

XIII. Hymenoptera Orientalia, or Contributions to a knowledge of the Hymenoptera of the Oriental Zoological Region. Part VI.

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In continuation of my last paper on Indian Hymenoptera, I give here descriptions of new species belonging to various groups.

CHRYSIDIDÆ.

This interesting family is being revised, as regards the Indian species, by M. Robert du Buysson, in the *Journal of the Bombay Natural History Society*, from material chiefly collected by Mr. R. C. Wroughton, in Bengal.

CHRYSIS.

A. Apex of abdomen undulated, without distinct teeth.

CHRYSIS PERFECTA, *sp. nov.*

Long. 8—9 mm.

Hab. Barrackpore.

Green, the flagellum of the antennæ black; the vertex, the middle of the pronotum and mesonotum, bluish; the apex of the first abdominal segment narrowly, of the second segment to near the middle, bluish, with a purplish tinge; the tarsi blackish, the basal joint testaceous; the wings fuscous, lighter coloured at the apex.

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The scape of the antennæ, the second joint, and the base of the third, green; the flagellum black, covered sparsely with a microscopic white down; the third joint slightly, but perceptibly, longer than the fourth. The vertex coarsely punctured; a curved keel runs from the side of the lower ocellus, the space between being irregularly longitudinally striolated, except in the centre at the apex, where it is smooth; the space below the antennæ thickly covered with long white hair; the clypeus has some scattered, moderately large punctures; the mandibles black, piceous towards the middle. Pronotum coarsely punctured; depressed in the middle; the mesonotum with the punctures as large, but, if anything, more widely separated; the median segment with the punctures still larger, deeper, and coarser, and with an oblique wide depression at the sides, this depression having at the base a few stout oblique keels. Propleuræ strongly and somewhat irregularly punctured, and with a large oval depression on its lower side; the mesopleuræ in front with small punctures; the rest with the punctures large, coarse, and deep; at the bottom are five stout perpendicular keels, which form one oval and three straight foveæ; the sternum finely punctured; the mesosternum with a straight keel, which does not quite reach to the apex. Legs green; the femora and tibiæ punctured, sparsely covered with white hair; the tarsi with the hair shorter and thicker, black; the base broadly testaceous. Wings fuscous, with a violaceous tinge; the apex almost hyaline. Abdomen large; the puncturing moderately close, deep, and of about equal strength on all the segments; on all closer and stronger laterally. The apical segment waved; without teeth, but with a rounded projection on either side of the middle; there are 10 foveæ, the central large, broader than long, the others smaller and rounder; the ventral

surface green, finely punctured, the apical segment with a longitudinal furrow down the centre; the apex blackish.

B. Apex of third abdominal segment rounded, with a tooth on either side at the end.

CHRYSIS FURIOSA, *sp. nov.* (Pl. 16, f. 9).

Viridis, late cœruleo-maculata, flagello antennarum nigro; alis fere hyalinis. ♀. Long. 6 mm.

Hab. Barrackpore.

Head nearly as wide as the thorax, green, a large purplish-blue patch on the vertex. On the front distinctly below the ocelli is a stout keel depressed inwardly, broadly in the centre, continued as a straight somewhat oblique keel down the sides of the eyes, from which it is distinctly separated, and becoming united to a semicircular keel over the frontal depression, which is finely and closely punctured at the sides, and finely transversely striated in the middle. From the centre of the top frontal keel a short thick keel runs down to the centre of the area. The vertex bears longish fuscous hair; the sides of the frontal depression with short white hair. Antennæ black; the scape, second and third joints, green; the flagellum covered with a microscopic down; the scape with white hair; the third joint is fully one quarter longer than the fourth. Prothorax half the length of the head; the sides, seen from above, oblique at the base; the rest curved, the base and apex of the curve being distinct, almost forming teeth; the punctuation coarse and even; in the central region is a large bluish band. Mesonotum coarsely punctured, the punctures large, round, and deep; the punctuation on the scutellum and the middle of the median segment similar to that on the mesonotum. The front of the propleuræ coarsely punctured; the rest excavated, shagreened; the mesopleuræ coarsely punctured, almost running into

reticulations; the hinder part with the punctuation closer and finer; over the sternum is a wide, deep, longitudinal furrow. The prosternum has a semicircular furrow at the apex; and down its centre, before and behind the semicircular furrow, is a straight keel.

C. Apex of abdomen with a tooth on either side and in the middle.

This section resembles closely that of the preceding, from which it differs in having a tooth in the centre of the apex of the abdomen, and also in the front having no area enclosed by stout keels.

CHRYSIS MENDICALIS, *sp. nov.*

Long. 6 mm.

Hab. Barrackpore.

Green, the centre of the thorax and the greater part of the second and third abdominal segments, blue; the coxæ, femora, and tibiæ green; the tarsi fuscous; the wings almost hyaline.

Antennæ stout, black; the first and second joints green; the third joint hardly one-quarter longer than the fourth. Vertex coarsely punctured, almost reticulated on the lower side; the ocellar region, and the part behind, bluish-purple; the excavated front closely punctured at the side; the centre finely transversely striated; the keel over the depression stout, and reaching to near the bottom of the eyes. Pronotum slightly more than half the length of the eyes; the sides oblique, rounded in front, uniformly coarsely punctured, the central area more coarsely, almost running into reticulations towards the apex, and for the greater part purplish. The propleuræ with a large oval depression at the top, which is almost smooth; the lower part shagreened. The mesopleuræ coarsely punctured, almost reticulated; a small basal and a larger apical, smooth, deep depression

on the side of the mesosternum; the metapleuræ almost smooth above, shagreened beneath. Wings almost hyaline; the nervures fuscous; the stigma black; the tegulæ green, punctured. Abdomen with a triangular depression in the centre at the base; the basal segment green, tinged with blue; the second and third segments blue, their sides green; the apices with a brassy tinge; there are on each side of the centre two distinct foveæ of nearly equal size, and a much larger one looking like two united, at least on one side of the example examined; for on the other side there are four foveæ, all clearly separated from each other. Ventral surface smooth, shining, green, with brassy tints.

D. Apex of abdomen with four teeth.

CHRYSIS DISPARILIS, *sp. nov.*

Long. nearly 7 mm.

Hab. Barrackpore.

Green; the vertex, the mesonotum, and the greater part of the abdominal dorsal segments, bluish-purple; the tarsi broadly testaceous at the base.

Head as wide as the mesonotum and somewhat longer than the pronotum, green; the ocellar region and the greater part of the occiput purple, coarsely punctured; the cheeks thickly covered with long white hair. Over the frontal depression and below the ocelli is a curved keel. Antennæ stout; the third joint on the lower side equal in length to the fourth. The thorax strongly punctured; the pronotum entirely green; the mesonotum purple; the scutellum and metanotum green; the scutellum with a faint purplish tinge. Wings hyaline. The first abdominal segment green, with a large purplish mark across the middle; the second segment purple, green at the apex; the last purple, green before the teeth, which are themselves purple.

