

recurved; clypeus with brownish oblique striations on each lateral area; tegmina with the costal membrane three times as broad as radial area.

Long., excl. tegm., 11 mm.; exp. tegm. 28 mm.

Hab. S. Mysore; Goorghalli Estate (*Bainbrigge-Fletcher*, Brit. Mus.).

XLVIII.—*Descriptions and Records of Bees.*—LVIII.

By T. D. A. COCKERELL, University of Colorado.

Anthophora curta, Provancher.

El Paso, Texas, at yellow flowers of a species of *Compositæ*, Nov. 7, 1913, 4 ♀ (*P. H. Timberlake*, 2).

Of these, two are typical *curta*, while two have the hair on inner side of hind basitarsi rather dark ferruginous. These latter are clearly *curta*, not *A. peritomæ*.

Tetralonia poetica, sp. n.

♂.—Length about 12 mm.

In my table in *Trans. Amer. Ent. Soc.* xxxii. p. 79, runs out at 4, because yellow of clypeus is not notched at sides; except for this character it runs to *T. frater* (Cress.) on p. 80, to which it is very closely allied. It differs from *T. frater* (a co-type from Colorado compared) by the clypeal yellow being pale lemon instead of almost orange, its upper border arched, leaving the upper and lateral margins of the clypeus broadly black; face broader; hair of thorax above more strongly ochreous; apical plate of abdomen broader; last ventral segment with the oblique submarginal ridges straight or nearly (curved in *frater*), and apical corners of segment prominent (not so in *frater*).

I thought this might be the male of *T. virgata* (Ckll.), but the b. n. in *virgata* squarely meets the t.-m., whereas in *poetica* it falls short of it.

Hab. Whittier, California, at flowers of *Convolvulus*, April 14, 1912, 3 ♂ (*P. H. Timberlake*, 3).

Perdita hypoxantha, sp. n.

♂.—Length $3\frac{1}{2}$ –4 mm.

Very close to *P. gutierrezæ*, Ckll., differing as follows:—Upper level of yellow on front practically straight, except a

small notch for the foveal spot on each side; cheeks with the lower three-fourths entirely yellow; pleura yellow, except its broad upper margin; abdomen much darker, with successively narrower yellow bands on a dark brown ground; anterior and middle tibiae each with a brown stripe, and there may be a small brown mark at apex of middle femora.

Hab. Idyllwild, San Jacinto Mts., California, abundant at flowers of *Adenostoma fasciculatum*, July 14, 1912 (*P. H. Timberlake*, 1).

The plant is Rosaceous, but the bee is related to the species occurring on flowers of Compositæ.

Halictus ovaliceps, Cockerell.

Whittier, California, April 16, 1913, 2 ♀; one at flowers of *Rubus vitifolius*, collecting cream-coloured pollen; one at flowers of *Phacelia hispida*, collecting light blue pollen (*P. H. Timberlake*, 5).

Nomada harimensis, sp. n.

♂.—Length 7 mm.

Head and thorax black, densely rugoso-punctate, with thin white hair, which is greyish white dorsally, but pure white on cheeks, middle of face, and underside of thorax; head broad; mandibles simple, red except basally; clypeus all black, but lower corners of face shining yellow; antennæ long and thick; scape swollen, black; flagellum black, bright ferruginous beneath except the last three joints; third antennal joint much shorter than fourth; tubercles and tegulæ ferruginous, thorax otherwise black; scutellum not very prominent. Wings clear, with the apical margin brown; stigma ferruginous, nervures fuscous; b. n. going a short distance basad of t.-m.; first r. n. joining middle of second s. m. Legs ferruginous, black basally; femora black except apex and about apical two-thirds above; tibiae with a black patch behind; anterior coxæ with a red apical spot, but not spined. Abdomen shining, without evident punctures; first segment piceous, with a curved, bilobed, transverse red band on disc; second and third segments broadly piceous apically, otherwise yellow except in middle, where they are ferruginous; fourth segment similar, except that the yellow is reduced and the apical margin is ferruginous; apex ferruginous, the apical plate broad and entire; venter only slightly marked with yellow.

♀.—Length about 7 mm.

