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NEW AND LITTLE-KNOWN BEES.

BY T. D. A. COCKERELL.

(1.) **Augochlora nigrocyanea** n. sp. ♀.—Belongs to section with hind spur of hind leg minutely ciliate. Length about 11 mm. Head and thorax dark indigo-blue; abdomen black, with green reflections on the sides of the first two segments. Pubescence of head and thorax short, moderately abundant, but inconspicuous because fuscous. On the cheeks and pleura beneath it is white, but sparse, and the sides of the face are very thinly clothed with very short, white pubescence; front extremely closely punctured, centrally black, becoming blue close to the orbits; facial keel distinct; clypeus with large, close punctures, one might say malleate; lateral ocelli as far apart as the distance of either from the eye; flagellum becoming dark fuscous; mandibles tinged with dark rufous beyond the middle, strongly bidentate at tips, the teeth diverging, the lower the longer; tubercles with a fringe of white hairs; mesothorax and scutellum very closely punctured: postscutellum and base of metathorax a much brighter blue; base of metathorax delicately, but strongly longitudinally wrinkled all over; tegulae piceous, with a fulvous spot. Wings smoky, nervures and stigma piceous, marginal cell with a small appendicular cell at its tip; first recurrent nervure joining second submarginal cell at its extreme end. That portion of radial nervure beyond the junction with third transverso-cubital considerably the longer. Legs black, with fuscous pubescence, small joints of anterior tarsi rufescent, anterior femora beneath with long whitish hairs. Abdomen with excessively minute punctures, only visible with a strong lens; pruinose with short, thin, whitish pubescence; sides, venter and base of first segment with thin, erect, pale fuscous and whitish pubescence; dorsum of first segment nearly bare. The apparent color of the pubescence differs somewhat according to the direction of the light.

Hab.—San Rafael, Vera Cruz, Mexico, July 1 (C. H. T. Townsend). A very distinct species; its color recalls *A. tarpeia*, but that is much smaller.

(2.) **Augochlora seminigra** n. sp. ♀.—Belongs to section with spur minutely ciliate. Length about or slightly over 5 mm. Head and thorax green, abdomen black, with a slight green lustre on the sides; pubescence sparse, whitish or very pale ochreous, a very few black hairs on scutellum; face broad, minutely roughened or shagreened; clypeus with its upper margin broadly green, the rest black, the lower corners produced into short denticles. The junction between the black and green on the clypeus is brassy, as also is the convex, shining, supraclypeal area; labrum black, with six delicate longitudinal ridges; mandibles orange-rufous with black bases; antennae black, flagellum beneath dark sepia brown, second and third joints of flagellum very short. Thorax very finely and closely punctured, more shining than the head, dorsally tinged, brassy; enclosure of metathorax blue-green, very delicately longitudinally wrinkled; tegulae shining, dark yellowish brown. Wings smoky, nervures and stigma fuscous, marginal

cell not appendiculate, second submarginal narrowed above. Legs very dark brown, tarsi dark ferruginous, pubescence of legs sparse and pale. Abdomen shining black, the sides with a slight green lustre, pubescence sparse and brownish, just enough on hinder part to make it look slightly dusty; punctures sparse and extremely minute.

Hab.—San Rafael, Vera Cruz, March 9, on yellow flowers of *Melopodium* (C. H. T. Townsend). Easily recognized by its small size and coloration. It might be taken for an *Halictus* at a glance, but the eyes are emarginate; and the green is a sort of Prussian green, quite different from that commonly observed in *Halictus*.

(3.) **Augochlora subignita** n. sp. ♀.—Belongs to section with large spines on spur. Length about 8 mm. Head and thorax bright green, very densely punctured. Abdomen metallic crimson, inclining to violaceous or purple, rather sparsely punctured. As compared with *A. pura* (which is not closely allied, but is chosen because it is a common species, in everyone's possession), the face is decidedly broadly in the middle, but the distance between the lateral ocelli and the eyes is not quite so great; the face below the antennæ is shorter, and the antennæ are somewhat wider apart, with a more elevated ridge between them; the black area on the clypeus is larger; the antennæ are about the same, except that the scape is more slender; the punctures of the mesothorax are larger and more distinct from one another; the middle of the mesothorax is rather inclined to brassy; the tegulae are larger and partly green behind; the sparse hairs on the dorsum of the thorax are partly black; the enclosure of the metathorax instead of being covered with longitudinal grooves or wrinkles is smooth at the base, with two oblique bands of very short wrinkles, meeting in the specimen described at an angle of about 125°, but variable. The wings are uniformly smoky, the costal nervure black, the other nervures and stigma dark sepia brown; marginal cell appendiculate. Legs much as in *pura*, but the hind legs decidedly stouter throughout, the hindmost spur of hind legs with six long spines. Abdomen crimson with purple tints, hind margins of segments with thin, very narrow bands of fulvous hairs; venter dark, with yellowish white hairs.

Hab.—San Rafael, Vera Cruz, March 13 and 14, on flowers of plant No. 7 (C. H. T. Townsend). Resembles *A. ignita* Sm., but the abdomen is not so brilliant, more violaceous, wings not clear and the nervures not testaceous. *A. ignita* belongs to a different section of the genus by the character of the spur. In many respects *A. subignita* more resembles *A. acidalia* Sm., from Uruguay, but the abdomen is not "very finely" punctured. *A. vesta* Sm. seems also allied, but is evidently distinct.

(4.) **Augochlora ignita** Smith.—Belongs to section with spur ciliate. The ♂, hitherto undescribed, differs by having the end of the clypeus whitish and the first joint of the flagellum rufous.

Hab.—San Rafael, Vera Cruz, last of June, many on flowers of *Cordia*, probably *C. ferruginea*, according to Dr. J. N. Rose (C. H.

T. Townsend). San Rafael and the vicinity is rich in *Augochlora* (seven species), in striking contrast with southern New Mexico, where I find only one (*A. pura* Say).

(5.) **Agapostemon melliventris** Cresson ♂.—Length 9 mm. Head and thorax brilliant green; hind part of mesothorax and metathorax bluer than scutellum and postscutellum. Head like that of *radiatus* in shape and size; labrum, mandibles, except tips, and broad anterior margin of clypeus sending a tongue upward in the median line, lemon-yellow. Head and thorax thinly clothed with yellowish white hairs, long and rather dense on cheeks below; inner orbits roundly emarginate; antennæ reaching to middle of metathorax; scape yellow, with a small suffused dark spot at end above; funicle yellow below, black above; flagellum pale brownish orange below, black above; a black spot at base of each antenna, and on each side of clypeus, as is also the case in *radiatus*; mesothorax coarsely and closely punctured, in fact subcancellate, the sculpture uniform, not as in *texanus*; enclosure of metathorax rather strongly longitudinally wrinkled, much as in *radiatus*; tegulae hyaline, with a semilunar lemon-yellow spot. Wings hyaline, nervures and stigma pale orange-brown, costal nervure black; stigma larger than in *radiatus*. Legs (except coxae) lemon-yellow, a dark brown spot on distal end of hind femur. Abdomen lemon-yellow, with a narrow, black, subapical band on each segment, somewhat broadened at the sides, but failing at extreme sides, the part just behind it faintly orange tinged; venter yellow, more or less marked with brown.