HEDYCHRUM LUGUBRE, *sp. nov.* (Pl. 16 f. 10).

Cæruleum, viride maculatum; flagello antennarum fusco; tarsis fusco-testaceis; alis fuscis. Long. 4—5 mm.

Hab. Barrackpore.

Scape of the antennæ green, rather strongly punctured; the flagellum fuscous-black, covered with a pale fuscous down; the third joint about one-quarter longer than the fourth. Head strongly punctured, the frontal depression finely and closely transversely striated. The base of the mandibles green, the rest of them blackish, with a piceous stripe before the middle. Prothorax longer than the head, strongly punctured above; two large blue splashes, nearly united, behind; its sides oblique, except at the apex, which is straight. Mesonotum in the middle purplish; the base, especially in the centre, with the punctures smaller and more widely separated than they are at the sides, and more especially behind; the scutellum, with the punctures larger and deeper than they are on the mesonotum; the median segments with the punctures larger and deeper than on the scutellum. Propleuræ in front coarsely punctured; behind smooth; the mesopleuræ coarsely punctured, behind finely striated; the metapleuræ finely longitudinally striated, more finely on the lower than on the upper side; the mesopleuræ finely transversely striated. Legs green, the tibiæ with a bluer tinge than the femora; the apex of the tibiæ testaceous; the tarsi dark testaceous, paler towards the apex. Wings uniformly dark fuscous; the nervures darker. Abdomen bluish, greener in tint in the middle; the punctures on the second segment more widely separated than on the basal; that on the third much coarser than on either. The ventral surface smooth, sparsely covered with white hair.

The head and thorax may have brassy tints; the relative proportions of the blue and green in the abdomen varies.

ICHNEUMONIDÆ.

ICHNEUMON ARDATES, *sp. nov.*

Niger, scutello flavo; abdomine rufo, flavo- et nigro-balteato; pedibus rufis; alis fere hyalinis, stigmatе flavo. ♀.
Long. 13 mm.

Hab. South India.

Head coarsely punctured; the inner orbits in the middle broadly, and a mark immediately below the antennæ, rufous; the palpi pale yellow. Antennæ short, thick, the 13—14 basal joints pale yellowish-testaceous, the apices deep black. Thorax black, except the scutellum which is pale yellow; closely punctured; the propleuræ closely obliquely striated except at the top. The lower part of the mesopleuræ coarsely punctured; the upper shining, irregularly shagreened; the metapleuræ closely coarsely irregularly striated. Median segment closely rugose; only the supramedian area clearly defined; it is a little wider than long, slightly narrowed from the middle; the apex in the middle a little dilated inwardly. Legs, including the coxæ, rufous. The narrow part of the petiole rufous; the broad apex with a yellowish band, the sides black; the raised central part of the apex closely longitudinally striated. The sides of the gastrocœli stoutly striated. The second segment is entirely rufous; the basal half of the third segment and the whole of the fourth black; the apical half of the third yellow, with a reddish tinge; the apical segments pale-yellow.

ICHNEUMON ÆLVANUS, *sp. nov.*

Capite, abdomine pedibusque rufis; thorace nigro, rufomaculato; antennis rufis, apice late nigro; pedibus rufis, coxis posticis nigris; alis fusco-violaceis. ♂. Long. 23 mm.

Hab. India, South-east Provinces.

Head entirely rufous, strongly punctured all over; the orbits distinctly margined on the inner side; the vertex broadly depressed; the tips of the mandibles black. Antennæ stout, the flagellum bare, from the 15th joint deep black. Thorax strongly punctured, black; the pronotum in front in the middle, its sides, a mark in front of the scutellum, the scutellum and post-scutellum, the tubercles and the lower part of the mesopleuræ in front, rufous; median segment strongly punctured, except in the middle at the base; the suprmedian area rounded and narrowed at the base. Legs closely covered with short hair; the tibiæ and tarsi are paler than the femora. Wings uniformly fuscous violaceous; the areolet longish, narrow; at the top slightly narrower than the space bounded by the recurrent and second transverse cubital nervures. The basal half of the petiole black; coarsely punctured, especially toward the apex; the sides there depressed, and there is near the base of the dilated part a shining, impunctate, somewhat triangular space; the gastrocœli longitudinally striated from the base to near the apex; the striæ stout, all distinctly separated and of nearly equal thickness. The apical segments are thickly covered with short fulvous hair.

ICHNEUMON GODWIN-AUSTENI, *sp. nov.*

Cæruleus, orbitis oculorum, geniculis tibiisque anticis flavis; alis fusco-violaceis. ♀. Long. 15 mm.

Hab. Khasi (*Godwin-Austen*).

Antennæ black, the 11th and 12th joints white beneath and at the sides, from these joints becoming

thickened and slightly compressed laterally; almost bare. Head shining, the outer orbits at and a little below the middle and the inner from the top to shortly below the middle, yellowish. Face flat, slightly dilated in the middle below the antennæ; punctured, the punctures at the sides more widely separated than in the middle, this being also the case on the front and vertex. Pro- and meso-thorax closely and uniformly punctured; the scutellum more shining and sparsely punctured; the median segment more strongly and closer punctured than the mesonotum, which has the areæ all clearly defined. Legs blue, the coxæ closely and thickly covered with white hair; the femora sparsely haired. Areolet narrowed at the top, the transverse cubital nervures being almost united; the recurrent nervure is received in the apical third of the areolet. Abdomen closely and strongly punctured; the apex of the petiole raised; the raised part clearly margined and separated from the sides; this raised part is longitudinally striated. Gastrocœli wide, deep; their sides obliquely striated; the part between the gastrocœli in the middle longitudinally at the sides, especially at the base, more strongly obliquely, striolated.

This species has the antennæ thickened towards the apex somewhat as it is in *Joppa*, but I cannot look upon it as congeneric with the American species of *Joppa*. Apart from the dilated antennæ (and in this point we find considerable variation in *Ichneumon*) I can find nothing whereby to distinguish it from *Ichneumon* as generally defined.

CRYPTUS PERPULCHER, *sp. nov.* (Pl. 16, f. 7).

Niger, thorace abdomineque flavo-maculatis; pedibus fulvis, apice femorum posticorum basique tibiæ posticarum, nigris; alis hyalinis. ♂. Long. 13 mm.

Hab. Borneo.

