

A SYNOPSIS OF THE TRIBE SCAPHEUTINI (HYMENOPTERA: SPHECIDAE)

A. S. MENKE¹
COLIN VARDY²

ABSTRACT

Three species of Scapheutes and two species of Bohartella are recognized, and a key and illustrations are provided for their identification. The male sex of Bohartella and one new species, B. hypopsia, are described. Scapheutes mocsaryi Handlirsch, 1887, and S. friburgensis Brèthes, 1913, are synonymized with S. lactus (Smith), 1860.

The tribe Scapheutini contains five species divided between two genera, *Scapheutes* Handlirsch and *Bohartella* Menke. Most specimens of this tribe are from South American localities but we have seen one Costa Rican record for *Scapheutes*. Nothing is known about the biology of either genus, and the species, which are black with yellow markings, are uncommonly collected. Malaise traps seem to have produced most specimens. The Scapheutini and its genera were redescribed by Bohart & Menke (1976), but the male of *Bohartella* was unknown to them. We have assembled about 150 specimens of these wasps, including the male of *Bohartella* and the hitherto unknown male of *Scapheutes flavopictus* (Smith); this material has enabled us to improve on the tribal and generic descriptions of Bohart and Menke.

Several tribal characters were not mentioned by Bohart and Menke. Sternum I has a pair of longitudinal carinae basally and sternum II basally curves upward rather abruptly to its attachment with I. In the related tribe Bothynostethini sternum I sometimes has two basal carinae, but sternum II is flat or at most slightly, evenly convex. We have been able to confirm the universality of two characters given by Bohart and Menke as partially diagnostic for the Scapheutini: male forecoxa and trochanter modified, plantula present on tarsomere IV. Other tribal features given by Bohart and Menke are now recognized as being only generic characters of *Scapheutes*: male tergum VII with defined pygidial plate; male sternum VIII bispinose apically; volsella greatly reduced. The volsella of *Scapheutes* was incorrectly described in Bohart and Menke as a "small plate". Actually it is a saclike structure in which arise a number of setae (fig. 17).

During our study we discovered that the hindcoxa in the Scapheutini as well as in the Bothynostethini has the inner dorsal apex produced into an earlike lobe. The hindtrochanter has a flat or concave basal area that rubs against the coxal lobe when the two segments articulate. The margin of this probable trochanteral sensory organ is produced

¹Systematic Entomology Laboratory, IIBIII, Agricultural Research, Sci. and Educ. Admin., USDA.

Mail address: c/o U.S. National Museum of Natural History, Washington DC 20560.

²Department of Entomology, British Museum (Natural History), Cromwell Road, London SW7 5BD, England.

toothlike on the inside. Although these structures are not unique to these two species tribes, they are very highly developed in them.

The types of all taxa have been studied by one or both of us. The syntypes of Smith's species were confused in the British Museum collection but Vardy was able to ferret out the true types so that we could select lectotypes. The holotype of *Scapheutes brasilianus* Handlirsch proved to be housed at Copenhagen rather than at the museums in Vienna or Budapest. We have borrowed material from the following collections (parentheses enclose abbreviations used to denote repositories of specimens):

Bernice P. Bishop Museum, Honolulu (BPBM)
 British Museum (Natural History), London (BMNH)
 California Academy of Sciences, San Francisco (CAS)
 Cornell University, Ithaca (CU)
 Florida State Collection of Arthropods, Gainesville (FSDA)
 Instituto Miguel Lillo, Tucuman (Lillo)
 Manfredo A. Fritz Collection, Buenos Aires (Fritz)
 Museo Argentino de Ciencias Naturales, Buenos Aires (MBA)
 Museum of Comparative Zoology, Cambridge (MCZ)
 Muséum National d'Histoire Naturelle, Paris (Paris)
 Naturhistorisches Museum, Vienna (MV)
 Naturhistoriska Riksmuseet, Stockholm (RS)
 Természettudományi Múzeum Allatára, Budapest (MB)
 Universitetets Zoologiske Museum, Copenhagen (MC)
 University of California, Davis (UCD)
 University of Kansas, Lawrence (KU)
 U. S. National Museum of Natural History, Washington DC (USNM)
 Zoologische Sammlung des Bayerischen Staates, Munich (MM)
 Zoologischen Museum der Humboldt Universität, Berlin (ZMB)

Genus *Scapheutes* Handlirsch

The description given by Bohart and Menke (1976) is adequate, but is augmented with the following: several flagellomeres in male with clearly defined sensory areas; labrum thin, flat; surface of pronotal lobe without carina; propleuron without transverse carina paralleling hindmargin; metapleural flange arcuate, not broadly lamellate; postspiracular carina absent; hindfemoral truncation densely setose in female, sparsely so in male; tergum II without lateral carina; male tergum VII with pygidial plate defined by carinae; male sternum VIII bispinose apically; volsella reduced to a sac near base of gonostyle in which arise a number of setae; penis valve head without ventral row of teeth, but a long, fingerlike process present just basad of head (figs. 13-17).

We recognize three species of *Scapheutes*. One, *brasilianus*, is morphologically isolated from the other two, *laetus* and *flavopictus*, by propodeal sculpture and male antennal characters.

Scapheutes brasilianus Handlirsch

Scapheutes brasilianus Handlirsch, 1895:829. Holotype female, Coary (Coari), Amazonas, Brasil (MC).

Also referring to this species: Dalla Torre, 1897:563 (catalog); Fox, 1897:380 (record); Schulz, 1904:786 (keyed); Menke, 1968:90, 99 (figure, checklist); Bohart and Menke, 1976:354, 355 (figures, checklist).

