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XLIII.—*Descriptions and Records of Bees.*—LXIII.

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

*Melissodes helianthophila*, sp. n.

♂.—Length about 10·5 mm., flagellum 8·5 mm.

Black, form of *M. aurigenia*; head and thorax with white hair, faintly tinged with yellowish except on mesothorax; disc of scutellum with rather short fuscous hair; eyes light green; clypeus light lemon-yellow, except a black spot on each side, and usual dark lower edge; labrum with about the middle third yellow, the rest black; mandibles with no yellow spot; antennæ very long, flagellum clear fulvous beneath and strongly blackened above; third joint very short; mesothorax and scutellum shining, sparsely punctured; tegulæ piceous, with white hair. Wings hyaline, nervures subfuscous. Legs with white hair, orange ferruginous on inner side of tarsi; small joints of tarsi ferruginous. Abdomen with thin white hair, forming very obscure bands; on apical part of first segment, and disc of second, is an admixture of short fuscous hair, only visible in lateral view; hind margins of segments broadly hyaline (the first narrowly), the junction of the hyaline with the black reddened; subapical spines black.

*Hab.* Boulder, Colorado, at flowers of *Helianthus lenticularis*, June 16, 1914 (*Cockerell*).



This looks like *M. aurigenia*, but is readily separated by the colour of the pubescence, dark mandibles, and dusky nervures. From *M. agilis subagilis* it is easily known by the much larger size, dusky nervures, and flagellum dark above. It is very close to *M. lupina*, but that has a spot on mandibles, and lacks the dark hair on scutellum. In my table in Trans. Amer. Ent. Soc. xxxii. p. 77, it runs to *M. perplexa*, from which it is readily known by the colours of clypeus and labrum. It could also run close to *M. gilensis*, which differs at once by the broadly black lateral margins of clypeus, the black labrum, and dusky wings.

*Melissodes bidentis*, sp. n.

♀.—Length 12 mm.

Black, the flagellum dark ferruginous beneath, except basally, wings strongly suffused with brown; head and thorax above with short dense pale ochreous hair, black at sides of vertex; hair of pleura pale ochreous, purplish black along the front and on the lowest part; hair of legs black, but the long scopa of hind tibiæ and basal part of basitarsus very pale reddish ochreous; abdomen black, without pale bands, the sides, venter, and apex with black hair. Very close to *M. cnici*, Rob., collected by Mr. Crawford at the same locality, but at thistle flowers; it differs from *cnici* by the uniformly smaller size; the redder wings, with apex of marginal cell more obtuse; the pale hair of cheeks and absence of black hair on scutellum. The mandibles are black, with at most a faint reddish tinge at extreme apex.

*Hab.* West Point, Nebraska, 5 ♀, at flowers of *Bidens*, Sept. 19–22, 1903 (*J. C. Crawford*). U.S. National Museum.

*Megachile mendica*, Cresson.

A male from East Florida in the British Museum, from the F. Smith collection, carries a manuscript name by Smith, who doubtless had the species long before it was published by Cresson. From the same source is also a male *M. petulans*, Cresson, from E. Florida.

*Chelynia pavonina*, Cockerell.

♀.—Near Jimtown, Colorado, June 8, 1914 (*W. P. Cockerell*). The mesothorax is golden-green, with slight coppery tints, and the scutellum is bluish green.



*Protandrena cockerelli*, Dunning.

Both sexes at flowers of *Asclepias*, Boulder, Colorado, July 4, 1914 (*E. Bethel*).

*Agapostemon splendens*, Lepeletier.

A female found dead on the snow, above Camp Albion, Colorado, 12,000 ft., 1914 (*Alfred Wheeler*). This is rather larger than usual, and a much yellower green than the specimens from Louisiana and Nebraska.

*Nomia mesillæ*, Cockerell.

Boulder, Colorado, a male at flowers of *Ratibida columnaris*, Aug. 3, 1914 (*Cockerell*). This is the second known specimen.

*Osmia permorata*, Cockerell.

Jimtown, Colorado, at flowers of *Astragalus*, June 7, 1914 (*Cockerell*).

*Oemia conjuncta marilaunidii*, subsp. n.

♂.—Head, mesothorax, and scutellum yellowish green; flagellum dull ferruginous beneath; lower part of front with only one tubercle, that obscure. Wings short, brownish; legs with much green colour; hair of face dense and pure white.

*Hab.* Devils River, Texas, at flowers of *Marilaunidium organifolium* (H. B. K.), May 6, 1907 (*F. C. Bishopp*). U.S. National Museum.

