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NOTES ON AMERICAN BEES.

By T. D. A. COCKERELL,

Professor of Entomology, New Mexico Agricultural College.

Nomia nevadensis, Cresson.—La Luz, N. M., July 27th, 1898. (C. M. Barber.)

Nomia arizonensis, n. sp.—♂. In my table of *Nomia* ('Entomologist,' February, 1898) this runs to *N. compacta*; but the wings are very clear, with very dark broad contrasting hind margins. It is surely a distinct species, by this character, and the locality. Arizona. (C. F. Baker, 2304.)

Andrena chromotricha, n. sp.

♀. Length a little over 9 millim.; breadth of abdomen 2½ millim. Belongs to the group with the *mesothorax* and *abdomen* minutely tessellate, not punctured; the enclosure of *metathorax* triangular, granular, defined only by a line, with only the extreme base very slightly wrinkled; the process of *labrum* broad and truncate, the truncation broadly sub-marginate, the sides sloping; the *clypeus* with a smooth median line, its sides on each side of the line distinctly but not closely punctate, its anterior margin with a pair of long and strong yellowish bristles projecting downwards; the front beneath the *ocelli* strongly striate; the *tegulae* very dark brown; the wings with the apical margin smoky; the abdomen with continuous but thin pale hair-bands; the apical *fimbria* sooty.

This species is closely allied to *A. apacheorum*, the description of which (Entom. 1897, p. 306) applies to it with these exceptions: it is a little smaller, especially in the abdomen; the *pubescence* of the *mesothorax* and *scutellum* is a lively reddish orange; the hair of the abdominal bands is hardly so long; the impunctate line on the *clypeus* is well-defined; the vertex is a little narrower; the *pubescence* of the *tarsi* is entirely very pale yellowish, like that of the *tibiae*; the frontal striation is stronger. The first segment of the *flagellum* is about or hardly twice the length of the second, whereas in *apacheorum* it is a little over twice the length. The *nervures* are very dark brown, the *stigma* somewhat lighter.

Hab. Forks of Ruidoso Creek, New Mexico, July 30th, 1898. (C. M. Barber.) It is just possible that this is an extreme variety of *apacheorum*, but its characters seem specific. The two conspicuous *clypeal* bristles also occur in *apacheorum*, *fimbriata* (*americana*), *electrica*, *macgillivrayi* (rather small), *vicina*, &c.

Halictus lerouxii, Lep.—♀. Colorado. (Gillette, 2441.) *H. parallelus* of Ashmead's Colorado list is doubtless the same.

Halictus ligatus race *townsendi* (Ckll.).—To my surprise, Mr. C. M. Barber took two females of this in Mesilla, New Mexico, along with many ordinary *ligatus*. The insect was described (as *H. townsendi*) from Tropical Mexico.

Panurginus pauper var. *flavotinctus*, Ckll.—Prof. C. H. T. Townsend took two males at Dripping Spring, Organ Mountains, N. M., Aug. 10th. I formerly thought they might belong to *P. asteris*, Rob. The female of *flavotinctus*, taken at Santa Fé in August, differs from the male in the broader flattened abdomen, and the wholly dark face. It will be distinguished from the female of *albitarsis* by its small size (about 5 millim.), and the *flagellum* being ferruginous beneath after the fourth segment.

Panurginus albitarsis subsp. *fortior*, subsp. nov.

♂. About 6½ millim. long. Differs from Santa Fé *albitarsis* in being more robust, with a broader abdomen, having indeed the build of a female rather than of a male. Wings quite clear; *stigma* and *nervures* rather pale brown; face-markings a deep chrome-yellow, whereas in the Santa Fé insect they are pale lemon-yellow. *Flagellum* entirely black.

Hab. Mescalero, N. M., July 22nd, 1898. (C. M. Barber.) This is probably a valid species.

Panurginus barberi, n. sp.

