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Descriptions and Records of Bees.— XIX.

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Descriptions and Records of Bees.—XIX.

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

Dufourea (?) *calidula*, sp. n.

♀.—Length about $7\frac{1}{2}$ mm.; anterior wing $5\frac{1}{2}$ mm.

Black, including legs (last tarsal joint dark reddish); pubescence dull white, not abundant; abdomen wholly without hair-bands; head subtriangular, the eyes long and converging below; malar space present, but very short; clypeus long, flattened, dullish, with very minute punctures and an exceedingly short and fine silvery tomentum, only visible in lateral view; sides of face with broad shining foveæ, which narrow below and extend about halfway down the sides of the clypeus as narrow grooves; antennæ black, short, ordinary; vertex dull; mesothorax very shiny posteriorly, anteriorly with a more sericeous surface; pleura with long hair; area of metathorax broad, dullish, with a minutely striatulate surface, its margin evident but rounded; tegulæ piceous. Wings perfectly hyaline, beautifully iridescent, the large stigma and the nervures piceous; lower section of b. n. strongly bent about its middle and falling some distance apicad of t.-m.; t.-m. not or hardly oblique, slightly bowed outwards; two submarginal cells, the first about or nearly twice as long as the large second, the latter receiving both the recurrent nervures, the second nearer to its apex than the first to its base; third t.-c. bent in the middle; second r. n. with an outward bend in its upper part. Hair of legs dull white, more or less reddish on tarsi; hind spurs yellowish white, long and perfectly simple. Abdomen broad, with a dullish sericeous lustre, first segment with a slight boss on each side; apex with long hairs; venter sparsely hairy.

Hab. Hinterland of Benguella, Jan. 3, 1908 (*F. C. Wellman*).

Taken with other bees (*Cœlioxyys benguellensis* &c.) at a small patch of flowering Compositæ, *Othonna* and *Geigeria*. No pollen had been collected. This is not a genuine *Dufourea*, nor is it a *Halictoides*; I believe it should be regarded as the type of a new genus, derived from the African Halictines, but I should like to see more material, and especially the male sex, before proposing a generic name. I have given the characters of the venation which separate it from the real *Dufourea*.

Heriades ekuivensis, sp. n.

♀.—Length about $8\frac{3}{4}$ mm.; anterior wing about $5\frac{3}{4}$ mm.

Black, with white pubescence; abdomen with the usual white bands; ventral scopa silvery white; basin of first abdominal segment with a sharp rim; wings dusky. General appearance like *H. truncorum*, L., but differing as follows:—Eyes much larger; cheeks less ample; clypeus with a median ridge on its upper half or more; mesothorax larger and broader; tegulæ piceous; scutellum large, broad, and flat, its straight hind edge projecting; no teeth at sides of scutellum, and its sculpture entirely different from that of mesothorax, consisting of large deep pits close together, the whole surface being dull, contrasting with the shining mesothorax; hind tibiæ more robust; marginal cell a little more pointed at apex. The principal characters are those of the scutellum; these and the clypeal ridge suggest affinity with *H. clypeatus*, Friese, from the Transvaal.

Hab. Ekuiva Valley, W. Africa, 1907 (*F. C. Wellman*).

Among other bees taken by Dr. Wellman in the Ekuiva Valley are *Serapista denticulata* (Sm.), *Mesotrichia flavorufa* (De Geer), &c.

Heriades wellmani, sp. n.

♀.—Length $5\frac{1}{2}$ mm. or slightly more.

Black, with white pubescence; abdominal bands scarcely developed; ventral scopa creamy white; basin of first abdominal segment with a sharp rim. A small slender species, superficially just like *Chelostoma campanularum* (Kirby), but differing in the structure of the first abdominal segment and also as follows:—flagellum ordinary; punctures of face and front much larger; punctures of mesothorax very much larger; scutellum (which is ordinary, not projecting) with deep sparse punctures on a shining ground. Wings hyaline, dusky apically; second s.m. receiving second r. n. very near its apex, and the first about twice as far from its base; punctures of abdomen large and deep. Somewhat related to *H. eximius*, Friese, apparently.

Hab. Hinterland of Benguela, Jan. 3, 1908 (*F. C. Wellman*).

Taken with other bees (*Cœlioxys benguellensis* &c.) at a small patch of flowering Compositæ, *Othonna* and *Geigeria*. No pollen had been collected.

