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ARQUIVOS DE ZOOLOGIA  
DO  
ESTADO DE SÃO PAULO

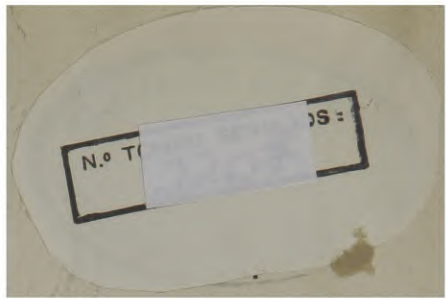
VOLUME XIV, FASCÍCULO 1

D. ELMO HARDY: NEOTROPICAL PIPUNCULIDAE (DIPTERA) STUDIES,  
PART IV. FURTHER STUDIES OF BRAZILIAN SPECIES.

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AVENIDA NAZARETH 481, CAIXA POSTAL 7172  
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## DEPARTAMENTO DE ZOOLOGIA DA SECRETARIA DA AGRICULTURA

É o museu oficial de zoologia do Estado de São Paulo. Compreende coleções seriadas da fauna brasileira, uma exposição pública, biblioteca especializada e a Estação Biológica de Boracéia.

### Histórico:

1890. O Conselheiro F. de Mayrink doa ao Governo do Estado o acervo do Museu Sertório, que adquirira do seu organizador, o Coronel J. Sertório. (Diretor: L. Löfgren). Donation to the State Government of the J. Sertório private collection; director A. Löfgren.
1893. O referido acervo é incorporado à Comissão Geográfica e Geológica, constituindo sua Secção de Zoologia (Chefe: H. von Ihering). Collections transferred to the State Geographical and Geological Commission, Zoological Section, head H. von Ihering.
1894. As Secções de Zoologia e de Botânica destacam-se da Comissão Geográfica e Geológica, dando origem ao Museu Paulista (Diretor: H. von Ihering). Sections of Zoology and Botany detached from the State Geographical and Geological Commission to form the Museu Paulista, director H. von Ihering.
1939. A Secção de Zoologia do Museu Paulista separa-se e transforma-se no atual Departamento de Zoologia (Diretores: S. de T. Piza Junior, 1.II — 18.IV.1939; O. M. de O. Pinto, 15.IV.1939 — 9.II.1956; Clemente Pereira, 5.III.1956 — 30.X.1958; Lindolpho Rocha Guimarães, 1.XI.1958 — 29.X.1962). Section of Zoology detached from Museu Paulista to form the Departamento de Zoologia (Directors, S. de T. Piza Junior, 1.II — 18.IV.1939; O. M. de O. Pinto, 15.IV.1939 — 9.III.1956; Clemente Pereira, 5.III.1956 — 30.X.1958; Lindolpho Rocha Guimarães, 1.XI.1958 — 29.X.1962).

### Publicações científicas

O Departamento publica duas revistas, Arquivos de Zoologia do Estado de São Paulo (publicação iniciada em 1940) e Papéis Avulsos do Departamento de Zoologia da Secretaria da Agricultura de São Paulo (1941). Os artigos são publicados individualmente e trazem indicada a data de sua distribuição aos autores e centros bibliográficos, sendo enfileirados em volumes sem periodicidade certa.

Anteriormente, os artigos zoológicos do Museu Paulista eram publicados na Revista do Museu Paulista. Com a fundação do Departamento de Zoologia, os volumes 1 e 2 dos Arquivos de Zoologia traziam as indicações, respectivamente, de volumes 24 e 25 da Revista do Museu Paulista. Esta prática foi abandonada, visto continuar essa revista sua publicação como Nova Série, dedicada a assuntos estranhos à Zoologia.

### Scientific publications

The Departamento publishes two periodicals, Arquivos de Zoologia do Estado de São Paulo (publication started 1940) and Papéis Avulsos do Departamento de Zoologia da Secretaria da Agricultura do Estado de São Paulo (1941). Papers are



individually published and show the date of distribution to authors and bibliographical centers, being eventually assembled into volumes.

Prior to 1940, zoological papers of the Museu Paulista were published in the Revista do Museu Paulista. When the Departamento de Zoologia was founded, volumes 1 and 2 of Arquivos de Zoologia had the indication "volumes 24 and 25" of the Revista do Museu Paulista. Such practice was subsequently abandoned, as that periodical continued publication as a "New Series" (Nova Série).

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NEOTROPICAL PIPUNCULIDAE (DIPTERA)  
STUDIES, Part IV  
FURTHER STUDIES OF BRASILIAN SPECIES (1)

D. ELMO HARDY (2)

This study is based upon a collection of 345 specimens of Pipunculidae from Brazil received from the late Dr. John Lane, Universidade de São Paulo, and Dr. M. Carrera, Departamento de Zoologia da Secretaria da Agricultura de São Paulo. I am grateful to these colleagues for having had the opportunity of studying this valuable collection. It is obvious that our knowledge of pipunculid flies in the Neotropical region is still very meager and a great deal remains to be learned about these flies. About fifty species have now been recorded from Brazil and it is apparent that this number represents just a fraction of the total number of species which must occur in this vast country. The collections which have been studied to date have been from rather localized areas and the pipunculid fauna of the major portion of Brazil is unknown. To date no biological information or host association data are available for any Brazilian species. Without doubt many of these will be found to be of economic importance when knowledge becomes available concerning the association with their Homopterous hosts.

A revised key to the known *Pipunculus* of the Neotropical region has been adapted from my Neotropical Dorilaidae Studies, Part III (Hardy 1954). A key is also given to the known Neotropical *Dorylomorpha* and to the known South American *Tomosvaryella*, excluding the Galapagos Islands.

The drawings have been made by Mrs. Elizabeth Pfeffer, University of Hawaii. These add materially to the value of this study.

**Chalarus Walker**

*Chalarus* Walker, 1834:269.

The members of this genus are characterized by the incomplete wing venation, with vein M1+2, the anal vein and the m crossvein lacking. Also by the presence of ocellar bristles, by the hemispherical

(1) Published with the approval of the Director of the Hawaii Agricultural Experiment Station as Technical Paper N.º 608

(2) Senior Professor of Entomology, University of Hawaii.

head and very narrow occiput, as well as by other details characteristic of the Chalarinae.

Only one species and one questionable subspecies of *Chalarus* is known to occur in Brazil.

Type of the genus *Cephalops spurius* Fallén.

### **Chalarus spurius (Fallén)**

*Cephalops spurius* Fallén, 1816:16.

Eleven specimens are present; one in the Lane collection from Est. do Rio, Itatiaia, Faz. Serra, August, 1946 (Barretto) and the remainder in the collection of the Departamento de Zoologia from Barueri, S. Paulo, July, 1955 to October, 1955 (K. Lenko).

### **Chalarus spurius chilensis Collin**

*Chalarus spurius chilensis* Collin, 1931:52.

This subspecies is differentiated from typical *spurius* by having the thorax and abdomen subshining black rather than opaque.

Eight specimens are present from the following localities: Est. do Rio, Itatiaia, Faz. Serra, August, 1946 (Barretto); S. Paulo, Sto. Amaro, July, 1945 (Lane-Coher); S. Paulo, Cantareira, July, 1945 (J. Lane); and Barueri, S. Paulo, August, 1955 (K. Lenko). The latter from the collection of the Departamento de Zoologia, the others were received from the late Dr. Lane.

I question the value of the subspecies character, in at least one series from one locality part of the specimens are subshining black (*chilensis*) and others are opaque black.

### **Pipunculus Latreille**

*Pipunculus* Latreille, 1802:463.

*Dorilas* Meigen, 1800:31. A rejected name.

Members of this genus are characterized by having a stigma present in the third costal section (cell Sc); the wing venation not reduced and the wing base not strongly attenuated, the axillary excision and the posterior lobes are developed.

Three subgenera, *Cephalosphaera* Enderlein, *Pipunculus* Latreille, and *Eudorylas* Aczél, occur in Brazil. The latter two are differentiated by the presence or absence of the propleural fan and since this character is often obscured by the sides of the head it is sometimes difficult to see and is not being used as a major character in the key to species which follows. This is still a very preliminary study and the classification will require many modifications as we learn more about the



Neotropical species. A number of species complexes have been discovered; the species look alike externally but have distinctive differences in the male genitalia.

KEY TO THE KNOWN SPECIES OF *PIPUNCULUS* (*sens. lat.*)  
FROM THE NEOTROPICAL REGION

1. Vein M1+2 bearing an appendix beyond the m crossvein  
(subgenus *Cephalosphaera*) ..... 2  
Vein M1+2 without an appendix ..... 6
- 2( 1). Third antennal segment obtuse below. Abdomen chiefly  
shining black. Mexico ..... *elegantulus* Williston  
Third segment acuminate below. Abdomen opaque .... 3
- 3( 2). Femora at least banded with black, or if only discolored with  
brown, the male hypopygium is strongly carinate 4  
Femora all yellow. Panama ..... *panamaensis* (Hardy)  
and related spp.
- 4( 3). Third antennal segment yellow, and produced into a long,  
rostrate apex which is nearly equal in length to the re-  
mainder of the segment. Third costal section equal or  
just slightly longer than the fourth ..... 5  
Third segment black and moderately acuminate. Third costal  
section two times longer than fourth. Argentina .....  
..... *incomitatus* Hardy
- 5( 4). Femora black, narrowly yellow at extreme apices and bases.  
Scutellum with a row of rather strong bristles along the  
hind margin. First tergum of abdomen with four to six  
short yellow bristles on each side. Female piercer longer  
than base and distinctly curved. Dominican Republic ..  
..... *mocaensis* (Hardy)  
Legs yellow, femora lightly tinged with brown medianly.  
Scutellum with a few sparsely placed, short bristles at  
apex. First tergum with two to three black bristles on  
each side. Female piercer equal in length to its base and  
straight; the base is swollen. Argentina .....  
..... *boutropis* Hardy
- 6( 1). Basal third of wings brown fumose, concolorous with the  
stigma, remainder of wings hyaline. Hind tarsi (at least  
of male) broad and flat. Brazil .. *platypodus* (Hardy)  
Wings and tarsi not as above ..... 7
- 7( 6). Abdomen chiefly yellow to rufous in color, the first four  
segments are entirely yellowish, except for a brownish to  
black median vitta ..... 8

- Abdomen entirely black, except in *longipilus* (Hardy) which has slight yellowish markings on the sides and on the venter ..... 9
- 8(7). Third antennal segment prolonged into a slender bristle-like apex which is longer than the remainder of the segment. The r-m crossvein is situated at the middle of cell 1st M2; third costal section two times longer than the fourth. Brazil ..... *rubidus* (Hardy)  
Third antennal segment not so developed. Crossvein r-m at basal one-third of cell 1st M2; third section of the costa equal to fourth. Jamaica. .... *cressoni* Johnson
- 9(7). Abdomen at least in part polished, at least the apical portions of some segments are bare of pollen ..... 10  
Abdomen opaque to faintly subshining, entirely pollinose 27
- 10(9). Each femur with a clump of long fine hairs at basal third, below (Hardy 1954, fig. 26b). Brazil .....  
..... *villifemoralis* (Hardy)  
Femora without such hairs ..... 11
- 11(10). Legs chiefly black, femora black, except at apices .... 12  
Legs entirely yellow, except for dark apical subsegments of the tarsi and sometimes discolorations of brown to black in the middle of each hind femur ..... 17
- 12(11). Third antennal segment produced into a long bristle-like point, about equal in length to the arista. The r-m crossvein is near the middle of the cell 1st M2. Peru. ....  
..... *brunnipennis* Becker  
Apex of third segment not bristle-like. The r-m crossvein at basal one-third to one-fifth of cell 1st M2 ..... 13
- 13(12). Propleura haired (*Pipunculus*) ..... 14  
Propleura bare (*Eudorylas*) ..... 16
- 14(13). Sides of mesonotum polished black, bare of pollen. Almost the entire dorsal surface of the hypopygium membranous and with a prominent apical keel (fig. 3b). Brazil and Argentina ..... *pauculus* (Hardy)  
Mesonotum gray-brown pollinose. Hypopygium with an apical membranous area ..... 15
- 15(14). Male hypopygium scarcely over one-half as long as the fifth abdominal segment. Claspers short and broad, enlarged at apices and each with a slight point at inner apex. The membranous area completely bisects the eighth segment on the venter. Argentina ..... *penepauculus* (Hardy)  
Hypopygium about equal in length to the fifth abdominal segment. Claspers rather slender, three times longer than wide and evenly tapered. Eighth segment not bisected on the venter. Argentina ..... *ferepauculus* Hardy

- 16(13). Third antennal segment long acuminate, produced into a long tapering point. Humeri yellow. Puerto Rico. ....  
 ..... *regalis* Curran  
 Third antennal segment short acuminate to acute (Hardy 1954, fig. 16a). Humeri brown, tinged lightly with yellow. Brazil and Argentina ..... *opiparus* (Hardy)
- 17(11). Third antennal segment with a bristle-like projection below. Third section of costa two times longer than the fourth. Femora without ventral spines. Mexico. *willistoni* Kertesz  
 Third segment variously shaped but not bristle-like at apex. Third section of costa about equal to or slightly shorter than the fourth (except in *D. accedens* (Hardy), which has the third nearly two times the fourth). Femora with ventral spines ..... 18
- 18(17). Propleura bare ..... 19  
 Propleura with a fan of hairs ..... 23
- 19(18). Third antennal segment acute to obtuse ..... 20  
 Third segment long acuminate ..... 21
- 20(19). Abdomen entirely polished black, except for narrow opaque bands across the bases of the terga. Third antennal segment acute. Abdomen rather densely covered with moderately long erect hairs. Brazil . . . . *similis* (Hardy)  
 Abdomen entirely opaque, except for the narrow apex of the fifth tergum. Third antennal segment obtuse. Abdomen sparsely covered with short, recumbent hairs. Brazil ..  
 ..... *inermus* (Hardy)
- 21(19). Front and middle tibiae with strong apical spines. Femora with a spur-like process (tab of tissue) near apex below (Hardy 1954, fig. 22). Third costal section equal to or slightly shorter than the fourth. Male genitalia as in figures 17d and 17e ..... *spinosus* (Hardy)  
 Without noticeable tibial spines or processes at the apices of the femora. Third section of costa one and one-half to two times longer than the fourth ..... 22
- 22(21). The r-m crossvein is situated near the middle of the cell 1st M2. Third costal section equal or longer than the fifth section. Abdominal terga two to five shining to subshining on apical third of the segments. Brazil. ....  
 ..... *accedens* (Hardy)  
 The r-m crossvein is at the basal fourth of cell 1st M2. Third costal section shorter than fifth. Abdomen entirely polished blue-black, except for the first tergum. Brazil  
 ..... *lividus* (Hardy)
- 23(18). Hypopygium with an apical membranous area. Sixth and seventh terga not unusually developed ..... 24



- Hypopygium lacking a membranous area. Seventh tergum very large and sixth tergum visible from a dorsal view but lateral in position (fig. 2c). Brazil and Argentina?  
 ..... *limatus* n. sp
- 24(23) . Very densely pilose, disc of scutellum, as well as apex, covered with long pale hairs. First tergum of abdomen with a dense clump of long bristlelike hairs, on each side. Brazil  
 ..... *callistus* (Hardy)
- Sparsely pilose species, disc of scutellum bare. First tergum with three to six bristles in a row on each side .. 25
- 25(24) . Front tibia lacking an apical spine. Membranous area completely dividing eighth segment on the venter (fig. 4d) 26
- Front tibia with a prominent apicoventral spine. Eighth segment not bisected by the membranous area (fig. 3d). Brazil ..... *nitidus* (Hardy)
- 26(25) . Hind tibia with prominent erect setae on the outside of the swollen portion (fig. 4b) Brazil ..... *paganus* n. sp.
- Hind tibia lacking erect setae on the swollen portion. Jamaica  
 ..... *stygius* (Hardy)
- 27( 9) . Femora chiefly brown to black, with not more than narrow apices, and sometimes bases, yellow ..... 28
- Femora chiefly or entirely yellow, with not more than median discolorations of brown to black on the femora ... 60
- 28(27) . Propleura each with a fan of hairs (*Pipunculus*) .... 29
- Propleura bare (*Eudorylas*) ..... 32
- 29(28) . Third segment obtuse, rounded ventrally ..... 30
- Third antennal segment acute, pointed ventrally ..... 31
- 30(29) . Antennae brown to black. Third costal section nearly two times longer than the fourth. Sixth tergum of female with a longitudinal median furrow extending the entire length. Face of female about one-third as wide as front. Brazil  
 ..... *williamsi* (Hardy)
- Third segment of antenna yellow. Third costal section one-third longer than fourth. Sixth tergum of female lacking such a furrow. Face very narrow, about one-seventh as wide as front. Argentina ..... *ravilateralis* Hardy
- 31(29) . Third antennal segment and the tibiae yellow. Female ovipositor rather slender, piercer about two times longer than the base and extending to base of fourth abdominal segment. Jamaica ..... *latifrons* (Hardy)
- Third antennal segment dark brown to black. Tibiae black except for yellow apices and bases. Ovipositor short, piercer about equal in length to base and reaching to about the base of the fifth abdominal segment. Chile ..  
 ..... *posticus* Collin

- 32(28). Third antennal segment rostrate below, produced into a very long point (Hardy 1954, fig. 21a), except in male of *pectitibialis* (Hardy 1954, fig. 18a) which has a row of short bristles at apex of hind tibia (fig. 17a) . . . . 33  
Third segment obtuse to short acuminate but not rostrate 41
- 33(32). Third section of costa short, about one-fourth as long as the fourth section. Puerto Rico . . . . . *regalis* (Curran)  
Third costal section about equal in length to the fourth, or if shorter (about one-half as long) the male hypopygium is about two times longer than the fifth abdominal segment and strong posteroventral apical spines are present on the front and middle tibiae (cf. *spinitibialis*) . . . . . 34
- 34(33). Male hypopygium large, one and two-thirds to two times longer than the fifth abdominal segment and with a small inconspicuous apical membranous area. The base of the ninth segment is visible from a dorsal view . . . . . 35  
Male hypopygium about equal to or shorter than fifth segment. Usually with a conspicuous apical membranous area and with the ninth segment not visible from dorsal view 36
- 35(34). Third costal section shorter than the fourth, often about one-half as long. Prominent posteroventral apical spines present on the front and middle tibiae. Outer clasper about equal in length to the inner, male genitalia as in figure 19d. Female ovipositor curved. Brazil and Argentina . . . . . *spinitibialis* (Hardy)  
Third costal section slightly longer than the fourth. Front and middle tibiae with tiny apical spines. Outer clasper of male much shorter than inner. Female ovipositor probably short and straight. Argentina .. *disgregus* n. sp.
- 36(34). Wings clear, not at all fumose; stigma filling only apical two-thirds of the third costal section. Ovipositor of female long, slender and straight, extending to base of second abdominal segment (Hardy 1954, fig. 13b). Brazil . . . . . *lopesi* (Hardy)  
Wings at least lightly fumose; stigma filling all of the third section. Ovipositor very short, not reaching beyond base of fourth segment or it is strongly curved upward 37
- 37(36). Lacking a comb of short bristles at apex of hind tibia. Last section of fourth vein straight; crossvein situated at the basal third of cell 1st M2. Ovipositor of female short and straight . . . . . 38  
With a comb of short bristles at apex of hind tibia (fig. 17a). Male genitalia as in figure 17b. Last section of fourth vein curved; crossvein near middle cell 1st M2. Ovipositor strongly curved upward. (Hardy 1954, fig. 18e). Brazil . . . . . *pectitibialis* (Hardy)

- 38(37). Male hypopygium lacking an apical membranous area. Claspers with broad basal lobes. Sixth sternum not swollen. Brazil ..... *occultus* (Hardy)  
 Hypopygium with a conspicuous apical membranous area. Claspers not as above. Sixth sternum often enlarged 39
- 39(38). Apex of third antennal segment extended into a bristle-like point (fig. 9a). Wings brown fumose. Scutellum with bristle-like setae around the margin, also a pair of bristle-like setae on each side of the mesonotum behind the humerus. Male claspers lacking basal lobes. Sixth tergum not visible from above; genitalia as in figures 9b-c. Brazil ..... *barrettoi* n. sp.  
 Not having the above characters. Claspers with prominent basal lobes. Sixth tergum visible from above .... 40
- 40(39). Male hypopygium about two-thirds as long as the fifth tergum. Claspers with slender apical lobes. Female ovipositor with a median longitudinal groove over the base. Brazil and Colombia ..... *absconditus* (Hardy)  
 Hypopygium equal to or slightly longer than the fifth tergum. Apical lobe of inner clasper enlarged basally. Female ovipositor lacking such a groove. Argentina .....  
 ..... *tucumanus* Shannon
- 41(32). Third antennal segment bright yellow ..... 42  
 Third segment brown to black ..... 43
- 42(41). Third antennal segment obtuse. Abdomen with hind margins of segments gray, except for median interruptions of brown. Middle femora with a few ventral spines. The r-m crossvein is situated at the basal one-third to one-fourth of cell 1st M2. Panama .... *replicatus* (Hardy)  
 Third segment acute. Abdomen with only hind angles of segments gray. Femora without ventral spines. Crossvein r-m situated near middle of cell 1st M2. Mexico ..  
 ..... *flavitarsis* Williston
- 43(41). Abdominal terga with distinct gray fasciae on the hind margins, these are usually narrowly interrupted in middle ..... 44  
 Abdomen not fasciate ..... 50
- 44(43). Claspers of male very conspicuous and asymmetrical, inner clasper long, curved and enlarged at apex. Female ovipositor strongly tuberculate below. British Guiana ...  
 ..... *rex* Curran  
 Claspers not conspicuous, in undissected specimens, and the two are similar in shape. Female ovipositor not tuberculate ..... 45
- 45(44). Last section of vein M1+2' curved. Male genitalia with a large membranous area which occupies the entire apex



- and is almost as broad as the widest portion of the eighth segment (Hardy 1954, fig. 20a) ..... 46
- Last section of fourth vein straight. Male genitalia with a small membranous area equal to half the diameter of the eighth segment (Hardy 1954, fig. 19b) ..... 48
- 46(45). Male claspers slightly enlarged and nearly truncate apically. Hypopygium about equal in length to the fifth segment. Argentina ..... *golbachi* Hardy
- Not as above ..... 47
- 47(46). Upper two-thirds of female front opaque black. Piercer of ovipositor longer than its base. Panama .....  
..... *interruptus* Malloch
- Front of female entirely silvery gray. Piercer of ovipositor equal to base. Argentina and Brazil ... *scotinus* Collin
- 48(45) Third antennal segment obtuse or short acute at apex. The membranous area is situated on the right side of the hypopygium as seen in dorsal view or a small basal cleft is present on the right side of the hypopygium. The sixth sternum does not terminate in a spine-like point .. 49
- Third antennal segment pointed, short acuminate at apex. Male hypopygium with a small apical membranous area, no basal cleft, and the sixth sternum terminates in a black spine-like point on posterior margin (fig. 13a). Brazil ..... *eremitus* (Hardy)
- 49(48). Male hypopygium with a prominent basal cleft on the right side and with a small apical membranous area. Brazil. .... *rotundicornis* (Hardy)
- Hypopygium lacking a basal cleft but with the membranous area covering the right side, as seen in dorsal view. Argentina ..... *dextratus* Hardy
- 50(43). Hind tibiae of male each with a row of prominent black dorsal spines extending the full length of the segment. Male with a large apical membranous area and a small apico-median keel. Claspers long, slender and tapered. Female opositor long and slender, not tuberculate ventrally. Argentina ..... *dorsispinosus* Hardy
- Hind tibiae lacking such spines, if the female ovipositor is elongate a prominent tubercle is present beneath the base ..... 51
- 51(50). Male hypopygium with a narrow membranous area extending longitudinally across the apex (Hardy, 1954, fig. 14b). Tibiae black except for narrow apices and bases. All tibiae with one to three rather strong, erect, posteromedian setae. Petiole of cubital cell two-thirds as long as the last section of vein M1+2. Male claspers curved on outer edges (fig. 13c). Brazil and Argentina .....  
..... *nigripedes* (Hardy)

- Not fitting the above, the petiole of the cubital cell elongate  
only in *buscki* Malloch and *devius* Hardy ..... 52
- 52(51). Wings brown fumose. Petiole of cubital cell elongate, three-  
fourths as long as the last section of vein M3+4. Male  
hypopygium with a large membranous area on the right  
side of the apex and a conspicuous keel present in the  
middle of the membranous area ..... 53  
Wings hyaline or very faintly infuscated. Petiole of cubital  
cell not so elongate. Hypopygium not as above .. 54
- 53(52). Male hypopygium slightly longer than the fifth abdominal  
segment. No erect posterior setae on hind tibiae. Third  
costal section one-half longer than the fourth and r-m  
crossvein situated at middle of cell 1st M2. Panama and  
Brazil ..... *buscki* Malloch  
Hypopygium short, scarcely half as long as the fifth segment.  
Three or four erect posterior setae at the middle of each  
hind tibia. Third costal cell scarcely longer than fourth.  
Crossvein r-m situated at basal two-fifths of cell 1st M2.  
Argentina ..... *devius* Hardy
- 54(52). Male genitalia with a large basal cleft on the right side. Sixth  
tergum plainly visible from dorsal view. Female ovipo-  
sitor very long and slender, equal in length to the abdo-  
men. Bolivia ..... *subjectus* Collin  
Not as above ..... 55
- 55(54). Third costal section approximately two times longer than the  
fourth and nearly as long as the fifth section .... 56  
Third about equal to fourth and much shorter than fifth 57
- 56(55). Male genitalia with membranous area extending basal over  
the dorsum and occupying most of the right side of the  
eighth segment (Hardy 1950, fig. 5b). Claspers two or  
more times longer than wide, tapered at apices (Hardy  
1950, fig. 5c). Brazil ..... *opinatus* (Hardy)  
Membranous area apical (Hardy 1954, fig. 1b). Claspers  
square in shape, as broad as long and truncate at apices  
(Hardy 1954, fig. 1c). Brazil ..... *ablus* (Hardy)
- 57(55). Male hypopygium with a prominent apical membranous  
area ..... 58  
Hypopygium nearly globose, no membranous area present  
(fig. 11b) ..... 59
- 58(57). A posteroventral bristle is present at the apex of each front  
and middle tibia. Hypopygium with a small basal depre-  
ssion on the right side (fig. 10b). Tibiae yellow. Clasp-  
ers asymmetrical, swollen basally and pointed at apices  
(fig. 10c). Brazil ..... *baruertiensis* Hardy  
Posteroventral bristles lacking on tibiae. Tibiae black. Hy-  
popygium lacking a basal depression (Hardy 1963, fig.