I had supposed this might be a new species, but on further consideration I must agree with Mr. Fox, who regards it as the undescribed ♂ of *melliventris*. My New Mexico records for *melliventris* are as follows:

Rincon, July 5, many males at flowers of mesquite; one ♀ at rest on mesquite. Mesilla, July 23, ♀ on *Solanum elaeagnifolium*. Mesilla, August 14, ♂ on *Solidago canadensis*; also August 18, ♂ on *Clematis ligusticifolia*; also August 23, on *Bigelovia wrightii* ♂.

Las Cruces, October 19, ♂ on garden *Cosmos*. Las Cruces, May 3, on *Salix*, ♀. Little Mountain, March 26, ♀ on *Streptanthus carinatus*. College Farm, Mesilla Valley, April 12, on *Sisymbrium*. Las Cruces, September 22, ♂ on *Verbesina encelioides*.

Thus it flies all through the season and visits many kinds of flowers. Prof. Toumey sent me a ♂ from Tucson, Ariz., where it was taken on flowers of *Bigelovia hartwegi*.

(6.) **Halictus aretaeus** Rob., race *argemonis* n. race.

This may be distinguished as follows:

***arcuatus* ♀.**

Base of metathorax shining, with large, irregular, longitudinal wrinkles.

Parapsidal grooves wanting.

Hind margins of abdominal segments very narrowly, but perceptibly testaceous.

Race *argemonis* differs from *H. pseudopectoralis* by its much broader face, dull yellowish stigma, continuous narrow hair-band at base of second abdominal segment, etc.

Hab.—Paso de Telya, Vera Cruz, March 29, on flowers of *Argemone mexicana* (C. H. T. Townsend).

(7.) ***Panurgus lustrans**** n. sp. ♀.—Length 8 mm., black, with short, thin, mouse-gray (or rather more brownish) pubescence, not concealing the shiny surface. Head nearly circular, face not particularly broad, thinly pubescent all over; face and clypeus quite closely and strongly punctured, lower edge of clypeus with a fringe of pale reddish or orange shining hairs; mandibles dark, only in the slightest degree rufescent at the broad tips, which are more or less notched; maxillary palpi 6-jointed, the joints after the first subequal, but the third conspicuously shorter than the second; labial palpi 4-jointed, first joint not so long as the last three together, the last three about equal in length; glossa not very long, acutely pointed, notched at sides; antennae rather short, scape long, funicle unusually large, flagellum short, obscure brownish beneath towards tip, second and third joints very short; mesothorax moderately shining, but microscopically tessellate, with sparse, small punctures; scutellum with rather close, but feeble punctures; postscutellum pubescent; metathorax thinly pubescent with conspicuously plumose hairs, except the basal enclosure, which is roughened, and longitudinally wrinkled at base; it is not bounded by a raised rim; tegulae shining dark brown, with a subhyaline spot. Wings hyaline, nervures and stigma pale brown, costal nervure black; stigma large; second recurrent nervure with its upper two-thirds bowed outwardly; basal nervure strongly bent; tibiae and tarsi with whitish pubescence; hind femora with long, thin scopula on basal two-thirds, which collects pollen quite as much as the tibial scopula, which is not very long, but conspicuously plumose; claws cleft. Abdomen shaped like that of an *Halictus*, shiny, finely punctured, base and sides of first segment, sides of second, and whole dorsum of third, fourth and fifth segments with sparse, pale grayish pubescence; when the abdomen is a little extended the articulating base of fourth segment is exposed and forms a shiny naked band; apex roundedly truncate; ventral segments with thin bands of rather long whitish hairs.

Hab.—Mr. Clark Rodger's ranch, Lone Mountain, near Silver

* Prof. E. O. Wooton has identified the flower visited by *Panurgus lustrans* as *Pyrrhopappus*, probably *P. rothrockii* Gray, possibly new.—T. D. A. C.

City, New Mex., July 7, 1896, numerous at flowers of a composite resembling a large *Crepis* or *Hieracium*. The sulphur-yellow flowers are visited by the bees early in the morning; as the day grows hot they close. This bee is not a true *Panurgus*. The stigma is large, and the inner angle of the second recurrent nervure with the cubital is greater than a right angle. It may form the type of a new genus; it is not a *Macropis*. [Occurs also in Texas.—W. J. F.]

(8.) ***Panurgus pectidis*** n. sp. ♀.—Length about or nearly 10 mm. Head and thorax black, abdomen and most of legs rufous. Head of ordinary size, face broad and flat, vertex low, cheeks not prominent, pubescence of head and thorax pale ochreous, dense on cheeks and occiput, thin on face; ocelli in a curve, hardly a triangle, the lateral ones looking outward; vertex shining, sparsely but distinctly punctured, front above antennæ very closely punctured, pale parts of face with sparse punctures, very large on clypeus; mandibles stout, simple, medially rufous; labrum black, process rounded; clypeus, except anterior edge and the usual pair of black spots, and large lateral face marks primrose yellow. The lateral face marks are almost exactly semicircular, but emit above a yellow line ascending the orbital margin; no supraclypeal or dogear marks; flagellum orange rufous beneath from the fourth joint, and towards tip more or less above; distal end of funicle pallid; mesothorax, scutellum and postscutellum densely covered with short tawny pubescence, similar but longer pubescence on pleura and sides of metathorax; base of metathorax medially smooth and shining; tegulae pale testaceous. Wings hyaline at base, strongly smoky beyond the cells, and more or less in the outer cells; nervures and stigma brown; costal nervure black; outer nervures blackish, inner becoming pale rufescent, as also the stigma, which is small; marginal cell long, terminating in an obtuse point on costa; first recurrent nervure broken by one, the second by two, hyaline dots; inner angle of the second recurrent nervure with the cubital practically a right angle, only very slightly less, or sometimes rather noticeably less. Legs rufous, with tolerably abundant pale ochreous pubescence; coxae blackish, femora more or less strongly suffused with black; claws with the inner tooth a minute inconspicuous denticle. Abdomen orange rufous above and below shining, practically naked above except the apex, which is strongly fringed with pale ochreous hairs; dorsal surface with small sparse punctures; second segment with a round black spot on each side. The hind trochanters bear a curled tuft of hair, as in *Andrena*.

Hab.—Las Cruces, New Mex., Sept. 17, 1895, on flowers of *Pectis papposa*. Two females.