This is easily known from *O. subfasciata* by the larger size and sharp teeth at sides of sixth abdominal segment. It can hardly be the male of *O. botitena*, as it is more finely and densely punctured than that species.

*Hoplitis monardæ*, sp. n.

♀.—Length about 10 mm.

Black, the ventral scopa creamy-white; head large, the cheeks very broad and rounded; hair of head and thorax long and white, but not abundant, on lower part of clypeus it is slightly sordid; clypeus with extremely dense minute punctures, and no raised or smooth line; the lower margin



truncate, slightly concave, shining; flagellum short, obscure reddish beneath; vertex and cheeks closely punctured; mesothorax with small punctures, sparse and weak in middle; scutellum broad, not elevated, well punctured; middle of area of mesothorax dull, without lustre; tegulæ rufous clouded with piceous. Wings very strongly reddened; b. n. meeting t.-m.; first r. n. joining second s.m. at a distance from its base less than half length of first t.-c., second r. n. ending at a greater distance from end of cell; tarsi with pale reddish hair on inner side; pulvilli very large. Abdomen shining, finely punctured, with white hair-bands on apical margins of segments, largely interrupted in middle; last dorsal segment broadly rounded, with fine pale hair.

*Hab.* Kerrville, Texas, at flowers of *Monarda citriodora*, May 31, 1906 (*F. C. Pratt*). U.S. National Museum.

Readily known from *H. truncata* (Cress.) by the absence of a raised line on clypeus and the very red wings. The clypeus is more finely punctured than in *H. sambuci*, Titus, and has no shining space above; the wings also differ in colour and venation. *H. mescalerium*, Ckll., is less related than *sambuci*.

On April 12, 1907, Mr. Pratt took *Megachile schismatura*, Ckll., a species new to Texas, at Kerrville.

*Prosopis luzonica*, sp. n.

♀.—Length about 6 mm.

Black, with very scanty white hair, but the posterior truncation of metathorax pale pruinose from minute hairs; head and thorax rather coarsely punctured; broad elevated region between antennæ, and clypeus, longitudinally grooved, the grooves punctured at intervals and microscopically longitudinally fluted or striate between the punctures; eyes converging below; a spot (rather broader than long) at apex of clypeus, and very narrow lateral face-marks (notched or abruptly narrowed at level of top of clypeus, but continuing upward along eyes to level of middle of front), as well as interrupted swollen band on prothorax, margin of tubercles, and spot on tegulæ chrome-yellow; flagellum obscurely dark reddish beneath; area of metathorax large, moderately rugose, but without distinct keels. Wings clear, faintly dusky apically, stigma rufo-fuscous, nervures sepia, recurrent nervures meeting transverso-cubitals; second s.m. much broader than high; a stripe on anterior tibiæ, small spot at base of middle tibiæ, and base of hind tibiæ



broadly, rather light yellow. Abdomen shining, very finely punctured, first segment with a little patch of pale hair on each side apically; apex with fuscous hair.

*Hab.* Mt. Banahao ("Bho." on labels), Philippine Is. (Baker, 2559).

Easily known from *P. tagala*, Ashm. (type examined), by the lateral face-marks, which in *tagala* are cuneiform, truncate above, not prolonged along eyes. From the female of *P. impunctata*, Friese, from Java, it is known by the bright yellow markings and the sculpture of the region between the antennæ. *P. hewitti*, Cam., from Borneo, is an *Allodape*, as Mr. Meade-Waldo has determined from the type, which is in the British Museum.

*Anthidium banningense*, Cockerell.

Nevada County, California (*Calif. Horticultural Commission*).

*Xenoglossa patricia angustior*, Cockerell.

Fresno, California, Aug. 19 (*Calif. Hort. Comm.*). From the same locality were also sent *X. angelica*, Ckll. (July 19), and *Melissodes agilis*, Cress. (Aug. 1).

*X. angelica* is also sent labelled Orange County, California.

*Bombomelecta fulvida* (Cresson).

Flagstaff Hill, Boulder, Colorado; male at flowers of *Senecio*, Sept. 1914 (Cockerell).

*Tetralonia edwardsii* (Cresson).

Claremont, California (Essig).

*Anthophora ignava*, Cresson.

Portola, California, March 10, 1913 (*E. J. Newcomer*).

*Halictis banabraonis*, sp. n.

♀.—Length about 7 mm.