Xylocopa valga, Gerst.

I received from the Museum of Comparative Zoology two

specimens of *Xylocopa* (♂ ♀), collected many years ago by the Rev. M. M. Carleton in the Koolloo Valley, near to the Himalayas, Northern India. The male was *X. fenestrata*, Fabr., but, to my surprise, the female proved to be *X. valga*, Gerst., not hitherto reported from India.

Chelynia pavonina, sp. n.

♂.—Length about 8 mm.

Looking like a small dark blue *Osmia*; the colour throughout, including legs and tegulæ, is a very fine dark purple-blue, shaded with green, the clypeus and mesothorax being nearly all green, while the upper side of the abdomen is largely green, with some crimson tints, the hind margins of the segments being purple. Mandibles tridentate; antennæ only moderately long, rather thick, resembling those of ♀ *Osmia*, but 13-jointed, the scape green; head and thorax densely punctured and with long coarse hair, which is black except on the mesothorax, where it is white; tegulæ large, densely punctured. Wings dusky, second submarginal cell receiving both recurrent nervures. Hair of legs and abdomen black; abdomen without light markings.

A very distinct and beautiful species, with peacock-colours; it most resembles *Stelis montana*, Cresson, but is easily known from that by the venation and other characters.

Hab. Boulder, Colorado, June (*G. M. Hite*).

CYRTAPIS, gen. nov.

Rather small; body *Halictus*-like; stigma large; three submarginal cells; first s.m. long, but not so long as the other two combined; second broad, receiving the first r. n. before its middle; third broader above than below, receiving the second r. n. a short distance from its base; second r. n. with an even but strong double curve; marginal cell large, pointed at apex; lower section of basal nervure strongly curved and much longer than upper; b. n. meeting t.-m., the latter oblique, its lower end more apicad; abdomen apparently with a narrow elongated black pygidial area, but this is a little uncertain.

Cyrtapis anomalus, sp. n.

Length about 8 mm., with head thrust forward.

Head about $1\frac{2}{3}$ mm. long, bluntly triangular, rather elongated; head and thorax apparently black; abdomen reddish, with broad entire bands, at least twice as broad as the pale intervals between them; antennæ cylindrical, not monili-

form, rather long (at least 3 mm.), width of flagellum about $170\ \mu$; abdomen as in *Halictus*, sessile, about 2 mm. broad. Wings hyaline, nervures and stigma pale testaceous; length of anterior wing about $4\frac{3}{4}$ mm.

The following wing-measurements are in μ :—

Depth of stigma 238; length of marginal cell 1615; width (or depth) of marginal cell 425; length of first submarginal 918; lower side of first s.m. 663; length of second s.m. (from one lower corner to the other) 629; second s.m. on marginal 391; third s.m. on marginal 663; third s.m. below 493; length of first discoidal 1224; upper side of second discoidal 765; lower side of second discoidal 884; length of third discoidal (from angle formed by first and second to lower apical corner) 1156; b. n. on first s.m. 255; b. n. on first discoidal (not allowing for curve) about 561.

Hab. Fossil in the Miocene shales of Florissant, Colorado, at Station 14 (*W. P. Cockerell*, 1907).

Without any clue to the mouth-parts it is difficult to place this singular genus in its correct systematic position. The general appearance, and the large stigma, marginal cell, and bent basal nervure are all as in the *Halictines*. The form of the second submarginal cell, with the first r. n. joining it before the middle, as well as the second r. n. with a double curve, suggest affinity with the *Colletines*. The really anomalous character is found in the third transverso-cubital nervure, which has a strong double curve, and has its upper section more apical than the lower, just reversing the normal condition. This is quite clearly visible in both wings, and evidently not an abnormality.

Ceratina binghami, sp. n.

Ceratina viridissima, Bingham, Faun. Brit. India, Hymenoptera, vol. i. p. 501.—Not *C. viridissima*, Dalla Torre.

