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(BEING A CONTINUATION OF THE 'ANNALS' COMBINED WITH LOUDON AND
CHARLESWORTH'S 'MAGAZINE OF NATURAL HISTORY'.)

CONDUCTED BY

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difference, but within Mr. Simons's set there are some variations worthy of note. Thus in some specimens there are only two rows of small scales on the middle line of the shoulder-shield, and in others there are three, others again having an irregular intermediate condition. Then in the skull the variation in the shape of the nasals is very considerable, these being in some long and narrow (breadth about 9 millim.) and in others far broader (12·8 millim.).

Dimensions of the type:—

Head and body 237 millim.; tail 103; hind foot, s. u. 44, c. u. 48; ear 31.

Skull: greatest length in middle line 64·5; basal length 52; zygomatic breadth 41; nasals $22 \times 12\cdot8$; constriction 17; palate length 36.

Type. Old male. B.M. no. 2. 2. 5. 31. Original number 1701. Killed 26th November, 1901.

The type of *D. vellerosus* is rather smaller (skull length 61), but the Tucuman specimens are of the same size as *D. v. pannosus*.

14. *Didelphis Azaræ*, Temm.

♂ ♀. 26th November, 1901.

XLI.—Descriptions of new Genera and Species of Hymenoptera from the Oriental Zoological Region (Ichneumonidæ, Fossoræ, and Anthophila). By P. CAMERON.

[Concluded from p. 215.]

Sphegidæ.

Ampulex 3-carinata, sp. n.

Metallic green, largely mixed with blue; the scape of the antennæ black; wings hyaline; the space between the base of the stigma and the third transverse cubital nervures smoky; the nervures and stigma black, the latter pale at the base. ♀.

Long. 15–16 mm.

Hab. Borneo.

Head above the antennæ blue, smooth and shining, below them green and densely covered with silvery pubescence; the clypeal keel and the apex of the clypeus testaceous. A

distinct keel runs down from the front ocellus to the antennæ, and there is a more distinct stouter keel on either side which commences lower down; the central keel is thinner in the middle. The eyes on the inner side are distinctly margined. Mandibles testaceous. Scape of antennæ dark green; the flagellum black. Prothorax as long as the mesothorax, distinctly narrowed at the base, and smooth and shining. Mesonotum smooth and shining; the two furrows are wide and deep and with stout transverse keels throughout, this being also the case with the transverse keel at the apex. The eight keels on the metanotum are distinct and reach to the apex, except the inner three, the outer two of which only reach to the base of the apical third of the segment and distinctly converge towards the apex. The segment, except in the middle at the apex, is closely transversely striated. The apical slope of the segment has a few oblique keels above and some transverse ones in the middle; the teeth on the upper edges are stout. The propleuræ are furrowed on the lower edge; the mesopleuræ distinctly punctured on the basal half above; below is a curved furrow which reaches beyond the middle; the upper part of the metapleuræ is striated and is bordered below by a longitudinal keel; the apex, as is also the sternal region, is thickly covered with white pubescence. Legs green; the hinder tibiæ blue, the tarsi darker in colour; the front tibiæ and tarsi dark testaceous in front. Wings hyaline; the radial cellule, the apex of the first, the second and third cubital, and the discoidal cellules smoky, with a faint violaceous tinge; the three transverse cubital nervures are distinct. Abdomen green, the second segment blue; it is about twice longer than wide and is not much narrowed at the base.

Comes near, judging from the imperfect description, to *A. insularis*, Sm. The description is not sufficient for identification—*e. g.*, no mention is made of there being any keels on the front. In Kohl's monograph of *Ampulex* (Ann. Mus. Wien, viii. p. 495) there is a mistake in the copy of Smith's description of *A. insularis* which may mislead: in the fourth line of the description, for "mesothorax" read "metathorax."

Sphex Franzi, sp. n.

Black; the abdomen, except the petiole, ferruginous; the wings fuscous violaceous, the apex of the fore wings darker, the hinder pair lighter in tint; the third cubital cellule at the top slightly shorter than the second, at the bottom distinctly longer than it; the head and thorax thickly covered with

long white hair and with a silvery pile; petiole black, curved, longer than usual, nearly as long as the hinder tibiæ and longer than the third and fourth joints of the antennæ. ♂.

Long. 18 mm.

Hab. Borneo.

