

widens, a white patch slightly irrorated with brown between veins 4, 3, another between extremities of veins 7, 6, and some white irrorated with brown on costa towards apex; vein 7, the median nervure, and veins arising from it and extremities of veins 6, 7 streaked with white. Hind wing white.

Hab. SIERRA LEONE (*Morgan*), 1 ♀ type. *Exp.* 34 mm.

Bombycidæ.

Trilocha obliquisigna, sp. n.

Fore wing with the termen evenly curved.

♂. Head, thorax, and abdomen pale yellow slightly mixed with red-brown; palpi and sides of frons red-brown; legs red-brown in front. Fore wing pale yellow sparsely irrorated with red-brown, a brownish patch on termen below apex; the antemedial area with two slight red-brown marks on costa and three very indistinct curved waved lines; an obliquely curved blackish discoidal striga; an oblique post-medial red-brown bar from costa; two red-brown subterminal lines, the first indistinct and slightly waved, the second more distinct and waved, forming a small spot at costa; a rather elongate red-brown apical mark; cilia reddish brown. Hind wing pale yellow slightly irrorated with red-brown, the inner margin with three red-brown spots; the antemedial area with three very indistinct waved lines; a slight discoidal point; two curved, waved postmedial lines, not reaching costa and closely approximated towards inner margin; a diffused subterminal red-brown shade from vein 4 to inner margin; cilia red-brown; the underside with two discoidal points, the two postmedial lines more distinct and reaching the costa.

Hab. N. ANGOLA, Kibokolo do Zombo (*Lewis*), 1 ♂ type. *Exp.* 30 mm.

Resembles *T. albiceps*, Wlk., from Borneo.

[To be continued.]

LXVII.—*Descriptions and Records of Bees.*—XXIX.

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

Lithurgus chrysurus, Fonsc.

S.W. Persia (*Escalera*). British Museum.

One female, which has the ventral scopa shining creamy white, reddish in the middle. In all respects this Persian

insect seems practically identical with the Sicilian var. *siculus*, Perez, but I have not had an opportunity of seeing Sicilian examples.

Anthidium florentinum (Fabr.).

Cyprus (*Miss Bates*), 1 ♂. British Museum.

The specimen is larger than usual, and the seventh abdominal segment is entirely black. It is possible that there is a distinct Cyprian race.

Megachile gulheccensis, sp. n.

♀.—Length 20 mm. ; expanse about 33.

Shape as in the group of *M. rufiventris*, *M. mystacea*, &c., the rather long abdomen broadest about the junction of the second and third segments ; head and thorax black, dorsally with short inconspicuous black hair ; face with black hair, a little slightly pallid on each side ; cheeks below with black hair ; prothorax and sides of metathorax with long yellowish-white hair ; pleura with black hair ; head very large, broader than thorax ; clypeus short and broad, densely punctured, toward the sides the punctures mixed very large and very small, the lower margin straight or faintly concave, emitting some long dark reddish hairs, and bounded on each side by a prominent tubercular angle ; mandibles with a very broad cutting-edge, only an apical and subapical tooth well-defined ; region midway between the antennæ elevated and reddish ; antennæ wholly dark, first three joints of flagellum nearly equal ; vertex very broad, with strong and close but well-separated punctures on a shining ground ; cheeks broad, less densely punctured ; mesothorax densely and strongly punctured ; scutellum dull, rugoso-punctate ; area of metathorax depressed centrally ; tegulæ ferruginous, with minute punctures. Wings strongly infuscated, coloured somewhat as in *Chalicodoma sicula* ; b. n. falling just short of t.-m. ; apical part of marginal cell rather slender. Legs reddish black, with dark hair, the tibiæ behind largely chestnut-red, the hair on tarsi becoming reddish, that on inner side of hind tarsi bright ferruginous ; claws simple. Abdomen dark reddish, the first segment with a very broad well-defined basin ; dorsal surface of abdomen densely covered with short felt-like pale ochreous hair, on apical segment becoming ferruginous ; ventral scopa entirely bright ferruginous. Maxillary palpi with long hair ; blade of maxilla conspicuously but finely transversely ribbed ; second joint of labial palpi a little longer than first ; middle femora very broad.