Antennæ black, bare, a broad white band near the middle. Head black; a mark close to the eyes opposite the ocelli, a mark touching the eyes immediately under the antennæ, and having a somewhat roundish projection issuing obliquely from above its middle, the mandibles (except the teeth) and the palpi, whitish-yellow; the face above the clypeus irregularly striated; front depressed, especially over the antennæ, where there is a straight keel in the centre; below the ocelli are a few oblique stout striæ. Pro- and meso-notum smooth, shining, impunctate; the middle lobe of the mesonotum well developed; the pro- and meso-pleuræ stoutly longitudinally striolated, except the former above at the base, where there is a smooth triangular spot; and the apex of the mesopleuræ where the striations only extend to the lower side. The base of the median segment before the keel is smooth, the rest of it closely transversely striated; the metapleuræ irregularly rugosely punctured. The following yellow marks are on the thorax: The tegulæ, scutellum, post-scutellum, an elongated triangular mark before the spiracles; a smaller one in front of and above the hinder coxæ; and a \perp -shaped mark on the median segment extending from near the transverse keel to the apex of the segment, the cross piece being thicker than the longitudinal. The coxæ are black, except the anterior at the extreme apex; the middle pair have a small mark at the base, and the hinder part a large yellow mark extending from the base to near the apex, its inner end being more prolonged than its outer; the fore coxæ and trochanters are whiter in tint than the others; the hinder trochanters are black, this being also the case with the apex of the femora, and to a less extent the base of the tibiæ; the four front tarsi are dark fuscous; the apex of the hind tibiæ, the base of the metatarsus broadly, and the extreme apex of the tarsi, black; the fore tarsi are

infuscated; the middle almost black. Wings hyaline, the stigma and nervures black; the areolet longer than broad; the second recurrent nervure received near the apical third of the cellule. Abdomen black, shining. All the segments pale yellow at the apex; the apical one almost entirely yellow; the ventral segments black, dull yellow at the apices.

CRYPTUS BROOKEANUS, *sp. nov.*

Niger, annulo late flagello antennarum tarsisque posticis albis; pedibus fulvis; trochanteribus posticis, apice femorum posticorum tarsisque posticis nigris; alis hyalinis. ♀. Long. 11 mm.

Hab. Borneo.

Antennæ as long as the body, from the apex of the fifth to the base of the fourteenth joint white above and at the sides; bare. Head black, bearing a short, sparse, black pubescence; the front, except at the sides, irregularly longitudinally striolated; the striæ rather stout; the face shagreened; the palpi white. Thorax entirely black; the pro- and meso-notum almost shining, impunctate; the base of the median segment behind the transverse keel (which is broadly curved backwards in the centre) irregularly longitudinally striated, and with two stout straight keels down the centre; behind this keel it is irregularly reticulated; in the middle at the sides are two stout spines. The upper part of the propleuræ is obliquely striolated, the striæ becoming stronger towards the apex, at the base in the middle being almost obsolete; the portion over the coxæ impunctate, smooth; the mesopleuræ closely irregularly longitudinally striolated; immediately under the wings are a few stout, clearly-separated oblique striations, which are mostly turned up at the base. The mesosternum smooth, impunctate, except a crenulated

furrow down its centre, and separated from the pleuræ by a curved crenulated furrow. Legs fulvous; the four anterior tibiæ and tarsi infuscated; the fore tibiæ white in front; the hinder trochanters, the apical third of the hinder femora and the hinder tibiæ, black; the hinder spurs black; the tarsi white, the extreme apex black. The second transverse cubital nervure is faint; the recurrent nervure is received in the apical third of the cellule. The petiole is smooth and shining; the sides at the apex depressed; the rest of it alutaceous; the apex of the second segment pale testaceous.

ICHNEUMON MITRA, *sp. nov.* (Pl. 16, f. 6).

Long. 12 mm.

Hab. Borneo.

Antennæ stout, almost bare, the 10—15 joints white except beneath. Head black; the orbits from shortly above the antennæ to shortly behind the hinder ocelli, the sides and apex of the clypeus (the latter narrowly), the labrum and palpi, yellowish-white; the mandibles piceous before the middle. The face rather strongly punctured; the punctures on the clypeus more widely separated towards its apex; the space above the antennæ shining and impunctate; the vertex coarsely punctured. The face and vertex covered with short white hair; the inner orbits distinctly margined. Thorax black; the edge of the pronotum, tubercles, tegulæ in front, and scutellum, yellowish-white. Thorax closely punctured; the propleuræ closely punctured above, beneath shining, and with strong, somewhat oblique keels behind; the mesopleuræ with the punctures larger and more clearly separated above, the lower part with them smaller and much more closely set together, and at the apex running into striæ. The mesonotum closely punctured; the scutellum has the punctures shallower and more clearly separated; the yellow mark does not occupy quite its

entire surface, and is somewhat mitre-shaped; the post scutellum shining, impunctate. The median segment strongly punctured, thickly covered (especially behind) with white hair; the supramedian area longer than broad; the sides almost straight; the base transverse; the apex curved roundly inwardly. The metapleuræ are more coarsely punctured than the mesopleuræ, and more thickly haired. Legs black; the front tibiæ and tarsi dirty testaceous (perhaps discoloured); the outer half of the fore coxæ, the outer side of the middle and a larger mark on the hinder side of the hinder coxæ, yellowish-white; the spurs also yellowish-white. Wings hyaline; the stigma and nervures black; the latter paler towards the apex; the areolet at the top in length a little less than the space bounded by the recurrent and the second transverse cubital nervures. Abdomen black; the base of the first, second, and third segments with yellow bands dilated at the sides, and which become gradually narrowed, a large mark on the sixth, rounded at the base, narrowed gradually at the sides and the greater part of the seventh, yellowish-white. The ventral segments black; the basal yellowish in the middle.

This species is abundantly distinct from the two species of *Ichneumon* described by Smith from Borneo, the antennæ of *I. penetrans* and the head of *I. comisator* being for the greater part yellow.

BRACONIDÆ.

BRACON BORNEENSIS, *sp. nov.*

Capite, thorace pedibusque flavis, abdomine ferrugineo; alis fuscis, basi late flavo; flagello antennarum nigro. ♂.
Long. 10 mm.

Hab. Borneo.

Scape of antennæ pale yellow, sparsely covered with longish hairs; the flagellum entirely black. Head

shining, sparsely covered with fuscous hair, which is longer and paler below the antennæ than on the vertex. At the sides and behind the ocelli are bordered by a distinct furrow; in front of them is a depression from which a straight narrow furrow runs to the base of the antennæ. Thorax smooth, shining, impunctate, the upper part fulvous, the sides and sternum paler. Legs fulvous, sparsely haired. Wings from the transverse basal nervure dark fuscous, with a slight fulvous tinge; the stigma and the nervure in the fuscous part of the wings, blackish; in the yellowish, yellow. The central part of the petiole above has a few widely separated keels; the lateral furrows wide and deep; the central part has the sides at the apex rounded and with a wide short furrow on the inner side. Down the centre of the second segment is a straight keel depressed in the middle, and which does not quite reach the apex of the segment; on either side at the base is a wide oblique depression reaching near to the apex; at its base are some sharply oblique keels; the rest of it has a few semi-oblique keels; the suturiform articulation has throughout straight stout keels; the other segments coarsely rugosely punctured, except the last, which is smooth, shining, impunctate, and of a pale yellow colour.

