

# THE SUBFAMILIES OF EURYTOMIDAE AND SYSTEMATICS OF THE SUBFAMILY HEIMBRINAE (HYMENOPTERA: CHALCIDOIDEA)<sup>1</sup>

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**ABSTRACT.** The family Eurytomidae consists of three subfamilies: Rileyinae, Eurytominae (=Harmolitinae = Aximinae = Eudecatominae = Isosominae = Decatominae, all NEW SYNONYMY), and Heimbrinae. The subfamily Heimbrinae is compared with the other two and is described in detail for the first time. There are two genera of Heimbrinae, both limited to the Western Hemisphere: *Heimbra* in both North and South America and *Symbra* (n. gen., type-species: *S. cordobensis* n. sp.), known only from Argentina; the genus *Heimbrella* is transferred to the subfamily Eurytominae.

The two genera and seven species are separated in a key. *Heimbra* includes six known species: *H. acuticollis* Cameron (the type-species), *H. opaca* (Ashmead), *H. bicolor* Subba Rao, *H. nigra* Subba Rao, and two new species, *H. parallela* and *H. pallida*. One species, *H. opaca*, is confined to western North America, *H. bicolor* is known from Mexico and Brazil; the remaining species are known from semiarid regions of southern South America.

Pertinent illustrations of morphological features supplement the key and descriptions.

Known distribution data are cited and shown on maps.

## INTRODUCTION

The present paper was begun many years ago by the senior author, while still at the Division of Biological Control, University of California, Berkeley, California. The essentially finished manuscript languished for some years. The junior author assumed the responsibility for updating the manuscript and arranging its publication; however, the bulk of the systematics and of taxonomic decisions must mostly be credited to the senior author.

## SPECIMENS EXAMINED

During the course of this study we have been able to study material from the following collections: American Museum of Natural History (AMNH), British Museum (Natural History) (BMNH), California Academy of Sciences (CAS), Canadian National Collections (CNC), Natural History Museum of Los Angeles County (LACM), United States National Museum of Natural History (USNM), University of Arizona (UNAR), University of California at Berkeley (UCB), Davis

(UCD), and Riverside (UCR), University of Kansas (UKAN), and the personal collection of J.A. Halstead (HALS).

## HISTORICAL RESUME

The genus *Heimbra* was originally described by Cameron (1909) for a single species, *H. acuticollis*, from Mendoza, Argentina. He placed the new genus among the typical eurytomids in the tribe Eurytomini. Another species, *H. opaca* (Ashmead, 1894) originally described in *Euperilampus*, was transferred to *Heimbra* by Burks (1958). At that time Burks assigned the genus to a position between *Eurytoma* Illiger and *Eudecatoma* Ashmead. Peck (1963) placed *Heimbra* near *Ipideurytoma* Bouček and Novicky in the Eurytominae.

The groupings of the genera within the family Eurytomidae have been more or less stable since Ashmead treated them in his 1904 revision of the Chalcidoidea. At that time he recognized five major eurytomid groups to which he accorded tribal rank: Aximini, Isosomini, Eurytomini, Rileyini, and Decatomini. These tribes have all been raised to subfamily rank by various more recent authors (e.g., Burks, 1971) and it has been necessary to change some of the names for nomenclatorial reasons. Nevertheless the group concepts have remained essentially the same through the years. Thus in Peck's catalog of the Nearctic Chalcidoidea (1963), five eurytomid subfamilies were recognized: Harmolitinae (=Isosomini), Aximinae, Rileyinae, Eurytominae, and Eudecatominae (=Decatomini). Unfortunately no authors have been able to offer clear characters to distinguish these groups as a whole, except in the case of the Rileyinae. In Ashmead's key the rileyines are distinguished primarily by their thirteen-

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segmented antenna with two or three ring segments. In the same key the other groups are distinguished by characters far more subtle and variable, such as the shape of the thorax, whether or not the head is cornute, and the nature of the wing venation. Ferrière (1950) in his key to the subfamilies occurring in Europe used essentially the same characters as did Ashmead although his wording in the couplets was more explicit. Nevertheless, from his key it was still apparent that Rileyinae was the only group truly distinct from the remaining groups within the Eurytomidae. Claridge (1961) added his endorsement to Ferrière's groupings but was similarly unable to clearly characterize any of the groups except the Rileyinae. The obvious solution to these problems was supplied by Peck, Bouček, and Hoffer (1964) in their work on the Chalcidoidea of Czechoslovakia. To them the only group sufficiently distinct from the rest of the eurytomids to warrant subfamily rank was the Rileyinae while the other three groups treated by them, Harmolitinae, Eudecatominae, and Eurytominae, were all placed together under the latter name.

Burks (1971) reviewed the higher classification of the Eurytomidae within which he proposed to recognize eight subfamilies; *Heimbra* was assigned to the new subfamily Heimbrinae as its sole genus. One new genus, *Heimbrella*, was added to the Heimbrinae by Subba Rao (1980), as well as two new species of *Heimbra* from Argentina and Brazil. Burks, in Krombein et al. (1979), in the most recent catalog of Nearctic Hymenoptera adhered to his 1971 arrangement.

As Burks (1971) had already noted, it was impossible to characterize the eight subfamilies that he recognized since none possessed unique sets of features. "It is an unfortunate fact that every character I have used here for separating genera will intergrade somewhere in the family. There seem to be no absolute characters in the Eurytomidae . . . The world genera . . . fall into apparently natural groups . . . [that] . . . cannot always be segregated by non-integrating key characters. It has not been possible to take out all the genera of a group at one place in a key." Why it should have seemed necessary to establish or continue the use of these undefined groups was neither explained nor justified and is, we believe, unsupportable.

Subba Rao (1980) expressed doubt that a family with about 55 genera worldwide should be divided into eight subfamilies. Similarly, Bouček, in Bouček, Watsham, and Wiebes (1981) noted that such subfamilies as ". . . Eurytominae, Eudecatominae and Harmolitinae . . . are still maintained by some authors . . . without good reason." In spite of those sentiments, no formal steps have been taken to rectify this situation. We, therefore, propose to formally place the subfamilies Aximinae, Decatominae, Philoleminae, Harmolitinae, Prodecatominae, and Eudecatominae in synonymy with the subfamily Eurytominae (NEW SYNONYMIES), since none can be differentially defined from that subfamily.

The synonymy of the above six subfamilies within the Eurytominae includes, of course, the transfer of all their component tribes and genera to the Eurytominae. Whether the Eurytominae, as here recognized, is monophyletic remains to be determined. We suspect that it is not and that one or

more of the old subfamilies may have to be resurrected, though differently defined. This problem is beyond the scope of the present paper.

It is clear that the old subfamilies, as they have been heretofore characterized, are not separable. For this reason, we chose to synonymize them. Future systematists who wish to revive these subfamilies will be forced to advance ample justification for doing so.

If we recognize three subfamilies in the Eurytomidae, i.e., Eurytominae (*s. lat.*), Rileyinae, and Heimbrinae, it becomes relatively easy to characterize and separate them. Table 1 shows the distribution among the three subfamilies of what we consider to be the more important group characters in the family. It can be seen that the Heimbrinae possess a combination of characters as distinctive as do the other two subfamilies and are perhaps even less similar to the Eurytominae than are the Rileyinae.

## Subfamily Heimbrinae

### DIAGNOSIS

Members of this subfamily may be readily distinguished from all other eurytomids by the following two features in combination: the peculiarly produced scutellum (Figs. 11–14) and the dorsally flattened, heavily sclerotized, partially fused gaster (Figs. 1, 2, 12, 14).

### DESCRIPTION

**FEMALE.** Form robust with heavy sclerotization and large umbilicate punctation on all body sections. Head tightly adpressed to thorax with width subequal to or greater than pronotal collar; occiput roundly, deeply incised in middle; compound eyes large, parocular area elevated above inner eye margin; antennal scrobes laterally and ventrally carinate, deeply incised, capable of hiding scapes; well-developed vertical lamella present between antennal sockets; malar area large, convex; malar groove absent; genal carina well developed laterally, becoming weakly lamellate near mandibles. Antenna with 11 to 13 segments; first flagellar segment often shorter than others but not forming a ring segment; flagellar segments and club more or less uniformly subcylindrical. Mandible resting against shield on procoxa. Pronotal collar with anterior lateral margin produced forward and carinate, forming socket to receive head; prepectus subcircular and very small, diameter less than one-half width of tegula; tegula large, opaque, heavily sclerotized, and heavily punctured; mesepisternum anteriorly and ventrally carinate and ventrally produced forward along middle and forming flat plate under procoxa; scutellum strongly, acutely produced posteriorly at least to base of gaster; metanotum inverted medially with anterior margin above and behind corresponding part of posterior margin. Procoxa strongly carinate and with anterior and lateral surfaces concave.

Forewing with costal cell broad; prestigma wider than submarginal vein; marginal vein short, scarcely one-half length of submarginal; stigmal vein not conspicuously enlarged api-

**Table 1. Distribution of characters in Eurytomidae.**

Character	Rileyinae <sup>1</sup>	Eurytominae <sup>2</sup>	Heimbrinae
Antennal segmen- tation	13	9–11	11 with undivided club or 13 with tripartite club
Ring segments	2 or 3	1	0
Antennal sexual di- morphism	Absent	Present (except Eudecatomini)	Absent
Malar groove	Present	Present (except Aximini)	Absent
Prepectus	Small, subcircular to subtriangular	Large, subtriangular	Small, subcircular
Tegula	Weakly sclerotized, smooth or hyaline	Weakly sclerotized, smooth or hyaline	Heavily sclerotized, punctured and opaque
Shape of scutellum	Not produced	Not produced (except <i>Acantheuryto- ma</i> )	Greatly produced posteriorly
Shape of gaster	Subcylindrical	Laterally compressed or subcylindri- cal	Dorsally flattened
Modifications of gaster	T 2–4 (♀) and T 2 and 3 (♂) reduced laterally with T 5 covering most of gaster	Petiole often very long and occasion- al minor fusion of terga along me- son	T 2+3 fused and large, cover- ing most of gaster

<sup>1</sup> Genera examined: *Riley*, *Neorileya*, *Calorileya*, *Archirileya*.