♂. Length about 7 millim., black, with a thin short greyish pubescence, making the insect appear dusty; abdomen narrow with subparallel sides; head, *mesothorax*, and *scutellum* with large and rather dense punctures, not dense enough, however, to obscure the shining surface; *metathorax* with its middle part shining and impunctate, its base with a narrow transverse channel crossed by little ridges at frequent intervals; abdomen shining, with only a few small scattered punctures at the sides of the first segment, the other segments with the anterior half rather thickly but minutely punctured; antennae entirely black; face scarcely hairy, *clypeus* (except two black dots, and the pale brown anterior margin) and lateral face-marks bright lemon-yellow; lateral marks rapidly narrowing above the level of the *clypeus*, ending in a sharp point (at an angle of about 45°) on the orbital margin just below the level of the antennae; *labrum* mostly yellow; *mandibles* simply yellow at base, otherwise reddish brown, with a conspicuous tuft of hair on the lower margin about the middle; *tubercles* yellow with a hyaline spot; *tegulae* testaceous; wings smoky, especially on the apical margin, *nervures* and *stigma* piceous; marginal cell with a long appendicular *nervure*; second submarginal cell receiving the recurrent *nervures* near the end of its first and beginning of its last fifths; legs black, bases of last four *tibiae*, all the knees, basal two-thirds of anterior *tibiae* in front, and basal joints of all the *tarsi*, pale yellow.

Hab. Mescalero, New Mexico, July 12th, 1898. (Chas. M. Barber.) In my table of *Calliopsis* and *Panurginus* this runs to *P. bidentis*, Ckll., but it will be easily known from that by its larger size, and the absence of the strong yellowish tint of the wings.

Calliopsis obscurellus, Cresson, 1879.—Three males and three females from Pasco, Wash., May 25th, 1896. (T. Kincaid.)

(To be continued.)

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appear about the central shadow, such as accompany the movements of the legs.

Gerris can also, by a powerful stroke of one of the intermediate legs, perform side-movements with perfect ease, and even turn right round, executing strategic movements to the rear with great agility.

The other active movement is the leaping, whereby the bugs tear themselves loose from the surface of the water and make a spring up into the air. According to Meinert, *G. lacustris* (Linn.), Stål, can leap a couple of inches on the water, but on dry land it exceeds this to some extent, springing to a greater height, with increased rapidity, and with more continuous movement; one often finds on a hunting excursion that these bugs can leap right out of the net.

Gerris does not, as a rule, voluntarily enter beneath the surface of the water, but it is evident that its usual position must expose it to the frequent danger of being overwhelmed by sudden squalls, or other disturbances, and swamped. The short, close, velvety pubescence with which they are usually almost completely covered forms—if it be in good and clean condition—an investment well-nigh impervious to water,* and they are thus able to rise to the surface unharmed, breaking the surface-film† with some little degree of effort.

(To be continued.)

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By T. D. A. COCKERELL,

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(Concluded from p. 129.)

Colletes nautlanus, n. sp.

♀. Length about $9\frac{1}{2}$ millim., rather broad and compact, shining black. Head broader than long, inner orbital margins quite strongly concave; face with short white pubescence, rather dense and strongly plumose at the sides; clypeus with rather strong punctures, more or less running into striæ; vertex with sparse punctures of two sizes; many black, strongly plumose hairs behind ocelli; cheeks with white pubescence; antennæ short, entirely black, scape punctured; clypeus

* The elytra are provided with short close hairs along the nervures, but, despite this, they are apt to become soaked and unmanageable when swamped with water; and this is one of the reasons why I have considered (*ante*, p. 109) that apterous forms will tend to supplant the others. In some macropterous and brachypterous individuals I have examined, pubescence is scarcely developed at all on the dorsal surface of the abdomen.

† See Miall, *l. c.* pp. 12-15; Scourfield, 1894, in *Journ. Linn. Soc. Lond.* xxv. pp. 1-19, Pl. 1 & 2.

with the anterior margin not emarginate; labrum with a row of weak pits; apical portion of mandibles dark reddish; space between base of mandible and eye very short, almost reduced to nothing; mesothorax with large and very strong punctures, dense in front, less so behind, hind part of disc without punctures; scutellum impunctate in front, with large punctures behind; post-scutellum coarsely roughened; basal enclosure of metathorax narrow, bounded by a sharp rim, and crossed at intervals by sharp ridges; posterior face roughened, almost malleate; pleura with very dense large punctures; prothoracic spine long and sharp; pubescence of thorax white at sides, dense on tubercles and on sides of metathorax, black just beneath the tegulæ, on dorsum thin but strongly plumose, black mixed with greyish white, the white conspicuous at the suture between mesothorax and scutellum, and (greyish) on post-scutellum, the black most conspicuous on the scutellum; tegulæ shining piceous; wings hyaline, nervures and stigma black; stigma small, marginal cell with an appendicular nervure, second submarginal cell about as long as third, third narrowed about one-half to marginal, second recurrent nervure strongly bent; legs with white pubescence; hind femora with an abundant, white, beautifully plumose floccus; second joint of hind tarsi triangular; abdomen broad, very shiny, minutely but strongly and quite closely punctured, except on anterior part of disc of first segment; segments nude, except very narrow snow-white apical bands, and white hair at base and sides of first segment, and a few scattered black hairs on the apical segments; venter with a very thin hoary pubescence.