(9.) ***Panurgus rhodoceratus*** n. sp. ♀.—Length 8.5-9.5 mm. Black, face wholly black; flagellum, except first joint, orange rufous beneath, mandibles rufous in middle, small joints of tarsi rufous; pubescence dull white, grayish white on dorsum of thorax, face and occiput, not at all mixed with black; pubescence of head and thorax rather thin, not concealing surface. Head rather broad, face about square, vertex shining, clypeus sparsely punctured, cheeks rounded, mandibles notched on inner side near tip; mesothorax with short pubescence, and larger hairs intermixed, its surface minutely punctured, with very sparse, larger, obscure punctures; scutellum shining, with extremely minute

punctures; base of metathorax nude, smooth and shining, not bounded by a sharp edge; tegulae testaceous, pubescent. Wings hyaline; costa, stigma, and nervures at base of wing (except the black costal nervure) yellowish ferruginous; the other nervures fuscous; the stigma varies to fuscous; second submarginal cell narrowed somewhat more than half to marginal. Legs with whitish pubescence. Abdomen flattened dorsally, minutely roughened, covered with a fine, inconspicuous pale down; hind margins of segments with uniform bands of dense, appressed, white pubescence, adjacent bases of following segments with similar, but thinner and narrower bands, usually concealed by the retraction of the segments; apex with white hairs; venter almost entirely nude.

♂.—Length 8-9 mm. Pubescence of head and thorax longer and denser, that on face dense and white; mandibles more slender, not notched near their rufous tips, but some distance below: face wholly dark; antennae somewhat longer, flagellum only obscurely rufescent beneath, its second joint very short, not so long as broad. Wings very slightly dusky toward apex; tarsi all pale ferruginous; also the hind tibiae, except for a blackish subapical cloud in front; ventral surface of abdomen more pubescent, dorsal surface not flattened. The hind tibiae may be almost entirely blackish.

Hab.—Las Cruces, New Mex. On flowers of *Pectis papposa* Sept. 17, 1895, eight females and seven males. On *Verbesina encelioides* September 11 and 12, four males.

(10.) **Panurgus oliviae** n. sp. ♂.—Length 7-7.5 mm. Black, face wholly black, mandibles black, flagellum dark rufous beneath. Legs, including tarsi, black; pubescence dull white, dense on face, pleura, and dorsum of thorax; short and appressed on legs, giving them a gray appearance. Head broad, face narrowing below (as is also the case with the ♂ of *rhodoceratus*); eyes dark sage green, vertex shining, second joint of flagellum broader than long; mesothorax and scutellum with very minute, obscure punctures, and very sparse large ones; base of metathorax shining; tegulae piceous, pubescent. Wings smoky, varying to nearly hyaline, with the apex hyaline and slightly milky; nervures and stigma piceous, second submarginal cell narrowed rather more than half to marginal. Abdomen minutely roughened, pruinose, hind margins of segments inclined to be slightly pallid, with bands of appressed white pubescence, neither so broad nor so dense as in *rhodoceratus*.

Hab.—Las Cruces, New Mex. On flowers of *Pectis papposa* Sept. 17, 1895, three males.

P. oliviae is very near to *rhodoceratus*, but is easily known by its smaller size, wholly black legs, and the peculiar coloration of the wings.

The stigma of *oliviae* and *rhodoceratus* is considerably smaller than that of *andrenoides*; and these two species agree in having the inner angle formed by the second recurrent nervure and the cubital nervure considerably less than a right angle, whereas in *andrenoides* it is greater than a right angle. *P. andrenoides* Cresson is a Spring species, and is common at Las Cruces on flowers of *Sisymbrium* at the middle of April.

The European *P. cephalotes* Latr., which I have from Marseilles (E. André), has the comparatively small stigma and the above-mentioned angle less than a right angle, but it differs from our species in having the marginal cell truncate and appendiculate.

P. halictulus Cresson, which I took on *Helianthus* at Santa Fé on Aug. 22, 1894 (the specimen determined by Mr. Fox), and at Las Cruces on *Helianthus annuus* on Sept. 21, 1895, has the small stigma, but the inner angle of the second recurrent nervure with the cubital is exactly a right angle. The tongue of *halictulus* is long and slender, like that of a *Calliopsis*.

It is perfectly evident that the so-called species of *Panurgus* of North America are not all of the same genus. By the character of the mouth-parts *halictulus* is an Apid, while the other species referred to above seem all to be Andrenids Cresson classes *Panurgus* with the Apidæ; it is, however, in its typical form unquestionably Andrenid, as is recognized by Mr. E. Saunders in his recently published "Hymenoptera Aculeata of the British Islands." It would seem, however, that there has long existed some confusion in regard to the proper components of this genus, for Smith (B. M. Cat. 1853, pl. v, fig. 7) figures for *Panurgus* a long, slender, Apid tongue, as in *P. halictulus*; whereas E. Saunders (Jour. Linn. Soc. Zool. xxiii, 1890, pl. v, figs. 4-6) figures an utterly different structure, which belongs to those species which must be regarded as Andrenidæ, notwithstanding the moderately lengthened tongue. It is unfortunate that neither of these authors tells us what species his figure was taken from.

Robertson has suggested that *P. andrenoides* may be a *Scrapter*, but Dalla Torre places *Scrapter* as a synonym of *Macropis*, and certainly *andrenoides* is not a *Macropis*. Smith's figure of the tongue of *Scrapter* certainly suggests *Panurgus* (Andrenid), and differs considerably from his figure of the same structure in *Macropis*.

It is to be remarked, before leaving the subject, that the long, slender tongue of *P. halictulus* may be less indicative of natural affinity than one would be ready at first to suppose. It is, at any rate, specially adapted for obtaining nectar out of the disc-florets of the sunflower, and may be a comparatively recent development to that end. Even the little meloid beetles (*Gnathium texanum* Horn det. Wickham) which live on the discs of sunflowers, in Mesilla, have enormously elongated mouth-parts.

(11.) **Protandrena mexicanorum** (Ckll.)

This is to be added to the United States fauna, as I took two males on flowers of *Aster spinosus* in Mesilla, New Mex., July 21, 1896. The male may be known from that of *aselepiadis* by the color of the stigma, but the two forms are to be considered geographical races of one species.

(12.) **Nomada limata** Cresson.

Prof. Townsend took a female on *Bidens* at San Rafael, Vera Cruz, March 8. It represents a variety with the marks more yellow, and no spot on clypeus and pleura; this agrees more nearly with *N. montezuma* Smith from Orizaba, which is, I am convinced, only a form of *limata*. Cresson's name has priority.

(13.) **Calliopsis renimaculatus** Ckll.

I took one specimen of this at Las Cruces, New Mex., September 23, on *Gutienezia sarothræ* var. *microcephala*. It represents a slight variation, with the yellow face-mark wholly supraclypeal.