Antennæ black, the flagellum bare, the scape sparsely covered with short white hair. Head alutaceous, the front and clypeus sparsely punctured; the cheeks and clypeus are thickly covered with silvery pubescence; the face in the middle is clearly separated and bounded by narrow keels; the middle of the clypeus is indistinctly keeled, its apex is distinctly depressed and separated. Mandibles rufous between the middle and the teeth; the hinder tooth is clearly separated above, is wide at the apex, and widely distant from the apical; the lower apical is bluntly pointed and projects long beyond the short apical one. Thorax shining; the pro- and mesothorax minutely and closely punctured, the pleuræ more closely than the upper surface, which has a slight plumbeous hue; the scutellum and postscutellum flat, neither is furrowed down the middle. Median segment closely transversely punctured, almost reticulated, and more openly at the base than at the apex. Legs black, pruinose, the pile white, except on the inner side of the hinder tibiæ, where it is fulvous or golden, and at the apex rufous; the claws are bidentate. Wings dark fuscous violaceous, the apex darker, the hinder lighter in tint; the stigma and nervures are black; the third cubital cellule at the top is slightly shorter than the second, at the bottom longer than it; the second recurrent nervure is received nearer the second transverse cubital than is the first; the transverse median nervure is received behind the transverse basal, the basal two transverse cubital nervures are not so sharply oblique as usual, as in, e. g., *Sphex aurulentus*; below the base of the stigma is a small black distinct point. The long black petiole is distinctly curved and covered with long white hair; the rest of the abdomen is ferruginous. Tegulæ black.

The eyes distinctly converge on the lower side, where they are separated by a distinctly less distance than they are on the vertex; all the tarsi are thickly and stoutly spined; the postscutellum is not sharply or deeply separated from the scutellum, and is scarcely raised above the metanotum; the upper part of the mesopleuræ is not raised distinctly, as in *aurulentus*; the tibiæ are almost spineless.

Belongs to the *Isodonta*-section of *Sphex*, and comes near to *S. nigellus*.

ANTHOPHILA.

Nomia (Paranomía) zebrata, sp. n.

Black; the head and thorax densely covered with longish white pubescence; the apices of the second to sixth segments banded with greenish blue and smooth and shining, the apex of the first dull green; the legs dark piceous, the tibiæ and hinder femora not dilated; the hair thick and pale; the wings hyaline, the nervures fuscous, the stigma darker. ♂.

Long. 7 mm.

Hab. Barrackpore, Bengal (*Rothney*).

Antennæ black; the scape covered with longish white hairs. Head: the front, face, and clypeus thickly covered with white pubescence, the upper two thirds of the clypeus keeled in the middle; the apex is depressed, smooth, and transverse in the middle; the punctuation towards the apex runs into striæ. Mandibles black, broadly piceous in the middle; their base is distinctly punctured. Mesonotum and scutellum closely punctured; the scutellum is broadly but not deeply depressed in the middle, its apex is sparsely covered with long black hair; the postscutellum is thickly covered with white pubescence. The basal area of the median segment is bordered behind by stout transverse keels; the sides are irregularly reticulated. Pleuræ thickly covered with white hair, which is much longer on the metapleuræ. The coxæ and trochanters are darker than the rest of the legs; the hair on the underside of the tarsi is rufous; the spurs are testaceous. Except on the apical bands, the abdominal segments are closely but not strongly punctured. The ventral surface is smooth, shining, and piceous in colour; the last segment is keeled in the middle, the keel becoming stronger towards the apex, which has a short narrow incision.

This species comes close to *N. Frederici*; the two may be separated thus:—

The area on the median segment transversely striated at the base; the flagellum of the antennæ black; the legs piceous	<i>zebrata</i> .
The area on the median segment not transversely striated at the base; the flagellum of the antennæ brownish; the legs black	<i>Frederici</i> .

Nomia (Paranomía) Frederici, sp. n.

Black, covered with white pubescence; the flagellum of the antennæ brownish beneath; the four basal segments of the abdomen with smooth, bare, blue bands; the wings hyaline,

the stigma and nervures fuscous; the hinder legs not much more thickened than the middle ones. ♂.

Long. nearly 8 mm.

Hab. Barrackpore, Bengal (*Rothney*).

Antennæ as long as the head and thorax united, stout; the scape covered with long pale hair. The front, face, and clypeus are thickly covered with white pubescence; there is an indistinct keel on the centre of the face and a distinct one down the centre of the upper two thirds of the clypeus; the front, vertex, and occiput are thickly covered with long white hair. Mesonotum closely rugose and covered with a white pile; the scutellum is more strongly punctured and its apex is fringed with long black hair. Postscutellum thickly covered with longish white pubescence. The basal area of the median segment is irregularly, longitudinally, but not closely, striated; the area behind it is smooth, the rest of the segment is punctured and covered with white pubescence. Pleuræ thickly covered with longish white hair. Legs black, thickly covered with white hair; the calcaria rufous; the hinder tibiæ become gradually, but not much, dilated towards the apex; the metatarsus is not thicker than usual. The basal segments of the abdomen are closely punctured, except at the apex; the basal segments of the abdomen and the sides are covered with white pubescence, the apices of the second, third, fourth, and fifth are smooth and bright blue. The apices of the ventral segments are fringed with white pubescence; the apical segment is furrowed in the middle and its apex is bilobate.

