

A REVIEW OF THE NEW WORLD SPECIES OF *PISON*
I. THE SUBGENUS *KROMBEINIELLUM* (HYMENOPTERA: SPHECIDAE)

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Abstract

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Five new species of *Pison*, subgenus *Krombeiniellum*, are described: *stangei* from Argentina; *duckei*, *plaumanni*, and *neotropicum* from Brazil; and *krombeini* from Central America. *Pison duckei*, *plaumanni*, and *neotropicum* are known by females only. A key is provided for the identification of the New World *Krombeiniellum*; the subgenus is divided into three species groups.

This paper is the first of a series devoted to a revision of the *Pison* of the Western Hemisphere. Recently, I (Menke 1968) provided a key to the 4 subgenera of *Pison* and gave a list of the 12 described New World species. The number of undescribed species undoubtedly will double or triple this figure, however.

The material on which this study is based belongs mainly to the U.S. National Museum, Washington, D.C. However, type material of some of the new species was lent by the University of California, Davis; the Instituto Miguel Lillo, Tucuman, Argentina; and the Naturhistorisches Museum, Vienna, Austria. The facial illustrations were rendered by Karen Calden Fulk.

The densely hairy compound eyes identify the subgenus *Krombeiniellum* (Figs. 1, 2). In addition, the following characteristics are common to all species of the subgenus: mandible not notched externoventrally; marginal cell of forewing acute apically, the apex well beyond the outer veinlet of the last submarginal cell; and gaster sessile, not subpetiolate.

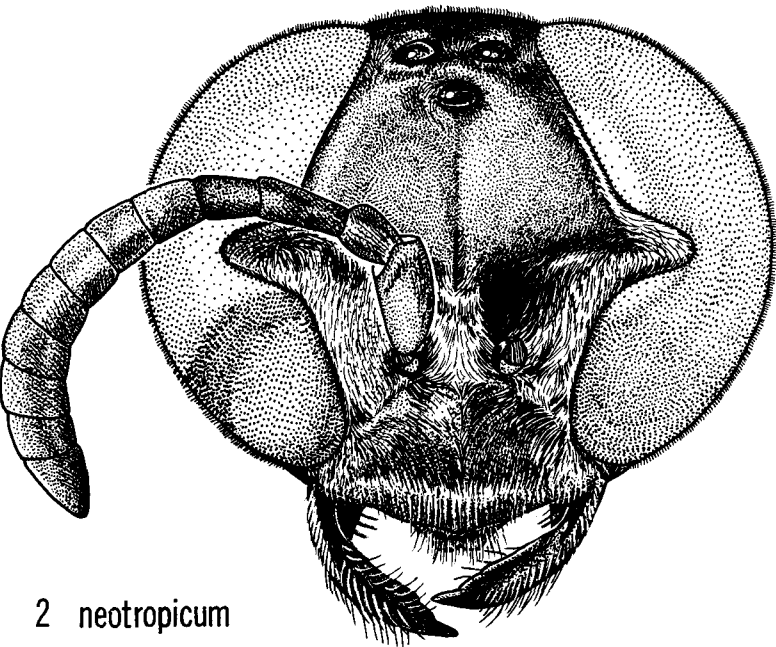
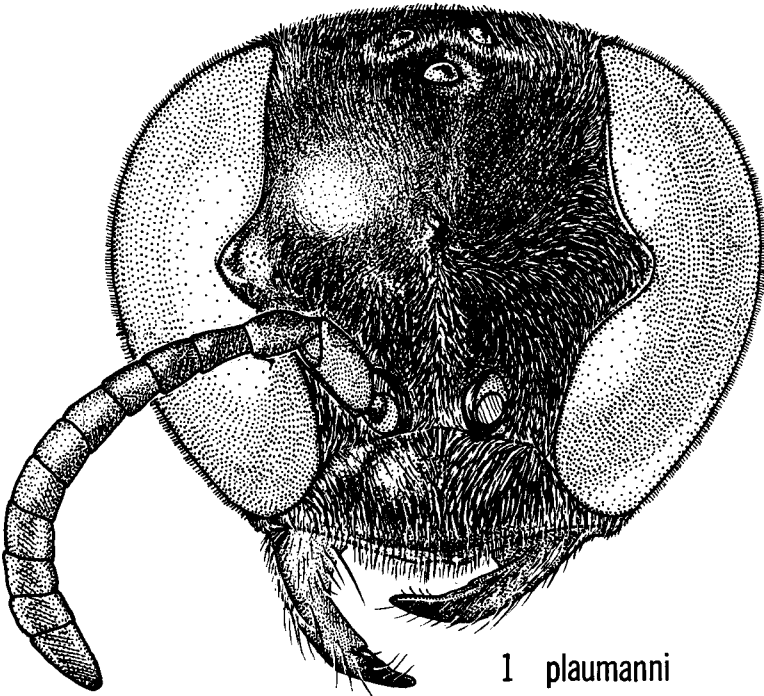
Krombeiniellum is found in the Oriental Region where it is represented by three species, *browni* (Ashmead), *differens* Turner, and *koreense* (Radoszkowski); and in the Nearctic and Neotropical Regions where five species are known. The single Nearctic representative, *koreense*, is a recently introduced species (Krombein 1958a). The Neotropical species are described in this paper.