Is not unlike *B. Rothneyi* but is larger, the base of the wings more broadly yellow; the lateral depression on the second abdominal segment is much larger and deeper; the central keel much more complete and clearly defined and without a smooth triangular base; the base of the antennæ yellow, not black, &c.

BRACON DISSIMULANDUS, *sp. nov.*

Niger; capite, pro-mesothorace metapleurisque ferrugineis; alis fuscis, fere violaceis. ♀. Long. 14; terebra 5 mm.

Hab. Borneo.

Head ferruginous, the teeth of the mandibles black; rather closely covered with black hair, particularly on the face; the front and vertex smooth, the face smooth in the centre, the sides with large, shallow, distinctly separated punctures; the sides of the clypeus have a yellowish hue; the palpi are covered with long, black hair; the mandibular teeth black. Antennæ entirely black; the scape with longish black hair. Pro- and meso-thorax smooth and impunctate; their pleuræ and sternum sparsely covered with fuscous hairs. The metathorax thickly covered with longish black hair; the upper part almost entirely black. The two anterior legs entirely ferruginous; the four hinder black; the intermediate with the base of the coxæ broadly, and the extreme base and apex of their femora ferruginous; the hinder legs are thickly haired. Wings large, uniformly smoky-violaceous; there is an elongated clear hyaline spot below the first transverse cubital nervure. The petiole is deeply depressed at the base; the raised centre bordered along the sides by a wide, moderately deep, shallow furrow; the raised central part bearing stout longitudinal keels; the central being stouter and straighter; at the apex of the segment there are shorter keels between the longer ones, or those become bifid. The third segment is nearly similarly striolated, but with the striæ closer together; and there is at the apex an interrupted transverse furrow; the remaining segments shining, smooth; the ventral surface pale-yellowish, the sheaths of the ovipositor thickly covered with long hair.

Of the Oriental species it comes nearest to *B. foveatus* Sm., but that has the ovipositor twice the length of the body.

BRACON CHARAXUS, *sp. nov.*

Niger; capite, thorace pedibusque anticis ferrugineis; alis fuscis, fere violaceis. ♀. Long. 11; terebra 12 mm.

Hab. Borneo.

Antennæ black; the flagellum almost bare; the scape thickly covered with blackish hairs, and piceous in the middle beneath. Head shining, sparsely covered with long fuscous hairs; below the antennæ bearing all over except in the middle, where there is a smooth space, moderately large punctures; the front and vertex very smooth and shining, except for a few small punctures along the inner orbits; the mandibles ferruginous, their teeth black; the palpi fuscous. Thorax entirely ferruginous, smooth, shining, impunctate; the middle lobe of the mesonotum raised; the median segment sparsely covered with long black hairs; on its side is a deep wide furrow, which does not reach the base. Wings uniformly deep smoky, but with a violaceous tinge. The fore legs entirely ferruginous, as are also the middle coxæ, except that they are darker; the four anterior legs sparsely covered with short hair; the hinder tibiæ and tarsi have the hair much longer and thicker. The petiole above is smooth and shining, except the apex in the middle, where it is a little rough; the middle part bounded by the keels is almost transverse, and has behind it a small space bearing some minute punctures; the outer divisions at the apex are obliquely truncated. The 2—4 segments are closely and strongly longitudinally striolated, the striations on the second being irregular; in the centre of the second segment are two keels, which unite in the middle and are continued to the apex as one; from the base near the edge runs another keel, which runs obliquely to the central keel, when it becomes straight; the sides are distinctly margined above; on the side of the second segment is a large smooth, shining space; and there is a similar one, but smaller, on the third in front of the depression; the other segments are smooth and shining, the last is

depressed at the base and is fringed at the apex with longish hairs. The ventral segments, except at the apex, are, in the middle, yellowish-testaceous; the last ventral segment projects beyond the apex of the dorsal.

Allied apparently to *B. foveatus* Sm. from Singapore; but that, among other differences, has the ovipositor twice the length of the body.

POMPILIDÆ.

SALIUS LEPTOCERUS, *sp. nov.*

Niger, abdomine pedibusque rufis; capite, thorace coxisque dense fulvo-hirtis; alis fusco-violaceis. Long. 17; exp. al. 24 mm.

Hab. Sikim.

Antennæ a little longer than the body, entirely black, except the scape on the under side, which is rufous. Head densely covered all over with a golden fulvous pile and less densely with long fulvous hair. Mandibles densely covered with short depressed fulvous pubescence; the palpi blackish. Thorax densely covered all over with golden fulvous pubescence and more sparsely with longish pale fulvous hair; there is a wide, deep furrow down the centre of the post-scutellum, and there is a narrower, less distinct one down the base of the median segment, which is obscurely transversely striated. Wings fuscous-violaceous, shining, the nervures blackish; the first recurrent nervure is received a short distance in front of the second transverse cubital; the nervures dark fuscous, the stigma darker at the base. Legs red; the coxæ black, densely covered with golden pubescence and, more sparsely, with longish fulvous hair; the posterior are rufous on the under side; the trochanters are black at the base. Abdomen dark fulvous; the second, third, and fourth segments black at the base.

Comes near to *S. zelotypus* Bingham from Tenasserim.

DOLICHUSUS CLAVIPES, *sp. nov.* (Pl. 16, f. 4).

Niger; *alis hyalinis*. ♀. Long. 9 mm.

Hab. Barrackpore (*Rothney*).

Antennæ filiform. Immediately above, and slightly protruding over them is a large projection which, seen from the side, is triangular; above depressed, the sides and apex distinctly raised; the base not margined; the front and vertex shining, impunctate. Antennæ separated from the base of the clypeus, which is keeled down the centre. Eyes reaching to the base of the mandibles. Radial and cubital cellules not differing from *Pseudagenia*. Prothorax somewhat longer than in typical *Pseudagenia*. Mesonotum with two nearly complete, deep parapsidal furrows; the median segment with distinct areæ; on the sides on the top of the apical part is a small blunt tooth, and in the middle is a much larger and more distinct one. At the base of the third ventral segment is a transverse furrow; the sheath of the ovipositor largely projecting. Claws with one tooth.

Antennæ filiform, the scape sparsely haired; the flagellum closely covered with a short pubescence. Head shining, impunctate; sparsely haired; the outer orbits on the lower side thickly covered with longish white hair; the clypeus, especially at the sides, and the base of the mandibles with longer white hairs. Thorax shining; pro- and meso-notum thickly covered with fuscous hair; the hair on the median segment longer and thicker; the apex of the pronotum depressed and clearly separated from the mesonotum. The parapsidal furrows do not quite reach to the apex of the mesonotum. Apex of scutellum semi-circular; post-scutellum stoutly longitudinally striolated. In the centre of the median segment are two keels which converge a little at the apex of the flat part, and these are united by a transverse keel; the centre at the base

shagreened and with four irregular longitudinal keels; the oblique apex shagreened. Propleuræ shining; the mesopleuræ shining above, shagreened below; the top projecting, oblique; a keel runs down the base from the tubercles; the metapleuræ closely longitudinally striolated. Legs shining, sparsely haired; the base of the hind spurs thickly covered with stiff pale hairs. Wings clear hyaline; the nervures blackish; the first transverse cubital is sharply elbowed from a little below the middle towards the apex of the cellule, the second straight, the third curved roundly toward the base of the cellule; the first recurrent nervure is received shortly beyond the middle of the cellule, the second near the basal third.