- 2e) and claspers symmetrical and evenly tapered (Hardy 1963, fig. 2f). Colombia ..... *dumicolus* Hardy
- 59(57). Claspers bilobed (Hardy 1950, fig. 4c). Sixth sternum normal in size. Brazil ..... *occultus* (Hardy)  
Claspers not bilobed (fig. 14c). Sixth sternum very large, visible from a dorsal view and larger than seventh segment as seen from below (fig. 14d) ..... *lanei* n. sp.
- 60(27). Third antennal segment very long acuminate, produced into a long point below ..... 61  
Third segment short acuminate to obtuse below ..... 68
- 61(60). Third antennal segment produced into a long seta-like projection which is about as long as the arista ..... 62  
The rostrate portion of the third segment not longer than the remainder of the segment and less than one-third as long as the arista ..... 63
- 62(61). Venter yellow, sides of abdominal segments two to four each with a yellow spot. Legs, humeri and halteres entirely yellow. Ecuador ..... *longipilus* (Hardy)  
Abdomen entirely black in ground color. Femora discolored with brown. Humeri and halteres brownish. Peru ....  
..... *peruensis* (Hardy)
- 63(61). Abdomen distinctly gray fasciated on hind margins of segments. Femora entirely yellow ..... 64  
Abdomen not fasciated. Femora often discolored with brown ..... 67
- 64(63). The rostrate portion of the third antennal segment is about equal in length to the remainder of the segment. Arista all black ..... 66  
The rostrate portion is comparatively short, about half as long as remainder of segment. Arista yellow at base .. 65
- 65(64). Hypopygium shorter than the fifth abdominal segment, with a shallow depression on the left side and a slight tubercle on the right side. Panama ..... *cuspicornis* Kertész  
Hypopygium distinctly longer than the fifth and with a large membranous area slightly to the right of the apex (Hardy 1948, fig. 3b) Mexico ..... *mexicanus* (Hardy)
- 66(64). Female ovipositor strongly curved upward (Hardy 1954, fig. 6c). Female front entirely cinereous. Male hypopygium brownish red, tinged with yellow, rounded and with no membranous area. Brazil and Argentina .....  
..... *curvatus* (Hardy)  
Ovipositor straight (Hardy 1954, fig. 11b). Upper portion of female front polished black. Male unknown. Genitalia probably not as above. Brazil and Argentina. ....  
..... *insignis* (Hardy)

- 67(63) . Third costal section about equal to the fourth and about one-half as long as the fifth section. Femora discolored with brown. Male genitalia rather quadrate in shape with a large membranous area covering all of the apical portion. Claspers with basal lobes. Ninth segment extended on inner margin (fig. 18a). Female ovipositor with a furrow down the middle of the base. Sixth tergum of female with a deep concavity on the hind margin. Southern South America ..... *schreiteri* Shannon
- Third costal section about two times longer than the fourth and equal or slightly longer than the fifth (fig. 7b). Legs all yellow. Male genitalia as in figure 7d. Brazil ....  
..... *adunatus* n. sp.
- Male genitalia more rounded with a small apical membranous area. Claspers slender with no basal lobes. Female ovipositor and apex of sixth tergum probably not as above. Argentina and Brazil ..... *tucumanus* Shannon
- 68(60) . Third antennal segment obtuse, rounded below ..... 69  
Third segment pointed, short acuminate or acute ..... 87
- 69(68) . Abdomen entirely silver colored above, except for small brown spots on the lateral margins of the terga. Mato Grosso, Brazil ..... *argentatus* (Hardy)
- Abdomen chiefly brown, gray on the sides and with not more than narrow gray fasciae at apices of segments ... 70
- 70(69) . Eyes of male narrowly separated on the front, at least a shining black line separates the eyes ..... 71  
Eyes of male joined on the front ..... 75
- 71(70) . Third costal section approximately equal in length to the fourth. Inner clasper of male genitalia greatly enlarged (Hardy 1954, fig. 9b) or with a large membranous area covering the entire apex ..... 72
- Third nearly two times fourth. Genitalia with a small membranous area at right of apex. Inner clasper not greatly enlarged. Brazil ..... *amazonus* (Hardy)
- 72(71) . Abdomen opaque brown with gray vittae at apices of segments (narrowly interrupted in the middle). Male genitalia with a small membranous area to the right of the apex. Inner clasper greatly enlarged ..... 73
- Abdomen subshining black, not distinctly fasciated. Genitalia with a large membranous area covering all of the apex. Claspers approximately equal in size and shape. Trinidad ..... *trinidadensis* (Hardy)
- 73(72) . Third antennal segment yellow. Inner clasper of male enlarged and globose at apex (Hardy 1954, fig. 5a) ... 74
- Third segment brown. Inner clasper not strongly swollen (Hardy 1954, fig. 9b). Sixth segment with two processes which fit below the claspers (Hardy 1954, fig. 9b). Brazil ..... *ineptus* (Hardy)

- 74(72). Sixth sternum with a single triangular-shaped point on hind margin. Inner clasper strongly swollen on inner apical margin (Hardy 1954, figs. 5a - b.) Brazil .....  
 ..... *carrerae* (Hardy)  
 Sixth sternum with a pair of projections from hind margin. Inner clasper more strongly swollen on the outer apical margin (fig. 10d). Brazil ..... *discanthus* n. sp.
- 75(70). Third antennal segment yellow. The r-m crossvein is situated below the basal third of the cell 1st M2. The third costal section is approximately equal in length to the fourth. Hind femora all yellow ..... 76  
 Third segment brown. The r-m crossvein is at middle of cell 1st M2. The third section is about two times longer than fourth. The hind femora are discolored with brown medianly. Brazil ..... *particeps* (Hardy)
- 76(75). Eighth segment largely membranous and with the membranous area extending to the base of the segment as seen from dorsal view (fig. 12b) (and fig. 3, Collin, 1931b:175) ..... 77  
 Membranous area apical or subapical in position, not bisecting eighth segment on the dorsum ..... 78
- 77(76). Membranous area occupying almost the entire dorsum of the eighth segment (refer to fig. 3, Collin, 1931b:174). Eighth segment at least one-half longer than the fifth. Inner clasper of male genitalia greatly enlarged at apex (refer to fig. 4, Collin, 1931b) Bolivia. *lindneri* Collin  
 Membranous area confined to right side of eighth segment. Eighth much shorter than fifth (fig. 12b). Inner clasper not enlarged, genitalia very different from above (fig. 12c). Brazil ..... *eminulus* n. sp.
- 78(76). A conspicuous basal lobe present on inner clasper (figs. 11c and 18e). Inner clasper much longer and stronger than outer ..... 79  
 Inner clasper lacking a basal lobe, about equal or shorter than outer (figs. 8c and 13b) or if longer it is bilobed at the apex (fig. 20c) ..... 84
- 79(78). Inner clasper strongly capitate (fig. 10d) ..... 80  
 Inner clasper not enlarged at apex ..... 81
- 80(79). Sixth sternum with a single triangular-shaped point on hind margin. Inner clasper strongly swollen on inner apical margin (Hardy 1954, figs. 5 a-b). Brazil .....  
 ..... *carrerae* (Hardy)  
 Sixth sternum with a pair of projections from the hind margin. Inner clasper more strongly swollen on outer apex (fig. 10d). Brazil and Argentina *discanthus* n. sp.
- 81(79). Inner clasper two or more times longer than the outer and distinctly bilobate ..... 82



- Inner clasper subequal to the outer and not bilobed (refer fig. 3b, Hardy 1950:435). Brazil .... *congruens* Hardy
- 82(81). Inner clasper about one-half longer than outer, the two lobes are separated by a narrow space and the apical lobe is short and thick (fig. 11c). Argentina .. *doelloi* Shannon  
 Inner clasper two-three times longer than outer, the lobes are well separated and the apical lobe is elongate, and slender (fig. 18e) ..... 83
- 83(82). Sixth sternum with two strong processes on the hind margin (Hardy 1954, fig. 9b). Antennae brown to black. Brazil ..... *ineptus* (Hardy)  
 Sixth sternum with a single blunt projection on the hind margin (fig. 18e). Third antennal segment yellow. Brazil ..... *scoliostylis* n. sp.  
 (Note these are also keyed in the group which has the eyes very narrowly separated)
- 84(78). Abdomen largely submetallic black. Membranous area covering entire apex of eighth segment. Inner clasper of male larger than outer and bilobed at apex (fig. 20c). Brazil ..... *subnitellus* n. sp.  
 Abdomen largely opaque brown with broadly interrupted gray vittae across apices of terga. Male genitalia not as above ..... 85
- 85(84). Outer clasper slender and curved, nearly two times longer than the inner (fig. 8c). Sixth sternum with a small point on hind margin. Brazil ..... *attenuatus* n. sp.  
 Outer clasper about equal to or but slightly longer than the inner. Hind margin of sixth sternum either lacking a point or heavily sclerotized and with two blunt points on the margin (fig. 13b) ..... 86
- 86(85). Outer clasper curved on outer edge and much narrower than inner. Hind margin of sixth sternum heavily sclerotized and developed into two blunt points (fig. 13b) Brazil ..... *exsertus* n. sp.  
 Outer clasper about equal to or distinctly broader than inner. Sixth sternum not as above ..... spp. *doelloi* complex
- 87(68). Male genitalia very large and globose in shape with a small membranous area on the right side of the apex. Abdomen not fasciated. Paraguay ..... *gratiosus* Kertész  
 Male genitalia not as above. Abdomen usually with gray fasciae on the posterior margins of the segments .. 88
- 88(87). Wings hyaline. Femora discolored with brown and tarsi wholly black. Jamaica ..... *gowdeyi* Curran  
 Wings at least faintly brownish fumose. Legs entirely yellow, except for the brownish coxae and last subsegments of tarsi ..... 89



- 89(88). Propleura bare ..... 90  
 Propleura each with a fan of hairs. Brazil .....  
 ..... *braziliensis* (Hardy)
- 90(89). Eighth segment of male completely bisected on the venter by  
 the large membranous area. Other aspects of the genitalia  
 as in figures 16b and 16c. Brazil ..... *partitus* n. sp.  
 Not as above ..... 91
- 91(90). Male genitalia with a large keel arising from the middle of the  
 membranous area (figs. 21b and 21c). The claspers are  
 curved on the outer edges and shaped as in figure 21c.  
 Brazil ..... *tropidoapex* n. sp.  
 Not as above ..... 92
- 92(91). Antennae yellowish. Third section of the costa equal to the  
 fourth. The third and fourth sections combined are equal  
 to or slightly longer than the fifth section. Female front  
 very narrow, just a thin line separates the compound  
 eyes. Peru ..... *angustifrons* Becker  
 Antennae brown. Third section one and one-half times longer  
 than the fourth and nearly equal in length to the fifth.  
 Female front probably normal. Male genitalia about one-  
 third as long as the fifth abdominal segment and with  
 a large membranous area covering the entire apex (Hardy  
 1954, fig. 8b). Brazil ..... *gomesi* (Hardy)

### **Pipunculus (Cephalosphaera) Enderlein**

*Cephalosphaera* Enderlein, 1936:3.

*Dorilas (Cephalosphaera)* Enderlein, Hardy 1950b:11.

This subgenus is differentiated from typical *Pipunculus* by having an appendix on vein M1+2. The propleural fan is developed as in *Pipunculus (Pipunculus)*.

Type of subgenus, *Pipunculus furcatus* Egger.

### **Pipunculus (Cephalosphaera) panamaensis (Hardy) complex of species** (figs. 1 a-c)

One female each of two distinct species are on hand from Brazil which fit *panamaensis* in my key. Both have the third antennal segment long acuminate (fig. 1). One from São Paulo, Boracéia, June, 1948 (J. Lane) lacks the lobate processes on the hind tarsi which are characteristic of *panamaensis*. Also the ovipositor possesses a rather prominent basal lobe (fig. 1c). The other specimen from São Paulo, December, 1953, Campos do Jordão (J. Lane) has the apical lobes on

the segments of the hind tarsi (fig. 1b) but has the sides of the first three abdominal segments yellow.

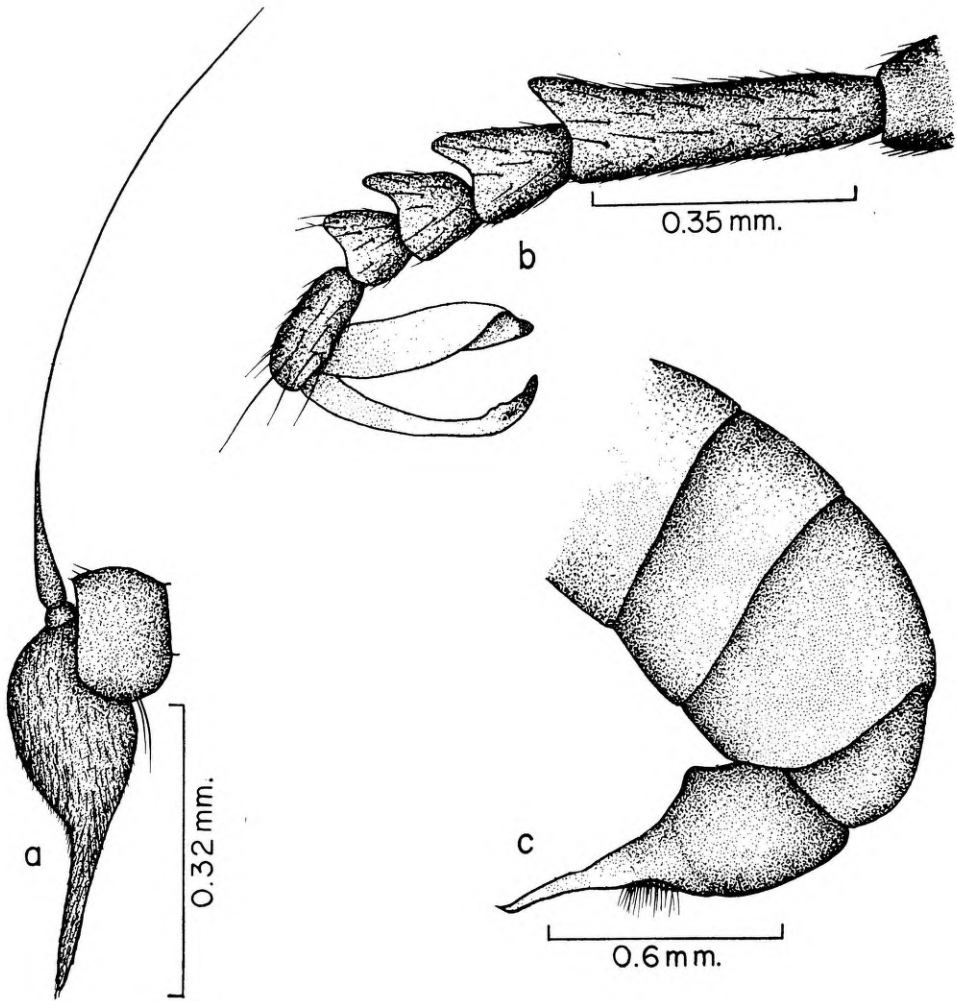


Fig. 1 : *Pipunculus (Cephalosphaera)* spp.?, a. antenna; b. hind tarsus; c. female ovipositor, lateral.

### *Pipunculus (Pipunculus)* Latreille

*Pipunculus* Latreille, 1802:463.

The typical subgenus is characterized by having the propleural fan developed. The subgenus does not appear to be highly developed in the Neotropical region, only seven species are presently known from Brazil.

Type of subgenus, *Pipunculus campestris* Latreille.

**Pipunculus (Pipunculus) limatus** n. sp.

(figs. 2 a-d)

This species runs near *P. callistus* (Hardy) but the genitalia are very dissimilar and the two are apparently not related. The lack of a membranous area on the eighth segment (fig. 2c) and the very strongly developed seventh tergum of the male (fig. 2d) will readily differentiate *limatus*.

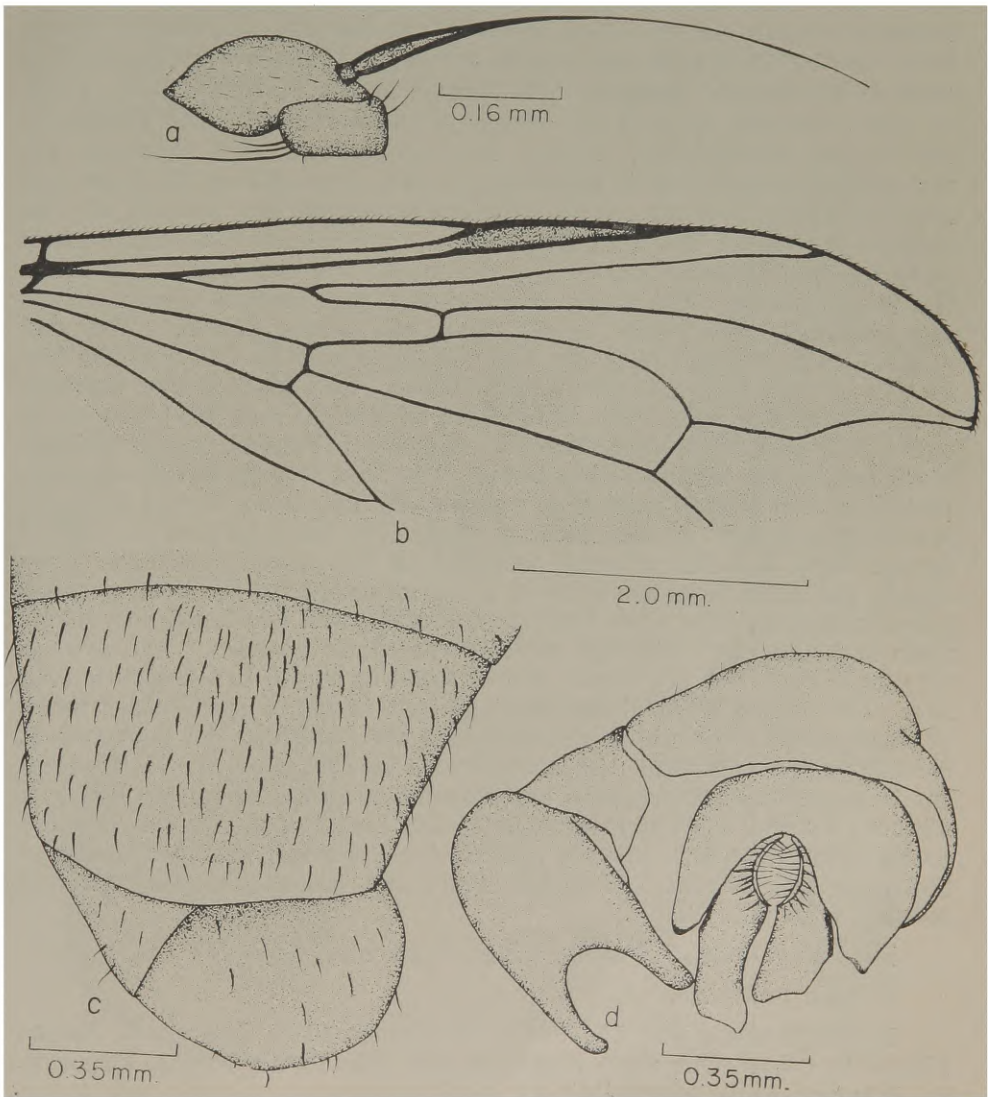


Fig. 2 : *Pipunculus (Pipunculus) limatus*, n. sp., a. antenna; b. wing; c. male genitalia, dorsal; d. male genitalia, ventral.

*Male. Head:* The junction of the compound eyes is almost equal in length to the frontal triangle, the latter is densely silvery gray pubescent. The face is silvery gray pubescent and is just slightly wider than the lower portion of the front. The occiput is gray except for a gray-brown pollinose area immediately behind the vertex. The antennae are entirely yellow, except for the flagellum of the arista. The third segment is short, acute. The ventral bristles on the second segment extend beyond the apex of the third (fig. 2a). The palpi and mouthparts are yellow. *Thorax:* Yellow-brown in ground color, more distinctly brown on the dorsum and predominantly yellow, tinged faintly with brown around the lateral margins of the mesonotum, the pleura and on the scutellum. The entire thorax is yellow-brown pollinose. The humeri are pale yellow. The knobs of the halteres are tinged faintly with brown. The scutellum has numerous pale hairs over the disc as well as around the margin. The longest of the marginal hairs would be approximately one-half the length of the scutellum. The propleural fan is very conspicuous. *Legs:* Entirely yellow. The segments are rather slender and ventral spines are weakly developed on the front and hind femora. Two strong erect posterior setae are present on the swollen portion of the hind tibia. *Wings:* Hyaline. The third costal section is just slightly longer than the fourth and the stigma fills all of the third section. The third and fourth costal sections combined are approximately two-thirds longer than the fifth section. The r-m crossvein is situated near the basal third of cell 1st M2 and the last section of vein M1+2 is moderately curved. Cell R5 is rather strongly narrowed at the apex (fig. 2b). Last section of vein M3+4 is about equal in length to the m crossvein. *Abdomen:* Predominantly polished black and rather thickly yellow pilose. The first tergum is entirely gray pollinose, the second tergum is polished on the sides, brown pollinose medianly and gray on the apical portion. The third tergum is polished except for a thin line of gray pollen along the posterior margin. The fourth and fifth terga are entirely polished except for the gray posterolateral margins. The sixth tergum is swollen, well developed and visible from a dorsal view although entirely ventral in position. The seventh tergum is very well developed, almost equal in length to the eighth (fig. 2c). The eighth segment is almost globose in shape and lacks a membranous area. The ninth segment, and the claspers, are pale yellow, densely yellow pubescent. As seen from a ventral view, the sixth segment is larger than the seventh and terminates in a blunt point which is directed toward the apical portion of the inner clasper. The claspers are asymmetrical, the inner is almost straight-sided, nearly truncate at the apex and the outer is rather short and thick, subacutely pointed apically (fig. 2d).

Length: Body, 5.7 mm.; wings, 7.25 mm.

Female unknown.

Holotype male, Est. São Paulo, December, 1945, Campos do Jordão (Barretto col.). One male paratype, Est. São Paulo, Brazil, Itaporanga, January, 1946, (Barretto).

The type has been returned to the John Lane collection, and the paratype is in the University of Hawaii collection.

**Pipunculus (Pipunculus) nitidus (Hardy)**

(figs. 3 d-e)

*Dorilas (Dorilas) nitidus* Hardy, 1950:447-448, figs. 9 a-b.

The male was adequately described in the original, except that the humeri vary from brown to yellow. The ventral aspects of the male genitalia are as in figure 3d. The following is the first description of the female. Fitting the description of the male in most respects. The front is silvery gray except on the upper portion and is gradually narrowed so that it is scarcely wider than the median ocellus at its narrowest point. The apical spines on the front tibiae and the erect setae on the swollen portions of the hind tibiae are stronger than in the male. The piercer of the ovipositor is short and straight about equal or subequal to its base (fig. 3e).