Comes close to *N. iridescens*, Sm., which may be known from it by the basal area of the median segment being longitudinally rugose, while in the present species it bears irregular widely separated keels.

Nomia (Paranomia) argenteobalteata, sp. n.

Black; the apices of the segments silvery white; the legs piceous black; the hinder tibiæ and tarsi testaceous, the hair on them silvery; the wings clear hyaline; the stigma black, the nervures paler; the hair on the head and thorax cinereous. ♂.

Long. 8 mm.

Hab. Bengal (*Rothney*).

Antennæ black; the flagellum rufous beneath towards the apex. The hair on the face, clypeus, and front is dense, on the vertex it is sparse; the vertex is almost impunctate. The clypeus is clearly separated from the face; the apex of

the clypeus is transverse and it is brownish there, as is also the labrum. Mandibles shining, brownish behind the sub-apical tooth. Mesonotum opaque, obscurely closely punctured; the scutellum is shining, closely and distinctly punctured, except behind the middle, where there is on either side a transverse smooth space; it is sparsely covered with long black hair. Postscutellum closely rugose, opaque, its base covered with white pubescence. The area on the median segment is closely, irregularly, and not very strongly longitudinally striated; the striæ in the middle form irregular reticulations; the segment is alutaceous and is almost punctured above; in the centre is a longitudinal furrow; the lower half of the sides is keeled. The pleuræ are more thickly haired than the dorsum and the hair is longer. Wings clear hyaline; the second recurrent nervure is received in the middle of the cellule. The hair on the legs is long, thick, and white; on the base of the tarsi it is bright fulvous on the underside; the hinder tibiæ and the metatarsus are bright rufo-testaceous; the four front tibiæ and metatarsus are darker rufo-testaceous. Abdomen black, smooth, impunctate; the apices of the segments silvery; the bands on the third and fourth segments are covered with silvery pubescence; the last dorsal segment is covered with fuscous hair. The ventral segments are dark rufo-testaceous on the apex.

There is a curved, not very distinct, transverse furrow near the middle of the second and third segments; the silvery pubescence on the outer orbits is dense; the hinder tibiæ and metatarsus are not abnormally dilated; the metatarsus projects above into a stout spine; the middle joints are narrowed at the base, becoming wider towards the apex; the third cubital cellule on the top is almost twice the length of the second; the clypeus is not keeled in the middle; the tegulæ are pale in front, dark brownish behind; the white band on the basal segment of the abdomen is narrower than the bands on the other segments.

Comes nearest to *N. albofasciata*, Sm. It differs from most of the species of *Paranomia* in the abdominal bands being white, not blue or green.

Nomia aureobalteata, sp. n.

Black, the apices of the abdominal segments pale and densely covered with golden pubescence; the hair on the head and thorax pale fulvous; the legs piccous, their hair long and white; the area on the median segment large,

strongly and closely longitudinally striated; the wings hyaline, highly iridescent, and slightly infuscated towards the apex; the stigma and nervures are dark fuscous. ♂.

Long. 7 mm.

Hab. Bengal (*Rothney*).

Antennæ black, brownish towards the apex. The face, clypeus, and the lower outer orbits are thickly covered with pale fulvous pubescence; the hair on the front and vertex is sparser and paler in colour; the front and vertex are alutaceous. The apex of the clypeus is broadly rounded; the labrum is fringed with golden hair and has two rounded broad keels, the lower being smaller than the upper. Mandibles piceous. Mesonotum and scutellum closely punctured, their hair is moderately thick and long and pale golden. The area on the median segment is large, extends to the top of the apical truncation, and is, except at the narrowed apex, closely, strongly, longitudinally striated; the sides on the apical slope are keeled. The hinder tibiæ and tarsi are not dilated. Abdomen shining, impunctate; the apices of the basal four segments are paler and are thickly covered with golden pubescence, which hides the surface; the last segment is brownish, and is thickly covered with long fulvous mixed with black hairs. The ventral surface is more or less piceous and is thickly covered with long pale hair.

Nomia carinicollis, sp. n.

Black, the pubescence white; the apices of the segments covered with white pubescence; the wings short, hyaline, the stigma and nervures pale testaceous; the area on median segment irregularly reticulated in the middle, the sides obliquely striated. ♀.