SPHEGIDÆ.

DIODONTUS STRIOLATUS, *sp. nov.* (Pl. 16, f. 3).

Niger, mandibulis, tegulis, geniculis, tibiis tarsisque flavis; alis hyalinis, nervis stigmatæque fuscis. ♂. Long. fere 5 mm.

Hab. Lahore (*Rothney*).

Antennæ entirely black, almost bare; the apex of the scape fuscous. Head shining, the front and vertex with fine, distinctly-separated punctures; mandibles yellow, the extreme base black, the teeth piceous-black; the palpi yellow; the clypeus projecting, roundly and deeply incised in the middle. Thorax shining, faintly aciculated above; the propleuræ with stout, distinctly separated striæ; the apical half of the mesopleuræ closely longitudinally striated, the striations becoming closer together at the apex; the metapleuræ, except at the base beneath, more strongly and irregularly striolated. The apex of the four front femora, the tibiæ and tarsi, testaceous; the middle tibiæ infuscated behind; the hinder tibiæ blackish; the hinder tarsi infuscated. Wings short, not reaching

much beyond the middle of the abdomen, slightly infuscated, the nervures testaceous, the stigma black; at the top the second cubital cellule is slightly wider than the space bounded by the first transverse cubital and the second recurrent nervures. Legs sparsely covered with white pubescence; the apex of the femora, tibiæ and tarsi, testaceous; the hinder tibiæ infuscated. Abdomen shining.

DIDINEIS ORIENTALIS, *sp. nov.* (Pl. 16, f. 2).

Niger, mandibulis, scapo antennarum subtus, tibiis, tarsis tegulisque albidis, alis hyalinis, nervis fuscis. ♂. Long. 5 mm.

Hab. Barrackpore (*Rothney*).

Antennæ fuscous, darker above, the scape bearing a few hairs, the flagellum thickly covered with short pile; the base of the apical joint before the base of the curve projecting. Head shining, the vertex with shallow closely-pressed punctures, and covered with longish blackish hair; the vertex with the hair shorter and closer; the cheeks and clypeus thickly covered with silvery hair, that on the clypeus being the longer. Mandibles with longish silvery hair; their base black, the rest piceous, with a yellow band between; the palpi yellow. Thorax black, shining, closely covered on the pro- and meso-thorax with black hair; almost impunctate; the depression on the propleuræ with a few stout, oblique keels. In the centre of the median segment is a large somewhat triangular area, but with the apex rounded, bounded by stout keels, and having in the centre of it two slightly diverging keels, which reach a little beyond the middle. From the apex of the triangle a straight keel runs down to the apex of the segment, and in the centre at the side is a somewhat semicircular area, which is joined to the central keel

by two short transverse ones. Legs thickly covered with short white hair; the apices of the coxæ, of the trochanters and of the femora, the base of the hinder tibiæ, the four anterior tibiæ and all the tarsi, yellowish-testaceous; the femoral tooth stout, oblique, somewhat triangular; the apex of the hinder femora fuscous. The wings have a faint fuscous tinge; the stigma fuscous, the nervures dark testaceous; the second cubital cellule oblique, at the bottom longer than the third cellule; the recurrent nervures almost interstitial; the third transverse cubital nervure is curved at the top; the lower part straight, oblique. Abdomen smooth and shining, sparsely covered with longish white hair, which becomes longer and thicker towards the apex.

This and *Alyson* are interesting additions to the Oriental Zoological Region, the few described species being from Europe and North America.

ALYSON ANNULIPES, *sp. nov.* (Pl. 16, f. 1).

Niger, mandibulis basi tiliarum posticarum maculisque 2 abdominis flavis; alis hyalinis, fusco-fasciatis. ♀. Long. 6 mm.

Hab. Poona (*Wroughton*).

Black, shining, almost impunctate; the head, pro- and meso-thorax sparsely covered with long fuscous hair; the apex of the median segment with shorter white hair. Head shining, smooth; the upper part covered with fuscous hair, which is much longer behind the ocelli; the lower part is more thickly covered with short silvery pubescence. Mandibles broadly yellow behind the middle, the two basal teeth piceous, the apical tooth darker in colour. The inner orbits with a yellow line; the clypeus yellow, the extreme apex piceous; the central tooth larger, the lateral not half its size; the palpi yellow. Thorax black, except two yellow marks on the

scutellum; rather thickly covered with longish fuscous hair; the hair on the pleuræ and apex of the median segment white. Median segment transversely irregularly striated; in its centre is a somewhat triangular area which reaches near to the apex of the top part, where it is rounded, and from which a straight keel runs to the apex; down the centre of the triangular area are two keels not reaching the end of the area, and bulging out at the apex. At the top of the oblique apex are, on each side of the central keel, three areæ, the inner being the larger; the rest of the areæ irregular. Wings clear hyaline, the stigma and nervures black; the radial, the base of the first and the second and third cubital cellules, smoky. Legs thickly covered with short white hair; the anterior knees, tibiæ, and tarsi yellowish in front; the apices of the four hinder coxæ and of the trochanters, a line below the apex of the hinder tibiæ, and the spurs yellow; the femoral tooth oblique, stout, twice as long as broad, the apex bluntly rounded. Abdomen shining, impunctate, the apex and ventral surface sparsely covered with long black hairs; the spots on the second segment obscure yellow (perhaps discoloured); the third segment obscure testaceous laterally at the base.

GASTROSERICUS BINGHAMI, *sp. nov.* (Pl. 16, f. 8).

Long. 5 mm. ♂.

Hab. Barrackpore (*Rothney*).

This species differs in too many points from *G. Rothneyi* to be its ♂. It differs also from the type of the genus (*G. Waltii* from Egypt) in having the clypeus toothed in the middle.