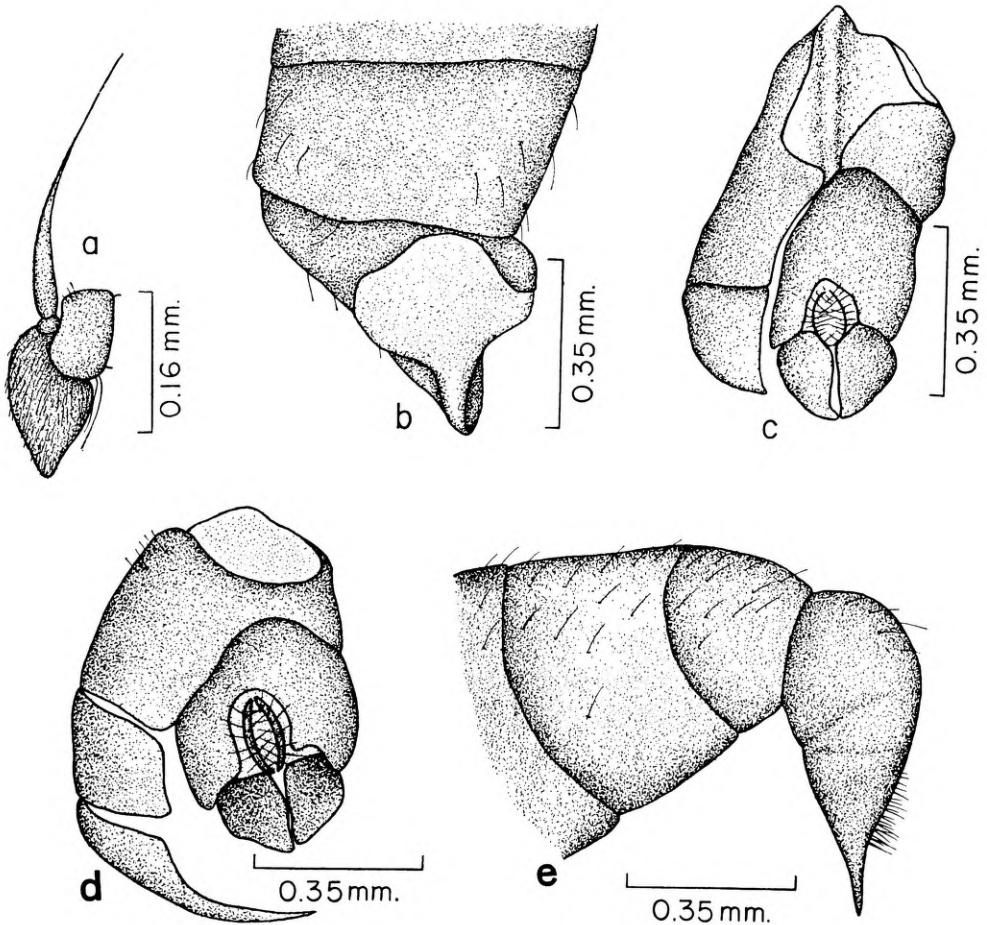


Fig. 3: *P. (P.) pauculus* (Hardy), a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral. *P. (P.) nitidus* (Hardy), d. male genitalia, ventral; e. female ovipositor, lateral.



Length: Body, 3.8-4.0 mm.; wings, 5.7 mm.

Seven specimens are in the Lane collection from: Est. do Rio, Itatiaia, Maromba, September, 1946 (Barretto); S. Paulo, Batea, November, 1944 (J. Lane); S. João, E. Santo, July, 1940 (no collector given); and Est. S. Paulo, Cantareira, Chapadão, November, 1946 (Barretto). Ten specimens are in the collection of the Departamento de Zoologia from Barueri, S. Paulo, July-August, 1955 (K. Lenko).

Two male and five females on hand from Barueri; E. S. Paulo, Itaporanga; and S. Paulo, Capital, appear to represent two or possibly three species which are close to *nitidus*. Additional specimens will be needed before these can be described.

### **Pipunculus (Pipunculus) paganus** n. sp.

(figs. 4 a-e)

This species appears to fit near *P. stygius* (Hardy), from Jamaica, but is differentiated by having prominent posterior setae at the middle of the hind tibia. The ventral aspects of the male genitalia probably are very different, those of *stygius* have not been studied in detail.

*Male. Head:* The junction of the compound eyes is equal in length to the frontal triangle. The latter is dull gray pubescent except for a shining black spot in the middle. The face is silvery gray, about equal in width to the lower portion of the front. The first two antennal segments are brown, the third segment is yellow, short acute at the apex (fig. 4a). *Thorax:* Shining black in ground color, brown pollinose on the dorsum, gray on the sides. The propleural fan is made up of conspicuous yellow-gray hairs. The sides of the mesonotum are polished black on the type, allotype, and on one of the male paratypes and completely brown pollinose on the other specimens, and this probably is not a reliable character. *Legs:* Entirely yellow except for a faint tinge of brown in the median portions of the femora. Ventral spines are moderately developed on all femora. Each hind tibia has a row of about four erect posterior setae on the swollen portion (fig. 4b). *Wings:* Hyaline except for the brown stigma that fills all of the third costal section. The third section is about one-half longer than the fourth and the two sections combined are just slightly longer than the fifth costal section. The r-m crossvein is situated between the basal one-third and basal two-fifths of cell 1st M2 and the last section of vein M1+2 is gently curved. *Abdomen:* The terga are entirely polished black except for a small amount of brown pollinosity in the middle of the first two terga. The abdomen is rather sparsely covered with short erect yellow-brown setae. The hypopygium is opaque brown pollinose, approximately two-thirds as long as the fifth abdominal segment and has a moderately large membranous area to the right of the apex (fig. 4c). As seen from a ventral view the membranous area completely bisects the eighth segment (fig. 4d). The claspers are nearly symmetrical in shape, each has a small, pointed preapical lobe on the inner margin.

Length: Body, 3.2 mm.; wings, 4.3 mm.

*Female.* The upper one-third to two-fifths of the front is polished black, the remainder is gray pubescent. The third antennal segment is



slightly more pointed than in the male. The third costal section is equal or slightly longer than the fourth and the two sections combined are equal to the fifth section. The sixth abdominal segment is approximately three-fourths as long as the fifth; the posterior margin of the tergum is not concave. The ovipositor is short, rather thick, the piercer has a small tubercle at its base and extends to approximately the apex of the third abdominal segment (fig. 4e).

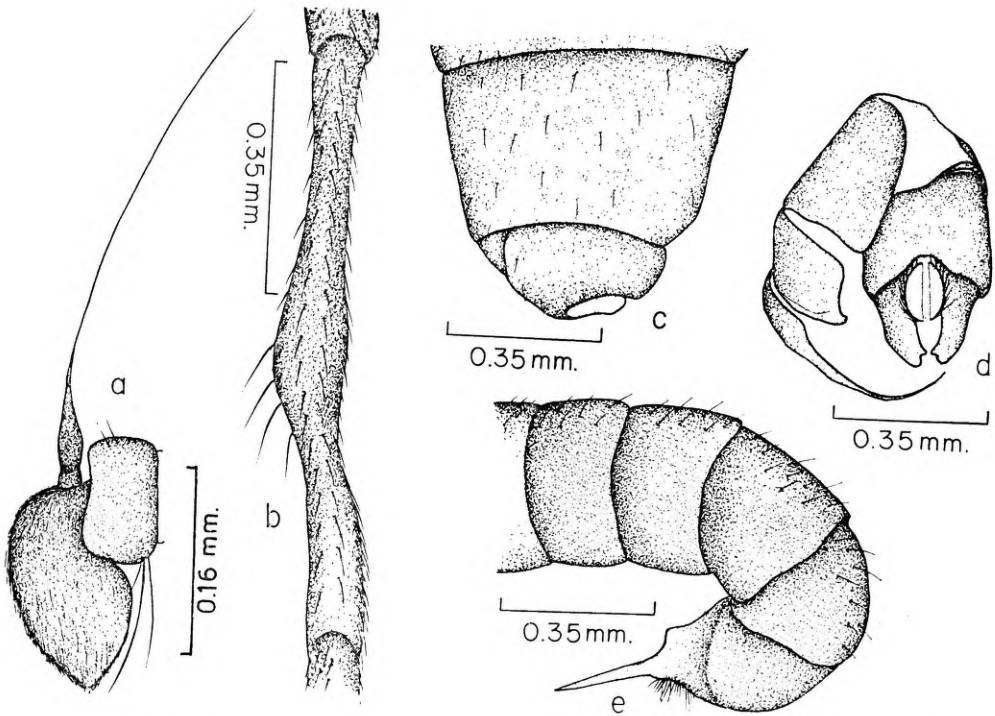


Fig. 4 : *P. (P.) paganus*, n. sp., a. antenna; b. hind tibia, dorsal; c. male genitalia, dorsal; d. male genitalia, ventral; e. female abdomen, lateral.

Length: Body, 2.8 mm.; wings, 4.0 mm.

A female specimen which appears to belong here differs by having the basal segments of the abdomen tinged with yellow to rufous on the sides and the third costal section scarcely more than one-half as long as the fourth.

Holotype male, Barueri, São Paulo, July 25, 1955 (K. Lenko). Allotype female same locality and collector, August 13, 1955. Two male paratypes, one same locality and collector as type, August 1, 1955; and one Ipiranga, São Paulo, September, 1955 (M. Suarez). The above mentioned aberrant female is from the same locality and collector as type, December 11, 1954.

The type, allotype and one paratype have been returned to Dr. M. Carrera to be deposited in the collection of the Departamento de Zoologia da Secretaria da Agricultura de São Paulo. The paratype and the female specimen are in the collection at the University of Hawaii.

**Pipunculus (Pipunculus) pauculus (Hardy)**

(figs. 3 a-c)

*Dorilas (Dorilas) pauculus* Hardy, 1954:51-52; figs. 25 a-b.

This species has been previously known only from the type female from Rio de Janeiro. Two male specimens on hand appear to belong here. The third antennal segment is acute ventrally (fig. 3a), slightly shorter pointed than in the female. The frontal triangle is gray-brown pollinose and is slightly longer than the junction of the compound eyes. The sides of the mesonotum and the apex of the scutellum are polished black, bare of pollen. The bases of the femora are yellow and the tibiae are largely yellow. The hind tibia has two or three erect setae on the outside surface of the swollen portion. Abdominal terga three-five are entirely polished. The hypopygium is distinctly longer than the fifth abdominal segment. The eighth segment has a large membranous area extending nearly to the base of the segment, as seen in dorsal view, and a prominent keel arising from the middle of the membranous area (fig. 3b). The claspers are short, rather thick, nearly symmetrical and tapered to subacute points at their apices (fig. 3c).

Length: Body, 3.6 mm.; wings, 4.0 mm.

Two male specimens are in the Lane collection from Est. do Rio, Itatiaia, Campo Belo and Maromba, September, 1946 (Barretto).

**Pipunculus (Pipunculus) villifemoralis (Hardy)**

(figs. 5 a-b)

*Dorilas (Dorilas) villifemoralis* Hardy, 1954:53-54; figs. 26 a-d.

This species is readily differentiated by the villose femora as well as other details. It was adequately described in the original except for the ventral aspects of the male genitalia. The claspers are symmetrical, evenly tapered to acute points at apices (fig. 5b). The wings are as in figure 5a.

One male specimen is in the Lane collection from Serra do Navio, Terr. Amapá, Brasil, October, 1957 (K. Lenko).

**Pipunculus (Pipunculus) williamsi (Hardy)**

(figs. 6 a-d)

*Dorilas (Dorilas) williamsi* Hardy, 1954:54, figs. 27 a-c.

This species is easily recognized by its small size; the obtuse, rounded third antennal segment; the distinctive wing venation (Hardy, 1954, fig. 27b); the brown to black pubescent frontal triangle of the male; the broadly expanded front of the female; the longitudinal furrow down the sixth tergum of the female; and by the genital characters of both sexes (figs. 6b, 6c and 6d).

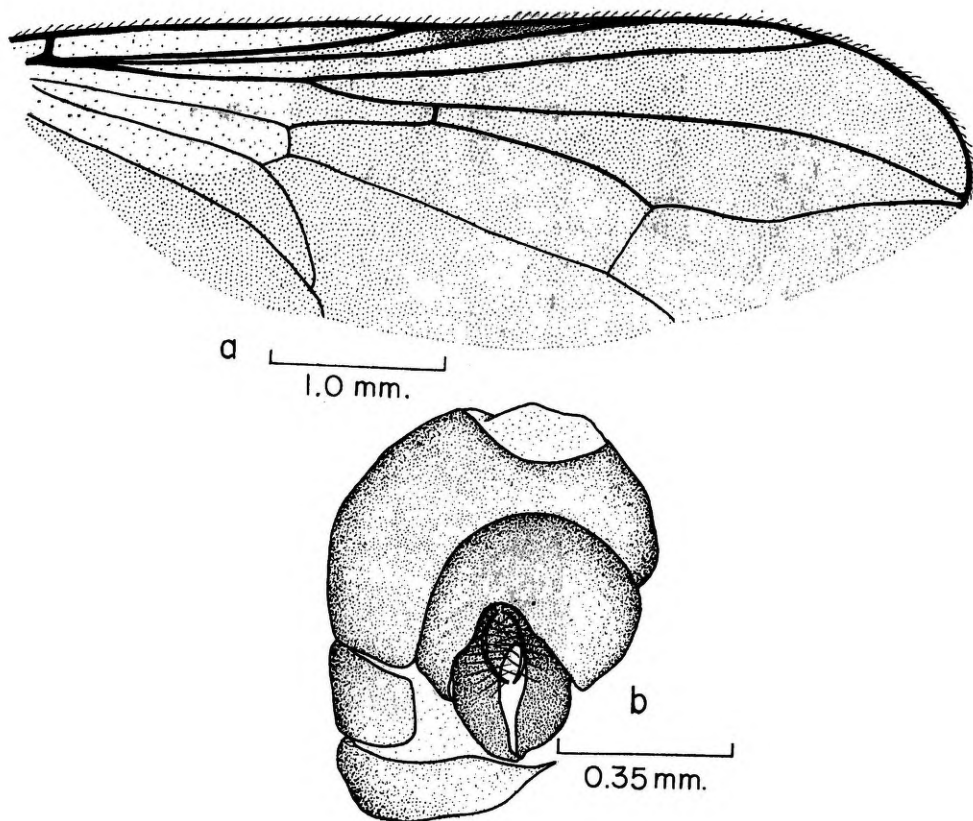


Fig. 5 : *P. (P.) villifemoralis* (Hardy), a. wing; b. male genitalia, ventral.

*Male.* The compound eyes are joined on the front almost to the median ocellus, the length of the junction is approximately equal to the length of the frontal triangle. The latter is dull brownish black pubescent except for a shining black spot in the median portion. The face is dull brown to black pubescent, distinctly narrowed on the lower portion, at the narrowest point the width is scarcely more than one-half the width of the front above the antennae. The antennae are brown on specimens at hand, the third segment is rounded ventrally, oblong in shape (fig. 6a); in the type the third segment is yellow. Thorax dark brown to black in ground color, brown pollinose on the dorsum, gray on the sides. The propleural fan is made up of fine gray hairs. The hind margin of the scutellum has a row of short, inconspicuous hairs. The knobs of the halteres are dark brown to black. The femora are brown, tinged with rufous, the apices and bases of the segments are yellow. The tibiae are largely yellow, tinged with brown on the median portions. The tarsi are yellow, mainly tinged with brown on the first four segments, the apical segment of each is brown to black. The front and hind femora lack ventral spines. The hind tibia has no erect posterior setae on the swollen portion. Wings slightly infuscated with brown. The stigma is brown and fills almost all of the third costal section. The

third section of the costa is almost two times longer than the fourth and is nearly equal in length to the fifth section. The r-m crossvein is situated near the basal one-third to two-fifths of cell 1st M2 and the last section of vein M3+4 is gently curved. For the wing venation refer to Hardy 1954, figure 27b. The abdomen is entirely brown pollinose. Three moderately large black setae are present on each lateral margin of the first tergum. The male hypopygium is about two-thirds as long as the fifth abdominal segment and has a moderately large subapical membranous area on the right side (fig 6b). The claspers are nearly symmetrical, curved inwards and crossed at apices (fig. 6c).

Length: Body, 2.5-3.35 mm.; wings, 3.5-4.4 mm.

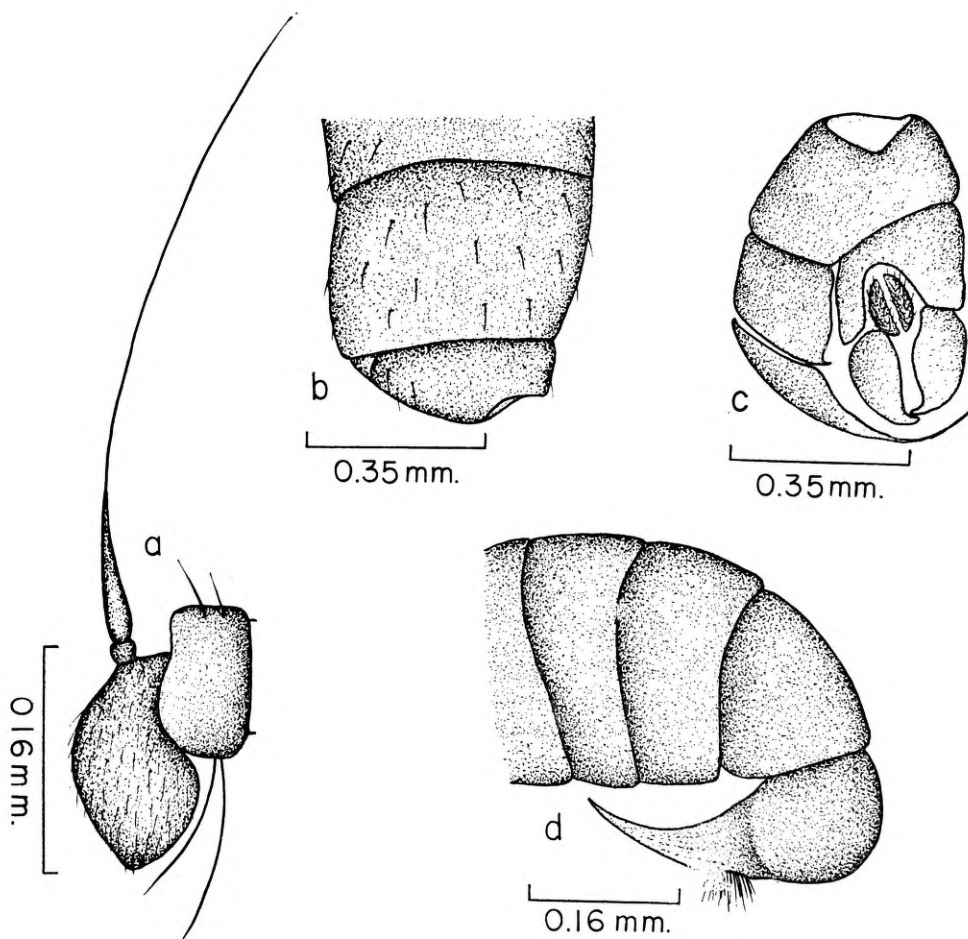


Fig. 6 : *P. (P.) williamsi* (Hardy), a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral; d. female abdomen, lateral.

Previously known only from the male, following is a description of the female. Fitting the description of the male in most details. The third antennal segment is obtuse, rounded below and variable in color

from vellow, tinged faintly with brown, to reddish brown. The face is rather strongly narrowed, at its narrowest point it is about equal in width to two rows of eye facets. The front is polished black and a thin line of gray extends across the lower margin and along each eye margin. The front is expanded in the median portion and is about three times wider than the face. The thorax is shining black, covered with brown pollen on the dorsum, gray on the sides. The coxae and femora are dark brown to black. The tibiae are yellow, tinged with brown. No erect setae are present on the outside surface of the hind tibia. The wings are as described and figured for the male. The abdomen is shining black covered with gray-brown pollen. The sixth tergum has a longitudinal median furrow extending the entire length of the segment. The ovipositor is short and thick. The base is globose. The piercer is thickened basally and curved upward toward the apex (fig. 6d). The piercer extends to the apex of the third abdominal segment.

Nine specimens are present in the Lane collection from the following localities: Est. do Rio, Itatiaia, Faz. Serra, and Maromba, August, 1946 (Barretto); Est. S. Paulo, Cantareira, Chapadão, September, 1946 (Barretto); Est. de Minas, Arceburgo, F. Fortaleza, December, 1946 (Barretto); Rio de Janeiro, Itatiaia, 500-1000 m., April, 1945 (Barretto). Also seven specimens in the collection of the Departamento de Zoologia from Barueri, S. Paulo, February 8, March 22, July 7-23, and August 6-8, 1955 (K. Lenko).

### **Pipunculus (Eudorylas) Aczél**

*Eudorylas* Aczél, 1940:151.

*Dorilas (Eudorylas)* Aczél, Hardy, 1943:55.

The *Eudorylas* are differentiated from typical *Pipunculus* by lacking a fan of hairs on each propleuron. I find no other character for separating these and prefer to treat this as a subgenus. The great bulk of the Neotropical Pipunculidae fall in this subgenus.

Type of subgenus, *Pipunculus opacus* Fallén.

### **Pipunculus (Eudorylas) absconditus (Hardy)**

*Dorilas (Eudorylas) absconditus* Hardy, 1954:14-16, figs. 2 a-b.

To date only female specimens have been seen from Brazil. The male sex has been described (Hardy, 1963:263, figs. 2a-c) from a large series of specimens from Colombia which appear to belong to this species. *P. absconditus* is closely related to *P. barrettoi* n. sp., refer to the discussion under that species.

One female specimen is present in the Lane collection from Est. do Rio, Itatiaia, Maromba, August, 1946 (Barretto).



**Pipunculus (Eudorylas) adunatus n. sp.**

(figs. 7 a-d)

This species appears to fit close to *P. mexicanus* (Hardy) but is differentiated by having the abdomen subshining, lightly gray-brown pollinose; by having the male hypopygium equal or slightly shorter than the fifth abdominal segment, and with a large membranous area covering the entire apical portion of the eighth segment and a distinct keel present in the middle of the membranous portion (fig 7c).

*Male. Head:* The junction of the compound eyes is slightly greater than the length of the frontal triangle. The lower portion of the front (frontal triangle) is silvery gray pubescent as seen in direct light; in indirect light it is dull black. The face is silvery gray, approximately equal in width to the lower portion of the front. The antennae are yellow, the third segment is moderately acuminate ventrally (fig 7a). The upper occiput is dusted with brown, the sides are silvery gray. *Thorax:* Dark brown to black in ground color, brown pollinose on the dorsum, gray on the sides. The humeri are yellow, the knobs of the halteres are tinged with brown. The hairs along the margin of the scutellum are tiny, inconspicuous. *Legs:* Entirely yellow. The segments are slender and ventral spines are weakly developed on the front and hind femora, these being represented by only one or two anteroventral spines on each hind femur and five or six spines on each front femur. The middle femora each have a row of small anteroventral and posteroventral bristles extending over about the apical half of the segment. *Wings:* Almost hyaline. The third costal section is approximately two times longer than the fourth and about equal in length to the fifth section. The stigma is pale brown and fills all of the third costal section. The r-m crossvein is situated near the basal two-fifths of cell 1st M2 and the last section of vein M1+2 is rather strongly curved (fig. 7b). The last section of vein M3+4 is slightly longer than the m crossvein. *Abdomen:* Polished brown to black in ground color, rather lightly dusted with brown over the dorsum, gray-brown on the extreme lateral margins of the terga. The hypopygium is approximately equal in length to the fifth abdominal segment, the entire apex is covered by a large membranous area which has a distinct keel in the median portion (fig. 7c). The seventh segment is not visible from direct dorsal view, but the ninth segment is distinctly seen from above. The claspers are rather slender, approximately symmetrical and the ventral aspects of the genitalia are as in figure 7d.

Length: Body, 3.7 mm.; wings, 4.5 mm.