Three species groups are recognized, and they are distinguished as shown in the key to species which follows.

Key to the New World *Pison* (*Krombeiniellum*)

1. Forewing with three submarginal cells, the second petiolate; propleuron with a lamelliform prominence near posterolateral angle; pronotum with a deep transverse sulcus just behind anterior margin; scutellum not margined anteriorly with a row of pits; occipital carina complete below and tangential to hypostomal carina; female mandible with two subapical inner teeth . . . *krombeini* group . . . 2
- Forewing with two submarginal cells, the second not petiolate; propleuron with a rounded swelling near posterolateral angle; pronotum without a transverse sulcus anteriorly; scutellum margined anteriorly with a row of pits; occipital carina incomplete below, not meeting hypostomal carina; female mandible with at most one weak subapical tooth 3
2. Admedian and parapsidal lines deeply impressed, appearing as sulci; scutum and scutellum densely and finely punctate, the interspaces weakly shiny; transverse ridge of pronotal collar very prominent laterally, humeral angles thus appearing

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FIGS. 1, 2. Facial portraits of female *Pison*.

- as right angles in dorsal view; dorsal and posterior faces of propodeum densely covered with silvery or brassy pubescence which obscures sculpture, propodeal side punctate, shiny; Central America *krombeini* Menke
- Admedian and parapsidal lines not sulciform, on same level as surrounding area; scutum and scutellum densely and finely punctate but dull due to minute etching of interspaces; transverse ridge of collar not prominent laterally, humeral angles rounded in dorsal view; propodeum not densely pubescent, surface granulate, dull; Brazil *neotropicum* Menke
3. Propodeal dorsum not delimited laterally from propodeal side by a carina and(or) foveolate sulcus; metapleural flange broadly lamellate posteriorly (Fig. 3); punctuation of tergite I sparser than II, interspaces of tergite I granulate, usually dull, those of II shiny; eastern North America *koreense* group *koreense* (Radoszkowski)
- Propodeal dorsum delimited laterally by a carina and(or) foveolate sulcus; metapleural flange not broadly lamellate posteriorly (Fig. 4); punctuation of tergites I-II similar, interspaces of tergites I-II with same degree of shininess ... *stangei* group 4
4. Propodeal dorsum mesally with fine striatopunctuation which is diagonally oriented basally, becoming transverse towards apex; Argentina *stangei* Menke
- Propodeal dorsum only punctate; Brazil 5*
5. Diameter of lateral ocellus nearly equal to ocellocular distance (5.0:6.0); clypeal outline as in Fig. 8; both recurrent veins received by first submarginal cell *duckei* Menke
- Diameter of lateral ocellus equal to slightly more than one-half ocellocular distance (6.0:10.0); clypeal outline as in Fig. 7; first recurrent vein received by first submarginal, second recurrent interstitial with outer veinlet of first submarginal *plaumanni* Menke

***koreense* GROUP**

This is an Oriental group and it contains three species, *koreense* (Radoszkowski), *browni* (Ashmead) (the type of which is in the U.S. National Museum), and *differens* Turner. *Pison browni*, known from the Philippines, and *P. differens*, known from India and Java, are very similar to *koreense*. The latter has recently become established in the northeastern United States.