DESCRIPTION

Color: Black except following are yellow: scape except for dorsal stripe or spot; clypeus except free margin; palpi and basal half of mandible; pronotal collar and lobe; ante-

rior spot on tegula; rectangular spot on scutellum (sometimes constricted at midline); round or elliptical lateral spot on terga I-V of female, and I-VI of male; apicodorsal spot on femora (sometimes absent on hindfemur); anterior face of fore and midtibiae, and basal half of hindtibia. Mid and hindcoxae of female and all coxae of male usually yellow marked. Flagellomeres I-III of male yellowish brown beneath.

Female: Clypeal free margin with U-shaped median notch and two lateral indentations which delimit two rounded teeth (similar to fig. 4); labrum emarginate mesally; prementum strongly gibbous toward clypeus; least interocular distance less than half distance between eyes at vertex (range: 27:66 to 30:68); disk of scutum unevenly punctate, punctures separated by 1/2 to 4 diameters, interspaces smooth, polished; propodeal dorsum polished, longitudinally bisected by median carina (fig. 3); propodeal hindface finely, densely punctate, most punctures less than a diameter apart and smaller than those of scutum, hindface with traces of arcuate ridges which radiate from midline; propleuron with triangular elevation posterolaterally; foretarsomeres II-III slightly longer than wide (range: 8:12 to 10:12); apical margins of gastral terga single-edged; length 7-10 mm.

Male: As in female except: free clypeal margin outline trapezoidal, entire; labrum entire; flagellomere III shorter than adjoining articles, flagellomeres IV-V equal in length and each bearing a pair of faint, widely separated, arcuate, longitudinal lines which delimit "sensory areas" covered with dense, short, erect setae (fig. 8); inner margin of mandible with small weak tooth on distal side of large basal tooth (fig. 11); least interocular distance more than half distance between eyes at vertex (range: 34:53 to 37:59); propleuron with weak posterolateral prominence; aedeagus as in figure 17; length 7-8 mm.

DISCUSSION

The smooth, polished propodeal enclosure readily identifies *brasilianus*. In the male the absence of a sensory area on flagellomere III and the nearly equal lengths of I-II and IV-V are distinctive (fig. 8). This species is fairly constant in structure and color.

DISTRIBUTION

Scapheutes brasilianus is the most commonly collected species of the genus. It is widely distributed around the Amazon Basin (Brasil, Colombia, Ecuador, Peru, Bolivia), but it is known also from southeastern Brasil.

Records (90 specimens seen): Bolivia, *Santa Cruz*: Ichilo, Yapacani, (Fritz). *Cochabamba*: Chimoré (Fritz). Brasil, *Amazonas*: Coari (MC); Flores, Manaus (USNM); Rio Autaz (RS); Rio Purus (RS); Tefé (UCD, BMNH, ZMB). *Amapá*: Serra do Navio (Fritz). Espírito Santo (MV). *Minas Gerais*: Lassance (CU). *Pará*: Arapari (BPBM); Belém (UCD, USNM, MCZ, MV, CU). *São Paulo*: Campinas (BPBM). Colombia, *Putumayo*: Puerto Leguizamo (BMNH); Mocoa (BMNH). Ecuador, *Napo Prov.*: Limoncocha (FSDA, UCD, USNM); Tena (USNM). Peru, *Huanuco*: Tingo Maria (MCZ, Lillo). *Loreto*: Pucallpa (Fritz, BMNH).

Scapheutes laetus (Smith)

Pison laetus Smith, 1860:81. Ega (= Tefé, Amazonas), Brasil, female. Lectotype female: "Brasil" (BMNH), present designation

Scapheutes mocsaryi Handlirsch, 1887: 174, pl. 3, figs. 3, 4; also 1888:232, pl. 1, figs. 3-7. Holotype male: São Paulo (? = São Paulo de Olivença), Brasil (MB). New synonymy.

Scapheutes friburgensis Brèthes, 1913:133. Holotype female: Nueva Friburg (= Nova Friburgo, Rio de Janeiro, Brasil) (MBA). New synonymy.

Also referring to this species: Kohl, 1885:187 (as *Pison laetus*, checklist); Handlirsch, 1895:829 (further desc. of *mocsaryi*); Kohl, 1896:401 (fig. of *mocsaryi*, description);

Dalla Torre, 1897:563, 712 (*Pison laetus*, *Scapheutes mocsaryi*, catalog); Schulz, 1904:786 (*mocsaryi* keyed); Turner, 1916:629 (*laetus* placed in *Scapheutes*); Menke, 1968:99 (*laetus*, *mocsaryi*, *friburgensis*, checklist); Bohart and Menke, 1976:353, 355 (*laetus*, *mocsaryi*, *friburgensis*, fig., checklist).

DESCRIPTION

Color: Head and pronotum as in *brasilianus* except flagellum and clypeus black in male or latter occasionally with small yellow spot or pair of spots; pronotal lobe often black in male and transverse stripe on collar often very narrow in this sex; scutellum usually with a pair of yellow spots, some individuals with one rectangular spot which is constricted at midline, some males without yellow on scutellum; terga I and V usually without yellow spots, yellow spots present only on tergum II in some individuals, but present on II-III, II-IV, I-IV or I-V in others, spots on II usually much larger than those on other terga; forefemur sometimes with apicodorsal yellow spot or apical ring, midfemur with apical yellow spot or spots or ring, hindfemur without yellow; tibiae as in *brasilianus*: coxae usually black in both sexes except forecoxa of male always yellow marked ventrally.

Female: clypeal free margin with U-shaped median notch and one or two lateral indentations which delimit one or two rounded teeth (fig. 4); labrum with median emargination; prementum with slight elevation at middle; least interocular distance slightly less than to slightly more than half distance between eyes at vertex (range: 28:68 to 39:73); disk of scutum varying from unevenly punctate as in *brasilianus* to longitudinally striatopunctate, the latter condition most common, interspaces microreticulate (shagreened) and subshining; propodeal dorsum with 6 to 13 parallel, longitudinal of oblique carinae on each side of a median, polished, flat area that is bisected by a median carina, carinae sometimes fading or absent laterobasally, interspaces smooth, polished (fig. 1); propodeal hindface about as in *brasilianus* except punctures about same size as those on scutum; propleuron with triangular elevation posterolaterally; foretarsomeres II-III almost twice as long as wide (range: 5:8 to 6:10); apical margin of terga II-III or II-IV sometimes double-edged; length 7.5-12 mm.