<sup>2</sup> Genera examined: *Eurytoma*, *Systole*, *Chryseida*, *Tenuipetiolatus*, *Bruchophagus*, *Prodecatoma*, *Tetramesa*, *Phylloxeroxenus*, *Eudecatoma*, *Axima*, *Aximogastra*, *Bephrata*, *Bephratoides*, *Sycophila*, *Eurytomocharis*, *Ipideurytoma*, *Isosomorpha*, *Isosomodes*, *Harmolita*, *Ailomorpha*, *Gahaniola*, *Aximopsis*, *Euroxysoma*, *Conoaxima*, *Phylloxeroxenoides*, *Eudoxinna*.

cally and without spur; postmarginal vein at least one-half length of marginal.

Gaster dorsally flattened or weakly concave and heavily sclerotized; petiole small, rectangular in lateral view, with large pit near upper edge; terga 2+3 indistinguishably fused, covering most of gaster; terga 4 and 5 short; tergum 6 short and fused to base of tergum 7 which is large, strongly convex so that posterior margin lies under anterior margin; tergum 8 primarily ventrally situated and often entirely anterior to most caudad part of tergum 6+7; sterna 3 and 4 fused; sterna 5, 6, and 7 greatly reduced with at most only part of sternum 7 visible externally.

**MALE.** Head, thorax, wings, and legs identical to those of female. Gaster with same general aspect as that of female but differing as follows: terga 2 and 3 fused and large, terga 4, 5, and 6 separate and short; sterna 2 through 8 all distinct, not fused; sternum 2 much longer than other sterna.

## DISCUSSION

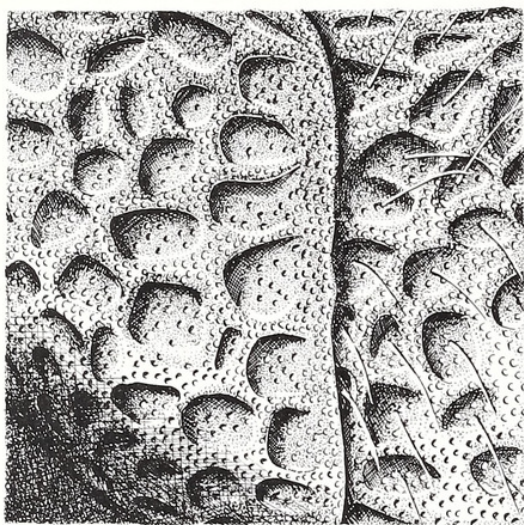
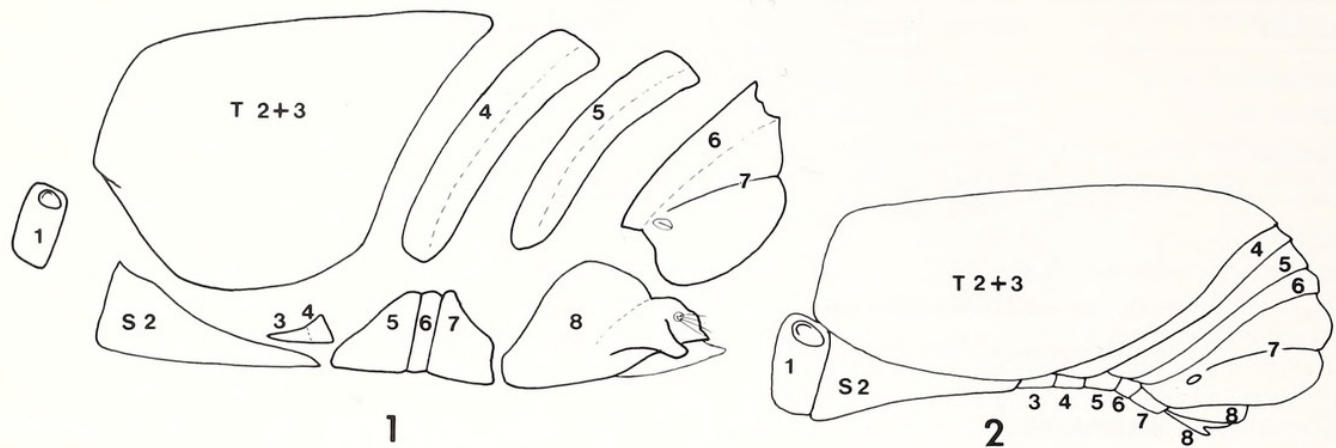
It is conceivable that new material referable to this subfamily will necessitate a broader description of Heimbrinae with many of the currently included characters perhaps being relegated to generic or specific rank. The unique character combination listed in the diagnosis, however, may be considered basic in that these features are usually conservative, varying little within other equivalent groups of eurytomids or other chalcidoids.

The unique feature of the Heimbrinae is the peculiar fusion of the gastral segments in both sexes. Specimens of *H. opaca* have been dissected and the fused segments identified. In *H. opaca* the male (Fig. 2) is least complex. All the sterna are distinct and visible in an undissected specimen. The terga are more complex since the second and third segments are indistinguishably fused. Terga 4–8 are all distinct and easily identified; laterally they approximate the corresponding sterna. The spiracle and cercus are easy means for identifying terga 7 and 8. Note that tergum 2+3 is laterally approximate to both sterna 2 and 3.

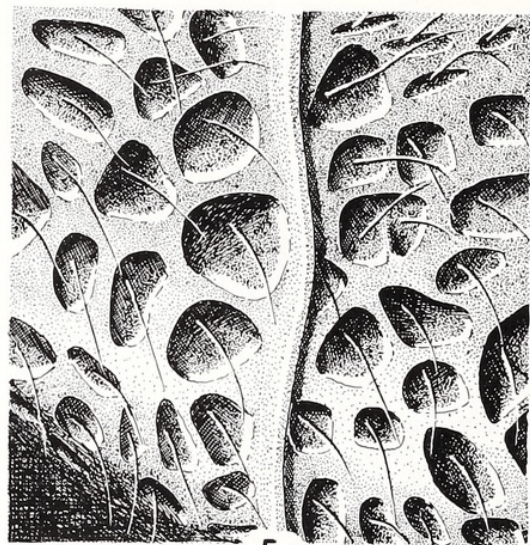
The female of *H. opaca* (Fig. 1) is more complex than the male. As is true of the male, all the sterna are distinguishable, although segments 3–6, and most of 7, are normally hidden in undissected specimens. Again, as in the male, terga 2 and 3 fused. Terga 4 and 5 are narrow but distinct. Tergum 6 is fused to 7 as a narrow basal band. Tergum 8 is large and fully visible.

The only other eurytomid genus in which the scutellum is prolonged into a spine-like process is the Bornean *Acantheurytoma* Cameron, 1911. This genus is presently believed to belong to the Eurytominae in the broad sense of this paper; Burks (1971) placed it in the Prodecatominae. In *Acantheurytoma* there is no fusion of the gastral segments, the antenna is not clavate, and the flagellar segments are elongate.

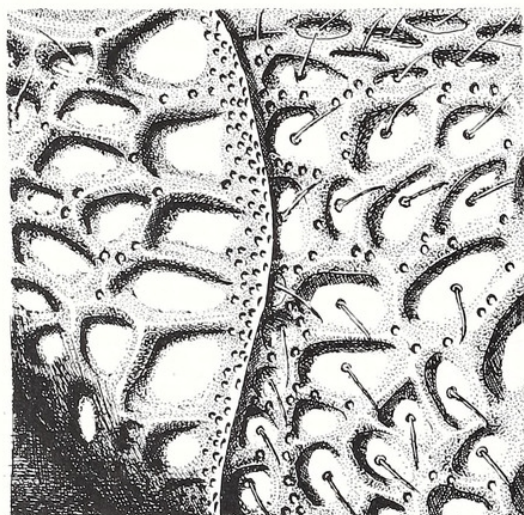
Although Subba Rao (1980) allied his genus *Heimbrella* to *Heimbria*, and thus within the Heimbrinae, we do not agree that this genus belongs here. The placement of the antennal



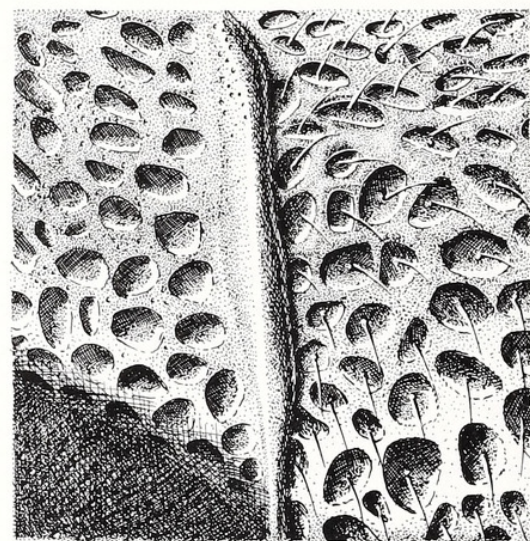
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Figures 1-6. *Heimbra* species. 1, *H. opaca*, "exploded" lateral view of female gaster, segments numbered; 2, *H. opaca*, lateral view of male gaster, segments numbered; 3, portion of posterior margin of mesopleuron, *H. opaca*; 4, same, *H. bicolor*; 5, same *H. parallela*; 6, same, *H. nigra*.

sockets well above the level of the lower eye margin, the barely produced scutellum, and the unmodified gastral structure (tergum 1 large, following segments not fused, and gaster not dorsally flattened) are all at variance with the Heimbrinae and we suggest that *Heimbrella* should be transferred to the subfamily Eurytominae.

The following key has been prepared to facilitate the identification of the genera and species in the subfamily Heimbrinae. Since specimens of both sexes are not available for all species we do not know if the characters utilized will hold for both sexes in all species. However, with the correlated characters between the sexes of *H. opaca* as a guide we have endeavored to select for use in the couplets those features that in our opinion have a high probability of being reliably constant between the sexes in the other species.