Head alutaceous, the vertex covered with a pale golden microscopic down; the orbits behind with silvery pubescence; the face and oral region thickly covered with

golden pubescence; the space where the hinder ocellus should be, shining, smooth. Clypeus yellow, the apex piceous; its centre raised and projecting into a stout triangular tooth; the mandibles yellow, piceous at the apex. Antennæ stout; the basal joints with a minute silvery pubescence; the apex of the scape yellow; the ocellar space raised and surrounded, except in front, by a furrow, and a wider furrow runs down the vertex. Thorax alutaceous; the scutellum finely punctured; the median segment at the apex finely punctured; the extreme apex minutely transversely striated; the fovea is wide and deep, sharply narrowed at the apex. The sides, base, and apex of the mesonotum thickly covered with golden hair; the hair on the meso- and meta-pleuræ silvery. Tegulæ and a curved spot at the apex of the pronotum yellow. Wings hyaline, the nervures and costa fuscous, darker towards the apex. Legs black; the apical half of the fore femora, the apices of the four hinder and the tibiæ and tarsi clear yellow; the four hinder tibiæ broadly lined with black behind at the base; the 3—5 joints of the hinder tarsi infuscated. Abdomen covered with a sericeous pubescence; the sides of the dorsal and the apices of the apical ventral segments obscure testaceous; the apical segment for the greater part rufous.

PISON ORIENTALE, *sp. nov.*

Long. 8 mm.

Hab. Barrackpore (*Rothney*).

Comes near to *P. striolatum*, but differs in the striolated metapleuræ. Entirely black; head and thorax thickly covered with long fuscous hairs; the face more closely covered with silvery hair. Front rugosely punctured; behind the ocelli the punctures much finer and more widely separated. Apex of clypeus shining, bare, the apex in the middle produced into a small rounded

point. Antennæ covered with a white microscopic pile. Thorax thickly covered with longish whitish hair. Mesonotum bearing large distinctly separated punctures which are much closer together; scutellum with the punctures smaller and not so deep, and almost absent in the centre. Median segment with a wide furrow in the centre in which are a few stout transverse keels; on either side of this it is irregularly punctured and has some curved striæ. Propleuræ shining, strongly depressed obliquely in the centre; mesopleuræ strongly punctured all over, and without a distinct longitudinal furrow; metapleuræ almost impunctate and more shining than the mesopleuræ. Wings hyaline, the costa and stigma black, the other nervures not so deep in tint; the recurrent nervures received shortly in front of the transverse cubital. Abdomen thickly covered with white hair, which is especially thick at the sides of the segments at their apices; the basal segments sparsely punctured; the others impunctate; the basal ventral segment strongly punctured.

PISON APPENDICULATUM, *sp. nov.* (Pl. 16, f. 5).

Long. 7—8 mm.

Hab. Barrackpore (*Rothney*).

Resembles *P. orientale*, but has the body more thickly pilose, the apex of the clypeus more broadly produced in the middle, the appendicle of the areolet as long as the cellule itself, and the recurrent nervures are received at a greater distance from the transverse cubitals.

Head closely and rather strongly punctured, more closely and hardly so strongly behind the ocelli; the front and vertex covered with long fuscous hair; from the lower part of the eye incision to the apex of the clypeus thickly covered with longish silvery hair, which hides the sculpture entirely; the apex of the clypeus

roundly produced in the middle. Thorax thickly covered with long fuscous hair; the mesonotum strongly punctured, particularly at the sides; the centre of the scutellum almost without punctures; the median segment at the base shagreened, the centre with a wide, deep furrow, in which are a few stout transverse keels; the apex is irregularly and rather strongly transversely striated, the striations coarser above than below; there is a deep furrow at the top. Propleuræ coarsely shagreened; the mesopleuræ strongly punctured and without a furrow; the basal half of the metapleuræ more shining and less pilose than the rest. Wings hyaline, the nervures and stigma blackish; the pedicle of the petiole oblique, as long as the cellule; the recurrent nervures are received somewhat less than half the length of the cellule in front of the transverse cubital nervures. Legs thickly covered with longish hair and white pile; the spurs pale testaceous at the base. Abdomen thickly haired, and, at the apices of the segments, lined with silvery pubescence.

PISON (PARAPISON) CRASSICORNE, *sp. nov.*

Long. 5 mm. ♀.

Hab. Barrackpore (*Rothney*).

Comes near to *P. Rothneyi*, but smaller, the furrow on the median segment extending from the base to the apex; and the apex transversely striolated.

Head: the vertex and front shagreened, covered with a short fuscous pubescence; the cheeks and clypeus thickly covered with silvery pubescence; the mandibles and palpi pale testaceous. Antennæ entirely black, distinctly thickened towards the apex. Thorax shining, the pro- and meso-thorax impunctate, the oblique half of the median segment transversely striated; there is at its base a narrowish furrow, and behind the striated part,

and separated from the basal, is a short, wider, and deeper furrow. The pro- and meso-pleuræ are shagreened; the latter has a wide and deep longitudinal furrow in the middle; the metapleuræ are shagreened at the base; the rest smooth and shining. The second cubital cellule at the top is as wide as the space bounded by the recurrent and first transverse cubital nervures; the upper part of the second transverse cubital nervure is curved; the lower straight, only slightly oblique; the second recurrent nervure is interstitial. The four front tibiæ are for the greater part dark testaceous; the hinder pair broadly dark testaceous at the base; the calcaria pale. Abdomen shining, impunctate, densely covered with white pubescence towards the apex; the five apical segments cream-coloured at their apices, the last more broadly than the others.

TRYPOXYLON COGNATUM, *sp. nov.*

Nigrum, abdomine rufo-balteato, capite thoraceque dense albo-pilosis, calcaribus albis; alis hyalinis, apice fere fumato.

♀. Long. 11 mm.

Hab. Himalaya.

