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“By mutual confidence and mutual aid
Great deeds are done and great discoveries made.”

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THE CLASSIFICATION OF GRACILARIA AND ALLIED GENERA.*

By T. A. CHAPMAN, M.D., F.E.S.

I DESIRE in these notes to point out that certain genera which I call collectively the Gracilariadæ are connected together by certain very definite characters of their larvæ and pupæ, and by the special nature of these characters are equally cut off and separated from certain other genera with which all our systematists, up to Staudinger, or rather Rebel, following his predecessors, have more or less mixed them.

These genera are *Gracilaria*, *Ornix*, and *Coriscium* as one subgroup, *Lithocolletis* as another, and *Phyllocnistis* as a third, together with several non-European genera, this group being much more abundantly represented in America than Europe.

As a subsidiary point, I associate *Lyonetia*, *Cemistoma*, and *Bedellia* as a very natural group, crisply marked off by pupal characters from all other forms, with *Phyllobrostitis* as probably representing a connecting form.

This being so, it is of course merely a corollary that *Tischeria* and *Bucculatrix* must find their proper place somewhere else, and not in association with these two groups or families.

I hardly know whether classification founded in earlier stages has still to fight for recognition; I hope not—I may merely say that where good characters are to be found in the earlier stages, and none in the imagines for classification, then classification by such characters is imperative. Classification by any one character or by any one stage is liable to be very erroneous, and any true

* Read before the City of London Entomological Society, March 18th, 1902. Mr. J. Hartley Durrant has very kindly looked through these notes. I mention this in order to make grateful acknowledgment, and to indicate that no gross errors of bibliography or nomenclature occur in them, but of course without for a moment desiring to make him responsible for any of my heresies.—T. A. C.

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA (ICHNEUMONIDÆ, CHRYSIDIDÆ, FOSSORES, AND APIDÆ).

By P. CAMERON.

ICHNEUMONIDÆ.

AMBLYJOPPA, gen. nov.

Antennæ stout, slightly compressed and dilated between the middle and the apex. Scutellum roundly convex, raised above the level of the mesonotum; its sides not margined, the apex with a flat, oblique slope. The base of the median segment has a distinct oblique slope; the areola is somewhat horseshoe-shaped, slightly narrowed behind; it is flat, raised, smooth and shining; the sides, except at the apex, are furrowed, the furrows becoming wider and striated towards the apex; the posterior, median, and the spiracular areæ only are clearly defined; there are no spines or projections, and the apex of the segment has a gradually rounded slope. Areolet narrowed at the top. Abdomen closely punctured; the segments are closely punctured and do not project much at the apex laterally. Legs stout; the apex of the hinder femora does not extend beyond the third segment. The post-petiole is wide and clearly separated; on the second segment only the part between the gastrocœli is striated. The abdomen is comparatively short, being not much longer than the head and thorax united; its apex is bluntly pointed and broad; it is not quite half the length of the penultimate; the ovipositor is broad and projects.

The temples are obliquely and rather sharply narrowed; the occiput is roundly incised, and is sharply margined; the malar space is large; the apex of the clypeus is transverse; the labrum slightly projects; the second joint of the maxillary palpi is widely dilated; the mesopleural tubercles are long, narrow, and plate-like; the ventral keel extends on to the fourth segment, and is not very distinct. There is a short stump of a nervure on the cubital-disco nervure. The wings are dark-coloured.

The species I have included in this genus are large handsome insects. The characteristics of the genus are the roundly convex scutellum and the flat, raised, smooth and shining areola. The median segment is completely areolated; there are three basal and five apical areæ, besides the spiracular area. The basal joints of the flagellum are elongated, more than three times longer than wide; the transverse median nervure is not quite interstitial; the transverse cubital nervures may be distinctly separated above, or they may be almost united.

To this genus belongs "*Ichneumon*" *alvanus*, Cam.,* which appears to be a common Indian species.

AMBLYJOPPA RUFO-BALTEATA, sp. nov.

Nigra, capite thoraceque flavo-maculatis; abdominis medio late

* 'Manchester Memoirs,' xl. pt. 4, p. 8.

rufo, apice petioli flavo; pedibus nigris; tibiis tarsisque late flavis, tarsis nigro-maculato; alis fusco-violaceis, nervis stigmatæque nigris. ♀.

Hab. Khasia Hills (coll. Rothney).

Antennæ stout, slightly dilated and compressed before the middle; the tenth to fifteenth joints white below; the scape minutely punctured, thickly covered with white pubescence. Head black; the face, clypeus, labrum, except in the middle, the inner orbits, the outer on the lower half—narrowly above, broadly below, the yellow extending to the base of the mandibles—pale yellow. Face and clypeus punctured, thickly covered with short white hair; the front above closely punctured. Thorax black; the edge of the pronotum, two short lines shortly behind the middle of the mesonotum, the scutellum, post-scutellum, two somewhat triangular marks on the sides of the metanotum, extending on to the spiracular area, the tubercles, a large mark on the under side of the mesopleuræ—rounded in front, obliquely narrowed at the apex—pale yellow. Mesonotum opaque, distinctly punctured in the middle, less distinctly and more closely on the sides; and thickly covered with short fuscous pubescence. Scutellum roundly convex, punctured, and thickly covered with long pale hair; post-scutellum smooth, thickly covered with fuscous hair. Median segment rugosely punctured; the suprmedian area has the basal half narrowed; the base in the middle transverse and slightly more than half the width of the apex; inside it is not depressed, is smooth and shining; the apex with two rows of punctures, the basal row not reaching to the sides; the posterior median and posterior intermedian areæ are stoutly transversely striated, the latter more strongly than the former. Pro- and mesopleuræ closely punctured, their apices more or less striated; metapleuræ closely rugosely punctured, above the middle keel more or less obliquely striated. The lower part of the stigma and the apical nervures are fuscous; the areolet five-angled, at the top half the width of the bottom; the recurrent nervure is received shortly behind the middle. Legs black; all the trochanters, the four anterior coxæ, the apices of the four anterior femora, the anterior tibiæ in front and at the base behind, the basal part of the intermediate to shortly beyond the middle and the basal two-thirds of the hinder pair, and an irregular mark on the top and sides of the hinder femora—broad above, narrow on the sides—pale yellow; tarsi pale yellow, the basal three joints at the apex and the apical two entirely black. Abdomen black; the apex of the petiole yellow; the second and third segments entirely, and the base and sides of the third, ferruginous. The petiole is depressed in the centre above, the base irregularly roughened; the apex rugosely punctured; the base of the post-petiole rugosely punctured; the apex less strongly punctured; the sides are closely, strongly, obliquely striated; the second, third, and fourth segments are closely punctured; the second closely, longitudinally striated at the base; the gastrocæli on their inner sides with curved striæ.

ACANTHOJOPPA, gen. nov.

Antennæ dilated and compressed beyond the middle. Scutellum pyramidal, the base with an oblique slope; the top roundly depressed; the sides of the top leaf-like; the apex has a more abrupt slope, is

shorter, and has its sides keeled. Median segment completely areolated; the base in the middle is depressed; there are five basal areas and three apical ones; the areola is completely defined; its base transverse; its sides oblique; the sides at the apex are oblique; the apex rounded inwardly. The spines are long and stout; the basal depression is keeled laterally. Face flat, hardly projecting in the centre; the labrum projecting. Occiput widely incised. Temples broad, obliquely narrowed. Areolet five-angled, narrowed at the top; the cubito-disco nervure has an almost obsolete stump of a nervure. Wings hyaline, or slightly infuscated at the apex. Legs long; the apex of the hinder femora reaches to the fourth segment. Petiole long and slender; the post-petiole becomes gradually wider from the base to the apex; the second and third segments are closely aciculated; the others smooth; the apical three segments become gradually narrowed; the last is largely developed; the cerci are prominent; the ovipositor largely projects; the ventral keel is large, and extends to the apex of the fifth segment.

The species of this genus known to me are uniformly ferruginous, with the wings hyaline, or yellowish-hyaline, at the most only slightly smoky at the apex; the antennæ are similarly coloured, darker towards the apex and lighter in the middle. The median segment is more regularly and completely areolated than usual; the sides of the abdominal segments do not project laterally. In the male the antennæ are not distinctly serrate.

A distinct genus, easily known by the flat face, the completely areolated median segment, with its stout spines; the pyramidal scutellum, deeply depressed on the top; and the abdomen narrowed at the apex, and with a long projecting ovipositor. In the arrangement of Kriechbaumer and Ashmead, the genus would come in near *Cryptojoppa*.

ACANTHOJOPPA SCHIZOASPIS, sp. nov.

Ferruginea, facie, clypeo, pleurisque flavis; antennis ferrugineis, apice late nigris; alis fulvo-fumatis, stigmatè ferrugineo. ♀.

Long. 15-16 mm.