#### KEY TO GENERA AND SPECIES OF HEIMBRINAE

- 1a. Antenna 13-segmented with 3-segmented club; flagellar segments broader than long (Fig. 12); scutellum with lateral, subapical margins concave in dorsal view (Fig. 11) (*Heimbria*) ..... 2
- b. Antenna 11-segmented with undivided club; flagellar segments longer than broad (Fig. 14); scutellum with lateral, subapical margins convex in dorsal view (Fig. 13) ..... *Symbra cordobensis*
- 2a. Mesopleuron contiguously punctured, appearing dull along posterior margin (Figs. 3, 4); tergum 6+7 (7,δ) with deep, transverse groove (Figs. 10, 12) ..... 3
- b. Mesopleuron smooth and shiny along posterior margin (Figs. 5, 6); tergum 6+7 (7,δ) without transverse groove (Figs. 7-9) ..... 4
- 3a. Umbilicate punctures on head and thorax with inner surface smooth (Fig. 4); integument generally black, pronotum orange-red ..... *bicolor*
- b. Umbilicate punctures on head and thorax with inner surface appearing finely granulose (Fig. 3); integument unicolorous black or very dark reddish-brown .... *opaca*
- 4a. Marginal vein at least 1.5 times as long as stigmal vein; tergum 6+7 in lateral view, with dorsal anterior margin far behind ventral posterior margin (Figs. 7, 8) .... 5
- b. Marginal vein only slightly longer than stigmal vein; tergum 6+7, in lateral view, with dorsal anterior margin not far behind ventral posterior margin (Fig. 9) .... 6
- 5a. Integument primarily black; scutellum width about 0.65 times length ..... *nigra*
- b. Integument primarily orange-brown; scutellum width slightly greater than 0.7 times length ..... *pallida*
- 6a. Integument largely ferruginous, marked with blackish on face, thoracic dorsum, and side of gastral tergum 2+3, mesepimeron and propodeum largely blackish; scutellar process about 0.7 times longer than wide and moderately to strongly depressed in profile (Fig. 22) .... *acuticollis*
- b. Integument entirely blackish, except dusky ferruginous on some appendages; scutellar process about 0.6 times

longer than wide and not at all depressed in profile (Fig. 25) ..... *parallela*

#### *Heimbria* Cameron

*Heimbria* Cameron, 1909:433-434. Type-species: *Heimbria acuticollis* Cameron, 1909; monobasic.

#### DIAGNOSIS

*Heimbria* can be distinguished from *Symbra*, the only other genus known in the subfamily, by its thick, thirteen-segmented antenna, its peculiar, laterally concave scutellum (Fig. 11) and in the female by its relatively short ovipositor (Fig. 12).

#### DESCRIPTION

**FEMALE.** Head subtriangular in front view, malar area only weakly convex; in side view, round dorsally and acute ventrally with face relatively flat; length of head (measured along middle from apex of clypeus to top of vertex) about 0.70 times width; antennal scrobe short and broad. Antenna short and thick, thirteen-segmented; scape short, not reaching median ocellus; pedicel and all flagellar segments broader than long; first flagellar segment shorter than subsequent segments and asymmetrical, dorsal length greater than ventral length; diameter of second segment slightly less than first and length not more than 1.50 times first; length of subsequent flagellar segments about subequal but diameters gradually increasing; club three-segmented, not enlarged, greatest diameter subequal to preceding segment.

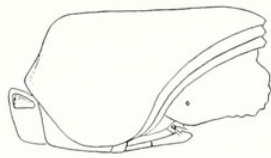
Scutellum width usually much less than 0.80 times length; lateral margin in dorsal view sinuate with basal portion convex and subapical portion concave, sides nearly parallel subapically.

Anterior lateral margin of tergum 2+3 of gaster broadly rounded where it overlaps sternum 2+3; tergum 6+7 broadly convex in lateral profile; visible portion of tergum 8 not more than about one-half length of gaster, usually much less and situated entirely anterior to most caudad portion of tergum 6+7; ovipositor sheaths short.

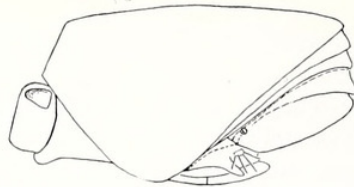
**MALE.** Similar to female in most respects except gaster is modified as indicated in description of subfamily.

#### DISCUSSION

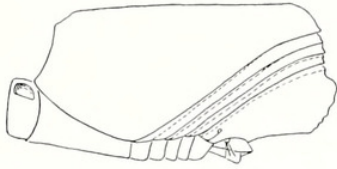
It is evident that *Heimbria* is widely distributed in the Western Hemisphere with specimens having been taken from such widely separated localities as Mendoza, Argentina and Denver, Colorado. The available distribution data suggest *Heimbria* may be more or less restricted to desert and semiarid regions. As can be seen from the maps all the North American records are from or adjacent to the arid parts of the western United States and the arid parts of northern and central Mexico, while nearly all of the South American records are from the arid parts of Argentina and adjacent countries. The



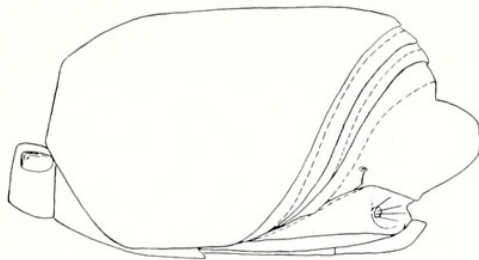
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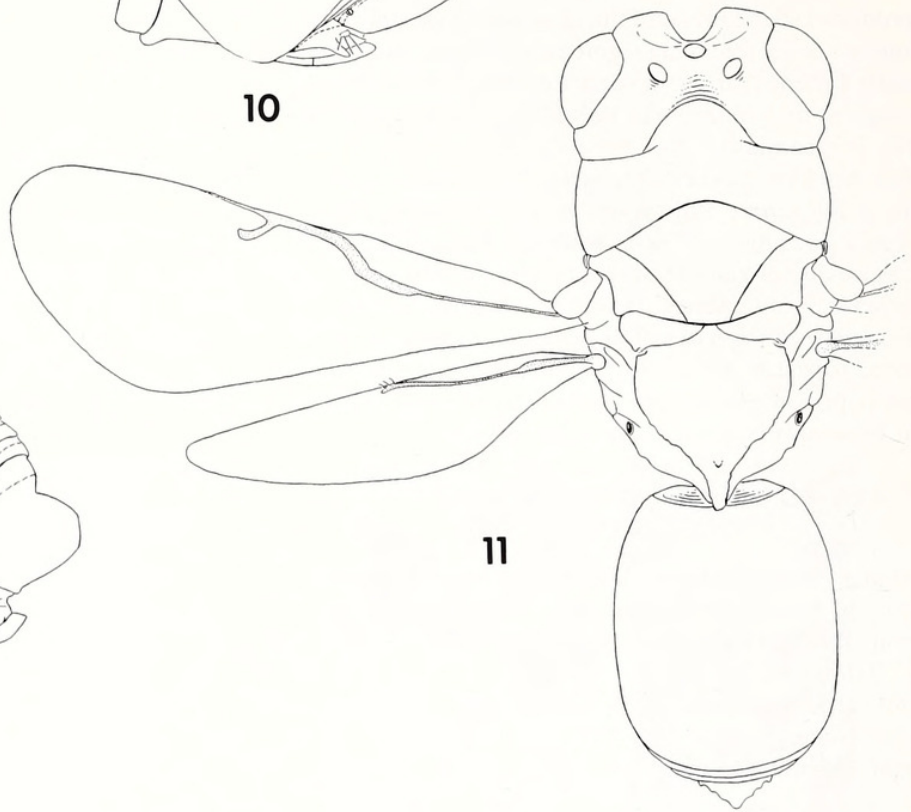
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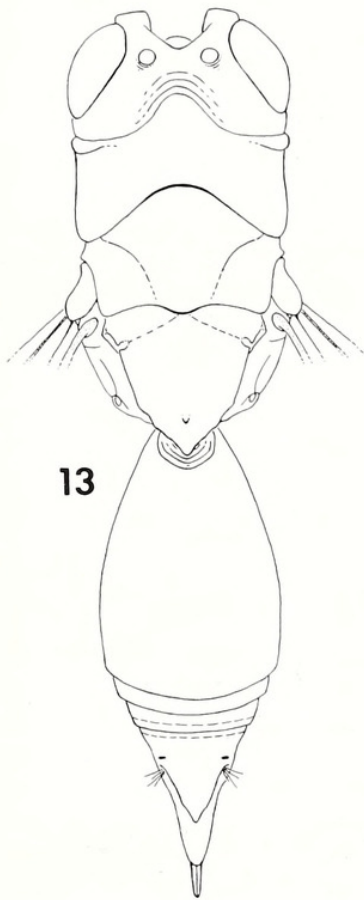
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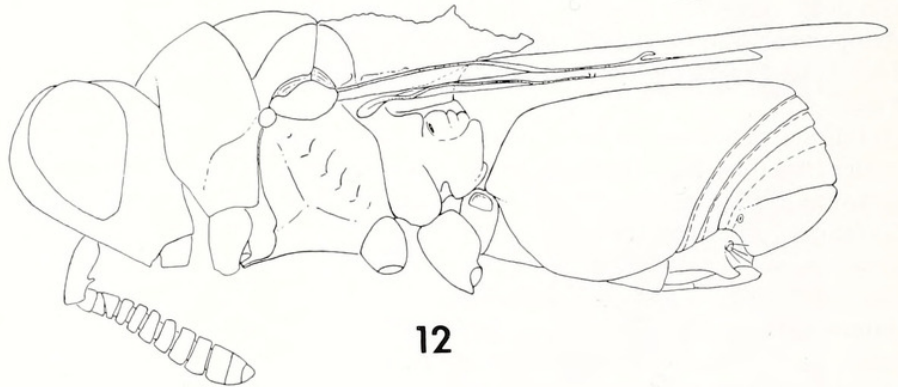
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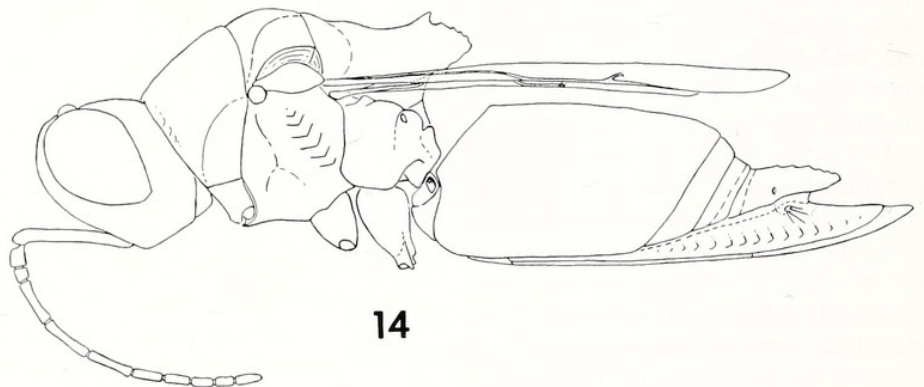
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14