Robust, bright ferruginous marked with black, no yellow anywhere; middle of mesopleura covered with a patch of silvery-white hair, sides of metathorax below with similar patches; head red, with supraclypeal area, front except sides, ocellar region, and cheeks except a band along posterior orbits all black; antennæ long, bright ferruginous, the last joint very clear red, but the one before it strongly blackened, contrasting, and the two joints before this more or less dusky; third antennal joint shorter than fourth; mesothorax with a broad median black band. Legs red, the middle and hind coxæ marked with black, hind tibiæ slightly dusky behind. Apex of wings dark brown. Abdomen shining chestnut-red, without evident punctures, and with no yellow markings; first segment with a large black patch, lobed at sides, second segment broadly blackened apically, fifth with an interrupted black basal band.

Hab. Harima, Japan (*Fukai*). U.S. National Museum. The male (=type) taken April 7, 1912, the female April 18, 1912.

This is not very close to any described Japanese species. In Schmiedeknecht's tables (*Apidae Europææ*) the male runs nearest to *N. ruficornis*, L., which is much larger, and differs in face-markings and colour of scape. The female runs to *N. thersites*, Schm., which is evidently closely allied, differing from *harimensis* by the black markings on the femora, markings of abdomen, &c.

Nomada luteola, Lepeletier.

East Falls Church, Virginia, May 4, 1913 (*Rohwer and Cockerell*).

Megachile melanophæa, Smith.

Chazy Lake, N.Y., June 28, 1913, ♂ (*Felt*).

Megachile nipponica, n. n.

This name is proposed for *M. orientalis*, Pérez, 1905 (not of Morawitz, 1895), from Yokohama, Japan.

Megachile harimensis, sp. n.

♀.—Length about 11 mm.

Black, robust, with fulvous, white, and black hair; facial quadrangle longer than broad; mandibles quadridentate; clypeus shining, closely and strongly punctured, the lower edge subemarginate in middle; antennæ entirely black;

face, front, cheeks, and occiput covered with pale ochreous hair, paler and dense at sides of face, on vertex fulvous, with some fuscous laterally; mesothorax and scutellum densely punctured but glistening, covered with bright fulvous or fulvo-ferruginous hair; other parts of thorax with paler, ochreous-tinted hair, becoming dull white beneath; tegulæ bright ferruginous. Wings pale brownish, nervures piceous. Legs black, with pale hair, red on inner side of middle and anterior tarsi, but reddish black on inner side of hind ones; middle basitarsi with reddish hair on outer side; joints 2 to 4 of middle tarsi broadened; spurs pale ferruginous. Abdomen broad and short, shining, punctured, not at all metallic; basal segment and sides of second with much pale ochreous hair; hind margins of segments 3 to 5 with thin pale hair-bands, the discs of these segments, especially at sides, having black hair (the third segment has pale hair in middle); sixth segment gently concave in lateral profile, almost bare, with no light hair; ventral scopa long, creamy white, black on last two segments and at sides of the one before.

Hab. Harima, Japan, May 1912 (*Fukai*, 45). U.S. National Museum.

In Friese's table of Palæarctic *Megachile* this runs to *M. picicornis*, except as to the antennæ. In his table of Oriental species it runs to 29, but is not either of the species there indicated. It does not appear to be very close to any recorded Japanese or Chinese species. Superficially *M. harimensis* looks just like a rather small *M. circumcincta*, but on closer examination it is seen to differ in many ways.

Megachile vagata, Vachal.

Argentina (*Fitzgerald*; British Museum, 99. 124). 1 ♂.

This specimen is about 10 mm. long, but otherwise agrees with Vachal's description. The anterior femora and tibiae are red on the outer side; the spines on anterior coxæ are small. The species is allied to *M. jenseni*, Friese.

Megachile dentipes, Vachal.

Argentina (*O. W. Thomas*; British Museum, 1904. 148). 1 ♂.

Vachal's description sufficiently indicates this striking species, with extraordinary anterior tarsi, and the middle femora sharply toothed beneath in the middle. The following may be added:—Mandibles with a large red patch; labrum dull testaceous; fringe of hair on inner border of anterior

basitarsus appearing black in some positions, but really largely pale straw-colour; anterior coxæ with a short band of red bristles in front; coxal spines long; greater part of anterior femora light red.

Megachile mendozana, Cockerell.