Long. 6 mm.

Hab. Ceylon (*Rothney*).

Face and clypeus thickly covered with white pubescence, the pubescence on the front and vertex sparser; on the outer orbits it is dense. The base of the pronotum is margined by a sharp keel; behind this it is closely minutely punctured. Mesonotum closely, uniformly, and distinctly punctured; the scutellum is less distinctly punctured; both are covered, but not thickly, with white short pubescence. Postscutellum more thickly covered with longer white pubescence. The basal area on the median segment is irregularly reticulated; the sides are obliquely striated, but not closely; the upper third of the apical slope has a narrow furrow, the furrow on the rest is wider and deeper. The legs are brownish testa-

ceous and are thickly covered with white hair. The wings appear to be shorter than usual; the third cubital cellule above is less than twice the length of the first. Abdomen smooth, the apices of the segments and the ventral surface brownish; the apices of the segments are covered with white pubescence.

In Bingham's arrangement (Fauna Brit. Ind., Hymen. i. p. 449) this species would come in near the doubtful *N. vineta*, Walker. Characteristic is the sharp distinct keel on the base of the pronotum, which is flatter above and more largely developed laterally than usual. The base of the basal abdominal segment, too, is more depressed—almost furrowed—in the middle than usual. The pygidium is covered with depressed golden pubescence, except in the middle, where there is a bare black longitudinal line almost as in *Halictus*. The tegulæ are of moderate size.

Nomia albofimbriata, sp. n.

Black; the mesonotum and scutellum covered with rufo-fulvous pubescence, the rest of the thorax and the head more sparsely with cinereous pubescence; the basal four abdominal segments with their apices narrowly lined with white pubescence; the hair on the femora and on the upperside of the tibiæ and tarsi white, on the underside of the tibiæ and tarsi rufous; the wings are hyaline, the stigma testaceous, the nervures paler. ♀.

Long. 8-9 mm.

Hab. Barrackpore, Bengal (*Rothney*).

Antennæ black, the flagellum brownish beneath; the scape sparsely covered with long white hair. The front and vertex are closely punctured, the vertex laterally smooth and shining; there is a narrow furrow down the centre of the front; the front is covered with white, the vertex more sparsely with longer fuscous pubescence. The face and clypeus coarsely alutaceous, opaque, covered with a white pile and sparsely with longish black hairs. Mandibles black, shining, and with a rufous band behind the apex. Mesonotum closely and distinctly punctured and covered with rufo-fulvous pubescence; the hair on the scutellum is similarly coloured, but much longer. Median segment short, shining, aciculated; the basal area is closely and finely transversely striated. Wings clear hyaline throughout. Calcaria pale. Abdomen shining, impunctate; the basal segment at the base is sparsely covered with white hair; the apices of the basal four segments are narrowly banded with white pubescence;

the pubescence on the apical two segments is black; the hair on the ventral segments is darker-coloured than on the dorsal.

The median segment is furrowed in the middle from the basal area; the clypeus is flat, with its sides rounded; the pleuræ opaque, the metapleuræ at the base obscurely striated; the second abdominal segment is slightly depressed and has a fine transverse furrow; the second transverse cubital nervure is roundly curved outwardly, and the mesopleuræ at the tubercles are thickly covered with white pubescence.

Comes nearest to the Ceylonese *N. rustica*, Sm. It has the general coloration and appearance of *N. thoracica*, Sm.

Halictus lahorensis, sp. n.

Black, the basal segments of the abdomen with a brownish tint; the hair white, on the underside of the tarsi fulvous; the basal area of the median segment has a few irregular longitudinal striæ; the basal two segments of the abdomen with a transverse narrow furrow near the base; the wings hyaline, the stigma testaceous; the first recurrent nervure is interstitial; the second cubital cellule at the top is slightly longer than the third. ♀.

Long. 7 mm.

Hab. Lahore (*Rothney*).