resulting disjunct distribution is of interest since it adds another animal genus to the several botanical genera known to follow the same pattern. Among the latter, *Larrea*, *Atamisquea*, *Cercidium*, *Koeberlina*, *Ephedra*, *Acacia*, *Caesalpinia*, *Condalia*, *Baccharis*, *Lycium*, *Prosopis*, *Mendora*, and *Hoffmanseggia* all occur on both continents while being more or less limited to xeric regions (Johnston, 1940). Unfortunately, nothing is known of the biology or hosts of the species of *Heimbra* but it would be most interesting if this genus were associated with any of these plants.

The genus *Heimbra* as presently understood contains six species, two from North America and four from South America. These six species fall into two distinct groups. The exclusively South American group includes those species in which the mesopleuron, along its posterior margin is smooth and shiny (Figs. 5 and 6), the propodeum is divided into large areolae, with smooth or weakly sculptured inner surfaces, and tergum 6+7 (♀) or 7 (♂) lacks a distinct transverse groove (Figs. 7–9). Included in this group are *H. acuticollis*, *H. nigra*, *H. pallida*, and *H. parallela*.

The second group, consisting of two species, *H. bicolor* and *H. opaca*, ranges from the United States to Brazil. In these species, the mesopleuron is punctate to the posterior margin (Figs. 3 and 4), the propodeum is dull and coarsely and irregularly sculptured and densely punctate, and tergum 6+7 (♀) or 7 (♂) has a distinct transverse groove (Figs. 10 and 12).

Those features which characterize the first, or acuticollis group, are shared with the one species of *Symbra*. *Symbra* is, however, readily distinguished from all species of *Heimbra* by the very long antennal scape that extends above the level of the anterior ocellus and the long, slender, nine-segmented flagellum with segments 2–9 longer than broad and segments 7–9 not forming an apical club. Females of *Symbra* possess a long ovipositor that extends beyond gastral tergum 6+7 when viewed in profile (Fig. 14). Although males of *Symbra* are unknown, they presumably will be similar to the females in antennal structure and in having the scutellar process short and, in dorsal view, with the lateral, subapical margins convex, rather than concave as in *Heimbra*.

### *Heimbra opaca* (Ashmead)

Figures 1, 2, 3, 11, 12, 19

*Euperilampus opacus* Ashmead, 1894:318; ♀. Dalla Torre, 1898:358; Viereck, 1906:227; Snow, 1907:129; Schmiedeknecht, 1909:82; Essig, 1929:849; Cresson, 1928:28; Peck, in Muesebeck et al., 1951:516.

*Eurytoma opaca*: Crawford, 1914:69.

*Heimbra opacus*: Burks, in Krombein, 1958:72, 82.

*Heimbra opaca*: Peck, 1963:832–833. Burks, in Krombein et al., 1979:846.

### DIAGNOSIS

This species may be readily distinguished from all other known species of *Heimbra* by its unique, dull punctation.

### DESCRIPTION

**FEMALE.** Length 4.4 to 4.6 mm. Primarily black although ventral portions and legs may become dark reddish-brown. Tarsi orange-brown.

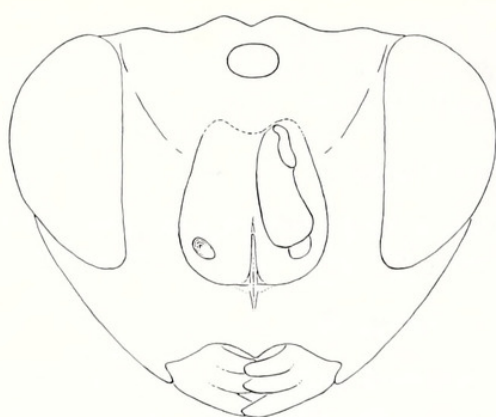
Head with large, shallow, closely spaced, umbilicate punctures over entire surface except on clypeus and in antennal scrobes; umbilicate punctures appearing weakly and finely granulose within, each bearing a short silvery-white hair whose length is generally subequal to diameter of puncture; antennal scrobes and interspaces between punctures similarly granulose but shiny; clypeus glabrous; antennal scrobes short, length about 1.25 times greater than maximum distance between lateral carinae near antennal sockets and about two-thirds length of eyes; scrobes with lateral carinae curved along lower half; interantennal lamella small; inner eye margins nearly parallel. Antennal scape length about three times maximum width near base; relative dorsal lengths of pedicel and first three flagellar segments: 6:5:4:4. Mandible black apically, reddish-brown basally.

Thoracic integument dorsally with punctation and vestiture like that on head except punctures on scutellum somewhat larger; pronotum in side view with dorsal outline convex anteriorly, somewhat flat posteriorly; lateral carina of pronotal collar very weakly oblique, nearly parallel to posterior margin; scutellum broad, width about 0.75 times length; scutellum with dorsal prominence conspicuous and acute in lateral view; mesopleuron finely, contiguously punctured along posterior margin (Fig. 3); propodeum coarsely sculptured, with large irregular ridges and finely, contiguously punctured interspaces.

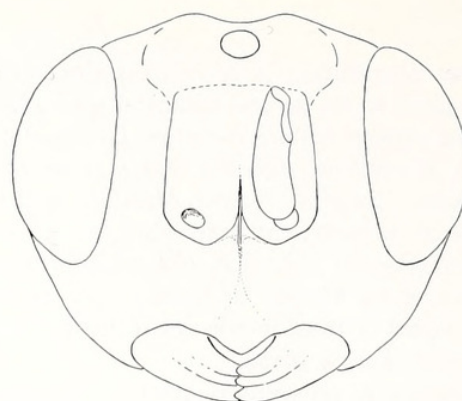
Wing veins dark brown; marginal vein long (measured from angle on wing margin to base of stigmal vein), slightly over 1.5 times length of stigmal vein; postmarginal vein indistinct apically but clearly short, not more than 0.90 times length of marginal vein.

Visible parts of all gastral terga weakly, umbilicately punctate, those on dorsum of tergum 2+3 merging into large reticulations; umbilicate punctures appearing finely, weakly granulose within; dorsum of tergum 2+3 medially flat; posterior lateral margin of tergum 2+3 weakly concave in lateral view; tergum 6+7 with convexity asymmetrical in lateral view, posterior margin at meson far in front of corresponding

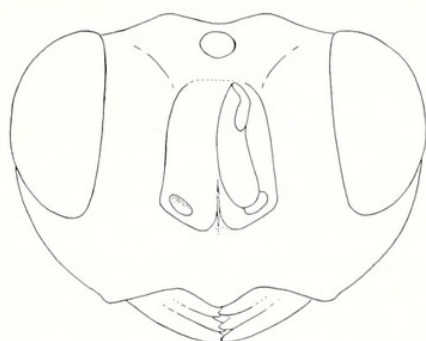
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**Figures 7–14.** Heimbrinae. 7, lateral view of female gaster, *H. pallida*; 8, same, *H. nigra* male; 9, same, *H. parallela* female; 10, same, *H. bicolor* female; 11–12 dorsal and lateral views of female, *H. opaca*; 13–14, dorsal and lateral views of female, *Symbra cordobensis*.



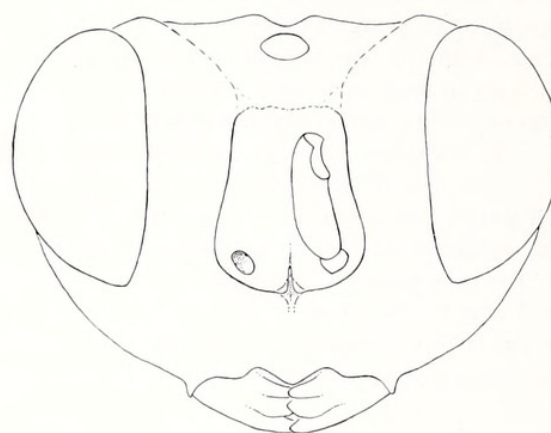
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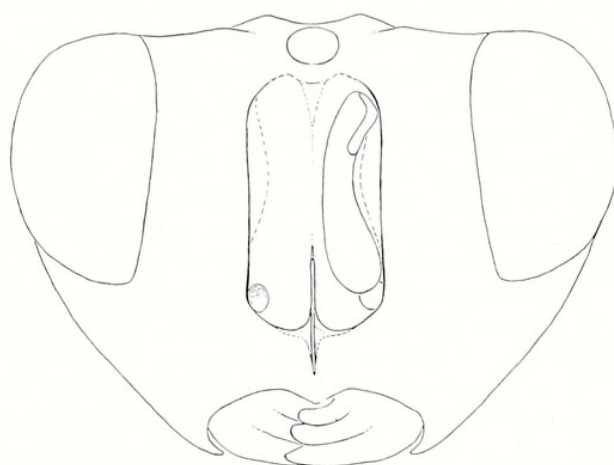
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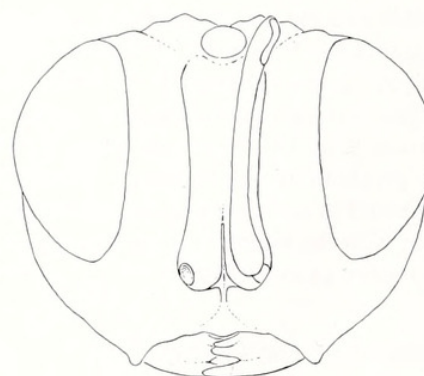
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19



20

**Figures 15-20.** Heimbrinae, front view of head: **15**, *Heimbra bicolor*, female; **16**, *H. nigra*, male; **17**, *H. pallida*, female; **18**, *H. opaca*, female; **19**, *H. parallela*, female; **20**, *Symbra cordobensis*, female.

part of anterior margin and convexity scarcely projecting caudad of posterior margin of tergum 2+3, with deep transverse groove and lacking conspicuous keel along meson dorsally and posteriorly; exposed portion of tergum 8 short, slightly over one-half length of hind femur, lateral ridge produced posteriorly into ventrally projecting broad spine.