Hab. Gulhek, Persia, July 1906 (*E. Grant-Duff*). British Museum.

The clypeus shows no sign of the median tubercle found in several of the large Asiatic species. This fine species is evidently very close to *M. foersteri*, Gerst., originally described from Crete. I believe that it is identical with the insect from Asia Minor described by Friese as *M. foersteri albescens*. As the name *albescens* was preoccupied, W. A. Schulz (1906) proposed to substitute *leucotricha*. The name *leucotricha*, however, was earlier used (Cockerell, 1902) for the representative or subspecies of *M. occidentalis* found in Southern California. The whitish colour of the abdomen in *M. gulhecensis* is especially evident when seen from in front.

Megachile fülleborni, Friese.

Near Johannesburg, Transvaal (*A. J. Cholmley*). British Museum.

The specimen exactly agrees with one from Langenburg, L. Nyassa (*Fülleborn*).

Prosopis husela, sp. n.

Similar to *P. elegans*, Smith, but anterior border of scutellum black and mesothorax with two discal longitudinal yellow bands in addition to the marginal ones; first r.n. meeting first t.-c.

♀.—Length a little over 8 mm.

Abdomen ferruginous, not blackened as in ♀ *elegans*; pleura, behind the tubercles, with a very large yellow patch.

♂.—Length about 7 mm.

Pleura with a small yellow patch behind the tubercles.

Hab. Townsville, Queensland; two males, 27. 2. 03 (*F. P. Dodd*); in British Museum: one female, 7. 1. 03 (*F. P. Dodd*). All from the Turner collection.

Husela is a Malay word for eleven, in allusion to the bars on the mesothorax.

Prosopis elegans huseloides, subsp. n.

♀.—Similar to *P. elegans*, but smaller (length about 8 mm.); first three abdominal segments ferruginous, more or less marked with black on disk, the others black; sides of clypeus without black stripes, but with ferruginous; mesothorax with a transverse yellow band (not reaching sides) along posterior margin; scutellum (as in *elegans*, but not as in *husela*) all yellow; no yellow patch behind tubercles, but

one or two small, evanescent, yellow spots more posteriorly ; first r. n. meeting first t.-c.

Hab. Townsville, Queensland ; two females, 10. 1. 03 (*F. P. Dodd*). British Museum. From the Turner collection.

It is obvious that *elegans*, *huseloides*, and *husela* are very closely related ; perhaps they are all forms of one species, but I treat *husela* as specifically distinct because it has a very striking appearance, and among the rather numerous *P. elegans* I have seen there has been nothing at all like it.

Palceorhiza melanura, sp. n.

♀.—Length 9 mm.

Head and thorax light rather dull yellow, marked with black ; abdomen light reddish testaceous or honey-colour, entirely black, with black hair, beyond the third segment ; head long, face narrow, malar space large ; front densely punctured, sides of vertex shining and sparsely punctured ; facial foveæ represented by grooves near the eye on vertex ; vertex black, and a broad black stripe extending downward to each antenna, leaving between a narrower yellow stripe ascending to middle ocellus ; mouth-parts and hinder part of cheeks honey-colour ; clypeus with two broad dark brown bars, the margins of which are suffused ; other parts of clypeus reddish, and adjacent sides of face whitish ; antennæ dark brownish or reddish beneath ; mesothorax strongly and closely punctured, black, with four longitudinal yellow bars, the outer one marginal, none quite reaching the anterior margin ; scutellum with a broad black band, and on each side (largely axillar) a transverse black mark ; postscutellum all yellow ; area of metathorax large, strongly but finely and regularly longitudinally grooved or fluted, bounded on each side by a black punctured band. Legs rufo-testaceous ; tegulæ pale testaceous. Wings large, minutely hairy, very pale yellowish, dusky at apex ; stigma and nervures pale ferruginous, darker towards the base ; second s.m. receiving both recurrent nervures ; first abdominal segment with a transverse dark band, the middle third of which is wanting ; hind spur with about four strong teeth.

