

BEES IN THE COLLECTION OF THE UNITED STATES NATIONAL MUSEUM.—3.¹

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Having spent some weeks in Washington, arranging the exotic bees in the National Museum, I found it necessary to set aside a large number of undetermined species for further study. The neotropical fauna especially is represented by large collections which prove to contain many new and little-known species. The museum at the time of my visit contained about 460 determined species from south of the Mexican boundary (including the West Indies), but when the undetermined material has all been classified the number will probably be not less than 700. Various parts of the Old World are also represented by collections which add considerably to our knowledge of distribution and include forms new to science.

The present part includes the neotropical social bees of the genus *Melipona*. These insects, as also the species of the allied genus *Trigona*, present a great number of races or very closely allied species, as do the ants. The group of *Melipona fasciata*, for example, with its local forms in Brazil, British Guiana, Trinidad, Panama, Costa Rica, etc., recalls the condition found among the ants of such a genus as *Camponotus*. The several forms are also related to one another in much the same degree as the "representative species" in the islands of an archipelago, as the birds of the Galapagos Islands or the Lesser Antilles. The natural inference is that this production of numerous closely allied forms is not due primarily to anything peculiar about the variability of social bees or ants, but comes about as a by-product of isolation. It appears probable that the mating sexes of these insects almost always come from the same nest, so that the several colonies give rise to others through a process of inbreeding. The tendency under these circumstances is toward a homo-

¹ For previous papers in this series see Proc. U. S. Nat. Mus., vol. 39, 1911, pp. 635-658, and vol. 40, 1911, pp. 241-264.

zygous condition, which is maintained until an accidental cross with another group occurs. It must be stated, however, that one form of dichroism appears to prevail within the limits of the colonies. The black and red variegation of the legs, which gave rise in one species to the name *M. variegatipes*, seems always to vary to a condition (probably recessive) in which the black pattern is absent. Owing to the existence of so many closely allied forms, the interpretation of many of the published descriptions, often without the citation of any exact locality, becomes very difficult. The United States National Museum possesses a large collection of these bees received from Dr. H. Friese, and I have followed his determinations whenever there was no reason to the contrary. In a few cases I have been obliged to dissent, and have given my reasons for so doing.

XYLOCOPA FORMOSA Smith.

A female about 22 mm. long, from Mexico, D. F. (J. R. Inda, No. 52), appears to be large for this species, but it otherwise agrees, especially in the striking characters of the head described by Maidl. Is it possible that *X. loripes* Smith is the male of this species?

XYLOCOPA VIRESCENS Lepeletier.

Alhajuelo, Canal Zone, May 29, 1912 (Busck). This is a species of the *X. brasilianorum* group, remarkable for its large size and green wings. It agrees exactly with Lepeletier's measurement, and although cited by Maidl as a synonym of *brasilianorum*, I believe it is a perfectly valid species. There are three large black species with similar green wings, separable thus:

Disk of first abdominal segment with only feeble widely scattered punctures; anterior wing about 24 mm. long-----*callichlora* (Cockerell).
 Disk of first abdominal segment strongly and quite closely punctured----- 1.
 Third antennal joint longer; margin of scutellum before the truncation rounded; anterior wing about 23 mm. long----- *virescens* Lepeletier.
 Third antennal joint shorter; margin of scutellum before the truncation rather sharp; anterior wing about 19 mm. long-----*transitoria* Pérez.

Maidl also regards *transitoria* as a synonym of *brasilianorum*.

XYLOCOPA ARIZONENSIS Cresson.

Tlahualilo, Durango, Mexico, two males at flowers of peach (A. W. Morrill).

XYLOCOPA SPLENDIDULA Lepeletier.

Carcarana, Argentina (L. Bruner, No. 27).

XYLOCOPA CILIATA Burmeister.

Carcarana, Argentina (L. Bruner, Nos. 26 and 28.). The female looks like *X. colona* Lepeletier, but is readily separated by the densely punctured clypeus.

XYLOCOPA VIRIDIS Smith.

Alhajuelo, Panama (Canal Zone), March 7 and 12, 1912 (Busck).

XYLOCOPA VARIANS ECUADORICA Cockerell.

Alhajuelo, Canal Zone, May 28, 1912 (Busck). A male, differing from the female only in the usual sexual marks, and the abdomen having very distinct but narrow marginal white hair-bands at sides of segments 2 to 5. The cheeks have erect white hair, mixed with black above. Face narrow, orbits distinctly converging above; clypeus, supraclypeal mark, lateral face-marks, labrum, broad stripe on mandibles, front of scape, and narrow stripe on basal part of flagellum, all very pale yellowish; clypeus with scattered black hairs. The tegulae are dark, with a red spot in front and the outer margin red; in typical *varians* they are wholly red.

XYLOCOPA TABANIFORMIS Smith.

A male, Mexico (C. F. Baker collection, 2499). This has black tegulae; Smith, describing a female, says they are ferruginous. The face-marks agree with those of var. *chiriquiensis* Pérez, except that they are sulphur yellow.

XYLOCOPA RUFINA (Maidl).

Both sexes from Mexico (C. F. Baker collection, 2321). Maidl described this as a variety of *X. tabaniformis*, but I believe it to be distinct, since the abdomen of the male is broad like that of the female, and the orange-ferruginous hair on the abdomen is very distinctive. The male also has larger eyes than *tabaniformis*, and the hair on the cheeks is black. There are no lateral face-marks. Baker had labeled this "*tabaniformis?*"

XYLOCOPA RUFINA ILLOTA, new subspecies.

Female.—Length, 18 mm. Similar to *X. rufina*, with interrupted orange-fulvous bands on abdomen, but hair of head and thorax dark mouse-gray (that of cheeks gray, not black); process of labrum more slender; surface of clypeus perfectly dull (moderately shining in *rufina*); tegulae black.

Mexico (Baker collection, 2154).

Type.—Cat. No. 20699, U.S.N.M.

MESOTRICHIA CALENS MALAGASSA (Saussure).

Antanambe, Madagascar. Both sexes.

MESOTRICHIA ALBICEPS (Fabricius).

Mount Coffee, Liberia (R. P. Currie). Agrees with one from F. Smith's collection, labeled Gambia.

MESOTRICHIA GABONICA (Gribodo).

Mount Coffee, Liberia, April, 1897 (R. P. Currie). A male, very like *M. anicula* (Vachal), but distinguished by the structure of the hind legs.

MESOTRICHIA STUHLMANNI ALTICOLA, new subspecies.

Female.—Length about 16 mm.; anterior wing 13.5 mm. Wings very dark, not noticeably pale at base; face covered with silvery-white hair, which extends far up on sides of front; dorsum of thorax posterior to level of wings, and whole of dorsal surface of first abdominal segment, covered with bright yellow hair; mesopleura with black hair; tegulae with a large ferruginous spot on outer side. Male with flagellum red beneath; thorax above covered with yellow hair; yellow hair of abdomen beyond first segment sparse; wings paler than in female.

Mount Kilimanjaro, 2 females, 3 males (W. L. Abbott).

The specimens have been in alcohol, and can not be very satisfactorily described, but the yellow on the first abdominal segment will distinguish the insect from true *M. stuhlmanni* (Kohl). The female is smaller than *M. divisa* (Klug), and differs not only in the pubescence, but also in the more delicate punctures of the abdomen.

Type.—Cat. No. 20700, U.S.N.M.

This is very possibly a distinct species; it is probably the same insect which Sjöstedt collected on Kilimanjaro, which Friese recorded as *Xylocopa caffrariae*, var *capensis* Enderlein. The name *capensis* is preoccupied in *Xylocopa*, and I am confident that our insect is not the same as Enderlein's which came from "Capland" and Port Natal. *M. stuhlmanni* is also recorded from Kilimanjaro.

XYLOCOPA BAROMBIANA (Strand).

Mount Kenia to Fort Hall, British E. Africa, altitude 8,500 feet (E. A. Mearns). Both sexes. Described by Strand as a variety of *X. carinata* Smith, from which it differs in the male by having the thorax light-haired only anteriorly above, and on anterior part of mesopleura (in the manner of the form *producta* Smith), and the wings dark as in the female, not light at base. The hind femora and trochanters are both dentate. Strand's type came from Barombi Station in the Cameroons, but it appears to be entirely the same insect, except that ours have an imperfect narrow smooth line on the clypeus, which was absent from Strand's example. The female is almost exactly like *X. carinata*, but the region just above the top of the eyes is less densely punctured, showing the shining surface, and the smooth band on each side of the clypeus is much narrower and less developed. *X. carinata* is represented by a series of forms in

different parts of Africa, and these may deserve only subspecific rank, but it seems probable that we may recognize several closely allied but distinct species.

MESOTRICHIA TENUISCAPA (Westwood).

Buitenzorg, Java, March, 1909 (Bryant and Palmer). Described by Westwood under the subgenus *Platynopoda* of *Xylocopa*, but referable to *Mesotrichia* in the broad sense.

XYLOCOPA FENESTRATA (Fabricius).

Chikar Kot, North West Provinces, India, April 1, 1906 (Frank Benton); Wazerabad, Punjab, April, 1906 (F. Benton).

XYLOCOPA COLLARIS, variety BRYANTI, new variety.

Male.—Length 19 mm. Agreeing with *X. collaris* Lepeletier in structure and appearance, but wings darker; a good deal of black hair on front; middle tibiae with black hair posteriorly, and their tarsi with long black hair externally and behind, except on the last three joints; hind tibiae with the hair on inner and posterior surfaces all black, and their tarsi with black hair, except a very little pale at base in front. The wings have a beautiful violet tint.

Buitenzorg, Java, April, 1909 (Bryant and Palmer).

Type.—Cat. No. 20701, U.S.N.M.

Lepeletier described *X. dejeanii*, now referred by authors to *collaris*, from a male in the Dejean collection said to come from Java. It agrees with the present insect in having the hair of the thorax pale (though in *bryanti* there is a band of black hair along extreme base of scutellum), and the pale hair of abdomen above confined to the first two segments (though in *bryanti* it fails to reach the apical margin of second segment in the middle third). On the other hand, the base of mandible has only a yellow spot, as in other *collaris* forms (Lepeletier may be misleading where he seems to infer more), the tegument of the thorax is distinctly greenish (Lepeletier says black, as in the Indian form *binghami* Cockerell), the long hair fringing apical part of abdomen is all black (Lepeletier says red and black mixed), and the hair on four posterior legs is as described above, the black fringe abruptly separated from the white on middle tarsi (Lepeletier says white, mixed with black hairs). It is thus evident that our insect is not the true *dejeanii*, but whether it is a distinct subspecies (as seems probable) can not now be decided.

XYLOCOPA PICTIFRONS Smith.

Male.—Soochow, China (N. Gist Gee, 141). The scape is curved and entirely black. This is Smith's male *piclifrons*; Bingham's is, according to Maidl, *X. attenuata* Pérez.

XYLOCOPA BENTONI, new species.

Male.—Length 18–20 mm. Black, the abdomen with a very obscure bluish tint; clypeus, supraclypeal mark, broad lateral marks reaching to level of lateral ocelli (at upper end a little divergent from orbit), transverse mark on labrum, and minute dot on base of mandibles, all ivory color; antennae black, third joint a little longer than following three united; inner orbits parallel, the front as broad as face; head and thorax with very pale ochreous hair, face with scattered brown hairs, middle of front and region of ocelli with much black or dark fuscous hair; sides of metathorax with some dark hair; legs with brownish-black and pale hair; anterior tibiae and tarsi fringed with long pale hair behind, but with dark hair in front; middle legs with more black hair, that on tarsi all dark, except some long glistening light hair on outer side above; hair of hind legs much like that of middle pair, but mainly dark on middle of tibiae posteriorly; hind femora beneath with much branched black hair; hind femora broad, angulate beneath basally; hind tibiae with inner face flat, apex on outer side with a snout-like projection; tegulae black; wings rather dilute brown, with delicate rosy tints in the apical field; abdomen with long and loose very pale ochreous hair on first three segments, on the third mixed with black; the remaining segments with very long loose black hair.

Abottabad, North West Provinces, India, April, 1906 (Frank Benton). Two males.

This insect looks superficially exactly like the common *X. collaris binghami* Cockerell, and has probably been overlooked on this account. It is very distinct in many important characters; the parallel orbits, shorter labial palpi, much shorter black scape, smaller ocelli, much greater distance between antennae and middle ocellus, smooth practically impunctate tegulae, shorter (triangular rather than cuneiform) second submarginal cell, more sparsely punctured abdomen with long loose hair, and the structure of the hind legs.

Type.—Cat. No. 20702, U.S.N.M.

XYLOCOPA APPENDICULATA Smith.

Male.—Length about 24 mm., anterior wing 20 mm. Black, the thorax densely covered with canary yellow hair, the first abdominal segment more thinly covered with the same, the rest of the abdomen appearing nearly bare, with fine black hair, the copious apical fringe brownish-black. Eyes extremely large, the orbits converging above and the large ocelli low down (style of *collaris*); clypeus, broad band-like supraclypeal mark, and spot at base of mandibles, yellow, but labrum and sides of face black; labrum without prominent tubercles; hair of head mostly black, but yellow on vertex, about mouth,

and a little on middle of face; wings narrower and more pointed than in *X. sinensis* Smith, and uniformly fuscous; mesothorax with very much finer punctures than in *sinensis*; tarsi with a good deal of red hair.

Soochow, China (N. Gist Gee, 143).

Superficially very like *X. sinensis* Smith, but structurally very distinct. Smith's original (1852) description of the male leaves one doubtful, but his later (1874) one is sufficiently convincing, though lacking in detail. The above brief account will make recognition easier. Pérez (1901) gives fuller details and especially describes the structure of the hind legs.

XYLOCOPA SONORINA Smith.

Buitenzorg, Java, March, 1909 (Bryant and Palmer). One female of this little-known species.

The middle ocellus is situated in a V-shaped basin; the clypeus has broad smooth swollen borders, and near the apical margin a pair of opaque black spots emitting hairs; labrum trituberculate; wings only moderately dark, greenish tending toward brassy, copery at apex. This is a true *Xylocopa*, not a *Mesotrichia*.

CERATINA CONGOENSIS Meunier.

Male.—Mount Coffee, Liberia. April, 1897 (R. P. Currie).

CERATINA CLADURA, new species.

Female.—Length about 8 mm. Shining black, with creamy-white markings; abdomen very broadly clavate, narrowed basally. Head rather large, the cream-colored portions being a very broad reversed T covering nearly all of clypeus, supraclypeal band (separated by narrow line from light color of clypeus), broad lateral face-marks (narrowing above, but reaching beyond middle of front), a pair of oblique marks on middle of front, small spots on labrum and base of mandibles, broad bands on cheeks, and a small spot on each side of vertex; middle of clypeus polished and wholly impunctate; antennae dark, scape ferruginous at extreme base; mesothorax dull and rough in front, otherwise very smooth and polished; light marks of thorax consisting of broad band on prothorax above, tubercles, broad but short bands above tegulae, two very obscure lines on disk of mesothorax, large patch covering most of anterior part of mesopleura, elongated patch beneath wings, scutellum, postscutellum, and a pair of very large patches on metathorax; at sides of prothorax is a reddish patch (perhaps originally yellow); area of metathorax black, obscurely transversely wrinkled, and with a rudimentary (basal) keel; tegulae testaceous; wings strongly dusky; stigma very long, dark brown; nervures fuscous, second submarginal cell compara-

tively small, subtriangular; legs black basally, anterior and middle femora broadly cream color at end, the tibiae of the same legs cream color with a reddish tint, the tarsi fuscous, ferruginous at end; hind legs without the creamy markings, tibial scopa long and loose; abdomen with a broad white band on first segment, straight behind, but broadly excavated in front; second and third segments with the base white, remaining segments black, hind margin of third obscurely reddened.