Argentina (O. W. Thomas; Brit. Museum, 1904, 148).

1 ♂.

This species was described from the female as *cornuta*, Sm., and *rhinoceros*, Friese, both preoccupied names. The insect before me is certainly the male of *rhinoceros* as described by Vachal; it also runs to *rhinoceros* in Friese's table of Argentine *Megachile*, and to *mendozana* in Jörgensen's Mendoza table. It is, however, smaller than the size given by Friese for male *rhinoceros*, and the mesothorax is more shining, with the punctures conspicuously larger and less dense than in a female *rhinoceros* from Mendoza now before me. There are perhaps two species at present confused by authors under *mendozana* or *rhinoceros*.

Megachile parsonsiæ, Schrottky.

Argentina (O. W. Thomas; Brit. Museum, 1904, 148).

This agrees with Friese's brief account of "*simillima*" from Mendoza, which Jörgensen says is to be called *parsonsiæ*. The pallid anterior tarsi have an elongated black spot on the inner side, and the keel of the sixth abdominal segment has six sharp spines.

Megachile porrectula, n. n.

A new name is required for *M. acuta*, Vachal, 1908 (not *M. acuta*, Smith), from Mapiri, Bolivia.

Megachile paraxanthura, sp. n.

♂.—Length a little over 9 mm.

Black, the flagellum very obscure brownish beneath; legs black, the last tarsal joint red at extreme apex, anterior femora with the smooth area which touches the tibiæ (when the legs are flexed) red; mandibles with a triangular tooth at base beneath; face densely covered with cream-coloured hair; rest of head and thorax with dull white or yellowish-white hair, mixed with long black hairs on vertex, scutellum, and especially postscutellum; head and thorax above closely

and finely punctured; tegulæ piceous. Wings dusky, the costal region strongly brownish; nervures sepia. Legs with pale hair; anterior tarsi simple; anterior coxæ with spines of moderate size, the face of the coxa above the spine shining, with no special ornamentation; spurs yellowish white. Abdomen short, first segment with long hair like that of thorax; second to fifth with entire ochreous hair-bands, rather thin on second, dense on the others; discs of second to fourth with very short fuscous hair, only seen in lateral view; nearly basal two-thirds of fifth segment covered with conspicuous ochreous tomentum; sixth segment above densely covered with golden-ochreous hair, but the margin of the keel bare; keel of sixth segment strongly emarginate in middle, but the edges of the emargination not dentiform, the margin on each side of the notch may be indented, but is not at all dentate; no evident ventral spines. There is no hair-band in the scutello-mesothoracic suture.

Hab. Argentina (*O.W. Thomas*; Brit. Museum, 1904. 148).

In Jörgensen's Mendoza table and Friese's Argentine table this runs to "*simillima*" = *parsonsiæ*, which is really a very different species. In Vachal's table of male *Megachile* it falls nearest to *M. pallefacta*, but it is not that species, nor is it *brasiliensis*, near to which it falls in Friese's table of species of the Brazilian subregion. It does not agree with any description I can find, but it may possibly have been described from the female.

Megachile abluta, Cockerell.

♂.—Los Baños, Philippine Is. (*Baker*, 1792, 1793, 1796); Mt. Makiling, Luzon (*Baker*, 1795).

I am surprised to find that I cannot separate this species from *M. abluta*, described from Formosa. It has very possibly been spread by man, the nests being easily carried in timber or merchandise. The mesothorax of the Philippine Islands specimens is less hairy than that of the Formosan examples before me, but the character varies, and it is impossible to draw any specific lines. The species is easily known from *M. laticeps*, Sm., by the spined coxæ.

A male of *M. abluta* was sent by Professor Baker with a female *Megachile*, which has received a manuscript name from Friese. I find, however, another male from Los Baños which, though allied to *abluta*, is distinct, and evidently belongs with Friese's new species.

Megachile laticeps, Smith, var. *a*.

♂.—Los Baños, Philippine Is. (*Baker*, 1790).

This exactly agrees with Smith's account, except that it is fully 11 mm. long, the hair on the cheeks is only faintly tinged with yellow, and the first four abdominal segments have entire fulvous hair-bands. Unless Smith's type was in poor condition, my insect must represent a distinct variety, but, I think, not a distinct species.