♂.—Similar, but the face narrower, and the very long and narrow clypeus without dark bands ; apex of abdomen truncate, more or less emarginate in the middle.

Maxillary comb very well developed, with large teeth, the lowermost (most basad) of which are longest (the end one at least 190 μ) and curved ; blade of maxilla short (about 545 μ beyond the origin of palpus), broad, very obtuse, with many

apical bristles; hyaline area well developed, about $85\ \mu$ broad in middle; maxillary palpi 6-jointed, the joints subequal, measuring in μ : (1) 187, (2) 187, (3) 204, (4) 204, (5) 204, (6) 221, the last two slender; tongue about $748\ \mu$ long, dagger-shaped, slender, the apical part linear, but appearing broad because of the very abundant long branched hairs; paraglossæ small, oval, very hairy; labial palpi 4-jointed, the first two joints stout, the third medium, the fourth slender; joints in μ : (1) 170, (2) 136, (3) 136, (4) 136.

Hab. Cairns, Queensland (*Turner*). Females labelled Kur. 1. 02; 2. 02; 3. 02: males Kur. 12. 01; 1. 02; 4. 02. Kur. is presumably Kuranda.

Palæorhiza flavomellea, sp. n.

♀.—Length about 7 mm.

Looking like a small *P. melanura*, with the same colour and pattern, but the area of metathorax shining, not fluted; the clypeus without dark bars (sometimes a ferruginous spot at each upper corner); the median black band of scutellum continued on postscutellum, and projected as a ferruginous mark (pointed at end) on metathorax.

♂.—Similar; length about $6\frac{1}{2}$ mm.; face strongly constricted below.

The mouth-parts of this species show the following characters:—

Structure as in *P. melanura*; tongue very broad at base, rapidly narrowing to the linear apical part, with the usual long hair; on each side is a separable tuft of hairs arising from near the base. Hairs at end of maxillary blade strongly plumose (in *melanura* they are quite simple).

Tongue $375\ \mu$ long; palpal joints measuring in μ : maxillary palpi (1) 85, (2) 153, (3) 153, (4) 153, (5) 170, (6) 204; labial palpi (1) 102, (2) 85, (3) 102, (4) 110. A curious comb of short erect bristles runs along inner side of first two joints of maxillary palpi, and is not interrupted at the suture. The same comb is found in *P. melanura*.

Hab. Cairns, Queensland (*Turner*), 4 ♀, 2 ♂. The males are labelled Kur. 12. 01: the females Kur. 12. 01; 3. 02; 5. 02. British Museum.

Palæorhiza basilura, sp. n.

♀.—Length about 8 mm.

Looking like a rather small *P. melanura*, with the same colour and pattern, except as follows:—The shorter and

broader clypeus has a broad ferruginous band on each side, each equal to the median yellow band, but not quite reaching the lower margin; a longitudinal ferruginous band, becoming black in front, runs across the pleura; the stigma is dark rufo-fuscous, and the nervures are dilute fuscous; the first abdominal segment has no dark marks; the bases of the segments are yellow, especially at sides; the fourth segment is deep purple instead of black, and is yellow at the base, the yellow narrowing to a point medially; the apical segments are dark shining blue. The postscutellum has no black mark, and the area of metathorax is shining, ferruginous at sides, wholly without fluting. The scape is light ferruginous in front.

Hab. Cairns, Queensland (*Turner*), 1 ♀. Kur. 12. 01. British Museum.

CELIOXYS.

