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THE EARLIER STAGES OF *CATACLYSTA* *LEMNATA*, L.

BY T. A. CHAPMAN, M.D.

(PLATE I.)

ON June 4th, 1904, being at Bookham with the South London Entomological Society, I observed *C. lemnata* in some abundance, and remembering that it was the only one of the Hydrocampas (except *Acentropus*) with whose early stages I had no acquaintance, I took home a supply of moths, with a view to obtaining eggs.

Curiously enough, I found, on looking into the matter, that all the other species had been well reported on by various authors, but I could find nothing better about *lemnata* than that by Buckler, who tells us nothing of its history earlier than Nov. 10th, when it is beginning to think of hibernation.

The way in which *lemnata* lays her eggs interested me perhaps as much as anything in its history. It lays them under water, and that surface of the egg which in the case of nearly all Lepidoptera is exposed to the air, is in that of *C. lemnata* bathed in water. This fact has never been recorded of *C. lemnata*, but it has been, I think, of all the other Hydrocampas; *A. niveus* (female) appears to go under water to do so, but the others apparently only submerge their ovipositors. The curious fact that all these eggs are truly aquatic is one that I had never clearly understood, probably because attention has not been called to it in records; for example, Buckler (E.M.M. xiv. p. 97) records how Mr. W. E. Jeffrey got *H. stagnata*, Don., to lay eggs, which he found placed in little batches on the under side of floating pieces of *Sparganium*. Not being pointedly told that the eggs are in the water and wetted by it, one reads the fact along with the accounts, which are much more abundant, of how

strong silken envelope. But rarely is a fragment of twig used. When about to emerge the pupa-case is thrust well out of the posterior aperture. The moths emerge in February and March.

Other interesting species I hope to deal with at some later date. My best thanks are due to Mr. Oswald Lower, F.E.S., of New South Wales, for very kindly running me out, from material supplied, the descriptions of *Clania lewinii* (male), and *Lepidoscia magnella* (male).

Launceston, Tasmania : August, 1904.

DESCRIPTIONS OF A NEW GENUS AND SOME NEW SPECIES OF EAST INDIAN HYMENOPTERA.

By P. CAMERON.

(Concluded from vol. xxxvii. p. 310.)

CRABRONIDÆ.

CRABRO ELVINUS, sp. nov.

Black; the scape of the antennæ, two-thirds of the pronotum, a small, transverse pyriform mark on the sides near the tegulæ, the greater part of the scutellum, its keels, a line on the post-scutellum, a line down the base of the mesopleuræ, an interrupted line on the base of the third abdominal segment, the front femora, tibiæ, and tarsi, the apical two-thirds of the middle femora, the apex of the hinder broadly—more broadly below than above—and the four hinder tibiæ, yellow. Wings fuscous, the stigma fulvous, the nervures darker. ♂. Length, 9 mm.

Hab. Himalayas.

Head with the front and vertex closely and distinctly punctured, the former more strongly than the latter; the lower part of the front in the centre smooth, shining, furrowed and covered with silvery pubescence and sparsely with long fuscous hairs. Face and clypeus densely covered with silvery pubescence. Mesonotum opaque, closely punctured and covered with long fuscous hair, as are also the scutellums. The metanotal area bears some curved striæ, and is bounded by a curved keel on the sides; the apical slope is deeply furrowed in the middle, and bears some curved transverse striæ. The furrow on the base of the mesopleuræ is wide and deep, and bears eight transverse keels; in front of the yellow line is a curved keel. Above the middle coxæ are four curved keels; there is an oblique keel above the hinder coxæ, and the metapleura is bounded at the apex by a curved keel. The basal segment of the abdomen becomes gradually wider towards the apex where its width is about two-thirds of the total length; the pygidium is bare, closely and distinctly punctured, and is hollowed in the middle; the epipygium is thickly covered with fuscous pubescence. The apex of the radius is rounded.

CRABRO LYSIAS, sp. nov.

Black; the scape of the antennæ, an interrupted line on the pronotum, and two large transverse marks on the second and fourth abdominal segments, yellow; the greater part of the front tibiæ, the middle at the base and apex, the hinder, except in the centre behind, and the basal joint of the hinder tarsi, yellow. Wings hyaline, the stigma fulvous, the nervures darker. ♀. Length, 9–10 mm.

Hab. Himalayas.

Clypeus thickly covered with dark silvery pubescence, and distinctly keeled in the centre. Mandibles punctured strongly, but not closely at the base; the apical teeth equal in size, large. Front and vertex closely, rugosely punctured, opaque, more shining along the lower inner orbits. Ocelli in a curve. Mesonotum opaque, closely rugose, a narrow furrow in the centre of the basal half; the punctures on the scutellum run into striæ at the apex. Metanotal area irregularly, closely longitudinally striated; a deep furrow in its centre; the furrow becomes wider towards the apex, and is united to the furrow on the apical slope, which is obscurely transversely striated. The upper part of the propleuræ obliquely striated; below, at the apex, are three stout, oblique keels. The upper part of the mesopleuræ is stoutly striated, the striæ curved; the lower part punctured, the punctures running into striæ; the basal furrow is wide. Metapleuræ obscurely striated. Tibiæ stoutly irregularly spined. The basal half of the pygidium bears large punctures; the apical is smooth, hollowed, narrowed, and keeled laterally; it is fringed with long golden hair.

Comes near *C. argentatus* and *C. bellus* in Bingham's arrangement.

CRABRO MENYLLUS, sp. nov.

Black; the scape of the antennæ, except for a brownish line above, an interrupted line on the pronotum and two transverse large marks on the base of the second abdominal segment, yellow. Wings hyaline, the nervures and stigma dark fuscous. ♀. Length, 7 mm.

Hab. Himalayas.