Hab. Khasia (coll. Rothney).

Antennæ rufo-fulvous, beyond the sixteenth joint black; the scape punctured, thickly covered with short black hair; the flagellum with a pale down. Head rufo-fulvous; the face and clypeus with a paler yellowish tinge; closely and rather strongly punctured; the apex of the clypeus impunctate in the middle; the labrum closely punctured; thickly covered with long fulvous hair. The apex of the mandibles broadly black. Front very smooth and shining; the vertex shagreened; the orbits yellow. The mesonotum dark rufous; closely punctured, thickly covered with short black hair. Scutellum large, pyramidal; the base with an oblique slope; the apex almost perpendicular; the top roundly and deeply depressed; the sides somewhat triangular, rounded; margined; the basal keels large, curved, acute; the basal depression narrow, transverse, not very deep; the hair thick, long, blackish. Post-scutellum yellowish, with an obliquely rounded slope;

the centre closely and finely striated; the sides with a few stout striations; the depressions at its sides wide, shallow, and marked with stout keels; the base of the median segment in the centre has a rounded slope, deeply depressed in the middle, and bordered with a stout keel round the sides and apex; the apex is rugose. The supra-median area is slightly wider than long; the base almost transverse; the sides at the base oblique; at the apex more sharply oblique; the apex bulges roundly inwardly; the posterior median area is of almost equal width throughout; the teeth are large, broad; the base of the segment is strongly punctured; the supramedian area has a few oblique striations; the apex strongly transversely striated. The upper part of the propleuræ is strongly punctured; the centre at the base with a few fine oblique striations; the lower part at the middle and apex with stout, irregular, mostly curved, keels. Mesopleuræ strongly punctured; the middle with some stout longitudinal striations; the tubercles large, elongate, leaf-like, roundly narrowed at the base and apex. The base of the metapleuræ above finely, the rest coarsely, punctured, the punctures running into reticulations; in front of the hinder coxæ are some stout oblique striations, and in front of these is a stout curved keel. Mesosternum thickly covered with fuscous hair, punctured; the furrows deep, much widened at the apex. Legs stout; the four anterior coxæ and trochanters more or less yellowish; the hinder strongly punctured; the hinder tarsi spinose. The costa and stigma are luteous; the nervures darker; the areolet narrowed at the top, the transverse cubital nervures almost uniting there; the first is largely bullated at the top; the second in the centre; the recurrent nervure is received in the centre of the areolet; the transverse median nervure is received distinctly in front of the transverse median. Petiole yellowish at the base, the apex shagreened; the sides at the apex with some large deep punctures. The other segments are closely punctured; blackish down the middle; the gastrocelli shallow, closely punctured; the space between them striated. The sheaths of the ovipositor fulvous, densely haired; the apex black.

(To be continued.)

SOUTH AFRICAN COCCIDÆ.—II.

By T. D. A. COCKERELL.

Aspidiotus (Marganella) maskelli, Ckll.

Botanical Gardens, Durban, Natal; on twigs of *Camellia* (*Fuller*). New to the African continent; it has been found in Mauritius by De Charmoy.

Hemichionaspis cyanogena, Ckll.

Verulam, Natal (*Fuller*). Botanical Gardens, Durban, Natal; on *Alternaria* (*Fuller*). The last-mentioned material showed circumgenital glands as follows: median, 17; cephalolateral, 16; caudolateral, 13. The type had median, 11; cephalolateral, 17; caudolateral, 15.

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ADDITIONS TO THE FAUNA OF MEXICO (BEES AND COCCIDÆ).

By T. D. A. COCKERELL.

PROF. C. H. T. TOWNSEND has this year been exploring parts of the State of Chihuahua, and has brought to light the following forms, new to the Mexican fauna.

APOIDEA.

Melissodes tristis malvina, n. subsp.—♂. Similar to *M. tristis*, but smaller (length about $8\frac{1}{2}$ mm.); eyes dark brown (pale greenish or greyish in *tristis*); antennæ with the flagellum dark reddish beneath (bright ferruginous in *tristis*); nervures of wings mostly piceous (ferruginous in *tristis*); pygidial plate narrower; otherwise as in *tristis*. The clypeus, labrum, and mandibles are black, as in *tristis*.

Hab. Cerro Chilicote, State of Chihuahua, Mexico, at mouth of cañon on south side, March 22nd, 1902, at flowers of a species of Malvaceæ, apparently one of the purple species of *Sidalcea*. Collected by C. H. T. Townsend.

The following table separates the males of *Melissodes* in which the clypeus is black:—

Antennæ reaching far beyond thorax	1.
Antennæ not reaching beyond thorax	3.
1. Mesothorax with much black hair. (Calif.)	<i>personatella</i> , Ckll.
Mesothorax without black hair	2.
2. Larger, length about 10 mm. (New Mexico)	<i>tristis</i> , Ckll.
Smaller, length about $8\frac{1}{2}$ mm.; differing also as described	
above	<i>malvina</i> , Ckll.
3. Antennæ scarcely reaching to scutellum; abdomen with-	
out bands. (Texas)	<i>intorta</i> , Cr.
Antennæ reaching to metathorax; abdomen banded	4.
4. Antennæ black, mandibles without a yellow spot. (Oaxaca,	
Mexico)	<i>assimilis</i> , Sm.
Flagellum bright ferruginous beneath, mandibles with a	
large yellow spot. (Sta. Fé, New Mexico)	<i>sphæralcæ</i> , Ckll.

ON SOME NEW GENERA AND SPECIES OF HYMENO-
PTERA (ICHNEUMONIDÆ, CHRYSIDIDÆ, FOSSORES,
AND APIDÆ).

By P. CAMERON.

ICHNEUMONIDÆ.

(Continued from p. 111.)

HABROJOPPA, gen. nov.

Antennæ dilated and compressed beyond the middle; the apex attenuated. Eyes small, reaching to the middle of the face, the malar space being large; they are parallel on the inner side. Occiput margined. Clypeus not separated from the face by a suture. Labrum hidden. Mandibles with two equal teeth on the apex. Mesonotum reticulated, without furrows. Scutellum stoutly keeled laterally; its apex incised. Median segment reticulated; the basal and central areas only are defined; the spiracles linear. Areolet much narrowed at the top; the transverse cubital nervures almost meeting there; it is angled below, and receives the recurrent nervure near the middle; the transverse median nervure is received shortly beyond the transverse basal on the outer side. Legs normal; the claws simple. Petiole long and slender, dilated at the apex; the spiracles are placed near the apex of the basal fourth. Gastrocæli large, deep. There are seven segments; the last three are smaller than the others, and form a sharp point; the ovipositor hidden; the ventral fold only extends to the apex of the second segment; the last ventral segment is large, entire, broadly rounded at the apex; its base extends to the base of the penultimate dorsal, and does not extend to the apex of the last dorsal; there are only six ventral segments in the female. The apex of the hinder femora reaches to the base of the fourth segment.

From *Charitojoppa* it may be known by its more slender form, by the scutellum not being pyramidal, by the petiole being more slender, and not broadly dilated at the apex. In the form of the scutellum it more resembles *Magrettia*,* but it wants the coxal spine, the pronotum is not incised behind, and the second and third segments are longitudinally striated; the petiole is more slender towards the apex, and longer, more as in *Ichneumon* than as in *Platyuri*.

HABROJOPPA RUFO-PETIOLATA, sp. nov.

Cærulea; abdomine albo annulato, basi rufo; pedibus rufis, tarsis posticis nigris; alis fusco-hyalinis. ♀. Long. 12 mm.

Hab. Khasia (coll. Rothney).

Antennæ black, the eighth to the thirteenth joints white, the apical joints compressed, fuscous. Head shining, blue, the face and

* *Magrettia*, I find, is preoccupied in Orthoptera. I now propose the name of *Xenojoppa* for it.

clypeus sparsely punctured; sparsely covered with short fuscous hair; the inner orbits from near the base to opposite the lower ocellus, a mark on the side of the clypeus, the base of the mandibles broadly, and the palpi yellow. The clypeus not separated from the face by a suture, nor foveate. Mesonotum coarsely reticulated; the sides depressed, crenulated; there is a smooth furrow on either side from nearly opposite the base of the tegulae to the apex. Scutellum smooth, impunctate, its sides keeled; at its base is a large, deep, smooth, slightly curved depression; from shortly behind the middle to near the apex it is pallid yellow. The areola is longer than broad; becomes slightly and gradually wider to beyond the middle, then becomes gradually narrower; its base is rough; in the middle at the apex is a stout longitudinal keel; the posterior median area is stoutly transversely striolated; the spiracular area behind the spiracles is finely rugose, in front of them stoutly transversely striolated. The base of the pronotum has a few curved striae; above, at the apex, it is irregularly stoutly striolated; the lower side is stoutly obliquely striolated; the upper part of the mesopleurae and the apex with a few stout irregular keels; the rest closely and coarsely punctured, almost reticulated; the upper part of the metapleurae at the base coarsely aciculated; the middle at the base with fine stout curved keels; the rest closely and stoutly reticulated. Mesosternum closely punctured; the furrow large, wide and triangular at the apex. Legs ferruginous, the fore coxae paler at the base; the apex of the hinder tibiae and the tarsi black; the latter spinose beneath. The areolet is narrowed at the top, but the nervures do not touch; the recurrent nervure is received almost in the middle of the areolet. The petiole is ferruginous, yellow at the apex, carinate down the middle, and striated on the base of the dilated part; the second, third, and fourth segments are blue; the second and third closely punctured, the others smooth; the second acutely striated in the middle between the gastrocelli, which are striated at the base, their apex smooth and brownish; the apical segments are for the greater part yellowish.