***Pison (Krombeiniellum) koreense* (Radoszkowski)**

Paraceramius koreensis Radoszkowski, 1887. Horae Soc. Entomol. Rossicae 21: 433. Type locality: Korea.

This species is easily separated from other New World *Pison* by the characters given in the key. Krombein (1958b, 1967) records *koreense* from Virginia, Maryland, Illinois, and Michigan.

***stangei* GROUP**

***Pison (Krombeiniellum) stangei* Menke new species**

HOLOTYPE. Male, length 5 mm.

COLOR. Black; scape, mandible, palpi, tegula, and free margin of pronotal lobe: yellowish; legs yellowish except coxae, dorsum of trochanters, dorsum of hindfemur, and dorsum of hindtarsomeres; wings clear, veins dark brown.

VESTITURE. Silver; body without long erect hair, head and scutum with dense short pile, tergal margins with weak apicolateral fasciae.

*Females only, males unknown.

STRUCTURE. Ratio of interocular distance at clypeus and vertex 26:33; ratio of ocellocular distance to diameter of lateral ocellus to interocellar distance 7.0:6.0:7.5; clypeus and frons minutely granulate, impunctate, dull; frons without a median longitudinal carina or line; clypeal free margin with a three-toothed median lobe (Fig. 9); humeral angle of collar rounded in dorsal view (Fig. 5); scutum microetched, impunctate, dull; scutellum finely, densely punctate, weakly shining; propodeal dorsum shining, finely, obliquely striatopunctate basally, ridges becoming transverse apically, this sculpture giving way to fine, dense punctation laterally, dorsum with a median longitudinal ridge on basal one-half; posterior face of propodeum weakly, transversely striatopunctate, the ridges interrupted dorsally by a broad shiny pit; propodeal side shining, finely obliquely striatopunctate dorsally, changing to fine, dense punctation ventrad; pleura very finely and closely punctate, weakly shining; gastral tergites and sternites I and II very finely and closely punctate, (almost microetched) weakly shining; first recurrent vein received by first submarginal cell, second recurrent vein interstitial with outer veinlet of first submarginal cell; sternite VIII and penis valve of dissected aedeagus as in Figs. 14 and 12, respectively.

FEMALE. Length 5.5 mm.

COLOR. As described for male.

VESTITURE. As described for male.

STRUCTURE. As described for male except as follows: ratio of interocular distance at clypeus and vertex 30.5:37.0; ratio of ocellocular distance to diameter of lateral ocellus to interocular distance 7.0:6.0:9.0; clypeal free margin with a rounded median lobe (similar to Fig. 8); transverse ridges of posterior face of propodeum interrupted by a shiny vertical sulcus which is shaped like an elongate inverted isosceles triangle; first submarginal cell receiving both recurrent veins.

TYPES. *Holotype male*: Amaicha, Tucuman, Argentina, 21 November 1966, L. A. Stange. *Paratype female*: Dique el Cadillal, Tucuman, Argentina, 17 April 1966, L. A. Stange. Both types deposited in the Instituto Miguel Lillo, Tucuman, Argentina. This species is dedicated to Lionel Stange.

This species is very similar to *duckei*, but the striatopunctate propodeal dorsum in *stangei* is diagnostic. Another difference between *stangei* and *duckei* is the form of the humeral angle of the pronotal collar. The humerus (in dorsal view) is rounded in *stangei* (Fig. 5), whereas in *duckei* it is distinctly angulate (Fig. 6). The frons of *stangei* does not have a median line, but in *duckei* there is a weak shiny line on the lower one-half. Finally, the median longitudinal ridge of the propodeal dorsum is longer in *duckei*, extending to the apex. Presumably, when the male of *duckei* is discovered, genitalic and clypeal differences will be found between the males of these two closely related species.

