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Description of New Species of Aculeate Hymenoptera from Borneo.

BY P. CAMERON.

ANTHOPHILA.

Nomia varibalteata, sp. nov.

Black; the head and thorax densely covered with fulvous pubescence; the abdomen with five blue, mixed with red, bands: legs black, the wings hyaline, with black stigma and nervures ♂.

Long: 11 mm.

Hab. Borneo.

Antennæ black, the scape sparsely covered with fulvous hair, the flagellum with a pale down. The front to the ocelli is closely, distinctly and uniformly punctured; the vertex smooth; both are thickly covered with long fulvous hair. The face is smooth; its sides are broadly and thickly covered with fulvous hair; the clypeus is stoutly keeled in the middle, is obscurely punctured and thickly covered with fulvous hair. Thorax thickly covered with fulvous pubescence. Mesonotum and scutellum opaque, closely and minutely punctured; the scutellar depression is covered with depressed pale fulvous pubescence; the scutellum sparsely with long blackish hair; the post-scutellar region thickly with fulvous pubescence. Median segment closely, irregularly punctured and thickly haired; the basal depression is clearly defined behind and is irregularly closely longitudinally striated. Legs black; the femora and tibiæ covered with pale hair; the tarsi on the under side thickly covered with fulvous pubescence; the hinder tibiæ are narrowed at the base and become gradually, but not greatly, thicker towards the apex. The abdomen is smooth, shining and sparsely haired above; the basal five segments are banded with blue belts, which are largely tinged in the middle with red. The ventral segments are covered with fulvous pubescence; the last segment is distinctly keeled in the centre.

The transverse median nervure is not interstitial, being received shortly behind the transverse basal; the first recurrent nervure is received shortly beyond the middle; the tegulae are pale testaceous; the third transverse cubital nervure is roundly curved on the lower side; the punctuation on the apical half of the clypeus is coarser than on the basal and runs into striations or obscure reticulations: the sides of the last ventral segment are keeled and project obliquely at the apex; the last dorsal segment is punctured and thickly covered with black hair; its apex is smooth.

A species closely related to *N. iridescens* Sm.

Megachile zygia, sp. nov.

Black; the hair on the front, face, pleurae and median segment, ferruginous; the abdominal segments banded with ferruginous pubescence, the ventral scopa pale fulvous; wings hyaline; the stigma and nervures rufous. ♀.

Long: 12 mm.

Hab. Borneo.

Head closely rugosely punctured; the face and upper part of the clypeus with a smooth, irregular longitudinal keel in the centre. The apex of the clypeus is transverse, finely rugose; its sides are straight and oblique. The base of the mandibles is closely rugosely punctured, the upper apical half has, at the base, some distinct punctures: the apical and the lower half smooth; the apical tooth is large, projecting, and becomes gradually narrowed towards the apex; the subapical is blunt and indistinct; on the base are two shallow curves, the inner being the larger. The mesonotum is closely alutaceous, opaque, without distinct punctures; the mesopleurae are coarsely rugosely punctured; the metapleurae coarsely alutaceous. The hair on the mesonotum and scutellum is short and dark, on the upper part of the pleurae and the median segment it is rufous; on the lower parts and on the sternum, pale fulvous. Wings hyaline, with a slight fulvous tinge; the costa, stigma and nervures are bright rufous. Abdomen black; the dorsal segments banded with a bright ferruginous pile; the scopa pale fulvous; the last dorsal segment is covered with short black hair. Legs black, covered with pale fulvous pubescence: that on the tarsi is

rufous in tint; on the apex of the front tibiae in the middle is a stout, slightly curved spine, which becomes narrowed towards the apex; on the apex, at the base, in front of this, is a shorter tooth; the apical claws are larger and stouter than usual and rufous in colour: the calcaria are obliquely narrowed at the apex.

SPHEGIDE.

Sphex malayanus, sp. nov.

Black; the second abdominal segment rufous at the base: the head and thorax densely covered with golden pile and thickly with long pale pubescence: wings clearly hyaline, the stigma and nervures deep black; the apex with a deep black cloud between the end of the radial nervure and the lower end of the third transverse cubital. ♂.