Megachile perihirta, Cockerell.

♂.—Los Angeles County, California (*Coquillett*). U.S. Nat. Museum. Denver, Colorado, Aug. 25 (*Mrs. C. Bennett*).

Megachile sidalceæ, Cockerell.

♂.—Del Rio, Texas, May 1, 1907, at flowers of *Monarda citriodora* (*Bishopp*). U.S. Nat. Museum.

Megachile pereximia (Cockerell).

M. vallorum, Ckll., is no doubt the female of *pereximia*. The type of *pereximia* has the first r. n. entering second s. m. as far from base as second from apex, and has the fringe on inner side of anterior basitarsus mainly black. These characters vary in Texan specimens; some from Cotulla and Denton have the first r. n. exactly meeting first t.-c., and in these the fringe on inner side of anterior basitarsus is light red, only black at base. These also are smaller than the type. However, one from Cotullo is as large as the type, and a Denton male has the first r. n. entering second s. m., though not so far from base as in type.

The following records relate to material from Texas :—

- (1) Males (*pereximia*).—Cotulla, May 11, at *Monarda punctata* and *Verbesina encelioides* (*Crawford*); Cotulla, May 5, at *Coreopsis* (*Crawford*); Denton, May 29, at *Gaillardia pulchella* (*Bishopp*); Dallas, at *Amorpha fruticosa*, May 9 (*Bishopp*); Dallas, at *Gaillardia pulchella*, May 19 (*Bishopp*); Dallas, July 1, hair of face cream-colour (*Bishopp*); Paris, May 24 (*Bishopp*); San Antonio, at *Coreopsis cardaminefolia*, May 4 (*Crawford*); New Boston, at *Tetra-neuris linearifolia*, Aug. 29 (*Bishopp*); Victoria, at *Helianthus*, April 26 (*Bishopp*); Stringtown, Sept. 7 (*Bishopp*); Calvert, April 5 (*Jones*); Kerrville, at

Marrubium vulgare, April 12 (*Pratt*); Devils River, at *Gaillardia pulchella*, infested with many mites, May 6 (*Bishopp*). Also from Daleville, Arkansas, Sept. 13 (*Jones*).

- (2) Females (*vallorum*).—San Diego, at *Opuntia*, April 24, large variety (*Mitchell*); Plano, June, Aug. (*Tucker*); Paris, on cotton, unusually large, with a very few black hairs on clypeus (*Jones*); Hearne, at nests in bogs, July 23 (*Bishopp*); Dallas, at *Gaillardia*, June 10 (*Bishopp*); Dallas, at *Engelmannia pinnatifida*, May 22 (*Pierce*); Laredo, Oct. 21 (*Mitchell and Bishopp*); Riverside, Aug. 24 (*Yothers*); Wolfe City, June 16 (*Bishopp*); Devils River, at *Monarda citriodora*, May 3 (*Pratt*); Pittsburg, May 9 (*Bishopp*); Kerrville, at *Coreopsis cardaminefolia*, June 2 (*Pratt*); Kerrville, at *Salvia pitcheri*, no pollen collected, June 19 (*Pratt*); San Antonio, at *Coreopsis cardaminefolia*, May 14 (*Crawford*); Denton, at *Coreopsis cardaminefolia*, May 19 (*Bishopp*); Arlington, at *Sideranthus*, Aug. 28 (*Bishopp*); Barstow, July 22 (*Crawford*); Austin (*Crawford*). Also at Daleville, Arkansas, Sept. 13 (*Jones*).

Megachile perbrevis, Cresson.

Males from Texas carry the following data:—Devils River, at *Gaillardia pulchella*, May 3 (*Bishopp*); Victoria, Aug. 20 (*Mitchell*); Victoria, March 6 (*Leister*).

Megachile perbrevis onobrychidis (Cockerell).

My *M. onobrychidis* is only a race of *perbrevis*. The following localities for it are new:—

Oak Creek Cañon, Arizona, 6000 ft., July (*Snow*); Douglas County, Kansas, 900 ft. (*Snow*); Mound, La., May 12 (*Jones*); Dallas, Tex., Sept. 4 (*Bishopp*); Greenville, Tex., Sept. 24 (*Bishopp*); New Boston, Tex., Aug. 30 (*Bishopp*); Rosser, Tex., April 15 (*Bishopp*). These are all males.