Buitenzorg, Java, March, 1909 (Bryant and Palmer). A remarkable species, allied to *C. benquetensis* Cockerell, from the Philippine Islands, but distinguished by the creamy-white markings and other characters.

Type.—Cat. No. 20703, U.S.N.M.

The four new species of *Ceratina* from Java now before me may be separated thus:

- Abdomen clavate, light markings creamy-white.....*cladura*, new species.
 Abdomen ordinary, not clavate; light markings yellow; scape black, not marked with yellow (males)..... 1
1. Apical plate of abdomen broadly rounded, without a central point;
 sixth segment with a large yellow mark.....*obtusicauda*, new species.
 Apical plate with a conspicuous median point..... 2
2. More robust; sixth segment with a large yellow mark.....*acuticauda*, new species.
 Less robust; sixth segment entirely black.....*bryanti*, new species.

These are all quite distinct from the Indian *C. hieroglyphica* Smith, which Friese records from Buitenzorg. They are also readily distinguished from the allied Philippine Islands species. The dark scape is characteristic of the Java forms.

CERATINA OBTUSICAUDA, new species.

Male.—Length a little over 7 mm. Black, with bright lemon yellow ornaments, as follows: Clypeus (except margins, the black margin rather broad above, and at sides of upper part), transverse supra-clypeal mark (broadly angulate above), narrow lateral face-marks (becoming linear above, and ending a little above level of antennae), large quadrate spot on labrum, narrow band on cheeks, narrow band on prothorax above, upper margin and broad apical part of tubercles, scutellum, apex of anterior femora (apical half beneath), all the tibiae on outer side, band (inclosing a spot on each side) on first abdominal segment, bands on second to fourth segments (on second very narrow except at sides, where it is abruptly enlarged and notched, on third also abruptly enlarged at sides but not notched), sixth segment with a large semilunar patch. Middle of clypeus with a distinct keel; antennae dark; mesothorax distinctly and quite closely punctured anteriorly, smooth and polished in middle, dull and rough along posterior margin; mesopleura densely punctured, with a shining spot above; tegulae rufous; wings strongly dusky,

stigma and nervures dark, second submarginal cell large; abdomen very broad; apical plate very broadly rounded.

Pelaboean, Ratoe, Java (Bryant and Palmer).

Type.—Cat. No. 20704, U.S.N.M.

CERATINA ACUTICAUDA, new species.

Male.—Length about 7 mm. Black, with yellow markings; abdomen very broad. Very close to *C. obtusicauda*, but differing thus: Front with two yellow spots; hind tibiae with only basal half yellow behind; bands on third and fourth abdominal segments interrupted; apical plate with a conspicuous median point, and subangulate laterally. There are slight differences in the punctures of head and thorax hard to describe; thus the mesothorax posteriorly, instead of having an abruptly defined perfectly opaque band, has a broader one, visibly consisting of punctures, which gradually thin out anteriorly.

The difference in structure between the two species, as regards the end of the abdomen, is like that between the American *C. dupla* and *C. mexicana*, except that *acuticauda* has not salient lateral angles like those of *mexicana*. There are four short yellow stripes on mesothorax.

Buitenzorg, Java, April, 1909 (Bryant and Palmer).

Type.—Cat. No. 20705, U.S.N.M.

CERATINA BRYANTI, new species.

Male.—Length 7 mm. Black, with lemon yellow markings. Close to *C. acuticauda*, but less robust, and also differing thus: Upper arm of clypeal mark abbreviated, so that there is a considerable distance between it and the supraclypeal band; mesothorax with only the outer yellow stripes, and these reduced; wings nearly clear (not brown as in *C. acuticauda*); anterior femora with a yellow spot not connecting with the apex; middle tibiae black except for a basal spot; hind tibiae with basal three-fifths yellow on outer side; first and sixth abdominal segments entirely black; second and third segments with lateral marks only, fourth and fifth with entire bands; lateral angles of apical plate more prominent.

Pelaboean, Ratoe, Java (Bryant and Palmer).

Type.—No. 20706, U.S.N.M.

CERATINA VOLITANS Schrottky.

San Bernardino, Paraguay, October 25 (K. Fiebrig).

CERATINA CHRYSOCEPHALA Cockerell.

Manaos, Brazil (Miss H. B. Merrill). This is the type-locality.

CERATINA PUNCTULATA Spinola.

Near Para, Brazil (Miss H. B. Merrill). Compared with a Panama specimen from F. Smith's collection, this differs (female) in

having a yellow stripe on anterior tibiae, middle of mesothorax rosy-purple, and abdomen with strong coppery tints. Possibly a valid subspecies is indicated. The insect is closely allied to the larger *C. chrysocephala*.

CERATINA AMABILIS Cockerell.

S. Lucrecia, Vera Cruz, Mexico (Crawford). From the same place is a specimen of the similarly colored *Augochlora ignita* Smith.

CERATINA MORRENSIS Strand.

Females.—San Bernardino, Paraguay (K. Fiebrig). One is marked November 1, at flowers of *Zea mays*. The three specimens before me have the dimensions of Strand's variety *cuprifrons*; the abdomen varies from brassy-green to blue-green and almost black. The strong violet tints, especially about the head, are very beautiful. This is closely allied to *C. cupreiventris* Smith from Ega, which Ducke has proposed to treat as a synonym of *C. maculifrons* Smith, but the latter is constantly much smaller and so far as I know always readily separable.

CERATINA VIRIDULA Smith.

Female.—Paraiso, Canal Zone, Panama, February 8, 1911 (Busck). Smith describes only the male; the female is like a small *C. laeta* Spinola, but there is a transverse white spot on the black apical margin of clypeus. Ducke makes this species a synonym of *C. laeta*, but I consider it quite distinct.

CERATINA BUSCKI, new species.

Male.—Length nearly 4.5 mm. Head and thorax brilliant golden green; abdomen blackish marked with yellowish-green, the first four segments each having a green band, most distinct and brilliant on the second; clypeus (except upper lateral margins, which are green and have very large punctures), small cuneiform lateral face-marks, labrum (except a dusky dot on each side) and very large mark on base of mandibles, ivory-color; green parts of face with very large punctures; antennae long; scape short and black; flagellum dull ferruginous, darkened above; sculpture of thorax ordinary, area of metathorax granular; tegulae piceous; wings dusky, stigma and nervures fuscous; apical plate of abdomen with a broad but distinct apical angle, the sides rounded (style of *C. atrata* H. S. Smith, but the median angle much less salient); femora mainly green (anterior and middle ones black in front), tibiae and tarsi ferruginous.

Taboga Island, Panama, June 10, 1911 (August Busck). Also one from the same locality, Feb. 22, 1912 (Busck).

Related to such species as *C. lucidula* Smith, *C. muelleri* Friese (which Ducke thinks should not be separated from *lucidula*) and *C.*

minima Friese, but known by the brilliant green head and thorax, and the color of the legs.

Type.—Cat. No. 20707, U.S.N.M.

OSIRIS PANAMENSIS, new species.

Female.—Length about 7 mm., not counting exerted sting. Polished, shining ferruginous or rufo-testaceous; front, vertex (except obscure reddish mark above each eye) and mesothorax black; abdomen suffusedly dusky; hind tibiae, except at base, black, covered with black hair; hind basitarsi as broad as tibiae, dark reddish, covered with black hair; spurs of middle and hind legs large and dark; tegulae rufotestaceous; wings clear hyaline, orange tinted, apex grey; stigma and nervures pale ferruginous; second s. m. broad, receiving first recurrent nervure in middle; third submarginal cell narrower on marginal than on outer discoidal; antennae ferruginous, apical half of flagellum dusky above; third antennal joint much shorter than fourth. Prothorax above swollen on each side; area of metathorax very large, triangular, smooth, and polished, except a narrow transverse rugosoplicate band at base; claws simple, bulbous at base; tongue with broad spoon-like end; second joint of labial palpi about 608 μ long, the two last joints each about 80 μ long; maxillary palpi about (not over) 352 μ long; a delicate keel down middle of front; hind wing with seven costal hooks.

Taboga Island, Panama, June 10, 1911 (A. Busck).

Nearest to *O. tarsatus* Smith but easily known by the black on hind legs.

Type.—Cat. No. 20708, U.S.N.M.

RHATHYMUS BICOLOR, variety NIGRIPES Friese.

Female.—Toca do Onca, Brazil, June 27, 1915.

The legs have a good deal of pale hair, contrary to Friese's description, but there is otherwise excellent agreement. In color the insect resembles *Epicharis conica* Smith, but the wings are much darker.

RHATHYMUS UNICOLOR Smith.

Female.—Sapucay, Paraguay, April 7, 1903 (W. T. Foster).

The specimen is almost 20 mm. long, but otherwise agrees with *R. unicolor*. It looks like a large red *Nomada*.

OXAEA TACHYTIFORMIS Cameron.

Mexico, D. F. (J. R. Inda, No. 37). This agrees perfectly with one from Venta de Zopilote, Guerrero, 2,800 feet, October (H. H. Smith), which Mr. Meade-Waldo compared with Cameron's type. The locality assigned by Cameron, "Santa Fé Mountains, New Mexico," was, of course, entirely erroneous. The flagellum is truncated in such a way that it appears as if broken off.

PROTOXAEA IMPUNCTATA, new species.

Female.—Length, 20 mm. Almost exactly like *P. texana* Friese, with bright rufofulvous hair on thorax above, and abdomen largely green, but differing thus; wings, although smoky, considerably paler; occiput, cheeks, sides of face, and region of ocelli with light fulvous hair; anterior femora with long pale hair; hair of middle of metathorax and middle of extreme base of abdomen creamy-white, contrasting with the red hair all around; dorsal surface of abdomen impunctate, except at sides, where it is sparsely punctured.

This cannot be the female of *Oxaea tristis* Gribodo; in *tristis* the second recurrent nervure joins the third submarginal cell very little beyond the middle, in *P. impunctata* near the beginning of the last third.

Mexico, D. F. (J. R. Ina, No. 55).

Type.—Cat. No. 20709, U.S.N.M.

PTILOGLOSSA MEXICANA Cresson.

Male.—Taboga Island, Panama, June 12, 1911 (A. Busck). Resembles *P. eximia* Smith, but mesopleura with black hair. The labrum and clypeus are honey color; scape honey-color in front; anterior legs with long clear red hair; hair at end of abdomen grayish-black. Cresson described only the female, which I have from Guatemala. I believe the Panama insect to be its male, although it is evidently not the insect described by Friese as male *mexicana*. The matter will have to remain a little uncertain until we have both sexes from Panama.

PTILOGLOSSA CRAWFORDI, new species.

Male.—Length about 19 mm. Robust, black, quite without any metallic tint; head and thorax densely covered with black hair; disk of clypeus with long appressed white hair; a transverse band of dull white hair above the clypeus, extending downward at sides half-way to mandibles; hair of cheeks and under side of body greyish or dilute black; clypeus prominent, quadrate, with flattened disk; eyes converging above; antennae black, flagellum pruinose beneath; third antennal joint much longer than next three together; tegulae black; wings strongly fuliginous, shining purple; first recurrent nervure practically meeting first transverso-cubital, or joining first submarginal cell some distance from its end; legs black, with black hair, small joints of tarsi reddish; abdomen with white hair at extreme base, and ferruginous hair at apex, but otherwise with rather thin black hair; venter with long pale hair, white basally, ferruginous apically, and in the middle suffusedly blackish.

Ujurass de Terraba, Costa Rica, September 1, 1907, 3 males (M. A. Carriker).

Type.—Cat. No. 20710, U.S.N.M.

Named after Mr. J. C. Crawford in recognition of his work on the bees of Costa Rica, and of the fact that he had separated the species as new before I saw it. *P. crawfordi* is a very distinct and unique species, easily known by its color and the long third antennal joint. The spurs of the hind legs are quite ordinary, not modified as in *P. ollantayi* Cockerell, *P. matutina* Schrottky, and *P. mexicana* Cresson. The insect is not a typical *Ptiloglossa*, but it falls in that genus better than elsewhere. A peculiar feature of the venation is the thickening and strong arching of the radial nervure before the apex of second submarginal cell, with the result of making the base of the marginal cell acutely pointed. This is merely an exaggeration of the condition found in other species of *Ptiloglossa*. In *Caupolicana* the condition is still more extreme, so that the base of the cell appears obliquely truncate. The genera *Ptiloglossa* and *Caupolicana* are so closely allied that it is doubtful whether they should be kept apart.

The female of the Chilean *Caupolicana fulvicollis* Spinola has the hair of thorax and first abdominal segment a very rich deep orange-ferruginous, while the male has pubescence like that of *C. gayi* Spinola. The United States National Museum has both sexes collected by M. J. Rivera at Constitucion, Chili, October 20, 1906. The specimen of *C. gayi* in the museum comes from Maipn, Chili (F. V. Ibarro).

TRIEPEOLUS FOXII, new species.

Female.—Length 9 mm. Similar to *T. vicinus* (*Epeolus vicinus* Cresson), but with perfectly entire bands on abdominal segments 2 to 4, and the oblique patches on sides of second segment separated from the band. On the first segment the apical interruption of the fulvous is rather narrower than the basal.

Portland, Jamaica, 2 females.

Type.—Cat. No. 20711, U.S.N.M.

This is doubtless the insect recorded by Fox from Port Antonio as *E. vicinus*. The characters might be considered varietal only, but the Jamaican insect presumably represents a form peculiar to that island.

TRIEPEOLUS (WILSONI variety?) BUSCKI, new species.

Female.—Length 13 mm., agreeing with *T. wilsoni* (*Epeolus wilsoni* Cresson), which is only known in the male, except that the antennae and legs are clear ferruginous, the head is entirely clear ferruginous, thorax dark ferruginous with the metathorax black, apical margin of wings not much darker than the rest; ground color of abdomen dark ferruginous, black on disk and sides of base of first segment. The specimen is perfectly mature, indeed somewhat worn.

Baracoa, Cuba, August, 1902 (A. Busck).

Type.—Cat. No. 20712, U.S.N.M.

This is very probably a red variety of *T. wilsoni*, but it seems to deserve a distinctive name. I have no specimens of *wilsoni* to compare; possibly they would show structural differences. The light orange-fulvous markings of the abdomen are very bright and beautiful.

NOMADA AZTECORUM PRATENSIS, new subspecies.

Female.—Length 10.5–11.5 mm. Differs from the typical form as follows: Legs (except coxae) bright ferruginous, the hind femora suffused with blackish behind; yellow area of clypens triangular; lateral face-marks more extended above, but variable; cheeks red or with a red band behind eyes; mandibles ferruginous, blackish apically; labrum ferruginous; mesothorax with two broad dull red bands, or these absent; spots on metathorax red; yellow band on first abdominal segment widely interrupted; venter with variably developed yellow bands, on fifth segment a yellow spot on each side.

Allotype—Male.—Length, 10–12.5 mm. Similar to the female, but with the following sexual characters: Face yellow, except a black line bounding clypeus and supra-clypeal mark; labrum and large spot on mandibles yellow; red band on cheeks narrow or nearly obsolete; scape greatly swollen, punctured, black, red at base and at apex on outer side; third antennal joint conspicuously longer than fourth; tegulae with a rather obscure yellow spot; femora marked with black near base and with variable yellow stripes, which may be obsolete; apical plate of abdomen entire or very faintly notched, its surface often marked with yellow.

Meadow Valley, Mexico, 2 females, 5 males, collected by C. H. T. Townsend.

Type.—Cat. No. 20713, U.S.N.M.

This seems to be a subspecies rather than an individual variety; the locality is far north of that (Amecameca) of typical *N. aztecorum* Cockerell.

NOMADA HEILIGBRODTI Cresson.