Male: As in female except: free clypeal margin outline varying from narrowly trapezoidal to arcuate (median lobe varying from straight with lateral angles to arcuate and no lateral angles), entire, width of median lobe less than distance between its margin and antennal socket (fig. 5); labrum entire or with weak emargination; flagellomere III length longer than II but subequal to lengths of IV-V, III-V each bearing a pair of faint, diametrically opposite, longitudinal lines which delimit "sensory areas" covered with dense, short, erect setae (fig. 9); mandible with only large basal tooth on inner margin (fig. 10); prementum flat; least interocular distance more than half distance between eyes at vertex (range: 36:58 to 42:58); terga I-V or II-IV usually double-edged; aedeagus as in figs. 13-15; length 7.0-8.5 mm.

DISCUSSION

Scapheutes laetus in the most variable species in the genus with respect to both structure and color, but the presence of two groups of carinae on the propodeal dorsum separated by a smooth zone near the midline is a reliable diagnostic feature (fig. 1). *S. flavopictus* is similar but the carinae are uniformly spaced across the propodeal dorsum (fig. 2). The clypeal notch and narrow least interocular distance of females of *laetus* contrast with the unnotched clypeus and wider least interocular distance of *flavopictus*. The male antenna of *laetus* (fig. 9) differs from *brasilianus* (fig. 8). *S. laetus* is the only species in which the tergal margins may be double-edged, and the scutum often striatopunctate. The aedeagus is variable (figs. 13-15). In one male studied from São Paulo the aedeagal head (fig. 15) has thorny outgrowths. These may be present in unmated males, but there is no evidence of the former existence of these structures on the genitalia of other males studied from São Paulo and elsewhere. This single male is probably a freak.

Scutal punctation varies as indicated above, particularly in females. Most females show some striatopunctation on the scutum, but the punctures are sparser and shallower in individuals from Campinas, Joinville, Antonina, Campo Alegre, and "Monat", as well as in the lectotype of *laetus*. These localities are in southern Brasil (we cannot locate Monat). Both types of sculpture are found in specimens from São Paulo, although striatopunctation predominates. Wings vary from clear with brown veins to weakly infumate with black veins, but there is no correlation with scutal sculpture. The Costa Rican female has close, deep scutal punctures without definite striae. There appears to be no geographic basis for the variation in yellow maculations.

DISTRIBUTION

Scapheutes laetus is the most widely distributed species of the genus. It occurs from eastern Colombia to southern Brasil and northern Argentina, and we have a single record from Costa Rica.

Records (39 specimens seen); Argentina, *Salta*: Salta (MCZ). *Tucuman*: Q. de Lulues (UCD). Brasil, "Monat" (UCD). *Amazonas*: Tefê (BMNH). *Guanabara*: Rio de Janeiro (USNM). *Mato Grosso*: Cerradão (BMNH). *Paraná*: Antonina (UCD). *Rio de Janeiro*: Nova Friburgo (MBA). *Santa Catarina*: Campo Alegre (UCD); Joinville (UCD, MCZ). *São Paulo*: Campinas (BPBM); São Paulo (USNM, UCD). Colombia, *Amazonas*: Leticia (BMNH). *Vaupés*: Miraflores (BMNH). Costa Rica, *Cartago*: Turrialba (KU). Ecuador: Tena (BPBM). Peru "Chanchamayo" (USNM). *Cuzco*: Quince Mil (MCZ). *Huanuco*: Cord. Azul, Previsto (BMNH); Tingo Maria (MCZ, CAS). *Loreto*: Pucallpa (Fritz).

Scapheutes flavopictus (Smith)

Pison flavopictus Smith, 1860:81. St. Paul (= São Paulo de Olivença, Amazonas), Brasil, female. Lectotype female: "Brazil" (BMNH), present designation.

Also referring to this species: Kohl, 1885: 187 (as *Pison* checklist); Dalla Torre, 1897:711 (as *Pison*, catalog); Schulz, 1904:782 (placed in *Scapheutes*, redesc., keyed); Turner, 1916:629 (placed in *Scapheutes*); Menke, 1968:99 (checklist); Bohart and Menke, 1976:355 (checklist).

DESCRIPTION

Color: Head and thorax as described for *brasilianus* except scutellum with two yellow spots; tergum II with round, yellow spot laterally (Fonte Boa and Ecuadorian specimens with smaller yellow spot on tergum I also). Legs in Brazilian specimens largely yellow: fore and hindfemora yellow on apical half dorsally and midfemur yellow on apical half; tibiae yellow except for narrow brown stripe ventrally on I-II, and brown apex on III; tarsomeres I-III or IV yellow except apices. Legs darker in Bolivian and Ecuadorian specimens: fore and midfemora with apicodorsal yellow spot, hindfemur black; fore and midtibiae yellow dorsally, hindtibia yellow on basal half or third; tarsi black except fore-tarsomeres I-III and mid and hindtarsomeres II-III mostly yellow in Ecuadorian male. Mid and hindcoxae yellow marked in all specimens, forecoxa usually black.

Female: Clypeal margin without median notch, but usually with two lateral indentations which delimit two rounded teeth (fig. 6); labrum entire; prementum flat; least interocular distance about two thirds to three fourths distance between eyes at vertex (range: 39:59 to 45:57) disk of scutum with fine, shallow, almost pinprick punctures which are mostly 2 to 3 diameters apart, interspaces smooth, polished; propodeal dorsum with about 20 parallel, longitudinal, essentially equally spaced carinae, interspaces smooth, polished, but sometimes with weaker shorter ridges (fig. 2); propodeal hindface smooth, polished, but covered with pinprick punctures which are much finer than those of scutum; propleuron at most with slight gibbosity posterolaterally; foretarsus slender, tarsomeres

II-III two to two and a half times as long as wide; apices of gastral terga single-edged; length 7.5-10 mm.