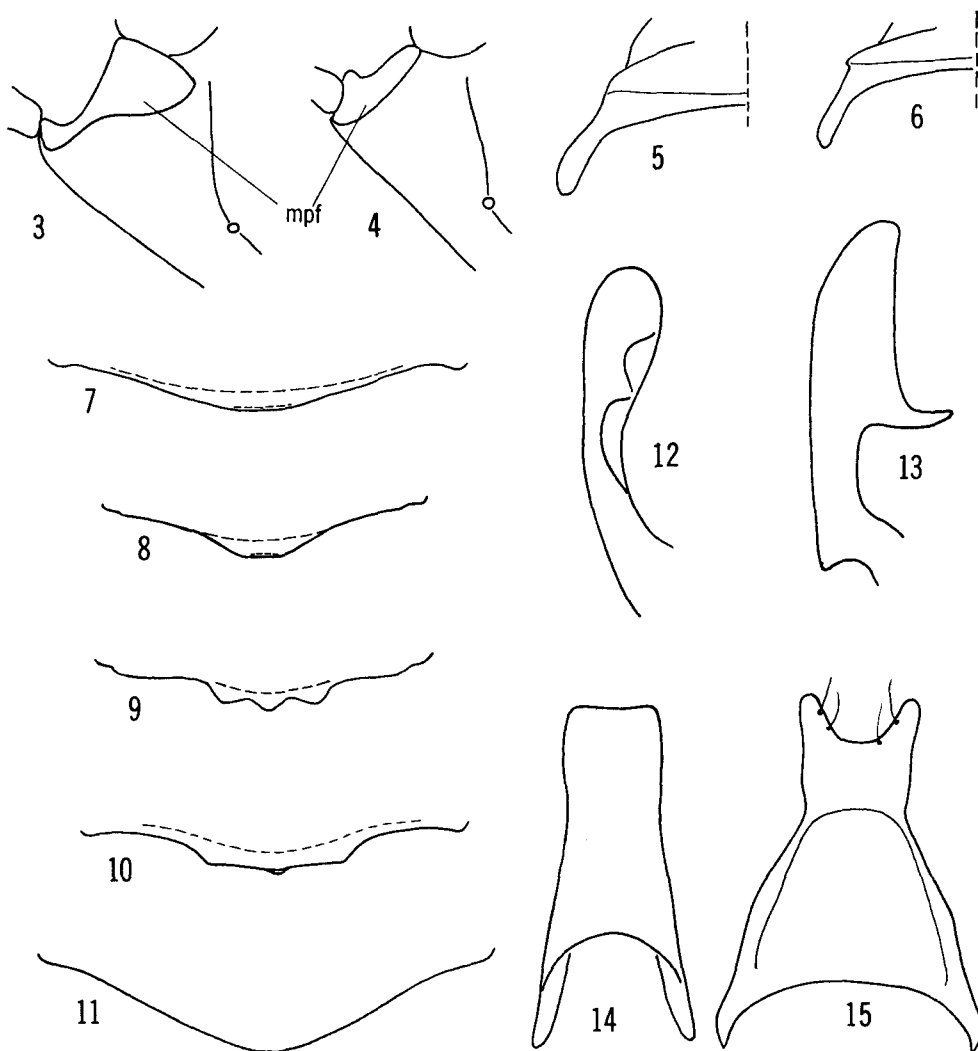
***Pison (Krombeiniellum) duckei* Menke new species**

HOLOTYPE. Female, length 4.5 mm.

COLOR. Black; scape, pedicel ventrally, clypeal lobe, mandible, palpi, tegula and free margin of pronotal lobe: yellowish; flagellum brownish red; fore- and mid-legs yellowish except coxae, hindleg brownish but with a yellow tint ventrally; wings clear, veins dark brown.

VESTITURE. As described for *stangei*.

STRUCTURE. Ratio of interocular distance at clypeus and vertex 24.0:30.0; ratio of ocellocular distance to diameter of lateral ocellus to interocellar distance



FIGS. 3, 4. Dorsal part of metapleuron, left side, showing form of metapleural flange (mpf) of *P. koreense* and *P. plaumanni*, respectively.

FIGS. 5, 6. Dorsal view of left half of pronotum of *P. stangei* and *P. duckei*, respectively.

FIGS. 7-11. Outline of free clypeal margin of: 7, *P. plaumanni*, female; 8, *P. duckei*, female; 9, *P. stangei*, male; 10, *P. krombeini*, male; 11, *krombeini*, female.

FIGS. 12, 13. Lateral view of left penis valve of dissected aedeagus of *P. stangei* and *P. krombeini*, respectively.