HOLCOJOPPA, gen. nov.

Abdominal segments strongly constricted at the base, and clearly separated; the constrictions deep and closely longitudinally striated; the segments longitudinally striated, and broadly depressed laterally; the petiole raised in the middle, and bearing there two longitudinal keels; there are seven segments; the last is small and has stout cerci. Scutellum conical, large, distinctly raised above the level of the mesonotum; its basal slope is steep, its apical long and gradually sloped from the top to the apex. Post-scutellum smooth, bifoveate at the base, and with a deep depression on either side. The median segment is widely and deeply obliquely depressed at the base; the areola is represented by a smooth tubercle; there are three large areae on the apical slope; the spiracular area being also defined; there are no spines. Wings larger than usual; the apex of the abdomen does not reach to the areolet when folded against it; the areolet is large, five-angled, narrowed above; the two transverse cubital nervures are roundly curved; the transverse median nervure is received beyond the

transverse basal; the wings are yellowish hyaline, with the apices of both infuscated. The hinder legs are much longer than the four anterior; they are longer than the body; the apex of the hinder femora reaches to the apex of the fourth segment; the tarsi are spinose. The head has the vertex depressed between the eyes; it is sharply obliquely narrowed behind them; the face is longish; the malar space is large; the labrum projects. The transverse median nervure is almost interstitial; there is the stump of a nervure on the disco-cubital nervure; the transverse cubital nervure in the hind wing is broken far below the middle; the lower part of the metapleuræ is bounded by a keel, and there is a stouter curved keel below the middle; the gastrocœli are deep, narrow; the ventral keel extends to the end of the third segment; the antennæ in the male are slightly serrate.

A distinct genus, easily known by the constricted segments of the abdomen separated by deep furrows.

HOLCOJOPPA FLAVIPENNIS, sp. nov.

Lutea, flagello antennarum tarsisque posticis nigris; alis flavo-hyalinis, apice nigris, stigmatibus testaceo. ♂. Long. 14–15 mm.

Hab. Khasia (coll. Rothney).

Uniformly rufo-luteous; the inner orbits, the fore legs in front, the three divisions of the pleuræ behind, and the petiole broadly at the base, more or less yellowish. The scape of the antennæ rufous, punctured, thickly covered with short fuscous hair; the base of the flagellum dull rufous, the rest blackish. Head somewhat triangular behind, being narrowed to a rounded point in the middle; the face roundly projecting in the middle, and obscurely punctured; the sides flat, yellowish, impunctate; the clypeus obscurely punctured; the apex obliquely depressed; the mandibles pale yellowish; the teeth black; the palpi rufo-testaceous. Thorax ferruginous above; the sides paler, having a yellowish tinge; thickly covered with short hair, dark on the mesonotum, paler on the pleuræ. The roundly pyramidal scutellum shining, rather thickly covered with longish fuscous hairs, and bearing all over large deep, not very widely separated, punctures; the post-scutellum small, not very distinct; the space on either side of it depressed, wide, smooth, and having a few stout irregular keels. The base of the median segment widely separated from the post-scutellum, raised to nearly the level of the top of the scutellum; without any defined area, but with two stout straight keels going down the centre, which is coarsely irregularly transversely striolated; the sides rugosely irregularly reticulated. Propleuræ closely punctured above, yellowish and impunctate below; the upper half of the mesopleuræ shining, impunctate; the middle with a wide shallow longitudinal depression down the centre; the lower half closely punctured, and of a yellowish hue at the base and apex; the metapleuræ with a wide oblique depression on the base at the top; over the sternum is a wide shallow furrow, bearing stout widely separated, slightly oblique keels. Legs rufo-testaceous; the apex of the hinder tibiæ and the tarsi blackish; the fore legs of a paler, more yellowish hue, and thickly covered with short white hair; the hair on the hinder tibiæ and tarsi blacker.

Wings yellowish hyaline, the apices blackish; the areolet narrowed at the top; the first cubital nervure slightly, the second distinctly, roundly curved, the two almost uniting at the top; the recurrent nervure is received almost in the middle. The basal half of the petiole greatly narrowed, yellowish; the apical with two stout keels down the middle, and coarsely punctured; the other segments coarsely rugosely punctured, striolated at the base down the centre; all the segments separated by a deep moderately wide depression; the ventral surface whitish.

CRYPTINA.

OSPRYNCHOTUS PERONATUS, sp. nov.

Niger, tegulis, apice scutelli, post-scutello, maculis 3 metanoti, ore orbitisque oculorum flavis; pedibus flavis; coxis, trochanteribus, femorum posticorum dimidio apicali apiceque tibiæ posticarum nigris. ♀ et ♂. Long. 16, terebra 6 mm.

Hab. Khasia (coll. Rothney).

Antennæ black; the tenth to fifteenth joints white, stout; the scape yellow beneath, and covered with short white hair. Head black; the face, except for a conical mark in the middle under the antennæ, the clypeus, labrum, the inner orbits above, and the outer more broadly below, and the palpi, yellow; the clypeus is edged with black at the sides and apex; the mandibles are entirely black. The face is closely, the clypeus more coarsely and not so closely punctured. Vertex strongly punctured, and with a few oblique striæ below the ocelli; the front depressed, at the sides very smooth and shining. Thorax black; a broad line on either side of the base above, the tegulæ, scutellum, except at the base, the post-scutellum, the scutellar keels, the apex of the median segment at the base and sides, the base more narrowly than the sides, where the yellow is dilated broadly outwardly, and a somewhat oval mark immediately under the hind wings, yellow. Mesonotum closely and strongly punctured, thickly covered with short white hair; its middle lobe is distinctly raised at the base; the scutellum shining and thickly covered with long white hair, and sparsely punctured; the punctures are large, round, and shallow; the post-scutellum is almost impunctate; its base is deeply bifoveate; the depression at the sides is not striated, and is covered with long white hair. The median segment, at the base behind the transverse keel, is closely punctured; the punctuation is stronger towards the apex, in the middle of which is a stout short semicircular keel; in front of the keel the segment is coarsely punctured, rugosely so at the apex, which has a slight oblique slope; its sides and top are bordered by a stout keel; the black mark in the middle is rounded at the base, transverse at the apex, and twice longer than broad. Pro- and meso-pleuræ closely punctured; the lower part of the former with some stout longitudinal keels at the apex; the metapleuræ more strongly punctured; the punctures run into reticulations, and are stronger on the lower side; over the hinder coxæ is a large yellow mark, twice longer than broad, and rounded and narrowed at the top. Wings hyaline, the apex smoky; the stigma and nervures black; the areolet is a little longer than wide, slightly narrower at the top than at the bottom; the recurrent nervure is received shortly beyond the middle; the second transverse cubital

nervure is bullated on the lower side, but not strongly. Legs fulvous; all the coxæ and trochanters, almost the apical half of the hinder femora, and the apical third of the posterior tibiæ, black; the hinder tarsi have a more yellowish paler hue, and are black at the base. Abdomen black and shining: all the segments are banded with yellow at the apex; the ventral surface, except the petiole, pale yellow.

This is an *Osprynchotus*, Spin., sec. Ashmead, non Kriechbaumer, which equals *Linoceras*, Tasch. The genus is new for the Indian fauna.

(To be continued.)

NOTES ON NEUROPTERA OF OXON AND BERKS.

By W. J. LUCAS, B.A., F.E.S.

RECENTLY I received for inspection from Messrs. W. Holland and A. H. Hamm a box of Neuroptera (other than Odonata) collected in Berks and Oxon. Insects of this order are so seldom recorded that the list will probably prove of interest to those who are working at them. I have to thank Mr. C. A. Briggs for assisting very greatly in naming the specimens, especially the more obscure ones.

OXON.

EPHEMERIDIA.—*Ephemera vulgata*, Thames side near Binsey, and canal side north of Oxford. *Cloëon rufulum*, Oxford. *Centroptilum luteolum*, Godstow and Oxford.