Face and clypeus strongly but not closely punctured; the apex of the clypeus is impunctate, except for a few elongate punctures, and is fringed with long fulvous hairs; the front and vertex are closely punctured and opaque, except behind and in front of the ocelli; the hair is griseous, darker on the front and vertex. Mesonotum shining, sparsely but distinctly punctured; there is a narrow furrow down the centre on the basal half and another on either side opposite the tegulæ; the base at the commencement of the central furrow is slightly but distinctly incised; the base has a vertical slope and has a transverse pilose furrow near the middle. Scutellum shining, sparsely punctured at the base; the post-scutellar region is thickly covered with long white hair. The basal area on the median segment is not clearly defined, at the base it bears a few irregular longitudinal striæ; the apical slope is bounded above by a rounded, laterally by more distinct oblique keels; the apical half in the centre is deeply furrowed. Pleuræ covered with white hair. Wings hyaline, the stigma testaceous, the nervures darker; the second cubital cellule at the top is fully longer than the top of the third; the first recurrent nervure is interstitial, the second is received near

the apex of the cellule; the third transverse cubital nervure is broadly rounded on the lower side. The back of the abdomen has a brownish tinge; the hair does not form distinct bands, but this may be owing to rubbing; there is a transverse furrow near the base of the apical fourth of the first segment, and a similar one shortly behind the middle of the second; the apical rima is brownish. The ventral surface is rather thickly pilose; the dorsal surface is impunctate.

The tegulae have the basal half black, the apical brownish; there is a wide furrow on the hinder edge of the propleurae, extending behind to beyond their middle; the pleurae below this are striated; the clypeus is separated from the face by a transverse furrow; the face is roundly convex.

A distinct species, readily known by the area on the median segment not being defined behind and by its having a few irregular longitudinal striae, by the furrows on the mesonotum with the incision at the base, by the transverse furrows on the basal two segments of the abdomen, by the form of the base of the thorax, and by the keeled apex of the median segment.

In Bingham's arrangement the species would come in near *H. albescens*.

Halictus ceylonicus, sp. n.

Black, the vertex and mesonotum with a slight but distinct brassy tint, the base of the median segment striated; the hair on the head and thorax white, the base of the abdominal segments banded narrowly with white pubescence. ♀.

Long. 8 mm.

Hab. Ceylon (*Rothney*).

Antennae black, slightly brownish towards the apex. Head moderately shining, smooth; the front and vertex covered with long fuscous hair, this being also the case with the face and clypeus; the outer orbits are covered with white hair. The clypeus is distinctly separated from the face by a suture; its apex is transverse, distinctly and broadly furrowed, and fringed with long rufous hair. Pro- and mesonotum with the scutellum shining, impunctate, and covered with fuscous hair; the postscutellar region is thickly covered with white pubescence. The median segment at the base is not so brassy in tint as the mesonotum; it is there closely longitudinally striated; its sides are more obliquely striated; it is not defined behind; its apical slope has its upper three fourths furrowed in the centre, the furrows being obliquely widened on the top; the sides are keeled. The propleurae project broadly behind above, the projecting part becoming roundly narrowed towards the apex. The hair on the femora and tibiae is white, on the underside of the tarsi it is rufous.

This is a larger species than *H. carinifrons*, which may be known from it by the front being keeled, by the head and thorax not having a blue tinge, and by the second cubital cellule on the top being shorter compared with the third. The labrum has two stout keels in the middle.

Halictus zonatulus, sp. n.

Black, the tarsi testaceous; the abdominal segments banded at the apices with olive-testaceous; wings clear hyaline, the stigma dark, the nervures pale testaceous; the area on the median segment stoutly, irregularly, longitudinally striated. ♂.

Long. 7 mm.

Hab. Barrackpore (*Rothney*).

In Bingham's arrangement (*l. c.* p. 421) this species would come near *H. proteus*, Vachal.

Antennæ stout, rather thickly covered with a short black stiff pile; the scape with longish white pubescence. Head closely and distinctly punctured; the clypeus smooth and sparsely punctured above; thickly covered with pale hair, which is darker-coloured on the vertex than on the face or clypeus; the front has a narrow but distinct keel on the middle. Mandibles black, testaceous near the middle, the apex piceous. Thorax thickly covered with pale fuscous hair; the mesonotum and scutellum closely minutely punctured. The area on the median segment is large and is distinctly bordered behind; there is a distinct longitudinal keel in the centre, some irregular ones on either side of it, and three regular ones on the edges; the apical slope of the segment is furrowed distinctly in the centre. Propleuræ closely obliquely striated in the middle; the mesopleuræ rugose, irregularly striated above the middle; the meta-pleuræ finely rugose and finely irregularly striated. Legs thickly covered with long, soft, white hair; all the tarsi are testaceous, as are also the calcaria. Abdomen smooth, shining, the apices of the segments banded with pale olive-green, the sides of the basal two segments and the apices of the others covered with pale hair; the hair on the ventral segments is longer and sparser. The wings appear larger than usual; the first and second transverse cubital nervures are straight, converge slightly above, and are bullated below; the third is roundly curved inwardly on the top; the first recurrent nervure is received close to the transverse cubital.

The antennæ are longer and the wings larger than usual. Characteristic are the olive-coloured bands on the abdomen.