The three Australian species have been described only in the female. I have before me males of all three, from the *Turner* collection, now in the British Museum. They may be separated as follows:—

- Length slightly over 12 mm.: wings brilliantly purple, hyaline at base; some tufts of black hair at sides of thorax behind, and lower down a tuft of white hair; apical segment of abdomen with four terminal teeth, the two upper ones scarcely more than rectangular, and with a small tooth at each side basally; fourth ventral segment with two strong keels, and deeply excavated between them. (*Cairns*; Kur. 4. 02.) *albiceps*, Fries.
- Smaller, length not over 9 mm.: wings infuscated, not very dark, not purple; no tufts of black hair at sides of thorax behind 1.
1. Scutellum with dense very large punctures; apical segment of abdomen broader than long, with six long teeth, the lateral ones finger-like but very slender. (*Mackay*, 1. 01.) *reginæ*, Ckll.
- Middle of scutellum smooth and shining; apical segment of abdomen longer than broad, with six well-developed teeth, the lateral ones spine-like. (*Mackay*, 9. 00.) *albolineata*, Ckll.

C. albolineata also occurs at Cairns (Kur. 4. 02: *Turner*).

Nomia aurantifer, sp. n.

♀.—Length about 12 mm.

Black, the abdomen without hair-bands, but with the hind margins of segments 2 to 4 broadly smooth and shining and

of the most brilliant orange; no tooth or process on post-scutellum or metathorax. Head and thorax dull, minutely roughened, with scattered punctures; face broad, with a slight raised line from middle ocellus to apex of clypeus, the middle of which, a little below level of antennæ, passes through a shining elevation; clypeus strongly punctured; mandibles bidentate; tongue linear, of moderate length; hair of head mainly whitish, inconspicuous, of pleura and sides of metathorax the same, but black on mesothorax and scutellum; area of metathorax bow-shaped, with a double curve on each side, the apex (middle) angulate, the concave basin with delicate ridges; some pallid tomentum between mesothorax and scutellum. Legs black, with mainly dark hair; tubercles with a conspicuous fringe of light hair; tegulæ moderately large, black. Wings strongly infuscated, nervures fuscous, stigma rather small, reddish in middle; second s.m. very small, receiving r. n. at beginning of its last third; hair of abdomen scanty, mainly dark, pale reddish at sides of first segment, and a dense pale reddish apical fringe on fifth; a little light colour on apical margin of first segment, at extreme sides; ventral segments fringed with long pale reddish hair.

Hab. Cairns, Queensland (*Turner*). "Kur. 4. 02," 2 ♀. British Museum.

A magnificent species, related to *N. cincta*, Smith, from Key Island. *N. cincta*, var. *tomentifera*, Friese, recorded from Cairns, cannot be this insect, as it is smaller, and has yellow-brown tegulæ and brown-yellow legs. The thorax also differs entirely in the pubescence.

Nomia darwinorum, sp. n.

♂.—Length about $10\frac{1}{2}$ mm.

Very close to *N. pulchribalteata*, Cam. (cotype from New Britain compared), differing thus:—Somewhat larger; hair of face very dense, greyish white. Wings clearer, not so brown, the outer margin broadly dusky. Hind femora more swollen; hind tibiæ and tarsi without red; abdominal bands considerably broader, apple-green (very yellow-green) shot with vermilion; fourth ventral segment with a very distinct fringe of white hair. As in *N. pulchribalteata*, the scutellum is bituberculate, and the postscutellum has a pair of long teeth, which arise from a mass of white tomentum. From *N. pulchribalteata austrovagans*, Ckll., this is known by the colour of the abdominal bands and hind legs.

Hab. Port Darwin, Australia, 12. 02 (*Turner*). British Museum.

Nomia iridescens, Smith.

Singapore (*H. N. Ridley*). British Museum.

The abdominal bands are brilliant blue-green, shot with purple; the first five segments are banded in the male. The thorax above has a good deal of fuscous hair in both sexes; this is not indicated in Bingham's description (*Hymenop. Brit. India*), but there is no doubt about the identity of my insect, as I possess a cotype from F. Smith's collection. The tegulæ are pointed or caudate posteriorly.

Nomia iridescens, var. *ridleyi*, nov.

♂.—Structure exactly as in *N. iridescens*, but the five abdominal bands yellow-green shot with orange-vermilion; second s.m. much higher than broad.

Hab. Singapore (*H. N. Ridley*). British Museum.

Nomia (Crocisaspidia) muscatensis, sp. n.