Both sexes from Cypress Mills, Texas, from the Ashmead collection. The male described by Cresson does not belong to this species; the true male has yellowish-white markings, face all light below antennae, apical plate of abdomen notched. The abdomen of the male looks just like that of *N. scita* Cresson, but the antennae are entirely different. The metathorax is obscure reddish without spots. The densely and coarsely punctured mesothorax distinguishes this from the very similar *N. vierecki* Cockerell.

COELIOXYS (LIOTHYRAPIS) FENESTRATA Smith.

Sochow, China (N. Gist Gee); Hakone, Japan, August 15 (Sasaki No. 154). Both are females; the Japanese one has the last ventral

segment distinctly more produced. The insect is larger than Smith's measurement would suggest, and he did not notice that the eyes were hairless. I have seen Smith's type.

COELIOXYS (LIOTHYRAPIS) DUCALIS Smith.

Mount Salak, Java, 3,000 feet, May 15, 1909 (Bryant & Palmer).

COELIOXYS HAKONENSIS, new species.

Female.—Length about 12 mm. Black, rather robust; eyes with rather short hair; inner orbits strongly converging below; mandibles black; face and front covered with light reddish-fulvous hair, dense except on clypeus, lower margin of clypeus with a dense fringe; clypeus rugosopunctate; cheeks keeled behind; antennae 5 mm. long, entirely black; occiput with light fulvous hair; mesothorax with very large confluent punctures, and scutellum even more coarsely sculptured, irregularly cancellate; hair of thorax pale fulvous or ochreous, becoming white below; axillar spines large, curved; hind margin of scutellum very obtusely angulate, the apex turned upward; tegulae bright chestnut red; wings dilute brown, paler basally; legs black, spurs ferruginous; anterior coxae with prominent angles, not amounting to spines; abdomen shining with large punctures, widely separated on disk of second segment, a little closer on third, closer and smaller on fourth and fifth; sixth dorsal segment rather broad, closely and finely punctured, conspicuously keeled (style of *C. penetratrix* Smith, but broader apically; last ventral segment extending a moderate distance beyond last dorsal, broad, acutely pointed, not notched at sides; dorsal segments with entire pale fulvous hair-bands; hind margins of ventral segments rufous.

Hakone, Japan, Aug. 15 (Sasaki 150).

Type.—Cat. No. 20714, U.S.N.M.

Resembles *C. fulviceps* Friese, from Formosa and China, but readily known by the red tegulae and last ventral segment not notched at sides, but only slightly narrowed at the point where the notch occurs in other species. It is also to be compared with *C. suisharyonis* Strand, from Formosa, but the end of the abdomen is quite different.

COELIOXYS LITORALIS Holmberg.

Female.—Mendoza, Argentine (C. S. Reed). This runs exactly to *litoralis* in the tables of Holmberg and Friese, but Jörgensen does not cite the species from Mendoza. The identification needs confirmation by actual comparison of specimens.

GRONOCERAS FELINA (Gerstaecker).

Female.—Mount Kenia to Fort Hall, British East Africa, 8,500 feet (E. A. Mearns).

MEGACHILE DOEDERLEINII Friese.

Kuling, Kiangsi, China (N. Gist Gee 51a).

OSMIA (PACHYOSMIA) PEDICORNIS, new species.

Female.—Length nearly 15 mm. Robust, hairy, obscure green; head large, with broad cheeks and vertex; middle of face with very long outstanding reddish hair; sides of face and lower part of front with long dull white hair, slightly creamy; upper part of front with thin black hair; cheeks and upper part of head behind with long white hair; mandibles broad and long, with two teeth; clypeus excavated in middle, forming a smooth basin, lower margin strongly bidentate, sides with enormous horns shaped like a boot, the toe turned inward and downward; antennae black, scape long; mesothorax finely and very densely punctured; hair of thorax long and erect, rather dull white, on scutellum slightly stained with brown; tegulae rufopiceous; wings greyish, a fuliginous streak in marginal cell; second submarginal cell very long; legs black, hair of tarsi mainly ferruginous; abdomen broad, shining, with long white hair on first segment and base of second; on third the hair is dark brown, on fourth and fifth black; ventral scopa orange.

Soochow, China (N. Gist Gee 125).

Type.—Cat. No. 20715, U.S.N.M.

A distinct and remarkable species, allied to the European *O. cornuta* (Latreille), but the abdomen is less densely hairy, the pubescence is quite differently colored, and the clypeal processes are differently shaped.

A male from the same locality (N. Gist Gee. No. 126) is referred here with confidence. It is about 12 mm. long, narrower than the female, and runs in Friese's table of Palaearctic species next to *O. rufa*, from which it is quite distinct. Clypeus simple; antennae long, reaching to end of thorax, entirely dark; hair of face and front long, creamy white, but black hair in region of ocelli; abdomen with black hair on fourth and fifth segments; six segment with reddish hair and entire margin; margin of fourth ventral segment broadly truncate in middle; tarsi with apical joint red. The long maxillary blade has a dark longitudinal band as in *O. rufa*.

OSMIA AZTECA Cresson.

Cresson only described the female. The male (Mexico, Baker collection 2386, and one labeled Mexico, without further data) is about 11 mm. long; hair of face pale ochreous; antennae long, entirely black; hair of thorax above orange-fulvous, but white on mesopleura; area of metathorax dull; abdominal segments 3 to 5 with the red fringes very bright and glistening; sixth segment truncate (faintly emarginate) in middle; seventh strongly bidentate.

ANTHOPHORA ACERVORUM, variety SQUALENS Dours.

Soochow, China (N. Gist Gee, males No. 123, females No. 124). I thought at first to separate the Chinese form as a distinct variety; but after examining specimens of four different European varieties there seemed to be no advantage in attempting to define another, though the Chinese specimens are slightly different from the available European ones. The males have a large yellow spot on mandibles, and the middle tarsi have joints 2 to 4, and base of 5, red.

ANTHOPHORA VIGILANS Smith.

Buitenzorg, Java, March, 1909 (Bryant and Palmer); Tjibodas, Mount Gede, Java, April 20, 1909 (Bryant and Palmer); Mount Salak, Java, 2,500 feet, March 7, 1909 (Bryant and Palmer). The male has very large foot-shaped black marks on clypeus.

ANTHOPHORA TEXANA Cresson.

Mexico, D. F. (J. R. Inda 39); Mexico (Baker coll. 2320).

CROCISA DECORA Smith.

Buitenzorg, Java, March (Bryant and Palmer); Depok, Java (Bryant and Palmer); Mount Salak, Java, above 3,000 feet, May 4, 1909 (Bryant and Palmer). The Depok one has the markings pale greenish blue, a different tint from that of the others, but it seems to represent only an individual variation.

CROCISA JAPONICA Friese.

Kuling, Kiangsi, China (N. Gist Gee). This is perhaps racially separable from the Japanese insect, but I do not venture at present to describe it as distinct. It is very close to *C. kanshireana* Cockerell from Formosa, but is easily separated by the blue spots on the lobes of the scutellum. It is distinct from *C. surda* Cockerell.

CROCISA IRISANA HUMILIS, new subspecies.

Buitenzorg, Java, March and April (Bryant and Palmer); Pelaboean, Ratoe, Java (Bryant and Palmer).

Type.—Cat. No. 20716, U.S.N.M.

Length of female, 9 mm.

Typical *C. irisana* is from the Philippine Islands; the Javan form has very dark wings, the tarsi with hardly any pale hair, and the scutellar notch with very little or no pale hair above. The type-locality of the subspecies is Buitenzorg. It is a rather poorly defined form, but four specimens are before me and seem to indicate that the Javan insect is recognizably distinct. Friese records this from Java as *C. pulchella* Guérin, but the original *pulchella* (never properly described) came from New Ireland and was supposed to be a variety of *C. nitidula* Fabricius.

CROCISA LILACINA, new species.

Male.—Length about 12 mm. Robust, with blue markings; clypeus prominent, finely punctured; sides of face (extending halfway up front), supraclypeal area and upper and lateral margins of clypeus all covered with blue hair; cheeks with blue hair; occiput with a fringe of hair, black in middle and white at sides; eyes greatly broadened below; mesothorax anteriorly with a pair of transverse bright blue patches, partly on prothorax; the usual four mesothoracic spots, short median band, and spots above tegulae, also blue, but the posterior spots nearly obsolete (rubbed off?); scutellum W-like, with rather sparse minute punctures, no light hair on disk, but a little white hair from beneath notch; tubercles fringed with reddish-fuscous hair; upper part of pleura with light blue hair, lower part with black, but nearly bare and strongly punctured; tegulae black with a large ferruginous mark; wings brown, with hyaline spaces; anterior and middle tibiae blue on outer side, but hind tibiae with only basal half blue; tarsi dark, without blue; markings of abdomen delicate lilac-blue, not metallic; first segment blue right across, the hind margin and a roof-shaped median mark black, this marking as in *C. caeruleifrons* Kirby, except that the blue is not interrupted basally; segments 2 to 5 with broad blue bands, rather widely interrupted in middle, sixth with some pale hair at sides; apex with two short teeth.

Buitenzorg, Java, March, 1909 (Bryant and Palmer).

Type.—Cat. No. 20717, U.S.N.M.

Resembles *C. caeruleifrons* Kirby, but differs by the blue at base of abdomen not interrupted; band on second segment more widely interrupted; hind tibiae with less blue, and general appearance less brilliant. It is much too large for *C. basalis* Friese and otherwise different.

CROCISA SORDIDA, new species.

Female.—Length about 11 mm.—Robust, with beautiful blue markings on head, thorax (except scutellum) and legs, but on abdomen and scutellum (large patches nearly covering lobes) they are gray and inconspicuous; there is a very little blue at extreme sides of abdomen. The hair is loose, not scale-like, and the blue is not metallic. Face and sides of front with light greenish-blue hair, sparse on disk of clypeus; cheeks and occiput with blue hair, but black behind ocelli, and partly near top of eyes; sides of vertex polished, with very sparse large punctures; thorax above with prothoracic band, long band on mesothorax (narrowing posteriorly), spot on each side of this band, band along mesothoracic margin from front of tegulae to near middle posteriorly, all bright blue; tegulae blue-spotted in front and behind; blue crescent behind tubercles; blue band across mesopleura

and markings on under side of thorax; scutellum W-like, a very little light hair from beneath notch; wings very dark; outer side of anterior and middle tibiae, basal half of hind tibiae, and first two joints of tarsi, covered with bright blue hair; first abdominal segment covered with gray hair, except narrow hind margin; segments 2 to 5 with broad bands narrowly interrupted on 2, broadly on the others.

Soekaboemi, Java, March 25, 1909 (Bryant and Palmer).

Type.—Cat. No. 20718, U.S.N.M.

A remarkable species on account of the obscure abdominal markings. In the character of the markings it resembles *C. abdominalis* Friese, also from Java.

CROCISA CALCEATA Vachal.

Male.—Sierra Leone. A specimen from Vachal, labeled "*Crocisa*, sp.," evidently prior to the description of *calceata*.

Genus OEDISCELIS Philippi.

Philippi based this genus (1866) on two species, *O. minor* Philippi and *O. vernalis* Philippi; the latter is herewith designated as the type. In later years species have been described by Friese, Ducke, Schrottky, and Bréthes. Mr. J. C. Crawford has made the surprising discovery that Ashmead's genus *Hylaeosoma* (1898) is apparently identical with *Oediscelis*. *Hylaeosoma* was based on *H. longiceps* Ashmead, from St. Vincent, West Indies; and in 1906 a second species, *H. ashmeadi* Crawford, was described from Costa Rica. The type of *Oediscelis* is, unfortunately, not available, but the United States National Museum contains specimens of *O. albida* Friese, *O. styliventris* Friese, and *O. inermis* Friese. These species of *Oediscelis* are very like *Prosopis*, but more hairy. The cheeks and under side of abdomen of *O. styliventris* have long white hair, but the species of *Hylaeosoma* are very little hairy. The species of *Oediscelis* and *Hylaeosoma ashmeadi* female have white hair on under side of abdomen. The female *H. longiceps* is broken, so this character can not be made out, but the male lacks the white hair, wherein it does not differ materially from male *O. albida*, etc.

Comparing the males of *H. longiceps* and *O. albida*, they are similar in appearance, with the same long (oval) head and very long (high) middle lobe of clypeus, but *longiceps* has no light face marks. They agree in the strong median groove of mesothorax, and both have a large stigma. The venation presents important differences; *O. albida* has the second submarginal cell large and quadrate, with first recurrent nervure meeting first transverse cubital; *H. longiceps* has the second submarginal cell very small, with first recurrent nervure falling short of it by a distance nearly equal to width of second submarginal cell. In the *Hylaeosoma* the basal nervure falls

short of transverse median a distance at least as great as length of transverse median, but a lesser distance in the *Oediscelis*. The females of the two species agree in having little hair on hind legs. *Hylaeosoma ashmeadi* female has second submarginal cell large, with first recurrent nervure falling only a little short of it, and basal nervure does not fall far short of transverse median.

O. styliiventris male has long antennae, and first recurrent nervure falling short of second submarginal cell. *O. inermis* male has similar characters, but hind femora angled below. The face marks of male *inermis* and *styliiventris* are very different.

It thus appears that *Oediscelis* contains quite diverse elements, and so far as external characters go it is difficult to separate it from *Hylaeosoma*. It has not been possible to compare the mouth parts or genitalia. Various generic names have already been proposed (*Pseudiscelis* for *O. rostrata* Friese, *Protodiscelis* for *O. fiebrigi* Bréthes, *Prosopoides* for *O. paradoxa* Ducke) for species of *Oediscelis* taken in the broad sense, and if all these bees are regarded as belonging to a single genus it will be hard to exclude *Hylaeosoma*.

Ducke cites *Chilicola* Spinola (1851) as doubtfully identical with *Oediscelis*. If the two are identical, *Chilicola* has priority. I have a pair of bees which I received as *Chilicola plebeja* Spinola, but they do not agree with Spinola's diagnosis of the genus, and are, in fact, Panurgids, closely allied (at least) to *Panurginus herbsti* Friese.

If *Hylaeosoma* is regarded as a subgenus of *Oediscelis* it will apparently be necessary to restrict it to the West Indian *H. longiceps*.

CENTRIS HAEMORRHODALIS (Fabricius).

St. Andrew, Jamaica, April 1898 (C. B. Taylor).

CENTRIS ELEGANS Smith.

Male.—Windward side, St. Vincent, West Indies (H. H. Smith). Smith described the female only. The male is like that of *C. haemorrhoidalis*, with the same face markings, but has the hair on and about the postscutellum reddish ochreous, the face markings (perhaps altered by cyanide) more decidedly yellow, the stripe on anterior tibiae reduced to two spots (representing the ends), the marks at sides of second abdominal segment transversely elongate, the apex of abdomen not red, and the hair on hind basitarsus all black.

CENTRIS ELEGANS GRENADENSIS, new subspecies.

Male.—Grenada, West Indies (H. H. Smith). Differs from the St. Vincent form thus: Face marks creamy white; stripe on anterior tibiae well developed, except basally, where it fails except for a basal spot; scutellum ferruginous; much fulvo-ochraceous hair behind wings; tegulae ferruginous; hair on hind tibiae and tarsi dark red-

dish; abdomen red at extreme tip. Some of these characters may be individual, but we doubtless have a distinct insular form.

Type.—Cat. No. 21648, U.S.N.M.

CENTRIS MURALIS Burmeister.

Male.—San Juan, Argentina (C. S. Reed). Male (var. *melanopus* Friese) and female. Mendoza, Argentina (C. S. Reed).

CENTRIS HOFFMANNSEGGIAE Cockerell.

Female.—Claremont, California (Baker).

CENTRIS COCKERELLI Fox.

Female.—San José de Guaymas, Mexico, April 10 (L. O. Howard).

CENTRIS NITIDA GEMINATA Cockerell.