Megachile subexilis, Cockerell.

♀.—Rito de los Frijoles, New Mexico, Aug. (*W. W. Robbins*).

Typical as to structure, but abdominal bands faintly creamy.

Megachile campanulæ (Robertson).

♀.—Indiana. Collector unknown.

Megachile exilis, Cresson.

The following localities are in Texas :—Grand Prairie, at *Ambrosia psilostachya*, June, ♂ (*Jones*); Rosser, June 7 (*Jones*); Runge, Sept. 20 (*Crawford*); Victoria, April 17, ♂ ♀ (*Leister*); Del Rio, May 8 (*Bishopp*); Cotulla, May 12 (*Crawford*); Kerrville, at *Monarda citriodora*, May 31, eleven females (*Pratt*). It also occurs at Durant, Okla., at *Asclepias*, one carrying a pollen mass on hind leg (*Bishopp*); and in Arkansas at Daleville, Aug. 13 (*Jones*), and Fouke, at *Verbesina helianthoides*, May 22, ♂ (*Bishopp*).

Megachile fidelis, Cresson.

Los Angeles, California; nine females, Aug. (*Coquillett*).

Megachile vidua monardarum (Cockerell).

♂.—Longs Peak Inn, Colorado, at *Bistorta bistortoides*, June 26 (*W. P. Cockerell*).

Megachile chilopsidis, Cockerell.

♀.—Cotulla, Texas, May 5 (*Crawford*).

Megachile newelli, Cockerell.

♀.—A characteristic feature is that the apex of clypeus is covered with pale hair.

Paris, Tex. (*Bishopp*); Victoria, Tex., at *Rudbeckia amplexicaulis*, April 28 (*Cushman*); Lafayette, La., at thistle, April 29 (*Cushman*); Mansfield, La., at *Helenium tenuifolium*, July 4 (*Bishopp*); Mound, La., at *Helenium tenuifolium*, Aug. 20 (*Bishopp*).

This is probably the female of *M. integra*, Cresson.

Megachile henrici, Cockerell.

♀.—Fernshaw, Australia (Nat. Mus. Vict. 18).

Megachile derelicta, Cockerell.

♀.—Brisbane, smaller than type, Sept. 24 (*Hacker*; Queensl. Mus. 75).

Megachile quinquelineata, Cockerell.

♀.—Kelvin Grove, Brisbane, Nov. 20 (*Hacker* ; Queensl. Mus. 67).

Megachile cygnorum, Cockerell.

♂.—“Woodend, Victoria” (*French* ; Froggatt, 169).
N. S. Wales (Nat. Mus. Vict. 42).

Megachile serricauda, Cockerell.

♂.—Museum Gardens, Brisbane (Queensl. Mus. 69).

Megachile mackayensis, Cockerell.

♀.—New South Wales (Nat. Mus. Vict. 26).

Megachile pictiventris, Smith.

♀.—Clarence River, N. S. Wales (*Wilcox* ; Nat. Mus. Vict. 49, 50).

Megachile semiluctuosa, Smith.

♀.—Near Murray River (Nat. Mus. Vict. 13).

Lithurgus gibbosus, Smith.

The following localities are in Texas :—Fredericksburg, May 29 (*Mitchell*) ; Maverick Co., May 15 (*Mitchell*) ; Kerrville, May 31, ♂ ♀, at *Monarda citriodora* (*Pratt*) ; Cotulla, at *Opuntia*, ♂ ♀, May 5 (*Crawford*, *Pierce*).

Lithurgus apicalis opuntiae, Cockerell.

Cotulla, Tex., at *Opuntia*, ♀, May 5, 11 (*Crawford*) ; Nueces River, Zavalla Co., at *Opuntia*, April 30, ♂ (*Pratt*) ; Tucson, Arizona, at *Opuntia*, May 20–24, ♂ (*Pratt*).

Anthidium tenuifloræ, Cockerell.

♂.—Ward, Colorado, at *Grindelia subalpina*, Aug. 26 (*Cockerell*).



Cockerell, Theodore D. A. 1914. "Descriptions and records of bees. LVIII." *The Annals and magazine of natural history; zoology, botany, and geology* 13, 424-433.

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