Four female specimens are on hand which appear to fit close to the above males. They represent two distinct species, however, and since neither has been associated with the male they are being designated as species ? close to *adunatus*. For the most part both fit the description of the male except for sexual characters. In one the upper two-thirds of the front is polished black, in the other the upper two-fifths of the front is polished black. In both the third costal section is approximately one-half longer than the fourth and the last section of vein M1+2 is straight or nearly so. The abdomen is more opaque in both of these and



also more distinctly gray pollinose on the sides. In the first mentioned species (species "A" — with the upper two-thirds of the front polished black) the marginal hairs are less conspicuous, the hind tibia lacks an erect seta on the outside of the swollen portion (as in the above described males) and the piercer of the ovipositor is distinctly longer than its base as in figure 8a. In the second mentioned species (species "B") the marginal setae of the scutellum are moderately developed, and one erect seta is present on the outside of the swollen portion of the ninth

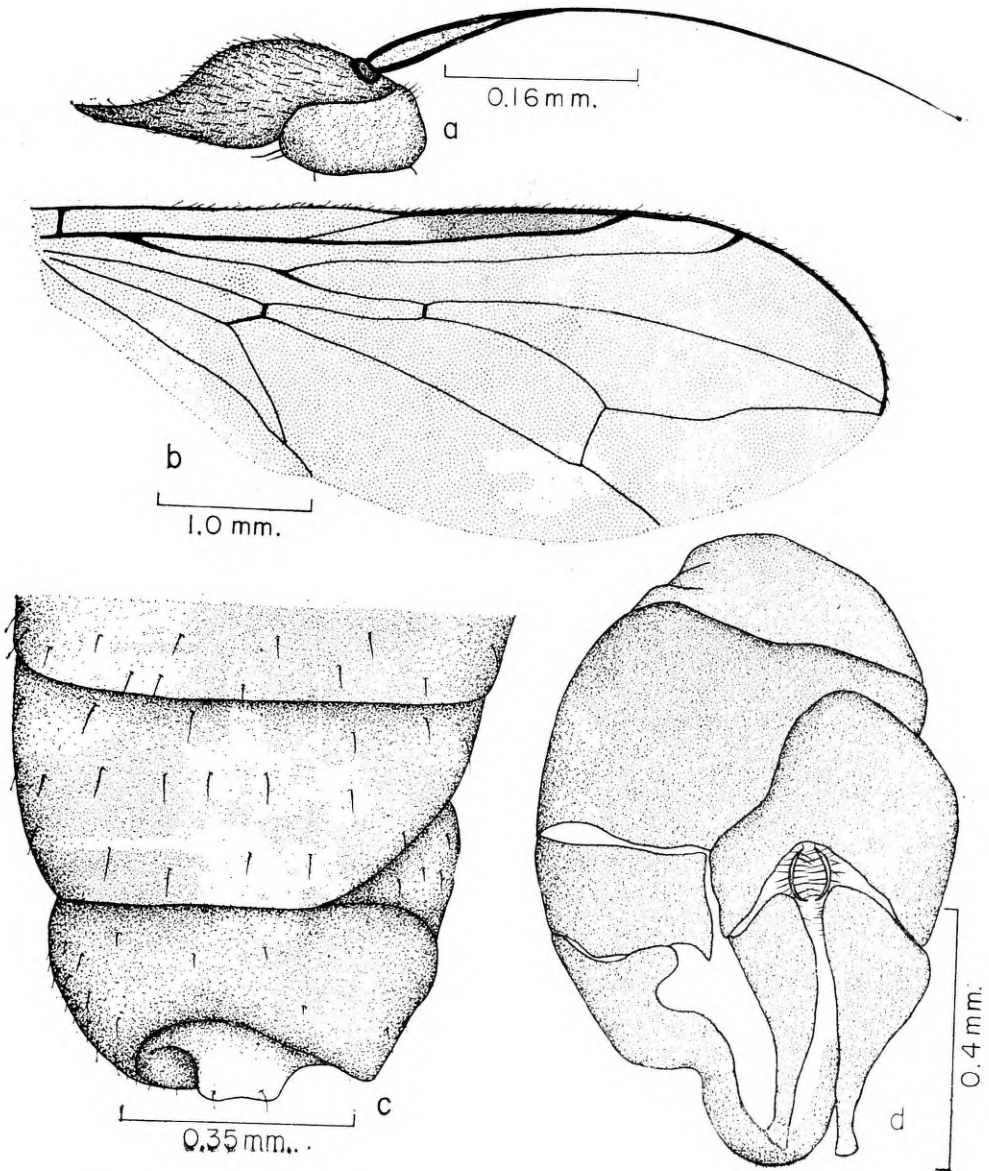


Fig. 7 : *Pipunculus (Eudorylas) adunatus*, n. sp. a. antenna; b. wing; c. male genitalia, dorsal; d. male genitalia, ventral.

tibia. In this species the ovipositor base is globose and the piercer is short and straight, approximately equal in length to the base (fig. 8b).

Holotype male and two male paratypes from Vera Cruz, F. Santa Rosa, Brazil, June, 1944 (Ramalho). One paratype male from Barueri, S. Paulo, July 16, 1955 (K. Lenko). The above mentioned females are from Est. São Paulo, Brazil, December, 1945, Campos do Jordão; S. Paulo, September-December, 1955 (J. Lane), and Cantareira, Chapadão, November, 1946 (Barretto).

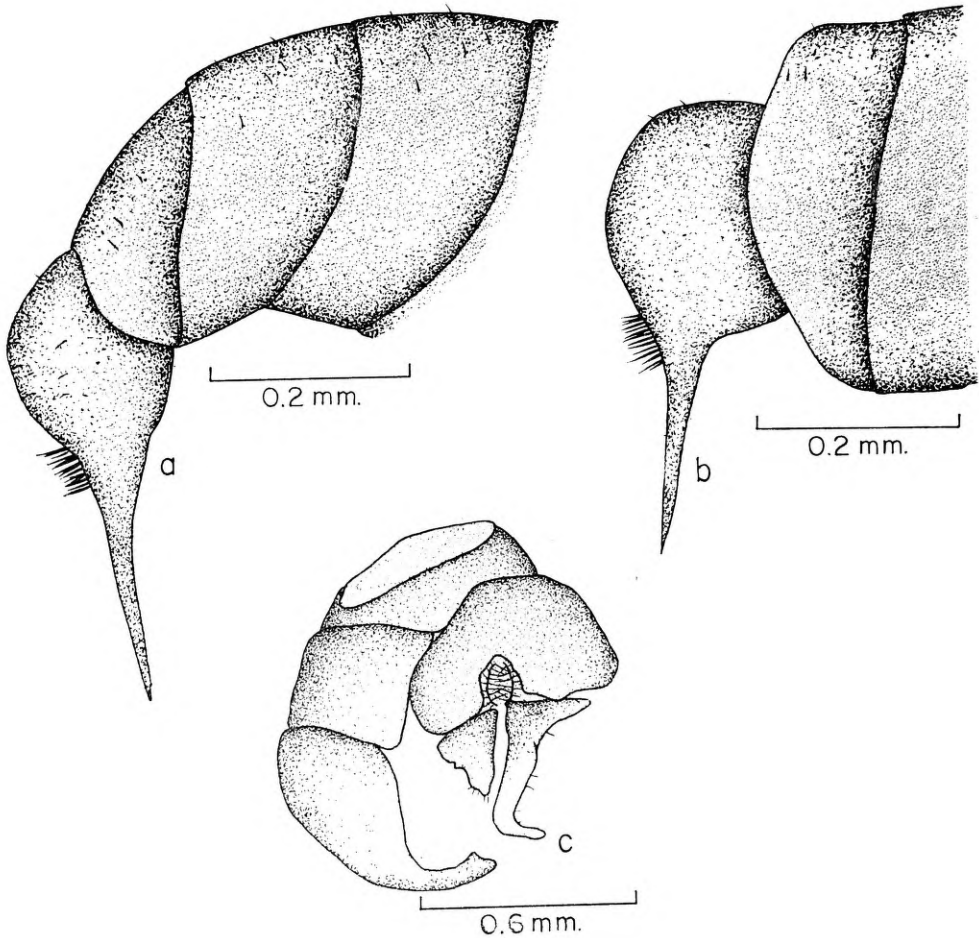


Fig. 8 : Species "A" close to *adunatus*, a. female ovipositor, lateral.  
Species "B" close to *adunatus*, b. female ovipositor, lateral.  
*P. (E.) attenuatus*, n. sp., c. male genitalia, ventral.

The type, one paratype, and the above mentioned female specimens have been returned to the John Lane collection. One paratype has been returned to Dr. M. Carrera to be deposited in the collection of the Departamento de Zoologia da Secretaria da Agricultura de São Paulo. One paratype is being retained in the University of Hawaii collection.

**Pipunculus (Eudorylas) argentatus (Hardy)**

*Dorilas (Eudorylas) argentatus* Hardy, 1954:17, fig. 4 a-c.

This species is differentiated by its entirely silvery abdomen; as well as by its distinctive genitalia (Hardy, 1963: figs. 2a-c), and by its large size.

Length: Body, 4.7-5.0 mm.; wings, 5.8-6.0 mm.

Female unknown.

Previously known only from the type male, from Mato Grosso, Brazil. One specimen is present in the collection of the Departamento de Zoologia from Barueri, S. Paulo, August 3, 1955 (K. Lenko).

**Pipunculus (Eudorylas) attenuatus n. sp.**

(fig. 8c)

This species fits in the *doelloi* complex and is differentiated by the genital characters as shown in figure 8c.

*Male*. Fitting the description of *doelloi*. The antennae are yellow, the third segment is rounded ventrally. The legs are predominantly yellow, the hind tibiae lack erect posterior setae on the swollen portion. The third costal section is about equal in length to the fourth and the r-m crossvein is situated near the basal third of cell 1st M2. The abdomen is predominantly dull brown, slightly grayed at the apices of the terga. As seen from a dorsal view the genitalia are like those of *doelloi*. From a ventral view the outer claspers are slender, attenuated, nearly two times longer than the inner claspers (fig. 8c). The sixth sternum is developed into a slight point on the hind margin.

Length: Body, 5.0 mm.; wings, 6.7 mm.

Female unknown.

Holotype male, Est. do Rio, Itatiaia, Maromba, Brasil, September, 1946 (Barretto).

The type has been returned to the John Lane collection.

**Pipunculus (Eudorylas) barrettoi n. sp.**

(figs. 9 a-c)

This species fits near *P. absconditus* (Hardy) and is differentiated by having the wings distinctly infuscated with brown; the third antennal segment brown to black; the scutellum with strong black setae around the margin; a pair of strong black setae present on the sides of the mesonotum behind the humeri; and the male genitalia are different as shown in figures 9b and 9c (compare with the figures of *absconditus*, Hardy, in press). The genitalia of *barrettoi* differ by having a mound development in the middle of the membranous area at the apex of the eighth segment and by having the claspers short, rather broad, lacking a ventral lobe.

*Male. Head:* The eyes are joined on the front for a distance almost equal in length to the frontal triangle. The latter is shining black down the median portion, gray-brown on the sides and just above the antennae. The face is dark-gray pubescent, just slightly wider than the lower portion of the front. The upper portion of the occiput is comparatively narrow, not noticeably swollen. The antennae are brown to

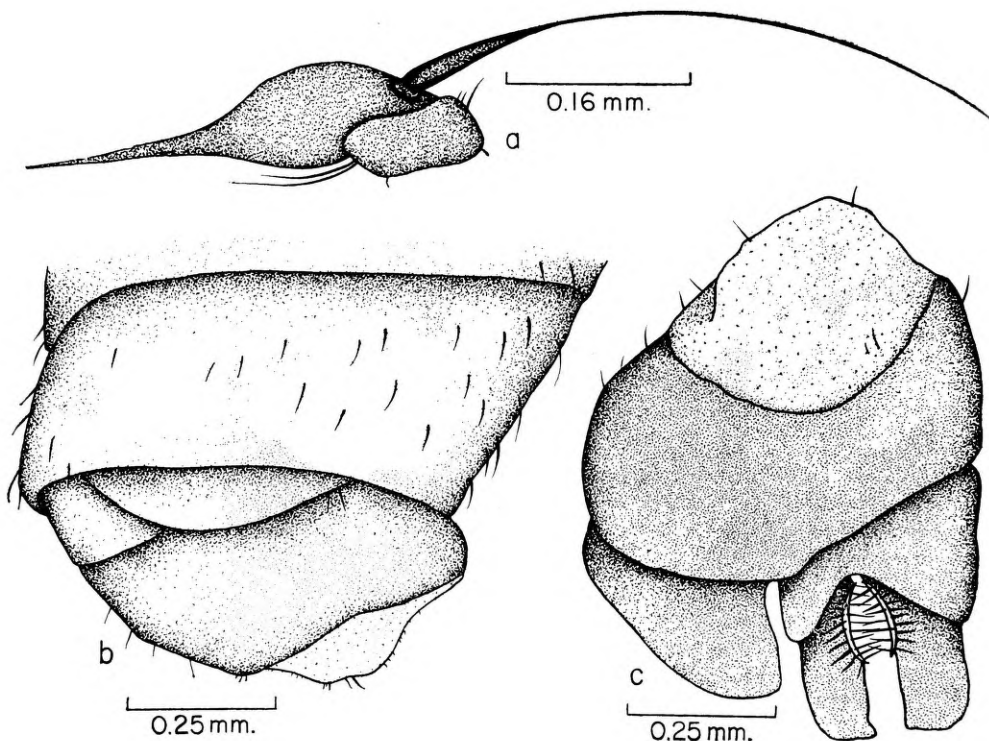


Fig. 9 : *P. (E.) barrettoii* n. sp., a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral.

black, the bristle-like apex of the third segment is equal or slightly longer than the remainder of the segment (fig. 9a). *Thorax:* Shining black in ground color, opaque gray-brown on the dorsum, gray on the sides. A row of rather conspicuous hairs extends down each dorsocentral line, a row of rather strong black setae (small bristles) extend around the hind margin of the scutellum, and two prominent black setae are present on each side of the mesonotum just above the notopleural callus. The humeri are dark brown to black. The halteres have brown knobs, the apices are yellow, tinged faintly with brown. *Legs:* Predominantly yellow, tinged with brown in the median portions of the femora. Ventral spines are moderately developed on all femora. No prominent erect setae are present on the swollen portion of the hind tibia. *Wings:* Conspicuously pale brown fumose. The third costal section is almost as long as the fourth and the stigma fills all of the third section. The third and fourth costal sections combined are just

slightly longer than the fifth section. The last section of vein M1+2 is gently curved. The r-m crossvein is situated near the basal two-fifths of cell 1st M2. *Abdomen*: The first tergum is gray, the abdomen is otherwise opaque brown except for the gray apices on terga two-four. The fifth tergum is subshining black on the apex, lightly gray-brown pollinose. The first abdominal segment has a row of four moderately strong black bristles on each side. The hypopygium is approximately two-thirds as long as the fifth abdominal segment. The sixth tergum is usually plainly visible in dorsal view and the base of the ninth segment is sometimes visible from above. The eighth segment has a large membranous area covering the entire apex, the median portion of the membranous region is gibbose (fig. 9b). The ninth segment is short and broad, the apical margins are rounded, the cleft is broadly U-shaped. The claspers are short and thick, almost quadrate in shape and truncate at apices (fig. 9c).

Length: Body, 3.6 mm.; wings, 4.7 mm.

Female unknown.

Holotype male and one male paratype, Est. do Rio, Itatiaia, Marombá, September, 1946 (Barretto).

The type has been returned to the John Lane collection.

The paratype is in the University of Hawaii collection.

### ***Pipunculus (Eudorylas) barueriensis* n. sp.**

(figs. 10 a-c)

This species fits near *P. occultus* (Hardy) and *lanei* n. sp. but the male genitalia are very different. *P. barueriensis* is readily differentiated by the presence of an apical membranous area on the male hypopygium (fig. 10b), as well as by the details of the ventral aspects of the genitalia (fig. 10c), and by the development of an apicoventral spine on each of the front and middle tibiae.

*Male. Head*: The compound eyes are joined on the front for a distance approximately equal in length to the frontal triangle, the latter is dull gray pubescent with a shining black spot in the median portion. The face is silvery gray and is just slightly wider than lower portion of the front. Antennae entirely dark brown to black, the third segment is acute to short acuminate at the apex as in figure 10a. *Thorax*: Shining black in ground color, brown pollinose on the dorsum, gray on the sides. The humeri are yellow, tinged faintly with brown. The scutellum has short inconspicuous hairs around the margin. *Legs*: The femora are predominantly dark brown to black, narrowly yellow at the bases and apices. The tibiae are yellow, the basal two segments of the tarsi are yellow. No prominent erect posterior setae are present on the hind tibiae. Each front tibia has a short apical bristle. *Wings*: Subhyaline, the yellow-brown costa fills all the third costal section. The third section is approximately equal in length to the fourth and the two sections combined are about one-third longer than the fifth costal section. The r-m crossvein is situated near the basal third of cell 1st M2 and the last section of vein M1+2 is nearly straight. *Abdomen*: The dorsum



is entirely gray-brown pollinose, very faintly subshining and with no distinct gray vittae. The hypopygium is almost equal in length to the fifth abdominal segment and has a large membranous area covering the entire apex (fig. 10b). The claspers are asymmetrical, the outer is developed into a hook-like lobe on the inner margin and the inner clasper is pointed at the apex (fig. 10c).

Length: Body, 3.2 mm.; wings, 4.0 mm.

Female unknown.

Holotype male, Barueri, São Paulo, July 21, 1955 (K. Lenko). Five paratypes (all males) are from the following localities in Brazil: same locality and collector as type, May 19, July 23, and August 6, 1955; Ipiranga, São Paulo, July, 1951 (Rabello); and Osasco, São Paulo, November 20, 1955 (Vulcano & Martinez).

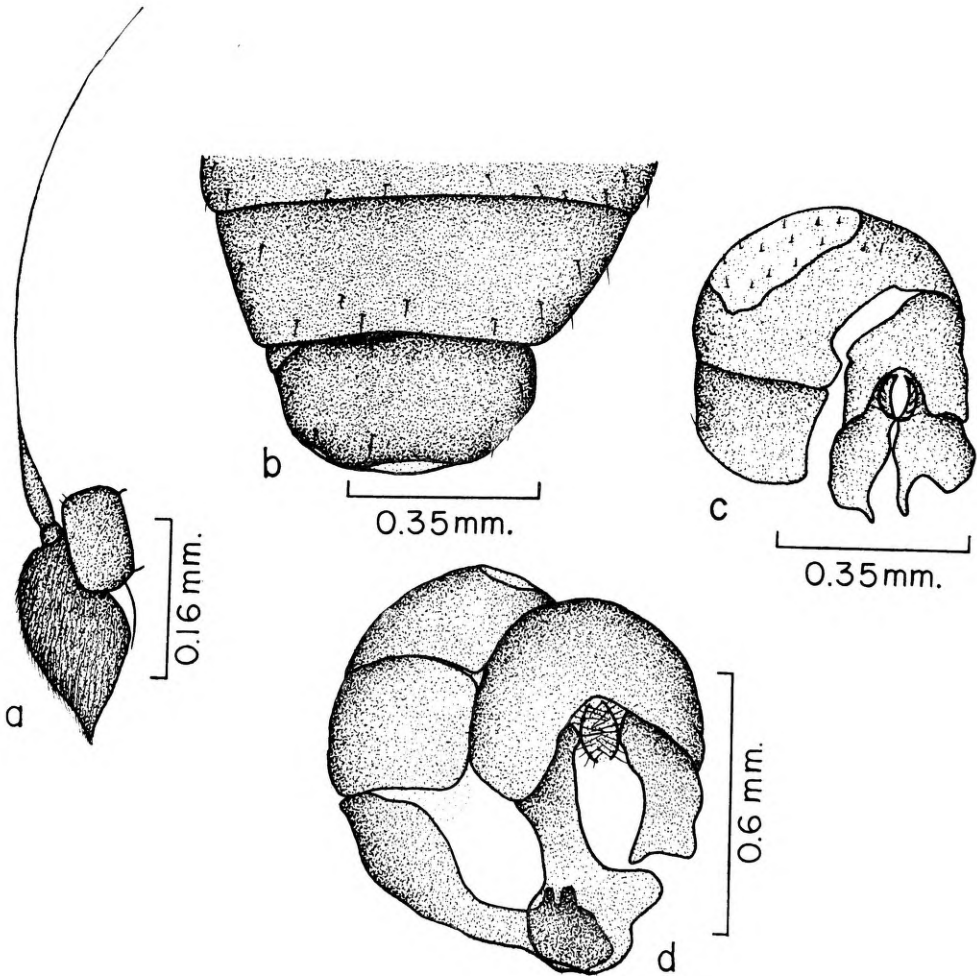


Fig. 10 : *P. (E.) barueriensis*, n. sp., a. antenna, b. male genitalia, dorsal; c. male genitalia, ventral. *P. (E.) discanthus*, n. sp., d. male genitalia, ventral.



The type and three paratypes have been returned to the Departamento de Zoologia da Secretaria da Agricultura de São Paulo. Two paratypes are in the University of Hawaii collection.

**Pipunculus (Eudorylas) carrerai (Hardy)**

*Dorilas (Eudorylas) carrerai* Hardy, 1950:434-437, figs. 2 a-d.

This species has been adequately described and figured in the original and in my "Neotropical Dorilaidae Studies, Part III" (Hardy, 1954:18-20, figs. 5 a-b).

One specimen is on hand in the Lane collection from Est. de Goiás, F. Monjolinho, Corumbá, Brasil, November, 1945 (Barretto).

**Pipunculus (Eudorylas) curvatus (Hardy)**

*Dorilas (Eudorylas) curvatus* Hardy, 1954:20, figs. 6 a-c.

This species is known only from the female and this sex has been adequately described in the original.

One specimen is in the collection of the Departamento de Zoologia from Barueri, São Paulo, July 16, 1955 (K. Lenko).

**Pipunculus (Eudorylas) discanthus n. sp.**

(fig. 10d)

This species belongs in the *doelloi* complex and fits very close to *F. carrerai* (Hardy) because of the strongly capitate inner clasper and the narrowly separated compound eyes of the male. It is differentiated by having two prominent processes developed on the hind margin of the sixth sternum and the inner clasper distinctively shaped as in figure 10d.

*Male.* Fitting the description of *doelloi* except for a few minor details and except for the male genitalia. The third antennal segment is yellow except for a faint tinge of brown in the ground color of the basal portion. The eyes are narrowly separated by a thin black line down the middle of the front. The narrowed portion is about equal in length to eight or nine rows of eye facets. The scutellum has a row of short inconspicuous pale hairs around the margin. The third costal section is about equal in length to the fourth and the two combined are approximately one-third longer than the fifth section. The r-m crossvein is situated at the basal one-fourth of cell 1st M2. The last section of vein M1+2 is gently curved. The last section of vein M3+4 is about two-thirds to three-fourths as long as the m crossvein. The abdomen is colored as in *doelloi* except that the apices of the terga are more faintly gray pollinose. As seen from dorsal view the genitalia are similar to those of *doelloi* except that the membranous area on the eighth segment is smaller and situated to the right of the apex. From

a ventral view the ninth segment is much enlarged, greater in size than the eighth, and approximately as wide as long. The ninth segment and the claspers are entirely yellow. The outer clasper is rather short, almost truncate apically. The inner clasper has a distinct lobe developed at the inner side of the base and the apical portion is greatly enlarged, as in figure 10d. The hind margin of the sixth sternum has two well-developed processes.

Length: Body, 3.9 mm.; wings, 4.6 mm.

Female unknown.

Holotype male, Barueri, São Paulo, Brasil, July 11, 1955 (K. Lenko).

The type is in the Departamento de Zoologia da Secretaria da Agricultura de São Paulo.

### **Pipunculus (Eudcrylas) doelloi** Shannon

(figs. 11 a-d)

*Pipunculus doelloi* Shannon, 1927:37-38.

*P. doelloi* Shannon was described from the female sex from Tafi Viejo, Tucumán. I have studied the type in the United States National Museum collection and have redescribed and figured it (Hardy, 1953:301-303, figs. 5-6). I later (Hardy, 1954:21) decided that *Dorilas congruens* Hardy (1950:437-439, figs. 3 a-c) was synonymous with *doelloi*. I now find this synonymy to be incorrect. It is apparent that a complex of species fit the description of *doelloi* and to date it has not been possible to definitely place this species. Through the kind cooperation of Dr. A. Willink, Director, Instituto Miguel Lillo, Tucumán, Argentina, I have had an opportunity to study a good series of specimens of both sexes of typical *doelloi* from Villa Padre Monti, Dep. Burruyacu, Tucumán, Argentina, February 1-7, 1948 (R. Golbach) and can now clarify the concept of this species. The *doelloi* complex of species is characterized by having the legs and antennae yellow with the third antennal segment short acute or obtuse apically; the sixth tergum of the male well developed and plainly visible from a dorsal view; and the sixth sternum well developed on the left side of the abdomen (fig. 11d); the base of the ninth segment plainly visible from above and the eighth segment with a large apical membranous area (fig. 11b). The female ovipositor is rather short and straight, the base is usually tuberculate ventrally.

The female was adequately described in my redescription of the type (*loc. cit.*). Following is the first description of the male. Fitting very close to *P. scoliostylis* n. sp., from Brazil, and differentiated by the characteristics of the male genitalia as shown in figures 11b-d. The differently developed inner clasper will readily separate *doelloi*.

*Male.* Fitting the description of the female except for sexual characters. The eyes are joined on the front for a distance equal to two-thirds the length of the frontal triangle. The latter is entirely silvery gray pubescent. The antenna is as in figure 11a. The sixth tergum is plainly visible from a dorsal view and the sixth sternum is well developed on the left side of the abdomen and is also developed into a triangular

point on the venter. The hypopygium is approximately equal in length to the fifth abdominal segment and the eighth segment has a large subapical membranous area on the right (fig. 11b). The base of the ninth segment is visible from dorsal view. As seen from ventral view the ninth segment is slightly larger than the eighth, is about as wide as long and has a shallow apical concavity. The inner clasper is bilobate, about one-half longer than the outer and shaped as in figure 11c. The outer clasper is scarcely longer than wide and is pointed at the inner apex. As seen from the left side the genitalia are as in figure 11d.