Female.—Chauchamayo, Peru (F. W. H. Rosenberg). Superficially looks exactly like *C. nigriventris* Burmeister, but is quite distinct. New to Peru.

Male.—Guayaquil, Ecuador. Light band across clypeus entire; end of abdomen covered with silvery white hair; hind trochanters dentate; hind basitarsi with a spine; scape entirely black.

CENTRIS CALLOXANTHA, new species.

Male.—Length about 15 mm., anterior wing 13; black, with black hair, but whitish on cheeks, and brilliant canary yellow on thorax above and on tubercles, the disk of mesothorax posteriorly with a round fuscous patch; clypeus much broader than high, smooth, flattened on disk, ivory color, except the broad black upper and lateral margins; rest of head without light marks; eyes large, dark olive; antennae placed far apart, close to eyes; scape very short, entirely black; flagellum ferruginous beneath except basally; ocelli well down on front; mesothorax finely and extremely densely punctured; tegulae black; wings dark fuliginous, second submarginal cell as high as long; hind femora and tibiae extremely stout; hair of abdomen all black, including first segment. The long dense hair of hind tarsi is dark chocolate color.

Chauchamayo, Peru (F. W. Rosenberg). A remarkable species, related to *C. femoralis* Friese, *C. lutea* Friese, and *C. mexicana* Smith, but known by the light clypeus and black labrum.

Type.—Cat. No. 21649, U.S.N.M.

CENTRIS OBSCURIVENTRIS Friese.

Female.—Bocas del Toro, Panama, July, 1908 (W. Robinson).

Male.—Frontera, Tabasco, Mexico. This is the widely distributed form which Friese describes under *C. decolorata* Lepeletier, remarking that Lepeletier's description does not agree very well and suggesting *obscuriventris* as a substitute in case of doubt. It is the same

species which I have recorded from Natal, Brazil, as *C. maculata* Lepeletier, but Lepeletier omits to notice any black hair on the legs of *maculata* or *versicolor*. It is very probable that Lepeletier's names were applied to the two sexes of the species before us, but since there are discrepancies in the descriptions, it seems better, for the present, to use the name suggested by Friese.

CENTRIS BIMACULATA Lepeletier.

Male.—El Rancho, Guatemala, January 20, 1905 (Chas. C. Deam).

CENTRIS BIMACULATA CARRIKERI, new subspecies.

Female.—Length 18 mm. Wings hyaline basally, about as far as basal nervure and including first brachial cell; beyond this very dark fuliginous; hair of thorax above creamy white.

Aroa, Venezuela, "on *Aster*," December 16, 1910 (M. A. Carriker). Looks very distinct on account of the coloration of the wings, but otherwise agrees with *C. bimaculata*.

Type.—Cat. No. 21650, U.S.N.M.

CENTRIS CHLORURA, new species.

Female.—Robust, about 20 mm. long, anterior wing 14.5; head, thorax, and legs black, abdomen clear green, the hind margins of segments concolorous; first two segments bluer, approaching steel-blue, the others yellowish green. Head with black hair, grayish between antennae, and more or less on lower part of cheeks; face entirely black; clypeus prominent, with large punctures; labrum large, strongly punctured; mandibles strongly tridentate; the teeth largely fulvous; antennae entirely dark, long for a female; thorax with dark gray hair, paler at sides, a tuft of pale ochreous hair behind wings; scutellum ordinary, covered with hair; tegulae black; wings fuliginous; second submarginal cell long, not much deformed; anterior and middle legs with black hair; hind tibiae and tarsi with very large clear fulvous scopa; middle basitarsus with a sharp ferruginous bare edge in front, its surface transversely corrugated; anterior basitarsus beneath with a brush of six long stout bristles, curled at end; anterior tibiae with an apical patch which appears pale or dark according to the angle of vision; claws of anterior and middle legs with a large inner tooth, but of hind legs slender, with the tooth extremely minute; abdomen covered with long fulvous hair, not banded, no black hair intermixed; apex fringed with bright copper-red hair; apical plate rather broad.

Piches and Perene Valleys, Peru, 2,000–3,000 feet (Geographical Society of Lima).

A remarkable species, nearest to *C. festiva* Smith and *C. semicaerulea* Smith, but known by the long hair covering the abdomen,

the hind margins of abdominal segments not testaceous, and the dark wings.

Type.—Cat. No. 21651, U.S.N.M.

CENTRIS LINEOLATA Lepeletier.

“On Aster”; Rio Mato, Caura district, Venezuela (M. A. Carriker). The hair of the thorax above is bright fox red.

CENTRIS PACHYSOMA, new species.

Female.—Very robust, length, 23 mm.; anterior wing, 17.5; hair of thorax above dusky fulvous, paler posteriorly; tegument of thorax and abdomen (except extreme apex) wholly black. Mandibles largely yellow, strongly curved apically; labrum pale yellow, with a large pale brown spot; hair of labrum light golden, a long tuft at apex; clypeus with lower margin broadly rufous, inferior lateral areas very broadly yellow, the yellow interrupted in the middle line, disk with a longitudinal smooth raised yellow band; scape with a yellow stripe; anterior and middle knees with yellow spots; tegulae ferruginous; wings dark fuliginous; scopa of hind legs entirely black; hair of apical part of abdomen pale, beginning on middle of fourth segment, that at extreme apex red. The lateral face-marks are triangular (very broad cuneiform).

Palcazu, Peru (Rosenberg). I do not describe this in greater detail, since it agrees in all respects with the description of *C. lineolata* Lepeletier. I should have referred it to *lineolata* without any question, except for the fact that according to Friese the female of that species is only 18–19 mm. long, and the additional circumstance that I have been able to recognize as *lineolata* a different insect from Venezuela, the type locality being “Cayenne.”

Type.—Cat. No. 21652, U.S.N.M.

CENTRIS FUSCIVENTRIS Mocsary, variety CAURENSIS, new variety.

Male.—Length about 22 mm. Clypeus with a pair of large quadrate yellow patches, their margins suffused; lateral face marks small and obscure, between clypeus and eye; hair of lower part of cheeks rusty black; tegulae black, with a large dull reddish spot; second abdominal segment with a dark red suffusion on disk; scopa of hind tibiae and tarsi, and hair covering hind knees, light fulvous; apical joints of tarsi mainly chestnut red. Scutellum shining and bigibbous.

Rio Mato, Caura district, Venezuela, October, 1909 (M. A. Carriker). Superficially this looks exactly like *Epicharis rustica* (Olivier), except that it is somewhat more robust.

Type.—Cat. No. 21653, U.S.N.M.

CENTRIS FUSCIVENTRIS, variety MATOENSIS, new variety.

Male.—Length about 23 mm., like variety *caurensis*, except as follows: Face-markings obsolete, their place indicated by a reddish suf-

fusion; scopa on hind tarsi, on apical part of tibiae, and hair on hind knees, dark reddish brown; hair at end of abdomen chocolate color.

Rio Mato, Caura district, Venezuela, October, 1909 (M. A. Carriker).

Type.—Cat. No. 21654, U.S.N.M.

CENTRIS FUSCIVENTRIS, variety.

Male.—Like variety *matoensis*, but surface of upper part of clypeus with a minute tessellation (smooth in *matoensis*); fourth abdominal segment with long appressed pale brownish hairs, appearing whitish in some lights (the same at base of segment laterally in *matoensis*).

Rio Mato, Caura district, Venezuela, October, 1909 (M. A. Carriker). This may be considered a subvariety of *matoensis*.

CENTRIS PROXIMA Friese.

Escuintla, Guatemala (Stella Deam); Alhajuco, Panama (Busck).

CENTRIS CHILENSIS Spinola.

Maipu, Chili (F. V. Ibarro); Chubut, Patagonia.

CENTRIS NIGERRIMA Spinola.

Maipu, Chili (F. V. Ibarro).

CENTRIS POECILA Lepeletier.

Livingston, Guatemala (Barber and Schwarz); Tamos, Mexico (F. C. Bishopp).

CENTRIS TRICOLOR Friese.

Female.—Mendoza, Argentina (C. S. Reed). The specimen belongs to a form which has been given a distinctive name in manuscript by Friese, but it appears to be certainly conspecific with *tricolor*.

CENTRIS VULPECULA Burmeister.

Male.—Mendoza, Argentina (C. S. Reed.) I have this from Villa Encarnacion, Paraguay, sent by Schrottky as *C. lanipes* variety *tarsata* (Smith). This agrees with Friese's interpretation, but I do not think it is the true *tarsata*. Whether it should be considered a variety of *C. lanipes* I do not know; it is certainly closely allied.

CENTRIS BREVICEPS Friese.

Rio Mato, Caura district, Venezuela, October, 1909 (M. A. Carriker). I should consider this identical with *C. vittata* Lepeletier, did not that author positively state that the hind tarsus of the male has an "appendage" on the inner side. Friese indicates that *breviceps* is probably *vittata*, but prefers the name *breviceps* on account of Lepeletier's imperfect and faulty description.

CENTRIS MERRILLAE, new species.

Female.—Length about 14 mm., anterior wing 11. Similar to *C. lanipes* (Fabricius), but larger; pale hair of head and thorax white, with a faint creamy tint on thorax above; eyes light reddish; yellow clypeal spots elongated and oblique, so that the apical black area is broadly triangular; flagellum only obscurely red beneath; wings dilute fuliginous, quite dark; legs black; hind tibiae short, with very long ochreous hair; hind basitarsi with very long hair, which is pure black on inner side, and on outer shades into reddish-brown; fourth abdominal segment thinly covered with black hair, sides of fifth with white. Scape very short and stout, entirely black; labrum pale yellow, without spots, finely punctured, apex entire; more than basal half of mandibles yellow, apical part with a ferruginous band; vertex with black hair, but a crescent of light hair behind middle ocellus; tegulae fuscous; middle tarsi with red hair, but a long white fringe behind; apical plate of abdomen narrow.

Manaos, Brazil (Miss H. B. Merrill). Related to *C. lanipes* and *C. tarsata*, but evidently distinct.

Type.—Cat. No. 21655, U.S.N.M.

CENTRIS PLUMIPES Smith.

Near Pará, Brazil (Miss H. B. Merrill). Rio Mato, Caura district, Venezuela (Carriker).

CENTRIS PERSONATA Smith.

Near Pará, Brazil (Miss H. B. Merrill); "on Aster," Aroa, Venezuela (Carriker); Trinidad River, Panama, May 7, 1911 (A. Busck).

CENTRIS RUBELLA Smith.

Female.—Rio Mato, Caura district, Venezuela, October, 1909 (M. A. Carriker).

CENTRIS LILACINA, new species.

Female.—Robust, length, about 21 mm.; anterior wing, 14.6 mm.; black, with pale yellow face-markings, the abdomen entirely chestnut red with a strong violet or lilac tint; mandibles black, with three strong teeth, the two outer yellowish; labrum pale yellow, with thin red hair; clypeus yellow, with a very large club-shaped mark, the stem of which reaches the lower margin; lateral face-marks irregularly cuneiform, with a linear process above along orbit to about level of antennae; scape with a yellow band in front; flagellum entirely dark; hair of vertex and front entirely rusty black, of cheeks (except above) creamy white, some pale hair around antennae; thorax above with dense short dark gray hair, but on lower part of pleura cream-colored; scutellum strongly bituberculate; tegulae black;

wings dark fuliginous, shining purple; legs dark, the femora dark chestnut red; anterior and middle legs with black hair, but the very large scopa of hind tibiae and tarsi brilliant orange fulvous; abdomen very minutely punctured, dullish, the first segment dorsally polished and shining; apical plate much broader at end than in *C. rubella*.

Palcazu, Peru (Rosenberg). A member of the group of *C. personata*, *rubella*, etc., recognizable by the face-markings, lilacine abdomen, and structure of scutellum.

Type.—Cat. No. 21656, U.S.N.M.

CENTRIS SCHWARZI, new species.

Female.—Length, about 17 mm.; robust, agreeing in size and form and most details of color with *C. personata* Smith, but the hair of head and thorax is black, except on cheeks, where it shades into grayish chocolate, and on metathorax and hind part of scutellum, where it is pale ochreous, abruptly contrasting; clypeus with only a small cuneiform yellow mark on upper part; lateral face-marks thorn-shaped; scape with a small yellow mark; wings dark fuliginous. Labrum with long dark chocolate hairs; anterior and middle knees with a yellow spot; scopa of hind legs very large, pale fulvo-ochraceous; abdomen moderately shining, apical plate much broader at end than in *C. rubella*.

Cacao, Alta Vera Paz, Guatemala, March 26, 1906 (Barber and Schwarz).

Type.—Cat. No. 21657, U.S.N.M.

CENTRIS NIGROFASCIATA Friese.

Guayaquil, Ecuador; a long series.

CENTRIS CITROTAENIATA Gribodo.

Rio Mato, Caura district, Venezuela (Carriker); British Guiana, April 24, 1901 (R. J. Crew).

CENTRIS CAELEBS Friese.

Ibarra, Ecuador (Rosenberg).

CENTRIS ATRA Friese.

Rio Mato, Caura district, Venezuela (Carriker). The male has the wings more lilac, the female more green. *C. xylocopoides* Fox is a synonym.

EPICCHARIS AFFINIS, variety QUADRINOTATA (Mocsary).

Female.—La Lajita, Rio Mato, Venezuela, October, 1909 (Carriker). Mocsary described this as a species, but it is only a variety of *E. affinis* Smith.

EPICHARIS SEMIMURINUS, new species.

Male.—Length 21 mm., anterior wing 17 mm.; the abdomen without spots or bands, the first three segments bare, the others with sparse but long and coarse black hairs; ventrally the abdomen has much long pale hair. Front broad; hair of head black; labrum large, quadrate, cream-color; clypeus entirely black, with two strong carinae converging above, between the carinae there is on the upper part a strong median groove, on each side of which are strong punctures; mandibles black, with fulvous apical patch; lateral face marks consisting of cream-colored stripes beginning between eye and mandible and extending along clypeal suture to about middle of side of clypeus; scape with a large light yellow spot in front; flagellum dark brown beneath; front with a strong longitudinal keel; thorax covered with gray hair, mixed with black anteriorly above; wings dark fuliginous, shining purple; legs as usual in the *rustica* group; hind femora very stout, with two large yellow apical spots; hind tibiae with the outer surface bright orange-yellow (a finger-like brown mark near base); hind tarsi peculiar, the basitarsus on outer side yellow, with an immense black-edged spine in front.

Campinas, Brazil, February 25, 1901 (Hempel, 402). This agrees structurally with *E. schrottkyi*, except as to the clypeal groove, but the thorax has gray hair as in *E. dejeani*.

Type.—Cat. No. 21658, U.S.N.M.

EPICHARIS ANGUSTIFRONS, new species.

Male.—Length about 19 mm., anterior wing 15 mm.; black, the abdomen without pale hair or marks above; labrum and cuneiform lateral face-marks between eye and clypeus light yellow; mandibles black, with fulvous apical patch; a pair of small oblique (converging) supraclypeal yellow marks; scape with rather indistinct yellow stripe; hair of head black, of thorax grayish-black; four anterior legs with black hair, but hind tibiae and tarsi with large, very bright orange-fulvous scopa. Superficially like *E. schrottkyi* Friese (from Maroni, Guiana), but differing as follows: front much narrower; ocelli larger; labrum smaller, with a more copious fringe of black hair; clypeus with only feeble indistinct punctures, the keels only developed at upper end, a delicate median groove from base to apex; mesothorax with distinct though scattered punctures; scutellum dull, with a shining area in anterior middle and posteriorly in middle with a deep depression; wings shining green (purple in *schrottkyi*); apical plate of abdomen large and broad; tegument of legs without any yellow; hind basitarsi with a relatively small obtuse

tooth near the middle. The mouth-parts are less elongated than in *E. semimurinus*.