(14.) **Calliopsis tricolor** n. sp. ♀.—Length about 9 mm., rather stout, almost entirely naked; black; with the face-marks, tubercles, first four legs in part, and abdominal bands, chrome-yellow; first abdominal segment largely rufous. Head broader than long, vertex and front densely punctured, except a broad, shallow groove in front of each eye; clypeus high, distinctly, but sparsely punctured; antennæ black, flagellum becoming brown beneath; mandibles with a large, yellow, basal patch; clypeus with its upper half yellow, the yellow sending a rounded projection downward in the median line; supraclypeal yellow mark quadrate, fully twice as broad as long, dog-ear marks well developed and large; lateral face-marks consisting of a short, broad band, reaching from about the lower margin of the yellow on the side of the clypeus to the top of the dog-ear mark, joining these, but separated from the orbit by a narrow interval. Thorax rather dull, minutely and strongly, but very closely punctured, median and parapsidal grooves of the naked mesothorax distinct; hind margin of prothorax with a narrow band of dull white pubescence; tubercles yellow; tegulae reddish testaceous, with a small yellow spot. Wings smoky, outer margin broadly darker, stigma orange-brown, nervures testaceous, costal nervure black; marginal cell with an abrupt, only slightly oblique, truncation; second recurrent nervure joining second submarginal cell almost at its tip. Legs sparsely pubescent, black; apical ends of first four femora, anterior tibiæ in front, and somewhat more than the basal half of middle tibiæ, yellow; basal joint of hind tarsi long and flattened, with parallel sides, minutely granular on outer side. Abdomen strongly punctured, hind margins of segments 1-4 with rather broad yellow bands, somewhat broader in the middle than at the sides; first segment otherwise rufous, with the base and a dorsal patch black; venter dark, the margins of the segments only slightly brownish.

Hab.—Near Philadelphia, Pa. (Dr. Skinner). Sent by Mr. C. F. Baker.

[*Tricolor* is really from Camden County, New Jersey, and is the variety of *abdominalis* mentioned in "Ent. News," iii, 29. I am not yet convinced that it is a distinct species, an opinion which Mr. Cockerell expresses above.—W. J. F.]

(15.) **Calliopsis townsendi** n. sp. ♀.—Length 6 mm. Black; the pubescence white, very short and thin, only noticeable on cheeks, hind border of prothorax, scutellum, sides of metathorax, pleura, and sides of abdomen, and nowhere dense. Head somewhat broader than long, strongly punctured, face bare, with a few short, scattered hairs laterally; clypeus large, broadly truncate above, entirely cream color, except the dots, which are minute, and the anterior margin; no supraclypeal or lateral marks; labrum black, the process obscurely whitish, except the emarginate end, which is black. In another specimen the end of the process is entire; the lower margin of the clypeus is broadly excavated to expose the process of the labrum; mandibles cream color with rufous ends, furnished with a long brush of pale hairs beneath; antennæ wholly black, first joint of flagellum larger than second, but not so long as 2 + 3. Thorax closely punctured; tubercles with a pale yellow spot; base of metathorax obscurely longitudinally wrinkled; tegulæ reddish testaceous. Wings grayish hyaline, slightly darkened at apex; nervures and stigma black; marginal cell appendiculate; second submarginal narrowed hardly half to marginal, receiving first recurrent nervure one-third of its length from base, and second at extreme apex. Legs very sparsely pubescent, black; the knees, anterior tibiæ in front, and first four tarsi, rufous; the hind tarsi fuscous, the basal joint rufous within; outer edge of hind tibiæ crenate; the second, third and fourth joints of the anterior tarsi form equilateral triangles. Abdomen rather narrow and cylindrical, black, finely and distinctly punctured, the depressed portions of the hind margins of the segments much more finely and closely, so as to be microscopically cancellate; thin white pubescence at basal sides of segments extending mesad somewhat, but not forming bands, or forming only very indistinct bands toward the apex.

Hab.—Two at Dripping Spring, Organ Mountains, New Mexico, 5600 feet, Aug. 10, 1896 (C. H. T. Townsend). One on a flower of a composite—*Erigeron*, or an allied form.

This is perhaps a *Protandrena* with only two submarginal cells, and not a true *Calliopsis*, but I have not studied the tongue, which is retracted in the types. It differs from *C. bakeri* by its larger size, color of mandibles and tegulæ, much longer marginal cell, etc. Differs at once from *C. clypeatus* by the venation.

(16.) **Perdita solitaria** n. sp. ♀.—Length 4.5 mm. Head and thorax black, without the least blue or green lustre. Abdomen and legs piceous brown; no light markings; mandibles yellowish rufous, abruptly dark rufous at tips, which are not bifid; margins of abdominal segments obscurely dark reddish brown; flagellum dark coffee-brown beneath. Head of ordinary size, round seen from in front, face nearly bare, facial ridge strong, clypeus low, with large shallow punctures, ocelli in a low, but decided triangle; front and vertex dull, micro-

scopically sculptured with fine grooves, in part modified into a minute tessellation; mesothorax nude, dullish, sculptured like the vertex, median impressed line distinct; scutellum and base of metathorax similarly sculptured, as also the pleura; tegulae testaceous. Wings hyaline, nervures and stigma piceous; stigma very poorly developed, narrow, running to a fine point; marginal cell obliquely truncate, with a very short appendicular nervure; poststigmatal portion somewhat the larger; second submarginal narrowed more than half to marginal; third discoidal distinct. Legs with thin, whitish pubescence. Abdomen of ordinary shape, moderately shining, minutely sculptured in the same manner as the thorax; pollen is carried on the hind legs and on the venter of the thorax, quite a quantity in the latter position.

Hab.—Two specimens in Soledad Canon, Organ Mountains, New Mexico, August 15 on plant No. 41, a small composite with deep yellow flowers (C. H. T. Townsend).

In my key to *Perdita* (Proc. Phila. Acad., 1896, p. 45) this runs down to 20, where it is distinguished by the black head and thorax, and small size. It is a very peculiar and distinct little species, intermediate between *Perdita* s. str. and *Macroterata*.

(17.) ***Perdita callicerata*** n. sp. ♀.—Length 4½ mm. Head and thorax shining, very dark indigo-blue, vertex slightly inclined to be greenish; both head and thorax with sparse, but long and conspicuous white hairs, denser on face and cheeks; cheeks unarmed. Head fairly large, broader than long; clypeus very low, black with an æneous tinge, the anterior margin broadly creamy white; on each side of the clypeus is an equilateral triangle of the same æneous black, and the extreme corner between the eye and the mandible is cream color; labrum bilobate, pellucid white; mandibles slender, simple, white with the ends rufous, and a black basal tubercle; scape and funicle piceous, pallid at ends; flagellum a beautiful sulphur-yellow, with the first six joints more or less ringed with piceous above; eyes piceous; vertex minutely granular. Thorax without light marks; tegulae hyaline, colorless, with an opaque spot in front. Wings hyaline, nervures and stigma yellowish white; third discoidal cell absent, though in certain lights the faintest indication of the missing recurrent nervure is perceptible; marginal cell with the substigmatal portion perhaps slightly the longer; second submarginal much narrowed above, approaching an equilateral triangle, the lower inner corner truncate; coxae black, with the ends yellowish; trochanters black, femora black, with the knees pale yellow, anterior tibiae all yellow, middle tibiae yellow, with a black patch in front and a shade behind; hind tibiae yellow at ends, black in middle, with long white hairs; tarsi pale yellow, claws dark at their strongly bifid tips. Abdomen dark sepia brown, segments 1-5 with cream-colored bands, which are broadly sublaterally notched above on each side, so as to be for a space narrowed to a fine line, and seeming interrupted until examined with a strong lens; laterad of this the bands rapidly widen, and are confluent at the extreme sides; sixth segment pale; apex pale orange; venter entirely pale yellowish, except the first segment, which is black.