Length: Body, 4.5 mm.; wings, 5.75 mm.

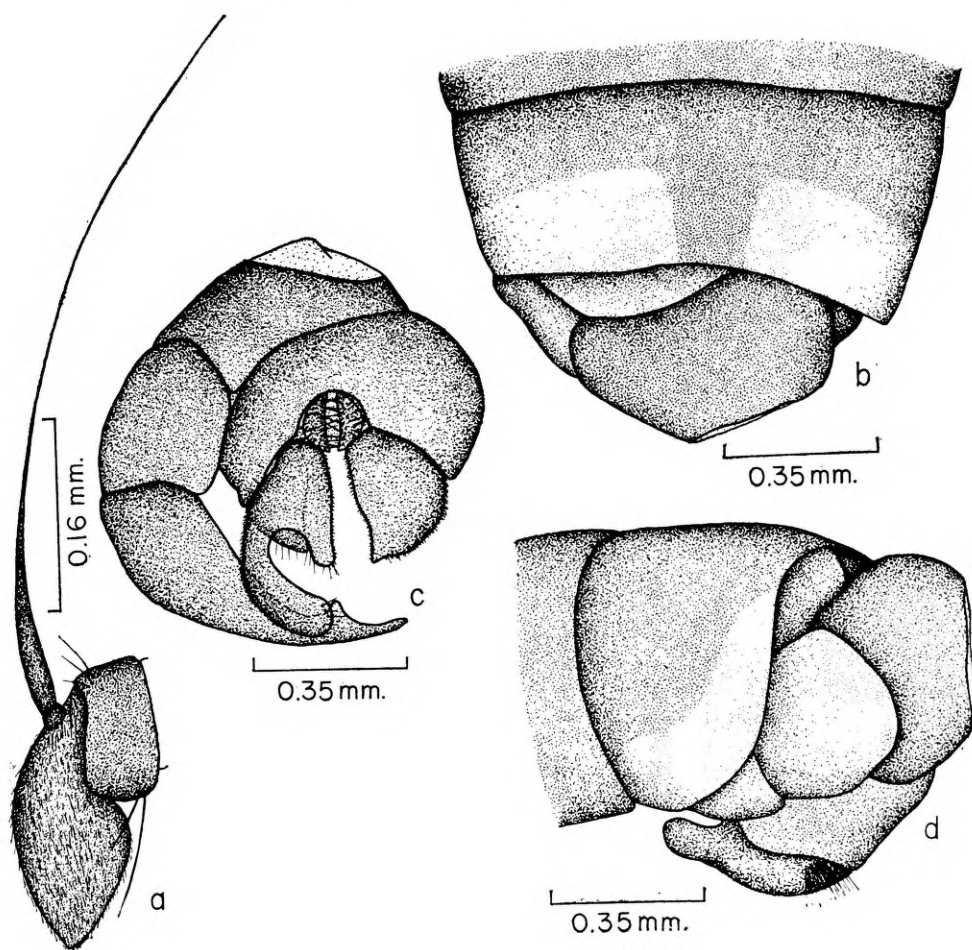


Fig. 11 : *P. (E.) doelloi* Shannon, a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral; d. genitalia, left lateral.

Four specimens are also on hand, representing at least three species of the *doelloi* complex, from Est. Biol. Boracéia, Salesópolis, São Paulo, 850m., November, 1957 (M. Carrera); São Paulo, Embu, July, 1952 (J. Lane); and Serra do Navio, Terr. Amapá, Brasil, October 24, 1957 (K.

Lenko). These are not being described since the specimens are not in good condition.

**Pipunculus (Eudorylas) eminulus n. sp.**

(figs. 12 a-d)

This species fits near *P. lindneri* Collin because of the obtuse third antennal segment, the yellow legs, and the large membranous area which extends over the dorsal surface of the eighth segment of the male (fig. 12b). The genitalia of the two differ very strikingly and these are probably not related. *P. eminulus* is differentiated by having the membranous area confined to the right side of the eighth segment (fig. 12b), the inner clasper not enlarged, and the ninth segment rather strongly lobate apically (fig. 12c).

*Male. Head:* The junction of the compound eyes is about equal in length to three-fourths the length of the frontal triangle, the latter is silvery gray pubescent. The face is silvery gray and is approximately equal in length to the lower portion of the front. The antennae are yellow, tinged faintly with brown on the basal segments. The third segment is subacute, or obtuse ventrally (fig. 12a). *Thorax:* Brown pollinose on the dorsum, gray on the sides and over the metanotum. The humeri are yellow, tinged with brown. The scutellum has a row of pale, rather short and inconspicuous, hairs around the hind margin. The halteres are brown, tinged with yellow on the knobs; the stems are yellow. *Legs:* Yellow except for the brown apical segments of the tarsi and for a tinge of brown on the coxae. Ventral spines are lacking on the front and hind femora, and are weakly developed on the middle pair. The hind tibia lacks erect setae in the middle of the segment. Apicoventral spines or strong setae are lacking on the tibiae. *Wings:* Entirely hyaline except for the yellow-brown stigma that fills all of the third costal section. The third section is equal in length to the fourth and the two sections combined are one-fourth longer than the fifth costal section. The r-m crossvein is situated at the basal third of cell 1st M2. The last section of vein M1+2 is rather strongly curved. *Abdomen:* Brown pollinose, gray on the first tergum, the basal median margin of the second tergum and the sides of terga two to five, and with a broadly interrupted gray vitta extending across the hind margins of terga three to five. The row of hairs on each side of the first tergum are pale and rather inconspicuous, scarcely longer than the scattered setae on the sides of the other abdominal segment. As seen from a dorsal view the hypopygium is about two-thirds as long as the fifth abdominal segment, a very large membranous area covers the entire apex and extends over the dorsum to the base of the segment on the right side (fig. 12b). As seen from a ventral view the entire apical portion of the eighth segment is membranous, the sides are reduced to a rather narrow sclerotized rim. The ninth segment is approximately as long as wide, the apices are developed into rather slender folds which extend almost to the apices of the claspers; the cleft on the posterior margin of the ninth segment extends nearly two-thirds the distance to the base. The claspers are rather small, nearly symmetrical,

but with the inner slightly longer than the outer; both are subacutely pointed at their apices (fig. 12c).

Length: Body, 5.0 mm.; wings, 5.3 mm.

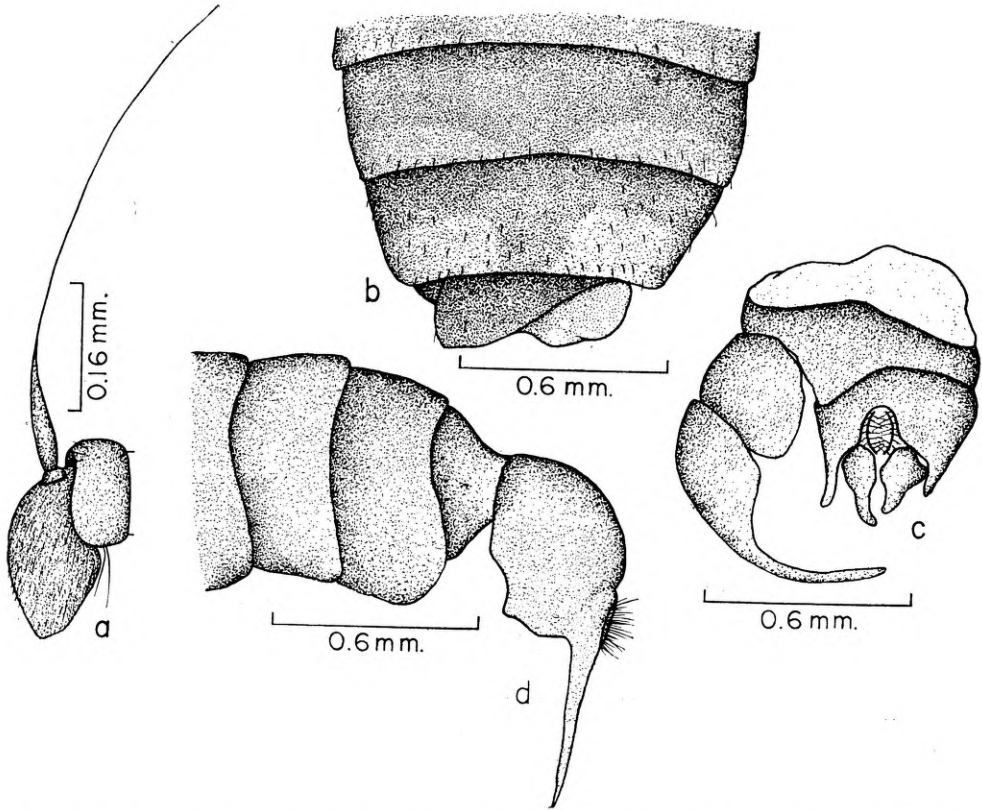


Fig. 12 : *P. (E.) eminulus*, n. sp., a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral; d. female ovipositor, lateral.

*Female.* Fitting the description of the male except for primary and secondary sexual characters. The front is entirely silvery gray except for a polished black area immediately below the ocellar triangle. In the median portion the front is about two-thirds as wide as the base. The femora are discolored with brown. The third costal section is slightly shorter than the fourth. The sixth tergum of the abdomen is approximately equal in length to the fifth and is entirely gray except for a brown marking extending longitudinally over the middle of the segment. The posteromedian portion of the sixth tergum is indented. The ovipositor is straight, the tip of the piercer extends to about the apex of the second abdominal segment (fig. 12d).

Length: Body, 4.0 mm.; wings, 5.0 mm.

Holotype male and allotype female from Est. de Minas, Arceburgo, F. Fortaleza, December, 1946 (Barretto).

The type and allotype are in the John Lane collection.



**Pipunculus (Eudorylas) eremitus (Hardy)**

(fig. 13a)

*Dorilas (Eudorylas) eremitus* Hardy, 1954:21-22, figs .7 a-b.

This species has previously been known only from the type male collected at Manguinhos, Brazil (Instituto Oswaldo Cruz collection) and has been adequately described and figured in the original description except for the ventral aspects of the male genitalia. As seen from below, the membranous area extends across the apex of the eighth segment. The ninth segment is about as wide as long and has a moderately deep cleft in the middle of the hind margin. The claspers are broad at their bases, narrowed and slightly curved at their apices. The sixth segment extends across the venter as a narrow, heavily sclerotized stripe and terminates in a short black spine as in figure 13a.

One specimen is in the Lane collection from Est. do Rio, Itatiaia, Maromba, September, 1946 (Barretto). Two male specimens in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, August 1, 1955 (K. Lenko), are being placed here with a query.

**Pipunculus (Eudorylas) exsertus n. sp.**

(fig. 13b)

This species fits in the *doelloi* complex and will fit the description of that species except for genital characters. The male is readily differentiated by the details of the ventral aspects of the genitalia. In dorsal view the genitalia are like those of *doelloi*. As seen from ventral view the outer clasper is rather thin, slightly curved on the outside margin, and much narrower than the inner clasper except at the apex. The two claspers are approximately equal in length; the inner is broad at base, rather sharply narrowed to a blunt point at the apex (fig. 13b). The sixth sternum is greatly enlarged, the posteroventral margin is heavily sclerotized and terminates in two blunt points as in figure 13b.

Length: Body, 5.0 mm.; wings, 6.4 mm.

Female unknown.

Holotype male, Est. do Rio, Itatiaia, Maromba, September, 1946 (Barretto).

The type has been returned to the John Lane collection.

It should be noted that at least two additional species of the *doelloi* complex which fit near *exsertus* occur in Brazil but they are differentiated by the details of the male genitalia. These are not being described since the available specimens are in poor condition.

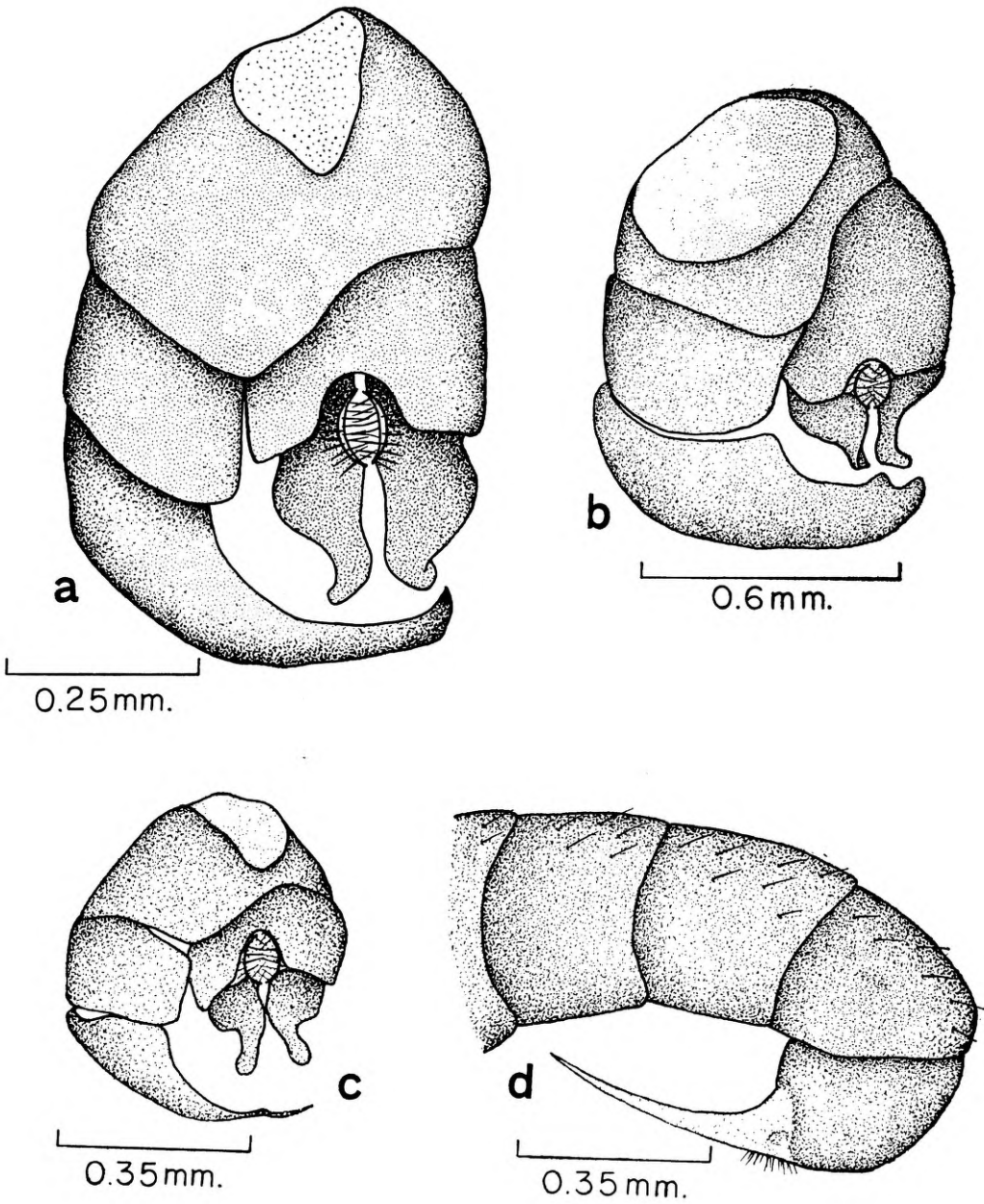


Fig. 13 : *P. (E.) eremitus* (Hardy), a. male genitalia, ventral. *P. (E.) exsertus*, n. sp., b. male genitalia, ventral. *P. (E.) nigripedes* (Hardy), c. male genitalia, ventral; d. female abdomen, lateral.

**Pipunculus (Eudorylas) gomesi (Hardy)**

(fig. 14a)

*Dorilas (Eudorylas) gomesi* Hardy, 1954:22-24, figs. 8 a-b.

This species was adequately described in the original except for the details of the ventral aspects of the male genitalia. As seen from below the entire apical portion of the eighth segment is membranous. The ninth segment is longer than wide and has a shallow concavity on the posterior margin. The claspers are subacute at apices, about equal in length but with the outer distinctly broader at the base than the inner (fig. 14a).

Two specimens are in the Lane collection from Est. São Paulo, Aratuba, Córrego Azul, February, 1946 (Barretto); and Serra do Navio, Terr. Amapá, Brasil, September 24, 1957 (J. Lane).

Three specimens, representing two species close to *gomesi*, are on hand from Est. São Paulo, Itaporanga, January, 1946, (Barretto); Est. de Minas, F. Fortaleza, Arceburgo, December, 1946 (Barretto); and Serra do Navio, Terr. Amapá, Brasil, October 24, 1957 (J. Lane).

**Pipunculus (Eudorylas) insignis (Hardy)***Dorilas (Eudorylas) insignis* Hardy, 1954:27-28, figs. 11 a-b.

This species is known only from the female. The original description is adequate.

One female specimen is in the Lane collection from Vera Cruz, F. Santa Rosa, Brasil, June, 1944 (R. Ramalho).

**Pipunculus (Eudorylas) lanei n. sp.**

(figs. 14 b-d)

This species is related to *P. occultus* (Hardy) but the male genitalia differ distinctly, the simple claspers of the male and the presence of a strong projection on the hind margin of the sixth sternum will best differentiate *lanei*.

*Male. Head:* The junction of the compound eyes is about equal in length to the frontal triangle, the front is dull gray-brown pubescent. The face is gray pubescent and approximately equal in width to the lower portion of the front. The antennae are dark brown, the third segment is obtuse, rounded ventrally (fig. 14b). *Thorax:* Shining black in ground color, covered with brown pollen on the dorsum, gray on the sides and over the metanotum. The hind margin of the scutellum is very sparsely short-haired. The humeri are black. Knobs of halteres black. *Legs:* Principally dark brown to black, yellow on the apices of the femora and the tibiae and the bases of the latter, and over the first three tarsal segments. No erect posterior setae are present on the hind

tibiae. *Wings*: Subhyaline, the yellow-brown stigma fills all of the third costal section. The third section is slightly longer than the fourth and the two sections combined are about two-fifths longer than the fifth costal section. The r-m crossvein is situated near the basal one-fourth of cell 1st M2 and the last section of vein M1+2 is gently curved. *Abdomen*: Entirely opaque brown on the dorsum, gray on the lateral margins and faintly so on the lateroapical margins of each tergum. The

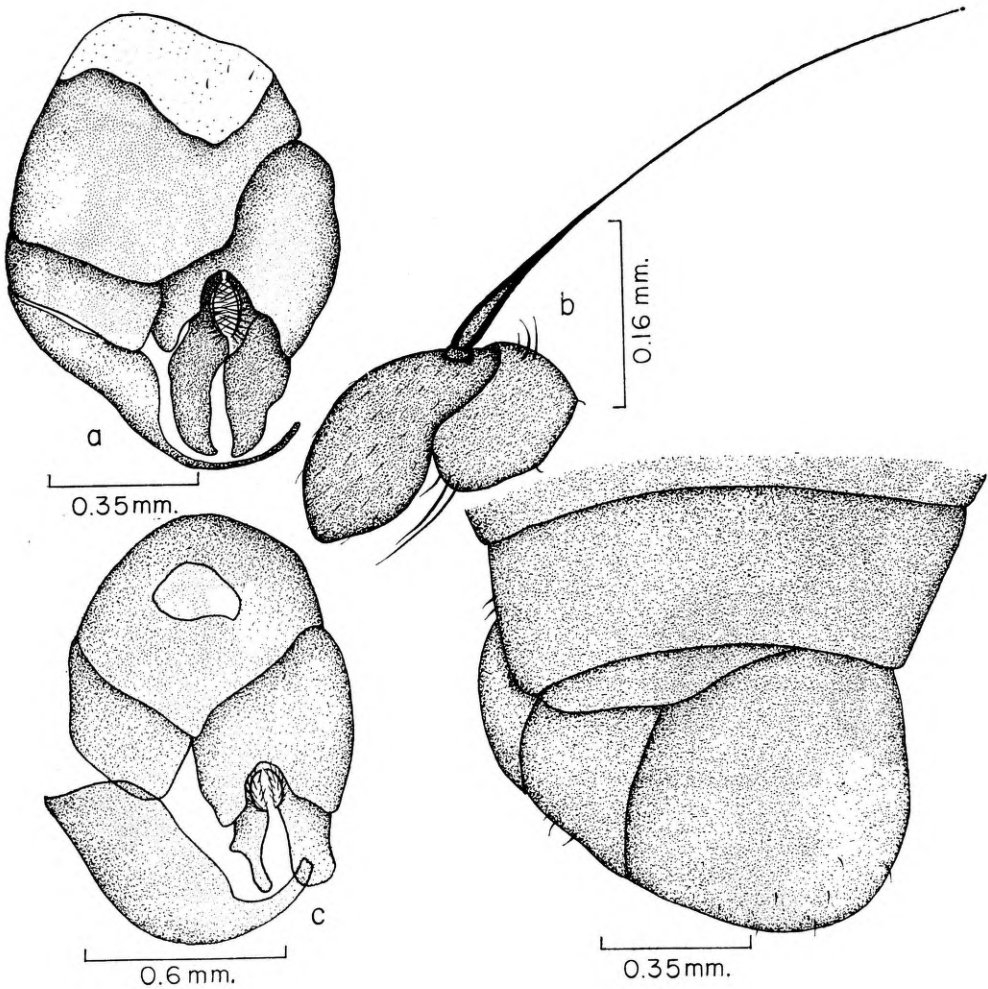


Fig. 14 : *P. (E.) gomesi* (Hardy), a. male genitalia, ventral. *P. (E.) lanei*, n. sp., b. antenna; c. male genitalia, ventral; d. male genitalia, dorsal.

hypopygium is very well developed, longer than the fifth abdominal segment, rather hemispherical in shape with no membranous area visible on the eighth segment as seen from a dorsal view. The sixth tergum is plainly visible from a dorsal view, as is the very large sixth sternum (fig. 14d). As seen from a ventral view a small semi-membranous clear spot is present below the apex of the eighth segment. The ninth segment

is slightly longer than wide and is rather deeply cleft in the middle of the hind margin. The claspers are asymmetrical, the outer is broad, blunt at apex; the inner clasper has a blunt lobe developed on the outside median margin and the apex is obtuse (fig. 14c). The sixth sternum is developed as in figure 14c.

Length: Body, 4.3 mm.; wings, 5.3 mm.

Female unknown.

Holotype male and one male paratype (the latter in rather poor condition) from Serra do Navio, Terr. Amapá, Brasil, October, 1957 (K. Lenko).

The type has been returned to the John Lane collection.

The paratype is in the University of Hawaii collection.

### **Pipunculus (Eudorylas) nigripedes (Hardy)**

(figs. 13 c-d)

*Dorilas (Eudorylas) nigripedes* Hardy, 1954:32-33, figs. 14 a-c.

The original description is adequate for the male. Figure 13c shows the shapes of the male claspers more adequately than does figure 14c of the original. The female has not been previously described. The front is entirely gray pollinose except immediately below the ocellar triangle, the face is about equal in width to the front. The third antennal segment is yellow, tinged faintly with brown. The abdomen is subshining, brown pollinose on the dorsum, gray on the sides. The sixth tergum is about as long as the fifth and the hind margin is not excised. The piercer is rather short, slightly curved upward, and extends to about the middle of the fourth abdominal segment (fig. 13d).

Length: Body, 3.2 mm.; wings, 4.3 mm.

Fifteen specimens are in the collection of the Departamento de Zoologia from Barueri, São Paulo, December, 1954 to July, 1955 (K. Lenko). Nine specimens are in the Lane collection from: Vera Cruz, F. Santa Rosa, June, 1944 (Ramalho); Est. do Rio, Itatiaia, Maromba, August, 1946 (Barretto col.); and Est. de Minas, Arceburgo, F. Fortaleza, December, 1946 (Barretto).

### **Pipunculus (Eudorylas) occultus (Hardy)**

(fig. 15 a-d)

*Dorilas (Eudorylas) occultus* Hardy, 1950:440, figs. 4 a-c.

The male of this species has been adequately described and figured in the original and in my paper on the Brazilian species (Hardy, 1954: 33-34, figs. 15 a-c). The large symmetrical hypopygium which lacks a membranous area (fig. 15c), the shape of the claspers (fig. 15b), and the acuminate third antennal segment (fig. 15a) will differentiate *occultus*.

The female has not been previously described. The front is entirely gray pubescent and is about equal in width to the face. The antennae



are slightly more acuminate than in the male. The ovipositor is short and straight and extends almost to the base of the fourth abdominal segment (fig. 15d).

