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ADDITIONAL SPECIES AND RECORDS OF STINGLESS BEES (MELIPONIDAE) FROM BRITISH GUIANA

BASED ON SPECIMENS COLLECTED BY THE TERRY-HOLDEN EXPEDITION

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Some months ago I issued a paper on The Stingless Bees (Meliponidae) of British Guiana and Some Related Forms (1938, Bull. Amer. Mus. Nat. Hist., LXXIV, Art. VII, pp. 437-508, Pls. LII-LXII). In that paper I attempted to include all of the species of British Guiana stingless bees definitely known to occur in that country, with indication of their range outside of British Guiana and such discussion as seemed pertinent. A key to the known forms occurring in British Guiana was provided.

In the paper in question I expressed the view that "there are probably many species in British Guiana that still await recording in the literature." Recently the Terry-Holden Expedition of The American Museum of Natural History has returned from an extensive exploration of British Guiana and among the insects it collected are a fair number of stingless bees.

A total of twenty-two species and varieties was collected by the Expedition. Of these, fourteen were previously known to occur in British Guiana while eight are recorded for the first time from the region. Of these eight no less than four—one species and three varieties—are new to science. Among the stingless bees collected by the Expedition are several specimens of the recently described *Trigona* (*Tetragona*) *kaie-teurensis* Schwarz, known until now only from the holotype. In my earlier paper forty-two forms of Meliponidae were recognized from British Guiana. The new records added by the Terry-Holden Expedition and a species (*capitata*) inadvertently overlooked when I wrote the earlier paper increase the known stingless bee fauna of British Guiana to fifty-one.

A notable blank in the distribution of the common species *Trigona* (*Trigona*) *trinidensis* variety *trinidensis* (Provancher) has been removed through the capture of this bee, hitherto unreported from British Guiana, on the Kuyuwini River. Another and rarer member of the subgenus *Trigona*, namely, *recurva* Smith, proves likewise to be an inhabitant of the territory traversed by that river, and a much rarer form, *Trigona* (*Hypotrigona*) *longicornis* Friese, turned up along the Shudihar River. *Melipona fasciata* variety *duida*, described from the Mt. Duida region of Venezuela, was located by the Terry-Holden Expedition on both the Kuyuwini and the Essequibo rivers.

The number of new forms obtained by the Expedition indicates how rewarding further collecting may prove to be, for the Expedition was concerned primarily with objects other than the collecting of bees and comparatively little time could be devoted to their capture. All of the stingless bee specimens taken bear record of having been collected on one or another of six scattered days. When consideration is given to this fact, the relatively large assemblage of forms is all the more remarkable. The specimens were collected by W. G. Hassler to whom I wish to express my appreciation as well as to Dr. William Holden, who headed the Expedition and kindly made the collection available.

It is hoped that the comments in connection with species or varieties not hitherto known from British Guiana may assist in differentiating them from forms noted in my earlier key to the British Guiana Meliponidae. It has not seemed necessary, for the time being at least, to prepare an enlarged key to include these hitherto unre-

ported forms. The bibliographic references have in this paper been confined to the original descriptions. A somewhat fuller bibliographic record will be found in my earlier paper.

Melipona fasciata variety **lateralis**
(Erichson)

Melipona lateralis ERICHSON, 1848, in Schomburgk's "Reisen in British Guiana in den Jahren 1840-1844," III, p. 592.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler).

Melipona fasciata variety **paraensis**
(Ducke)

Melipona scutellaris paraensis DUCKE, 1916, Com. de Linhas Teleg. Estrat. de Matto Grosso ao Amazonas, Publicação 35, Anexo 5, Hist. Nat., Zoologia, p. 156.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler).

Melipona fasciata variety **duidae**
(Schwarz)

Melipona fasciata subspecies *cramptoni* variety *duidae* SCHWARZ, 1932, Bull. Amer. Mus. Nat. Hist., LXIII, Art. IV, pp. 243, 378, 379-382, 400, 408.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler); Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

Hitherto known only from the Mt. Duida region of Venezuela.

The present specimens, due to the coloration of their hairs, align themselves with *duidae* rather than with the very closely related *cramptoni*. The coloration of the abdominal tergites varies somewhat from specimen to specimen. As a rule all or most of the tergites are black except for the fulvous apical bands, which is the condition also in *cramptoni*, but in a few of the specimens only the two basal tergites are black, the others maroon. It is only a step from this predominance of maroon to the bright chestnut red condition represented by the closely allied *pseudocentris*. I suspect an intergrading condition, somewhat paralleling that between *Melipona fasciata* variety *lateralis*, of mainly dark coloration, and the interlinked form of bright red abdomen known as *kangarumensis*.

Trigona (Trigona) fulviventris variety **guyanae** (Cockerell)

Trigona guyanae COCKERELL, 1910, Annals and Mag. Nat. Hist., (8), VI, p. 366.

BRITISH GUIANA.—Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

Trigona (Trigona) hypogaea variety **robustior**, new variety

WORKER.—Structurally like typical *hypogaea* but differs by its more robust appearance and its greater wing length.

Width of head 2 1/2 mm. as against 2 mm. for the typical variety; width of thorax about 2 1/4 mm. as against 1 3/4 mm. for the typical variety; length of forewing, including tegula, about 6 3/4 mm. as against about 5 mm. in the typical variety.¹

BRITISH GUIANA.—Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler), including holotype; Moraballi Creek, Essequibo River, Aug. 13, 1929, and Sept. 5, 1929, some of the specimens taken on carion (Oxford University Expedition).

ECUADOR.—Mera, Feb., 1923 (F. X. Williams).