FIGS. 14, 15. Sternite VIII of males of *P. stangei* and *P. krombeini*, respectively.

6.0:5.0:7.5; clypeus and frons minutely granulate, impunctate, dull; frons with a weak median longitudinal line on lower one-half; clypeus with a rounded median lobe (Fig. 8); humeral angle of collar angulate in dorsal view (Fig. 6); scutum microetched, impunctate, dull; scutellum finely, densely punctate, shining; propodeal dorsum shining, densely punctate, the punctures slightly larger than those on scutellum, dorsum with a median longitudinal ridge which extends to apex; posterior face of propodeum weakly transversely striatopunctate, the ridges

interrupted by a shiny vertical sulcus; propodeal side shining, finely obliquely striatopunctate dorsally, changing to fine dense punctation ventrad; pleura very finely densely punctate, weakly shining; gastral tergites and sternites I and II very finely, densely punctate (almost microetched), weakly shining; both recurrent veins received by first submarginal cell.

MALE. Unknown.

TYPES. *Holotype female*: Pará (= Belém), Brazil, 18 January 1901, A. Ducke. *Paratype female*: Pará, Brazil, 16 January 1901, A. Ducke. Both types deposited in the Naturhistorisches Museum, Vienna. This species is dedicated to A. Ducke.

This species is very similar to *stangei*. See discussion under that species for differences.

***Pison (Krombeiniellum) plaumanni* Menke new species**

HOLOTYPE. Female, length 6 mm.

COLOR. Black; scape, margin of clypeus, mandible, palpi, yellowish; fore- and mid-legs except coxae, trochanters, and closing face of hindtibia: yellowish; hindleg brownish; wings clear, veins brown.

VESTITURE. Same as for *stangei*.

STRUCTURE. Ratio of interocular distance at clypeus and vertex 29.0:41.5; ratio of ocellocular distance to diameter of lateral ocellus to interocellar distance 10.0:6.0:8.5; clypeus and frons finely and closely punctate, weakly shining; frons with very weak median line on lower one-half; clypeal free margin without a median lobe (Fig. 7); humeral angle of collar rounded in dorsal view; scutum and scutellum finely and closely punctate, weakly shining; propodeum and pleura finely, closely punctate, but punctures larger than those of head and scutum, interspaces shining; propodeal dorsum with a median longitudinal ridge which extends to apex; posterior face of propodeum transversely striatopunctate, the ridges interrupted by a shiny narrow, vertical sulcus; gastral tergites and sternites I and II finely densely punctate similar to scutum, shining; first recurrent vein received by first submarginal cell, second recurrent interstitial with outer veinlet of first submarginal.

MALE. Unknown.

TYPES. *Holotype female*: Nova Teutonia, Santa Catarina, Brazil, December 1964. Fritz Plaumann. *Paratype females* (2): Nova Teutonia, Brazil, 12 January 1964 and October 1967, Fritz Plaumann. Holotype and one paratype in the collection of the University of California, Davis. One paratype in the collection of the U.S. National Museum. This species is dedicated to Fritz Plaumann.

Pison plaumanni is easily separated from *stangei* and *duckei* by the broader ocellocular distance, absence of a prominent median clypeal lobe (in females) and absence of striatopunctuation dorsally on the propodeal side. The absence of striatopunctuation on the propodeal dorsum also distinguishes *plaumanni* from *stangei*. The end point of the second recurrent vein (interstitial with outer veinlet of first submarginal) may prove to be variable when more material becomes available for study.

***krombeini* GROUP**

***Pison (Krombeiniellum) krombeini* Menke new species**

HOLOTYPE. Male, length 6.5 mm.

COLOR. Black; antenna, mandible, palpi, tegula, and legs: dark reddish brown; tergite I reddish laterally (below lateral carina), sternite II reddish apically;

wings clear except for faint amber clouding of marginal cell and first submarginal cell of forewing, veins amber colored.

VESTITURE. Head, thorax, and gaster generally covered with short, sparse silver hair, except for scutellum, metanotum, and propodeal dorsum which are densely covered with longer silver hair which obscures sculpture; tergal margins I–III with silver fasciae.