Campinas, Brazil, February 8, 1901 (Hempel 427).

Type.—Cat. No. 21659, U.S.N.M.

EPICHARIS MACULATA Smith.

French Guiana (W. Schaus); Rio Mato, Caura district, Venezuela (Carriker).

EPICHARIS LATERALIS Smith.

Campinas, Brazil (Hempel). The yellow marks at sides of face are not on clypeus. Hair of thorax above gray. Male with short, thick scape. Female with bright orange spot at end of mandibles; the spots on sides of face may be almost obsolete.

XENOGLOSSA DUGESI, new species.

Female.—Robust, length about 20 mm., anterior wing 13.5 mm.; black, the clypeus and labrum very dark reddish, mandibles with a variable orange band on apical part, abdomen beyond middle of second segment ferruginous; eyes dark greenish, diverging below; ocelli very large; mandibles notched at apex; scape and base and apex of flagellum reddened; third antennal joint about as long as the next two together; hair of head dark chocolate; hair of thorax black, short, and dense; tegulae piceous; wings dark fuliginous; legs dark, the femora chestnut red; hair of legs mainly black, dense and pale gray on outer apical side of anterior and middle tibiae, dark red on inner side of hind tibiae and tarsi; abdomen beyond second segment densely covered with feltlike bright fulvous hair; apical plate broad, finely transversely lineolate; under side of abdomen with dark fuscous hair.

Guanajuato, Mexico, two collected by Dr. A. Dugès. They bear the numbers 763 and 524. Closely related to *X. gabbi* (Cresson), from Costa Rica, but distinguished by the very dark wings and dark basal half of second abdominal segment. *X. fuliginosa* Gribodo, from Venezuela, has the abdomen colored as in *X. dugesi*, but the wings are quite differently colored. The legs of one specimen of *X. dugesi* carry large pollen grains, apparently of some Cucurbitaceous plant.

Type.—Cat. No. 21660, U.S.N.M.

Genus MELIPONA Illiger.

The specimens are workers, unless the contrary is stated.

1a. Abdomen with light tegumentary bands or markings on a black or dark ground.

2a. Band on second segment thick, broadly interrupted; that on first reduced to spots or obsolete.

3a. Hair of thorax fox red.

4a. Hind tibiae with a large yellow spot on inner side near end; apicolateral margins of abdomen with black hair.

MELIPONA ORBIGNYI Guérin.

Villa Rica, Paraguay; determined by Friese as *M. quinquefasciata orbignyi*, but here regarded as a distinct species.

4b. Hind tibiae without such a spot; face dark; clypeus dull, not polished; apicolateral margins of abdomen with white hair.

MELIPONA PHENAX, new species.

Ecuador (Baker collection). Labeled *M. anthidioides*, but not that species. True *anthidioides* is larger and has black hair on thorax.

Type.—Cat. No. 21661, U.S.N.M.

4c. Like the last but face marks light.

MELIPONA SCHAUSI, new species.

Length nearly 9 mm.; black, including scutellum, but axillae with conspicuous small yellow spot; face broad; clypeus very pale dull yellow, with a pair of very broad dark brown bars, not reaching upper end; pale yellow lateral face-marks filling space between clypeus and eye, thence rapidly narrowing to a point on orbital margin a short distance above level of antennae, more or less notched opposite antennal sockets; the small malar space with a minute yellow spot; labrum reddish; mandibles reddish, the edge not denticulate; scape black with a red spot at base; flagellum dark above, ferruginous beneath; front with whitish hair, top of head with hair partly black and partly red; mesothorax shining; thorax with bright fox-red hair above and at sides; tegulae clear ferruginous; wings reddish hyaline, nervures ferruginous; legs dark reddish brown, hind tibiae suffusedly somewhat paler near end; hair of legs mainly white, red on inner side of tarsi; abdomen black, with five chrome-yellow bands, that on first segment reduced to a spot on each side, the interval brown, that on second very widely interrupted, the others with variable brown marks on the yellow sublaterally; venter with shining white hair.

Cayenne (French Guiana), from collection of William Schaus. Resembles *M. marginata* Lepeletier and *M. favosa* Fabricius, but known by the interrupted band on second segment and other characters.

Type.—Cat. No. 21662, U.S.N.M.

3b. Hair of thorax black or almost, not red.

5a. Tegulae piceous; face shining black, polished.

MELIPONA ANTHIDIOIDES Lepeletier.

Rio Janeiro and Cayeiras, Brazil. I have a Brazilian specimen from F. Smith's collection.

MELIPONA ANTHIDIOIDES INTEGRIOR, new subspecies.

Band on second abdominal segment with hardly more than its middle fifth missing; that on third to fifth very narrowly or scarcely interrupted. Length, 10 mm.

Sapucay, Paraguay, "10.5. 1902."

Type.—Cat. No. 21663, U.S.N.M.

5*b*. Tegulae rufotestaceous.

6*a*. Abdominal bands white.

MELIPONA BAERI PALLESCENS Friese.

Tarata, Bolivia. Labeled by Friese *M. quinquefasciata*, var. *pallescens*.

6*b*. Abdominal bands yellow.

7*a*. Larger, anterior wing 7.7 mm.; tarsi red.

MELIPONA ANTHIDIOIDES Lepeletier.

A specimen determined as such, from Rio Janeiro; perhaps immature.

7*b*. Tarsi dark; the last joint may be red.

MELIPONA BAERI Vachal.

Tarata, Bolivia. Labeled by Friese *M. quinquefasciata*, variety *baeri* (marks on clypeus, above and at lower corners, small and suffused), and *M. quadrifasciata*, variety *bicolor* Lepeletier (marks on clypeus, including pale upper margin, distinct). The latter is not *M. bicolor* Lepeletier. These specimens represent a single species, which is distinctly smaller than *M. anthidioides*, and has very distinct light marks at sides of first abdominal segment, absent in *anthidioides*.

2*b*. Band on second abdominal segment narrowly or not interrupted, or very slender.

9*a*. Ground color of abdomen clear rufous, except at base; abdominal bands yellow, conspicuous. Length 9 mm.

MELIPONA QUADRIFASCIATA CALLURA, new subspecies.

Curityba, Brazil. Labeled by Friese *M. quadrifasciata*, variety *bicolor* Lepeletier; but it is not *M. bicolor* Lepeletier, which has no marks or bands on abdomen.

Type.—Cat. No. 21664, U.S.N.M.

9*b*. Ground color of abdomen not clear rufous, or only the basal part rufous.

10*a*. Scutellum with black or partly black hair.

11a. Abdominal bands broad, yellow, on first segment reduced to a mark on each side; hair of scutellum and mesothorax wholly black.

MELIPONA QUADRIFASCIATA Lepelletier.

Curityba, Brazil; determined by Friese.

11b. Abdominal bands extremely broad, yellow, covering all but basal third or less of segments; first segment without band or marks; front densely covered with white hair, contrasting with the black of top of head; clypeus polished, with scattered very small punctures; hind tibiae broadly yellow apically, the basitarsus also largely ochre yellow on outer side.

MELIPONA MANDACAIA Smith.

The above characters are recorded from a specimen from F. Smith's collection.

11c. Abdominal bands very distinct, and moderately broad, but occupying less than half segments; first segment with a well-developed and entire band; hair of thorax above not wholly black.

MELIPONA INTERMIXTA, new species.

Length about 10 mm., robust, black, with five entire pale yellow bands on abdomen, the first segment before the band red, the others sometimes dark reddish; clypeus dull ferruginous, the upper and lateral margins suffusedly blackish, the lower margin at extreme sides yellowish, and a faint suggestion of a median yellow stripe; lateral face marks with the lower end very broad and reddish, the upward extension a narrow whitish stripe along orbits to near middle of front; labrum and mandibles ferruginous, the latter not denticulate; malar space well developed; sides of face and front with thin hoary pubescence, but front and vertex generally with black, and occiput with pale ochreous; antennae, including scape, ferruginous beneath; mesothorax black, not polished; scutellum shining fusco-testaceous; axillae with a small yellow stripe; hair of thorax above brownish-black mixed with ochreous, whitish anteriorly: sides of thorax with white hair, the upper part with a large suffused fulvous patch; tegulae light ferruginous; wings dusky; legs black suffused with reddish, their hair partly dark and partly light, the fringe of hind tibiae black; apical part of abdomen with long black hair; venter with shining white hair.

British Guiana, May 27, 1901 (R. J. Crew). Allied to *M. eburnea* and *M. quadrifasciata*.

Type.—Cat No. 21665, U.S.N.M.

11d. Abdominal bands narrow: margin of scutellum fringed more or less with pale hair.

12a. Larger than 12d, axillae black, face without conspicuous light marks; hair of thorax above appearing gray, not fulvous; hair of pleura white, with a pale fulvous patch.

MELIPONA FASCIATA Latreille.

Para, Brazil; determined by Friese.

12b.

MELIPONA FASCIATA PANAMICA, new subspecies.

Hair of thorax above fulvous, mixed with fuscous or black, fulvous patch on pleura bright; scutellum and axillae dull testaceous or wax color; a faint pale line down middle of clypeus. The hair on apical part of abdomen above is black, not fulvous as in *M. eburnea*. Length 9 mm.

Porto Bello, Panama, February 28, 1911 (A. Busck), = type. Also from Cabima, Panama, May 17, 1911 (A. Busck), and Alhajuelo, Panama (Busck).

Type.—Cat. No. 21666, U.S.N.M.

12c.

MELIPONA FASCIATA COSTARICENSIS, new subspecies.

Like *M. fasciata panamica*, but differing thus: Hair of head and thorax above black, with some admixture of gray; upper part of pleura with fuscous hair, middle with fulvous, lower with white; scutellum darker. The fulvous hair on pleura may be wholly lacking. Length 9 mm.

Pozo Azul, Costa Rica, June 15, 1902 (M. A. Carriker). The abdomen is broader than in *M. solani* Cockerell, but it is very closely related. The flagellum is bright ferruginous beneath, which is not true of *solani*. The hind femora are more or less reddish, but not bright ferruginous with a black stripe beneath as in *solani*. *M. solani* represents the end of a series of forms deviating from *M. fasciata*.

Type.—Cat. No. 21667, U.S.N.M.

12d. Smaller than *M. fasciata*; axillae pale; face with conspicuous light marks (lateral marks and stripe on clypeus); ground color of abdomen black or (immature?) reddish.

MELIPONA MARGINATA GHILIANII Spinola.

Para, Brazil; determined by Friese.

12e.

MELIPONA MARGINATA CARRIKERI, new subspecies.

The narrow abdominal bands entire. Hind margin of scutellum pale yellow; axillae with yellow bands; lateral marks of face linear, not extending much below level of top of clypeus, the latter without a stripe. Mandibles red, simple; flagellum red at tip. Length 7 mm.

Pozo Azul, Costa Rica, June 15, 1902 (M. A. Carriker). The mesothorax has yellow lateral margins; in variety *amazonica* Schulz it is entirely black.

Type.—Cat. No. 21668, U.S.N.M.

10*b*. Scutellum with reddish or pale hair.

13*a*. Scutellum black. Large species, with very narrow white abdominal bands, entire on first segment, interrupted on 2 to 4.

MELIPONA INTERRUPTA Latreille.

Para, Brazil, and Bolivia; determined by Friese.

13*b*. Scutellum and axillae black; abdominal bands broad and bright yellow.

MELIPONA ORBIGNYI JENNINGSI, new subspecies.

Male.—Band on first segment widely interrupted, the others entire, that on second notched in front; bands on segments 2 to 4 with sublateral curved dark lines; no lateral face marks, but upper margin of clypeus clear pale yellow, the edge of the dark against this yellow bilobed; lower part of cheeks with shining white hairs. Length 8.5 mm.

Las Cascadas, Canal Zone, Panama (A. H. Jennings).

Type.—Cat. No. 21669, U.S.N.M.

13*c*. Scutellum at least partly yellowish or reddish.

14*a*. Small species, about 7 mm. long; scutellum and axillae yellow; face marks very conspicuous (lateral face marks, supraclypeal mark, lower corners and median stripe on clypeus); base of abdomen ferruginous.

MELIPONA MARGINATA Lepeletier.

Sao Paulo, Brazil, determined by Friese.

14*b*. Larger.

15*a*. Rather small, with broad abdominal bands, that on first segment interrupted; scutellum and axillae black, with fulvous or ochreous hair.

MELIPONA SCHAUSI CONVOLVULI, new subspecies.

Like *M. schausi*, with the same face-marks, etc., but abdominal bands considerably broader, and that on second segment not interrupted; no light spots on axillae. Length, 8 mm.

"On convolvulus," C. Bolivar, Venezuela (M. A. Carriker). Related to *M. favosa* Fabricius, but scutellum different. Also apparently related to *M. mutata* Lepeletier.

Type.—Cat. No. 21670, U.S.N.M.

15*b*. Pleura with a distinct patch of golden-fulvous hair; no lateral face-marks; first abdominal segment largely or almost wholly very pale yellowish; abdominal segments 3 to 5 heavily fringed with ochraceous hair; hair on inner side of hind basitarsi shining copper-red.

MELIPONA EBURNEA Friese.

Tarata, Bolivia, and Peru; determined by Friese. Rio Charape, Peru (C. H. T. Townsend); determined by Crawford. Piches and Perene Valleys, 2,000–3,000 feet. Peru (Soc. Geogr. de Lima).

15c. Pleura with large patch of rufo-fulvous hair; apical dorsal segments of abdomen with sparse black hair.

MELIPONA BONITENSIS, new species.

Like *M. fulvipes*, but a little larger and more robust, with rufo-fulvous hair on pleura; scape without a yellow stripe; front with fulvous hair; hairs fringing hind tibiae black; abdominal bands cream color, on segments 2 to 4 more or less narrowed sublaterally; no fringes of white hair on last few abdominal segments; legs black. Length 10 mm. Bonito, Prov. Pernambuco, Brazil, Jan., 1883. Related to *M. fasciata*.

Type.—Cat. No. 21671, U.S.N.M.

15d. Similar to the last but narrower, with narrower bands on abdomen; upper part of front with black hair.

MELIPONA FASCIATA BARTICENSIS, new subspecies.

Close to *M. solani*, but differing thus: Scutellum paler and shorter, less produced apically; first abdominal segment pale fulvous, suffused with brown above; black hair on apical part of abdomen not so thick; a median pale line on clypeus and (obscurely) along orbits; hair of pleura bright rufofulvous, without a fuscous spot. Length, 9 mm.

Bartica, British Guiana, May 17, 1901, also May 20 (R. J. Crew). There is some resemblance to *M. scutellaris*.

Type.—Cat. No. 21672, U.S.N.M.

15e. Pleura without a patch of golden-fulvous hair; anterior corners of thorax with a patch of fulvous hair.

16a. Lateral face marks linear, cream color; abdominal bands entire, broad, and bright yellow.

MELIPONA SANTHILARII Lepeletier.

Parana, Brazil, and Jundiahy, Brazil; determined by Friese. Asuncion, Paraguay; determined by Schrottky. Schrottky's interpretation of *M. quinquefasciata* Lepeletier, also from Asuncion, is at least very closely allied; it is the species described by Strand as *M. paraguayaca*. Possibly all the Asuncion specimens should be united under the latter name.

16b. Lateral face marks narrow, yellow; abdominal bands narrow.

MELIPONA FULVIPES Guérin, variety a.

Quiriqua, Guatemala (W. P. Cockerell); Cacao, Trece Aguas, Guatemala, May, 1907 (G. P. Goll). This form has darker legs than typical *fulvipes*, but it is not sharply differentiated.

Also from Prinzapolca River, E. coast of Nicaragua.

16c. Lateral face marks broad below.

MELIPONA FULVIPES Guérin.