PLANIPENNIA.—*Sialis lutaria*, canal side north of Oxford, and Thames side at Binsey. *Raphidia xanthostigma*, Shotover Hill (May 28th). *Sisyra fuscata*, Thames side at Binsey (May 29th). *Chrysopa flava*, University Park, Oxford. *C. vulgaris*, taken in the Museum, Oxford (Mar. 28th). *C. perla*, near Oxford. *Panorpa germanica*, Stow Wood.

TRICHOPTERA.—*Phryganea striata*, Charlbury, Wychwood Forest. *Limnophilus lunatus*, Oxford. *Anabolia nervosa*, Oxford. *Notodobia ciliaris*, canal side north of Oxford (May 26th); not a common species. *Leptocerus cinereus*, Thames side at Binsey. *Mystacides nigra* (McLach., Trich. Eur.), canal side north of Oxford. *M. azurea* (McLach., Trich. Eur.), Thames side at Binsey.

BERKS.

EPHEMERIDIA.—*Ephemera vulgata*, Thames side above Godstow, and Reading. *E. danica*, Reading. *Leptophlebia marginata*, Thames side above Godstow (June 1st), and Wellington College, near Reading (April 22nd.) *Centroptilum pennulatum*, Thames side near Oxford (May 27th). *Ecdyurus volitans*, Thames side above Godstow (June 1st, 1901); an interesting capture.

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[No. 471.

VISIT OF THE ENTOMOLOGICAL SOCIETY OF LONDON TO OXFORD.

(PLATE II.)

THE members of the Council and Fellows of the Entomological Society, who had accepted Professor E. B. Poulton's kind invitation to visit Oxford, assembled in the Hope Department of Zoology in the Museum on Saturday, July 5th. After a pleasant afternoon spent in inspecting the collections, now in process of rearrangement, an adjournment was made to Jesus College, where Professor Poulton entertained the following members of the University and Fellows of the Society: the Vice-Chancellor, Mr. D. B. Monro, Provost of Oriel; Mr. A. B. Poynton, Senior Proctor; Mr. A. J. Evans, Keeper of the Ashmolean Museum; Professor Dixey, Dr. David Sharp, Mr. R. McLachlan, Professor Meldola, the Rev. F. D. Morice, Colonel Swinhoe, Mr. A. J. Chitty, Mr. M. Jacoby, Mr. Hamilton Druce, Mr. H. St. J. K. Donisthorpe, Mr. Guy Marshall, and Mr. H. Rowland-Brown. While of the uninvited but appropriate (!) guests who put in an appearance was the rare *Reduvius personatus*, Linn., taken by Professor Poulton on the college wall, crawling up toward the electric light. On Sunday tea was served in one of the meadows that border the Cherwell, after a pleasant pull on the river, now in all its summer freshness, and the haunt of innumerable Odonata, of which *Calopteryx splendens* and *Aeschna cyanea* were perhaps the commonest and most admired. Later in the

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA (ICHNEUMONIDÆ, CHRYSIDIDÆ, FOSSORES, AND APIDÆ).

By P. CAMERON.

(Continued from p. 183.)

CHRYSIDIDÆ.

CHRYSIS (TETRACHRYSIS) LEPCHA, sp. nov.

Viridis, supra late cæruleo; antennis tarsisque nigris; alis fusco-violaceis. Long. 14 mm. ♀.

Hab. Khasia (coll. Rothney).

Antennæ black; the basal three joints bluish above; the base of the scape broadly green; the flagellum, except at the base, covered with a pale down. Head green, tinged with blue; the front brassy in the middle; the ocellar region purple; the apex of the clypeus and the mandibles, except at the base, black. The vertex coarsely and deeply punctured, the punctures larger and deeper at the sides near the eyes; the front closely punctured in the middle; the sides much more strongly punctured; the eyes are bordered by a distinctly defined row of punctures; in the centre of the front above is a shallow depression; the orbits behind are bordered by a sharp distinct keel. Thorax above dark green; the base and a transverse band on the pronotum, and the centre of the meso- and metanotum, broadly purple; the pronotum coarsely and closely rugosely punctured, except a smooth impunctate space in the centre at the base, this space being broadest behind; the mesonotum and the scutellum have the punctures larger and deeper, especially in the middle; the middle of the metanotum is punctured like the scutellum, its sides near the wings depressed; the projecting lateral angles are coarsely punctured at the base; the outer sides at the apex have two slight depressions. The upper part of the propleuræ coarsely punctured; the middle is depressed, and bears a few irregular striæ; below this depression is a deeper narrower longitudinal one; mesopleuræ deeply and largely punctured, the punctures running into reticulations. Mesosternum brassy, closely punctured behind; the sides and middle with stronger punctures. The metapleuræ are irregularly longitudinally striated, the striæ being stronger and more widely separated at the base. Legs green, largely mixed with blue; the tarsi black. Wings fuscous, paler towards the apex; the nervures deep black. The basal segment of the abdomen is bluish green; the sides with a distinct brassy tinge; the base and sides are strongly punctured; the centre has the punctures more widely separated and smaller; between the larger punctures are smaller ones. The second segment is closely punctured, the punctuation on the sides being closer and stronger than on the middle, and they have a brassy tint; the third segment is finely and sparsely punctured at the base, the rest of it much more strongly and closely punctured; the apical depression is wide and deep; the foveæ are also deep; the four teeth are large; the outer broader than the inner, and somewhat triangular.

This is considerably larger than any of the other species of this section.

MUTILLIDÆ.

MUTILLA CASIPHIA, sp. nov.

Black ; the basal three segments of the abdomen red ; the scutellum with a narrow deep furrow down the centre ; the area on the median segment reaches to the apex of the truncation, and becomes gradually narrowed ; wings violaceous, paler at the base. ♂. Long. 18 mm.

Hab. Borneo.

Antennæ short, the flagellum opaque ; the third joint slightly longer than the fourth, which is of the length of the fifth. Head narrower than the thorax, densely covered with long griseous hair ; on the cheeks the hair is longer, denser, and bright silvery in tint. Front and vertex coarsely rugosely punctured ; the face and clypeus smooth and shining ; on the centre, above the clypeus, is a conical projection, the narrow part being above ; the clypeus is depressed below it, and foveate on either side of its apex. Mandibles broad ; the apical tooth broad, broadly rounded at the apex, the subapical tooth transverse ; at the base, behind the middle, is a large blunt tooth, which projects downwards ; the base is thickly covered with grey pile, and with silvery hair ; the palpi are black. Pro- and mesothorax closely and strongly punctured ; the mesopleuræ and sternum thickly covered with silvery pubescence ; the mesonotum thickly with longish blackish hair ; the scutellum and post-scutellum with long black hair ; there are two furrows on the apical two-thirds of the mesonotum, a smooth flat keel between them, and a shorter one on either side. Scutellum roundly convex, rugosely punctured ; there is a furrow in the centre of the apical two-thirds, bordered by flat smooth keels, and there is a flat smooth keel at its base. Median segment coarsely and regularly reticulated ; there is a central area which reaches to the top of the truncation ; it is wide at the base, and becomes gradually narrowed to the apex, which is not quite one-half the width of the base. Propleuræ closely rugosely punctured, the apex smooth, with some stout striæ behind. Legs thickly covered with white hair ; the spurs pale. Wings deep fusco-violaceous, paler at the base ; the pale space on the hinder wings more extended than on the front ; the third cubital cellule at the top and bottom is distinctly shorter than the second ; the apex of the radius is obliquely bent upwards, is straight, and at a different angle from the lower part ; the first transverse cubital nervure is rounded, and has an oblique slope ; the second is not oblique, and has a broad rounded curve ; the third is sharply angled in the middle ; both the recurrent nervures are received shortly, but distinctly beyond the middle. The apical half of the first and the whole of the second and third segments are rufous ; the basal five segments are covered with white, the apical more thickly with longer black hair ; the ventral keel is stout, does not extend beyond the middle, and is roundly but not deeply curved below. The pygidium has an elongated bare space, narrowed at the top and bottom in the centre ; the sides on the basal two-thirds are covered with long black hair ; the apex is sparsely but not strongly punctured ; the hypopygium is flat, covered with long black hair, and not keeled.

MUTILLA AESYCA, sp. nov.

Black; the head and thorax red; the front femora and the basal three-fourths of the four posterior rufous; the lower part of the petiole rufous; a quadrate spot on the centre of the petiole, a broad band on the apex of the third segment, widest in the middle, the apex of the penultimate, and the sides of the last segment covered with silvery pubescence. ♀. Long. 11 mm.

Hab. Borneo.