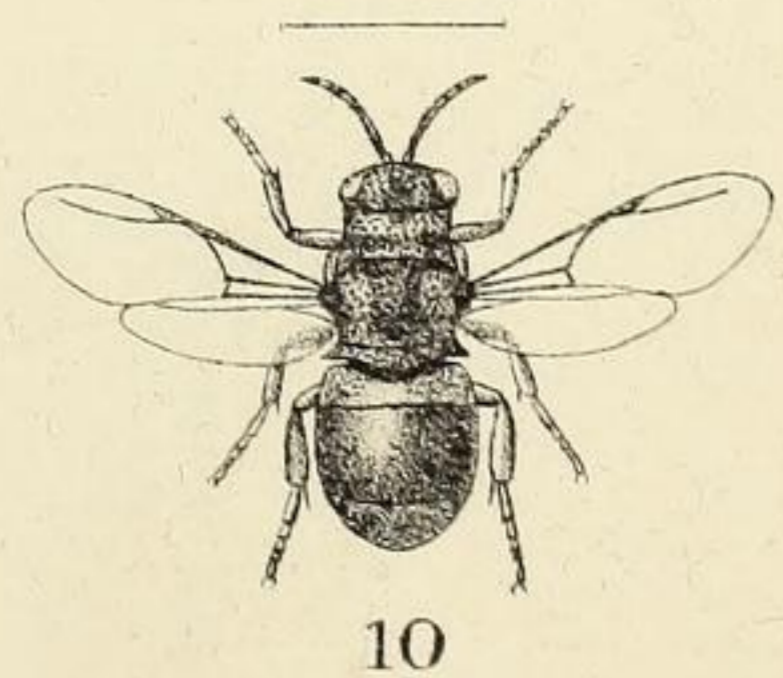
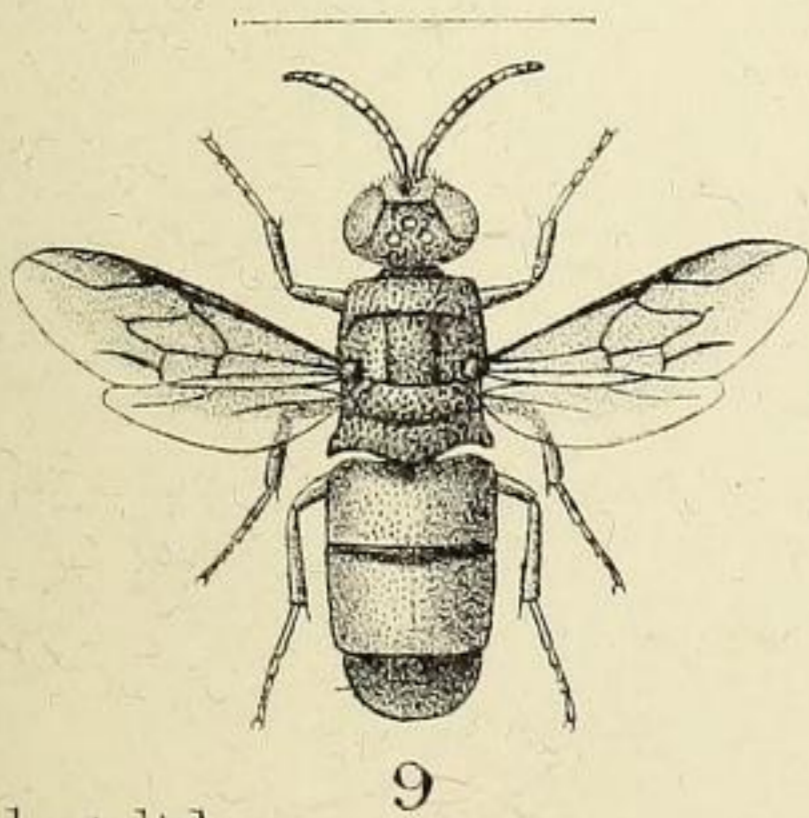