Hab. San Rafael, on the Rio Nautla, State of Vera Cruz, Mexico, last of June. (*C. H. T. Townsend.*) This has less black hair than *C. æthiops*, and the abdomen is not "rapidly narrowed to apex." It has no trace of the dense ochraceous pubescence found on the breast of *C. mexicanus*. Curiously, *C. nautlanus* has a very strong resemblance to *C. nudus*, Rob., from Illinois, differing, however, by the shining and closely punctured abdomen.

Colletes gilensis, Ckll.—♂. Prude's Summit, White Mountains, N. M., July 29th, 1898. (*C. M. Barber.*) Prude's Summit is not on the maps; it is the top of the divide between Ruidoso and Mescalero.

Colletes bigeloviae, Ckll.—♀. Prude's Summit, White Mountains, N. M., July 29th, 1898. (*C. M. Barber.*) My original types were badly worn; a new specimen, in excellent condition, has a shiny black abdomen, with very distinct but narrow snow-white bands on the apical margins of the segments, interrupted in the middle on the first. The punctures of the abdomen are very much smaller than in *C. gilensis*. The third discoidal cell is much less bulging at its end than in *C. nautlanus*.

Nomada edwardsii, Cresson, 1878.—Mr. T. Kincaid sends me eighteen specimens; three from Seattle, Wash.—two males, May 13th, one female, May 17th, 1896; the rest from Olympia,

Wash., May 11th and 23rd, and June 24th—mostly females. Cresson's description, though stated to be of a male, applies to the female. The male has the mesothorax all black, the scutellum with only a pair of yellow spots, the post-scutellum black, the yellow spots on metathorax smaller, and the black bands on the abdomen broader. The basal portions of the legs are largely black, where in the male of *N. superba* they are red. The flagellum of male *edwardsii* is black above and red beneath, and this is the only red about the insect.

Nomada maculata, Cresson, 1863.—Mr. T. Kincaid takes at Seattle and Olympia, Wash., May 23rd–June 25th (the last date being that of a Seattle male), a species which agrees with *maculata*, but is 10 millim. long or slightly over. Robertson, in Illinois, found the insect to not exceed 8 millim. in either sex; but I have a female from Franklinville, Pa., May 19th, identified as *maculata* by Mr. Fox, which is quite as large as the Washington form. The mandibles are bidentate, and the last abdominal segment in the male is bifid, as Robertson indicates.

Sphecodes dichrous, Smith, 1853.—Mr. T. Kincaid sends me very numerous examples from Olympia, Wash., mostly taken in June, the dates running from May 25th to July 2nd; also a few from Seattle, Wash., one as early as April 17th; also one or two from Pasco, Wash., May 25th; and a somewhat larger and darker individual (female) from Comano I., Wash., collected by N. L. Gardner, May 25th, 1896. It would be interesting to ascertain whether the Comano I. specimens are uniformly of rather large size and dark colour, constituting a local race.

Bombus nevadensis, Cress.—Mescalero, Indian Agency, N. M. (Otis).*

Bombus ternarius, Say.—One from Seattle, Wash., April 3rd, 1897. (T. Kincaid.) The pubescence of the head is mostly black.

Bombus sonarus, Say.—Forks of Ruidoso Creek, N. M., July 30th. (C. M. Barber.) Also taken by Prof. C. H. T. Townsend. New to the United States.