PERU.—Colony of the Perené, June 5, 1920; El Campamiento, June 22-26, 1920; San Antonio del Rio Cotuhé. Putumayo District: La Chorrera, Aug. 17-20, 1920; La Chorrera to La Sombra, Aug. 21, 1920; El Encanto, Aug. 25, 1920. (The Peruvian specimens were collected by the Cornell University Expedition.)

BOLIVIA.—Huachi, Beni, August; San Fernando Rapids, August; Santa Elena, August; Covendo, September. (The Bolivian specimens were collected by William M. Mann while on the Mulford Biological Expedition of 1921-1922.)

BRAZIL.—State of Amazonas: Porto Velho, Rio Madeira (Mann and Baker). State of Para: Santarem (H. H. Smith). State of Matto Grosso: Chapada (probably Sant' Anna do Chapada, near Cuyaba) collected by H. H. Smith.

Trigona hypogaea Silvestri and variety *robustior* are readily separable from their close relatives of the subgenus *Trigona* by

¹ The body length of *robustior* is 5 mm. to 6 mm. The body length of the typical variety as given in Silvestri's description is 6 1/2 mm. This, it would seem, must represent an extreme distension of the abdomen. In two cotypes of typical *hypogaea* before me the body length is, respectively, 4 and 4 1/2 mm.

the rather narrow and very gradually widened hind tibiae of the worker, with the apex of these tibiae rounded instead of angulate or distinctly truncate. The contour of the tibiae is a little like that of a baseball bat in the gradual and symmetrical expansion from base to apex. Like *amalthea* this species has a notably flattened clypeus, which almost invariably is more or less mahogany-stained. Typically there are two, more or less elongate, mahogany maculations on a black or blackish surface, but sometimes the entire clypeus has a reddish-brown stain. A very large number of the specimens here assigned to *robustior* seem to be callows, with instances where the entire body or large parts of it are mahogany-colored rather than black. The series, including the holotype, from the upper Essequibo River embraces specimens that seem to be completely colored, with black or blackish head, thorax, legs and abdomen; yet even these specimens retain the mahogany spots on the clypeus and in addition have the mandibles largely or wholly mahogany-colored except for the blackish teeth. In respect to the coloration of the mandibles they are like specimens collected between La Chorrera and La Sombra and from La Chorrera itself in Peru; but other specimens—Colony of Perené, Peru, and particularly those from localities in Bolivia—have the mandible colored much more nearly like that of *amalthea*: black with a stripe of red just before the toothed apical end. Nevertheless, I have placed these specimens in *robustior* because of their virtual identity in size with that variety although in the color of their mandibles they approximate the two cotypes of typical *hypogaea*. The Brazilian specimens show variability, some—even from the same locality—having the mainly blackish, others the mainly mahogany-colored mandible.

For a long time I have hesitated separating *robustior* from typical *hypogaea*, the more so as occasionally specimens are found—a series, for instance, from Rio Negro in Bolivia and likewise from Rurrenabaque on the Rio Beni in Bolivia—that are somewhat intermediate in size. In the main, however, the wing length and the

other dimensions approach constancy in each of the forms here recognized.

***Trigona (Trigona) trinidadensis*
variety *trinidadensis* (Provancher)**

Melipona Trinidadensis PROVANCHER, 1889, Addit. et Correct. au Vol. II de la Faune entom. du Canada—Hyménoptères, pp. 344–345.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler).

This is the first time that this common species has been reported from British Guiana. Considerable diversity of size may be noted among the specimens of *trinidadensis* from region to region. The Central American variety *silvestriana* (characterized by the uniform low growth of hairs—almost plush-like in appearance—on the front, in contrast to the longer, coarser and more uneven hairs on the front of typical *trinidadensis*) is of relatively small stature but even typical *trinidadensis* includes specimens that approximate the size of *silvestriana* while, on the other hand, it numbers also individuals that are impressively larger. The specimens of *trinidadensis* from the Kuyuwini River are among the largest specimens, both in length and width of body and in the extension of their wings, that have come to my attention. The forewing, including the tegula, measures in these specimens a little more than 11 mm., being of the same length as that attained by specimens from La Chorrera, Peru, secured by the Cornell University Expedition Aug. 17–20, 1920. Specimens from Trinidad, from which *trinidadensis* was described, have in contrast a wing length of only about 9.5 mm. Intergradations of size in *trinidadensis* make a subdivision into distinct varieties very difficult within this species, although variety *silvestriana* is definitely separable.

The typical variety of *trinidadensis* has a wide distribution in South America. It is found abundantly in Colombia and Venezuela. Along the west coast of South America it occurs in Ecuador, Peru, and Bolivia. In Brazil it extends from Amazonas and Acre-Territorium in the north to as far south as the states of Minas Geraes and São Paulo, and even Santa Catherina (Blumenau record of Friese). According

to Ducke (1925, Zool. Jahrb. System. Geogr. u. Biol., XLIX, p. 422) it does not occur in those Brazilian states that border the Atlantic Ocean and is absent from the greater part of the State of Para. It has been assumed also that it was absent from the Guianas but, in addition to the present record from the Kuyuwini River, it is possible that the insect referred to by Barrere as *Apis Sylvestris* (1741, "Essai sur l'histoire naturelle de la France equinoxiale," pp. 190-191) was *trinidadiansis*. Barrere's description is brief: "It is a species of black bees, very small, being only four or five lines at the most." Eighteen years later Fermin (1769, "Description de la Colonie de Surinam," II, pp. 300-301) alluded under the same name to a social bee that he described as half the size of the European honey bee, being at the most five or six lines in length and black. Barrere's observations were made in French Guiana; those of Fermin in Dutch Guiana. The size indicated and the coloration suggest *trinidadiansis*.