Hab.—Las Cruces, New Mex., Aug. 21, 1896, two on plant No. 44, which I take to be *Baileya multiradiata* (C. H. T. Townsend).

In my key to *Perdita* this runs down to 68, and agrees with *albottittata* in the hairy clypeus, etc., but differs in the color of the legs, etc.

(18.) **Diadasia rinconis** n. sp. ♀.—Length 12 mm., anterior wing 9 mm. Black, the pubescence pale ochreous; face nearly square, covered with short, whitish pubescence, more or less failing on lower part of clypeus, though dense on labrum; occiput and cheeks also densely hairy, the occipital hairs more or less ochraceous; vertex shining; clypeus shining, with very large punctures and numerous small ones intermixed; mandibles without any light color; antennæ short, flagellum rufescent beneath, first joint of flagellum slightly longer than second and third together, second very short; maxillary palpi 6-jointed, second longest, then third; fifth and sixth together not so long as fourth. Thorax densely covered with short, pale, ochraceous pubescence, the color becoming brighter on scutellum, and pale mouse-gray on pleura; disc of metathorax bare, dullish, enclosure bounded by an impressed line; tegulae black, their basal half pubescent. Wings smoky hyaline, nervures piceous. marginal cell with an obscure, suffused brownish streak, starting from the stigma; second submarginal cell very short. Legs black, with fairly abundant whitish or very pale ochraceous pubescence; small joints of the four hind tarsi rufescent; scopæ of hind legs abundant, pale ochraceous, conspicuously plumose: tarsi with very dark rufous hairs on inner side, those on basal joint of hind tarsi glittering with a coppery lustre. Abdomen broad, black with broad bands of appressed, short, pale ochraceous pubescence; the first segment pubescent all over, the hairs erect, though short toward base; the bands, which are apical, are on segments 2-4 roundly excavated on each side above, so as to be much narrowed at these points; the fifth segment is covered with similar pubescence, thinner and with naked dots toward the base; the extreme apex and the margins of the ventral segments are clothed with dark fuscous hairs.

Hab.—Rincon, New Mex., three at flowers of *Chilopsis saligna*, July 5, 1896. One had previously visited an *asclepiad*, as shown by the pollen masses adherent to the legs.

I had taken this for a *Synhalonia*, but Mr. Fox wrote me that it was a *Diadasia*, and a subsequent examination of the mouth-parts showed me that he was unquestionably correct.

(19.) **Podalirius californicus** (Cresson) ♂.—Length about 13 mm., anterior wing 9 mm. Head, thorax and first segment of abdomen covered with fulvous pubescence, nowhere mixed with black, dense, except on clypeus and middle of dorsulum, where it is sparse; on the cheeks and underside of thorax the pubescence becomes dirty whitish. Head broad, face nearly square; clypeus, except a black spot on each lateral margin, a supraclypeal transverse band, lateral face-marks shaped something like an *Emarginula*-shell seen from the side, but the ends more produced: labrum, except two large black spots at upper corners, and the narrow apical margin (as also of the clypeus) and mandibles without, except extreme margins, base and apex, bright lemon-yellow; clypeus minutely granular or tessellate, with tolerably close punctures: labrum shiny, subconfluently punctured; vertex sparsely punctured; antennæ reaching a little beyond tegulae.

black, the scape yellow in front, first joint of flagellum scarcely as long as second and third together, last joint subtruncate; mesothorax dull, minutely granular, with close, very shallow punctures; tegulae dark reddish testaceous. Wings hyaline, nervures piceous, marginal cell minutely appendiculate. Legs black, tarsi rufous (first joint of middle tarsi darker), claws black, except their bases; pubescence of legs short, thin, whitish; middle legs slender, their tarsi simple; hind femora and tibiae greatly swollen, tibia with a short, but stout, rufous, subapical tooth on inner side; first joint of hind tarsi enlarged and flattened, covered with appressed dark rufous hairs within, with the inner margin presenting a very large tooth with a broad base, but acute point (like a rose-thorn), below which, apically, is a small tooth. Abdomen coal-black, with the hind margins of all the segments broadly ivory-white; there is short, inconspicuous, black pubescence on the black portions, but no pale hairs, except the fulvous hairs of the first segment, and appressed silvery pubescence on the hindmost portion of the sixth segment and covering the apex, the same silvery pubescence being continued up the sides of the abdomen beneath.

Hab.—Two at flowers of *Caesalpinia falcaria* in the grounds of the Canaigre factory, Deming, New Mex., July 9, 1896.

This resembles *P. cleomis*, but is at once distinguished by the face-markings, the color of the pubescence, etc. From *P. tricolor* it will be known by the legs. From *P. tarsatus* by the want of black pubescence on the dorsulum, and by the color of the legs. It seemed to differ from Cresson's *californicus* by the pale griseous or whitish pubescence of the legs, the large amount of yellow on mandibles, and the bright yellow face-marks; but Mr. Fox assures me that it is in reality the same species. I give a redescription, as Cresson's description is hardly adequate.

(20.) ***Podalirius cardui* n. sp. ♂.**—Length about 13 mm., anterior wing 10 mm. Black, with gray pubescence, dense on thorax, except dorsum of metathorax, which is bare and shining; dense also on cheeks and occiput, but sparse on front and altogether absent on the white parts of the face; a few black hairs on vertex, none on thorax. Head broad, face nearly square, vertex somewhat shining, but minutely roughened, clypeus dullish, sparsely punctured above, the punctures becoming larger and closer on apical half; labrum somewhat shining, irregularly and subconfluently punctured; clypeus, except a black spot on each side above, and the narrow anterior edge, a transverse supraclypeal band, lateral face-marks shaped like the side view of a shoe with a pointed toe and a large flap; labrum, except a black spot on each side above, and the narrow anterior margin, a large subpyriform spot on mandibles, and a large elongate mark on scape, all ivory-white; first joint of flagellum about as long as the second and third together; mesothorax dull; tegulae large, dark brown, margined with hairs. Wings hyaline, slightly brownish in first submarginal cell, nervures brown. Legs slender, simple, small joints of tarsi more or less rufous; pubescence of legs silvery whitish, hardly more than a sparse fringe on femora, a slight pruinosity on anterior tibiae, a conspicuous white fringe on outer margin and a smaller one on inner margin of middle tibiae; hind tibiae with the whole outer side hairy; tarsi

with silvery hairs on outer and dark rufous hairs on inner side, those on inner side of basal joint of hind tarsi so dark as to appear black in some lights. Abdomen blue-black, hind margin of first segment narrowly opaque white, hind margins of the remaining segments broadly subtranslucent grayish white; first segment with grayish white pubescence like that of the thorax; remaining segments dorsally seeming bare, but clothed with short, inconspicuous hairs, white on second segment, basally black and subapically white on third segment, black with a very narrow, white, subapical fringe on fourth segment, brown-black on fifth and sixth segments, apical margin of sixth and apex clothed with silvery hairs; venter with a band of white hairs.