Long: 14 mm.

Hab. Borneo.

The eyes distinctly converge below; the inner orbits from near the ocelli and the face and clypeus are densely covered with a golden pile and the entire head is thickly covered with long pale hair: it is impunctate; the ocelli are in a curve, are large and prominent: below them is a short, distinct keel which becomes sharply pointed at the apex; the apex of the clypeus is broadly rounded; in its centre it is distinctly depressed or furrowed; the middle is keeled. The labrum is slightly keeled in the middle. Mandibles black, rufous towards the apex; they are bidentate: the upper tooth is long, is clearly separated from the lower, which does not project, and is straight or slightly oblique at the apex; the apical tooth projects on the upper side, slightly, but distinctly; this projecting part is about three times longer than broad. The golden pile on the thorax is dense; the long pale hair is dense, long and pale; on the median segment it is not quite so thick, but is, if anything, longer. The mesonotum is alutaceous: the mesopleurae closely and distinctly punctured; the scutellum is sparsely punctured in the middle, more closely and distinctly on the sides. Neither it, nor the post-scutellum, is furrowed in the centre: the latter is thickly covered with golden pubescence. The median segment is closely, finely, distinctly and irregularly reticulated: the apical slope is largely hollowed. Legs black, pruinose:

the femora and coxæ covered with long, soft white hair; as with many species the apex of the hinder tibiæ has a rufous pile; the tarsi are spinose. Wings clear hyaline; the nervures and stigma deep black; the cloud commences at the end of the radial cellule and extends behind to the cubitus; the angle formed by the bending back of the third transverse cubital nervure is hyaline. Abdomen black; the second segment more or less rufous; the petiole is long and curved; it is, if anything, longer than the hinder tibiæ and is covered with long white hair. The apices of the segments are testaceous all round and more broadly below than above.

There are two teeth on the tarsal claws. The third cubital cellule at the top is not much shorter than the second; at the bottom it is longer than it; the second recurrent nervure is received close to the second transverse cubital; the first at three times greater the distance from it. The species comes near to *S. maria* Bing. and *S. nigellus* Sm.

Cerceris excavata, sp. nov.

Black; the lower inner orbits, the apex of the third and of the sixth abdominal segments, pale yellow; the four anterior tibiæ and tarsi and the base of the hinder tibiæ, yellow; wings hyaline; the radial cellule and the apical cubital cellule above, smoky; the area on the median segment not clearly defined, rugosely longitudinally striated. ♂.

Long: 7 mm.

Hab. Borneo.

Antennæ black; the scape pale yellow beneath; the eight basal joints and the apical joint of the flagellum reddish-brown. Front and vertex rugosely punctured as is also the clypeus and, to a less extent, the face; there is a broad yellow line, roundly narrowed at the top and bottom, on the lower inner orbits; the apex of the clypeus is slightly waved in the centre, the sides are thickly fringed with stiff longish pale golden hair. Antennal keel acute, and black and yellow. Thorax coarsely rugosely punctured, black; a spot on either side of the pronotum behind; the scutellum is smooth behind; the median segment is coarsely rugosely punctured; the punctures are round and deep; the apex is hollowed in the middle; the basal area is not clearly

defined; there is a stout longitudinal keel and two less distinct oblique ones on either side of it. Wings hyaline, the radial cellule and the greater part of the apical cubital cellule, smoky; the petiolated cellule is about one half the length of the following; it receives the recurrent nervure distinctly behind the middle. The four anterior tibiae and tarsi are yellow; the mid tibiae are marked behind with black; the hinder are black, except for a yellow band near their base and the metatarsus. Abdomen closely and coarsely punctured; black, the apex of the third and of the sixth segment banded with yellow; the pygidium is broad, coarsely punctured; its apex transverse, depressed, membranous, except at the sides; the epipygium is depressed. The third ventral segment is banded broadly with yellow in the middle.