Puntarenas, Costa Rica (F. Knab); S. Diego, Cuba (Palmer and Riley); Guantanamo, Cuba; Kingston, Jamaica; Rio Jacinto, D. F., Mexico (Julio Riquelme). A poor specimen from F. Smith's collection is labelled *M. fulva* Lepeletier, but it is not that species; according to Ducke *M. fulva* is the same as *rufiventris*. Other specimens of *M. fulvipes*, marked (one with a query) *M. fasciculata* Smith, are from Belize, Honduras, and Izamal, Yucatan (Townsend). True *fasciculata*, according to Gribodo, is a variety of *M. interrupta*.

16d. Male like *M. fulvipes*, but clypeus pale yellow with two broad dark bars (in male of *fulvipes* from Gualan, Guatemala, it is black with the lower corners pale yellow).

MELIPONA LIGATA Say.

San Rafael, Mexico, middle of July (C. H. T. Townsend).

1b. Abdomen without pale bands, or at most apical margins of segments slightly discolored, or (*M. interrupta oblitescens*) there are fragments of bands. (*M. rufiventris* has extremely slender pale bands.)

17a. Abdomen clear or rather dusky fulvous or ferruginous.

18a. Hair of mesothorax mainly or wholly black or dark fuscous.

MELIPONA SEMINIGRA Friese.

Para, Brazil, and Obidos, Amazons; determined by Friese. Pleura with a patch of fulvous hair; abdomen shining, polished.

MELIPONA ABUNENSIS Cockerell.

Rio Madeira, Abuna, Brazil. Allied to the last, but the scutellum is entirely black.

MELIPONA FASCIATA MELANOPLEURA, new subspecies (variety?).

Like *M. fasciata costaricensis*, with the same dark hair on pleura (which separates it at once from the other forms falling in this section of the table), but abdomen ferruginous, the pale bands very obscure, the third and fourth segments with fine appressed golden hairs. The face is practically immaculate. The hair of head and thorax above is mostly black. Length about 10 mm.

Pozo Azul, Costa Rica, June 15, 1902 (M. A. Carriker). I had marked this as quite distinct from *M. fasciata*, though allied; but there are so many intermediate forms that it seems best to treat it as a variety. It is possibly no more than a dimorphic variation of *costaricensis*.

Type.—Cat. No. 21673, U.S.N.M.

MELIPONA FASCIATA TRINITATIS, new subspecies.

Like the last variety, but differing thus: Hair of pleura entirely pale, with a fulvous patch; narrow line on clypeus and lateral face

marks (ending above about middle of front) cream color; hair of head and thorax above fulvous mixed with black, the general effect reddish; scutellum honey color and axillae whitish; first abdominal segment dorsally cream color; third and fourth segments without appressed golden hair. Length 10 mm.

Port of Spain, Trinidad, "11.6" (Aug. Busck).

Type.—Cat. No. 21674, U.S.N.M.

18*b*. Hair of mesothorax pale.

19*a*. Legs clear red, or red marked with black.

20*a*. Larger and more robust; hair fringing hind tibiae red.

MELIPONA PSEUDOCENTRIS Cockerell.

Described from Manaus, Brazil. One collected by Miss H. B. Merrill in the same locality only differs by lacking the bicoloration of the hind tibiae, which are wholly fulvous. It may stand as variety *a*. *M. pseudocentris* is probably not separable from *M. rufiventris* Lepeletier, as understood by Friese (from Sao Paulo, Brazil); but I here accept F. Smith's interpretation of *rufiventris*, as shown by a specimen from his collection. This appears to agree with Lepeletier's account, though the matter can not be definitely settled without examining Lepeletier's type. Smith, himself, in describing *M. mondury* Smith (which Marianno says is a synonym of *rufiventris*), remarks that *rufiventris* differs by having the inner orbits of eyes pale and the scutellum black. The specimen from his collection has the orbits as stated, but the scutellum is dull testaceous. It is also testaceous in *M. pseudocentris*.

20*b*. Smaller and narrower; abdomen with linear pale bands.

MELIPONA FLAVOLINEATA Friese=RUFIVENTRIS Lepeletier (F. Smith collection).

Para and Maranhao, Brazil; determined by Friese as *flavolineata*; near Para (Miss H. B. Merrill); Palcazu, Peru (from Rosenberg). The specimen from F. Smith's collection has the middle and hind basitarsi, middle tibiae at apex, and more than apical half of hind tibiae, black. This variation, as in the *M. pseudocentris* series, appears not to be specific; one of the Miss Merrill specimens shows the same leg-pattern, and is also peculiar for the distinctly narrower face.

As the identification of *M. rufiventris* is more or less uncertain, it may be best for the present to discard the name, and use *flavolineata* for the present insect.

19*b*. Legs black or dark; pleura with a fulvous patch.

MELIPONA PSEUDOCENTRIS MERRILLAE, new variety.

Like *M. pseudocentris*, but legs very dark reddish; hind tibiae not at all bicolored, the hairs fringing them black; scape much darker, though variable. Length 10 mm.

Manaos, Brazil, four collected by Miss H. B. Merrill. The abdomen is considerably broader than in *M. mimetica*.

Type.—Cat. No. 21675, U.S.N.M.

MELIPONA MIMETICA Cockerell.

Guayaquil, Ecuador (Brues). When publishing this species I suggested that Friese might have mixed it with his *M. fuscipes*, which he said was very rarely fulvous-haired. This surmise proves correct, as a specimen of *M. mimetica* from Guayaquil (Buchwald) is labeled *M. fuscipes* by Friese. True *fuscipes*, with ashy-fuliginous hair, and conspicuous black hair on abdominal segments 3 to 6, is certainly distinct.

MELIPONA FUSCIPES Friese.

Cacao, Trece Aguas, Alta Vera Paz, Guatemala, May, 1907 (G. P. Goll).

17*b*. Abdomen black or dark.

22*a*. Hair of thorax above mainly or wholly fulvous.

23*a*. Abdomen with much fulvous hair; hair of scutellum bright fox-red.

MELIPONA NIGRA Lepeletier.

Sao Paulo and Jundiahy, Brazil; determined by Friese. The specimens from the two localities are not quite alike.

23*b*. Abdomen comparatively little hairy.

24*a*. Larger, mainland forms.

MELIPONA SCUTELLARIS Latreille.

Pará, Brazil; determined by Friese. This has the legs dark, but one form near Pará (Miss H. B. Merrill) has red femora.

MELIPONA SCUTELLARIS ILLOTA, new subspecies.

Thorax above with much black or dark fuscous hair mixed with the fulvous; legs chestnut red, hind basitarsus and apical half of tibia black; clypeus red suffused with blackish, and with a faint median pale line. Length, 10 mm.

Palcazu, Peru; from Rosenberg.

Type.—Cat. No. 21676, U.S.N.M.

24*b*. Smaller; mainland species with yellow scutellum and axillae.

MELIPONA CONCINNULA, new species.

Length, about 9 mm.; black, with the hind legs, all the femora, and small joints of tarsi ferruginous; scutellum and axillae light yellow (not testaceous); mandibles light reddish, the blackened apical margin simple; a large bright ferruginous patch at lower end of cheeks beneath; clypeus dull, minutely roughened, with a broad median cream-colored stripe (not reaching upper end) and a spot at each extreme side; a narrow cream-colored band along inner orbits; scape with base and a line beneath to apex bright ferruginous; flagellum dull reddish beneath, broadly red at apex; front with pale

ochreous hair, top of head with ferruginous; mesothorax shining, the punctures very minute; hair of thorax bright fox-red, on ventral surface white; tegulae ferruginous; wings dusky; legs with pale hair, fringe on hind margin of hind tibiae black; abdomen short and broad, black, with dull surface, hind margins of second and following segments broadly dark obscure reddish; the very inconspicuous hair of upper side of abdomen is black, with some pale; the venter has white hair. Labrum whitish, not bicolored. Margins of mesothorax partly pale.

Rio Mato, Caura district, Venezuela, October, 1909 (M. A. Carriker). The scutellum is shorter, less produced apically, than in *M. scutellaris*.

Type.—Cat. No. 21677, U.S.N.M.

24c. Small species of the Lesser Antilles.

MELIPONA VARIEGATIPES Gribodo.

Montserrat (C. V. Riley); also four from Dominica.

MELIPONA VARIEGATIPES LAUTIPES, new variety.

Legs ferruginous, without the characteristic "*variegatipes*" markings. Length, 7 mm.

Montserrat, March 3, 1894 (C. V. Riley). A variation similar to those recorded above in *M. pseudocentris* and *M. flavolineata*. It is doubtless recessive to the typical form, with which it occurs in small numbers.

Type.—Cat No. 21678, U.S.N.M.

22b. Mesothorax with mainly black hair, scutellum with red; lateral face-marks conspicuous.

MELIPONA VULPINA, new species.

Length, about 10 mm.; broad and robust, black, including the legs, except that the femora have a suffused red band above; scutellum dull testaceous; mandibles ferruginous, the dusky margin simple; cheeks wholly black; labrum pallid; clypeus entirely dull, its lower margin cream-color except a small interval on each side of middle; vertical stripe on clypeus narrow and obscure, not extending very much above middle; lateral face-marks broadened below, conspicuous; scape long, black, with the extreme base red; flagellum dull red beneath, brighter apically; lower part of cheeks with glistening white hair, but upper part, with front and top of head, with the hair nearly all black; mesothorax with black hair, copiously intermixed with pale ochreous anteriorly; scutellum and upper part of pleura with very bright fox-red hair; under side of thorax with white hair; tegulae red; wings dusky reddish; legs with pale and black hair, that fringing hind tibiae black; abdomen short and broad, black, with

short stiff black hair, hind margins of second and following segments with thin inconspicuous fringes of pale hair; middle of venter with shining silvery-white hair.

Rio de Janeiro, Brazil, July, 1915 (P. G. Russell).

Type.—Cat. No. 21679, U.S.N.M.

22c. Hair of thorax above white, with a bright fulvous patch at each anterior corner of mesothorax, but none on pleura. Fragments of abdominal bands present. Hair fringing hind tibiae white.

MELIPONA INTERRUPTA OBLITESCENS, new subspecies.

Surinam; from Mr. Sladen, who determined it as *mutata* Lepeletier, which is an entirely different species, with red hair on thorax. This is a race of *interrupta*, with large pale supraclypeal mark, but clypeal stripe reduced to a triangle on lower margin; pale band on first abdominal segment broken into fragments and those on the other segments reduced to lateral marks.

Type.—In the author's collection.

22d. Hair of thorax above wholly or mainly black.

25a. Small, anterior wing about 5.3 mm. long; face-marks ivory color, clear-cut, and distinct.

MELIPONA MARGINATA ATRATULA Friese.

Jundiahy and Blumenau, Brazil; determined by Friese.

25b. Larger.

26a. Basin of first abdominal segment and hind margins of segments whitish or reddish; abdomen smooth, polished, and shining; very little hair on disk.

MELIPONA FUSCATA Lepeletier.

Para, Brazil; determined by Friese. Mapiri, Bolivia; received from Schrottky.

26b. Abdomen not thus marked.

27a. Large and robust, abdomen about 6 mm. wide; face shining black.

MELIPONA FLAVIPENNIS Smith (TITANIA Gribodo).

Guayaquil, Ecuador, and Mapiri, Bolivia; determined by Friese. Also from Costa Rica; Pozo Azul (Carriker) and Juan Vinas (William Schaus).

27b. Much smaller; clypeus dull; abdomen wholly without pale hair bands.

MELIPONA PERUVIANA Friese.

Huancabamba, Peru, 3,000 m.; determined by Friese.

27c. Resembling *M. fuscata* and *M. peruviana*, but very distinct. Abdomen with distinct pale hair bands. Pleura with a fulvous patch, varying to fuscous.

MELIPONA FASCIATA INDECISA, new subspecies.

Like *M. fasciata costaricensis*, but abdomen wholly without tegumentary bands. Very close to *M. solani* Cockerell, but differing by the dark reddish to black hind femora, and flagellum ferruginous beneath. It is, however, as near to *solani* as to *costaricensis*, being intermediate between the two, and strongly suggesting the reference of *solani* to *fasciata* as another race. Length, 10 mm.

Lagunita de Aroa, Venezuela, 2,000 feet (M. A. Carriker).

Type.—Cat. No. 21680, U.S.N.M.

ANTHOPHORA ZONATA (Linnaeus).

Female.—Brisbane, Queensland, February 10, 1907.

ANTHOPHORA AERUGINOSA Smith.

Male.—Duaranga, Dawson district, Queensland; from W. F. H. Rosenberg.

ANTHOPHORA SCYMNA Gribodo.

Male.—Warooka, Western Australia, February 15, 1909 (G. F. Berthoud). This species was described from a female, but the male before me appears to belong to it. The clypeus, broad supraclypeal mark, lateral face marks filling space between clypeus and eyes, labrum, base of mandibles, and scape in front are all bright chrome yellow. The flagellum is black, with an imperfect red stripe beneath.

ANTHOPHORA PULCHERRIMA Bingham.

Female.—Pognor La, Rupshu, Ladak, 16,000 feet altitude, July 22 and 23, 1897 (W. L. Abbott). Bingham's description is rather inadequate, as he does not distinctly indicate the black hair on head (except clypeal region and middle of vertex) and pleura. I have the species from Khamba Jong, Sikkim (15), 16,000 feet altitude, July (British Tibet Expedition).

TETRALONIA FLORALIA Smith.

Soochow, China, 5 males (N. Gist Gee, 127). A little smaller than *T. nipponensis* (Pérez), but very closely allied. The third antennal joint is much shorter than in *T. chinensis*.

PROSOPIS ITAMUCA Cockerell.

Female.—Brisbane, Queensland, December 23, 1904.

PROSOPIS (NESOPROSOPIS) PUBESCENS (Perkins).

Female.—Hilo, Hawaii, July (H. W. Henshaw). Agrees with one from Perkins. There is also one from Oloa, Hawaii, July 18 (W. H. Ashmead).

AUGOCHLORA FLAMMEA Smith.

Female.—Tacubaya, Mexico (O. W. Barrett); Motzorongo, Vera Cruz, Mexico, January (H. Osborn). Compared with one from F. Smith's collection.

AUGOCHLORA VESTA TERPSICHORE (Holmberg).

Female.—Zaruma, Ecuador, January 30, 1916 (F. W. Rohwer).

MEGALOPTA IDALIA Smith.

Cayenne (French Guiana), both sexes collected by Wm. Schaus.

MEGALOPTA FORNIX Vachal.

Female.—Chauchamayo, Peru; from W. F. H. Rosenberg. I suppose this large form is Vachal's *fornix*, as it agrees in nearly all respects; the lateral ocelli are, however, distant from the occipital border much less than twice the diameter of an ocellus.

MEGALOPTA FORNIX PANAMENSIS, new subspecies.

Female.—Similar to the Peruvian insect just recorded, but smaller, 13–14 mm. long, anterior wing 10.5 to 12 mm.; lateral ocelli distant from occipital border much less than twice diameter of an ocellus; protuberance on labrum thick, not like a horseshoe. These characters would appear to refer the insect to the Brazilian *M. sodalis* Vachal, but the third antennal joint is conspicuously longer than the fourth, as in *fornix*.

Male.—What I suppose to be the male of this subspecies has the abdominal structure and general appearance of *M. idalia*, but the face below the antennae is testaceous delicately suffused with green (not bicolored), the flagellum is wholly ferruginous (not darkened apically), and the area of metathorax, though shining and polished in middle, is quite large.

Female (type).—Trinidad Rio, Panama, March 23, 1912 (Busck); also Boquete, Chiriqui, Panama; male, Paraiso, Canal Zone, Panama, January 28, 1911 (Busck). If the insect from Peru cited above is separable from *M. fornix*, the species will stand as *M. panamensis*, with the Panama form as typical.