**MALE.** Length 4.0 to 4.5 mm. Similar to female in all pertinent characters described above except as follows: antennal scape bears one subapical, ocelloid spot on lower surface; scutellum narrower, width about 0.65 times length; tergum 8 without lateral ridges; punctuation of visible parts of sterna 2-8 similar to that on exposed parts of terga 5 and 6;

sternum 8 with lateral, posteriorly directed, blunt spines similar to, but smaller than, those on tergum 8 in female.

#### TYPE DATA

*Heimbra opaca* was described from a unique female collected in June at Denver, Colorado and subsequently deposited in the collection of the American Entomological Society and now in the USNM.

The only additional published distribution record (Viereck, 1906; Snow, 1907) is based on a single specimen collected in July at Oak Creek Canyon (6,000 ft. alt.), twenty miles southwest of Flagstaff, Coconino County, Arizona.

#### SPECIMENS EXAMINED (Map 1)

**UNITED STATES. ARIZONA**, *Cochise Co.*: 1♂, Texas Canyon, 5,000–6,000 ft. elev., Sept. 8, 1927 (J.A. Kutsche; CAS). *Coconino Co.*: 1♀, Ashfork, June 17 (Barber and Schwarz; USNM). *Gila Co.*: 1♀, Cedar Creek, 15 mi. W Fort Apache, June 21, 1957 (G. Butler and F. Werner; UNAR). *Maricopa Co.*: 1♀, 5 mi. SE Wickenburg, Sept. 2, 1961 (P.D. Hurd; UCB), on *Euphorbia pediculifera*. *Pima Co.*: 1♂, Pipersauce Canyon, Santa Catalina Mts., Aug. 18, 1940 (J.J. duBois; LACM); 1♀, Mt. Lemmon, 9,000 ft. elev., Santa Catalina Mts., Sept. 5, 1939 (R.H. Crandall; UNAR); 1♀, 1♂, Box Canyon, Santa Rita Mts., Sept. 14, 1964 (L. and C.W. O'Brien; LACM); 1♂, Santa Rita Mts., 5,000–8,000 ft. elev., July (F.H. Snow; UKAN); 1♂, 10 mi. E Continental, July 18, 1961 (F. Werner and W. Nutting; UNAR). *Pinal Co.*: 1♂, Oracle, Aug. 25, 1934 (I. Moore; USNM). *Santa Cruz Co.*: 1♂, Canelo, July 19, 1958 (M.S. Adachi; UNAR); 1♀, same locality, Aug. 3, 1956 (G.D. Butler; UNAR); 1♀, Nogales, Aug. 24, 1939 (R.H. Crandall; UNAR); 1♂, 8 mi. NW Nogales, Sept. 8, 1957 (T.R. Haig; UCD); 1♂, 13 mi. NNW Nogales, same date and collector (USNM); 3♂♂, Patagonia, Aug. 10, 1958 (F.G. Werner, M. Adachi; UNAR); 1♂, W side, Patagonia Mts., Aug. 9, 1956 (F.G. Werner and G.D. Butler; UNAR). **CALIFORNIA**, *Inyo Co.*: 1♂, Antelope Springs, 8 mi. SW Deep Springs, June 15, 1961 (C.A. Toschi; UCB), on *Chrysothamnus*; 1♀, 1♂, same locality, July 1, 1961 (J.A. Powell; UCB), ♀ on *Eriogonum heermannii*. *Riverside Co.*: 1♀, Palm Desert, June 5, 1960 (R.L. Westcott; LACM); 1♂, Deep Canyon, July 1, 1964 (E.I. Schlinger; UCR). *San Diego Co.*: 1♀, 10 mi. NE Ramona, July 21, 1981 (J.A. Halstead; HALS); 2♂♂, 0.9 mi. W Oak Grove, July 25, 1979 (J. LaSalle; UCR). *Santa Barbara Co.*: 1♂, Santa Ynez Mts., June 24, 1959 (F.D. Parker; UCD). *Santa Clara Co.*: 1♀, no further data (Harkins Collection; LACM). *Tulare Co.*: 1♀, Kaweah Powerhouse Station 3, Ash Mountain, July 3, 1983 (J.A. Halstead; HALS). **COLORADO**, *Rio Blanco Co.*: 1♀, Meeker, ca. 6,200 ft. elev., July 20–21, 1919 (AMNH). **KANSAS**, *Baldwin Co.*: 1♀, Baldwin, July (J.C. Bridwell; USNM). *Scott Co.*: 1♂, no further locality, June 20, 1925 (H.O. Deny; UKAN). **MONTANA**, *Petroleum Co.*: 1♀, 1.5 mi W Winnett, July 28, 1970 (N.E. Rees; USNM). **NEVADA**, *Humboldt Co.*: 1♀, Orovada, July 14, 1962 (M.E. Irwin; UCD). **NEW MEXICO**, *McKinley Co.*: 1♀, Pinedale, Navajo Reservation, July 22, 1948 (L.C. Wymann; USNM). *Otero Co.*: 1♂, Moun-



Map. 1. Distribution of *Heimbra opaca* (●) and *H. bicolor* (○) in North America.

tain Park, June 27, 1940 (D.E. Hardy; UKAN). *Valencia Co.*: 1♂, Sandia Mts., July 17, 1952 (R.H. and L.D. Beamer, W.E. LaBerge, C. Liang; UKAN), on *Croton*; 1♂, 2♀♀, Carrizo Arroyo, 20 mi. W Los Lunas, Aug. 1–23, 1977 (S. and J. Peck; CNC). **UTAH**, *Uintah Co.*: 1♂, no further locality, July 13, 1911 (USNM).

**MEXICO. HIDALGO**: 1♂, 18 mi. NW Pachuca, 6,400 ft. elev., June 25, 1971 (Ward and Brothers; USNM), on *Prosopis laevigata*. **MEXICO**: 1♂, Ixtapan la Sol, 5,500 ft. elev., Aug. 9, 1954 (J.G. Chilcott; CNC). **MORELOS**: 1♂, Cuernavaca, Aug. 1959 (N.L.H. Krauss; USNM); 1♂, same locality, Aug. 1, 1938 (L.J. Lipovsky; UKAN). **NUEVO LEON**: 1♀, Chipinque Mesa, 5,400 ft. elev., near Monterrey, July 8, 1963 (H. and A. Howden; CNC). **OAXACA**: 2♂♂, 7 mi. E Oaxaca, road to Guelatao, 5,400 ft. elev., July 14, 1963 (L.E. Caltagirone; LACM). **SONORA**: 1♂, Alamos, Aug. 12, 1960 (P.H. Arnaud, E.S. Ross, and D.C. Rentz; CAS). **ZACATECAS**: 1♀, 10 mi. N Fresnillo, May 10, 1962 (F.D. Parker and L.A. Stange; UCD); 2♀♀, 15 km E Zacatecas, July 30, 1951 (P.D. Hurd; UCB).

#### DISCUSSION

The available records indicate that *H. opaca* is widely distributed through the arid and semiarid regions of western North America. The few associated plant records may be a clue to the actual host or hosts of this species, but in all probability they merely represent adult feeding behavior since

such records by these collectors only pertain to flower visits by the insect.

### *Heimbra bicolor* Subba Rao

Figures 4, 10, 15

*Heimbra bicolor* Subba Rao, 1980:308; ♀ ♂.

#### DIAGNOSIS

This species can be distinguished from all others known in the genus by the combined characters of the smooth, shiny umbilicate punctures, the presence of a transverse groove on tergum 6+7 (7, ♂) and the conspicuous coloring.

**FEMALE.** Length 4.0 mm. Primarily black except for bright orange-red dorsal portion of pronotum and some minor exceptions as noted below.

Head integument with large, deep, closely spaced umbilicate punctures over entire surface except clypeus and in antennal scrobes; umbilicate punctures smooth and shiny within, each bearing a short, silvery-white hair whose length is subequal to diameter of puncture; interspaces between punctures and surface of antennal scrobes appearing weakly, finely granulose but shiny; clypeus glabrous; antennal scrobe short, length only slightly longer than maximum distance between lateral carinae near antennal sockets and less than 0.75 times length of eye; scrobe with lateral carina curved along lower half; interantennal lamella large; inner eye margins weakly converging below, nearly subparallel. Antennal scape length less than three times maximum width near base; relative dorsal lengths of pedicel and first three flagellar segments: 6:4:4.5:5. Mandible nearly black apically, dark reddish-brown basally.

Punctuation and vestiture of thoracic dorsum similar to that of head except punctures slightly larger; punctures on pronotal collar as large as those on mesonotum or scutellum; pronotum in side view with dorsal outline flat anteriorly, convex posteriorly; lateral carina of pronotal collar weakly oblique to posterior margin; scutellum narrow, width about 0.65 times length; scutellum with dorsal prominence conspicuous and acute in lateral view; mesopleuron finely, contiguously punctured along posterior margin (Fig. 4); propodeum coarsely sculptured with large irregular ridges and finely, contiguously punctured interspaces.