Hab.—One at flowers of *Cnicus*, Mr. Clark Rodger's ranch, Lone Mountain, near Silver City, New Mex., July 7, 1896, about 6000 feet. A male *Xylocopa arizonensis* Cr. was visiting the same flowers. The *Cnicus* resembles *ochrocentrus*, but the flowers are of a very beautiful crimson-pink color, such as I have not seen in thistles elsewhere.

P. cardui seems to be nearest to *P. smithii* Cresson, but it differs in the color of the pubescence and the clypeal spots. In the latter character it resembles *P. walshii*, but the tarsi are not as in that species.

(21.) **Epeolus verbesinæ** n. sp. ♂.—Length from 7-16 mm., but this apparent great variation is due in large part to the contractility of the abdomen which may thus differ greatly in apparent length in specimens of the same size; the length of the anterior wing varies from about 6.5-8 mm. Black, with creamy white markings. Legs red. Head short, considerably broader than long; vertex flattened, closely and subconfluently punctured, the punctures becoming larger on front; face, nearly up to level of top of scape, covered with appressed snow-white pubescence, becoming thin on lower part; cheeks with similar, but thin pubescence; a few hairs, bending forward, just behind the middle ocellus; antennæ moderately long, black; the scape and first joint of flagellum dark rufous, sometimes black; funicle minute, scarcely emerging from scape, easily overlooked; first joint of flagellum shorter than third, which is shorter than second; the white pubescence of thorax is arranged much as in other species, but the markings are very distinct and well defined; there is a band, narrowed medially, on hind border of prothorax, two short stripes passing backward on mesothorax, a broken band passing over the tegulae, narrow bands at hind margins of mesothorax and scutellum, and such a band on postscutellum; the pleura and metathorax, except the hairless enclosure, are also white pubescent; the scutellum is quadrituberculate; enclosure of metathorax smooth in middle and densely punctured at sides; mesothorax densely and confluent punctured; tegulae dull orange ferruginous. Wings hyaline, with black nervures, outer margins broadly dark gray; second submarginal cell greatly narrowed above, sometimes almost to a point. Legs red, with the usual sparse white pubescence, spurs of middle and hind legs black. Abdomen dull black, with clear-cut, creamy white markings: first segment with a large white triangle on each side, one corner of which joins the band; the bands on segments 1-5 are all rather broadly interrupted in the middle, narrowing subdorsally and the swelling, so that their mesad terminations

are bulbous; this is most noticeable on the first segment, and becomes less so on each subsequent one, the band on the fifth being almost uniform; laterally the bands are broadened, and that on segment 2 emits a large upward projection, which is apt to get more or less rubbed off; sixth segment with an entire white band, more or less narrowed medially; venter largely silvery pubescent, segments 4 and 5 with short fringes of pale yellowish curled bristles; apex rounded, black; in some specimens is projected a pale testaceous plate, minutely emarginate in the centre, producing a pair of low rounded lobes, laterad of which is a deep notch.

♀.—Length 10 mm.; agreeing with the ♂ in color and ornamentation: pygidial area at apex of abdomen large, rounded, beset with short, brilliantly golden scales, placed some distance apart on a dark field.

Hab.—Fifteen males at the Canaigre factory, Deming, New Mex., on flowers of *Verbesina encelioides* July 9, 1896 (Ckll.). One ♀ taken at Las Cruces, New Mex., by Prof. Townsend several years ago. I have never taken it at Las Cruces myself. It somewhat resembles *E. donatus* Sm., and especially *E. tephaneucus* Cresson. Mr. Fox, to whom I sent a specimen, writes: “allied only to *compactus*, but is larger and sculpture of thorax is finer; wings more darkly margined. I am inclined to regard it as a variety of *compactus*, until other specimens have been found.” But I have a good series, and the species is certainly not *compactus*. A single example of *E. compactus* was taken at Las Cruces by Prof. Townsend, years ago, and determined for me by Mr. Fox. It differs from *verbesinæ*, in addition to the characters mentioned, in the longer first joint of flagellum, and in the color of the spurs.

(22.) **Melissodes pinguis** Cresson.

A peculiar little species, known in the ♂ by the dark wings with a broad second submarginal cell, black pubescence of dorsum of thorax; pale yellow clypeus, labrum and spot on mandibles; and appressed fulvous pile on abdomen; first joint of flagellum at least half as long as second.

I give a new description of the ♀, as I had some difficulty in identifying it from Cresson's description:

♀.—Length about 8 mm., stout, black. Head and thorax with short, thin, white and mouse-gray pubescence, mixed with black. Abdomen with short fulvous pile, like velvet, but appressed. Head broad, shining, with large punctures, especially large and close on the clypeus, which becomes subcancellate; pubescence of face sparse, grayish, some black hairs between the antennæ, vertex with black hairs, occiput and cheeks with short white hairs; antennæ reaching to tegulae, wholly black, first joint of flagellum larger than the two following together. Thorax shining, with large close punctures; dorsal pubescence thin and black, more dense on scutellum; a very few short pale hairs intermixed, sides of metathorax and pleura with grayish white hairs; tegulae black. Wings fuscous.

outer margin broadly iridescent, a green band between two pink ones on both wings; apex of front wings shining, a little violaceous in some lights; nervures black, marginal cell shorter than usual. Legs with pale grayish ochraceous pubescence; anterior femora almost naked, but with a spreading tuft of very long whitish hairs near base beneath; basal joints of tarsi with shining orange rufous hairs on inner side; brush of hind tarsi rufous. Abdomen short and stout; base of first segment with a thin band of erect pale hairs, no distinct bands, but second segment, to a large extent, and third and fourth segments entirely covered with short fulvous pile, fifth segment covered with pale ochraceous hairs; the extreme hind margin of the second segment has a very narrow band of fulvous pile, which is noticeable, through the segment itself not being covered like the following two; there is a white substance, which I do not understand, in the suture between the second and third segments.

Var. *velutinellus* ♂.—The abdominal pile yellowish white. This looks like a distinct species, but it flies with the normal ♂, and may be regarded as a dimorphic form of it.

Hab.—San Rafael, Vera Cruz, March 14, ♂. Paso de Telaya, April 7, ♀. All were on flowers of plant No. 9, which Dr. Rose recognises as a species of *Sida*. Collected by Prof. C. H. T. Townsend.