Type.—Cat. No. 21681, U.S.N.M.

MEGALOPTA TABASCANA, new species.

Male.—Length a little over 12 mm., anterior wing 10; general form and appearance as in the *M. idalia* group, but first two abdominal segments dull rufo-testaceous, with the hind margins broadly blackened; remaining segments dark, with strong yellowish-green tints, the third obscurely reddish basally; third ventral segment with a deep median sulcus reaching to the base, as in the Peruvian *M. aethantis* Vachal. Head and thorax yellowish green; labrum and

lower margin of clypeus broadly whitish; mandibles whitish basally, ferruginous apically; flagellum long, crenulated, dusky above, becoming black on apical part; lateral ocelli about as distant from occipital margin as the diameter of one; thorax dorsally with faint coppery tints; postscutellum much shorter than scutellum, with thin hair not hiding the surface; area of metathorax rather large, angular posteriorly, finely striate all over; prothorax testaceous; wings yellowish hyaline; first recurrent nervure meeting second transverse cubital; legs testaceous.

Frontera, Tabasco, Mexico. Allied to *M. aegis* Vachal and *M. aethautis* Vachal, but distinct from both by the combination of thoracic and abdominal characters.

Type.—Cat. No. 21682, U.S.N.M.

NOMIA, subgenus NOMIAPIS, new subgenus.

This is proposed for the subgenus described by me¹ as typical *Nomia*; type *N. diversipes* Latreille. Meade-Waldo has shown that the Asiatic *N. curvipes* is the true type of *Nomia*.

MEGACHILE ATRATA Smith.

Female.—Fergusson Island, British New Guinea. This is the form with dark fuliginous wings; it agrees with one from Amboina, from F. Smith's collection. The form with translucent orange-tinted wings, broadly pale fuscous on outer margin, which I have from Sumatra (from F. Smith's collection), is to be called *M. atrata*, variety *fulvipennis* (*M. fulvipennis* Smith).

MEGACHILE DISJUNCTIFORMIS Cockerell.

Female.—Tai-pek, Formosa, June 15, 1896.

MEGACHILE MYSTACEA (Fabricius).

Female.—Brisbane, Queensland, November 28, 1904.

MEGACHILE RUFIPES (Fabricius).

Female.—Axim, Gold Coast, Africa; from C. R. Mengel.

COELIOXYS SAUTERI (Cockerell).

Female.—Tai-pek, Formosa, July 31, 1896. Described as a subspecies of *C. afra*.

COLLETES BICOLOR Smith.

Female.—Bahia Blanca. Argentina (L. Bruner, 6).

AGAPOSTEMON FESTIVUS Cresson.

Male.—San Francisco Mountains, Santo Domingo, West Indies, September, 1905 (A. Busck). The hind femora have a small tooth beneath. According to Baker, this is the male of *A. poeyi* Lucas.

¹ Proc. U. S. Nat. Mus., vol. 38, p. 289.

AGAPOSTEMON RADIATUS PORTORICENSIS, new subspecies.

Male.—Length about 9 mm. Abdomen a little more distinctly metallic, but base of first segment ferruginous instead of green and the yellow band interrupted by ferruginous; underside of abdomen yellowish-red, without distinct markings; middle and hind tibiae suffusedly ferruginous on outer side; dark parts of first and second abdominal segments considerably smoother than in *radiatus*.

Mayaguez, Porto Rico, January, 1899, two males (Aug. Busck).

Type.—Cat. No. 21683, U. S. N. M.

Genus TRIGONA Jurine.

The following table separates the African species represented in the United States National Museum. Nearly all the species were received from Doctor Friese and determined by him. The specimens are workers, unless the contrary is stated.

1a. Scutellum entirely pale or yellow, except a small black mark at base; lateral margins of mesothorax pale; species not minute.

2a. Abdomen of worker dark, with suffused light marks at sides; greater part of clypeus black. (Male abdomen testaceous, with a dark triangle or second segment.)

TRIGONA BECCARII Gribodo.

I possess a cotype of this species, from Keren, Abyssinia, collected by Beccari.

2b. Like *T. beccarii* (worker), except that there is more light color on scape, and the clypeus is yellow, with a narrow black band along anterior margin, and a pair of oblique reddish marks above.

TRIGONA BECCARII JOMBENENSIS Cockerell.

Jombene Range, East Africa (Chanler-Hohnel Expedition).

2c. Abdominal segments rufotestaceous, with broad dark margins.

TRIGONA BECCARII NIGRIFACIES Friese.

1b. Scutellum black, with a broad yellow margin; species not minute.

1c. Scutellum all dark.

3a. Abdomen greatly elongated, narrow, so that the insect looks like some wasp; polished black, wings fuliginous.

TRIGONA STAUDINGERI Gribodo.

3b. Abdomen otherwise.

4a. Very small species.

5a. Mesothorax polished; wings brownish.

TRIGONA CURRIEI Cockerell.

Worker. Length about 3 mm., robust, black; head large and quadrate; mandibles and base of scape red; clypeus with a median groove; whole body polished and shining; cheeks very broad; tegulae fuscous; wings dilute brownish, stigma pale with a dusky margin; legs obscurely reddish; abdomen short and broad, the first segment very obscurely more or less reddish. Related to *T. magretti* Friese, but easily separated by the brownish wings. The head also is quite broad.

Mount Coffee, Liberia, April, 1897 (R. P. Currie).

5*b*. Wings clear hyaline, a little milky.

6*a*. Mesothorax polished; antennae low down on face.

TRIGONA MAGRETTII Friese (Old Calabar).

TRIGONA BOTTEGOI Magretti (Somaliland).

The *T. magretti* was determined by Friese; the *T. bottegoi* came from the Magretti collection. In spite of the widely different localities, I can not see any difference. Apparently *T. magretti* falls as a synonym.

6*b*. Mesothorax dull; labrum pale or yellow.

7*a*. Abdomen brown, hind margins of segments pallid; "eyes red" (Friese).

TRIGONA GRIBODOI Magretti.

Three specimens are from Luebo, Congo (D. W. Snyder).

7*b*. Abdomen red basally and black apically; "eyes black" (Friese).

TRIGONA BRAUNSI Kohl.

Very closely allied to the last.

4*b*. Species not minute.

8*a*. Abdomen entirely black or piceous; mesothorax not polished; wings dilute brownish.

9*a*. Larger, anterior wing about 6 mm. long; hind tibia very broad; no light face marks.

TRIGONA TOGOENSIS JUNODI Friese.

9*b*. Smaller, with light face marks.

10*a*. Light face marks consisting of triangular supraclypeal mark, lateral bands along orbits, and transverse clypeal band having a median vertical process; tubercles light.

TRIGONA LENDLIANA Friese.

10*b*. Light face marks confined to broad band on lower margin of clypeus, and small obscure lateral marks.

TRIGONA CLYPEATA Friese.

8*b*. Abdomen at least partly red or light; mesothorax not polished.

11*a*. Face black, with pruinose pubescence; abdomen varying from red at base only, to reddish with hind margins of segments black.

TRIGONA TOGOENSIS Stadelmann.

11*b*. Lower margin of clypeus with a dull white band; abdomen lively orange fulvous, with hind margins of segments black.

TRIGONA ZEBRA Friese.

This has been considered a variety of *T. clypeata*, but it seems to be distinct. Another related form is *T. quagga* Strand.

11*c*. Clypeus, supraclypeal mark and broad lateral face-marks cream-color or yellow; clypeus with two faint brownish clouds, not always evident.

TRIGONA NEBULATA Smith.

There are specimens of this from Mount Coffee, Liberia, May, 1897 (R. P. Currie).

The United States National Museum contains 10 species of Asiatic *Trigona*, of which only the following calls for remark:

TRIGONA BIROI Friese.

The type of this species must be considered to be one of those collected in New Guinea by Biró. Friese records it at the same time from the Philippine Islands, where it seems to be common. Specimens come from Los Banos (Baker), and others were collected by C. R. Jones in a locality not specified. Three are from flowers of *Nipa fruticans*, "Lamao, Batan," February 26, 1916 (P. J. Weeter). For the present it is assumed that all these insects are the same, but it may be that the Philippine form is distinct from that of New Guinea, and possibly there is more than one sort in the Philippines. The specimens are mostly in poor condition, so that it is impossible to be sure of all their characters. The Philippine *T. biroi* has a red scape, and although very close to the Australian *T. carbonaria*, I am sure it is a distinct species.

TETRAPEDIA CALCARATA Cresson.

St. Lucrecia, Vera Cruz, Mexico (F. Knab).

CHELOSTOMOIDES PRATTI Cockerell.

San José de Guaymas, Mexico, April 10, 2 females (L. O. Howard). New to Mexico; previously known only from Texas.

EULAEMA NIGRITA Lepeletier.

Male.—Bogova, Chirique (Rosenberg).

NOMADA CRUCIS Cockerell.

Female.—Meadow Valley, Mexico (Townsend).

AGAPOSTEMON TEXANUS Cresson.

Male.—San Juan Allende, Mexico, 11.29 (Townsend).

HALICTUS SEMIVIRIDIS Friese.

Male.—Spanish Point, Bermuda, July 5, 1910 (Reynold Spaeth). Friese described the female. The male has labrum and apex of clypeus ferruginous; antennae very long, flagellum dull pale reddish beneath; tibiae at base and apex, and the tarsi ferruginous.

MEGACHILE RHODOPUS Cockerell.

Female.—Mexico (Baker 1785).

MEGACHILE THORACICA Smith.

Female.—Buitenzorg, Java, March, 1909 (Bryant and Palmer). This has remarkable clavate hairs, as described by Smith. The hair on the face is only partly black; that surrounding the clypeus is creamy-white, and the lower margin of clypeus is fringed with ferruginous hair. The disk of mesothorax is shining between the punctures.

MEGACHILE DIMIDIATA Smith.

Meade-Waldo¹ states that *M. velutina* Smith is a synonym of *dimidiata*. The species is said to have red antennae and fulvous legs, and Meade-Waldo remarks that "the original descriptions of both species distinctly state that the legs are fulvous." As a matter of fact, the descriptions do not so state, but imply that they are black, with fulvous hair. *M. dimidiata* is said to have red antennae. *M. erythropoda* Cameron, from Singapore, is also of this immediate alliance; it has red legs and the scape is rufous. A female labeled Punjab and United Provinces, India, VI-X (R. L. Woglum), is evidently the genuine *M. velutina*, described from "northern India." It has black legs and antennae. The insect from Trong, Lower Siam, collected by Dr. W. L. Abbott in 1899, and identified by me as *M. velutina*, is smaller (length 16 mm.), with brighter red hair, and outer margin of apical half of mandibles much more convex. The antennae are black, but the legs obscurely more or less reddish. This insect represents a distinct subspecies, and may be known as *Megachile velutina abbotiana*.

If, as is quite probable, all these insects are to be regarded as subspecies of *M. dimidiata*, the nomenclature will be:

Megachile dimidiata Smith.

¹ Ann. Mag. Hist., November, 1912, vol. 10, p. 468.

Megachile dimidiata velutina Smith.

Megachile dimidiata abbottiana Cockerell.

Megachile dimidiata erythropoda Cameron.

MEGACHILE BENTONI, new species.

Female.—Length a little over 11 mm.; black, not very broad, with mainly ochreous pubescence; clypeus very densely rugosopunctate, without any keel or smooth line, its lower margin irregularly denticulate; a shining area just above top of clypeus; mandibles with the long cutting edge very oblique, the teeth feeble, except the sharp apical one; face with pale brownish hair, fuscous on middle of clypeus, dense and almost white at sides; front and vertex with long black or dark fuscous hair; cheeks and occiput with whitish hair; mesothorax and scutellum very densely punctured; dorsum of thorax with ochreous hair, but black on disk of mesothorax; at sides of thorax the hair is pale ochreous, becoming dull white beneath; tegulae bright ferruginous; wings dusky hyaline; legs black, the hair pale, on inner side of tarsi bright red; hind basitarsi parallel-sided, not especially broad; abdomen glistening, the first two segments with ochreous pubescence, the others with black, but segments 2 to 5 with conspicuous entire reddish-ochreous hair-bands; ventral scopa pale reddish, black only at apex of last segment.

Menserah, Northwest Provinces, India, March 1906 (Frank Benton). Among the Indian species perhaps nearest to *M. fulvofasciata* Radoszkowski, from which it is readily known by the four entire abdominal bands. Bingham places *fulvofasciata* as a doubtful synonym of *M. amputata* Smith, but the description indicates a quite different species, only 10 mm. long. *M. bentoni* has a strong superficial resemblance to the European *M. argentata*.

Type.—Cat No. 21692, U.S.N.M.

MEGACHILE ARCUATA, new species.

Female.—Length about 13.5 mm.; black, rather robust, resembling a *Lithurgus*; head large, face and cheeks very broad; mandibles elongate, tridentate, with a tubercle on inner border; maxillary palpi with long dark hair; clypeus broad, concave, smooth, presenting a shining basin bounded on each side by a large oblique keel; supra-clypeal area also presenting a smooth basin, bounded above and at sides by an arcuate raised margin; antennae black; cheeks with strong punctures running together in rows; sides of face, sides of metathorax, tuft behind wings, fringe on tubercles, and ventral surface of thorax with white hair, but the head and thorax otherwise with sparse black hair; mesothorax and scutellum densely and coarsely rugosopunctate; tegulae black, finely punctured; wings hyaline, the apical margin broadly dusky, marginal cell very obtuse at end; legs with thin white hair, dense and shining on middle

tarsi; spurs black; hind basitarsi narrow, not modified; abdomen dullish, more shining apically, with large not very close punctures, and no distinct hair-bands; second and third segments deeply grooved at base; first segment with white hair at extreme sides; the others with short pure white hair bands at sides, hardly noticeable from above, but conspicuous in lateral view; ventral scopa shining yellowish-white, black on last segment and on apical middle of penultimate one.

Type.—Cat. No. 21693 U.S.N.M.

Punjab and United Provinces, VI-X (R. L. Woglum). A very distinct species, recalling *Megachile longula* Fox, from Lower California, which was described as a *Lithurgus*. The insect may be placed in the Asiatic fauna next to the large species of the subgenus *Eumegachile*, which it resembles more or less in structure. The genus *Megachile* is richly represented in the Indian region, and the accurate classification of the species presents a problem of considerable difficulty. Northeastward and in Baluchistan there is a large Palaearctic element. Some years ago Major Nurse kindly communicated to me some records and synonymy which ought to be published, as follows:

Megachile ulrica Nurse is *M. terminata* Morawitz.

Megachile nadia Nurse is *M. rotundata* Fabricius.

Megachile appia Nurse is *M. centuncularis* Linnaeus.

Megachile lerma Cameron is *M. umbripennis* Smith.

Megachile rugicauda Cameron is *M. patellimana* Spinola.

Megachile creusa Bingham is *M. flavipes* Spinola.

It is also known that *M. gathela* Cameron is *M. nana* Bingham; *M. bombayensis* Cameron is *M. heru* Bingham; *M. erythrostroma* Cameron is also *heru*.

Some of Cameron's supposed *Megachile* belong to other genera:

Megachile anonyma Cameron = *Osmia anonyma*.

Megachile phaola Cameron = *Heriades phaola*.

Megachile saphira Cameron = *Heriades saphira*.

Megachile elfroma Cameron = *Heriades elfroma*.

The following were taken by Major Nurse and determined by Friese:

(1) At Deesa. *Megachile seraxensis* Radoszkowski.

(2) At Quetta. *Megachile morawitzi* Radoszkowski; *M. viridicollis* Morawitz; *M. multispinosa* Morawitz; *M. argentata* Linnaeus; *M. desertorum* Morawitz; and *M. asiatica* Morawitz.

MEGACHILE TUXTLA Cresson.