Male: As in female except: free clypeal margin broadly trapezoidal, entire, width of median lobe much greater than distance between its margin and antennal socket (fig. 7); flagellomere III length longer than II but subequal to lengths of IV-V, III-V each bearing a pair of faint, diametrically opposite, longitudinal lines which delimit "sensory areas" covered with dense, short, erect setae (as in fig. 9); mandible with only large basal tooth on inner margin; least interocular distance more than four fifths distance between eyes at vertex (42.5-50); aedeagus as in fig. 16; length 7 mm.

DISCUSSION

Scapheutes flavopictus is the least commonly collected species in the genus, and we have seen only eight females, one of which is the lectotype, and one male. The absence of a median clypeal notch is immediately diagnostic for the female. The narrow male clypeus with its broad lobe distinguishes this sex from males of *laetus*. The male antennae are essentially identical in these two species but the penis valve heads differ (compare figs. 13-15 with 16). The rather equally spaced dorsal propodeal carinae, the fine punctation on the scutum and propodeal hindface, and the slender tarsi are additional species characters. The frons is broader at its narrowest point than in *brasilianus* and *laetus*.

The Bolivian and Ecuadorian specimens have less yellow than the Brazilian ones as indicated in the description, but too little material is available to assess the significance of this color variation. Even though tarsal color is not constant in *flavopictus*, this is the only species of *Scapheutes* that sometimes has yellow tarsi.

DISTRIBUTION

Brasil, Bolivia and Ecuador.

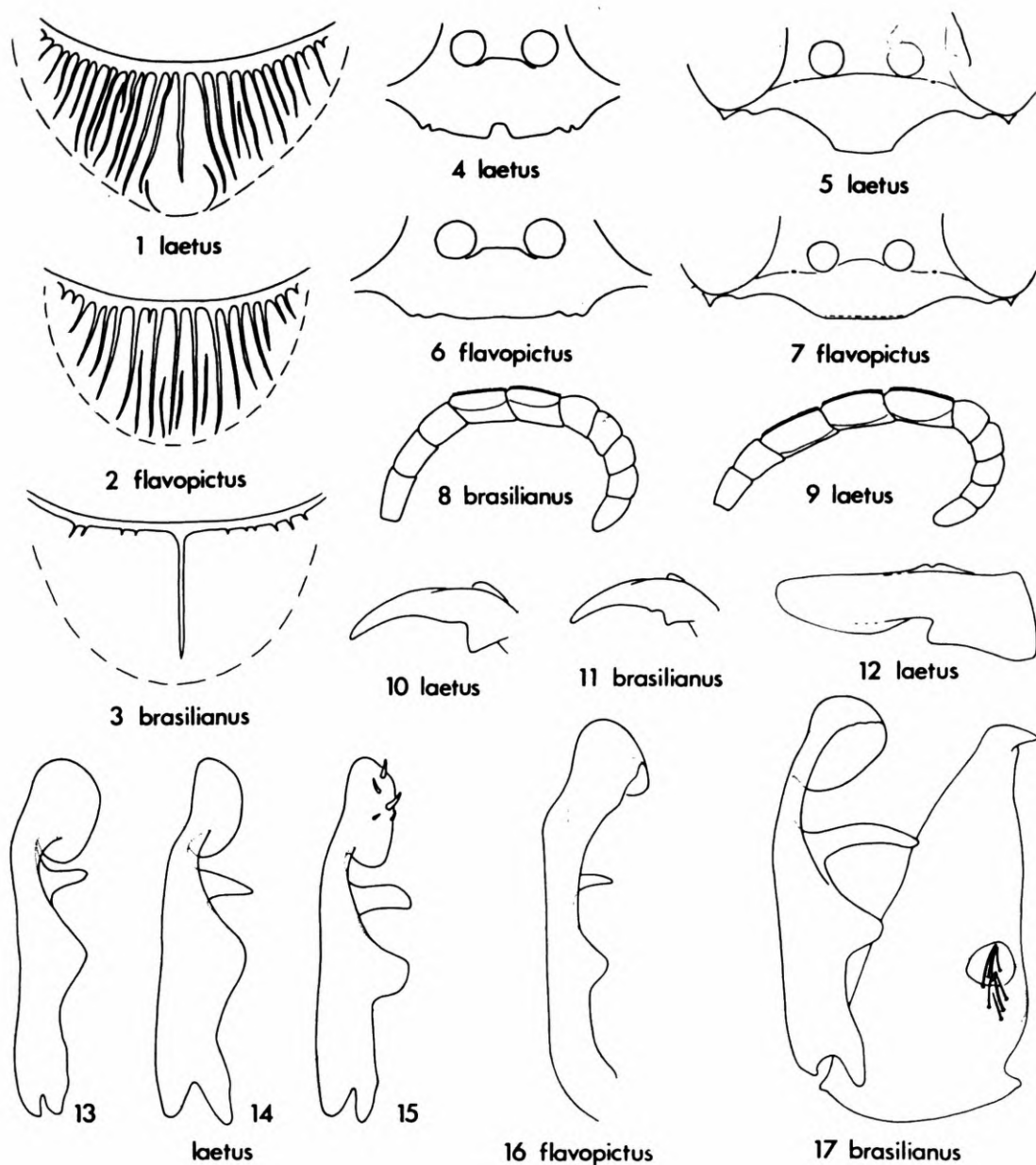
Records: Bolivia, *Santa Cruz:* Prov. Sara (UCD). Prov. Chapare, Villa Tunari (Fritz). Brasil, *Amazonas:* Fonte Boa (BMNH); São Paulo de Olivença (BMNH); Tefé (BMNH, MM). Ecuador: Napo, Muyuna, 5 km. w. Tena (BMNH); Morona-Santiago, Cord. Cutucu, c. 6 km e. Macas, 1000m (BMNH. USNM).

