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## New and Little Known Bees

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## NEW AND LITTLE KNOWN BEES.

BY T. D. A. COCKERELL, BOULDER, COLORADO.

The genus *Nomia* doubtless originated in the Old World, where it is abundant and varied. In America it has few species, though one (*N. jenseni*, Friese) exists as far south as the Argentine. The genus may perhaps have reached America about the same time (and doubtless by the same route) as the Elephantidæ.

*Nomia ekuivensis*, sp. nov.

♂.—Length about  $8\frac{1}{2}$  mm., anterior wing 6; black, *with a strongly clavate abdomen*; pubescence dull white (not at all fulvous or yellow);

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head large and broad; front and vertex dull and rough; face covered with hair; mandibles dark; antennæ dark, flagellum with a ferruginous streak at base beneath; palpi dark; tongue rather short, dagger-shaped; mesothorax shining, with strong and mostly well separated punctures; scutellum prominent but not bigibbous, very shiny, with sparse punctures; area of metathorax plicate basally; tegulæ of ordinary size, rufo-piceous; wings strongly infuscated in the apical field, iridescent, nervures and stigma piceous; second s. m. nearly square, but a little oblique, receiving the first r. n. at or very slightly beyond its middle; third s. m. large, scarcely shorter than first; legs black, slender, tarsi brown, the hind ones quite pallid; hind legs not modified; abdomen shining, finely punctured, hind margins of segments depressed and with thin hair-bands; most of fourth ventral segment depressed and covered with hair.

*Hab.*—Ekuiva Valley, W. Africa, 1907 (*Wellman*). *N. producta*, Smith, from Natal, and *N. andrei*, Vachal, from the French Congo, also have a claviform abdomen. The following table separates the males:

Clypeus greatly produced; first r. n. joining second t. c. . . . *producta*, Sm.\*  
 Clypeus normal. . . . . I.  
 1. Head and mesothorax sculptured alike . . . . . *andrei*, Vach.  
 Head and mesothorax sculptured quite differently . . . *ekuivensis*, Ckll.

*Nomia Welwitschi*, sp. nov. •

♂, ♀.—Length about 10 mm., black, the head and thorax with dense, coarse pubescence, strongly ochreous on thorax above, otherwise pallid; wings strongly and broadly infuscated apically; hind margins of abdominal segments broadly whitish or reddish, with hair-bands.

♂.—Head broad; orbits converging below; face broad, very hairy; antennæ dark, ordinary, flagellum dull red beneath; vertex with rough, dense sculpture; mesothorax very densely rugosopunctate; scutellum normal, rugosopunctate and dull; metathorax with a subbasal ridge, above which is a narrow (almost linear) area, which is shining and somewhat plicatulate; tegulæ ordinary, piceous, pallid in front; wings reddish

\*Since writing the above, I have determined that *Nomia producta*, Smith (Tr. Ent. Soc. Lond., 1875), is not a *Nomia* at all, but a *Thrinchostoma*. For the venational characters, see Ckll., Trans. Amer. Ent. Soc., XXXI, p. 322. The name *producta* was earlier used for a different *Thrinchostoma*, so the *Nomia producta*, Sm., may be known as *Thrinchostoma nomiaformis*, n. n.

subhyaline, the apical region with a dark cloud; nervures and stigma dark, stigma small; second s. m. broad, receiving first r. n. beyond the middle; legs red, the coxæ and trochanters black, and the femora black above; anterior tarsi fringed with long hair; middle femora short and rather swollen, very shiny; hind femora greatly incrassated, concave beneath, with a sharp tooth on inner side beyond the middle; hind tibiæ enlarged, subtriangular, with a broad, blunt, apical lamina, but no tooth on inner side; abdomen broad, with hair-bands on all the segments, apex rounded, bright ferruginous.

♀.—Legs black; abdominal bands golden-fulvous.

*Hab.*—Ekuiva Valley, W. Africa, 2 ♂'s, 1 ♀, 1907, one of the males at flowers of *Geigeria* (Wellman). The species is named after Welwitsch, the well-known African traveller, who collected bees in Angola many years ago. By the clouded wings and other characters this closely resembles *N. nubecula*, Smith, from Sierra Leone, but it differs from *nubecula* by the dark mandibles (only slightly ferruginous in the middle), the dark scape, the form of the scutellum, the dark tegulæ, etc. The face is broad, whereas in *N. nubecula* (of Ckll., Trans. Am. Ent. Soc., XXXI, p. 322) it is narrow. In the form of the hind legs *N. Welwitschi* resembles *N. patellifera*, Westw., except that the tibial process is shorter and blunter.

*Nomia Wellmani*, sp. nov.

♀.—Length 10 mm. or a little less, robust, black, the apex of the abdomen covered with shining orange-ferruginous hair, and the hind margins of the third to fifth segments with broad hair-bands of the same colour, that on the fifth dense, those on the other two paler and thinner, very thin on middle of third; a little of the same hair at sides of second segment; all this giving an appearance just like that of the Australian *N. australica*, Smith, as seen from a little distance.