(23.) **Megachile sidalcea** n. sp. ♂.—Length nearly 15 mm., anterior wing 11 mm. Black with white pubescence, that on the face dense and cream color. Head fairly broad, pubescence of face not mixed with black, arranged as in *M. candida* Sm.; vertex closely punctured, with sparse white pubescence, only noticeable when the insect is held sideways; cheeks with white hairs, contrasting with the yellowish tint of those on the face; flagellum dark rufous beneath, last joint not enlarged; first joint of flagellum about as long as the second; mandibles rufopiceous toward tips, with a brush of cream-colored hairs on upper outer margin; strongly tridentate, the lower tooth shorter and so placed that it might be described as on the lower margin: the upper two consisting really of a single broad blade deeply notched at the end; tongue rufous, with its end beset with pale rufous hairs. Thorax dullish, closely punctured, all the pubescence rather dull white, inconspicuous, except a narrow band between mesothorax and scutellum, a small patch behind tegulae, a patch below tegulae, hind margin of prothorax very narrowly, two very narrow lines running thence onto mesothorax, and thin long pubescence on prothorax, pleura, metathorax and more or less on scutellum; tegulae punctured, piceous, with rufotestaceous margins. Wings smoky hyaline, outer margin broadly darker; a narrow dark streak running along costal margin in marginal cell, and a small dark cloud just beyond marginal cell; nervures piceous, marginal cell quite long. Legs with thin, but long white pubescence, black with the tarsi cream color; spines of anterior coxae long and flattened, a little curved, blade like; femora stout, anterior femora very peculiar; the upper basal half, which rubs against the thorax, is shining pale yellowish with a rufous tinge; the lower apical half, which touches the tibia when the leg is flexed, is cream color, meeting the outer side at an acute angle, the margin smooth and appearing as a conspicuous cream-colored line on the flexed leg; anterior and middle tibiae more or less cream colored at apex, the apical corners more or less produced into teeth or short spines; anterior tarsi broadened and flattened, first joint hollowed within, somewhat produced at apex, but with no free projection;

on outer apical margin there is a rounded notch containing a little boss, looking like a rivet joining first and second segments; the segments from the second to the fourth diminish gradually in size, as usual; the hind margin of the tarsus presents a long dense fringe of white hairs, dark fuscous at the ends, or rather dark fuscous hairs growing behind the white ones overtip them and produce the effect described; ridge beneath first joint and joints 2-4 more or less beneath, with dark reddish hairs; tip of claw-joint black at tips and strongly bifid; the other tarsi slender and ordinary, basal joint with a black stripe behind. Abdomen fairly long, subparallel, shining, but closely punctured; first segment with base deeply and broadly excavate, sides and apex fringed with long whitish hairs; hind margins of segments 2-5 with very uniform, narrow, snow-white hair bands; seen from above the remainder of these segments seems nude, but seen from the side a thin pubescence is evident, ochraceous tinged on 2 and 3, darker on 4, black on 5; apical segment without appressed pubescence, broadly but not deeply emarginate, the emargination with a low prominence in its centre; a variable number, up to five, small teeth laterad of the emargination; ventral segments with thin bands of long white hairs.

Hab.—On flowers of *Sidalcea malvaeflora* at Mr. Clark Rodger's ranch, Lone Mountain, July 7; and at flowers of golden mint Deming, New Mex., July 9, 1896.

It most resembles *M. candida* Sm., *floridana* Rob., *integra* Cr. and *albitarsis* Cr. Mr. Fox observes that it is "of the *pollicaris*, etc. group." [with anterior tarsi of ♂ flattened.—W. J. F.]

(24.) **Ceratina amabilis** n. sp. ♀.—Length 10.5-11.5 mm. Head and thorax a brilliant Prussian green. Abdomen bright carmine. Legs black, the anterior femora bright green behind; an elongate mark on middle of clypeus, bulbous below, a spot on each extreme side of clypeus, a spot on end of anterior femora, and a short stripe on anterior tibiae cream color; there is no light color on labrum or tubercles; mandibles wholly black, strongly tridentate at tips, the middle tooth considerably the longest; face with large confluent punctures; front above antennæ more or less dark æneous; antennæ short, wholly dark; cheeks with a broad band of punctures running down the middle, leaving a narrow, smooth band just behind the eyes; mesothorax strongly punctured, with a median, dark æneous, impunctate area; longitudinal impressed lines as in *eximia*; scutellum with four small, round, dark purple spots, two on disc and one on each extreme side; base of metathorax granular; tegulae transparent, shining, orange testaceous. Wings smoky, quite dark, nervures and stigma piceous; marginal cell somewhat shorter, comparatively, than in *nautlana*. In *nautlana* the radial nervure, from the stigma to the junction with the third transversocubital, is distinctly shorter than the part beyond, whereas in *amabilis* the reverse is the case, though not so conspicuously. Legs with thin, pale grayish pubescence, orange rufous on inner side of tarsi; spurs of hind tibiae large, dark reddish piceous, the anterior one shorter and hooked at the end. Abdomen strongly, but not so very closely punctured; first segment, except hind margin, olive-green; last two segments rugose.

Hab.—San Rafael, Vera Cruz, March 14 on plant No. 11; March 16 on plant No. 14 (*Ipomoea*). Paso de Telya, Vera Cruz, March

30, on plant No. 21, which seems to be a *Canna*. All collected by Prof. C. H. T. Townsend, 1896.

Nearest to *C. eximia* Sm., but larger, legs not ferruginous, etc.

(25.) **Ceratina nautlana** n. sp. ♂.—Length about 4.5 mm., shining dark olive-green, strongly punctured; clypeus entirely, labrum except a spot on upper border, and an oblong spot on each side, a small spot on mandibles and the tubercles cream color or pale café-au-lait; small joints of tarsi more or less rufescent; antennæ piceous, flagellum not pale beneath; tegulæ shining, piceous. Wings hyaline, slightly dusky toward the apex, nervures and stigma piceous; face somewhat narrowed below, with very large punctures; clypeus not punctured, but irregularly grooved; mandibles bifid at tips; a partly single, partly double row of punctures just behind the eyes, behind which the cheeks are broadly smooth and impunctate; base of metathorax dark bluish green, minutely irregularly wrinkled, so as to seem granular; hind femora angled below, but hardly so strongly even as in *dupla*; there may be a well-developed pale stripe on anterior tibia.

♀.—Length 5 mm., similar to ♂; clypeus with only an oblong pale mark, labrum black; mandibles dark rufous medially, bifid as in ♂; dark parts of clypeus with large punctures; cheeks with a triple row of punctures behind eyes, then smooth.

Hab.—San Rafael, Vera Cruz. The ♀ March 12; the ♂ March 9, two on *Bidens* (C. H. T. Townsend). The name of the species is derived from the Rio Nautla, which runs by San Rafael.

Near to *C. strenua* Sm., but differs in the dark tibiæ, antennæ, tegulæ and nervures. The punctuation of the cheeks is very characteristic and distinguishes it at once from a very similar species found in New Mexico.