Mexico, D. F. (Inda, 46.59). Both sexes; the male represents a variety with hair on apical segments of abdomen greyish-white instead of golden.

MEGACHILE ALBITARSIS Cresson.

Mexico (Baker collection, 1785). A male *M. rhodopus* Cockerell carries the same number.

MEGACHILE LATIMANUS Say.

Mexico (Baker collection, 2320). Both sexes. This is identical with the Rocky Mountain species which I have regarded as *latimanus*; it is possible that the true species of Say is separable, but I have not the materials on which to reach a decision.

MEGACHILE NIGROMIXTA, new species.

Male.—Length about 8 mm., anterior wing 6.5; black, including the legs (anterior tarsi simple), the long slender flagellum obscurely brownish beneath; head broader than thorax; face and front covered with long yellowish-white hair, the upper part of clypeus also with very long black hairs, largely mixed with the others, and not forming a definite fringe; vertex with inconspicuous long dark hairs and sparse short pale ones; vertex broad, closely punctured, but glistening; thorax above well punctured, but somewhat shining; hair of thorax pale, mixed with black above, especially on scutellum, and a patch of black hair on middle of pleura; tegulae black; wings dilute fuliginous, the costal region darker, shining violaceous; legs with pale hair, yellowish on inner side of tarsi; anterior coxae flattened and shining in front, with stout spines; middle and hind femora and hind tibiae stout; abdomen shining, segments 1 to 4 with pale ochreous hair-bands at sides only; disk of second segment with long black hair; fifth segment with an entire band; sixth above covered with ochreous hair, the keel obtusely bilobed; venter with two entire hair-bands.

Mexico (type), from Baker collection (1785). Also one from Guatemala (Baker collection, 1783). Superficially like *M. guatemalensis* Cockerell, but easily separated by the much larger head, darker wings, and bilobed end of abdomen.

Type.—Cat. No. 21684, U.S.N.M.

MEGACHILE KNABI, new species.

Male.—Length about 10 mm.; anterior wing 6.8; black, moderately robust, antennae slender, and simple; face and front covered with shining white hair, and cheeks below with a stiff dense fringe of the same; mandibles broadly triangularly expanded below, the margins of expanded part conspicuously hairy, the inner slope with a dense pale yellowish fringe; vertex with strong, very dense punctures, mesothorax and scutellum with the same; thorax with white hair, thin dorsally, not mixed with black; base of metathoracic area rugulose; tegulae black; wings dusky, especially toward apex; legs with pale hair; anterior coxae with rather short spines; anterior

tarsi black, but very remarkable, the first two joints broadly expanded and quadrate, densely covered with pure white hair on outer side, third joint with a large rounded lateral expansion, but only the other part of the joint covered with white hair; middle tarsi curved, densely covered with silky hair, yellowish on inner side; hind tarsi with a glittering white fringe of hair anteriorly; abdomen shining, well punctured, apical margins of first three segments with fulvous hair bands, failing in middle, but reinforced by fulvous hair at extreme bases of segments following; segments 4 to 6 densely covered with bright reddish fulvous hair; keel of sixth segment with two large rounded lobes.

Cordoba, Mexico, Dec. 20, 1907 (F. Knab). Related to *M. occidentalis* Fox, but easily separated by the peculiar anterior tarsi, which are not elongated, and the fulvous hair on abdomen.

Type.—Cat. No. 21685, U.S.N.M.

MEGACHILE HOWARDI, new species.

Male (type).—Length 10 to 11 mm.; anterior wing 7.7; black, parallel-sided; antennae black, not modified; legs black, with the anterior tarsi clear pale yellow, with pure white hair on outer side; first joint of anterior tarsi hollowed, boat-shaped, the orange-tinted apex not reaching end of second joint, the inner margin fringed with black hair; second and third joints broadened, the whole tarsus with a large posterior hair fringe, which is tipped with ferruginous, while on the inner surface of the tarsus are two dark spots. Face densely covered with pure white hair, a few brown ones from upper edge of clypeus; vertex with hair partly brown, but rest of head with white hair; surface of vertex, mesothorax, and scutellum dull, impunctate; hair of thorax wholly white; tegulae dark brown; wings hyaline, with a brown cloud beyond marginal cell; anterior coxae with very long spines, from the outer side of which are very long hairs, standing at right angles to spine; middle tarsi with a fringe of very long white hair behind; abdomen shining black, with narrow entire pure white hair bands on segments 2 to 5; disk of fifth segment with abundant black or dark brown hair; keel of sixth segment variably emarginate, the very broad rounded lobes more or less jagged.

Female.—Similar, except for the usual sexual differences, the vertex distinctly punctured, the scutello-mesothoracic suture with a line of white hair (wholly lacking in male), the clypeus beset with long stiff black hair. The hind basitarsi are hardly broadened; the ventral scopa is white (carrying orange pollen), black at tip of last segment.

San José de Guaymas, Mexico. April 10 (L. O. Howard). The female, which is possibly a different species, nearly agrees with the description of *M. zaptlana* Cresson, but it is smaller and has no black

hair on abdomen before the fifth segment. There is also some resemblance to *M. chichimeca* Cresson, but that has a broad hind basitarsus. The mandibles of the male are formed somewhat as in *M. furcata* Vachal.

Type.—Cat. No. 21686, U.S.N.M.

MEGACHILE POCULIFERA, new species.

Male.—Length about 12 mm.; anterior wing 8.9; black, including the slender antennae; form parallel-sided, but abdomen not very long; head broad; eyes black above and posteriorly, green below and in front, the separation of the two colors diagonal; face densely covered with pale fulvous-tinted hair (wholly without black), strongly contrasting with the pure white hair of cheeks; white fringe on lower side of head continued to outer side of coxae; vertex finely punctured; mesothorax and scutellum dull, the punctures hardly visible under a lens; a narrow white line of hair in scutello-mesothoracic suture; hair of thorax white at sides and below, above scanty and not so clear white, that on disk of scutellum brown; the vertex also has long fuscous hair; tegulae dark brown; wings strongly suffused with brown, especially in the costal and apical regions; legs very dark brownish, with white hair, pale orange on inner side of middle and hind tarsi; anterior coxae with very long spines, from the basal part of which long white hairs extend posteriorly; apex of anterior tibiae yellow; anterior tarsi bright yellow, with a long posterior fringe, which is largely ferruginous apically; first joint boat-shaped, extremely deeply hollowed, but not very long, its inner margin with a black fringe; the other joints essentially as in *M. howardi*; middle femora with a sharp tooth on middle of under side; middle tarsi densely clothed with white hair on outer side; middle and hind tarsi ferruginous apically; abdomen shining, the segments with white hair bands; hair on disk of segment 2 brown, on the others black, long and coarse on fifth; keel of sixth segment emarginate in middle, and strongly jagged or dentate with about three teeth on each side; no ventral spines.

Mexico. (Baker collection, 1785.) Related to *M. howardi*, but larger, with yellow hair on face and other characters.

Type.—Cat. No. 21687, U.S.N.M.

MEGACHILE NIGROLATERALIS, new species.

Female.—Length about 12 mm., robust, with broad conical abdomen; black, including antennae, the legs obscurely reddish; head broad; eyes green; mandibles quadridentate, with apical tuft of fox-red hair; clypeus and supra-clypeal area shining, with large punctures; hair of face, cheeks, and occiput pale yellowish, of vertex black; vertex well punctured, with a shining smooth spot on pos-

terior middle; mesothorax and scutellum dull, the disk of mesothorax a little shining, with well-separated punctures; hair of mesothorax very short and black (a little pale in front), of scutellum long and black, but a broad dull white band in scutello-mesothoracic suture, and a broad pale ochreous hair band on each side over tegula; a pale hair band in suture between scutella, and mesothorax with large tufts of white hair at sides, but in middle with mixed black and white; pleura with black hair, but tubercles marked by a dense pale yellow tuft; tegulae chestnut color; wings dilute brownish; legs ordinary, anterior tarsi short, hind basitarsi broadened; abdomen shining, with fine punctures, the segments with very thin hardly noticeable white hair bands, best developed on 1 to 3; sixth segment straight in profile, with erect black hair; ventral scopa white, black on last segment and apex of penultimate.

Mexico (Baker collection, 2320). Related to *M. breviscula* Smith; recognizable especially by the black-haired pleura.

Type.—Cat. No. 21688, U.S.N.M.

MEGACHILE TEXANA Cresson.

Mexico (Baker collection, 2320).

MEGACHILE MENDOZANA Cockerell (RHINOCEROS Friese).

Female.—Carcarana, Argentina (Bruner, 23).

MEGACHILE LENTICULA Vachal.

Female.—Palcazu, Peru (Rosenberg). One specimen, certainly not a different species, is peculiar for the polished scutellum, the upper surface almost impunctate, and the hind part of disk of mesothorax with widely separated punctures.

MEGACHILE PORRECTULA Cockerell (ACUTA Vachal).

Male.—Matucana, Peru, Jan. 30, 1913 (C. H. T. Townsend).

MEGACHILE EULALIAE, new species.

Female.—Length: 11.5–12 mm., robust, intense black, with black hair. On the cheeks, behind the eyes, is a band of creamy white or pale yellowish hair, not always present; the anterior and middle tibiae are clothed posteriorly, especially toward the apex, with hair which shines pale yellowish in certain lights; the hind femora and tibiae are covered posteriorly with very fine short pale grayish-yellow hair; hair on inner side of tarsi reddish. First two joints of labial palpi about equal; mandibles broad, quadridentate; clypeus closely and very strongly punctured, with no smooth line; the lower margin irregular, thickened, and somewhat elevated; supraclypeal area strongly punctured, with a median impunctate space; antennae entirely dark; front densely granular, dull; mesothorax and scutellum dull, closely punctured, the punctures on disk of mesothorax pos-

teriorly well separated; wings strongly smoky; abdomen shining, distinctly punctured; ventral scopa black at sides, base, and on last segment, otherwise shining white.

Santa Eulalia, Peru, Jan. 18, 1913 (C. H. T. Townsend).

Type.—Cat. No. 21689, U.S.N.M.

Superficially like *M. huascari* Cockerell, but easily separated by the quite different ventral scopa, the dull mesothorax, etc. Vachal described a series of black *Megachile* of this general type; these may be distinguished from each other and from *M. eulaliae*, as follows:

- | | |
|---|-------------------------------|
| Ventral scopa pale or red at end..... | 1 |
| Ventral scopa at least black on last segment..... | 2 |
| 1. Larger, 13-14 mm. long (Bolivia and Ecuador)..... | <i>aequilibra</i> Vachal. |
| Smaller, 9.5 mm. long, ventral scopa entirely red (Chile). | |
| | <i>flamiventricis</i> Vachal. |
| 2. Larger, 14 mm. long; wings hyaline, washed with yellow basally (Bolivia). | |
| | <i>atricoma</i> Vachal. |
| Smaller, not over 12 mm..... | 3 |
| 3. Wings hyaline, not grayish or smoky; border of clypeus sinuate (Bolivia). | |
| | <i>latula</i> Vachal. |
| Wings grayish or bronzy or dark..... | 4 |
| 4. Mesothorax and scutellum smooth and polished; ventral scopa pale in middle (Peru and Bolivia)..... | <i>tergina</i> Vachal. |
| Mesothorax and scutellum well punctured or not polished..... | 5 |
| 5. Ventral scopa black; punctures of mesothorax and scutellum very large and dense (Mendoza)..... | <i>oreina</i> Vachal. |
| Ventral scopa partly pale..... | 6 |
| 6. Scopa orange in middle; wings grayish hyaline (Mendoza)..... | <i>nigella</i> Vachal. |
| Scopa white in middle; wings strongly smoky (Peru)..... | <i>eulaliae</i> Cockerell. |

MEGACHILE PERENENSIS, new species.

Length about 11 mm.; anterior wing, 9.5; very robust; black; the tarsi reddish apically; general effect of the abundant pubescence dark reddish; vertex and front with very long hair, partly black and partly ferruginous, the latter especially around the ocelli; cheeks with pale reddish hair, partly dark below; face with mainly black hair, but pale at each side next to clypeus; thorax above with mixed ferruginous and dark-brown hair, at sides with ferruginous, shading into white beneath; legs with short black or dark fuscous hair, but a good deal of white on femora and trochanters, and dark red on inner side of tarsi; abdomen dorsally thickly covered with dark red hair, the hind margins of segments with indistinct paler bands, last segment with some appressed black hair; ventral scopa white at base, red in middle, and reddish-black on last three segments; in addition, ventral segments 2 to 5 have marginal bands of white hair, broadly interrupted in middle. Mandibles broad, quadridentate, with red hair at apex; clypeus convex, dull at sides, in middle polished, with scattered large punctures, the lower margin broadly and shallowly emarginate, with a small median tubercle; supra-clypeal area in

middle flattened, smooth, and polished; antennae entirely black; mesothorax dullish anteriorly, the posterior disk shining and punctured; anterior part of scutellum impunctate, but only moderately shining; tegulae clear ferruginous; wings hyaline, orange-tinted, the apical margin pale grayish; stigma and nervures ferruginous; spurs ferruginous; hind basitarsi broad.

Piches and Perene Valleys, Peru, 2,000-3,000 feet altitude (Soc. Geog. de Lima). This looks sufficiently like *M. flabellata* Vachal to raise the question whether it could be its female, but it is quite distinct by the shape of the marginal cell and other characters. In Schrottky's table of Brazilian *Megachile* this runs to *M. gracilis*, an entirely different insect with ferruginous legs.

Type.—Cat. No. 21690, U.S.N.M.

MEGACHILE LAQUEATA, new species.

Female.—Length about 11 mm., anterior wing 7.5; rather narrow and parallel-sided, black, the general effect of the scanty pubescence gray. Face, cheeks, and front with long clear white hair, clypeus with long black hair; vertex with scanty black hair; thorax with white hair, but disks of mesothorax and scutellum with scanty black hair, not easily observed; position of tubercles marked by a dense tuft of white hair; legs with white hair, clear ferruginous on inner side of tarsi; abdomen basally with thin dull white hair, apically with rather coarse black hair, first segment with a small patch of white hair on each side; segments 2 to 4 with narrow entire white hair-bands, the last tinged with ochreous; sixth segment with appressed pale and erect black hair; ventral scopa white, suffused with ochreous on fifth segment and base of sixth, but on sixth, except base, black. Mandibles broad, the two apical teeth prominent, marked at sides with ochreous hair, and also a line of ochreous hair parallel with broad cutting edge; clypeus short, densely rugosopunctate, the lower margin crenulate; flagellum very faintly reddish beneath; front and vertex minutely and closely punctured; mesothorax and scutellum dull, with small indistinct punctures; tegulae very dark brown; wings dusky, darker in region of marginal cell and apex; abdomen shining; spurs pale ferruginous; hind basitarsi not very broad.

Ecuador, from the C. F. Baker collection. Very like *M. peruviana* Smith, to which it runs best in Friese's table of species of Brazilian subregion; but if we may trust Smith's description it differs by the darker wings and scopa black at end. Among the species known from Ecuador, it is suggestive of *M. philinea* Cockerell; but that differs from *M. laqueata* by the conical abdomen, red legs, bright buffy hair surrounding mesothorax, red tegulae, etc.

Type.—Cat. No. 21691, U.S.N.M.

MEGACHILE CURVIPES Smith.

Male.—Sapucay, Paraguay, 3. 9. 1901.

MEGACHILE HOFFMANNSEGGIAE Jörgensen.

Female.—Carcarana, Argentina (Bruner 24).

MEGACHILE BURMEISTERI Friese.

Female.—Carcarana, Argentina (Bruner 25). Allied to the last, but easily known by the absence of any white hair band in scutello-mesothoracic suture, and the entirely black hair of sixth dorsal abdominal segment. The ventral scopa is not such a deep red; there are a few black hairs at apex.