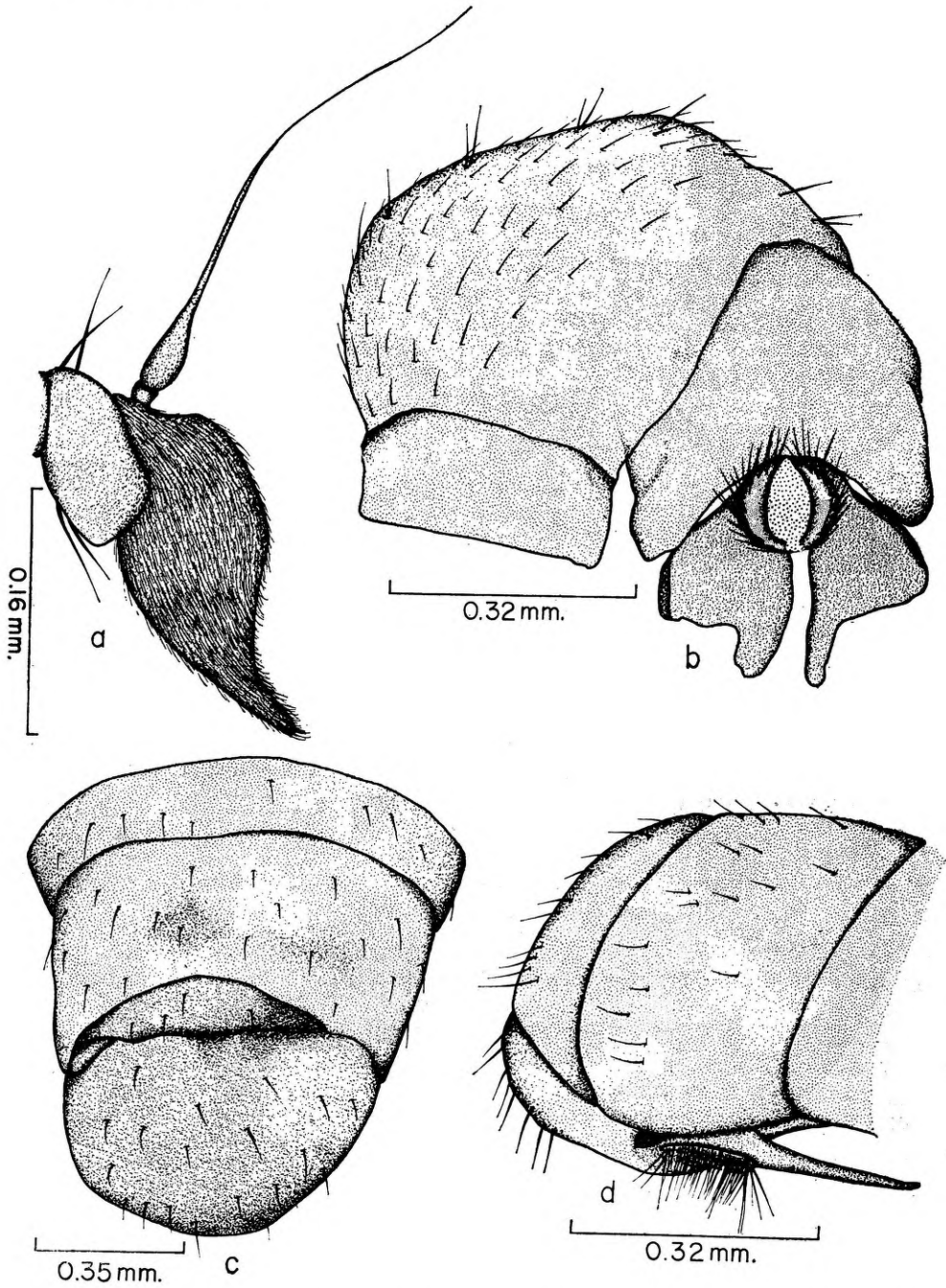


Fig. 15 : *P. (E.) occultus* (Hardy), a. antenna; b. male genitalia, ventral; c. male genitalia, dorsal; d. female ovipositor, lateral.

This is apparently common in Brazil. Eighteen specimens are in the Lane collection from São Paulo, January, 1951 and December, 1955, Campos do Jordão (J. Lane) and S. Catarina, December, 1955 (J. Lane).

**Pipunculus (Eudorylas) opinatus (Hardy)**

(figs. 16 d-e)

*Dorilas (Eudorylas) opinatus* Hardy, 1950:440-442, figs. 5 a-c.

This species has been previously known only from the type male from São Paulo, Cidade Jardim. One topotypic male specimen is on hand collected in December, 1940 by J. Lane.

The original description is adequate except that the membranous area at the apex of the eighth segment does not extend basad as far on the dorsum as in the type (fig. 16d). The ventral aspects of the genitalia are as in figure 16e. The ventral portion of the eighth segment is largely membranous and the claspers are nearly symmetrical.

**Pipunculus (Eudorylas) opiparus (Hardy)**

*Dorilas (Eudorylas) opiparus* Hardy, 1954:34-37, figs. 16 a-d.

This species has been adequately described and figured in the original description.

Three male and one female specimens are in the Lane collection from Est. do Rio, Itatiaia, Maromba, August, 1946 (Barretto) and Est. de Minas, Arceburgo, F. Fortaleza, December, 1946 (Barretto). Two males which seem to belong here are in the collection of the Departamento de Zoologia from Barueri, São Paulo, July 21 and October 4, 1955 (K. Lenko).

**Pipunculus (Eudorylas) particeps (Hardy)**

(fig. 16 f)

*Dorilas (Eudorylas) particeps* Hardy, 1954:37-38, figs. 17 a-c.

The species was adequately described in the original except for a few details of the male genitalia. The ventral portion of the eighth segment is entirely membranous. The claspers are nearly symmetrical, are long and slender, slightly curved (fig. 16f). The ventral portion of the sixth segment is slender, strap-like.

It should be noted that the introductory paragraph in the original description of *particeps* was somewhat mixed up in the printing. The third and fourth lines should read: by having the anterior crossvein (r-m) situated near the middle of cell 1st M2; and by the distinctive genital characters as seen in figures 17b and c.

Eight males are in the collection of the Departamento de Zoologia from Barueri, S. Paulo, July-August, 1955 (K. Lenko).

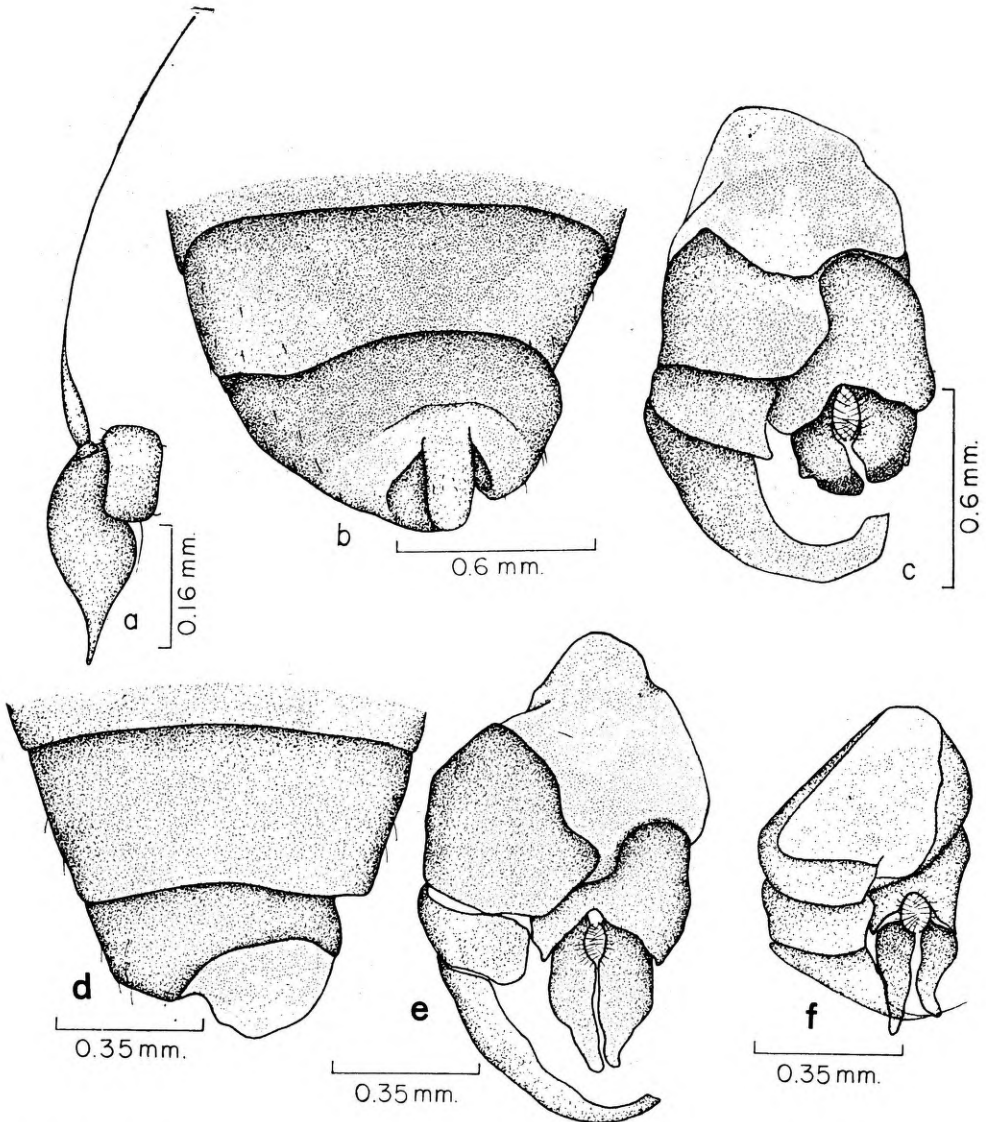


Fig. 16 : *P. (E.) partitus*, n. sp., a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral. *P. (E.) opinatus* (Hardy), d. male genitalia, dorsal; e. male genitalia, ventral. *P. (E.) particeps* (Hardy), f. male genitalia, ventral.

***Pipunculus (Eudorylas) partitus* n. sp.**

(figs. 16 a-c)

This species fits near *P. tropidoapex* n. sp. but is differentiated by the very large membranous area covering over the apex of the eighth segment and completely bisecting the segment on the venter (fig. 16c). Also the other aspects of the male genitalia differ as shown in figure 16b and 16c.

*Male. Head:* The junction of the compound eyes is approximately equal in length to the frontal triangle. The triangle is silvery gray pubescent and is just slightly narrower than the face. The upper portion of the occiput is opaque, covered with gray-brown pollen, the remainder of the occiput is silvery gray pubescent. The antennae are yellow, the ventral portion of the third segment is moderately acuminate (fig. 16a). The base of the arista is yellow. The palpi are yellow. *Thorax:* Shining black in ground color, brown pollinose on the dorsum, gray on the sides. The humeri are yellow. The marginal hairs of the scutellum are pale and inconspicuous. The halteres are yellow, tinged faintly with brown on the knobs. *Legs:* Entirely yellow except for a tinge of brown on the apices of the tarsi and on the coxae. Ventral spines are absent on the hind femora and poorly developed on the front pair. No strong spines or bristles are present on the apices of the tibiae, and the hind tibia lacks erect setae on the swollen portion. *Wings:* Subhyaline, very faintly infuscated. The stigma fills all of third costal section. The third section is one-half longer than the fourth and the r-m crossvein is situated at the basal third of cell 1st M2. The last section of vein M1+2 is moderately curved. The last section of vein M3+4 is just slightly longer than the m crossvein. *Abdomen:* Entirely opaque, gray over the first tergum and on the sides of terga two-five, brown pollinose over the dorsum. The hypopygium is slightly shorter than the fifth tergum, the eighth segment has a large membranous area extending over the entire apical portion and a distinct keel developed at the apex (fig. 16b). As seen from a ventral view the membranous area on the eighth segment is very extensive and completely bisects the segment. The ninth segment is about as wide as long and the claspers are short and broad, black at apices, as in figure 16c.

Length: Body, 3.75 mm.; wings, 5.0 mm.

Holotype male and one male paratype, Est. de Minas, Arceburgo, F. Fortaleza, Brasil, December, 1946 (Barretto). Also five male paratypes from Barueri, S. Paulo, November 28, 1954, July 16-25, and August, 6, 1955 (K. Lenko).

The type has been returned to the John Lane collection.

Three of the paratypes have been returned to Dr. M. Carrera to be deposited in the collection of the Departamento de Zoologia da Secretaria da Agricultura de São Paulo. The remainder of the paratypes are in the University of Hawaii collection.

A male specimen from the collection of the Departamento de Zoologia labeled "Jataí, Goiás, I. 1955. (M. Carrera, A. Machado, F. S. Pereira, E. Dente, M. Loureiro)" fits close to *partitus* but the genitalia are distinctive. The specimen is not in good enough condition to be described.

### **Pipunculus (Eudorylas) pectitibialis (Hardy)**

(figs. 17 a-b)

*Dorilas (Eudorylas) pectitibialis* Hardy, 1954:38-41, figs. 18 a-e.

The species has been adequately described in the original except for the ventral aspects of the male genitalia. The comb at the apex of the

hind tibia is as in figure 17a. The membranous area covers the entire apex of the eighth segment and the ninth is about as long as wide. The claspers are straight sided, blunt at apices. The outer clasper is very broad, two times wider than the inner (fig. 17b).

Three males are in the Lane collection from: Est. do Rio, Itatiaia, Maromba, September, 1946 (Barretto), and S. Paulo, Magda, December, 1956 (J. Lane). Also one female specimen is in the collection of the Departamento de Zoologia from Barueri, S. Paulo, August 16, 1955 (K. Lenko).

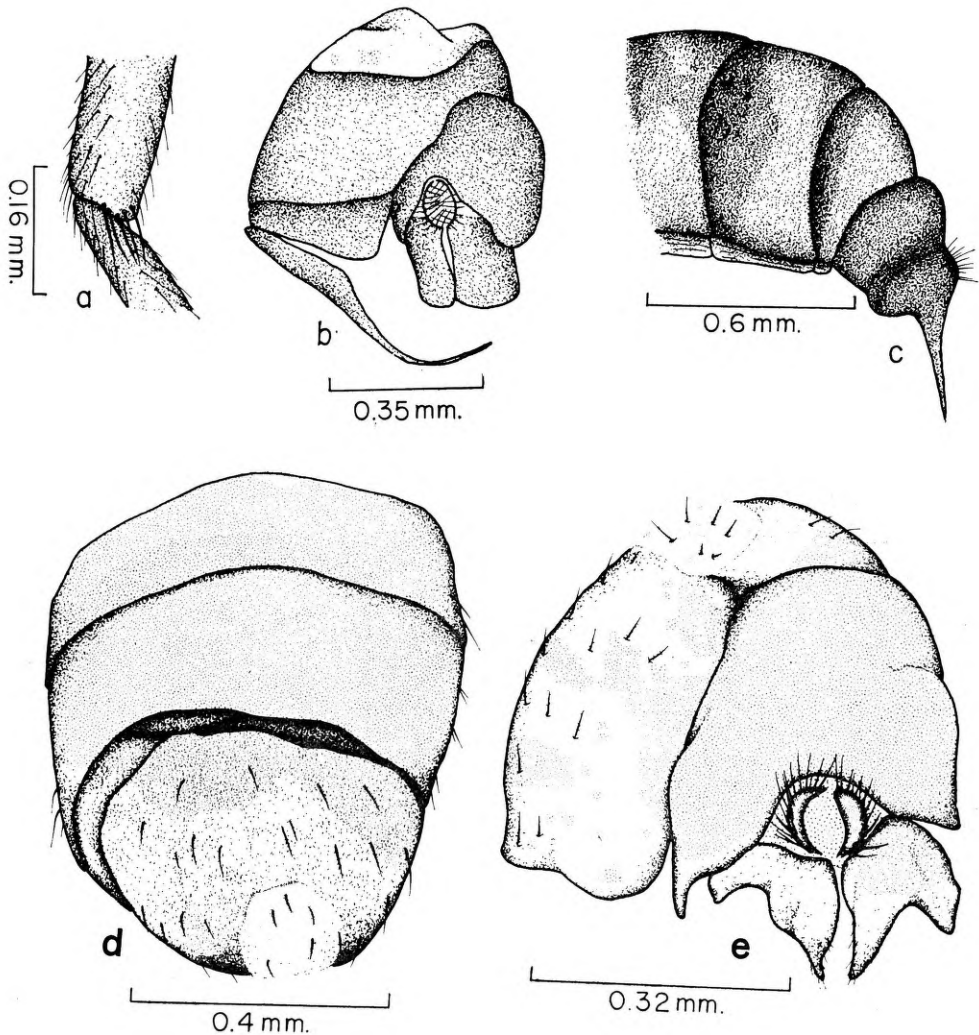


Fig. 17 : *P. (E.) pectitibialis* (Hardy), a. apex of hind tibia; b. male genitalia, ventral. *P. (E.) rex* Curran?, c. female ovipositor, lateral. *P. (E.) spinosus* (Hardy), d. male genitalia, dorsal; e. male genitalia, ventral.



**Pipunculus (Eudorylas) rex** Curran?

(fig. 17c)

*Pipunculus rex* Curran, 1934:416.

This species has previously been known only from males collected in British Guiana. A male and female, *in copula*, and two females from Brazil seem to fit the published descriptions (see Hardy, 1948b:128-129, figs. 5 a-e). Following is the first description of the female.

The female front is about two-thirds as wide as the face and is rather strongly narrowed to a width just slightly greater than one ocellus on the extreme upper portion. The front is silvery white pubescent, except just below the median ocellus. The sixth tergum of the abdomen is almost as long as the fifth and the hind margin is not excised. The base of the ovipositor is short and globose. The piercer is short and straight, scarcely longer than its base and has a prominent ventral tubercle (fig. 17c).

Length: Body, 4.0-4.4 mm.; wings, 4.7-5.4 mm.

Two females are in the Lane collection from S. Paulo, Luiz Barreto, June, 1943 (Ramalho col.) and Est. de Minas, Arceburgo, December, 1946, F. Fortaleza (Barretto). A male and female, *in copula*, are in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, February 7, 1955 (K. Lenko).

**Pipunculus (Eudorylas) schreiteri** Shannon

(fig. 18a)

*Pipunculus schreiteri* Shannon, 1927:37.*Pipunculus simulator* Collin, 1931a:56-58, fig. 17b.

The species has been adequately described by Collin (*loc. cit.* and 1931b:173-174, figs. 2, 5b and 5c), also by Hardy (1953:303-304, figs. 7-9), except that it should be noted that the front tibia has a stout, erect, posterior seta at about the apical two-fifths of the segment. The male genitalia are also shown in more detail in figure 18a.

Nine specimens are in the Lane collection from the following localities in Brazil: S. Paulo, Batea, November, 1940; Cantareira, August, 1945; Jaraguá, August, 1945; and S. Amaro, July, 1947 (all collected by J. Lane and Coher); Est. do Rio, Itatiaia, Faz. Serra, August, 1946, and Campo Belo, September, 1946 (Barretto); and Est. S. Paulo, Cantareira, Chapadão, August, 1946 (Barretto). Thirty-eight specimens are in the collection of the Departamento de Zoologia, from: Barueri, S. Paulo, February-August, 1955 (K. Lenko).

**Pipunculus (Eudorylas) scoliostylis** n. sp.

(figs. 18 b-e)

This species is closely related to *doelloi* Shannon and as differentiated by the elongate, rather slender apical lobe of the inner clasper of the

male (fig. 18e). It also is related to *P. ineptus* (Hardy) but is differentiated by having a single process on the hind margin of the sixth sternum and by the yellow third antennal segment.

*Male. Head:* The eyes are joined or closely approximated for a distance almost equal to the length of the frontal triangle. The frontal triangle and the face are densely silvery gray pubescent, the latter is just slightly wider than the lower portion of the front. The first two antennal segments are yellow-brown, the third segment is yellow, faintly tinged with brown, and subacute ventrally (fig. 18b). *Thorax:* Shining black in ground color, rather densely gray-brown pollinose on the dorsum, gray on the sides. The hairs at the margins of the scutellum are small, inconspicuous. The humeri are yellow, tinged with brown and covered with gray pollen. *Legs:* Yellow except for the brown apical subsegments of the tarsi and except for a faint tinge of brown on the coxae. Ventral spines are lacking on the front and hind femora. No erect setae are present on the swollen portion of the hind tibia. The posterior surface of each femur is gray pollinose, the tibiae are covered with gray pollen. *Wings:* The third costal section is about equal in length to the fourth and the stigma completely fills the third section. The r-m crossvein is situated near the basal third of cell 1st M2 and the last section of vein M1+2 is gently curved. The last section of vein M3+4 is about equal in length to the m crossvein. *Abdomen:* The first tergum is entirely gray pollinose, terga two-five are brown pollinose on the dorsum, silvery gray on the lateral margins and each has a broadly interrupted gray vitta on the posterior margin. The sixth tergum is plainly visible from a dorsal view but is not as well developed as in other species of the *doelloi* complex which have been studied. The sixth sternum is not visible from direct dorsal view and only the base of the ninth segment is visible. The eighth segment has a moderately large subapical membranous area on the right side (fig. 18d). The ninth segment is yellow, rather strongly swollen and conspicuous. As seen from a ventral view the inner clasper is extended into a long curved arm which is slightly flattened on the apical portion. The ventral portion of the inner clasper is developed into a short point on the inside margin (fig. 18e). The outer clasper is short and thick and terminates in a ventral point. The sixth sternum is well developed and has a rather heavily sclerotized projection on the posterior margin (fig. 18e).

Length: Body, 4.7 mm.; wings, 5.75 mm.

*Female.* The female has not been definitely associated with the male but the specimens on hand fit the description of the male except for sexual characters. They also would fit the description of *doelloi* (refer to Hardy 1953: 301-303, figs. 5-6) except that the ovipositor base is not tuberculate ventrally and the dorsal portion of the ovipositor has a slight depression extending longitudinally down the middle. The front is distinctly narrower than the face and is gradually attenuated toward the upper portion of the head so that the extreme upper portion of the front is scarcely wider than the median ocellus. The front is entirely silvery gray pollinose except for a polished black line down the median portion from the ocellar triangle, extending a distance equal to about  $1\frac{1}{2}$  times the length of the ocellar triangle. The occiput is entirely gray pollinose except for a spot of brown on the extreme upper portion.

The antennae are entirely yellow. The ground color of the scutellum is yellow-brown. The ovipositor base is short, sublobose, a distinct depression extends down the dorsomedian portion. The piercer is rather short and straight, extending slightly beyond the apex of abdominal segment four (fig. 18c).

Length: Body, 5.0 mm.; wings, 6.4-6.75 mm.

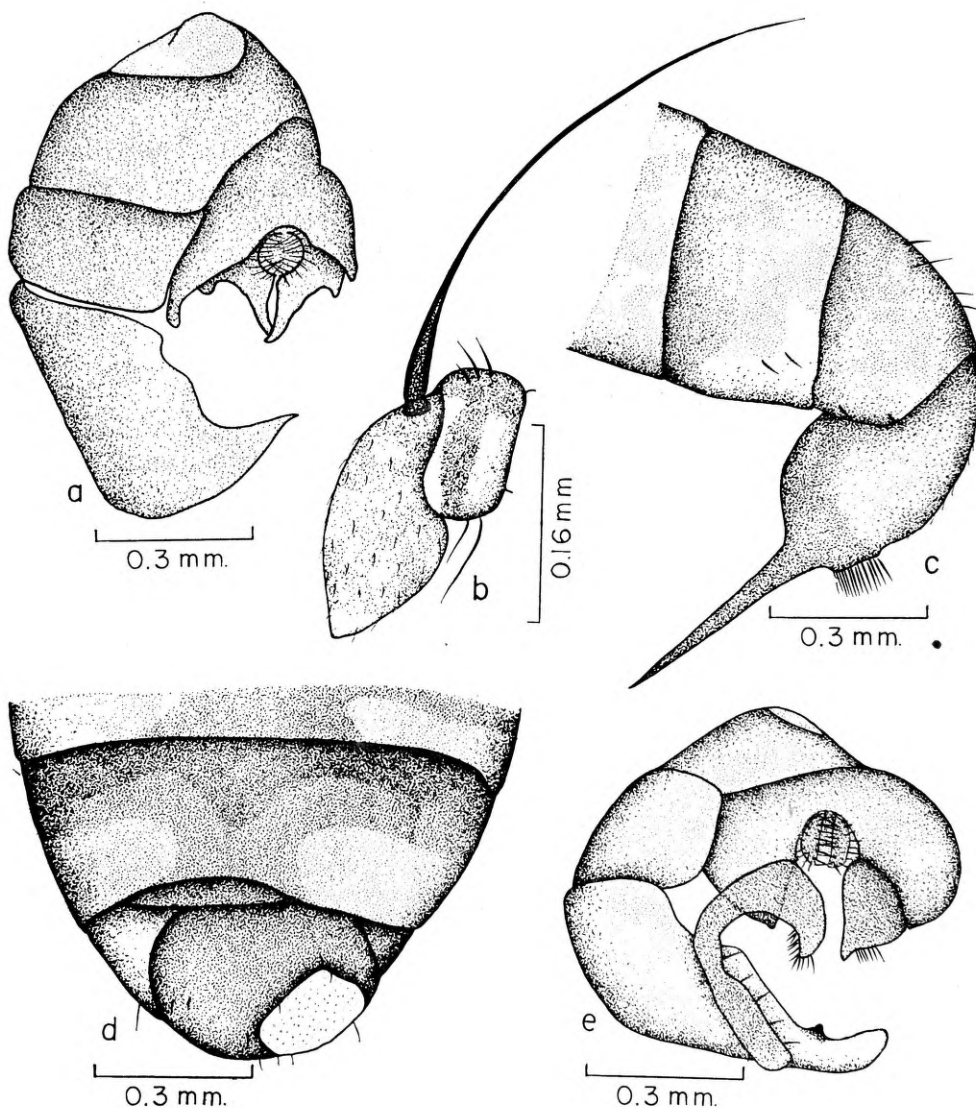


Fig. 18 : *P. (E.) schreiteri* Shannon, a. male genitalia, ventral; *P. (E.) scoliostylis*, n. sp., b. antenna; c. female ovipositor, lateral; d. male genitalia, dorsal; e. male genitalia, ventral.

