

## MELIPONINE BEES FROM CENTRAL AMERICA.

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When recently travelling in Central America, Dr. W. M. Wheeler collected and made observations on a number of interesting species of Meliponinae. The specimens obtained were kindly sent to me for study, and are reported on herewith.

*Trigona amalthea* (Olivier).

Escuintla, Guatemala, Dec. 28, 1911 (No. 2); Las Sabanas, Panama, Nov. 1911 (No. 17). This is *T. fuscipennis* Friese. The "amalthea" of Friese and Silvestri is *T. silvestriana* Vachal (*T. friesei* von Ihering).

*Trigona nigerrima* Cresson.

Quirigua, Guatemala, Nov. 1911.

*Trigona jaty* Smith.

Escuintla, Guatemala, Dec. 30, 1911; Patulul, Guatemala, Jan. 1, 1912.

*Trigona pallida* (Latreille).

Gatun, Panama, Canal Zone, Nov. 11, 1911; Las Sabanas, Panama, Nov. 1911.

*Trigona cupira* Smith.

Guatemala City, Guatemala, Dec. 1911; Zacapa, Guatemala, Dec. 15, 1911 (No. 10). A male from San José, Costa Rica, Dec. 27, 1911 (No. 8) evidently belongs here; it has a narrower face than the female, and the clypeal markings are obscure.

*Trigona perilampoides* Cresson.

Escuintla, Guatemala, Dec. 28, 1911.

*Trigona fulviventris* Guérin.

Zacapa and Puerto Barrios, Guatemala.

*Trigona townsendi* Cockerell.

Patulul, Guatemala, Jan. 2, 1912, one specimen (No. 19). This

minute species has hitherto been known only from Peru. Face all black.

*Trigona frontalis* Friese.

Patulul, Guatemala, Jan. 2, 1912, one specimen. Face-markings, white.

*Trigona stigma* Smith.

Las Sabanas, Panama, Nov. 1911 (Nov. 14). In several specimens the abdomen is yellowish white except at apex; in others dark brown. This is, I believe, due to immaturity. A specimen from Sangre Grande, Trinidad, March 16, 1912 (*H. Scott*) is considered to be the hitherto unknown male of this species. It is like the worker, but with longer antennæ, and the anterior orbits are very narrowly margined with creamy-white. Dr. Friese, to whom a specimen of this species was submitted, considered it undescribed, but it agrees exactly with Smith's description of *stigma*.

*Trigona bipunctata wheeleri* subsp. nov.

*Worker.* Smaller, length hardly  $4\frac{1}{2}$  mm.; wings suffused with orange ferruginous, the color especially bright and strong in the costal region. Known from other black Guatemalan species by the color of the wings, a variable light spot at each side of the clypeus, and the upper part of the clypeus with a variably distinct keel. The mandibles are bright red at apex. *T. bilineata* Say, from the Rio Nautla, Mexico (*Townsend*) is hardly to be considered a distinct species, but it has not the orange wings, and does not closely resemble the present insect.

The new form is from Escuintla, Guatemala (type locality), Dec. 20, 1911 (No. 11); Patulul, Guatemala, Jan. 8, 1912. Twelve specimens in all.

Dr. Friese, who examined a specimen of this species, referred it to *T. mexicana* Guérin. I have what I consider to be *T. mexicana* from the Rio Nautla, Mexico (*Townsend*); it has greyish-hyaline wings, and is distinct from the present insect.

*Trigona pectoralis* (Dalla Torre).

Escuintla, Guatemala, Dec. 27, 1911 (No. 5). Professor C. F. Baker sent me specimens of this species from San Marcos, Nicaragua, labelled *T. dorsalis* Sm., det. Friese. I have a true *dorsalis* from F. Smith's collection; it has a long abdomen, and is evidently distinct from *pectoralis*.

*Trigona pectoralis panamensis* subsp. nov.

*Worker* with the long pollen-collecting hairs of hind tibiae all black (in typical *pectoralis* they are entirely pale red).

Las Sabanas, Panama, Nov. 1911, two workers (No. 15).

*Trigona* n. sp.(?).

Gatun, Panama, Canal Zone, Nov. 11, 1911. A worker in very bad condition; resembles *T. fulviventris* Guér., but the legs are red, and the hair of head, thorax and legs is entirely fulvous; the mesopleura is also evidently red. So far as can be made out the species is new, but it cannot be described properly without fresh material.

*Trigona ruficrus* (Latreille).

Zacapa, Guatemala, Dec. 13, 1911.

*Trigona ruficrus corvina* subsp. nov.

*Worker* with hind tibiae and tarsi black. Larger than *T. amalthea*; wings very dark; mandibles red.

Zacapa, Guatemala (type locality), Dec. 12, 1911 (No. 3); San José, Costa Rica, Dec. 27, 1911; Gatun, Panama, Canal Zone, Nov. 11, 1911 (No. 7.); Las Sabanas, Panama. Dr. Friese would not separate this from *T. fuscipennis*, but it has red mandibles, and in my opinion belongs with *ruficrus* rather than with *amalthea* (*fuscipennis*).

*Trigona nigra* Cresson = *cressonii* Dalla Torre.

This is not in Dr. Wheeler's collection, but I take the opportunity to note that specimens from Belize, sent by Prof. C. F. Baker, are labelled *T. hyalinata* Lep., det. Friese.<sup>1</sup> It is however plain from Lepeletier's description that they cannot be that species.

*Trigona flaveola mediorufa* subsp. nov.