Trigona (Trigona) recursa Smith

Trigona recursa SMITH, 1863, Trans. Entom. Soc. London, (3), I, p. 508, Pl. xx, fig. 15.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler).

This species, too, has not hitherto been reported from British Guiana nor indeed from any of the other South American states bordering the Caribbean. While *amalthea* extends throughout Central America and into Mexico, *recursa* has not been taken in that large area. It is, however, of fairly wide distribution in South America. In addition to British Guiana, the following countries in South America are included in its range:

ECUADOR.—Tena, Feb. 14 and Feb. 17, 1923 (F. X. Williams); Napo, Pano River, April 8, 1929 (F. X. Williams).

PERU.—Yurimaguas, April 8, 1920 (H. Parish); La Merced, Rio Chanchamayo, June 17, 1920 (Cornell Univ. Expedition); El Campamiento, Colony of the Perené, June 22-26, 1920 (Cornell Univ. Expedition); La Chorrera to La Sombra, Putumayo District, Aug. 21, 1920 (Cornell Univ. Expedition); San Ramon, at meat,

Feb. 16, 1940 (W. Weyrauch); San Ramon, at a puddle, male, Feb. 17, 1940 (W. Weyrauch); San Ramon, from a nest, including many males, Feb. 25, 1940 (W. Weyrauch).

BOLIVIA.—Santa Elena, August; Tumpasa, December; Ixiamas, December; C. Esperanza, Beni, March. (These specimens were collected by W. M. Mann while on the Mulford Biological Expedition of 1921-1922.)

BRAZIL.—State of Para: Igarapé Assú, July 15, 1919 (H. Parish); Belem, July 15, 1924 (J. Bequaert). Furo de Ressaco, Amazon, night of Sept. 10, 1920 (Cornell Univ. Expedition); Rio Japura, Amazon (Roman). State of Matto Grosso: Chapada (probably Sant' Anna do Chapada), collected by H. H. Smith. Also from Maruru (H. H. Smith), presumably in Brazil.

In many respects *recursa* is much like *amalthea*. Its clypeus is only a little less flat than that of *amalthea*, being barely foveate at the apex. Its scape, in contrast to the fine downy covering of the scape of *amalthea*, has short black bristle-like hairs. The clypeus also has stiff erect black hairs. While the mandibles of *amalthea* are almost always black, striped with red just before the apex, *recursa* shows, like *hypogaea* variety *robustior*, considerable variability in this respect even among the specimens of a single locality, some individuals having mandibles corresponding with the coloration prevalent in *amalthea*, while others have largely reddish to brownish mandibles. The insect is smaller and of more dainty structure than *amalthea* and its hind tibiae are more slender. Due to the fact that the abdomen is rather more slender and elongate than the usually compact abdomen of *amalthea*, specimens of *recursa* may attain the same length as specimens of *amalthea* that have the abdomen especially contracted. However, the thorax width of *recursa* is always less than that of *amalthea*, and the two insects, when placed side by side, can be differentiated even by the unaided eye due to their difference of stature.

By its more dainty build *recursa* is readily differentiated from *ruficus* variety *corvina*, from which it differs furthermore in having

a less arcuate clypeus and distinctly narrower hind tibiae. From both *amalthea* and *ruficus* variety *corvina* it can furthermore be separated by the more hyaline condition of its wings, the wings of the other two species having a distinctly deeper stain. Finally *recurva* and *ruficus* variety *corvina* would seem to be separated geographically, for, while *recurva* is known up to the present only from South America, *ruficus* variety *corvina* seems to be confined to Central America and Mexico.¹

The less flattened clypeus of *recurva* and its broader hind tibiae without rounded apex separate this bee from the also rather closely related *hypogaea*. It tends to resemble *hypogaea* in the clarity of its wings and in the presence often on the clypeus of two mahogany-colored maculations.

I have had the opportunity to examine, in addition to the type specimen of *recurva* in the British Museum, a specimen identified by Smith that is at Oxford, and a specimen from the Smith collection kindly donated by Professor Cockerell to the American Museum. All of these specimens have quinquedentate mandibles. Smith's statement to the effect that the mandibles have "three or four stout acute teeth at their apex" is misleading.

In Smith's specimens the hind metatarsi are rather wide at the apex, almost as wide indeed as are the hind tibiae at their apex. This condition is shared by some of the specimens before me, especially those from Santa Elena, Bolivia. Specimens from several other localities, on the other hand, have rather parallel-sided, relatively narrow hind metatarsi. It seems doubtful whether this character is sufficiently fundamental to justify a further separation.

Dr. W. Weyrauch has sent me the following description of a nest of *recurva* that he observed at San Ramon, Peru, Feb. 25, 1940:

"Nest in earth at the foot of an old tree. A tunnel-like front structure of black granular resin holds fast to the ground dead leaves that are lying about. The nest entrance is 5 cm. wide and 7 cm. long.

The tunnel-like structure in its entire extent is 10 cm. wide and 14 cm. long. The tunnel enters into a hollow root which is used as a passage-way to the nest."

The nest was one of three located about the base of an old tree (Oropel) in a shady coffee plantation. The other two nests were those of bees of the subgenus *Partamona*.

Workers of *recurva* in large numbers were attracted, according to Weyrauch, to meat at the market in San Ramon and a male of this species was observed visiting a puddle.