Head and thorax very densely rugosopunctate; face very broad, rather thinly covered with coarse whitish hair; antennæ black, flagellum more or less red beneath; mandibles black, with long golden hairs beneath; tongue rather long, linear; labial palpi elongated, with the first joint longer than the other three united; maxillary palpi slender; thorax with coarse, dull white hair; tegulæ ordinary, shining piceous, whitish in front;

scutellum and postscutellum ordinary; metathorax with a transverse subbasal ridge, very prominent, enclosing a band-like shining area which is more or less plicate; legs black, the tarsi (especially the hind tarsi) broad; anterior basitarsi, and apex of their tibiæ, with orange hair; apex of hind basitarsus fringed with bright orange hair; base of hind basitarsus above ferruginous; abdomen broad, densely punctured; wings dusky, the apical margin broadly darker; stigma ferruginous, nervures rather pale brown; marginal cell very obtuse at apex; second s. m. very broad, receiving first r. n. beyond its middle.

*Hab.*—Hinterland of Benguela, W. Africa, Jan. 3, 1908, taken with many other bees at a patch of flowering Compositæ, *Othonna* and *Geigeria* spp. (*Wellman*). This species is not truly congeneric with such forms as *N. ekuivensis*, but I should prefer to examine a larger series of the African species commonly assigned to *Nomia* before proposing any segregated genera.

*Nomia Bakeri*, Ckll., 1898.

This species was described from the male only. A female was taken by Mr. S. A. Rohwer at Boulder, Colorado, Sept. 16, 1907. It agrees with the male, except in the usual sexual characters; the tibiæ and tarsi are entirely clear ferruginous, with yellowish-white hair. The sixth abdominal segment is clothed in the middle with appressed bright orange-ferruginous hair. The wings are very yellow, with the apical margin broadly infuscated.

*Calliopsis coloradensis*, Cresson, 1878.

♂.—Length, 8 mm.; black, with abundant white pubescence; face, knees, tibiæ and tarsi lemon-yellow, the small apical joints of the tarsi ferruginous. The abdomen is broad and flattish, like that of a female; the hind margins of the segments are rather broadly hyaline, with thin white hair-bands. Head broad; eyes green; labrum yellow, prominent, concave, with a central dark spot; mandibles yellow except apically; supraclypeal and dog-ear marks present; lateral face-marks large, extending above level of supraclypeal mark, ending in an acute angle on the orbital margin; scape yellow in front; flagellum ferruginous beneath; prothorax yellow above; tubercles dark; wings clear, nervures and stigma ferruginous; anterior femora with the apical half in front yellow;

anterior and middle tibiae with a black spot behind, but *hind tibiae wholly yellow*. Closely related to *C. andreniformis*, Smith, but much larger, with a much broader face, and the femora mainly black. It is also very much larger and broader-faced than *C. rhodophilus*, Ckll.

Boulder, Colorado, at flowers of *Grindelia perennis*, Nelson, August (*S. A. Rohwer*).

Cresson's description of the male of this species is very short, but I think there is no doubt about the identity of our insect. There is in this group a curious sexual difference in the first abdominal segment, which is much more closely and minutely punctured in the males than in the females.

*C. chlorops*, Ckll., was based on a male of this group, easily distinguished from *coloradensis* by the colour of the legs and the smaller size. *C. coloratipes* (Ckll.) is very like *chlorops*, but the eyes in both sexes have a sort of purple colour, instead of the characteristic green of *chlorops* and *coloradensis*. The species common at Phoenix, Arizona, at flowers of Compositae (*Heterotheca*, etc.) hitherto regarded as *coloratipes*, has green eyes, and must be associated with *chlorops*, though, perhaps, racially separable. A male from Florissant, Colorado, at first referred to *coloradensis*, proves to be *chlorops*. Two females from Soledad Canon, Organ Mts., New Mexico, (*C. H. T. Townsend*), belong to *chlorops*, resembling the Arizona form. The females of *coloratipes*, and also those of the Arizona form of *chlorops* (in each case taken in copula with the males), have the light dog-ear marks on the face, which are wanting in *coloradensis* ♀. The more northern and typical *chlorops*, however, seems to have a female without these marks; and at present I do not know how to separate this from *coloradensis*. There is just a possibility, perhaps, that *coloradensis* was founded on females of *chlorops* and males of the Boulder species described above.

A female which I collected at Rinconada, New Mexico, at a tall species of *Chrysothamnus*, Sept. 26, represents an intrusion of the southern type into northern New Mexico, up the Rio Grande Valley. It has the dog-ear marks very well developed; and the lateral marks are peculiar, being broad and obliquely truncate above, with a linear upward extension quite distinct from the truncation. This may represent a distinct local race.