STRUCTURE. Ratio of interocular distance at clypeus and vertex 30.0:27.0: ratio of ocellocular distance to diameter of lateral ocellus to interocellar distance 4.0:7.0:6.0; frons granulate, dull, with a median longitudinal depression which is smoother and somewhat shining; clypeus weakly granulate, dull; clypeal free margin with a truncate median lobe (Fig. 10) which is narrowly double edged; humeral angle of collar angulate in dorsal view; scutum finely, densely punctate, weakly shining, admedian and parapsidal lines depressed, sulciform; scutellar punctation as fine as that of scutum but sparser; propodeal dorsum with a median longitudinal ridge which extends to apex; pleura and propodeum finely, densely punctate, shining; posterior face of propodeum with a narrow vertical sulcus; second submarginal cell receiving both recurrent veins; tergites I and II densely, finely punctate, subshining; sternite III with a broad transverse depression which is filled with dense short pale setae, sternite IV with a similar but smaller weakly depressed area; sternite VIII and penis valve of dissected aedeagus as in Figs. 15 and 13, respectively.

FEMALE. Length 6 mm.

COLOR. As described for male except clypeal margin yellowish brown; sternite II completely black; clouding of forewing slightly more intense.

VESTITURE. As in male except dense hair of scutellum, metanotum, and propodeum as well as that of tergal fasciae yellowish or brassy rather than silver.

STRUCTURE. As described for male except clypeal free margin arcuate, without a median lobe, margin not double edged (Fig. 11); collar humeri more sharply angulate; sternites III and IV without depressions.

TYPES. *Holotype male*: "Brit. Hond." (British Honduras), January 1908, USNM No. 70065. *Paratypes*: one male, British Honduras, January 1908; one female, Turrialba, Costa Rica; one female, Barro Colorado Is., Panama, 15 August to 26 September 1928, Phil Rau (field note #7756). The holotype and two paratypes are in the collection of the U.S. National Museum. The Turrialba paratype is in the collection of the University of California, Davis. This species is dedicated to Karl Krombein.

The sulciform admedian and parapsidal lines of the scutum, the dense silver or brassy pubescence of the propodeal dorsum, and the angulate humeri of the collar separate this species from *neotropicum*.

***Pison (Krombeiniellum) neotropicum* Menke new species**

HOLOTYPE. Female, length 7.5 mm.

COLOR. Black; scape, pedicel, clypeal margin, free margin of pronotal lobe, tegula, and dorsal surfaces of legs, reddish brown; apical margin of tergites narrowly yellowish brown; wings clear except for brownish clouding of medial, submarginal I and marginal cells, veins dark brown.

VESTITURE. Head, thorax, and gaster generally covered with short sparse silver hair; margin of tergite I with a weak silver fascia.

STRUCTURE. Ratio of interocular distance at clypeus and vertex 45.0:31.0; ratio of ocellular distance to diameter of lateral ocellus to interocellar distance 4.5:9.0:6.0; frons finely and very densely punctate, the punctures closely set imparting a granulate appearance, surface dull, frons with a short shiny median line on lower one-half, line continued as a shallow depression toward median ocellus (Fig. 2); clypeus finely, densely punctate, weakly shining; clypeal free margin obtusely triangular; humeral angles of collar rounded in dorsal view; scutal sculpture similar to that of frons, dull; admedian and parapsidal lines not depressed below level of scutum; scutellum finely, densely punctate, interspaces microetched, dull; propodeum finely granulate, dull; propodeal dorsum with a median longitudinal ridge which extends to apex; posterior face of propodeum with a narrow vertical sulcus; pleura finely, densely punctate, weakly shining; tergites I and II finely, densely punctate, weakly shining.

MALE. Unknown.

TYPES. *Holotype female*: Rio de Janeiro, Brazil, October 1938, R. C. Shannon, USNM No. 70066. *Paratype females* (5): same data except all collected January 1939. Holotype and four paratypes in the collection of the U.S. National Museum. One paratype in the collection of the University of California, Davis.

This is a larger, more robust insect than *krombeini*, and the clouding of the leading margin of the forewing is more pronounced. The non-sulciform admedian and parapsidal lines of the scutum, the absence of dense propodeal pubescence, and the rounded humeri of the collar identify *neotropicum*.

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