Wing veins brown; marginal vein long (measured from angle on wing margin to base of stigmal vein), about 1.5 times length of stigmal vein; postmarginal vein indistinct apically but more or less subequal in length to marginal vein. Legs primarily dark reddish-brown, nearly black but tarsi, femora, and tibiae distally light orange-brown.

Gastral tergum 2+3 laterally and ventrally and tergum 6+7 ventrally, umbilicately punctate; punctures on tergum 2+3 largest and deepest on anterior lateral portion, becoming small and indistinct on posterior lateral portion and merging into large reticulations dorsally; umbilicate punctures within and interspaces between dorsal reticulations smooth and shiny; visible portion of terga 4, 5, 6+7 anteriorly, and 8 appearing finely, weakly granulose; dorsum of tergum 2+3 medially flat; posterior lateral margin of tergum 2+3 weakly

concave in lateral view; tergum 6+7 with convexity asymmetrical in lateral view, posterior margin far in front of corresponding part of anterior margin and convexity extending slightly caudad of posterior margin of tergum 2+3; tergum 6+7 with deep transverse groove but lacking conspicuous keel along meson dorsally and posteriorly; exposed portion of tergum 8 short, slightly over one-half length of hind femur; tergum 8 with lateral ridge produced posteriorly into ventrally projecting broad spines.

**MALE.** Length 3.5 mm. Similar to female in all pertinent characters described above except as follows: antennal scape with one subapical ocelloid spot on lower surface; scutellum width about 0.7 times length; tergum 8 without lateral ridges; visible parts of sterna 2-8 with punctuation similar to that of exposed parts of terga 5-6; spines of sternum 8 smaller than those of female.

#### TYPE DATA

The type series is from Nova Teutonia, Brazil, and is deposited in BMNH; the holotype has been examined.

#### DISTRIBUTION

In addition to the type we have seen material of this species from Brazil, Paraguay, and Mexico (Maps 1 and 2).

#### SPECIMENS EXAMINED

**BRAZIL.** MINAS GERAIS: 3♀♀, Pedra Azul, Nov. 1972 (Seabra and Oliveira; CNC).

**PARAGUAY.** 1♂, San Bernardino (K. Fiebrig; BMNH).

**MEXICO.** DURANGO: 1♀, El Palmito, 6,500 ft. elev., July 17, 1964 (J.F. McAlpine; CNC). NAYARIT: 1♀, Ahuacatlan, July 18-22, 1951 (P.D. Hurd; UCB), on *Donnell-smithia hintonii*. VERA CRUZ: 1♀, 2 mi. N Cerro Azul on road to Naranjo, 1,500 ft. elev., June 9, 1963 (L.E. Caltagirone; LACM).

### *Heimbra parallela*, new species

Figures 5, 9, 19, 25, 26

#### DIAGNOSIS

*Heimbra parallela* may be separated from all the other known species of *Heimbra* by the evenly convex seventh tergum, the short marginal vein, and the parallel carinae on the margins of the antennal scrobes.

#### DESCRIPTION

**FEMALE.** Length 5.5 mm. Primarily black but with some minor exceptions as noted below.

Head with large, deep, closely spaced, umbilicate punctures over entire surface except clypeus and in antennal scrobes; punctures smooth and shiny within, each bearing a silvery-white hair that is more than 1.5 times diameter of puncture; interspaces between punctures appearing weakly, finely, granulose but still relatively shiny; antennal scrobes with surface distinctly transversely striate and shiny; clypeus glabrous; antennal scrobe about twice as long as maximum

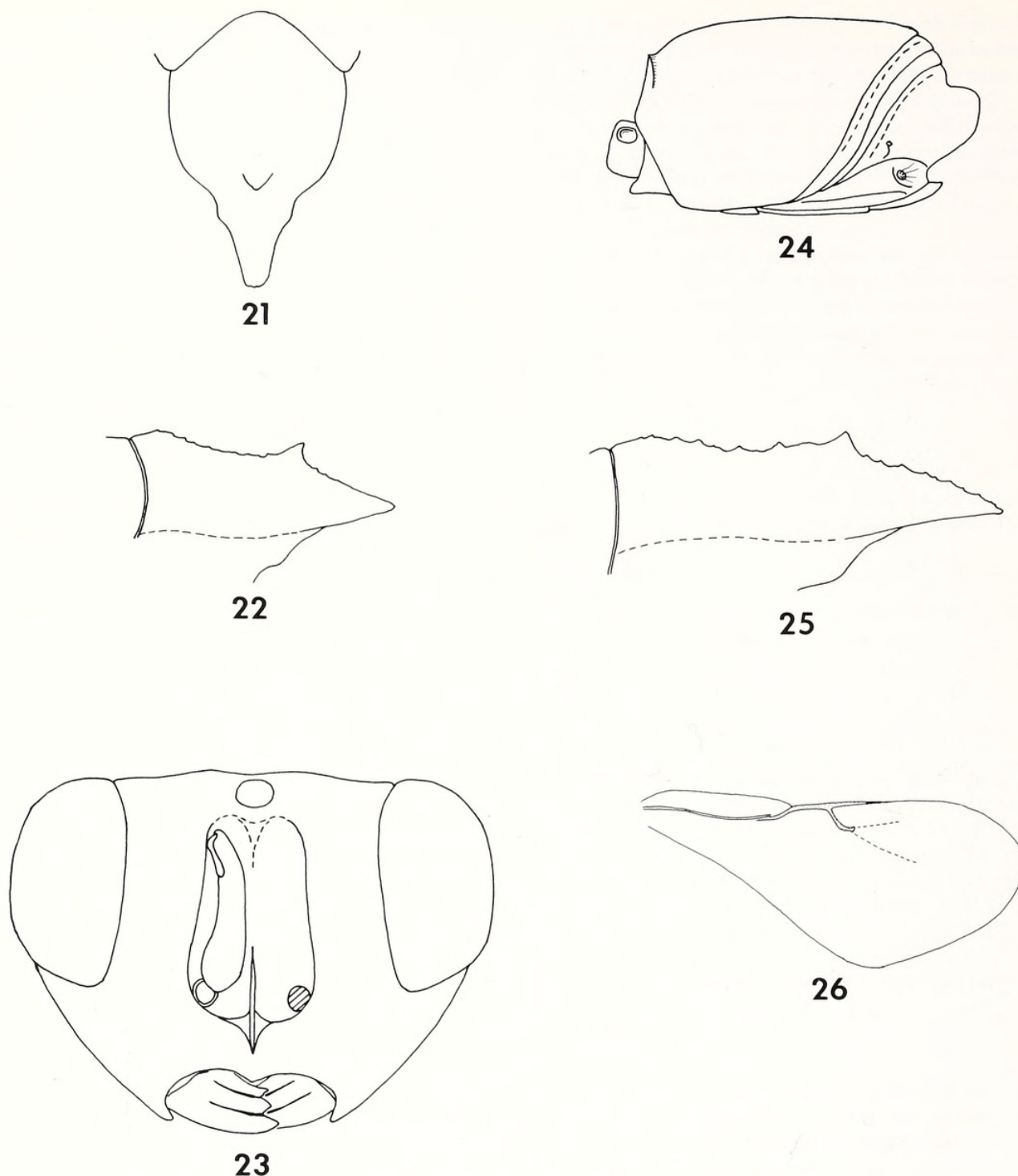


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**Map 2.** Distribution of Heimbrinae in South America: *Heimbra acuticollis* (◆); *H. bicolor* (●); *H. nigra* (●); *H. pallida* (□); *H. parallela* (○); *Symbra cordobensis* (▲). Inset shows coverage of larger map.

distance between lateral carinae near antennal sockets and nearly equal to eye length; marginal carinae of scrobes nearly straight and parallel along lower half; interantennal lamella large; inner eye margins weakly diverging below. Antennal

scape length nearly 3.5 times maximum width at base; relative dorsal lengths of pedicel and first three flagellar segments: 7:7:8:8. Mandible black apically, dark reddish brown basally.



**Figures 21-26.** *Heimbra* species. **21-24, *H. acuticollis*:** **21**, dorsal view of scutellum; **22**, lateral view of scutellum; **23**, front view of head; **24**, lateral view of gaster. **25-26, *H. parallela*:** **25**, lateral view of scutellum; **26**, forewing.

Punctuation and vestiture of thoracic dorsum similar to that of head except as follows: punctures tend to be somewhat larger and hairs more than twice longer than puncture diameter; puncture size variable, small punctures on pronotum anteriorly near meson and on mesoscutum anteriorly, larger punctures on apical portion of scutellum; pronotum in side view with dorsal outline slightly more strongly convex anteriorly than posteriorly; lateral carina of pronotal collar

strongly oblique to posterior margin; scutellum narrow, width slightly over 0.60 times length its dorsal prominence conspicuous and acute in a lateral view (Fig. 25); mesopleuron smooth and shiny along posterior margin (Fig. 5); propodeum posteriorly with two large, flat, smooth, shiny, subrectangular areolae lateral to large, shallowly depressed, irregularly sculptured diamond-shaped areola in middle.

Forewing veins dark brown; marginal vein short (measured

from angle on wing margin to base of stigmal vein), only slightly longer than stigmal vein; postmarginal vein indistinct apically, length 1.5–2.0 times length of marginal vein (Fig. 26). Legs primarily black but tarsi and ends of femora and tibiae light orange-brown.

Gastral terga laterally and ventrally umbilicately punctate, punctures merging into large reticulations dorsally on tergum 2+3; punctures on terga 2+3, 4, and 5 very shallow and comparatively small; punctures on terga 6+7 and 8 large and as deep as on pronotal collar; all umbilicate punctures smooth and shiny within; area between reticulate ridges on dorsum irregular but very shiny; dorsum of tergum 2+3 medially, weakly concave, appearing medially flat in lateral view; posterior lateral margin of tergum 2+3 weakly sinuate, nearly straight in lateral view; convexity of tergum 6+7 nearly symmetrical in side view, posterior margin at meson not far in front of, but considerably ventrad of, corresponding part of anterior margin and convexity extending considerably caudad of posterior margin of tergum 2+3; tergum 6+7 with conspicuous keel along meson dorsally and posteriorly but lacking deep transverse groove; exposed portion of tergum 8 long, subequal to length of hind femur; tergum 8 with lateral ridge entire, not produced posteriorly into ventrally projecting broad spine.