Antennæ entirely black; the third joint more than double the length of the fourth; the fourth and fifth equal in length. Front and vertex rugosely punctured, and sparsely covered with longish black hair; the front indistinctly keeled down the centre. Antennal tubercles dark rufous, smooth. Mandibles black, rufous at the apex; their base punctured; their apical tooth long, rounded at the apex; the hair on their base long and pale fulvous. The head is broader than long, but is largely developed behind the eyes; the occiput is roundly incised, not transverse or convex. Thorax twice longer than broad; the base and apex almost transverse, with their sides rounded; the outer edge of the mesonotum is irregular; the sides of the apex above bear four stout teeth. The top of the median segment has a rounded slope; it is sparsely punctured, and is keeled down the centre. Pleuræ smooth and shining; the upper part projects. Legs black; the front femora entirely, and the four posterior, except at the apex, rufous; they are covered with long white hair; the tibial spines apparently are few in number, and are black; the spurs are pale; the tarsal spines are rufous; their basal joints are thickly covered with pale pubescence. The abdomen deep black; there is a square mark of silvery pubescence on apex of the petiole, in the middle there is a broad band of similar pubescence, broadest in the middle, on the apex of the second segment; a broader one on the penultimate, and the sides of the pygidium are thickly covered with silvery pubescence; the last segment is punctured at the base; the apical half is smooth, shining, and piceous. The keel on the basal ventral segment does not project much, and is rounded at the base and apex; the second segment is smooth and depressed on the basal half, and is there indistinctly keeled in the middle; the epipygium is closely punctured, and is distinctly bordered laterally. On the side of the second segment is an elongated patch of dark rufous pubescence.

(To be continued.)

A LIST OF TORTRICES TAKEN IN SOUTH ESSEX
BETWEEN 1885 AND 1901.

By A. THURNALL.

(Concluded from p. 193.)

Catoptria wimmerana, Wilk.—Strictly confined to the salt marshes along the Thames, and on the coast. Wakering, near Shoeburyness, Thames Haven, Fobbing, and Benfleet. Larva in September and October spun up in the tops of *Artemisia maritima*.

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[No. 472.

ON THE LARVA OF *LIPHYRA BRASSOLIS*, WESTW.

BY DR. T. A. CHAPMAN, F.E.S.

Two of the larvæ of *Liphyra brassolis*, sent to the Editor by Mr. Dodd (*ante*, p. 154), are apparently a full-grown one and another of very much smaller size. These two are so very different that, if they came from different places with different histories, one would never suspect their being at all related.

The smaller one is 6 mm. long and 2.3 mm. wide, very flat, reminding one very much of the larva of *Camponiscus luridiventris* (a common alder sawfly) in its general size and form, or, for that matter, of an ordinary *Lycæna* larva, if we make it first colourless, then nearly flat instead of raised along the dorsal line, and, thirdly, if we somewhat exaggerate the rounded lateral projections of the segmental margins. The segmental divisions as seen dorsally are twelve, of which the first and last, of course, are terminal. White and soft as this larva looks, the margins nevertheless have something of the appearance and structure of the full-grown larva, having a strong chitinous binding, divided into small cells. The prothorax has a slight angle on either side, allowing the front between the two angles to be a transverse straight line; beneath it is the head, placed quite centrally beneath it, but quite free from it and capable of much movement, including probably protrusion in front. The last segment, which is seen dorsally, is the ninth abdominal, and beneath this is the tenth, carrying the anal prolegs; the true segmental divisions are very plain on a ventral view of the larva. The prothoracic spiracle lies in the fold between the pro- and mesothorax, but the abdominal spiracles are each on about the middle of its own segment, placed dorsally, about half-way from the middle line to the margin. I do not detect anywhere any hairs or tubercles.

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA (ICHNEUMONIDÆ, CHRYSIDIDÆ, FOSSORES, AND APIDÆ).

By P. CAMERON.

(Continued from p. 208.)

SCOLIIDÆ.

TIPHIA SPINOSA, sp. n.

Nigra, alis flavo-hyalinis, nervis fuscis, stigmatibus nigro; metanoto striolato; petiolo subtus spinoso; mandibulis palpisque nigris. ♂. Long. 12 mm.

Hab. Khasia Hills (coll. Rothney).

Antennæ short, stout; the scape closely and distinctly punctured, sparsely covered with fuscous hair; the flagellum covered with a pale microscopic down. Front closely, strongly, and uniformly punctured; the vertex has the punctures more irregularly distributed, larger and more widely separated; both are thickly covered with white hair. Clypeus closely punctured, and thickly covered with white hair; in the middle is a slight incision, Mandibles black, shining; the base closely punctured, thickly covered with silvery hair; the palpi dark testaceous. Pronotum closely and strongly punctured, its apex smooth; behind the basal keel obscurely longitudinally striated. Mesonotum with large deep moderately widely separated punctures; the scutellums are similarly punctured. On the median segment are three keels; the central is straight, the outer more irregular; the space between them is strongly shagreened, and irregularly transversely striated; the space outside them is irregularly reticulated and striated; on the apex are three short stout keels, the inner of which does not reach to the transverse apical keel; the outer converge at the base. The apex is coarsely shagreened, irregularly reticulated, and round the edges striated; the keel bounding the top is stouter than usual; on the sides near the middle, extending half on to the notum and half on to the pleuræ, is a large deep ovate depression with raised sides; inside it is shagreened. Propleuræ closely striated; the top punctured, the apex smooth; mesopleuræ strongly but not closely punctured; metapleuræ strongly striated; the base largely and deeply excavated on the upper part, the lower part strongly shagreened. Mesosternum rather strongly but not closely punctured, thickly covered with a pale pubescence, and with long fuscous hair; the middle has a broad rounded furrow. Legs thickly covered with silvery pubescence; the spines rufous. The radius has an oblique slope at the base; the second transverse cubital nervure has a rounded outwardly curved slope; the first recurrent nervure is rounded outwardly at the top, and is received almost in the middle of the nervure. The petiole is strongly but not closely punctured at the apex; the base of the second segment has a narrow strongly and closely striated depression; the other segments are punctured, the punctures becoming stronger and closer towards the apex; the apical segments are thickly covered with pale pubescence. The base of the first ventral segment bears a stout

curved, somewhat triangular, spine; the apical part of the segment is strongly shagreened; on the sides are two or three large irregular foveæ; the apex is furrowed and stoutly longitudinally striated. The pygidium is coarsely punctured; the epipygium is coarsely punctured, with a smooth shining band in the middle; the ventral segments are fringed with bright golden hair.

A species easily known by the tooth on the base of the petiole, by the stoutly transversely striated middle of metanotum, and by the stoutly striated base of the second abdominal segment.

TIPHIA CURVINERVIS, sp. nov.

Long. 14 mm. ♀.

Hab. Khasia Hills (coll. Rothney).

Agrees closely in form and coloration with *T. fulvinervis*, but is smaller; may readily be separated from it by the second transverse cubital nervure being roundly curved at the top, the whole nervure being of the shape of a reaping-hook.

Scape of antennæ thickly covered with long pale fulvous hair; the flagellum with a pale pile, its last joints rufous. Front and vertex strongly and deeply but not very closely punctured, and sparsely covered with long pale fulvous hair; the keel over the antennæ is large, but not stout, and is bluntly conical. Face and clypeus closely and somewhat strongly punctured; the apex and the middle of the clypeus smooth. Mandibles rufous in the middle, fringed below with long pale golden hair. The basal slope of the pronotum is closely and distinctly punctured; the basal half of the upper part bears large deep punctures; the apical is smooth; the whole is thickly covered with long white hair. Mesonotum bearing large deep scattered punctures, the sides impunctate in the middle. Scutellum with some large deep punctures on the apex; the post-scutellum similarly punctured at the base. Median segment coarsely shagreened, more strongly between the keels; of these there are three; the outer are curved outwardly at the base; the inner reaches near to the apex; the oblique slope is strongly shagreened, is thickly covered with a short white pile, and is irregularly punctured and striated round the edges. Propleuræ longitudinally striated; above the striæ are thinner, more irregular, and are intermixed with punctures. Mesopleuræ rugosely punctured, thickly covered with white pubescence. Metapleuræ closely striated, except at the base, which is broadly shagreened. Basal half of the mesonotum strongly punctured; the apical smooth; the apical area narrowed at the base, the narrowed part deeply furrowed; there is a triangular depression in the middle at the base; the sides have a few punctures. Legs thickly covered with glistening silvery hairs; the spines are rufous. Wings fulvo-hyaline, the hinder pair paler at the apex and behind; the nervures and stigma are fulvous. The base of the radius is straight, and has an oblique slope; the upper half of the second transverse cubital nervure has a round outward curve; the lower half is almost straight, oblique; the first transverse cubital nervure has a rounded outward curve at the top; the second has an oblique slope, and is received near the base of the apical third.

Abdomen shining, sparsely punctured; the apical segments thickly covered with long white hair; the basal half of the pygidium is strongly punctured, and is thickly covered with long pale fulvous hair; the apex is smooth, rufous, and is keeled down the middle; the epipygium is closely and finely punctured.