Trigona (Trigona) williana Friese

Trigona williana FRIESE, 1900, Termés. Füzetek, XXIII, p. 388.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler); Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

Trigona (Trigona) pallida variety *pallida* (Latreille)

Apis pallida LATREILLE, 1804, Ann. Mus. Hist. nat., V, p. 177, Pl. XIII, fig. 14.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler).

About one-half of the specimens collected at the above mentioned locality are assignable without hesitation to the typical variety. The remainder show varying degrees of obscuration of the abdomen, usually beyond the first or beyond the first two tergites. It is not altogether exceptional to find in typical *pallida* some darkening of the apical segments of the abdomen but these specimens are unusual in that in the extreme cases several of the tergites (and frequently likewise the sternites) are predominantly or wholly black. Were it not for the presence in the series of specimens that, in contrast, have the usual honey-colored abdomen commonly associated with typical *pallida*, I should be inclined to regard the representatives from the Kuyuwini River as a distinct variety.

Trigona (Tetragona) nigra variety *paranigra*, new variety

WORKER.—Very close to *nigra* variety *paupera* but differs from that variety and is in agreement with typical *nigra* in having the erect hairs (as well as the appressed) of the clypeus silvery-gray

¹ What Cockerell reported (1920, Bull. Amer. Mus. Nat. Hist., XLII, pp. 465 and 501) from Tumatari as *ruficus* variety *corvina* is according to my interpretation *hyalinata* variety *hyalinata*.

instead of black and the erect hairs of the front also silvery-gray except for a few black hairs just below the ocelli. Differs from the typical variety in having the forewings hyaline if somewhat milky, especially on the apical half, and the stigma and venation bright ferruginous except that the costal and subcostal veins are slightly brownish. The hairs on under side of abdomen silvery-gray.

BRITISH GUIANA.—A single specimen from Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

The key supplied in a previous paper on the Stingless Bees of British Guiana (Schwarz, 1938, Bull. Amer. Mus. Nat. Hist., LXXIV, Art. VII, pp. 439-448) included *Trigona* (*Tetragona*) *nigra* variety *pura* (Cockerell). To distinguish that insect from the present one the following key to the workers may be of service:

- 1.—The forewings smoky except for their milk-white apical tips. Sidefacial maculations subdued to absent. Erect hairs on clypeus and over most of front silvery-gray. *nigra* variety *nigra* Cresson.
The forewings hyaline and unstained although more or less milky on the apical half. The stigma and at least the veins of the apical half of the wing bright ferruginous. 2.
- 2.—Clear, strongly defined yellow maculations on the middle of the clypeus, bordering the eyes (more or less interruptedly on the posterior orbits), supraclipeus, scape, pronotum, tubercles and scutellum. Hair of thorax as well as of head pale. *nigra* variety *pura* (Cockerell).
Maculations on face, if present, obsolescent; absent on thorax. Erect hairs on at least vertex, mesonotum and mesopleura black. 3.
- 3.—Erect hairs on clypeus, front and under side of abdomen black. *nigra* variety *paupera* (Provancher).
Erect hairs on clypeus and on front (mostly), and on under side of abdomen silvery-gray *nigra* variety *paranigra*, new variety.

Trigona* (*Tetragona*) *varia
(Lepeletier)

Melipona (*Trigona*) *varia* LEPELETIER, 1836, "Hist. nat. des Insectes, Hyménop.," I, p. 433.

BRITISH GUIANA.—Upper Essequibo River, Sept. 28, 1937 (W. G. Hassler).

***Trigona* (*Tetragona*) *handlirschii* Friese**

Trigona handlirschii FRIESE, 1900, Termés. Füzetek, XXIII, p. 391.

BRITISH GUIANA.—Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

Ducke (1925, Zool. Jahrb. Syst. Geogr. u. Biol., XLIX, p. 376) speaks of the yellow maculation on the clypeus as exceptional.

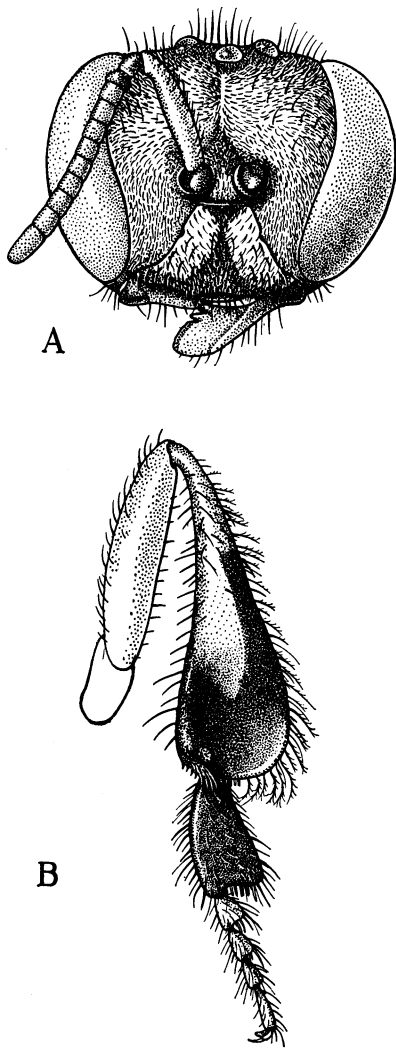


Fig. 1.—Worker of *Trigona* (*Tetragona*) *handlirschii* Friese.—A, head; B, hind leg, with special reference to the tibia and tarsal joints. Drawn by Mrs. Shirley H. Risser.

In the specimens before me, including one from Brazil identified by Friese as *handlirschii*, the maculations are present and accord with those of Fig. 1.