♀.—Length about 11½ mm.; expanse about 18.

With the typical *Crocisaspidia* scutellum and post-scutellum; head and thorax densely and minutely punctured, the usual pubescence creamy white, on mesothorax more ochreous; eyes strongly converging below; clypeus not carinate; tongue linear; head black; mandibles ferruginous, black at tips; antennæ entirely bright ferruginous; mesothorax and most of pleura black, rest of thorax clear ferruginous; area of metathorax broadly triangular, dullish, minutely beaded along the base. Legs clear ferruginous; tegulæ ferruginous, moderately large. Wings dusky, rather reddish, stigma and nervures ferruginous; stigma small; second s.m. square, receiving first r. n. near its end; abdomen ferruginous, the first four segments with very broad ivory-coloured tegumentary bands, the ferruginous parts rather closely punctured; venter with shining pale yellow hair.

Hab. Muscat, Arabia (*A. S. G. Jayakar*, no. 27). British Museum.

Nearest to *N. (Crocisaspidia) forbesii* (W. F. Kirby) from Socotra, and *N. lamellata*, Smith, from Egypt, but distinguished by the prevailing red coloration.

Nomia (Crocisaspidia) lamellata, Smith, 1875.

The type male, from Egypt, was examined and found to have the *Crocisaspidia* scutellum and postscutellum.

Abdomen with broad entire ivory-white bands, the first a little greenish. Legs red, pointed process on hind tibiæ enormous.

The type female, labelled as from the Gaboon (Smith's description says Gambia), seems to be the same species, but is perhaps distinct, as the abdomen (excluding bands) is densely rugoso-punctate in male and smooth with separated punctures in female. In both the scutellar lobes are ferruginous.

The female should be regarded as the true type, being first described.

Nomia (*Crociaspidia*) *crocisæformis*, Bingham, 1903.

The type male, from Abyssinia, was examined, and found to be a genuine *Crociaspidia* in every respect. Length about 14 mm., expanse 25. Face covered with white hair. Anterior wings dark fuscous; second s.m. square, less than half length of third, first r.n. joining it near apex. Tongue elongate; flagellum dull ferruginous beneath; mesothorax dull, with dense small punctures, scutellum the same; anterior and middle tibiæ and tarsi clothed with white hair on outer side; hind tibiæ of the triangular type, the apical projection ferruginous; abdomen with large lateral quadrate white spots, faintly tinged with green; hind femora swollen.

Walker wrote (1871) of *N. vespoides*, Walker, and *N. zonaria*, Walker, from the Red Sea, that "the thin forked edge which forms the hind border of the scutellum" distinguishes them from other *Nomia*. I infer from this that they belong to *Crociaspidia*. *N. zonaria* is perhaps the same as *N. lamellata* (Egyptian form).

Camptopæum persicum, sp. n.

♂.—Length a little over 6 mm.

Black and very pale yellow; head and thorax with abundant very pale yellowish hair; head black, with mandibles (except tips), labrum, clypeus, large supraclypeal mark (obtusely rounded above between antennæ), dog-ear marks (almost wholly above level of clypeus), and lateral marks (ending above rather obtusely at about level of middle of scape) all very pale yellow; scape pale yellow in front; flagellum reddish brown above, orange beneath, the second and third joints partly ringed with brown beneath; eyes very broad; thorax black, with the following parts very light yellow, upper border of prothorax, tubercles, scutellum (or the yellow reduced to a pair of transversely oblong spots), postscutellum, and sometimes a pair of short oblique bands

along sides of area of metathorax ; there may also be a light triangular mark on each side of metathorax, nearly hidden by hair ; area of metathorax irregularly longitudinally wrinkled. Legs very light yellow, anterior femora with nearly the basal two-thirds dark behind, and small dark marks at bases of the other femora ; claws bifid ; tegulæ pellucid, with a light yellow spot. Wings hyaline, a little dusky, stigma and nervures pale brown ; stigma small ; marginal cell rather obtusely pointed than truncate ; second s.m. about as long as first, receiving first r.n. a considerable distance from base. All the abdominal segments with very broad pale yellow bands, nearly covering the surface ; basad of the bands the segments are black, but the apical margins are subtranslucent testaceous ; apical plate ferruginous, subtruncate, with rounded edges ; venter pale yellow.