Genus *Bohartella* Menke

The discovery of a second species, including the previously unknown male, enables us to give a more nearly complete generic description.

DESCRIPTION

Antenna moderately long, scape short, bulbous; male flagellomeres without visible sensory areas; gena with vertical carina paralleling outer orbit from mandible base to upper angle of eye; occipital carina lamelliform, meeting hypostomal carina just anterior to latter's apex; outer margin of mandible entire (fig. 22), inner margin with large basal tooth (fig. 23); labrum short, thick, transverse, hidden, its surface transversely concave; pronotal collar usually with fine transverse carina at middle; pronotal lobe transversed by carina that is directed toward humeral angle of collar; propleuron with fine carina paralleling hindmargin; metapleural flange lamellate, outer margin angulate; propodeal dorsum with roughly triangular enclosure delimited by two convergent ridges, enclosure longitudinally bisected by two parallel ridges; propodeal hindface margined dorsally by irregular arcuate ridge, hindface and upper propodeal side irregularly ridged and/or areolate; omaulus present, ending shortly after crossing episternal sulcus in female, continuous with acetabular carina in male; subalar fossa limited anterad by short postspiracular carina; episternal sulcus complete, broadening beyond omaulus; lateral carina present on terga I-II, but weak on II; apical margin of terga I-IV thickened, double-edged, terga usually



Figs. 1-17. Details of species of *Scapheutes*. Figs. 1-3. Propodeal enclosure. Figs. 4-7. Clypeus. Figs. 4, 6 are females, 5, 7 are males. Figs. 8-9. Male antenna. Figs. 10-11. Front view of right male mandible. Fig. 12. Lateral view of left female mandible showing notch. Figs. 13-16. Lateral profile of penis valve. Fig. 13 is specimen from São Paulo, fig. 14 is specimen from Tingo Maria, fig. 15 is a aberrant specimen from São Paulo. Fig. 17. Lateral profile of penis valve and gonostyle showing saclike volsella.

with impressed, transverse, subapical pitrows laterally which are broadly effaced toward midline; male tergum VII truncate apically, surface flattened and setose but pygidial plate not defined by carinae; male forecoxa and trochanter with concavities; hindfemoral truncation densely setose in female, sparsely setose in male; male sternum VIII tridentate apically (fig. 21); volsella long, narrow (fig. 20); penis valve head with row of teeth ventrally (fig. 20).

Bohartella differs from *Scapheutes* in many ways: male antenna without sensory areas; mandible without tooth or angle on outer margin; labrum thick, curled; scape short; gena with carina along outer orbit; occipital carina complete; pronotal lobe with carina; propleuron with fine transverse carina; propodeal enclosure delimited by a pair of converging ridges, propodeal side and hindface ridged; omaulus present; terga without well-defined, complete transverse pit rows; male tergum VII without defined pygidial plate; male sternum VIII tridentate; volsella long, narrow, separate from gonostyle; penis valve head with ventral row of teeth.

The 5 males and 8 females of *Bohartella* assembled for this study display a perplexing degree of morphological variability. At first we believed that only one species was involved, but we have not been able to satisfactorily reconcile the structure of one female and its 5 associated males, all collected at the same time and place, with the rest of our material. These 6 specimens are described as a new species of *Bohartella*.

Bohartella scapheutoides Menke

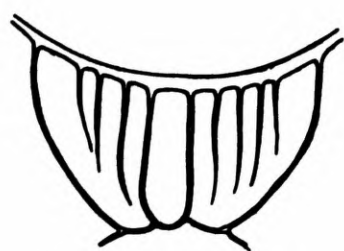
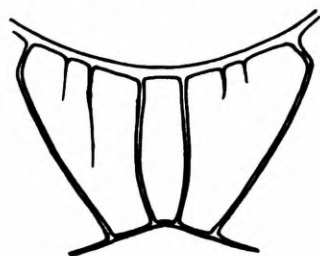
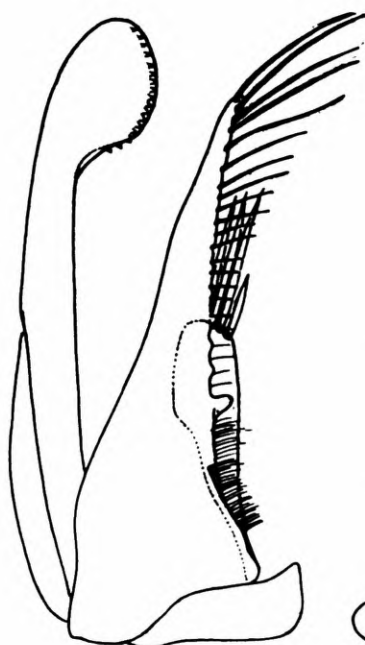
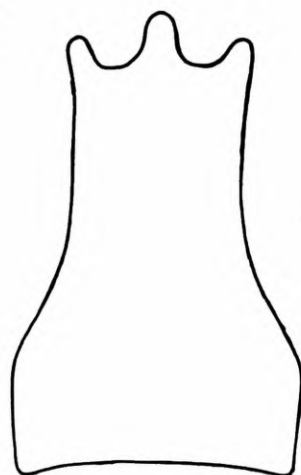
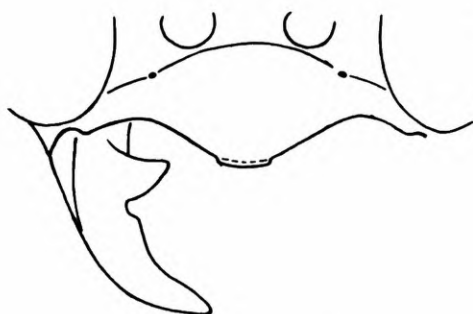
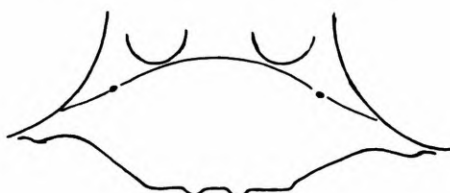
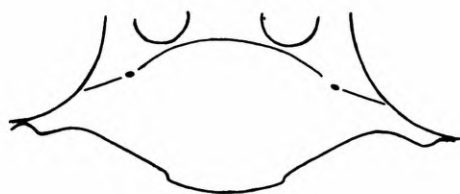
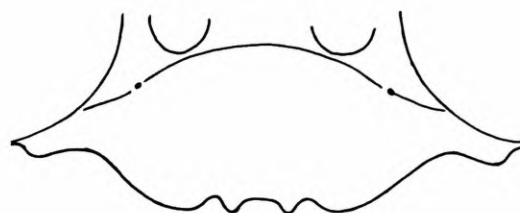
Bohartella scapheutoides Menke, 1968:96. Holotype female, Santarém, Brasil (UCD). Also referring to this species: Bohart and Menke, 1976:355 (figs., checklist).