This Indian species has long passed as *Ceratina viridis*, Guér., as it agrees sufficiently with Guérin's short description. The name of the species was needlessly altered to *viridissima* by Dalla Torre on account of supposed preoccupation. The original *viridis* was from Senegal, W. Africa, and has not been found in that region since 1845, unless an insect reported by Meunier as a variety of his *C. congoensis* really belongs to it. I have just received from Dr. F. C. Wellman some specimens (2 ♀, 1 ♂) of a *Ceratina* collected by him in the Ekuiva Valley, 160 miles east of Benguela, and these I refer without hesitation to *C. viridis*. One of the females was visiting the flowers of an orchid. Compared with the Indian insect these *viridis* are more robust and much

less brilliantly coloured, and somewhat more coarsely punctured; there is no doubt that they represent a distinct species. My specimens of *C. binghami* are from Mr. Sladen, and were collected at Calcutta and Siliguri in 1897. The specimen from Calcutta is more blue than green.

PROTOMELECTA, gen. nov.

Form *Andrena*-like, with a rather long abdomen; wings short, not reaching tip of abdomen; flagellum thick, as in *Melecta*; eyes large and prominent; middle ocellus in a depression; scutellum apparently flat and *Crocisa*-like, the lateral posterior corners produced and angulate, but the interval between the points straight in the middle, not incised; stigma large; marginal cell long, ending in a rather blunt point not quite on costa; three submarginal cells, the first longest below, but not very greatly so; second submarginal cell very broad, receiving the first recurrent nervure beyond the middle; third s.m. greatly narrowed to marginal, receiving the second r. n. beyond the middle; second r. n. curved outwards, with a little band at middle of curve.

Protomelecta brevipennis, sp. n.

Length about 9 mm.

Black; anterior wing $5\frac{2}{3}$ mm.; abdomen 5 mm. long or nearly and about 3 wide, extending about 1 mm. beyond closed wings; wings fuliginous, stigma black, nervures brown; flagellum thick, about $340\ \mu$ diameter. Wings quite hairy; abdomen with sparse but evident hairs. Ocellar basin (for middle ocellus) oval, about $391\ \mu$ long and 255 broad. Basal nervure originating some distance from stigma, its lower part gently curved, but not at all as in the *Halicines*; third transverso-cubital with a double curve, formed about as in *Xenoglossa*; apex of first discoidal prolonged and sharply pointed.

The following wing-measurements are in μ :—

Depth of stigma 238; length of marginal cell 1598, its depth 459; length of first discoidal cell 1649; lower side of first submarginal cell 646, of second 595, of third 544; lower section of basal nervure 612, the upper very much shorter; lower side of first discoidal 969; first recurrent nervure 663; insertion of first r. n. to end of second s.m. 85; insertion of second r. n. to end of third s.m. about 85; upper side of second s.m. about 459, of third s.m. 187; distance between insertions of the recurrent nervures 493.

Hab. Fossil in the Miocene shales of Florissant, Colorado, Station 14 (*W. P. Cockerell*, 1907).

A very *Melecta*-like genus, but with the venation of the Eucerines and the large stigma of the Andrenids. In Ann. & Mag. Nat. Hist., July 1902, p. 45, the affinities of *Melecta* are discussed, and it is concluded that it is derived from the Anthophorine series, and is especially related to the Eucerines (*Xenoglossa* &c.). The genus now described would therefore fall into the series as a primitive Melectine, retaining, however, the large stigma characteristic of lower groups. Among the known fossil genera it has a rather close resemblance to *Lithandrena*, but the latter has not the *Melecta*-like antennæ and the proportions of the submarginal cells are different. *Protomelecta* is no doubt a parasitic genus, but there is no reason for supposing this of *Lithandrena*.

Cælioxyys benguellensis, sp. n.

♀.—Length about 16 mm.; anterior wing a little over 10 mm.

Black, including the legs and tegulæ, with dense snow-white pubescence on cheeks, sides of face, upper part and margins of pleura, &c. Hair on eyes only moderately long; clypeus with white hair, no keel on it or the supraclypeal region; mesothorax and scutellum dull, with very dense large punctures; scutellum with no median tubercle, teeth at its sides long, a little curved. Legs with white hair, but it is orange-ferruginous on inner side of tarsi. Anterior wings dark fuliginous, violaceous, hyaline at base; hind wings hyaline, with the apex broadly fuliginous. Abdomen strongly and quite closely punctured, with linear white hair-bands, broadening laterally; venter with three broad white hair-bands, failing more or less in the middle; margin of penultimate ventral segment covered with white hair; last dorsal segment keeled about $\frac{2}{3}$ of its length, its apex rather blunt; last ventral surpassing last dorsal by nearly a millimetre, narrow, with long fuscous hair on each margin and with a little sharp tooth on each side a little beyond level of apex of last dorsal; penultimate ventral segment rough with excessively minute punctures, giving way to larger ones at the base. In Friese's table of African *Cælioxyys* ('Arkiv för Zoologi,' 1904) this runs to *C. setosa*, Friese, but differs from that E.-African species in the colour of the hair on the clypeus and apical segment of abdomen. In the structure of the apex of the abdomen there is some analogy with *C. elongata*, Lep., but the apex of the last ventral is very much narrower than in that species, and the lateral teeth are not nearly so near the apex.