Holotype male Barueri, São Paulo, August 8, 1955, No. 2516 (K. Lenko). Two male paratypes: one same locality and collector as type,

July 25, 1955, No. 2170; and one Ipiranga, São Paulo, October 27, 1955 (d'Andretta e Martinez). The female specimens on hand are not being indicated as part of the type series since their placement is not certain. Three specimens are from Est. S. Paulo, Cantareira, Chapadão, December, 1945 (Barretto) and São Paulo, December, 1945, Campos do Jordão (J. Lane).

The type and one paratype have been returned to Dr. Messias Carrera, Departamento de Zoologia da Secretaria da Agricultura, São Paulo. Two of the females have been returned to the John Lane collection. One paratype and one of the female specimens is in the University of Hawaii collection.

### **Pipunculus (Eudorylas) scotinus Collin?**

(figs. 19 a-b)

*Pipunculus scotinus* Collin, 1931a:60-61, figs. 16b and 18c.

My previous concept of this species was evidently much too broad and apparently a complex of species will fit the original description. It is possible that my redescription of "*scotinus*" (Hardy, 1954:42-44) may actually pertain to one or more closely related species. Unfortunately Collin did not describe or figure the ventral aspects of the male genitalia and it will not be possible to be sure of the identity of *scotinus* until these structures can be studied on the type. The type locality is Bompland, Misiones Territory, Argentina. The specimen is in the British Museum (Natural History).

Three specimens (two males and one female) are in the Lane collection which appear to belong here. These are from Est. do Rio, Itatiaia, Campo Belo, September, 1946 (Barretto); and Est. do Rio, Itatiaia, Maromba, August, 1946 (Barretto). The males differ from Collin's description in that the third costal section is slightly shorter than the fourth, rather than slightly longer. The female fits my (*loc. cit.*) description and figure. The male genitalia of the above specimens are as in figure 19a and 19b.

### **Pipunculus (Eudorylas) similis (Hardy)**

(fig. 19c)

*Dorilas (Eudorylas) similis* Hardy, 1950a:443-444, figs. 7 a-c.

The male of this species has been adequately described and figured in the original description. It has previously been known only from the type male. Following is the first description of the female: The front is rather broad, in the median portion it is slightly wider than the face. The upper two-thirds of the front is polished black. The femora are slightly discolored with brown. The ovipositor is slender and straight, the piercer extends approximately to the base of the second abdominal segment (fig 19c). Otherwise fitting the description of the male.

Length: Body, 3.2 mm.; wings, 4.2 mm.

Five male specimens are in the Lane collection from the following localities in Brazil: São Paulo, January, 1954, Campos do Jordão (J. Lane); S. Paulo, Cantareira, March, 1945 (J. Lane); S. Paulo, February, March, April, 1954 (J. Lane); and Est. S. Paulo, Cantareira, Chapadão, February, 1946 (Barretto). One female is in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, August 30, 1955 (K. Lenko).

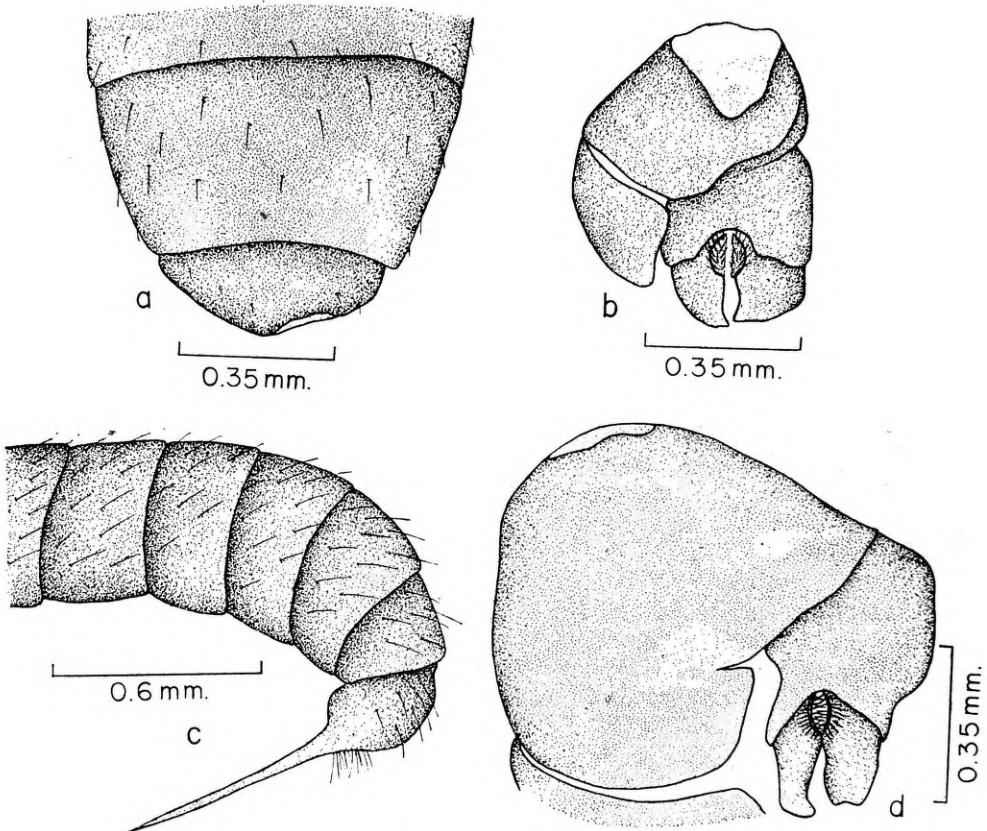


Fig. 19 : *P. (E.) scotinus* Collin?, a. male genitalia, dorsal; b. male genitalia, ventral. *P. (E.) similis* (Hardy), c. abdomen of female, lateral. *P. (E.) spinitibialis* (Hardy), d. male genitalia, ventral.

### *Pipunculus (Eudorylas) spinitibialis* (Hardy)

(fig. 19d)

*Dorilas (Eudorylas) spinitibialis* Hardy, 1954:44-46, figs. 21 a-c.

The original description is adequate except for the ventral aspects of the male genitalia. It should also be noted that line 15 should read "The front and middle tibiae" not the hind and middle. The seventh segment appears to be fused with the eighth. The claspers are short



and thick, the outer is almost truncate at its apex and the inner curves inward slightly at the apex (fig. 19d).

33 specimens are in the Lane collection from the following localities in Brazil, unless otherwise indicated all were collected by Barretto: Est. S. Paulo, Cantareira, Chapadão, September, 1946; Est. S. Paulo, Araçatuba, Córrego Azul, September, 1946; Est. do Rio, Itatiaia, Maromba, Faz. Serra and Campo Belo, August-September, 1946; Est. de Goiás, Corumbá, F. Monjolinho, November, 1945; Vera Cruz, F. Santa Rosa, June, 1944 (Ramalho); and S. Paulo, Cantareira, August 4, 1943 (J. Lane).

Three specimens are in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, March and July, 1955 and January, 1956 (K. Lenko).

### **Pipunculus (Eudorylas) spinosus (Hardy)**

(figs. 17 d-e)

*Dorilas (Eudorylas) spinosus* Hardy, 1954:46, fig. 22.

The female has been adequately described in the original and in Hardy (1954:46, fig. 22). The following is the first description of the male. The junction of the compound eyes is one-half longer than the frontal triangle. The mesonotum is subopaque, brown pollinose. The legs and wings are similar to those of the female except that the third costal section is equal in length to the fourth and the last section of vein M1+2 is slightly curved. The first tergum is gray, the second is subshining, lightly gray-brown pollinose. Terga three-five are polished brown to black, gray pollinose on the lateral margins. The hypopygium is nearly hemispherical, as seen from above, with a small apical membranous area on the eighth segment and with a prominent cleft at the right basal portion of the eighth (fig. 17d). From a dorsal view the hypopygium is distinctly longer than the fifth abdominal segment and the seventh tergum is plainly visible. As seen from ventral view the membranous area on the eighth is clearly defined, the ninth segment is scarcely longer than wide and the hind margin is broadly concave. The claspers are lobed at their bases and attenuated apically (fig. 17e).

Length: Body, 2.85; wings, 3.25 mm.

Eleven specimens are in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, March, 1955 to January, 1956 (K. Lenko). Four specimens are in the Lane collection from Est. S. Paulo, Itaporanga, January, 1946; Est. do Rio, Itatiaia, Faz. Serra, August, 1946, and Araçatuba, Córrego Azul, September, 1946 (Barretto).

### **Pipunculus (Eudorylas) subnitellus n. sp.**

(figs. 20 a-d)

This species fits in the *doelloi* complex but is differentiated by the submetallic black abdomen and by the development of male genitalia as shown in figures 20b and 20c.

*Male. Head:* The compound eyes are joined or closely approximated for a distance equal to the length of the frontal triangle. The frontal triangle and the face are densely gray-white pubescent. The face is approximately equal in width to the lower portion of the front. The upper median portion of the occiput is gray-brown pollinose, the remainder of the occiput is silvery gray. The antennae are pale yellow, the third segment is subacute (fig. 20a). The base of the arista is yellow. The palpi are rufous. The mouthparts are yellow. *Thorax:* Shining black in ground color, densely gray on the sides, except for the subopaque black mesopleura, and gray-brown pollinose on the dorsum, except for a silvery white spot on each side anterior to the wing bases. The hairs around the margin of the scutellum are small, conspicuous. The bases of the halteres are yellow, the knobs are rufous, tinged with brown. *Legs:* Entirely yellow except for the brown apical segments of the tarsi and except for a tinge of brown on the coxae. Ventral spines are present only on the middle femora. The hind tibia lacks erect setae on the swollen portion. The legs are similar in all respects to *scoliostylis*. *Wings:* Fitting the description of *scoliostylis* in most respects. The r-m crossvein, however, is situated near the basal fourth of 1st cell M2 and the last section of vein M3+4 is slightly shorter than the m crossvein. *Abdomen:* The first tergum is entirely silvery gray pollinose except for an opaque brown spot in the middle. Terga two-five are submetallic black on the dorsum, each has a silvery gray spot on the sides and the fifth tergum has a broadly interrupted gray vitta along the posterior margin. The sixth tergum as well as the sixth sternum are plainly visible from a dorsal view. Also the ninth segment is plainly visible from above. The eighth segment has a large membranous area covering the entire apex (fig. 20b). As seen from a ventral view the membranous portion covers the entire apex of the eighth segment. The ninth segment is red, tinged with brown and is large almost globose, much larger than the eighth segment. The inner clasper is much larger than the outer and is bilobate at its apex (fig. 20c). The sixth sternum has two small lobes developed on the posterior margin.

Length: Body, 5.0 mm.; wings, 6.7 mm.

*Female.* Fitting the description of the male except for sexual differences. The coloring of the body and the appendages appear exactly the same in the two sexes and the antennae are distinctly correct as is illustrated for the male (fig. 20a). The front is about equal in width to the face and is rather strongly narrowed on the upper portion, at the narrowest point it is scarcely wider than one ocellus. The wing venation differs slightly from that of the male. The third costal section is scarcely over one-half as long as the fourth. The base of the ovipositor is dark brown, tinged faintly with rufous on the ventral portion. The piercer is yellow, the base is subglobose, distinctly swollen ventrally and with a distinct lobe present on each lateral margin of the under portion of the base; this is not readily visible since the edges may be covered by the lateral margins of the sixth abdominal tergum. The piercer is short and straight, extending scarcely beyond the base of the fifth abdominal segment (fig. 20d).

Holotype male and allotype female, Est. de Minas, Arceburgo, F. Fortaleza, December, 1946 (Barretto col.).

Type and allotype returned to the John Lane collection.

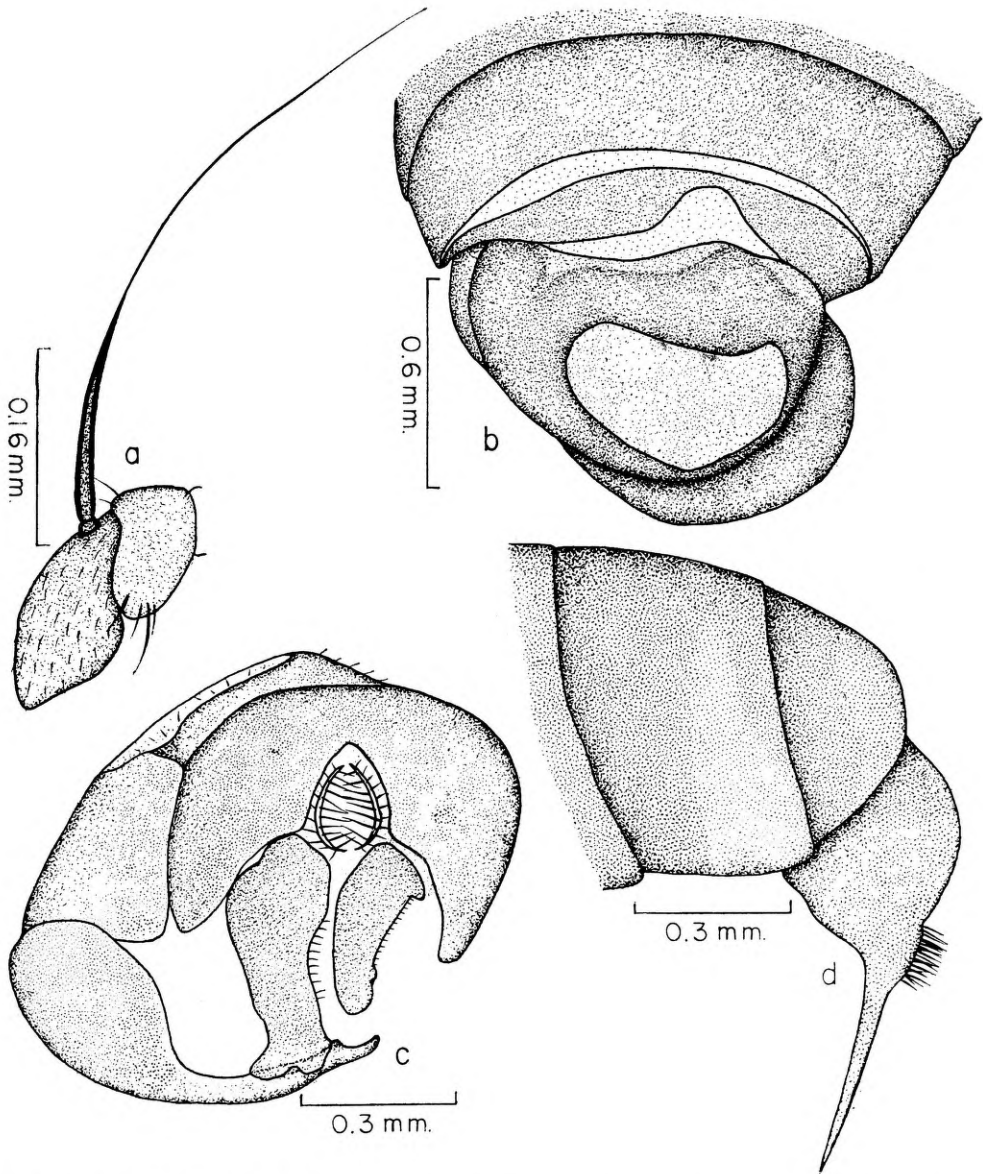


Fig. 20 : *P. (E.) subnitellus*, n. sp., a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral; d. female ovipositor, lateral.

***Pipunculus (Eudorylas) tropidoapex* n. sp.**

(figs. 21 a-c)

This species fits near *P. gomesi* (Hardy) and is differentiated by having a large keel arising from the middle of the membranous area on the eighth segment of the male abdomen and also by differences in the shapes of the claspers; by the yellow antennae; and other characteristics.

*Male. Head:* The junction of the compound eyes is about one-third longer than the frontal triangle. The frontal triangle is dull gray to black pubescent. The face is silvery white pubescent and is approximately equal in width to the lower portion of the front. The antennae are yellow, tinged faintly with brown. The third segment is short acute at the apex (fig. 21a). *Thorax:* Subshining black in ground color, brown pollinose on the dorsum, gray on the sides. The scutellum has a fringe of small brown hairs around the margin. The humeri are yellow,

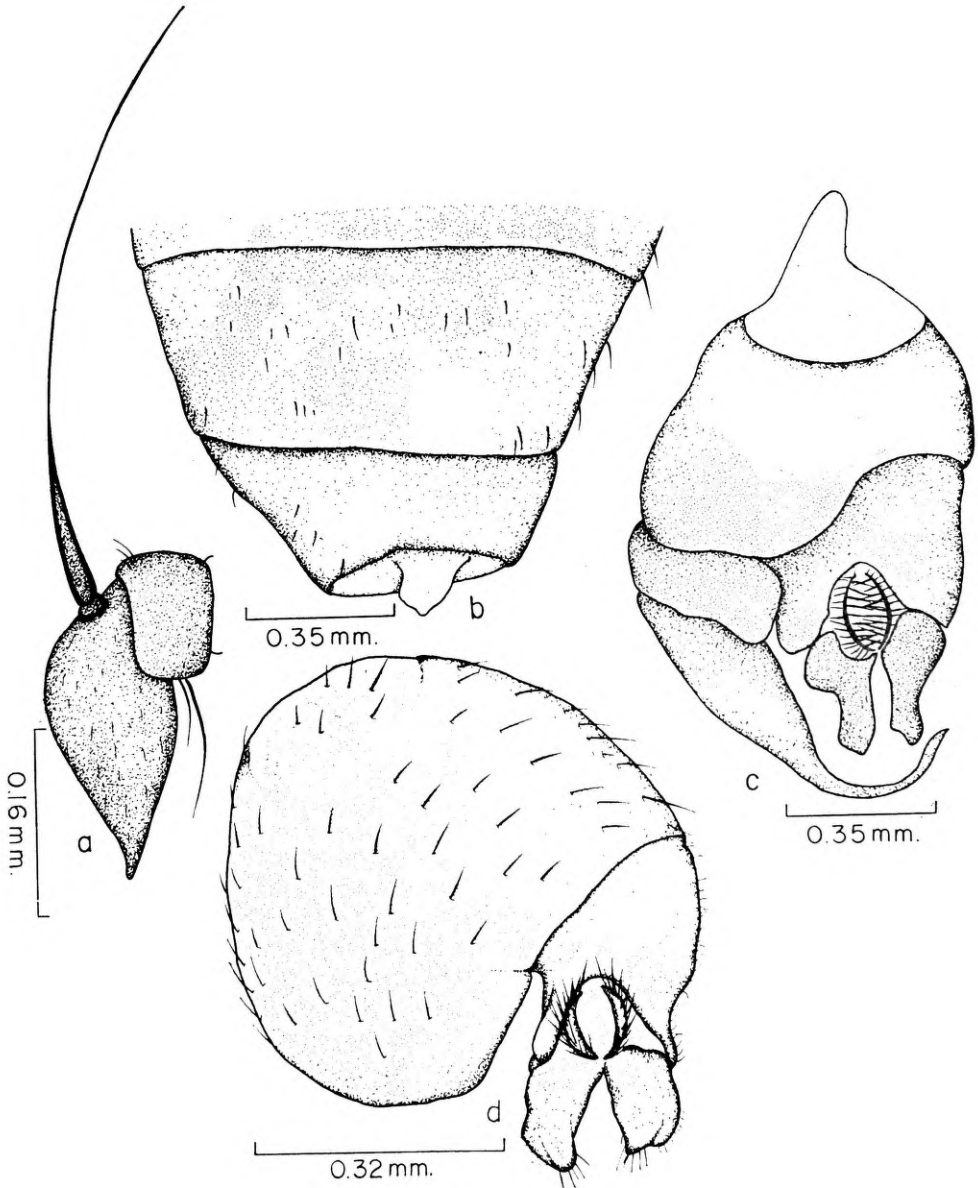


Fig. 21 : *P. (E.) tropidoapex*, n. sp., a. antenna; b. male genitalia, dorsal; c. male genitalia, ventral. *P. (E.) ventosus* (Hardy), d. male genitalia, ventral.

tinged faintly with brown on the upper portion. The knobs of the halteres are yellow, tinged faintly with brown. *Legs*: Entirely yellow except for a tinge of brown on the coxae and on the apices of the tarsi. Ventral spines are very weakly developed on the hind and the front femora, on the hind femur they are represented by one or two small black preapical anteroventral spines. On the front femur five or six small black anteroventral spines are located at about the apical one-fourth of the segment. No prominent erect setae are present on the swollen portion of the hind tibia. *Wings*: Faintly infuscated with brown. The third costal section is just slightly longer than the fourth and the stigma fills all of the third section. The r-m crossvein is situated near the basal two-fifths of cell 1st M2 and the last section of vein M1+2 is gently curved. The last section of vein M3+4 is about equal in length to the m crossvein. Vein Cu1 plus 1st A is approximately equal or just slightly longer than the m-cu crossvein. *Abdomen*: Entirely opaque, brown at the bases of the segments and with a broad gray vitta extending across the apex of each tergum, this is slightly narrowed medianly but is not interrupted. As seen from direct dorsal view, the genitalia are almost as long as the fifth abdominal segment. The sixth tergum is not visible and the seventh is lateral in position. The eighth segment has a large membranous area occupying the entire apex and has a well-developed keel arising from the middle of the membranous area (fig. 21b). As seen from a ventral view, the claspers are approximately symmetrical and are strongly curved on the outside surfaces (fig. 21c). The sixth sternum is not strongly sclerotized or lobate.

Length: Body, 4.7 mm.; wings, 6.4 mm.

Female unknown.

Holotype male, S. Paulo, Brazil, January, 1954, Campos do Jordão (J. Lane). One male paratype from Est. do Rio, Itatiaia, Maromba, September, 1946 (Barretto).

Type returned to the John Lane collection. Paratype in the University of Hawaii collection.

### *Pipunculus (Eudorylas) ventosus* (Hardy)

(fig. 21d)

*Dorilas (Eudorylas) ventosus* Hardy, 1954:47-48, figs. 23 a-b.

The original description is adequate except for the ventral aspects of the male genitalia. The eighth segment is evenly rounded and a small membranous area is present. As seen from ventral view the lobes of the ninth segment are pointed. The claspers are short and thick, shaped as in figure 21d. The seventh tergum appears to be fused with the eighth.

Three male specimens are in the Lane collection from Est. do Rio, Itatiaia, Maromba, September, 1946 (Barretto col.) and two are in the collection of the Departamento de Zoologia from Barueri, S. Paulo, March 22 and August 4, 1955 (K. Lenko).



**Pipunculus (Eudorylas) sp? ♀ near *curvatus* (Hardy)**

One female specimen from S. Paulo, Batea, October, 1940 (J. Lane) fits near *curvatus* (Hardy) but the ovipositor is slender and straight. It cannot be placed without the male.

**Pipunculus (Eudorylas) spp. near *lopesi* (Hardy)**

One female specimen from Est. do Rio, Itatiaia, Maromba, August, 1946 (Barretto col.) fits near *lopesi* but the last section of vein M1+2 is straight and the upper half of the front is polished black. One male of still another species near *lopesi* is from Barueri, S. Paulo, July 16, 1955 (K. Lenko). It differs by having the third antennal segment terminating in a bristle-like apex, the third costal section very short and the stigma occupying only the extreme apex of the third section.

**Pipunculus (Eudorylas) n. sp. near *particeps* (Hardy)**

One male specimen in the collection of the Departamento de Zoologia, from Barueri, São Paulo, March 4, 1955 (K. Lenko) fits near *particeps* but the male genitalia are very different. It is not being described until further specimens can be studied.