DESCRIPTION (female only)

Color: Black; dorsum of collar with pair of transverse, elongate, yellow spots which narrow toward midline; pronotal lobe usually with yellow spot at posterior margin. Wing veins dark brown; membrane clear or slightly infuscate, especially along leading margin of forewing.

Vestiture: Clypeus and lower frons densely covered with appressed setae which vary from silver to golden and which obscure sculpture; upper frons, vertex, gena, thorax and gaster covered with short, dense, erect setae which vary from silver to golden; vestiture of gaster forming transverse basal fasciae on terga in certain lights.

Structure: Clypeal surface swollen, free margin without impunctate marginal bevel but with two submedian, rounded teeth; outline of free margin either trapezoidal with teeth surpassing straight, transverse portion (fig. 25), or length of teeth equalled by expanded, broadly rounded lateral part of margin (fig. 26). Frons and vertex densely, coarsely punctate, punctures less than a diameter apart, those on frons diminishing in size toward midline and midocellus, those on vertex sometimes forming transverse striatopunctuation, vertex with narrow impunctate zone around hindocellus which extends broadly to eye margin; genal punctation finer, slightly sparser, narrow zone anterior to genal carina impunctate. Anterior face of collar finely, densely punctate; humeral angle of collar rounded or accentuated by short, angular carina. Scutum densely punctate, punctures sometimes changing to longitudinal striatopunctuation on disk, punctures less than diameter apart or two or three diameters apart on disk on longitudinal axis; tegula finely, closely punctate around margin, punctures becoming sparser toward disk which is impunctate; scutellum varying from longitudinally striatopunctate to merely punctate, in latter case punctures separated by 1 to 3 diameters on disk; metanotum closely to sparsely punctate, usually with median longitudinal carina and 1 to 3 longitudinal ridges laterally; propodeal enclosure with 3 to 5 parallel, longitudinal ridges on each side of median pair, these ridges nearly as strong as median pair but fading posterad, not reaching limiting ridges of enclosure, interspaces of enclosure smooth, shining (fig. 18); propodeal hindface with strong Y-shaped ridge, the arms of which are paralleled by several weaker, sometimes irregular

18 *scapheutoides*19 *hypopsia*20 *hypopsia*21 *hypopsia*22 *scapheutoides*23 *hypopsia*25 *scapheutoides*24 *hypopsia*26 *scapheutoides*

Figs. 18-26. Details of species of *Bohartella*. Figs. 18-19. Propodeal enclosure. Fig. 20. Lateral profile of male genitalia with outline of partially concealed volsella shown by dotted line. Fig. 21. Male sternum VIII. Fig. 22. Lateral view of left female mandible. Fig. 23. Male clypeus and mandible. Figs. 24-26. Female clypeus. Fig. 24 is holotype, fig. 25 is specimen from Caracas, fig. 26 is specimen from Arauca.

ridges, interspaces smooth, shining; hindface with longitudinal sulcus above Y-shaped ridge; ridges of hindface extending forward to propodeal spiracle, often irregularly so, and extending beyond spiracle onto metapleuron. Pleura shining, preomaulal area finely, shallowly punctate, rest of mesopleuron coarsely punctate, punctures varying from nearly contiguous to 4 diameters apart, punctures becoming much finer on mesopleural venter; metapleuron impunctate or with sparse pinprick punctures; lower part of propodeal side shining, with sparse pinprick punctures or with larger punctures (similar to those in front of midocellus) separated by about a puncture diameter. Tergum I moderately to densely punctate, punctures slightly smaller than those on mesopleuron, punctures subcontiguous to 4 diameters apart; punctures diminishing in size on remaining terga, sometimes resembling pinpricks on III-V, but still rather dense; sterna II-V impunctate on basal half or three fourths, but densely punctate beyond, the punctures similar to those on terga I-II; sternum VI similarly punctate but with narrow, shining, impunctate strip along midline. Basitarsis of foreleg with 7-8 rake spines. Setae of hindfemoral truncation semierect, long, narrow (fig. 27); length: 7.25-10 mm.

Male: Unknown.

DISCUSSION

The ridged propodeal enclosure (fig. 18) is diagnostic for *scapheutoides*, but the 7 specimens before us, including the type, display considerable variation. There is general plasticity in the form and arrangement of the ridges on the propodeum, although those inside the enclosure are usually not interrupted. The subapical cross ridge between the central pair of longitudinal ridges of the enclosure figured in Menke (1968, fig. 11) occurs only in the type. The Brazilian type and two females from Colombia are larger than the four Venezuelan females (9.0-10.0 vs. 7.25-7.5 mm). Other variables seem correlated with these two size groups. The most obvious difference between them is the shape of the clypeus. In the small females the clypeal teeth are prominent (fig. 25), but in the large females the edge of the clypeus is broadly expanded lateral to the teeth (fig. 26). In general the punctation is sparser and finer in the small specimens. For example, the punctures on terga III-V are almost like pinpricks in the small wasps, but they are clearly puncture like in the large specimens. The scutal and scutellar punctures are separated by one or more puncture diameters in the small specimens but the punctation is mostly subcontiguous, often becoming striatopunctate in the large wasps. Further material may indicate that these two groups represent separate species. The second recurrent vein is interstitial in one wing of one of the Colombian females.