TIPHIA BICARINATA, sp. nov.

Nigra, punctata, longe hirsuta; alis fusco-violaceis; metanoto bicarinato. ♂. Long. 16 mm.

Hab. Japan (George Lewis).

This species is larger than any of the recorded Japanese species, from which it differs (as it does also from the Indian) in having only two keels on the median segment.

Scape of the antennæ shining, bearing large deep punctures and long pale fulvous hairs; the basal three joints of the flagellum shining, thickly covered with glistening fulvous hair; the rest of the flagellum opaque, covered with a dull pale down. Front and vertex closely and strongly punctured; there is a smooth space on the outer side of the hinder ocelli, which is continued across behind them by a space having only a few small punctures; the part immediately behind the ocelli is strongly punctured. Front thickly covered with long, the vertex with shorter, fuscous hair; in front of the ocelli there is a smooth space—somewhat dagger-shaped in form—broad at the base, narrowed and sharply pointed at the apex. Clypeus smooth and shining in the middle; the base and sides shagreened. Mandibles broadly piceous in the middle; the lower side fringed with long pale golden hair at the base. The pronotum on the perpendicular base closely punctured, except on the lower side in the middle; the upper part coarsely punctured, except a broad somewhat curved space at the base. The middle of the mesonotum is slightly depressed, closely and coarsely punctured, the sides are bordered by a row of large deep punctures, closely united together, followed inwardly by a row of larger ones, fewer in number, and more widely separated; inside of these again is a smooth space, with a large puncture near its centre. Scutellum closely punctured at base and apex, the middle smooth. Median segment shagreened, opaque, finely longitudinally aciculated at the apex; in the middle are two stout keels, which hardly converge towards the centre. The base of the propleuræ bears moderately large punctures, closely united together at the extreme base, widely separated and scattered over the rest; the lower half is closely obliquely striated, the striæ somewhat coarser towards the apex; the whole shining. Mesopleuræ strongly punctured, opaque, thickly covered with long white hair. In the middle of the metapleuræ is a shallow curved furrow; the upper part at the base strongly obliquely striated; the lower smooth, very finely striated; the apex is also finely striated. Legs black, the projection on the apices of the femora piceous; the coxæ, trochanters, and femora smooth, sparsely covered with soft white hair; the fore tibiæ slightly, the four posterior very thickly, covered with white hair; coarsely punctured on the outer, smooth on the inner side; the outer row of broad spines pale and fulvous; the calcaria testaceous. The petiole shining, smooth, covered with long fuscous hair, more sparsely

towards the apex; the second and third segments sparsely and shallowly punctured: the fourth much more coarsely and closely; the fifth rugosely punctured; the pygidium coarsely longitudinally striated, intermixed with some coarse punctures; its apex finely, closely, longitudinally striated. The basal ventral segment punctured at the base; the second coarsely, the others more finely and closely punctured; the second smooth; the third and fourth aciculated at the base; the last rugosely punctured. Wings fusco-hyaline; the nervures and stigma deep black.

POMPILIDÆ.

SALIUS HIMALAYENSIS, sp. nov.

Niger, capite thoraceque dense aureo pilosis; pleuris brunneis; apice abdominis late rufis; pedibus rufis, coxis trochanteribusque brunneis; alis flavo-hyalinis. ♀. Long. 15 mm.

Hab. Khasia (coll. Rothney).

A species closely related to *S. flavus*. The differences between the two may be best shown in synoptical form:—

Second cubital cellule at the top distinctly shorter than the first; the pleuræ and median segment black; the femora broadly black at the base	<i>flavus</i> .
Second cubital cellule equal in length to the first; the pleuræ and median segment brownish; the femora without black	<i>himalayensis</i> .

Antennæ pale fulvous, the scape darker in tint. Head dark ferruginous; the vertex, front, and face densely covered with golden pubescence, the face bearing also some long rufous hairs. The apex of the clypeus is broadly rounded, closely punctured, except on the extreme apex. Mandibles dark ferruginous, the teeth black, the extreme base covered with depressed golden pubescence. The greater part of the prothorax and the mesonotum densely covered with depressed golden pile; scutellum minutely punctured, and covered with rufous hair. Median segment irregularly transversely striated, sparsely covered with black hair; the base and apex black; the middle with a wide shallow furrow. The propleuræ are of a brighter colour than the meso-; the metapleuræ darker; the mesopleural furrow is narrow; the metapleuræ irregularly obliquely striated. Legs ferruginous; the coxæ blackish behind; the tarsi are paler; the hinder femora darker. Wings yellowish hyaline; the apex slightly infuscated; the first and second cubital cellules are equal in length on the top. Abdomen black, shining; the apical two segments ferruginous, and thickly covered with long rufous hairs.

POMPILUS SETABIS, sp. nov.

Black, the under side of the scape white, of the basal joints of the flagellum brown; the apex of the median segment densely covered with white pubescence; wings hyaline, the apex smoky; the third cubital cellule petiolated. ♂. Long. 8 mm.

Hab. Borneo.

Antennæ stout; the apical joints of the flagellum roundly dilated; the basal three joints brownish; the scape for the greater part white

beneath. Head densely covered with silvery pubescence, thickest on the front and clypeus. Eyes long, slightly converging above; the ocelli are in a curve; the hinder are separated from each other by a slightly greater distance than they are from the eyes. Clypeus at the apex transverse in the middle; the labrum large, the palpi black. Thorax densely pruinose; the apical slope of the median segment is densely covered with woolly hair, silvery white in colour. Legs densely pruinose; the tibial and tarsal spines long and black; the calcaria white; the longer of the hinder pair is two-thirds of the length of the metatarsus. Wings hyaline; the apex of both wings infuscated; the radial cellule short, wide; the third cubital cellule is petiolated; below it is as long as the second; the first transverse cubital nervure is broadly and roundly curved; the first recurrent nervure is received close to the transverse cubital; the second shortly beyond the middle of the cellule; the accessory nervure in the hind wing is received behind the cubital. Abdomen sessile; the basal segments densely covered with silvery pubescence; the apical segment bluntly pointed.

(To be continued.)

NOTES AND OBSERVATIONS.

ARE COCOONS WATERPROOF?—The question is suggested by my experience of the disastrous rain-storm at Ipswich on July 1st. I had a chrysalis of *Odonestis potatoaria* in the cocoon on a stem in a tall glass jar, which stood in a sheltered position near a wall. To my surprise next morning I found the jar was filled with water to the depth of five inches (a fact which indicates the greatness of the deluge), and I concluded the chrysalis was drowned, and threw it aside. Two days later, when it was dry, curiosity caused me to open the cocoon, and I found the pupa alive and kicking! Considering that it must have been nearly twenty hours under water, I thought the incident worthy of record, and should be interested to hear of similar experiences. CLAUDE A. PYETT; 28, Waterloo Road, Ipswich.

ICHNEUMON IN *ZYGÆNA TRIFOLII*.—In July, 1901 (when in search of *Aporia cratagi*), I came across a fresh locality for *Z. trifolii*, and the examples appeared to be of a more blotched character than those I usually get. This year I went to the spot in June in order to collect a number of cocoons, and to my surprise I found that there were two distinct sizes, one about one-third the size of the other. In about a couple of hours I collected 400 cocoons, and after I reached home I separated the two sizes, and found there were 275 small ones and 125 large ones. Several small larvæ (typical *trifolii*) spun up while in my possession, and were amongst the 275. I thought there must be two species, and anxiously waited for their emergence. Alas! I was disappointed, for the large cocoons produced very normal *Z. trifolii*, and the smaller ones were all ichneumonid, with three exceptions, which produced very dwarfed *trifolii*. The percentage of ichneumonid cocoons (68·75 per cent.) seems exceptionally great, for in another place I

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[No. 473.

MERIANIA ARGENTIFERA, MEIG., A TACHINID NEW TO BRITAIN.

BY COLBRAN J. WAINWRIGHT, F.E.S.

(PLATE III.)

AMONGST a few Diptera sent to me for identification by Mr. W. J. Lucas in the early part of this year, I found a specimen of this species, which, so far as I know, is quite new to the British list. Novelties are by no means uncommon in this comparatively little-known family; at the same time, I was interested in recognizing such a well-characterized and handsome species, and, as Mr. Lucas has prepared very excellent drawings of the fly, and of the side view of its head, some account of it may be generally interesting.

The Tachinidæ form a very large group of the *Calyptrate Muscidæ*, nearly allied to the common "blue-bottles," and including the very abundant and familiar Sarcophagidæ, or flesh-flies. Many of the species are parasitic upon other insects, and in consequence some of them have made themselves unpleasantly known to breeders of Lepidoptera, who have found them in their breeding-cages in place of the expected and more desired butterfly or moth.