**Pipunculus (Eudorylas) n. sp.? close to *schreiteri* Shannon**

One male on hand from S. Paulo, December, 1955, Campos do Jordão (J. Lane) is close to *schreiteri* but the membranous area on the eighth segment covers a considerably larger area and the antennae are brown to black. The abdomen is gray-brown pollinose over the dorsum. The sixth tergum is plainly visible from above and no basal cleft is present on the eighth segment.

**Pipunculus (Eudorylas) sp? ♂ near *scotinus* Collin**

(figs. 22 a-b)

One male from Est. S. Paulo, Avanhandava, Barra Mansa, February, 1946 (Barretto) fits *scotinus* except that the third antennal segment is acute rather than ovate and the r-m crossvein is at the basal third of cell 1st M2, rather than slightly before the middle. The genitalia of this specimen are as in figures 22a and 22b.

**Pipunculus (Eudorylas) sp.?**

Two female specimens from Serra do Navio, Terr. Amapá, Brasil, September 25 and October 21, 1957 (J. Lane) cannot be placed.

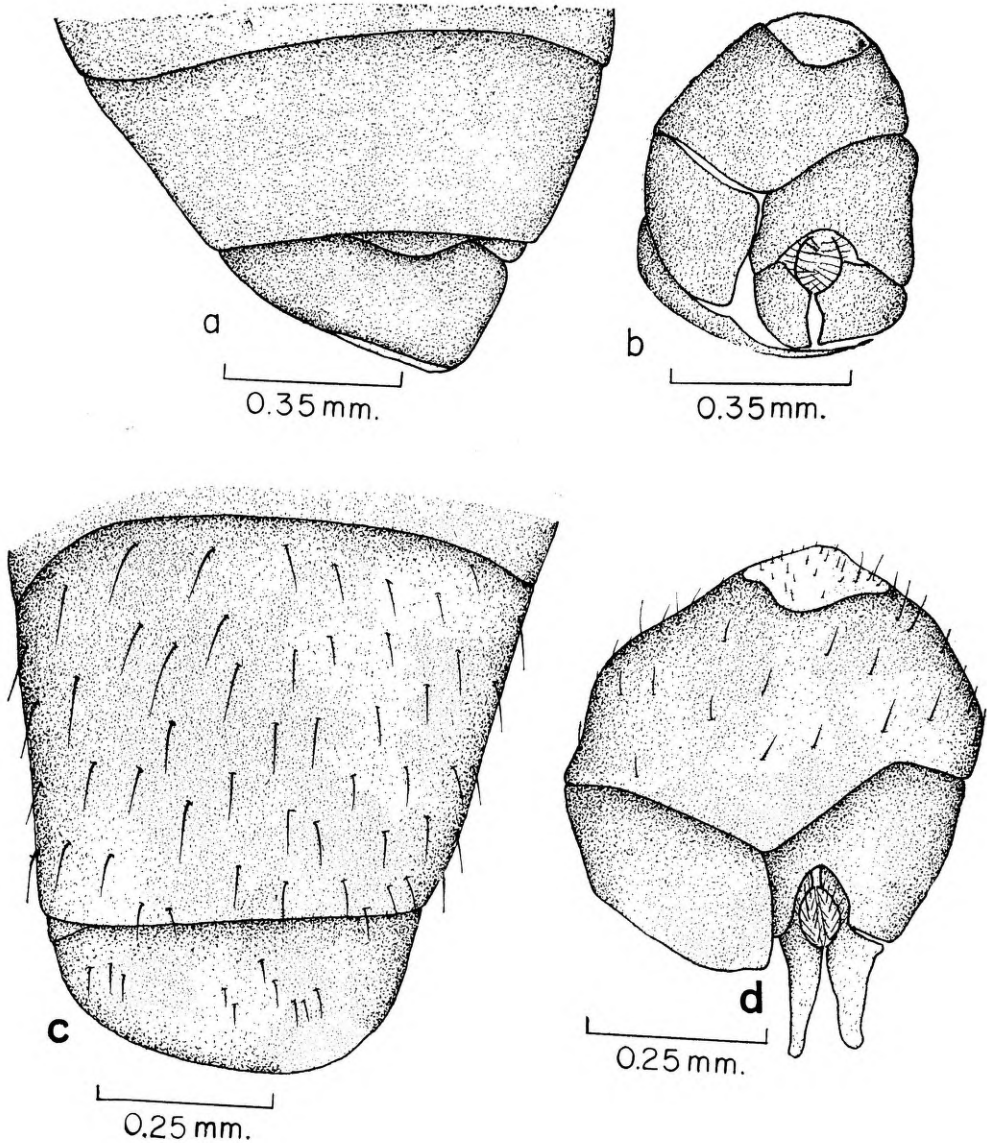


Fig. 22 : *P. (E.)* sp.? near *scotinus* Collin, a. male genitalia, dorsal; b. male genitalia, ventral. *Dorylomorpha reveloi* Hardy, c. male genitalia, dorsal; d. male genitalia, ventral.

### *Dorylomorpha* Aczél

*Tomosvaryella (Dorylomorpha)* Aczél, 1939:22.

*Dorylomorpha* Aczél, 1940:152.

The members of this genus are readily recognized by their slender, clavate abdomen; predominantly polished black bodies; absence of a

stigma in the wing; by the location of the r-m crossvein near the base of cell 1st M<sub>2</sub>; and by the last section of vein M<sub>1+2</sub> being much shorter than the penultimate section; as well as by other details. Refer to Hardy (1943:131) and Aczél (1948:80).

As noted by Aczél (1952:249) only one species (*Dorylomorpha laeta* (Becker), from Peru) has been known to occur in the Neotropical region. A species on hand from Brazil appears to be distinctly different from *laeta*, and a third species of this genus has been described elsewhere from Colombia (Hardy, 1963:259). The members of this genus are widespread over the world but occur predominantly in temperate climates; very few species are known from the tropics.

Type of genus, *Pipunculus rufipes* Meigen.

KEY TO KNOWN SPECIES OF *DORYLOMORPHA* ACZÉL FROM  
THE NEOTROPICAL REGION

1. Legs and antennae yellow ..... 2  
Coxae, trochanters, and femora black; antennae black, third segment densely white pubescent. Male genitalia as in figures 22c and 22d. Colombia ..... *reveloi* Hardy
2. Male abdomen entirely black, genitalia with a large membranous area extending over the right side of the dorsum (fig. 23c).  
Brazil ..... *lenkoi* n. sp.  
Male with large yellow spots on the sides of the abdominal terga.  
Genitalia with a small membranous area at the apex. Peru  
..... *laeta* (Becker)

***Dorylomorpha lenkoi* n. sp.**

(figs. 23 a-e)

The specimens at hand seem to fit near *D. laeta* (Becker) but differ from his description (Becker, 1900:249) by having the abdomen of the male entirely polished black, not having yellow markings on the sides of the segments; and by having a large membranous area extending over the right side of the genitalia (fig. 23c), not with only a small membranous area at the apex. In my key to the New World *Dorylomorpha* (Hardy, 1943:131-132 — this does not include *laeta*) it runs to *flavomacula* (Hough) but is readily differentiated by the all black abdomen of the male; by the very long acuminate third antennal segment of both sexes (fig. 23b); by the conspicuously hairy abdomen; and by the very different genitalia of both sexes, as shown in figures 23c, 23d and 23e (compare with Hardy 1943, plate 12, figs. 75 a-f).

*Male. Head:* The compound eyes are separated on the front, at the narrowest portion the front is almost equal in width to one eye facet. The upper portion of the front is polished black, the lower portion is dull gray pollinose. The face is dull gray, the two basal segments of the antennae are brown, the third segment is yellow and long acuminate (fig. 23b). The upper portion of the occiput is subshi-

ning black, the sides and lower portion are gray pollinose. *Thorax*: Polished black in ground color, rather lightly gray-brown pollinose on the dorsum, distinctly gray on the sides. The propleura are bare. The hind margin of the scutellum has a row of pale, rather thickly placed

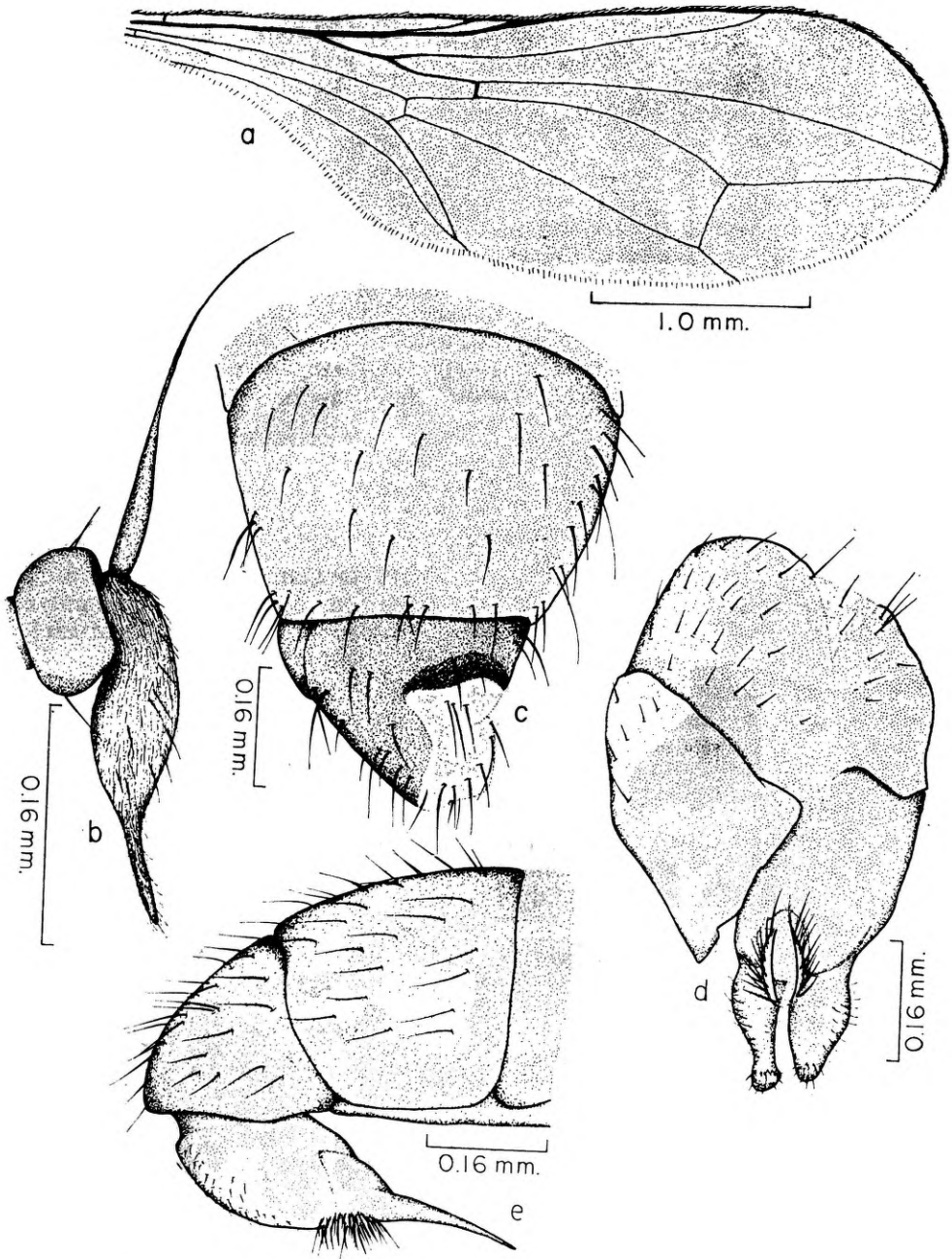


Fig. 23 : *Dorylomorpha lenkoi*, n. sp., a. wing; b. antenna; c. male genitalia, dorsal; d. male genitalia, ventral; e. female ovipositor, lateral.

hairs. The halteres are yellow, faintly tinged with brown on the knobs. *Legs*: Entirely yellow, the segments are rather slender. The ventral spines are lacking on the front and hind femora and moderately developed on the middle pair. No erect setae are present on the outside surface of the hind tibia. *Wings*: Subhyaline, very faintly infuscated. The third costal section is very short, approximately one-sixth as long as the fourth, and the fourth section is approximately equal in length to the fifth. The r-m crossvein is situated near the basal one-fifth of cell 1st M2. The last section of vein M1+2 is straight. The last section of vein M3+4 is rather short, scarcely over half as long as the m crossvein (fig. 23a). *Abdomen*: Polished black, rather thickly covered with erect yellow-brown hairs. The first tergum has a row of eight or nine long yellow hairs on each lateral margin. The abdomen is moderately clavate as is typical of this genus. The hypopygium is about two-thirds as long as the fifth abdominal segment, is distinctly pointed and has a large membranous area covering the right side as seen from a dorsal view (fig. 23c). As seen from a ventral view the ninth segment is slightly longer than wide and has a moderate cleft in the middle of the hind margin. The claspers are nearly symmetrical in size and shape with the outer being slightly broader than the inner and both being blunt, rounded at apices (fig. 23d).

Length: Body, 3.5 mm.; wings, 4.0 mm.

*Female*. Fitting the general characteristics of the male. The upper third of the front is polished black and the front is just slightly narrower than the face. The sides of terga two to five, and the venter of the abdomen, are bright yellow. The first tergum is entirely shining black. The black markings on terga two to four are roughly triangular in shape with the base of the triangle along the posterior margin of each segment. The fifth tergum is more broadly blackened over the posterior half of the segment. The sixth is entirely polished black and is about three-fourths as long as the fifth. The ovipositor is rather short, the piercer is straight and extends about level with the middle of segment four (fig. 23e).

Length: Body, 3.2 mm.; wings, 3.9 mm.

Holotype male and two male paratypes from Barueri, São Paulo, Brazil, August 8, 1955 (K. Lenko). Allotype female, same data as type except that it was collected July 22, 1955.

The type and allotype have been returned to Dr. Carrera to be deposited in the collection of the Departamento de Zoologia da Secretaria da Agricultura de São Paulo. The paratypes are in the University of Hawaii collection.

### Tomosvaryella Aczél

*Tomosvaryella* Aczél, 1939:22.

The members of this genus are characterized by lacking a stigma in the wing, the r-m crossvein situated near the middle of cell 1st M2, the eyes of the male contiguous for a short distance on the front, and the abdomen not clavate.



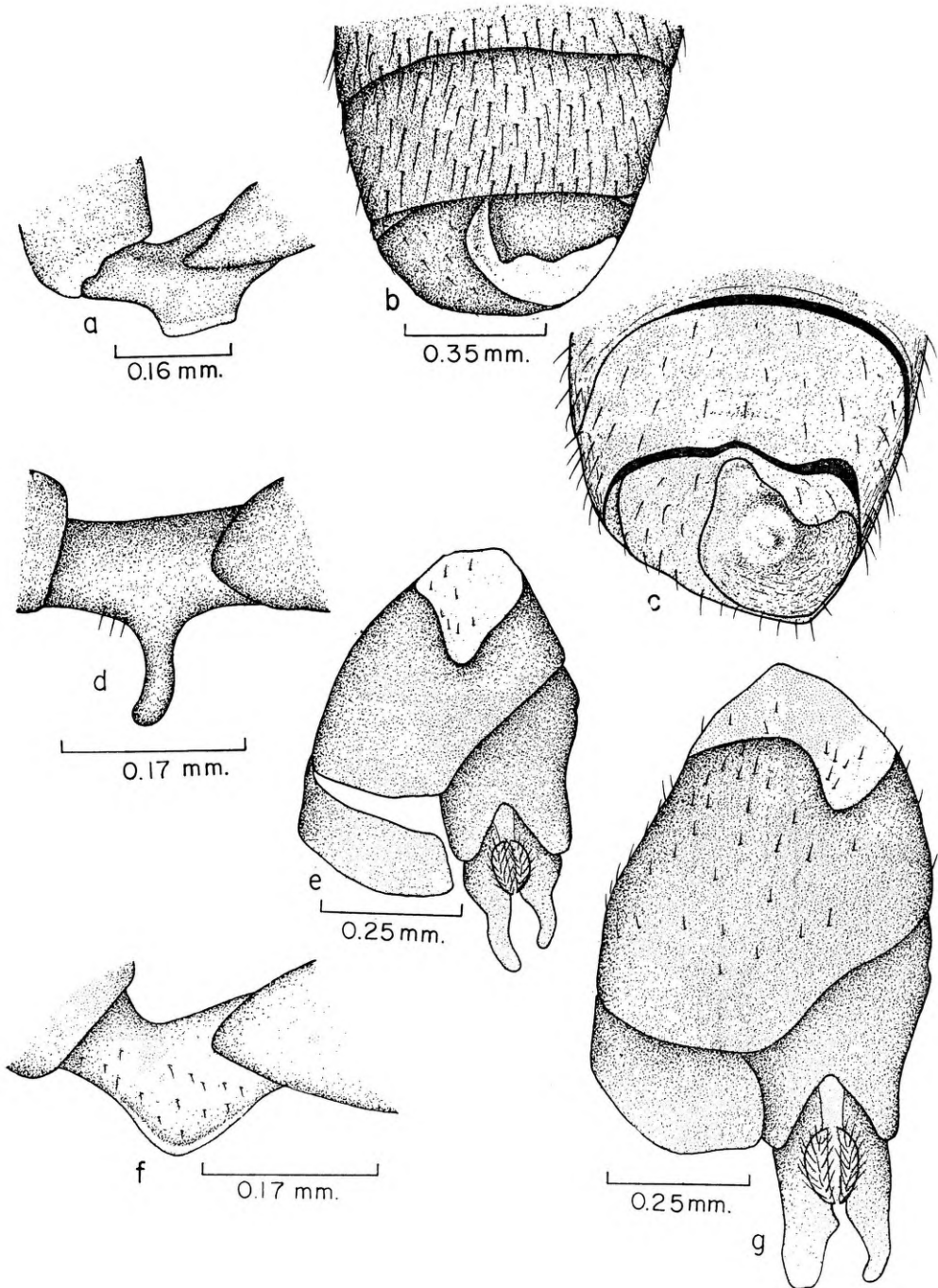


Fig. 24 : *Tomosvaryella subvirescens* (Loew), a. hind trochanter of male; b. male genitalia, dorsal. *T. mediocris* (Collin). c. male genitalia, dorsal (copied from Collin, 1931a: 55, fig. a). *T. prostata* Hardy, d. hind trochanter of male; e, male genitalia, ventral. *T. scopulata*, n. sp., f. hind trochanter; g. male genitalia, ventral.

Twelve species have now been recorded from the Neotropical region, four are presently known to occur in Brazil. The species which have been described from the West Indies (*polita* (Williston), from Saint Vincent, and *tuberculata* Hardy, from Cuba), from Mexico (*sonorensis* (Cole)), and from the Galapagos Islands (*galapagensis* (Curran)) are not being treated in the key since with the exception of *tuberculata* these can not be recognized from the original descriptions.

Type of the genus, *Pipunculus sylvaticus* Meigen.

KEY TO KNOWN SPECIES OF SOUTH AMERICAN *TOMOSVARYELLA*  
(EXCLUDING THE GALAPAGOS ISLANDS)

1. Male hypopygium asymmetrical, compressed to the right, usually with a broad suture or membranous area extending down the left side (fig. 25b). Hind trochanter of male lacking a square-topped process ..... 2  
 Male hypopygium symmetrical, subhemispherical in shape, not compressed to the right (fig. 24b). Hind trochanter of male with a densely white pubescent ridge below (fig. 24a). Cosmopolitan ..... *subvirescens* (Loew)
2. Membranous area on the eighth segment very large, covering the entire apex and extending nearly to the base of the segment as seen from a dorsal view (fig. 24c). Hind trochanters not tuberculate below. Chile ..... *mediocris* (Collin)  
 Not as above, hind trochanter with at least a slightly raised area below (figs. 24d, 24f and 25a) ..... 3
3. Hind trochanter of male with two ventral processes (fig. 25a). Widespread over Nearctic and Neotropical regions ..... *bidens* (Cresson)  
 Hind trochanter with not more than one ventral process .... 4
4. Hind trochanter of male with a slender, slightly curved process which is equal or slightly longer than the width of the trochanter ..... 5  
 Hind trochanter with a mound-like, obtuse, ventral process, or a small rather inconspicuous ridge (fig. 24f) ..... 6
5. Hind tarsus of male with three flat plate-like projections from the ventral surface, two from the basitarsus and one from the third tarsal segment (Hardy 1954, fig. 28b). Male claspers truncate at apices (Hardy 1954, fig. 28d). Brazil ..... *ornatitarsus* Hardy  
 Hind tarsi lacking such developments. Male claspers rounded at apices (fig. 24e). Process of hind trochanter as in figure 24d. Colombia ..... *prostata* Hardy
6. Claspers elongate, slender, straight-sided (Hardy 1953, fig. 4). Argentina and Brazil ..... *lynchi* (Shannon)

Claspers not slender or shaped as above, enlarged at apices or the hind trochanter has a small rather inconspicuous ridge or point below (fig. 24f) ..... 7

7. Hind trochanter with a prominent raised area. Claspers enlarged at apices (Hardy 1943, fig 92c). Widespread through the Nearctic and Neotropical regions ..... *lepidipes* Hardy  
 Hind trochanter with a small inconspicuous ventral ridge (fig. 24f). Claspers not enlarged, rather truncate at apices (fig. 24g). Colombia ..... *scopulata* Hardy

*Tomosvaryella galapagensis* (Curran) — type male N.º 3796, California Academy of Sciences — fits in couplet 6 but cannot be differentiated from *T. lynchi* (Shannon), *lepidipes* Hardy, or *scopulata* Hardy until the ventral aspects of the genitalia can be studied. The claspers are not visible on the type *in situ*. The hind trochanter has a microscopically pubescent ventral ridge and is probably close to *scopulata*.

**Tomosvaryella bidens** (Cresson)

(figs. 25 a-d)

*Pipunculus bidens* Cresson, 1911:320.

This species was adequately described by Hardy (1943:153, pl. 14, figs. 84 a-f). It is readily differentiated from any other known new world *Tomosvaryella* by the presence of two prominent tubercles on the hind trochanter of the male (fig. 25a). The male genitalia are as in figures 25b and 25c. The female ovipositor (fig. 25d) has a slight tubercle below, this has not been noted on specimens from North America.

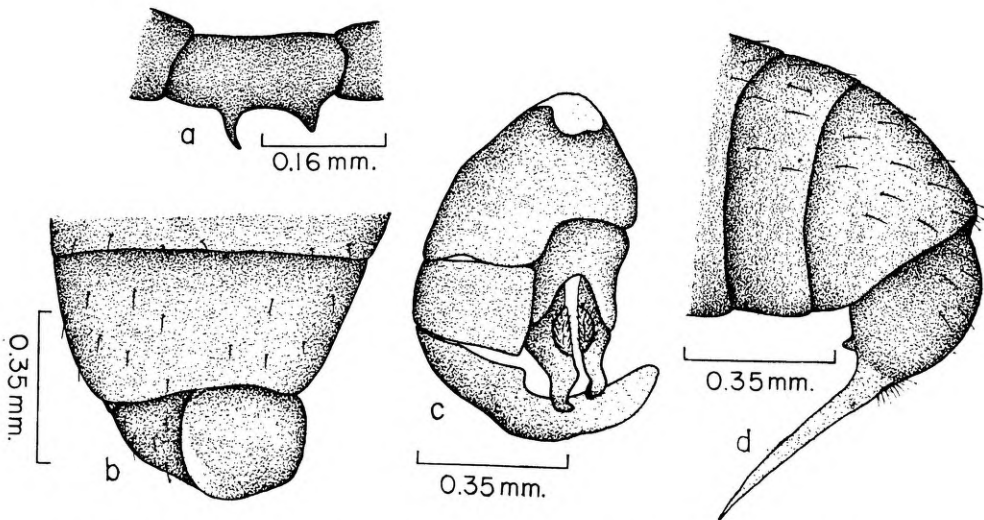


Fig. 25 : *T. bidens* (Cresson), a. hind trochanter of male; b. male genitalia, dorsal; c. male genitalia, ventral; d. female ovipositor, lateral.

This is the first record of this species south of Mexico. It is obviously widespread over the Neotropical, as well as the Nearctic, region. Two specimens are in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, August 3-6, 1955 (K. Lenko).

**Tomosvaryella lepidipes Hardy**

*Tomosvaryella lepidipes* Hardy, 1943:166-167, pl. 16, figs. 92 a-e.

This species is apparently widespread throughout the Nearctic and Neotropical regions. This is an important parasite of the geminate leafhopper (*Colladonus geminatus*) in North America. The original description and figures are adequate for this species.

Sixteen specimens are in the Lane collection from the following localities in Brazil: Est. do Rio, Itatiaia, Maromba, August, 1946 (Barretto); Est. S. Paulo, Cantareira, Chapadão, September, 1946 (Barretto); and S. Paulo, January, 1954 and November, 1950, Santo Amaro and Campos do Jordão (J. Lane). Three specimens are in the collection of the Departamento de Zoologia, from Barueri, S. Paulo, March 22, July 23, and August 3, 1955 (K. Lenko).



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