**MALE.** Length 3.9–4.7 mm. Antennal scape without ocelloid spot. Similar to female as described above except: scutellum width 0.72–0.75 times length; tergum 8 without lateral ridges; visible parts of sterna 2–8 with punctation similar to that of visible parts of terga 5–6; sternum 8 with short, barely evident lateral ridges instead of spines.

#### TYPE DATA

Holotype female: Salta, ARGENTINA, Feb. 14, 1951 (Ross and Michelbacher), in the California Academy of Sciences. Paratypes: 1♂, Pronunciamiento, Entre Ríos, ARGENTINA, Feb. 1965 (collector unknown; CNC); 1♂, Santa Anna, Misiones, ARGENTINA, no date (Dr. Černosvitov; BMNH).

#### ETYMOLOGY

The specific name, Latin for parallel, refers to the parallel scrobal carinae.

#### DISTRIBUTION

Presently known only from Argentina and Brazil. Map 2.

#### DISCUSSION

In addition to the type series, we have seen one female from São Paulo, S.P., BRAZIL, Jan. 2, 1964 (V.N. Alin; AMNH) and one male from Curitiba-Villa Velho, Paraná, BRAZIL, Nov. 7, 1970 (J.W. Boyes; CNC). The female is very similar to the type. The male is likewise similar to the two paratypes, but is considerably larger, about 4.7 mm long compared to 3.9 and 4.2 mm for the two paratypes.

This species is most similar to *H. nigra*, and the male is especially similar since both lack an ocelloid spot on the antennal scape. Both sexes are readily separable from *H.*

*nigra* by the characteristic shape of tergum 6+7 and by the presence of a distinct tubercle on the scutellum.

### *Heimbra pallida*, new species

Figures 7, 17

#### DIAGNOSIS

*Heimbra pallida* can be distinguished from all others in the South American species group by the ferruginous color, the long marginal vein, and the far anterior placement of the posterior margin of tergum 6+7.

#### DESCRIPTION

**FEMALE.** Length 3.3 mm. Primarily orange-brown with appendages palest and antennal scrobes, axillae, mesepisternum ventrally, tergum 2+3 dorsally, and tergum 6+7 caudally darkest.

Head with large, closely spaced, umbilicate punctures over entire surface except clypeus and in antennal scrobes; umbilicate punctures smooth and shiny within, each bearing a large, silvery-white hair whose length is nearly 1.5 times diameter of puncture; interspaces between punctures smooth and shiny except on vertex posteriorly where they appear weakly, finely granulose but still shiny; antennal scrobes with surface shiny but faintly, transversely striate; clypeus glabrous; antennal scrobes short, length slightly less than 1.5 times maximum distance between lateral carinae near antennal sockets and slightly less than 0.9 times length of compound eye; scrobes with marginal carinae weakly diverging along lower half; interantennal lamella small; inner eye margins nearly parallel. Antennal scape length about 3.5 times maximum width near base; relative dorsal lengths of pedicel and first three flagellar segments: 5:3:3:4.

Punctation and vestiture of thoracic dorsum similar to that on vertex except puncture size varies as follows: smallest punctures on pronotum anteriorly and mesoscutum anteriorly, largest punctures on apical portion of scutellum; pronotum in side view with dorsal outline nearly evenly convex; lateral carina of pronotal collar weakly diverging ventrally from posterior margin; scutellum narrow, width slightly over 0.70 times length; dorsal prominence of scutellum weakly developed but with three distinct acuties visible in lateral view; mesopleuron smooth and shiny along posterior margin; propodeum with two large, flat, smooth, shiny subrectangular areas lateral to large, shallowly depressed, irregularly sculptured diamond-shaped area along anterior meson.

Wing veins dark brown; marginal vein long (measured from angle on wing margin to base of stigmal vein), nearly 1.6 times length of stigmal vein; postmarginal vein indistinct apically and 1.0–1.5 times length of marginal vein.

Gastral terga laterally and ventrally umbilicately punctate, punctures merging into large reticulations dorsally on tergum 2+3; punctures on terga 2+3, 4, and 5 very shallow and relatively small, interspaces appearing granulose; punctures on tergum 6+7 and tergum 8 laterally as large and deep as

those on head; all umbilicate punctures smooth and shiny within; area between reticulate ridges on dorsum irregular but shiny; dorsum of tergum 2+3 broadly concave, appearing flat in lateral view; posterior lateral margin of tergum 2+3 strongly, broadly concave in lateral view; convexity of tergum 6+7 asymmetrical in side view, posterior margin at meson far in front of corresponding part of anterior margin and scarcely projecting caudad of posterior margin of tergum 2+3; tergum 6+7 lacking conspicuous keel along meson and deep transverse groove; exposed portion of tergum 8 less than 0.66 times length of hind femur; tergum 8 with lateral ridges pronounced and entire but not produced posteriorly into ventrally projecting broad spine.

**MALE.** Unknown but probably similar to female in most respects.

#### TYPE DATA

Holotype female: Trancas, Tucumán, ARGENTINA, Dec. 14, on foliage (USNM). The type is in the collection of the United States National Museum of Natural History, Washington, D.C.

#### DISTRIBUTION

Known only from Argentina. Map 2.

#### DISCUSSION

The long marginal vein of the forewing and the anterior position of the apical margin of tergum 6+7 will readily separate *H. pallida* from all species except *H. nigra*. From that species, *H. pallida* may be separated by the uniformly ferruginous color and the relatively broad scutellum. The color of *H. pallida* is similar to that of *H. acuticollis*, a species with the marginal vein short and with the apical margin of tergum 6+7 only slightly anterior to the anterior margin.

#### *Heimbra nigra* Subba Rao

Figures 6, 8, 16

*Heimbra nigra* Subba Rao, 1980 (1978):308; ♀.

#### DIAGNOSIS

Specimens of *H. nigra* can be separated from those of the other species in the South American species group by the combined characteristics of uniformly dark color, the long marginal vein of the forewing and by the apical margin of tergum 6+7 being situated much anterior to the anterior, dorsal margin (Fig. 8). The latter two features are shared with *H. pallida*, an entirely ferruginous species with broader scutellum.

The previously undescribed male is described below.

#### DESCRIPTION

**MALE.** Length 3.5–4.15 mm. Integument black except following orange-brown parts: mandible, legs except coxae, and tergum 2+3 laterally.

Head with large, deep, closely spaced umbilicate punctures over entire surface except on clypeus and in antennal scrobes; umbilicate punctures smooth and shiny within, each bearing a long silvery-white hair whose length is less than 1.5 times diameter of puncture; interspaces between punctures appearing finely granulose but shiny; antennal scrobes with surfaces shiny but faintly, transversely striate; clypeus glabrous; antennal scrobes short, length less than 1.25 times maximum distance between lateral carinae near antennal sockets and 0.80 times length of eyes; scrobes with carinae nearly parallel along lower half; interantennal lamella small; inner eye margins weakly diverging below. Antennal scape length about 3.0 times maximum width near base; lacking ocelloid spot; relative dorsal lengths of pedicel and first three flagellar segments: 6:3:4:5.

Punctuation and vestiture of thoracic dorsum similar to that on head except both punctures and hairs average slightly larger with smallest anteriorly on pronotum and largest posteriorly on scutellum; pronotum in side view with dorsal outline evenly convex; lateral carina of pronotal collar strongly oblique to posterior margin; scutellum narrow, width 0.65 times length; scutellum in side view with dorsal prominence weak and lacking acute projections; mesepimeron smooth and shiny along posterior margin (Fig. 6); propodeum with two large, shiny, finely pitted, elevated areas adjacent to deep groove along meson.

Wing veins dark brown; marginal vein long (measured from angle on wing margin to base of stigmal vein), about 1.5 times length of stigmal vein; postmarginal vein indistinct apically, length 1.0–1.5 times length of marginal vein.

Gastral terga laterally and ventrally umbilicately punctate, punctures merging into large reticulations dorsally on tergum 2+3; punctures on terga 2+3, 4, and 5 shallow and small compared to those on tergum 6+7, punctures on tergum 6+7 equivalent to those on pronotal collar; all umbilicate punctures smooth and shiny within; area between reticulate ridges on dorsum irregular but shiny; dorsum of tergum 2+3 broadly concave, appearing flat in lateral view; tergum 6+7 with convexity asymmetrical in side view, posterior margin at meson far in front of corresponding part of anterior margin and slightly projecting caudad of posterior margin of tergum 2+3; tergum 6+7 lacking conspicuous keel along meson and deep transverse groove; visible parts of sterna with punctuation similar to that on lateral parts of tergum 2+3; sternum 8 with two lateral, posteriorly directed, blunt spines.

#### TYPE DATA

The type of *H. nigra*, a female from Burzaco, Buenos Aires, Argentina, is in the British Museum (Natural History).

#### DISTRIBUTION

This species is known from Argentina and Uruguay. In addition to the type, we have seen the following specimens. Map 2.

**ARGENTINA.** Buenos Aires: 1♂, San Isidro, Mar. 1957 (J. Daguerre; USNM); 1♀, 8♂♂, Zelaya, Feb. 1957, Nov. 1958, Dec. 1962 (J. Daguerre; USNM).

**URUGUAY.** 1♂, Paysandu, no date (Silveira; USNM).

## DISCUSSION

Subba Rao (1980) gives the length of the holotype female as 2.3 mm. The one female, other than the holotype, that we have seen is appreciably larger, 3.8 mm. Otherwise it is very similar to the holotype. In the original description Subba Rao stressed the absence of a dorsal tubercle or elevation on the scutellum and this character is consistent in the specimens we have studied.