We have in this country a quite uncertain number of species, probably about three hundred, and possibly many more. Owing to the fact that they are mostly very much alike, and the specific distinctions minute and often indefinite, they have received very little attention, and consequently are little known; and a number of species undoubtedly remain undetected and unidentified. Moreover, those that are known are often little understood—their limits indeterminate and their nomenclature in a muddle. New names and new species, therefore, are more nearly the rule than

of a thicker basal segment, and a very slender "seta," either exarticulate, or partly or altogether divided into numerous segments. Tegula almost always present. Empodium coalesced with the claws throughout a shorter distance, and at most through two-thirds of the length of the claws; free margin a little emarginate or simple. Second pair of abdominal spiracles dorsal, somewhat remote from the lateral margin.

4. Fulgoridæ. 0

(To be continued.)

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA (ICHNEUMONIDÆ, CHRYSIDIDÆ, FOSSORES, AND APIDÆ).

By P. CAMERON.

(Continued from p. 241.)

SPHEGIDÆ.

AMPULEX LONGICOLLIS, sp. nov.

Cærulea, antennis pedibusque nigris, femoribus posticis dimidio basali rufo; alis fusco-violaceis. ♀. Long. 16-18 mm.

Hab. Khasia (coll. Rothney).

Antennæ black, sparsely covered with black hairs; the third joint twice the length of the fourth. Head dark purple, the cheeks and oral regions of a brighter tint; the front and vertex coarsely rugosely punctured; the former with a keel down the apical two-thirds. Clypeus aciculated, stoutly keeled down the middle, and sparsely haired; the apex rounded; the sides armed with an oblique longish tooth. Mandibles black, keeled down the middle and at the sides. The front and vertex are sparsely haired. Thorax blue, mixed with purple and green; the median segment for the greater part indigo-blue. Prothorax smooth, aciculated, and with a few scattered punctures; its base distinctly separated, and the apex is depressed; the apical part narrowed towards the apex and transverse at the base; the prothorax is if anything longer than the mesothorax, which bears large deep scattered punctures, as do also the scutellum and post-scutellum; these are sparsely covered with long black hair. The central keel on the median segment is straight, and reaches shortly beyond the middle; the second keel is of similar length; the outer longer, reaching to the apex; the segment is stoutly transversely striated, the striæ becoming more curved and irregular at the apex of the keels; the middle part at the apex is smooth; the apex of the segment is perpendicular, and ends at the sides above in stout teeth. Mesopleuræ coarsely irregularly punctured; the metapleuræ with a longitudinal keel below the keel which ends in the tooth; the space between the two bearing, near the middle and apex, some straight keels; the base below is aciculated, the rest reticulated. Mesonotum bearing large deep round punctures; its base smooth; the middle furrow deep.

Legs blue; the tarsi black; the apex of the hinder femora and the tibiæ black; the basal half of the hinder femora red. Wings fuscous-violaceous, more hyaline in the discoidal cellules. Abdomen blue, shining; the basal half of the petiole very narrow; the apical half abruptly dilated, and distinctly narrower than and separated from the second segment, which is constricted at the base.

AMPULEX TRIGONA, sp. nov.

Cærulea; antennis tarsisque nigris, femoribus posterioribus rufis; alis fusco-violaceis, nervis fuscis. ♀. Long. 21 mm.

Hab. Khasia (coll. Rothney).

Antennæ stout, shorter than the thorax, black, covered with a pale down; the third joint about one-third longer than the fourth. Head sharply obliquely narrowed behind the eyes; the vertex has a wide shallow furrow in the middle behind, and is sparsely punctured laterally; the front has some elongate foveæ or punctures on the sides; in the centre over the antennæ are some semicircular keels, and one also encloses the front ocellus. The antennal keels are stout, slightly curved, and narrowed at the top; in the middle immediately above them is a distinct black tubercle. The clypeus is sharply keeled throughout in the centre; the apex in the middle roundly and broadly projects, and has on either side a small rounded tooth. The eyes distinctly converge above, and are there separated by about the length of the third antennal joint. Pronotum slightly longer than broad, of almost equal width; in the basal half above is, in the middle, a distinct keel, the space on either side of which is slightly depressed. Mesonotum smooth, the furrows deep; the space between them darker, of a more violaceous hue than the sides. The median segment is transversely striated throughout; the striæ enclosed by the inner keels being more widely separated; and those on the extreme outside are stouter and still more widely separated. All the keels reach to the apex, being united there to a stout semicircular keel; its posterior keel is broadly depressed in the centre. The lower two-thirds of the apex of the segment is closely transversely striated; the upper part has a keel down the middle, and three or four irregular keels on the sides. The spine on the top is stout, narrowed and transverse above; below it is a smaller triangular one. The upper half of the propleuræ is raised, and distinctly separated from the lower; below the middle, on the apical half, are a few stout keels; the upper half of the mesopleuræ bears large deep irregular punctures; the apex of the metapleuræ is striated. Mesosternum with a few scattered punctures; the central furrow moderately wide, and with transverse keels. The anterior trochanters, femora, and tibiæ are reddish in front; the four posterior trochanters and femora are bright red; the hinder claws are stout at the base, and have a stout subapical tooth. The alar nervures are fuscous. Abdomen smooth, the middle purple; the petiole with the narrowed basal part short; the basal part beneath is stoutly transversely striated. The head is more sharply narrowed behind than usual, and the legs have more red.

(To be continued.)

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LIFE-HISTORY OF *VANESSA ANTIOPA*.

By F. W. FROHAWK, M.B.O.U., F.E.S.

I AM deeply indebted to Mr. Frederic Raine for his kindness in procuring for me living examples of *V. antiopa*, which has enabled me to work out the life-history of this interesting species. On the 7th of April last I received from this gentleman eight females and three males, alive, which he captured at Hyères on the 5th; again, on the 7th, he caught two males and one female, and these he also sent me, arriving on the 9th. Five females of the first consignment I placed on two growing plants of willow, the same morning they reached me, but owing to the continuance of cold dull weather they remained quiet until the 13th, and on the 14th, with bright sunshine at midday, I had the pleasure of watching one of the females deposit a number of eggs, and made a sketch of her in the act. She clung to a small stem, and deposited 192 eggs in one batch, which encircled the stem; while depositing the end of the abdomen curves from side to side of the branch; the ovipositor, feeling for the last egg laid, carefully places another beside it, in circles round the stem, working upwards, until the batch is completed. On this day another batch was deposited by another female, and others on the following days; so that by the 25th eight batches were laid. These five females continued depositing at intervals for several weeks, and the last eggs were laid in small batches on June 27th.

On May 21st four batches were laid, consisting of about 450 eggs, the smallest batch containing 53, and the largest about 160. On May 27th another lot of eggs deposited in four batches, the smallest batch of 3 doz. and the largest 170—in all 336. All five females still alive on May 25th. The first one died on the 26th; the other four were quite lively, and had a big drink each after

ON SOME NEW GENERA AND SPECIES OF HYMENOPTERA (ICHNEUMONIDÆ, CHRYSIDIDÆ, FOSSORES, AND APIDÆ).

BY P. CAMERON.

(Continued from p. 264.)

AMPULEX BREVICORNIS, sp. nov.*

Cæruleo-viridis; antennis tarsisque nigris; femoribus posterioribus rufis; alis fusco-violaceis. ♀. Long. 23-24 mm.

Hab. Khasia (coll. Rothney).

Antennæ short, stout, about twice the length of the head; black, opaque; the third and fourth joints equal in length; the fourth to sixth joints incised at the base beneath. Head shining, smooth, except for a few large deep punctures above each antenna; each puncture bears a long hair. Eyes converging slightly above, the width separating them being about the length of the basal three joints of the antennæ united. The apex of the clypeus is largely depressed, the depression becoming gradually wider towards the apex, which is not toothed; backwards the keel extends to the base of the antennæ. Antennal tubercles stout; there is no keel over the antennæ; behind the head is developed to a greater length than the length of the eyes. The apical part of the prothorax is broader than long, the sides almost straight; its basal half bearing large deep distinctly separated punctures, and with a narrow distinct longitudinal furrow. The basal half of the mesonotum, except in the middle, bears large deep clearly separated punctures, and is covered with long black hairs; the middle has a distinct furrow, extending from the base to near the apex. The scutellum has a row of punctures round the sides and apex, as has also the post-scutellum. There is no central keel on the median segment, except at the extreme base; the inner lateral lines form a large triangle, which is distinctly striated; the basal striæ are slightly oblique, and arise from the centre; the apical ones go right across; at the apex the keels are waved and reach to the apex. The apex has an almost perpendicular slope, is smooth at the base, the rest with curved striations, which are finer on the inner side. The propleuræ smooth; the middle under the keel striated at the apex. Mesopleuræ smooth, the upper and apical parts striated; the lower middle part more finely and closely striated. Mesosternum smooth, sparsely pilose; the furrow keeled in the middle. The mesonotum at the base and sides and the greater part of the median segment are more or less indigo-blue. There is no distinct tooth on the apex of the median segment, only the second keel on the metapleuræ projects slightly. The anterior femora blue; the