DISTRIBUTION

Colombia, Venezuela and northern Brasil.

Records: Brasil, *Pará:* Santarém (UCD). Colombia, *Arauca:* Tame, July 20-27, 1976, M. Cooper (BMNH); *Nariño:* Barbacoas, Jan, 5, 1975, M. Cooper (BMNH). Venezuela, *Distrito Federal:* Caracas, Styrup (MC); *Aragua:* 2 km, N. Ocumare de la Costa, June 21-22, 1976, A Menke & D. Vincent (USNM).

BIOLOGY

Unknown but Cooper collected the Barbacoas female from a damp clay path in primary forest. Its pygidium has traces of red earth.

Bohartella hypopsia Menke & Vardy, new species

DESCRIPTION (Holotype female)

This species is so similar to *scapheutoides* that only differences from the description of the latter will be given here.

Color: Pronotal lobe mostly yellow behind transverse carina. Wing veins pale brown, membrane clear.

Vestiture: Appressed setae silver except those on gastral terga with slight golden tinge.

Structure: Outline of free margin of clypeus trapezoidal, the transverse portion (lobe) weakly arcuate, without teeth (fig. 24), this lobe bordered by impunctate bevel whose width is equal to about one third diameter of hindocellus. No striatopunctuation on head. Humeral angle of collar rounded. Scutal punctuation coarse, punctures less than a diameter apart, forming longitudinal striatopunctuation on disk; scutellum longitudinally striatopunctate but some punctures 1 to 2 diameters apart longitudinally; metanotum closely, finely punctate, with median longitudinal carina and 4 longitudinal ridges laterally. Except for pair of median longitudinal ridges, propodeal enclosure surface irregularly smooth, with suggestion of sparse, shallow punctuation, devoid of strong ridges laterally except for several short basal remnants, one of which extends over enclosure as a feeble ridge (fig. 19); arms of Y-shaped ridge on propodeal hindface weak, short, surface of hindface irregularly rugosopunctate; propodeal side at level of spiracle with several strong, irregular, longitudinal ridges which are continued forward onto upper metapleuron, ridges much weaker and more irregular toward propodeal enclosure, interspaces weakly punctate. Mesopleural punctures less than a diameter apart; metapleuron with fine, sparse, pinprick punctures; lower part of propodeal side closely, shallowly punctate, punctures about same size as those in front of midocellus. Setae of hindfemoral truncation closely appressed, short, broad, bladeliike, imparting a diamond pattern under fluorescent light source (fig. 28). Length: 7.5 mm.

Male (differs from female as follows): Lower surface of flagellum reddish brown; outer surface of tibiae mostly yellow (narrowly black apically). Inner margin of mandible with two teeth near base, the distal one very small (fig. 23); clypeus abruptly swollen along free margin, latter with narrow, truncate, median lobe (fig. 23) which, in ventral view, is thick. Humeral angle of collar weakly angulate. Punctures on disk of scutum often separated by one to four diameters along longitudinal axis; only suggestion of striatopunctuation on scutellum, punctures separated by two to four diameters on disk; arms of Y-shaped ridge of propodeal hindface usually long, strong, and paralleled by strong radiating ridges; ridges of propodeal side irregular, strong, not appreciably weaker toward propodeal enclosure. Omaulus continuous with acetabular carina, the latter forming a long, narrow, rearward directed, elevated triangle along midline, mesopleural venter deeply impressed channellike along this triangle; forecoxa and trochanter with concavities that are extensions of mesopleural channels. Tergum VII truncate apically, surface slightly concave, moderately setose. Forebasitarsus with 5 or 6 rake spines; setae of hindfemoral truncation fine, sparse. Genitalia as in fig. 20. Length: 6.0-7.0 mm.