The male is immediately separable from those of *H. opaca* and *H. bicolor* by the lack of an ocelloid spot on the lower surface of the antennal scape. In this, it is similar to the male of *H. parallela*, from which it is separable by the lack of a dorsal prominence on the scutellum and the shape of tergum 6+7.

### *Heimbra acuticollis* Cameron

Figures 21–24

*Heimbra acuticollis* Cameron, 1909:434; ♀.

This species is known with certainty only from two type specimens in the BMNH.

The color is largely ferruginous, with irregular areas of blackish on the face, the thoracic dorsum, and the side of the gaster blackish. Color aside, *H. acuticollis* most closely resembles the type female of *H. parallela*; i.e., the marginal vein is short and the anterior, dorsal margin of gastral tergum 6+7, in profile view, is only a little distad of the posterior margin (Fig. 24). However, the scrobal carinae are not parallel, the scutellar process is more slender, with the posterior one-half more depressed, as seen in profile (Fig. 22). The type is redescribed below.

## DESCRIPTION

**FEMALE.** Length about 4.6 mm. Color primarily ferruginous, but head mostly blackish, with ferruginous mandibles, side of upper frons, center of vertex, and gena; lateral and anteromedial spots on mesoscutum, irregular axillar blotch, median blotch on scutellar process, mesopleuron (except ferruginous spot below tegula), metapleuron, and propodeum blackish; large irregular blotch on side of tergum 2+3 blackish.

Head with large deep closely spaced umbilicate punctures over all surfaces except clypeus and antennal scrobes; punctures smooth and shiny within, each bearing a silvery-white hair that is 1.2–1.5 times longer than a puncture diameter; interspaces between punctures finely granulose and slightly shiny; surface of antennal scrobe slightly shiny and apparently finely transversely striate (not readily visible because of position of antennal scapes); interantennal lamella large;

inner eye margins weakly diverging below; antennal scape length about 4.3 times basal width; relative dorsal lengths of pedicel and first three flagellar segments: 12:8:8:8.

Punctuation and vestiture of thorax similar to that of head except as follows: punctures tend to be a little larger and hairs about twice longer than a puncture diameter; puncture size variable, punctures smallest anteromesially on pronotum and mesoscutum, largest on apical portion of scutellum; pronotum, in lateral view, convex, highest at scutal margin; lateral carina of pronotal collar weakly oblique to posterior margin; scutellum broad, width about 0.65 times median length; dorsal prominence conspicuous and acute in profile (Fig. 22), apex narrowly truncate in dorsal view (Fig. 21); mesopleuron smooth and shiny along posterior margin (about as in Fig. 5); posterior face of propodeum not visible. Metacoxa black, remainder of hind leg ferruginous.

Wing vein dark brown; marginal vein (measured from angle on wing margin to base of stigmal vein) subequal to length of stigmal vein; postmarginal vein distinct for distance about equal to length of marginal vein.

Gastral terga laterally and ventrally umbilicately punctate, punctures merging into large reticulations dorsally on tergum 2+3; punctures on terga 2+3, 4, and 5 very shallow and smaller than on pronotal collar; punctures on terga 6+7 and 8 a little larger and deeper, but obscured by roughened integument between punctures; all umbilicate punctures smooth and shiny within; area between reticulate ridges on dorsum irregular but very shiny; dorsum of tergum 2+3 medially, weakly concave, appearing nearly flat in lateral view; posterior lateral margin of tergum 2+3 weakly sinuate, nearly straight in lateral view; convexity of tergum 6+7 nearly symmetrical in side view, posterior margin (in profile) not far in front of, but considerably ventrad of, corresponding part of anterior margin and convexity extending considerably caudad of posterior margin of tergum 2+3; tergum 6+7 with conspicuous keel along meson dorsally and posteriorly but lacking deep transverse groove (Fig. 24); exposed portion of tergum 8 long, subequal to length of hind femur; tergum 8 with lateral ridge entire; not produced posteriorly into ventrally projecting broad spine.

## DISCUSSION

Two syntypes of *H. acuticollis* are in the BMNH collection. Of these, the one in best condition is here designated and appropriately labeled as the lectotype; the second specimen is the lectoparatype.

The only additional female, other than the types, that we have seen is larger than the types, length 5.1 mm, and is almost wholly ferruginous, without the conspicuous darkened areas on the head and thorax. The gaster is distinctly brownish-ferruginous over most of tergum 2+3 and on the exposed portions of the remaining terga. This specimen differs most conspicuously from the types in the profile of the scutellar process; in profile the posterior one-half is sharply depressed below the level of the basal one-half and the erect tubercle is absent. Although this specimen may represent still

another species, it would be unwise to describe this specimen as such on such meager evidence.

## DISTRIBUTION

Known only from Argentina. Map 2.

## SPECIMENS EXAMINED

**ARGENTINA.** 2♀♀, Mendoza (lectotype and lectoparatype no. 5.351b, BMNH); 1♀, Estancia La Noria, Río San Javier, Santa Fe, Jan. 2, 1912 (G.E. Bryant; BMNH).

## *Symbra*, new genus

Type-species: *Symbra cordobensis*, new species.

## DIAGNOSIS

This genus can be easily recognized from all the other members of the subfamily by its slender, eleven-segmented antenna, the broad, laterally convex scutellum (Fig. 13) and in the female by its relatively long ovipositor (Fig. 14) and all features associated with it.

## DESCRIPTION

**FEMALE.** Head subcircular in front view, malar area conspicuously convex, in side view subrectangular, face distinctly angled near antennal insertions; length of head (measured along meson from apex of clypeus to top of vertex) nearly 0.80 times width; antennal scrobe long and narrow. Antenna long and slender, eleven-segmented; scape long, reaching median ocellus; pedicel and all flagellar segments except first, longer than broad; first flagellar segment broader than long and asymmetrical, dorsal length greater than ventral length; diameter of second segment subequal to first but length more than 4.0 times first; subsequent flagellar segments gradually decreasing in length and diameter; club undivided, subequal to ninth segment. Scutellum width nearly 0.85 times length; lateral margin in dorsal view more or less convex, subapical margins strongly converging.

Anterior lateral margin of gastral tergum 2+3 narrowly rounded where it overlaps sterna 2 and 3+4; tergum 6+7 acutely convex in lateral profile and without deep transverse groove; tergum 8 with visible portion nearly equal to length of remainder of gaster and apex situated posterior to most caudad portion of tergum 6+7; ovipositor sheaths long.

**MALE.** Unknown but presumably very similar to female as in *Heimbra* males.

## DISCUSSION

This genus at present contains only a single species, *Symbra cordobensis*, which has been taken near Dean Funes in Argentina. *Symbra* is undoubtedly very closely related to *Heimbra* as can be seen by the many shared characters listed in the subfamily and species descriptions. This affinity is particularly conspicuous between it and the species of *Heimbra*

from South America as indicated above in the discussion under *Heimbra*.

## *Symbra cordobensis* new species

Figures 13, 14, 21

## DIAGNOSIS

Same as for the genus.

## DESCRIPTION

**FEMALE.** Length 4.8 to 4.9 mm. Primarily black but tegula, ventral portion of gaster, and all appendages except antenna reddish-brown.

Head with large, closely spaced, umbilicate punctures over entire surface except clypeus and antennal scrobes; umbilicate punctures smooth and shiny within, each bearing a long, silvery-white hair whose length is about 1.5 times diameter of puncture; interspaces between punctures appearing weakly, finely granulose but still shiny; antennal scrobes with surface conspicuously transversely striate and shiny; clypeus glabrous; antennal scrobes very long, length over 2.5 times maximum distance between lateral carinae near antennal sockets and somewhat longer than eyes; scrobes with lateral carinae strongly diverging along lower half; interantennal lamella large; inner eye margins weakly convex and diverging below. Antennal scape long, extending to median ocellus, length nearly 7.0 times maximum width near base; relative dorsal lengths of pedicel and first three flagellar segments: 7:4.5:17:16.

Punctuation and vestiture of thoracic dorsum similar to that of head except punctures tend to be somewhat larger and possess slightly longer hairs; punctures and hairs smallest on pronotum anteriorly and largest on scutellum posteriorly; pronotum in lateral view with dorsal outline evenly convex; lateral carinae of pronotal collar weakly developed but strongly oblique to posterior margin; scutellum wide, width 0.85 times length; dorsal prominence of scutellum conspicuous and acute in lateral view; mesopleuron smooth and shiny along posterior margin; propodeum dorsally with large, strongly carinate square, diagonally on meson, otherwise scrobiculate with general surface shiny. Legs with coxae and tibiae darkest, tarsi lightest.

Wing veins light brown; marginal vein long (measured from angle in wing margin to base of stigmal vein), nearly twice length of stigmal vein; postmarginal vein apically indistinct, length 1.25–1.50 times length of marginal vein.

Gastral tergum 2+3 laterally umbilicately punctate, punctures most distinct anteriorly and least distinct posteriorly while merging into large reticulations on dorsal surface; umbilicate punctures and dorsal reticulations with inner surfaces smooth and shiny; posterior margin of terga 2+3, 4, and 5 appearing weakly, irregularly granulose; tergum 6+7 and most of 8 somewhat more coarsely punctured than preceding two; ventral margin of tergum 8 finely reticulate; dorsum of tergum 2+3 weakly concave medially, appearing flat in lateral view; posterior lateral margin of tergum 2+3 weakly convex in lateral view; tergum 6+7 acutely convex in lateral view, posterior margin at meson well behind anterior margin and

apex of convexity projecting far caudad of posterior margin of tergum 2+3; tergum 6+7 without conspicuous keel on meson or conspicuous transverse groove; exposed portion of tergum 8 very long, more than twice length of hind femur; tergum 8 with lateral ridge entire, not produced posteriorly into ventrally projecting broad spine.

**MALE.** Unknown but probably like female in most pertinent characters described above.

# TYPE DATA

Holotype female and one paratype: 5 mi. N Dean Funes, Cordoba, ARGENTINA, Feb. 8, 1951 (Ross and Michelbacher; CAS); the holotype is in the collection of the California Academy of Sciences, San Francisco, and the paratype is in the Natural History Museum of Los Angeles County. Map 2.

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