* The Mescalero Indian Agency, on Tularosa Creek, N. M., is an interesting locality for bees. In addition to the species mentioned in the body of this article, Mr. C. M. Barber took the following at the Agency in July, 1898:—*Sphecodes mandibularis*, Cress., *Agapostemon texanus*, Cress., *Halictus ruidosensis*, Ckll., *H. forbesi*, Rob., *H. meliloti*, Ckll., *H. perdifficilis*, Ckll., *H. ligatus*, Say, *Andrena apacheorum*, Ckll., *Prosopis tridentula*, Ckll., *Heriades carinata*, Cress., *Melecta miranda*, Fox (about nests of *Podalirius occidentalis*, on which it is evidently parasitic), *Podalirius occidentalis*, Cress., *P. cardui*, Ckll. (the second specimen known), *Megachile fortis*, Cress., *M. fidelis*, Cress., *M. pugnata*, Say, *Anthidium maculosum*, Cress., *Osmia faceta*, Cress. (new to N. M.), *Melissodes crenulaticornis*, Ckll., *M. tristis*, Ckll., *Xenoglossa pruinosa*, Say, *Clisodon terminalis*, Cress., *Monumetha borealis*, Cress., *Bombus marrisoni*, Cress., *Apis mellifera*, L.

Bombus fervidus, Fabr.—Three from Pasco, Wash., May 25th, 1896. (T. Kincaid)

Psithyrus cevalliae, n. sp.

♂. Length 18–22 millim., black, with yellow and black pubescence. Antennæ entirely black, about 10 millim. long, first two joints of flagellum short and equal, each about two-thirds the length of the third; orbits parallel, facial quadrangle somewhat longer than broad; front and vertex quite densely punctured, but a shining impunctate area on each side of the ocelli, which are placed in a gentle curve; pubescence of head black, mixed with pale grey on the face, especially on the clypeus; thorax above with a broad black band between the wings, all before this band is yellow, behind it is yellow mixed with black; pleura extremely densely punctured, with long black hair more or less mixed with dull white; wings fuliginous; legs black, anterior femora with black hair, middle femora with black hair in front and long yellowish-white hair behind, hind femora with sordid yellowish hair, short and black underneath at base; tibiae and tarsi with short black pubescence on the outer side, and pale reddish on the inner; first five segments of abdomen clothed with mustard-coloured hair, sixth with black, apex with shining orange-ferruginous; venter with sparse short black hair, some pale along the margins of the segments; claws very deeply cleft.

Hab. East of Las Cruces, New Mexico, in the *Larrea*-zone, Aug. 23rd, at flowers of *Cevallia sinuata*, two males taken, others seen, by C. H. T. Townsend and the present writer. On Nov. 10th I took a specimen at Mesilla Park, N. M., at flowers of *Aster canescens* var. *viscosus*; this differs in having the meta-thoracic pubescence almost all black, except a yellow tuft just behind the wings, and the hair of the apex of the abdomen black.

This is certainly a true *Psithyrus*, but it closely resembles the so-called *Apathus elatus*, which is the male of *Bombus fervidus*.

This is the only *Psithyrus* I have ever found in southern New Mexico. *P. variabilis* (Cress.), described from Texas, extends thence northward; I have specimens of it from Stillwater, Oklahoma, at flowers of *Prunus americana* (coll. C. E. Regnier, com. E. E. Bogue), and Baldwin, Kansas (J. C. Bridwell). I have a single small male of *variabilis* from Tuerto Mountain, near Santa Fé, New Mexico, at an altitude of 8200 ft., Aug. 7th, at flowers of *Senecio* (Ckll. 4313); this has yellow hair on the anterior part of the pleura, black on the hinder part, and a patch of yellow hair on the front.

Melissodes obliqua, Say.—Mesilla, N. M., July, 1898; many specimens. (C. M. Barber.)

Melissodes crenulaticornis, Ckll.—What I take to be the female of this species was found by Mr. C. M. Barber at the Forks of Ruidoso Creek, N. M., July 30th, 1898. In my table of N. M. *Melissodes* (female) it runs at once to *M. gilensis*; but it differs

from that in being smaller (length 10 millim.), no black hair on vertex, flagellum wholly black, dark hair of mesothorax and scutellum dark brown instead of black, stigma less developed and piceous, bases of third and fourth abdominal segments with scanty hair which is entirely black, apical bands of pubescence on second to fourth segments white and well-defined. The hair of the last two abdominal segments is black, except at the extreme sides, and the brush of the hind tarsi is orange-fulvous.

This female is referred to *crenulaticornis* instead of to *ruidosensis*, on account of its small size, and also because the venation is as in the former species, whereas *ruidosensis* has a much larger second submarginal cell.