A distinct species, not very nearly related to any of the described Indian species. Characteristic is the "enclosed space" at the base of the median segment which is less clearly bounded than usual and is longitudinally and obliquely coarsely striated and the excavated middle of the median segment.

SCOLIIDE.

Scolia pulchrivestita, sp. nov.

✓ Black; the head and thorax densely covered with fulvous hair and with a dense golden pile; the basal segments of the abdomen with blue and purple tints; the segments edged with pale fulvous hair; the wings fulvous-hyaline; the fulvous tint deeper along the apex; the stigma and nervures deep fulvous. ♀.

Long: 27 mm.

Hab. Borneo.

Antennae black, the scape covered with pale fulvous hair. The vertex behind and in the centre is strongly and closely punctured, and there are a few punctures on the outside of the ocelli; the upper part of the vertex is smooth, bare and furrowed in the middle; the lower part is punctured and thickly covered with fulvous hair. The clypeus is smooth, base, subtriangular and flat; its apex is flat, broadly rounded and piceous; the apex of the mandibles broadly rufous. Thorax densely covered, except on the apical slope of the median segment, with pale

golden pile and with longish fulvous hair. Mesonotum, except in the middle behind, strongly punctured; the scutellum is more closely punctured, except on the apex and in the middle at the base; the post-scutellum is closely and strongly punctured, except in the middle. The basal part of the median segment is closely, but not strongly, punctured. The second transverse cubital nervure is broadly and roundly curved outwardly below the middle. Legs black, thickly covered with fulvous hair; the tibial and tarsal spines are rufous; the calcaria pale; abdomen black; the basal three segments with violet and blue micaceous tints; the basal segments thickly covered with long pale hair; smooth; the apical fringes are pale; the hair on the apical three segments is long and black; the pile on the pygidium is black.

Comes near to *S. acutinerva*; it is a stouter built insect; its clypeus is flat, not roundly convex; its second transverse cubital nervure is broadly rounded and the abdomen wants the yellow bands.

Scolia apherema, sp. nov. ✓

Black; the front and vertex, the eye incision and the outer orbits, orange-red; wings fuscous-violaceous. ♀.

Long: 17 mm.

Hab. Borneo.

Antennæ black; the scape and second joint smooth and shining, the flagellum opaque. Head; the front, vertex, eye incisions and the outer orbits—wide above, narrowing below—to near the bottom, orange-red. Front and vertex shining, distinctly, but not very closely, punctured, except on the hinder edge of the vertex; and somewhat thickly covered with shining fulvous pubescence. The antennal tubercles and the parts below the antennæ deep black; the clypeus smooth and shining, the rest closely and rather strongly punctured. Mandibles black, smooth. Thorax above thickly covered with stiff black hair; the apical slope of the median segment is covered with white hair and densely with silvery pubescence; the propleuræ covered with long dark, the meso- with long pale, pubescence; the metapleuræ thickly covered with silvery pile. Mesonotum strongly and closely punctured; the middle behind smooth; the

scutellum is strongly, but not very closely, punctured; the post-scutellum is more closely and regularly punctured. The basal region of the median segment is closely punctured except the basal lobes at the base. Legs black; the femora and tibiæ thickly covered with long pale, mixed sparsely with black, hair; the spines on the four front tibiæ are bright rufous, on the hinder black. Abdomen black; the second and third segments have distinct violaceous tints; the pubescence on the dorsal segments are black, mixed with pale hair; on the ventral segments the hair is longer and paler; the apex of the petiole is strongly punctured; the rest of the abdomen smooth; the segments are not distinctly fringed with hair on their apices: the stiff pile on the pygidium is black mixed with white.

Comes nearest perhaps to *S. humeralis* Sauss. which differs from it in having the wings of a deep blue-violet tint; in its pronotum being broadly rufous; in the mesonotum and scutellum not being so strongly and closely punctured, the apical halves of these being impunctate; the abdominal segments want the blue-violet tints and the abdomen is longer compared to the length of the head and thorax.

✓ *Scolia (Discolia) thyatira*, sp. nov.