Hab. Hinterland of Benguella, W. Africa, Jan. 3, 1908 (F. C. Wellman).

It was taken, along with numerous other bees (*Anthophora cerulea*, Friese, ♀, *Crocisa picta*, Smith, ♀, *Apis adansonii*, Latr., worker, &c.) at a small patch of flowering Compositæ, species of *Othonna* and *Geigeria*.

Thrinchostoma orchidarum, sp. n.

♂.—Length a little over 11 mm. with the head thrust forward; anterior wing $8\frac{3}{4}$ mm.

Black, with the hair on head and thorax above mainly ferruginous, but on cheeks and pleura white; sides and middle of face with dense white hair; clypeus greatly produced as usual, its apical margin broadly light yellow; tongue long and slender, orange, very hairy; palpi clear ferruginous; last joint of maxillary palpi long and slender; antennæ ordinary, flagellum ferruginous beneath; eyes prominent; mesothorax and scutellum extremely closely and densely punctured; tegulæ clear ferruginous. Wings ample, ferruginous-tinted, stigma and nervures ferruginous; costal margin with short dark hair; apex of wings not infuscated; second s.m. large; second t.-c. with a patch of black hair as usual in the genus, but straight (not bent as in *T. bicometes*); third t.-c. almost straight (not curved as in *T. wellmani*); third s.m. receiving both recurrent nervures at about equal distances from apex and base; femora black; tibiæ with a yellow basal spot and more or less yellow apically; hind tibiæ broad, triangular, with a greatly produced and enlarged inner angle, on the lower side of which the two spurs are seen, widely separated; tarsi clear light yellow, the apical two or three joints ferruginous; abdomen black, with the hind margins of the segments broadly brilliant silvery, the apical segment with black hair.

From the structure and colour of the wings this cannot be the male of *T. wellmani*. It is also quite distinct from *T. bicometes* (*Diagonozus bicometes*, Enderlein) and *T. productum* (Smith). Its closest affinity is with *T. renitantly*, Saussure, from Madagascar, but it differs in several points of coloration.

Hab. Hinterland of Benguella, Jan. 1908, in flowers of a large orchid (F. C. Wellman).

Thrinchostoma othonnæ, sp. n.

♀.—Length hardly 8 mm.; anterior wing 6 mm.

Shining black; head and thorax with white hair, a little

fuscous on scutellum; clypeus produced, but not so excessively as in some species, exceedingly shiny, very sparsely punctured; sides of face covered with white hair; malar space broader than long; antennæ black; front densely and minutely punctured; mesothorax with dense strong punctures, but shining; postscutellum covered with white tomentum and white hair in scutello-mesothoracic suture; area of metathorax broad, with a raised cancellate sculpture; tegulæ dark reddish. Wings reddish, stigma and nervures rather dilute brown; second s.m. very large; third s.m. receiving the recurrent nervures near apex and base; second and third transverso-cubital straight. Legs black, the tarsi ferruginous at apex. Abdomen black, the hind margins of the segments broadly hyaline, rather sparsely beset with silvery hairs; dark parts of abdomen with much black hair.

The smallest known species of the genus; nearest to *T. productum*, but malar space shorter, and the sculpture of the thorax very different.

Hab. Hinterland of Benguella, Jan. 3, 1908 (*F. C. Wellman*).

Taken with other bees (*Cælixys benguellensis* &c.) at a small patch of flowering Compositæ, *Othonna* and *Geigeria*. The hind legs are loaded with the deep orange pollen.

Bombus ephippiatus montezumæ, n. n.

Bombus laboriosus, Smith, Journ. of Entom. 1861, p. 153 (not of Fabricius, 1804).—Mexico.