Front and vertex closely and distinctly punctured, the former more strongly than the latter, which is not furrowed, and is covered below with silvery pubescence. Ocelli in a curve. Clypeus not keeled or furrowed in the centre; thickly covered with silvery pubescence. Mandibles black, piceous towards the apex. Mesonotum closely and strongly punctured, and thickly covered with longish pale pubescence. Scutellum closely punctured, less strongly and obscurely striated at the apex; the extreme apex shining. Post-scutellum closely punctured, with a smooth space in the centre. Metanotum aciculated, the base closely striated, the striæ stronger and oblique on the sides; the apical slope aciculated and closely, but not strongly, obliquely striated. Mesopleuræ distinctly, but not very closely, punctured; the meta-closely, finely obliquely striated. Petiole as long as the second and third segments united; it becomes gradually wider towards the apex; the third and following segments are thickly covered with fulvous

pubescence. Legs normal; the fore tibiæ with a broad yellow band on the apical half.

This species, from the form of the petiole, is allied to *C. ardens* and *C. odontophorus*. The area on the metanotum is not bounded by a furrow; the furrow on its apical slope is wide and deep on the upper half.

CERCERIS FLAVOPLAGIATA, sp. nov.

Black; the upper part of the head, the mesonotum and scutellum red; the head and thorax largely marked with yellow, the vertex with four yellow marks in a transverse row; the abdomen black, the sides of the first segment, the base of the second broadly, its apex and that of the third, fourth, and fifth narrowly, the lines becoming gradually narrower, two marks, wider than long, on the base of the third segment, the edge of the pronotum behind, the middle of the propleuræ, a mark behind the tubercles, projecting narrowly upwards at the base, an irregular mark on the lower part of the mesopleuræ, the yellow turning into rufous below and two large oval marks on the apex of the metanotum, extending on to the metapleuræ, a mark on the sides of the scutellum and the post-scutellum, yellow. Wings hyaline. ♀. Length, 12 mm.

Hab. Himalayas.

Antennæ rufous, darker above, the scape lined with yellow below. Head: the lower half of the outer orbits, the inner broadly from shortly above the middle, a line extending from the ocelli to the base of the antennæ, dilated below and to a less extent above, the face, clypeus, and the mandibles, except at the apex, lemon-yellow; there is a black line commencing shortly behind the ocelli, where it is obliquely narrowed, extending down the sides of the central yellow line to the base of the clypeus. Occiput black below. Clypeus roundly convex, its apex almost transverse, rufous. The outer marks on the vertex are irregularly oval, the two central narrower, longer, and oblique. The whole head is closely and strongly punctured; the clypeus is less strongly and closely. Thorax punctured, but not strongly, the base of the pronotum shagreened. Metanotal area closely but not very strongly punctured, and more closely on the sides than in the centre. The metapleuræ at the base above with some stout, clearly separated striæ, the lower part and the centre finely, indistinctly striated. Four front legs rufous, mixed with yellow, the coxæ and the femora for the greater part above, black, the middle tarsi black above; the hinder coxæ black, with a yellow line in the centre above, the trochanters for the greater part yellow, the femora for the greater part black, their tibiæ broadly black, as are also the tarsi. Petiole stout, of nearly equal width throughout, fully one-third longer than wide. Pygidium longitudinally rugose, of almost equal width throughout; the epipygium with the apical two-thirds incised; the incision becoming gradually, but not much, widened towards the apex. The basal three ventral segments are largely marked with yellow.

In Bingham's arrangement this species would come in near *C. tristis* and *C. sulphurea*.

ANOPLINI.

ANOPLIUS (POMPILUS) ORODES, sp. nov.

Black; densely pruinose; the apex of the hinder femora broadly and the hinder tibiæ red; the wings yellowish-hyaline, the apex from the end of the radius smoky; the third cubital cellule much narrowed above. ♀. Long. 13 mm.

Hab. Darjeeling.

Black; pruinose; the abdomen broadly banded with white pile; the apical third of the hinder femora and the hinder tibiæ red. Head very little developed behind the eyes; the occiput transverse. Eyes parallel, only very slightly converging above. Ocelli in a curve, the hinder separated from each other by a greater distance than they are from the eyes; there is a narrow furrow on the lower half of the front. Apex of clypeus transverse, its sides rounded. Thorax smooth, densely pruinose; the pronotum is as long as the head. Median segment large; the top flat; the apex with an oblique slope, its sides slightly dilated; the outer edges broadly, roundly dilated; below ending in a tooth. The first and third transverse cubital nervures are broadly, roundly curved; the second is straighter and more oblique; the fuscous apical cloud commences at the end of the radial cellule, and does not extend to the third transverse cubital nervure; the third cubital cellule is greatly narrowed above.

Comes near to *P. incognitus*, Cam., but is a larger and stouter insect; has the third cubital cellule not petiolate, the apex of the median segment not thickly covered with silvery matted pubescence, and the wings are not uniformly infuscated. It has the coloration of *P. pedestris*, but it wants the transverse furrow on the second ventral segment found in that species.

OBS.—*P. vischnu*, Cam., has nothing to do with *P. incognitus*, Cam., as Bingham suggests (*Hym. of India*, 157). It would be much better when an author, in a monographic work, cannot quote a species with certainty as a synonym, to give the original description in full. *Vischnu*, Cam., has the legs entirely black, and has not the hinder femora and tibiæ red, as in *incognitus*. It is related, as I have stated (*Manr. Memoirs*, 1891, 469), to *P. vivax*, Cam. So, too, on p. 169, *hero*, Cam., is doubtfully referred to *P. rothneyi*. There are considerable differences in coloration between them, and although the two might be sexes of one species, it would have been better, and have saved the student trouble, if the original description had been given in full, seeing that the identity of the two species was so doubtful.