Trigona (Tetragona) heideri variety
heideri Friese

Trigona heideri FRIESE, 1900, Termés. Füzetek, XXIII, pp. 389-390.

BRITISH GUIANA.—Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

Trigona (Tetragona) clavipes
(Fabricius)

Centris clavipes FABRICIUS, 1804, "Syst. Piez.," p. 359.

BRITISH GUIANA.—Upper Essequibo River, Sept. 28, 1937 (W. G. Hassler).

Trigona (Tetragona) kaieteurensis
Schwarz

Trigona (Tetragona) kaieteurensis SCHWARZ, 1938, Bull. Amer. Mus. Nat. Hist., LXXIV, Art. VII, pp. 445, 472-474, Pl. LVI, fig. C.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler); Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler); Shudihar River, Dec. 29, 1937 (W. G. Hassler).

The specimens differ somewhat in the extent to which the cream-colored clypeus is invaded by black apically. In the Essequibo River specimens the invasion is so deep that it almost reaches the base, with the result that the pale areas of the clypeus merely frame narrowly the large black enclosure. In the specimens, one each, from the Kuyuwini River and the Shudihar River, the black area is mainly along the apex of the clypeus as depicted in the drawing that accompanies the original description (Schwarz, 1938, Bull. Amer. Mus. Nat. Hist., LXXIV, Art. VII, Pl. LVI, fig. C).

Trigona (Tetragona) essequiboensis,
new species

WORKER.—Black, with black hairs. Wings somewhat dusky in basal half, with black venation; milky in apical half, with bright ferruginous stigma and venation. Abdomen narrow and elongate, narrower than thorax.

HEAD (Fig. 2A) only moderately shiny notwithstanding its smooth chitin, broader than long, extending slightly beyond the outer rims of the tegulae. Eyes strongly convergent below. Clypeus arched, slightly downsloping toward the apex but not foveate, and like the rather prominent supraclypeus raised somewhat above the level of the sides of the face, its apex broadly truncate with a slight recession at each lateral extremity, its sides with a very slight angulation

about midway between the base and the apex. The malar space enlarged at its outer extremity but for most of its extent very short, at its middle not more than one-fourth the width of the scape. The apico-lateral angles of the

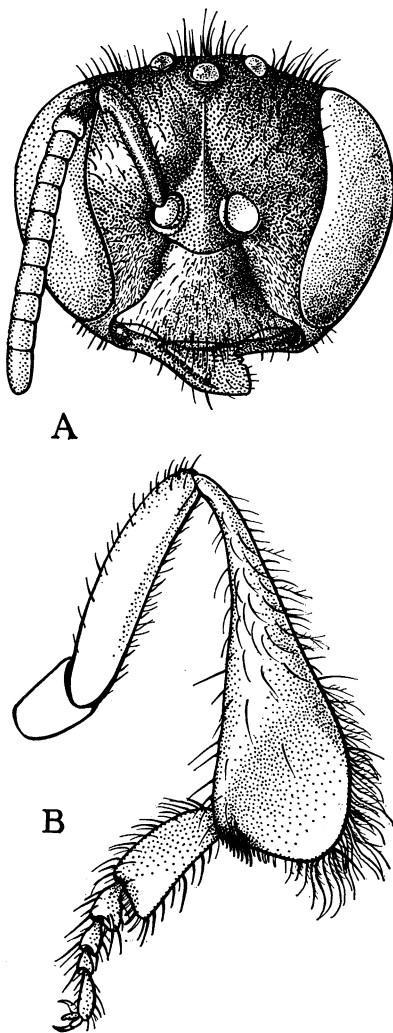


Fig. 2.—Worker of *Trigona (Tetragona) essequiboensis*, new species.—A, head; B, hind leg, with special reference to the tibia and tarsal joints. Drawn by Mrs. Shirley H. Risser.

clypeus well separated from the eye by an interval about one-half the width of the scape. The mandible somewhat hourglass-shaped, its apex with two denticles on the inner one-third, the innermost the larger. The middle ocellus slightly anterior to the lateral ones, which are

somewhat elevated and tilted laterad; the area covered by the ocelli a trifle greater than the space separating each lateral ocellus from the eye. Flagellum a little wider than the scape and about twice as long. Entirely black, except for a dull-brownish suffusion on the apical half of the mandibles and sometimes on the flagellum beneath. Rather dull gray and inconspicuously pruinose on front and sides of face, a little more strongly silvery-gray pruinose on genae. The erect hairs all black. Those over the entire clypeus longer than the erect black hairs on the scape and approximating in length those on the front, which in turn are shorter than those on the vertex, the labrum, and fringing the mandibles below; black hairs also on lower part of genae.

THORAX wholly black, moderately shiny. Width of the mesonotum at its widest along the basal margin about equal to the length from this basal margin to the apex of the scutellum, which is not salient. Hair throughout exclusively black and rather dense, longest on mesonotum anteriorly, scutellum, mesopleura and on thorax beneath. Hairs on propodeum also black; middle or dorsal area of propodeum hairless and shiny.