Robust, black, with black and pale hair; head broad; mandibles red at apex; clypeus coarsely irregularly punctured; supraclypeal area convex, shining, with small punctures; head thinly clothed with short glittering pale hair, but upper two-thirds of clypeus and middle of vertex with



black or dark fuscous hair; front dull and granular, glistening at sides above; apical half or more of flagellum dull ferruginous beneath; mesothorax and scutellum with brownish-black hair; upper border of prothorax, border of tubercles, and postscutellum (except at sides) with dense reddish-ochreous pubescence; pleura and metathorax with thin pale hair; mesothorax and scutellum closely and finely punctured; area of metathorax large, glistening, with crowded, vermiform, longitudinal rugæ, those of the apical middle becoming transverse; posterior truncation of metathorax very sharply defined, its upper lateral angle on each side emitting a ridge which runs forward, enclosing with the edge of the basal area a triangular space which tapers anteriorly; tegulæ piceous, with a rufous spot. Wings dusky, stigma and nervures sepia; outer r. n. and t.-c. weakened; second s. m. broad below, receiving first r. n. a short distance before its end. Legs black, with pale reddish hair, that on outer side of hind tibiæ short and black; hind spur with three long spines. Abdomen broad, black, shining, very finely punctured, second and third segments with a basal band of dense ochreous tomentum, usually only visible at the sides, occasionally almost invisible, the abdomen seeming bandless; venter with pale ochreous hair.

*Hab.* Mt. Barnahao, Luzon, Philippine Is. (*Baker*, 2557, 2558), 4 ♀

Related to *H. philippinensis*, Ashm., but easily separated by the much larger size and darker wings. It is also larger than *H. manilæ*, Ashm., with none of the greenish tint on the head. The scutellum finely punctured all over readily separates it from *H. luzonicus*, Strand. *H. manilæ*, Strand (not Ashm.), based on a poorly preserved specimen collected long ago by Eschscholtz, has largely yellow legs, although it is said to be a female.

*Halictus flindersi leucurus*, subsp. n.

♀.—Hair at apex of abdomen entirely brownish white (instead of dark fuscous); area of metathorax with stronger better-defined longitudinal ridges.

Distinguished from *H. behri* by the dark legs and mandibles; from *H. behri transvolans* by the dark tibiæ and tarsi and angular tubercles.

*Hab.* Bribie Island, Queensland, Nov. 2, 1913 (*Hacker*; Queensland Museum, 110).

On the same day, on Bribie Island, Mr. Hacker took



*H. urbanus*, Smith, and *H. helichrysi*, Ckll., the latter not quite typical.

*Halictus isthmalis*, sp. n.

♂.—Length about 5 mm.

Rather robust, black, with a large broadly rounded red plate at end of abdomen; mandibles dark red except at base; clypeus with a very broad, apical, pale yellow, transverse band, angularly produced in middle above; anterior knees and all the tibiae and tarsi ferruginous, the middle and hind tibiae with a suffused dusky cloud; tegulae piceous, the margins subrufous. Wings hyaline, nervures and stigma reddish sepia; first r.n. meeting second t.-c., or entering basal corner of third s.m.; third s.m. large. Pubescence scanty, but much white hair in region of antennae; hair of thorax above faintly yellowish; clypeus shining, irregularly punctured; front dull; antennae long, black, the flagellar joints stout and swollen beneath; mesothorax and scutellum shining, with fine only moderately dense punctures; area of metathorax semilunar, well defined, with radiating ridges; abdomen broad, shining, hind margins of segments not pallid.

*Hab.* Eaglehawk Neck, S.E. Tasmania, Feb. 12–March 3, 1913, 2 ♂ (*R. E. Turner*; British Museum).

This can hardly be the male of *H. familiaris*, Er., or *H. globosus*, Sm.

The following table separates it from the nearly related males:—

Head very broad; tibiae and tarsi not red; sculpture of area of metathorax extremely fine. (Adelaide.)	<i>H. cambagei</i> , Ckll.
At least the tarsi red; area of metathorax with evident ridges	1.
1. Larger; ridges absent from apical part of area; tibiae dark	<i>H. repertus</i> , Ckll.
Smaller; ridges not thus limited; tibiae red....	<i>H. isthmalis</i> , Ckll.

*Halictus isthmalis*, var. *a*.

♂.—Smaller, with area of metathorax more finely sculptured; tegulae with a large red spot; second s.m. very narrow.