* This species has the basal ventral segments formed as with *Ampulex assimilis*, Kohl, from Guinea, and figured by him (Annal. d. k.k. Natur. hist. Hof. Mus. Wien, viii. pl. xii. f. 38), and not as in *A. cognata*, fig. 34, *i. e.* the lower side is roundly curved and incised at the apex, somewhat as in *A. latifrons*, but not roundly dilated at the apex as in that species (*cf.* Kohl, *l. c.* f. 43). The apical half, too, of the clypeus is cleft, not the apical third, as in *cognata*.

tibiæ and tarsi blackish; the apex of the tibiæ rufous. The four hinder femora are red, blackish at the extreme apex; the trochanters, tibiæ, and tarsi black; the end joint of the tarsi with a heart-shaped dilatation, which reaches to the middle of the joints; the claws bifid. Wings fuscous-violaceous; the appendicular cellule is open; the apex of the radial nervure is united to the nervure bordering the radial cellule, not received in front of it as in *A. latifrons*; the two abscissæ of the radius are equal in length; the first recurrent nervure is roundly curved from top to bottom, and is received shortly beyond the middle; the second has three slight curves, and is received before the middle of the cellule. The cubital nervure in the hinder wings is interstitial. Abdomen smooth and shining, blue; the apices of the segments piceous. The narrowed part of the petiole as long as the widened apex; the second segment is as long as the succeeding united.

Allied to *A. latifrons*.

TRYPOXYLON GENICULATUM, sp. nov.

Nigrum, trochanteribus tarsisque anterioribus, tibiis anticis basi que tibiæ posticarum testaceis; alis hyalinis, stigmatè nigro; abdominis medio rufo. ♀. Long. 13 mm.

Hab. Khasia (Coll. Rothney).

Antennæ black, the second joint rufous beneath; the scape and flagellum almost bare. The face and clypeus thickly covered with silvery pubescence; the front and vertex almost bare, finely punctured and opaque; below the ocelli is a shallow, but distinct, furrow; below this furrow is a stout keel, with oblique sides. Mandibles rufous; the palpi pale testaceous. Mesonotum shining, plumbeous; distinctly, but not strongly, punctured all over. The middle depression on the base of the median segment is wide, shallow, narrowed at the base, and finely transversely striated; the lateral furrows are wide, slightly narrower and deeper than the middle one, and striated like it; the apex of the segment has an oblique slope; its furrow is deep, with oblique sides; its apical half transversely striated. Pleuræ smooth and shining; the tubercles have a thick hair fringe behind; the furrow on the base of the mesopleuræ deep; the central fovea large, round. Mesosternum closely and finely punctured; the central furrow wide. Legs black; the anterior tibiæ and tarsi, all the trochanters and the four posterior knees, rufo-testaceous. Wings clear hyaline; the stigma and nervures black. Abdomen black; the apices and sides of the second and third segments rufous; the petiole is slightly longer than the second and third segments united; its base is distinctly channelled above; its apical fourth is dilated.

TRYPOXYLON TROCHANTERATUM, sp. nov.

Nigrum, abdomine rufo, petiole nigro; alis hyalinis, stigmatè nervisque fuscis. ♀. Long. 12 mm.

Hab. Khasia Hills (Coll. Rothney).

Antennæ black, covered with a short pile. The face, the eye incision, and clypeus thickly covered with silvery pubescence; the clypeus projecting broadly in the middle and at the apex, where it is

smooth, shining and glabrous. Mandibles rufous, sparsely covered with long pale hair; the palpi rufo-testaceous. Front and vertex opaque, the front finely and closely punctured; the upper half with an indistinct furrow down its middle; the lower half keeled in the middle; the upper half of the keel distinctly furrowed in the centre. Thorax opaque; the pleuræ and apex of the median segment covered with silvery pubescence; the base of pronotum on the top raised; the raised part dilated laterally. The base of the median segment longitudinally striated; the rest of the basal region closely transversely striated; the central depression wide, not much widened towards the apex; the apex of the segment has an oblique slope, and has a narrow, deep furrow down the centre. Pleuræ smooth, the mesopleuræ covered with silvery pubescence. Legs black; the trochanters, the tibiæ in front, the anterior tarsi, the spines, and the claws rufous. Abdomen rufous; the petiole black, except at the apex; it is as long as the second and third segments united; the apical half is distinctly wider than the basal, which is furrowed down the middle; on the apex of the second segment is a small black mark; on the third a larger cleft mark.

VESPIDÆ.

ZETHUS QUADRIDENTATA, sp. nov.

Deep black; the mandibles broadly lined with pale yellow in the middle; wings fuscous-violaceous, paler at the base; the tegulæ bright red; apex of mandibles with two sharply pointed teeth in the middle, and a broader, blunter one on either side. ♂. Long. 15 mm.

Hab. Borneo.

Antennæ black, distinctly thickened towards the apex; the last joint brownish below; the hook long, curved, stout. Head closely, rugosely punctured; thickly covered with pale fuscous pubescence, which is longest on the front. Clypeus broader than long, sparsely punctured and thickly covered with long fuscous hair; its apex is broadly rounded; the teeth are only distinctly visible when looked at from below. There is a narrow reddish line on the pronotum near the tegulæ, where it is less strongly punctured than elsewhere. Mesonotum shining, not strongly punctured, the apical half less strongly than the base; the furrows extend from the base to the apex; they are deep and smooth. Scutellum punctured, but not deeply or closely; there is a short, deep longitudinal furrow on the apex behind; the post-scutellum is more strongly punctured than the scutellum; its sides are bordered by a distinct raised keel. The central part of the apical slope of the median segment is bordered laterally by a stout keel; between the two is a shorter broad keel; the enclosed space is coarsely transversely striated; the outer side and the apex of the metapleuræ coarsely reticulated. The middle of the propleuræ bears some stout keels; the apex is smooth, with a row of punctures on the lower edge. The upper part of the mesopleuræ is more strongly punctured than the lower, and there is a longitudinal punctured furrow in the middle; the apical two-thirds of the upper part of the metapleuræ are strongly obliquely striated. Legs black, thickly covered with pale pubescence; the knees and calcaria pale. Wings fuscous-

violaceous, the stigma and nervures black; the top of the second cubital cellule is not much more than half the length of the space bounded by the recurrent nervures. The petiole is coarsely rugosely punctured; on the sides the punctuation is coarser, more irregular, and running into reticulations.

(To be continued.)

MISCELLANEA RHYNCHOTALIA.—No. 5.

BY G. W. KIRKALDY, F.E.S. 1902c

(Concluded from p. 284.)

LÆMOCORIS POSEIDON, sp. nov.

Allied to *L. costæ*, Reuter, but the latter has much smaller eyes.

Clothed with sparse white pubescence. Head, pronotum, and scutellum blackish. Elytra brownish, basal third of corium (base itself excepted), a large spot on the costal margin near the apex, not reaching to the claval or membranal margin, whitish. Membrane fumate, iridescent. Antennæ brownish white, basal half of the first segment blackish brown, apical half dirty whitish. Beneath pale brownish, apex of coxæ and the rostrum whitish. Lateral margins of the sterna blackish. Eyes very large, occupying the greatest part of the head (in profile). Rostrum reaching well beyond posterior coxæ; second segment of antennæ one-fifth longer than the third, more than three times as long as the first, the latter reaching a little in front of the head. Vertex scarcely wider than an eye. Base of pronotum one-half wider than the head and eyes, twice as wide as the eyes together. Long. 3.2 mill. (with elytra), 2.5 mill. (to apex of abdomen), lat. 1 mill.

Hab. GUINEA, Addah (ex coll. Montandon).

LÆMOCORIS (?) RAVENAR, sp. nov.

Clothed with fairly long, somewhat bristly, yellowish hairs. Head, pronotum, scutellum and under side, antennæ, rostrum, &c., pale flavous. Elytra pale olivaceo-flavous, a whitish band across elytra at apex of clavus, and a large whitish spot at apex of corium, not reaching to interior margins. Head (in profile) twice as long as the thickened first antennal segment, vertex a trifle wider than the eyes together. Rostrum reaching to apex of posterior coxæ. Second segment of antennæ three times as long as the first, one-sixth longer than the third. Long. 3 mill. (including elytra), lat. $\frac{5}{8}$ mill.

Hab. JAVA (ex coll. Montandon).

SHANA, gen. nov.

Belongs to *Capsaria*; distinguished from *Polymerus*, Reuter, and *Pæciloscytus*, Fieber (to which it is remotely allied) by the very distinct stink-orifices; from *Charagochilus* by the slender collar and the length of the tarsi.