LEGS black, with the apical tarsal joints somewhat more brownish. Hairs almost exclusively black, to the inclusion of those on the coxae, trochanters and femora. Even the metatarsal brushes predominantly black, with only a faint copper sheen in some lights. The microscopic hairs on the raised portion of the inner surface of the hind tibiae silvery-gray. The hairs are shortest on the femora and on the outer face of front tibiae, and longer on the under side of the middle tibiae than on the outer face of this joint, where some plumose hairs are intermixed with the simple hairs. The hind tibiae (Fig. 2B) are fringed anteriorly and for the most part also posteriorly with only simple hairs but at least toward the apex of the joint plumose hairs appear. Long erect hairs, predominantly simple, occur on the basal half of the outer face of the hind tibiae. These tibiae clavate, much wider at the apex than at the base but gradually, not abruptly expanded, their posterior contour convex, rounding without angulation into the subtruncate apex; the exterior face of the joint flattened on its apical half. The hind metatarsi almost parallel-sided, a little contracted at the base, with a posterior angulation at the apex.

WINGS slightly darkened in the basal half, in which the venation, in agreement with the tegulae, is black. The apical half of the wing, in rather sharp contrast, is milky, with bright ferruginous stigma and venation. Number of hamuli in each lower wing 5-7, usually 5 or 6.

ABDOMEN elongate, narrower than thorax, black, with the hairs black. Tergite 1 with a few scattered microscopic hairs, largely to wholly glabrous. Tergite 2 polished and hairless on basal half, with microscopic hairs on apical half. The exposed parts of the subsequent tergites with

progressively longer hairs, those on the apical tergite only a little shorter than those on each of the ventral sternites.

Length $4\frac{1}{2}$ to $5\frac{1}{2}$ mm.; width of thorax about $1\frac{1}{2}$ mm.; length of forewing, including tegula, about 6 mm.

BRITISH GUIANA.—Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

Structurally this insect is very close to *Trigona* (*Tetragona*) *clavipes* (Fabricius) and it may be that, different as it is in coloration, it should be considered a variety of *clavipes* rather than a distinct species. But in addition to its distinctively dark appearance and slightly smaller size, it has the hairs of the clypeus relatively longer than in *clavipes* and the innermost denticle of the mandible rather less developed. It seems preferable to consider it temporarily at least—and until the unknown male is discovered—a distinct species. In the coloration of its chitin and of its hairs it resembles *Trigona* (*Tetragona*) *nigra* variety *paupera* (Provancher) but that insect differs structurally in having the malar space even more vestigial and the hind tibiae more arched, not flattened, over their outer face except for the extreme apex, and in addition has a more shiny head and thorax and usually traces, even if dulled, of side-facial maculations. Superficially *essequiboensis* resembles also a member not of its own subgenus but the subgenus *Trigona*, namely *compressa*, which is likewise black, with predominantly black hairs, narrow abdomen, and, in some specimens at least, with a more or less darkened median cell contrasting with the milky appearance of the apical half of the wing. But the quadridentate mandible of *compressa* makes confusion between this species and *essequiboensis* unlikely.

Trigona (*Tetragona*) *subgrisea* variety *subnigra*, new variety

WORKER.—Structurally like typical *subgrisea*, to the inclusion of the distinctive sharp thin carina that is coextensive with the ocelli and partly overarches the lateral ones.

HEAD with the hairs of the vertex black instead of ochraceous.

THORAX with the hairs of the mesopleura pale as in the typical variety but with some intermixed darker hairs on the mesonotum and particularly on the scutellum in contradistinction

to the uniformly pale hairs in these parts in the typical variety.

LEGS with black hairs instead of pale on front and middle tibiae, external surface of metatarsi and other tarsal joints, and fringing the hind tibiae anteriorly and posteriorly.

WINGS with the bright fulvous venation confined to the basal two-thirds. The stigma somewhat clouded, the veins in the darkened apical part of the wing fuscous. Number of hamuli in each lower wing 5.

ABDOMEN with the hairbands on tergites 3-6 a little darker than in the typical variety, blackish rather than fulvous to brownish.

Dimensions those of the typical variety: length about 4 1/2 mm.; width about 1 3/4 to 2 mm.; length of forewing, including tegula, about 5 1/2 mm.

BRITISH GUIANA.—Upper Essequibo River, Dec. 13, 1937 (W. G. Hassler).

In making the above comparisons between the present variety and the typical variety, I have had under examination the holotypes of both forms.

Trigona subgrisea and its variety *subnigra* should be placed in my estimation in the subgenus *Tetragona* notwithstanding the fact that their abdomen is broad instead of much narrowed. Like typical *Tetragona* they have in the worker two denticles on the inner end of the apex of the mandible, plumose hairs fringing the hind tibiae, and a shiny integument. The sharp thin carina that tends partly to overarch the ocelli differentiates *subgrisea* from its near relatives, which include *mombuca* Smith (of which *subterranea* Friese is in my estimation a variety), *leucogastra* Cockerell (distinguished especially by the exceedingly long hairs on its scape) and *fulvohirta* Friese (which has the hind tibiae deeply emarginate apically, with a resulting strongly tooth-like angle where the convex posterior contour meets the concave apical contour). The last mentioned bee has wings colored very much like those of *subgrisea* variety *subnigra*.

***Trigona (Partamona) testacea* variety *testacea* (Klug)**

Melipona testacea KLUG, 1807, Magaz. neuesten Entdeckungen in gesam. Naturkunde (Gesells. naturf. Freunde, Berlin), I, p. 265.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler); Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

***Trigona (Partamona) testacea* variety *musarum* (Cockerell)**

Trigona musarum COCKERELL, 1917, Psyche, XXIV, p. 123.

BRITISH GUIANA.—Shudihar River, Dec. 29, 1937 (W. G. Hassler).

***Trigona (Partamona) testacea* variety *nigrior* (Cockerell)**

Trigona cupira nigrior COCKERELL, 1925, Animals and Mag. Nat. Hist., (9), XVI, p. 627.

BRITISH GUIANA.—Kuyuwini River, Nov. 22, 1937 (W. G. Hassler).