*Hab.* Mt. Wellington, S. Tasmania, Jan. 15–Feb. 6, 1913 (*R. E. Turner*; Brit. Museum).

I had at first separated this as a distinct species, but on closer examination it appears to be an individual variation.



*H. isthmalis* is readily distinguished from *H. plebeius*, Ckll., by the area of metathorax much more strongly sculptured, and not produced apically.

*Halictus doddi*, sp. n.

♀.—Length about 8 mm.

Rather slender, black, the first two abdominal segments light ferruginous, with a large transverse black dorsal patch, that on the first brown-black, straight behind and obtusely pointed in front, that on the second straight in front and behind, extending right across the segment, its upper border not far from the base; hair of head and thorax ochreous, on mesothorax thin and fuscous; tubercles and adjacent upper border of prothorax with a dense ochreous fringe; scutellum and postscutellum, except at extreme sides, covered with a dense reddish-ochreous felt-like tomentum, which also extends, somewhat thinner, as a pair of subtriangular patches on hind part of mesothorax; head broad; mandibles dark red apically; clypeus and supraclypeal area shining, sparsely punctured; front dull, except at sides, quite hairy; flagellum dull reddish beneath; mesothorax very finely and densely punctured; area of metathorax very finely irregularly wrinkled, without a sharp boundary; posterior truncation with salient upper corners; tegulæ clear ferruginous, minutely roughened anteriorly. Wings dusky yellowish; stigma and nervures light dull amber-colour, the outer t.-c. and r.n. weakened; second s.m. square, very large (as large as third), receiving first r.n. at extreme end. Legs black, with ochreous hair, a fuscous band on outer side of hind tibiæ and basitarsi; anterior tibiæ with the tegument dull red on inner side, except at apex, and middle tibiæ with a large bright ferruginous patch anteriorly; hind spurs simple. Abdomen long and parallel-sided, with extremely fine punctures; no distinct hair-bands, but vestiges of them at bases of segments; hair at apex fuscous; venter with no curled scopa.

*Hab.* Kuranda, Queensland (*Dodd*; Queensl. Museum, 121).

By the dorsal patch of dense tomentum this resembles *H. leichardti*, Ckll., from which it is easily known by the colour of the abdomen. It also approaches *Parasphcodes basilaustus*, Ckll., and should perhaps be referred to *Parasphcodes*.



*Parasphcodes bryotrichus sordidulus*, subsp. n.

♀.—Smaller, length about  $7\frac{1}{2}$  mm.

Abdomen dusky, the hind margins of the segments especially with dusky suffusion; first r. n. entering apical corner of second s.m.

*Hab.* Brisbane, Queensland, Aug. 5, 1913 (*Hacker*; Queensl. Museum, 122).

*Halictus oxoniellus*, sp. n.

♀.—Length about 5 mm.

Of ordinary form, with thin white hair; head and thorax black, except the mesothorax and scutellum, which are a fine dark blue; mandibles and antennæ black; tegulæ ferruginous, clouded with piceous. Wings dusky hyaline, the stigma large, piceous, obtuse apically; nervures dilute sepia, outer r. n. and t.-c. almost wholly obsolete, first r. n. entering second s.m. Legs black, the small joints of middle tarsi reddish; hind femora thin and arched, hind tibiæ very robust; hind spur with three large teeth. Abdomen bright ferruginous, the first segment black except a broad apical band, the other segments with black patches on extreme lateral margins; venter with long curled hairs, mesothorax shining in front, dull behind; area of metathorax with very delicate raised lines, evanescent apically; clypeus slightly metallic, with a microscopically tessellate sculpture and sparse punctures; front minutely striate.

*Hab.* Bribie Island, Queensland, Nov. 2, 1913 (*Hacker*; Queensl. Museum, 108).

A distinct species, easily known from *H. erythrurus*, Ckll., by the dark stigma and blue mesothorax. The specific name is in allusion to the dark blue colour.

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XLIV.—*A Note on the Apparent Absence of Sexual Characters in the Shell of Neritina fluviatilis.* By A. E. BOYCOTT and J. W. JACKSON (Victoria University).

WE give here the result of an enquiry into the possible occurrence of differences between the shells of male and female *Neritina fluviatilis*. Our material has been derived from two sources:—(1) the Preston-Lancaster Canal in the neighbourhood of Barton, Lancashire, collected in June





Cockerell, Theodore D. A. 1914. "Descriptions and records of bees. LXIII." *The Annals and magazine of natural history; zoology, botany, and geology* 14, 361–369.

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