Hab. S.W. Persia (*Escalera*) ; 2 ♂. British Museum.

Apparently nearest to *C. handlirschi*, Friese, from Algeria, but easily separated by the colour of the metathorax.

Bombus longiceps, Smith.

A worker from Baltistan agrees with Smith's description. It is a very pretty insect, the thoracic hair bright canary-yellow and that at the end of the abdomen very bright red. Friese and Wagner (1909) make this a variety of *B. hortorum*, but remark that they have no specimens. The malar space in the specimen before me is only about as broad as long, suggesting a doubt whether it is genuine *longiceps* (it certainly is distinct from *hortorum*) ; but since the striking coloration agrees with Smith's account, and I do not know whether "head elongate" is to be interpreted as meaning excessively so, I cannot venture to regard it as a new species.

Thrinchostoma lemuricæ, sp. n.

♂.—Length about 15 mm. ; thorax and abdomen about 12 ; anterior wing not quite 11.

General structure as in *T. renitanelly*, Saussure, but considerably larger, with very dusky (brownish-grey) wings. Head and thorax black, the abundant hair dull fulvous ; eyes very prominent ; clypeus greatly produced, as usual, with its apical margin broadly pallid, testaceous shading into rufous ; antennæ black, the flagellum obscurely dull ferruginous beneath ; outer side of flagellum with very numerous conspicuous elongate pits ; mesothorax closely punctured ; area of metathorax closely longitudinally wrinkled, the rugæ

connected by very numerous cross ones; tegulæ ferruginous. Wings hairy, nervures and the large stigma fusco-ferruginous; b. n. falling short of t.-m.; second t.-c. with the usual patch of black hair, but the nervure only slightly bent (not strongly as in *T. bicometes*). Legs ferruginous; hind tibia with a broad creamy-white lamina bearing the spurs; hind tarsi very long, dull pale yellowish, with yellowish hair. Abdomen black, with the usual apical hair-bands, only evident in certain lights, when they shine brilliantly; disks of third and fourth segments covered with a sort of brownish felt; fifth ventral segment with a pencil of long yellowish hair on each side, and a pair of small erect hair-pencils arising from base, in the wide emargination of fourth segment. The hind margins of the abdominal segments are dark, not whitish hyaline as they are in *T. orchidarum*, Ckll., and other African species.

Hab. Madagascar. British Museum, 95. 21.

For other species of this genus see Ann. & Mag. Nat. Hist., April 1908, p. 343. "*T. orthonnæ*," as there given, is a misprint for *T. othonnæ*. Friese (1909) has added a species *T. sjöstedti*, described under *Diagonozus*.

LXVIII.—*Descriptions of a new Hawk-Moth and some new Syntomidæ.* By the Hon. WALTER ROTHSCHILD, Ph.D.

I. *Meganoton hyloicoides*, sp. n.

At first sight this insect resembles a giant *Hyloicus francki*.

♂. Palpi cinnamon-brown mixed with grey; head and tegulæ black, bordered with dark cinnamon-rufous; thorax and patagia pale yellowish brown, with a broad central black band; abdomen rufous-cinnamon, with brown central band and darker edges to segments. Fore wing: base buffy brown, basal third blackish brown, with five or six irregular dark maroon and grey transverse zigzag bands; rest of wing rufous-cinnamon, with irregular white, maroon, and grey bands and patches; a large apico-costal sooty patch. Hind wing: inner three-fourths cinnamon-brown, with indistinct black patches near inner area; outer fourth black powdered with yellowish grey; fringe cinnamon-rufous mixed with whitish.



Cockerell, Theodore D. A. 1910. "Descriptions and records of bees. XXIX." *The Annals and magazine of natural history; zoology, botany, and geology* 5, 496–506.

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