Although in all of these specimens the facial maculations are feeble, only in about one-half of them is the labrum black.

***Trigona (Paratrigona) impunctata* (Ducke)**

Melipona impunctata DUCKE, 1916, Com. de Linhas Teleg. Estrat. de Matto Grosso ao Amazonas, Publicação 35, Anexo 5, Hist. Nat., Zoologia, opposite p. 28, pp. 101-103.

BRITISH GUIANA.—Upper Essequibo River, Dec. 23, 1937 (W. G. Hassler).

***Trigona (Hypotrigona) longicornis* Friese**

Trigona longicornis FRIESE, 1903, Zeitschr. Hymenop. u. Dipterol., III, p. 360.

BRITISH GUIANA.—Shudihar River, Jan. 1, 1938 (W. G. Hassler).

This is the first time this species has been collected in British Guiana. It was described by Friese from Itaituba in the State of Para, Brazil (1903, Zeitschr. Hymenop. u. Dipterol., III, p. 360) and has been reported by Ducke from various localities in that state and also from the Brazilian states of Amazonas and Matto Grosso. It has been taken, according to Ducke, on the confluent of the Madeira and in the upper region of the Tapajos in the northern part of Matto Grosso and likewise at Cuyuba in the middle part of the state. Finally, Ducke noted that it is known also from the Cataract of Cupati of the Caquetá River in southeastern Colombia (1916, Comissão de Linhas Telegraficas Estrategicas de Matto Grosso ao Amazonas, Publicação No. 35, Anexo 5, Historia Natural, Zoologia, p. 91; 1925, Zool. Jahrb. System. Geogr. u. Biol., XLIX, p. 363).

Among the six specimens of this rather rare species before me, three are from localities in the State of Para and one is from British Guiana. The remaining two specimens are from countries not previously listed in the range of *longicornis*, namely:

PERU.—Puerto Bermudez, Rio Pichis, July 12–19, 1920 (Cornell University Expedition).

BOLIVIA.—Rurrenabaque, Rio Beni, October (W. M. Mann, of Mulford Biological Expedition, 1921–1922).

The worker of this species is readily recognized by the following characters

duckei and of *muelleri*, the only queens of *Hypotrigona* that I have had an opportunity to examine (see Schwarz, 1938, Bull. Amer. Mus. Nat. Hist., LXXIV, Art. VII, Pl. LXI, figs. C and D).

TRIGONA (CEPHALOTRIGONA),
NEW SUBGENUS

Type species *capitata* Smith.

Members of this subgenus of *Trigona* are characterized in the worker (Fig. 3) by the following combination of characters: the unusual sculpturing of the head, which is coarsely punctate and shiny on the clypeus, lower part of the supraclypeus, and lower extremity of the sides of the face, but densely granular and dull over

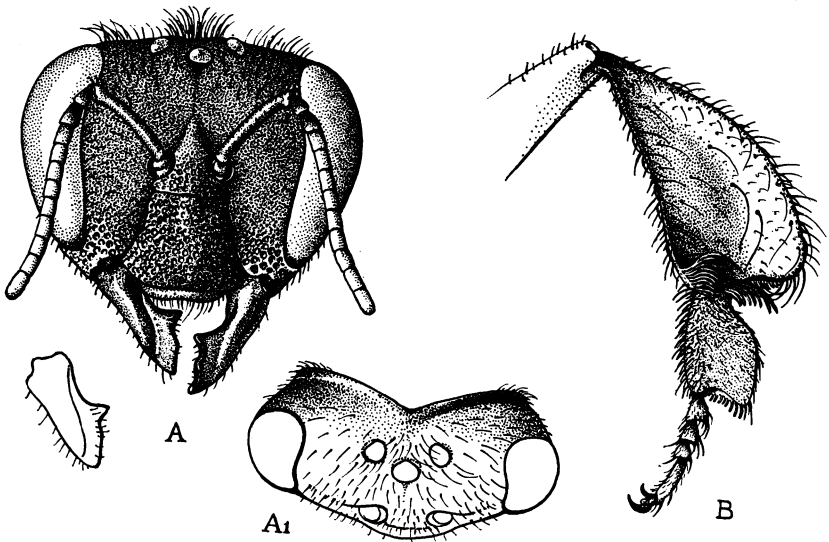


Fig. 3.—Worker of *Trigona* (*Cephalotrigona*) *capitata* variety *capitata* Smith.—A, head in front view and mandible; A', head viewed from above; B, hind leg, with special reference to the tibia and tarsal joints. Drawn by Mrs. Shirley H. Risser.

which separate it from the worker of other species of the subgenus *Hypotrigona*:

Antennae very long, scape, when erect, projecting beyond the vertex; labrum with two rather sharp prominent spines; hind tibiae very saw-toothed along the posterior contour and fringed with pale hairs that are as long as or longer than the joint is wide; stigma and venation light brownish.

While the length of the hairs fringing the hind tibiae of the worker of *longicornis* greatly exceed those of any other worker of the subgenus *Hypotrigona*, they are approximated in length by the corresponding hairs on the hind tibiae of the queen of

the upper part of the head; the peculiar armature of the mandible with its single large tooth at the inner extremity of the apex; the rather unusually large size of the head; the broad hind tibiae fringed with simple hairs.

In the male, too, there is contrast—although rather less emphatic than in the worker—between the punctate to punctate-tessellate lower half of the face and the dull and granular sculpturing of the upper half. Sternite 6 of the male has an exceptionally broad median tooth and the lateral teeth are also broad and in-pointing (Fig. 4).