*Worker*. Length about 5½ mm.; orange-ferruginous and black; head extremely large, broader than thorax, pale ferruginous, the face suffusedly light yellowish-testaceous; ocellar region black, the black variable in amount, with or without lateral processes; clypeus with a transverse black subapical line; front and face almost hairless, front brilliantly shining, face (with clypeus) finely sculptured with

<sup>1</sup> Professor Baker's species labels were large, and I replaced them by smaller ones. I do not now recall whether "det Fries'" was on the original labels, or was placed there by me on the basis of information sent separately.

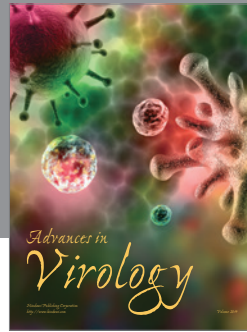
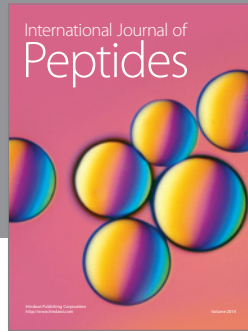
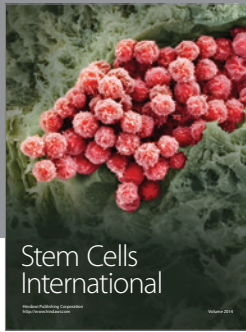
quite dense microscopical punctures; mandibles pale reddish testaceous, with a black basal tubercle, the margin dentate only at the inner corner; scape pale ferruginous, with the apical part darkened; flagellum dark with the apical margins of the joints ferruginous beneath; mesothorax moderately shining, with rather coarse and abundant hair, which is red on the red parts, but mainly fuscous on the back; middle third of mesothorax (broader behind) clear ferruginous, lateral third black, but the lateral margins narrowly ferruginous; scutellum ferruginous with a dark basal spot; pleura and metathorax black, with partly reddish and partly fuscous hair (fuscous in front and beneath); prothorax orange-ferruginous with a black stripe on each side; tubercles ferruginous; tegulæ large, pale yellowish red; wings hyaline, yellowish basally, stigma and nevrues light orange-ferruginous; legs reddish-black, with the following parts red or yellowish-red, anterior femora in front, and apically behind, with more or less of a stripe down lower side, anterior tibiæ in front and a broad stripe down outer side, apices of the tarsi, middle and hind trochanters above, and spot at apex of middle femora; hairs of the not greatly broadened hind tibiæ black; abdomen rather short and narrow, shining clear orange-ferruginous, the apical segments with coarse hair, which appears black in some lights and reddish in others, but that of last segment always appears red; hair on inner side of basitarsi red, shining, brilliant red-golden.

*Hab.*—Escuintla, Guatemala, three taken Dec. 30, 1911. (*W. M. Wheeler*, 30). Not very close to any species known to me by specimens or descriptions, but it may be compared with *T. taira* Smith (*coccafago* H. Müller; *cacafago* F. Müller), from which it differs by the much broader face, much longer scape, color of the legs, etc., (a cotype of *taira* compared). Since writing the above, I have been informed that Dr. Friese considers this to be his *T. flaveola*. As however *flaveola* was described as “ut *cacafago*, sed thorace ferrugineo, femoribus ferrugineis; alis hyalinis, basi fuscata, pterostigmate flavido, cellula radiali hyalina.” I think I am justified in considering our insect at least subspecifically distinct.

The following table will facilitate the separation of the species discussed above:

Mesothorax and scutellum densely rugosopunctate; axillæ pale, as also the bidentate apex of scutellum.....	<i>perilampoides</i> Cress.
Not thus sculptured and marked.....	1
1. Wings blackish, with the apex white; small black species.....	<i>ressoni</i> (D.T.)
Wings not thus colored.....	2
2. Minute, length 4 mm. or less.....	3
Larger, over 4 mm.....	4
3. Larger; face with white markings.....	<i>frontalis</i> Friese
Smaller; face all black.....	<i>townsendi</i> Ckll

4. Legs bright ferruginous ..... 5  
 Legs mainly (*mediorufa*) or wholly black or brown, dark ..... 7
5. Mesothorax wholly red ..... *pallida* (Latr.)  
 Mesothorax black, or almost entirely so ..... 6
6. Hind tibiae with hair all red ..... *pectoralis* (D. T.)  
 Hind tibiae with conspicuous black hairs ..... *pectoralis panamensis* Ckll
7. Head and thorax black; abdomen orange; wings dusky reddish. *fulviventris* Guér.  
 Not so colored ..... 8
8. Wings with bright ferruginous costa ..... 9  
 Wings without red costa ..... 10
9. Abdomen orange-ferruginous; head very large ..... *flaveola mediorufa* Ckll  
 Abdomen black ..... *bipunctata wheeleri* Ckll
10. Wings white or clear hyaline, stigma light ferruginous; abdomen long and  
 narrow, often pale ..... *stigma* Smith  
 Wings dark or dusky; abdomen ordinary ..... 11
11. Large; anterior wing about 9.5 mm. long ..... *nigerrima* Cress.  
 Smaller ..... 12
12. Face broad, without light markings ..... 13  
 Face with light markings ..... *cupira* Smith
13. Mandibles dark ..... *amalthea* (Oliv.)  
 Mandibles red ..... 14
14. Hind tibiae and tarsi red ..... *ruficrus* (Latr.)  
 Hind tibiae and tarsi black ..... *ruficrus corvina* Ckll



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