(26.) **Exomalopsis sidae** n. sp. ♀.—Length 8 mm., rather stout, very shiny. Head, thorax and legs black. Abdomen red; face about square, orbits parallel, vertex smooth and impunctured, clypeus rather obscurely punctured; face with sparse, appressed, white pubescence, a dense, suberect, brush of the same just above the antennæ; vertex with a few erect hairs, which, in the specimen described, have entangled a mass of *Sida* pollen; labrum with a fringe of yellowish hairs; mandibles simple, grooved without, dark rufous medially; first three joints of maxillary palpi conspicuously stouter than the other three; flagellum dark brown beneath, funicle oval. Thorax sparsely punctured, nearly nude, except lines or bands of white pubescence along hind margins of prothorax and scutellum, and covering postscutellum, and similar pubescence on tubercles, pleura, and more or less on sides of metathorax; tegulæ testaceous. Wings hyaline; stigma pale orange-brown, nervures fuscous, contrasting, costal nervure black, second submarginal cell nearly square; venation as in *E. solani*; small joints of tarsi rufous. Legs with white pubescence; the abundant scopula of hind legs pale fuscous, very strongly plumose, carrying an enormous quantity of the pale yellow pollen of the *Sida*. Abdomen pyriform, almost impunctate, rufous; first two segments bare and shining, except a patch of appressed white pubescence on each side, and erect white hairs at base of first; third and fourth seg-

ments almost covered with appressed white pubescence, fifth with long, depressed, white hairs; extreme apex with some fuscous hairs; pygidium transversely lineolate; ventral segments with thin fringes of oblique pale hairs, which carry very little pollen.

♂.—Length about 7 mm., wholly shining black, except the flagellum rufescent beneath, the claw-joints of tarsi rufous, the mandibles medially dark rufous; and the very broad low clypeus and the labrum wholly pale primrose yellow; dorsum of thorax somewhat more hairy than in the ♀, but the abdomen above entirely nude, except a short lateral white hair band on segment 5, and a complete band on segment 6; segments 3-5 conspicuously punctured, second with very minute, sparse punctures; the hind legs have quite long white hairs, which entangle a small quantity of pollen.

Hab.—On flowers of *Sida hederacea*, Mesilla, New Mex., July 21, 1896, ten females, one male. A very distinct species, known by the black male, and female with red abdomen.

(27.) **Exomalopsis penelope** n. sp. ♀.—Length 7 mm. Black, shining, sparsely pubescent; vertex shining, impunctate; ocelli in a very slight curve; front with suberect grayish white hairs; face with appressed, plumose, white pubescence, conspicuously denser at sides; clypeus with large, not very close punctures, and minute ones in between; mandibles rufous, except at base, short and blunt, simple; cheeks with thin, dull white pubescence; flagellum, except the first joint, brown beneath; mesothorax strongly punctured, its anterior half with inconspicuous brownish gray pubescence, its hind half bare: hind margin of prothorax and tubercles with rather dense, dull white pubescence; a band on hindmost half of scutellum, and an oval patch on postscutellum of light orange rufous pubescence, very conspicuous; sides of metathorax and pleura with dull white pubescence, finely plumose; tegulae piceous. Wings hyaline, nervures and stigma ferruginous, costal nervure black; first recurrent nervure joining the second transversocubital; second recurrent joining third submarginal cell at its end. Legs black, with dull white pubescence, small joints of tarsi rufous; basal joints of tarsi within with orange rufous pubescence, the brush of hind tarsi being of the same color; scopa of hind legs wholly pale, copious, yellowish, or light rufous, its color hard to see because it is filled with orange pollen. Abdomen short and broad, first segment excessively shiny, impunctate, base of second with fine, close punctures; base and sides of first segment with thin gray pubescence, second segment with a very broad V of white pubescence on each side; third and fourth apparently fasciate, but the hair-bands visible only at the side, otherwise covered by the retraction of the segments; fifth covered with white hairs; venter rather thinly pubescent.

♂.—Smaller, with the abdomen narrower and more tapering; face covered with white pubescence; flagellum entirely rufous beneath, first joint about half as long as second; mesothorax more sparsely punctured; tegulae clear rufous. Wings slightly dusky at apex; scutellum and postscutellum with the orange rufous pubescence not always obvious, but sometimes so, and the pubescence of the anterior part of the mesothorax also dark orange rufous; all the tarsi rufous, middle tibia with a rufous spot at end; basal joint of hind tarsus with long, conspicuously plumose, fulvous pubescence, which also intrudes somewhat on to the tibia; the outer side of the basal joint is minutely speckled with black. Abdo-

men quite strongly punctured, including the first segment; continuous pale hair-bands on segments 2-6.

Hab.—San Rafael, Vera Cruz, one female on plant No. 34, July 3; seven males on plant No. 31 (*Cardia*, probably *C. ferruginea*) last of June. Collected by Prof. C. H. T. Townsend, 1896.

Allied to *E. solani*, and still more to *E. tarsata* Smith from Santarem.

POSTSCRIPT ON AUGOCHLORA.

I found considerable difficulty in determining the species of *Augochlora* described by F. Smith, especially as there was no indication of the spur-character, which divides the species into two groups. I wrote to Mr. E. A. Smith, suggesting that it would be a great convenience to students if the types in the British Museum could be examined with reference to this character, and the result published. With great promptness Col. C. T. Bingham, to whom this suggestion was communicated, examined the types, and he has most kindly sent me the report which I give below.—T. D. A. C.

“The types of the following *Augochlora* are in the Museum, and these I have carefully examined and have arranged them under Robertson's two sections.”

Hind calcar of hind tibia simple or minutely ciliated.

1. *A. electra Sm.*
2. *A. artemisia Sm.*
3. *A. regina Sm.*
4. *A. festiva Sm.*
5. *A. gratiosa Sm.*
6. *A. viridula Sm.*
7. *A. fervida Sm.*
8. *A. callisto Sm.*
9. *A. acis Sm.*
10. *A. feronia Sm.*
11. *A. titania Sm.*
12. *A. festiva Sm.*
13. *A. alecyone Sm.*
14. *A. nana Sm.*
15. *A. thalia Sm.*
16. *A. flammea Sm.*
17. *A. aurata Sm.*
18. *A. briseis Sm.*

- . Cotypes only in Museum :
- 1. *A. sumptuosa Sm.*

Hind calcar of hind tibia pectinate.

1. *A. pandora Sm.*
2. *A. bucephala Sm.*
3. *A. vesta Sm.*
4. *A. fulgida Sm.*
5. *A. splendida Sm.*
6. *A. lucidula Sm.*
7. *A. acidalia Sm.*
8. *A. berenice Sm.*
9. *A. deidemia Sm.*
10. *A. atropos Sm.*
11. *A. calypso Sm.*
12. *A. chryseis Sm.*
13. *A. lœta Sm.*
14. *A. lucidula Sm.*
15. *A. habescens Sm.*
16. *A. aspasia Sm.*
17. *A. aurora Sm.*

Cotypes only in Museum :

1. *A. daphnis Sm.*
2. *A. resplendens Sm.*

Col. C. T. BINGHAM, in litt., Sept. 2, 1896.