Black; largely tinted with violet and purple tints; the front, vertex, upper part of the occiput, a small spot below the antennæ in the middle, an oblique broad mark on either side of the top of the clypeus, the pronotum broadly above and a large broad mark narrowed and rounded behind, on either side of the base of the third segment, bright orange, the wings uniformly fuscous-violaceous ♂.

Long: 22 mm.

Hab. Borneo.

Antennæ black, the scape, shining and covered with black hair, the flagellum opaque. The entire vertex, front, and the upper part of the outer orbits, orange yellow; strongly, but not very closely, punctured, and covered rather thickly with long fulvous hair. The clypeus is more sparsely punctured and its apex is impunctate; the two orange marks are large, covered, and almost unite above; the hair on the face is black, on the clypeus pale. The hair on the thorax is dense, stiff and black; the punctuation

on the mesonotum is close, almost uniform and distinct; this is also the case with the scutellum, except on its apex, which is smooth. The post scutellum is less strongly punctured. The median segment is more violaceous in tint than the mesonotum; it is smooth and is covered rather thickly with black hair except laterally at the base. Mesopleuræ thickly covered with black hair. The wings are uniformly dark fuscous-violaceous and are without a very brilliant lustre. Legs thickly covered with black hair. Abdomen covered like the thorax and with violet, green and blue tints and lightly iridescent; it is thickly covered with black hair except on the second and third segments where the hair is much sparser and shorter; on the base of the third segment are two broad orange marks, which are obliquely narrowed laterally. The frontal furrow is smooth and is deeper and more distinct above and below than in the middle; the orange on the front extends into the eye incisions; the two yellow marks on the clypeus vary in extent; the lateral furrows on the apex are distinct; the two orange marks on the third abdominal segment vary in size and form.

Comes near to *S. bioculata* Sauss. and *S. fulvifrons* Sauss.

MUTILLIDÆ.

Mutilla gispa, sp. nov.

Black; the thorax and the base of the mandibles red; the third abdominal segment covered with silvery pubescence, two irregularly oval marks of silvery pubescence on the base of the second segment; the pygidium laterally covered with long silvery hair ♀.

Long: 11 mm.

Hab. Borneo.

Scape of antennæ shining, sparsely punctured and covered with white hair; the flagellum opaque, covered with a microscopic down; the terminal joint is brownish; the third joint is nearly twice the length of the fourth; the antennal tubercles rufous. Front and vertex coarsely rugosely punctured: the punctures on the front running into reticulations. Face and clypeus smooth and shining; the apex of the clypeus with a broad shallow incision. Mandibles black, rufous at the base; the apical

tooth is long and does not taper much towards the apex, which is rounded; the subapical tooth is rounded at the apex, does not project much and is not defined behind. Palpi long, dark testaceous and thickly covered with pale yellowish hair. Thorax slightly, but distinctly, narrower than the head; rounded at the base, almost transverse at the apex; it is fully twice longer than wide; its sides above irregular, not contracted; above it is coarsely rugosely punctured and sparsely covered with longish black hair; the pleuræ are smooth and shining; there is a stout curved keel in the centre of the propleuræ. Above the base of the middle coxæ is a stout keel, which extends upwards to the middle; the lower edge is less distinctly keeled. Legs black, covered sparsely with long white hair; the tibial spines are black and stout; the tarsal bright rufous; the calcaria pale. Abdomen black; the basal segment short, becoming gradually wider towards the apex, above covered with long pale hair; the basal segment is thickly covered with shorter black hair; there are two irregular oval marks of silvery pubescence on the base of the second segment, which is thickly covered with black hair, long at the base, shorter on the remainder; the third segment is covered with silvery pubescence; the basal two-thirds of the pygidium is irregularly longitudinally striated; the apical third smooth; the sides are thickly covered with long pale hair. The keel on the basal ventral segment does not reach to the middle of the segment, is stout, is rounded at the base, its apex with a vertical slope; near it the sides bear some large round punctures; above the middle is a complete curved keel with a shorter one below on the apical half. The second and following segments are thickly fringed with silvery pubescence. the epipygium is punctured; the apex is smooth and is roundly incised in the middle.