Alcidamea simplex (Cresson).—This is the *Heriades simplex*, Cress., and the *Alcidamea producta*, Cress., the former specific name having priority.

Megachile relativa, Cresson, 1878.—One female. Forks of Ruidoso Creek, N. M., July 30th, 1898. (C. M. Barber.) New to New Mexico.

Megachile wootoni subsp. *calogaster* (Ckll.).—When describing *M. calogaster* I omitted to notice the close resemblance between its male and that of *M. wootoni*; they may be separated thus:—

Spurs of hind tibiae ferruginous; vertex more closely punctured	<i>wootoni</i> .
Spurs of hind tibiae piceous; vertex less closely punctured	<i>calogaster</i> .

The two are doubtless geographical races of one well-marked species.

Megachile sidalcea, Ckll.—A female was taken by Mr. C. M. Barber in Mesilla, N. M., July 4th, 1898. It resembles the male except in the usual sexual characters. The face has short white hair instead of a dense pale yellow brush; the ventral scopa is white, with a few black hairs at the extreme tip.

Megachile casadae, Ckll.—Mr. C. M. Barber took a female in Mesilla, N. M., July 4th, 1898. It resembles the male except in the usual sexual characters. The ventral scopa is white, even to the tip.

Megachile fidelis, Cr., var. n. *concinnumula*.

♂. Length about 9½ millim., black, with thin dull white pubescence. Head large, a little broader than thorax, eyes mottled, facial quadrangle a little longer than broad, narrowing below; face, including clypeus, densely covered with yellowish-white hair; vertex dull, strongly punctured, with erect hairs, some of which in certain lights seem black, but this is deceptive; cheeks with thin white pubescence, a dense tuft behind near base, but the area above the

base of mandibles is hairless; antennæ black, last joint not broadened; mandibles striato-punctate, black, fringed beneath with orange-fulvous hair; a tooth behind mandibles; mesothorax and scutellum dull, with numerous shallow punctures, thinly clothed with erect dull white hair; no bands of pubescence at sutures; tegulae piceous; wings dusky, darkest at apex, nervures brown, second submarginal cell receiving first recurrent nervure almost at its extreme base, and the second very near its apex; legs black, pubescence on femora white, on tibiae short, thin, and fulvous; spurs light ferruginous; the four hind tarsi ordinary, the pubescence on inner side of hindmost strongly orange-fulvous; anterior femora ordinary, black, with long white hairs; anterior tibiae black, with a short sharp spine at apex; anterior tarsi honey-colour inclining to ferruginous, last joint and apical half of the one before fuscous; first joint deeply hollowed, canoe-shaped, produced and somewhat curved at end, its rounded apex resembling a finger-tip; inner margin of the hollow with a continuous fringe of short black hairs, outer margin darkened, but having only fulvous hairs; hind margin with the usual long fringe of white hairs, none of which are black at ends; second and third joints flattened, with a conspicuous dark spot beneath; fourth joint simple; anterior coxae with a long spine, no patch of bright hair near its base; middle coxae unarmed; abdomen short, well punctured, with rather long thin dull white hair on basal segment above and beneath, but not at sides, and more or less on sides of ventral segments to the apex; hind margins of second to fourth dorsal segments with a narrow yellowish hair-band, very well defined; last segment concave in the middle, its margin with a deep but rather narrow emargination, the margin on each side of this minutely denticulate; the subapical ventral teeth obsolete.

Hab. Colorado Springs, Colorado, middle of July. (Ckll. 3558.) Differs from *fidelis* in the face being more narrowed below and the venation. Mr. Fox has also seen this variety from California.

Mesilla Park, New Mexico, U.S.A.

THE GENUS LEUCERONIA OF AURIVILLIUS.

By A. G. BUTLER, Ph.D.

In a paper upon the African genera of Pieridæ (Ent. Tidskr. 1895, p. 256), Prof. Aurivillius places *Teracolus* next to his new genus *Leuceronia*, under a section having only eleven veins to the front wings. Had the author consulted a paper which I wrote some years previously, "On the inconstancy of a generic character in *Nepheronia arabica*" (Ent. Mo. Mag. 1886, p. 259) he would have discovered that the eleven-vein peculiarity which exists in some examples of *L. buquetii* and its racial or seasonal forms was altogether abnormal.