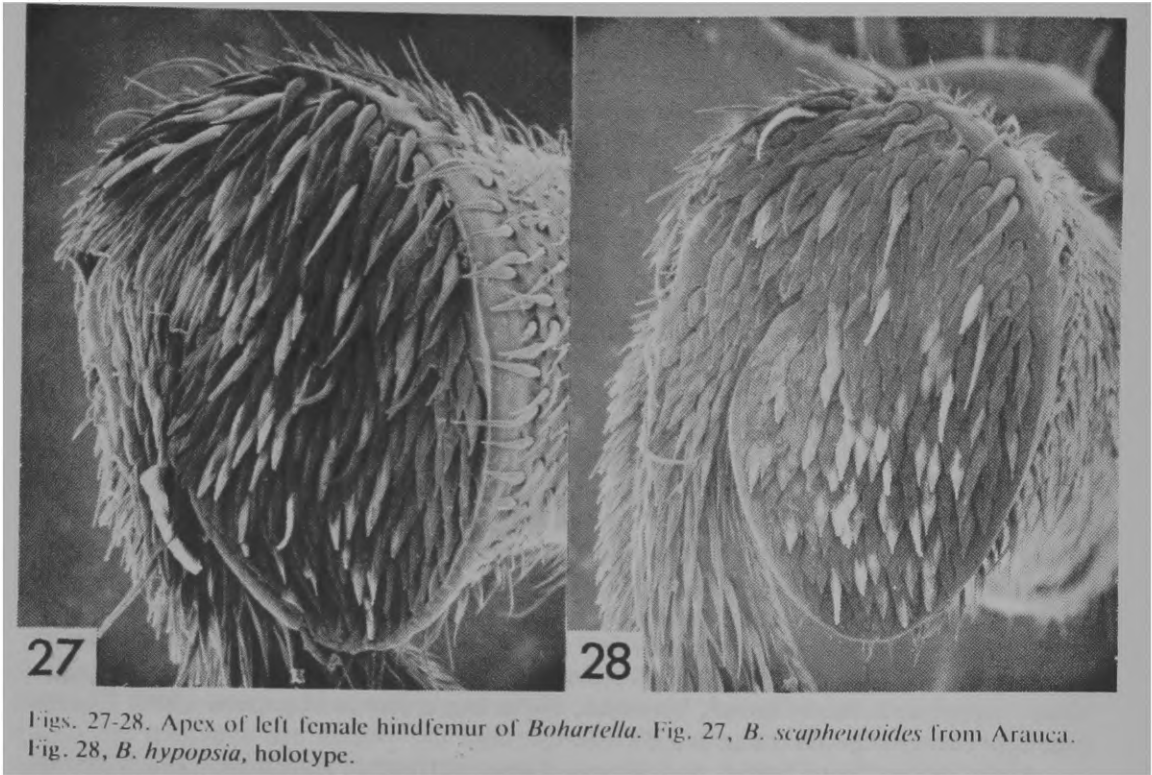
ETYMOLOGY

The species name is derived from the Greek word hypopsios which means viewed with suspicion.

DISCUSSION

Bohartella hypopsia differs from *scapheutoides* in the absence of strong longitudinal ridging laterally in the propodeal enclosure. In *scapheutoides* the enclosure always has several prominent ridges paralleling the median pair. The female clypeus of *hypopsia* lacks the two teeth found in females of *scapheutoides*. The setation of the hindfemoral truncation differs between them (compare figs. 27-28), but this character is difficult to appreciate unless a fluorescent light source is used.

This species is known only from southern Brasil. At first we considered these specimens as variants of *scapheutoides*, but the female clypeal and hindfemoral features, as well as the propodeal sculpture, indicate that two species are involved.



Figs. 27-28. Apex of left female hindfemur of *Bohartella*. Fig. 27, *B. scapheutoides* from Arauca. Fig. 28, *B. hypopsia*, holotype.

TYPES

Holotype female: Brasil, *São Paulo*: Campinas, March 1924, F. X. Williams (BPBM). Five male paratypes with same data (except one collected in February) (BPBM, BMNH, USNM, and, the Universidade de São Paulo).

Key to genera and species of Scapheutini

1. Externoventral margin of mandible scarcely emarginate subbasally (fig. 22); gena with carina closely paralleling outer margin of eye; mesopleuron with omaulus *Bohartella* Menke 2
- Externoventral margin of mandible with rounded notch whose basal margin is toothlike (fig. 12); gena without carina adjacent to eye; mesopleuron without omaulus. *Scapheutes* Handlirsch 3
2. Propodeal enclosure with several longitudinal carinae lateral to middle pair (fig. 18); setae on female hindfemoral truncation semierect (fig 27) *scapheutoides* Menke 4
- Propodeal enclosure with only median pair of longitudinal carinae well developed (fig. 19); setae on female hindfemoral truncation appressed (fig. 28) *hypopsia* Menke & Vardy 3
3. Propodeal dorsum with single median longitudinal carina (fig. 3) *brasilianus* Handlirsch
- Propodeal dorsum with many longitudinal or oblique carinae 4
4. Carinae of propodeal dorsum divided into two groups by median longitudinal flat area which usually broadens posterad, and is itself longitudinally bisected by median carina (fig. 1); female clypeus with U-shaped median notch (fig. 4); width of median lobe of clypeus in male less than distance between its margin and antennal socket (fig. 5) *laetus* (Smith)

Carinae of propodeal dorsum regularly spaced (fig. 2); female clypeus without median notch (fig. 6); width to median lobe of clypeus in male greater than distance between its margin and antennal socket (fig. 7) *flavopictus* (Smith)

REFERENCES

- Bohart, R. M. & A. S. Menke, 1976. Sphecoid Wasps of the World. Univ. of California Press, Berkeley. x + 695 p.
- Brèthes, J., 1913. Himenopteros de la America Meridional. Anal. Mus. Nac. Hist. Nat. Buenos Aires 24:35-166.
- Dalla Torre, C. G. de, 1897. Catalogus Hymenopterorum, vol. 8. Fossores. G. Engelmann, Lipsiae. viii + 749 p.
- Fox, W. J., 1897. Contributions to a knowledge of the Hymenoptera of Brazil, no. 3. Sphegidae (sens. lat.). Proc. Acad. nat. Sci. Philadelphia 1897:373-388.
- Handlirsch, A., 1887-1888. Monographie der mit *Nysson* und *Bembex* verwandten Grabwespen. Sitz. kais. Akad. Wiss. Wien 95:246-421 (part I, 1887); 96:219-311 (part II, 1888).
- Handlirsch, A., 1895. Nachträge und Schlusswort zur Monographie der mit *Nysson* und *Bembex* verwandten Grabwespen. Ibidem 104:801-1079.
- Kohl, F. F., 1885. Die Gattungen und Arten der Larriden Auctorum. Verhandl. zool.-bot. Ges. Wien 34:171-268.
- Kohl, F. F., 1897. Die Gattungen der Sphegiden. Ann. naturhist. Hofmus. Wien 11:233-516.
- Menke, A. S., 1968. New South American genera and species of the tribe Bothynostethini. Acta Zool. Lilloana 22:89-99.
- Schulz, W. A., 1904. Hymenopteren Amazoniens. Sitzb. math.-phys. Klasse Bayer. Akad. Wiss. 33:757-832.
- Smith, F., 1860. Descriptions of new genera and species of exotic Hymenoptera. J. Ent. 1:65-84.
- Turner, R. E., 1916. Notes on the wasps of the genus *Pison* and some allied genera. Proc. Zool. Soc. London 1916: 591-629.