In the queen (Fig. 5) there is also some contrast between the lower half of the face and the upper although the sculpturing of the upper half of the head tends to be much less dense

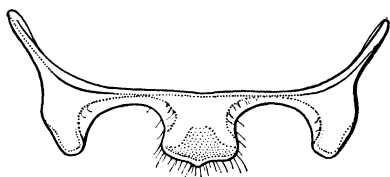


Fig. 4.—Male of *Trigona* (*Cephalotrigona*) *capitata* variety *capitata* Smith.—Sixth sternite. Drawn by Mrs. Shirley H. Risser.

than in either worker or male, with shiny interspaces among the punctures in this area. Sternite 6 has a bidentate apex, which is visible even when the virgin queen is viewed from above, jutting out pronouncedly from the end of her rather bulbous and spherical abdomen.

The subgenus *Cephalotrigona* is especially differentiated from the other subgenera of *Trigona* by the characters of the worker. Not only is the kind of contrasted sculpturing of the head in this caste—and to a lesser degree in the male and queen—very exceptional but the unidentate condition of the mandible is also distinctly unusual. The Old World subgenera *Dactylurina* and *Heterotrigona*, which also have only one tooth on the mandible of the worker, are in other respects so utterly different from *Cephalotrigona* as to preclude the thought of close relationship. In *Hypotrigona* individuals with defectively

toothed mandibles occur (Schwarz, 1938, Bull. Amer. Mus. Nat. Hist., LXXIV, Art. VII, p. 503, Pl. LXI) but the normal condition is bidentate.

Ducke (1925, Zool. Jahrb. Syst. Geogr. u. Biol., XLIX, p. 351) places *capitata* Smith, here considered the type species of *Cephalotrigona*, in one of the two main subdivisions of his Division III. In the other subdivision of Division III he includes insects that are assignable to the subgenera *Trigona*, *Tetragona*, *Oxytrigona*, and *Scaura*. My own feeling is that *Cephalotrigona* is more nearly affiliated with some of the forms of rough chitin than it is with these subgenera of smooth or mainly smooth chitin.

***Trigona* (*Cephalotrigona*) *capitata*
variety *capitata* Smith**

Trigona capitata SMITH, 1854, "Catal. Hymen. Brit. Mus.," II, p. 409.

BRITISH GUIANA.—Kamakusa, Sept., 1922, including males, and Jan., 1923 (H. Lang).

In my earlier paper on the Stingless Bees (Meliponidae) of British Guiana this species was unfortunately not included although Cockerell had reported *capitata* from the Berbice River (Cockerell, 1923,

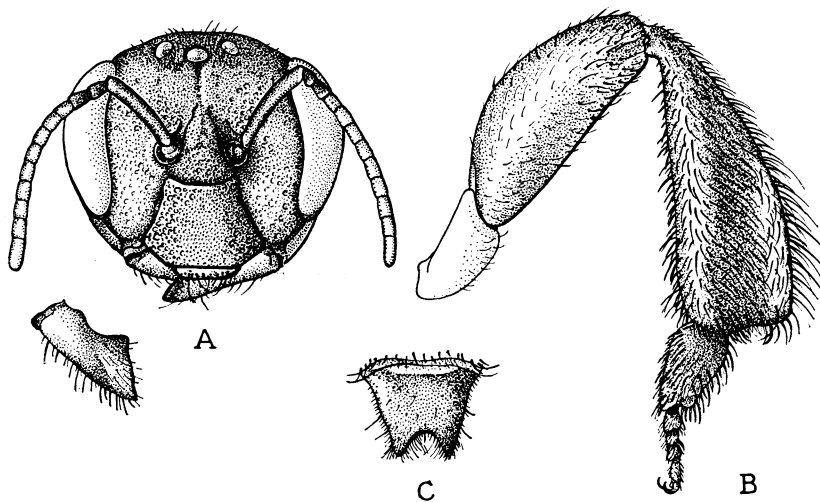


Fig. 5.—Queen of *Trigona* (*Cephalotrigona*) *capitata* variety *capitata* Smith.—A, head and mandible; B, hind leg; C, last visible sternite of abdomen. Drawn by Mrs. Shirley H. Risser.

Annals and Mag. Nat. Hist., (9), XI, p. 451).

In erecting *capitata* variety *virgilii*, Friese (1901, Zeitschr. Hymenop. u. Dipterol., I, p. 268) set down as one of the characters the "dark black-brown" body-color. This fact and the even more convincing evidence offered by the fact that in subsequent identifications he assigned the name *virgilii* to specimens of dark abdomen somewhat irrespective of the extent of the thoracic maculations makes me think that Friese perhaps interpreted *capitata* as a variety with reddish abdomen. Certain it is that Ducke so interpreted *capitata*, for Ducke alluded to the "*bicolored* typical form" (Ducke, 1925, Zool. Jahrb. Syst. Geogr. u. Biol., XLIX, p. 390). However, the ground color of the abdomen in Smith's

type is black, and in my estimation *virgilii* is a synonym of typical *capitata* rather than a distinct variety. There is considerable variability in the maculation of the thorax within *capitata*. Friese erected the variety *virgilii* on the basis of its more feeble thoracic maculation but numerous specimens identified by Friese as *virgilii*, including some from the type locality, Blumenau, seem to me to be fully as maculated, in some instances more extensively maculated, than is the type specimen of Smith's *capitata*. It is true that Friese in his description of *virgilii* indicated that sometimes the thoracic maculations are wholly lacking. But this condition I have been able to note in none of the South American specimens before me and it would seem to be a very unusual extreme.