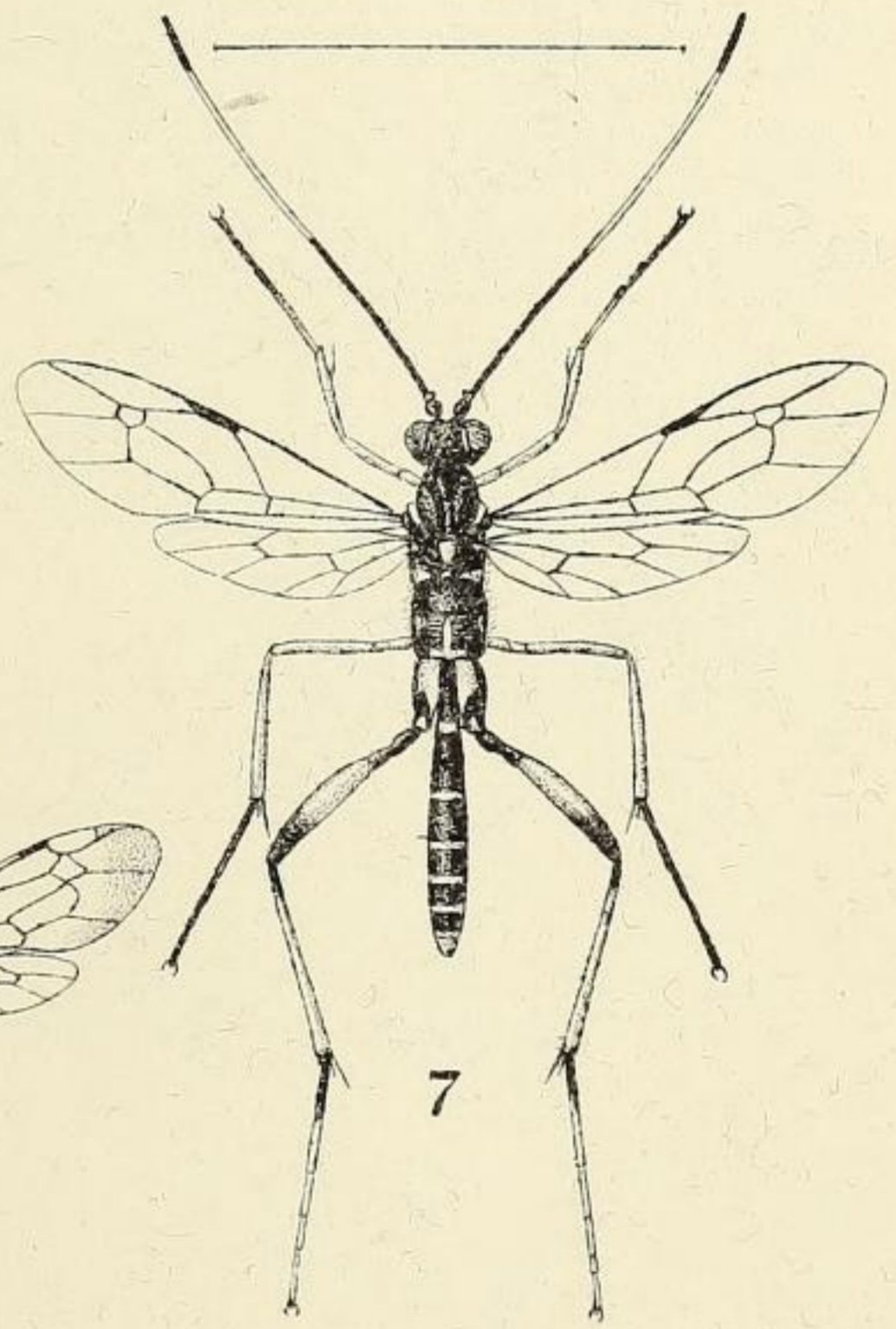
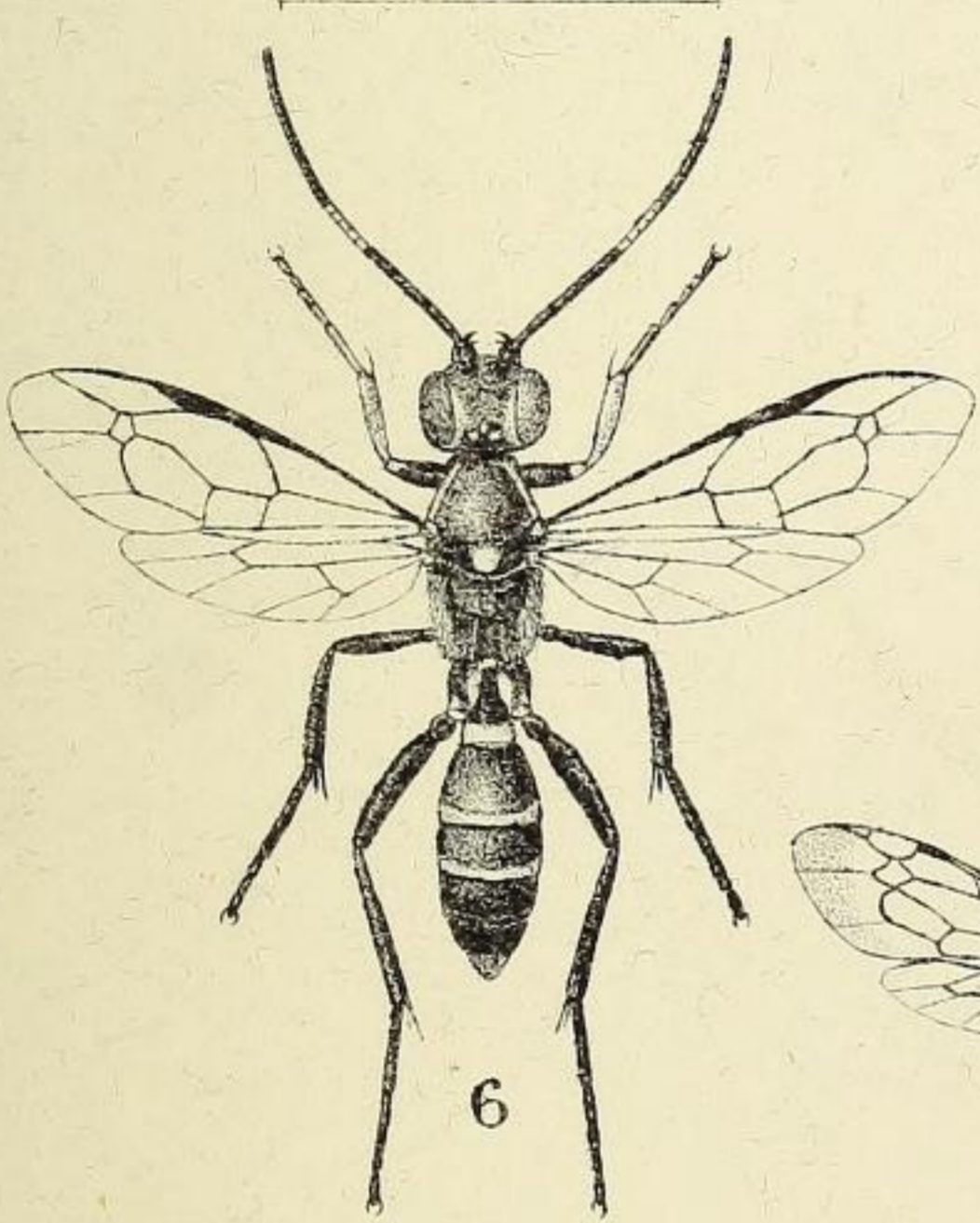
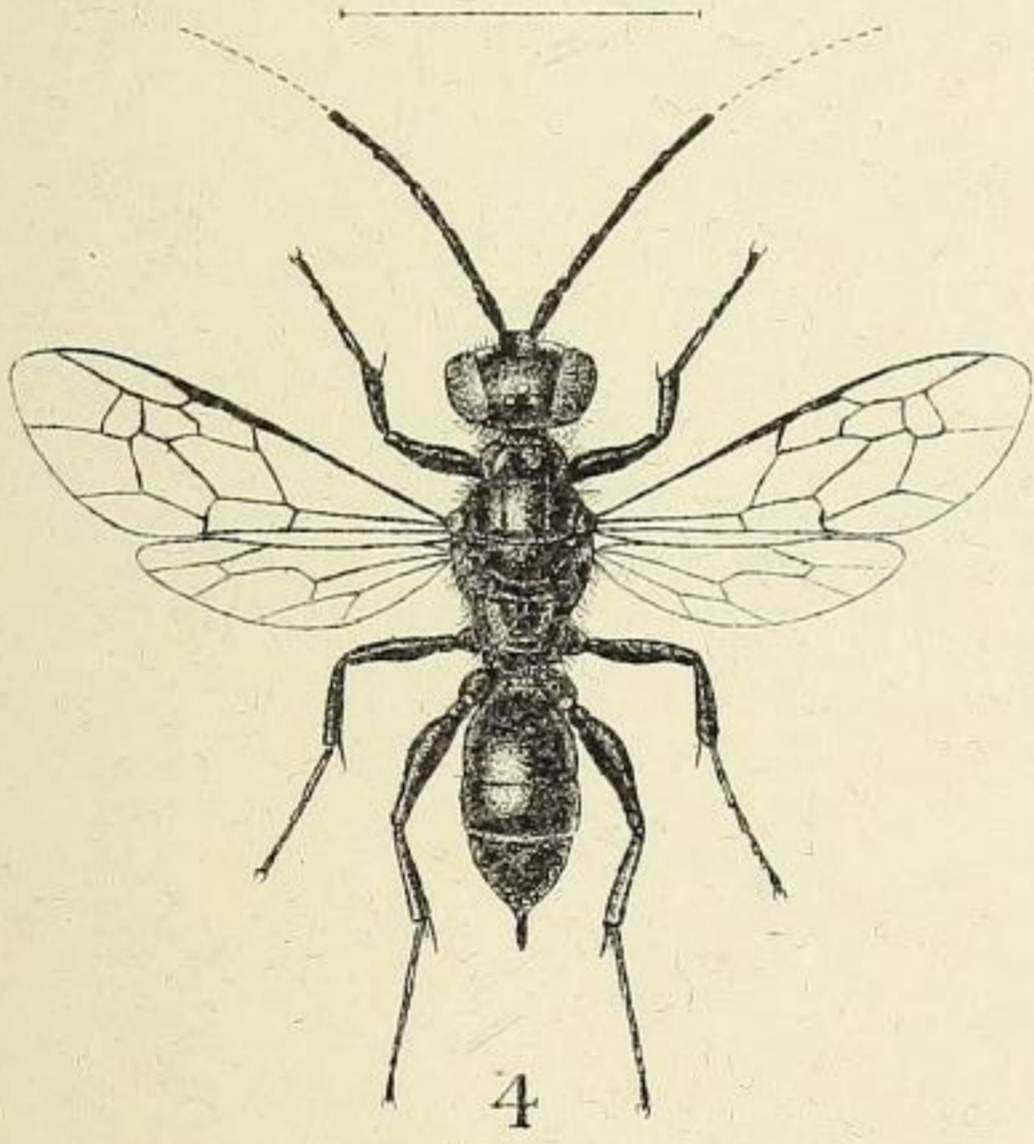
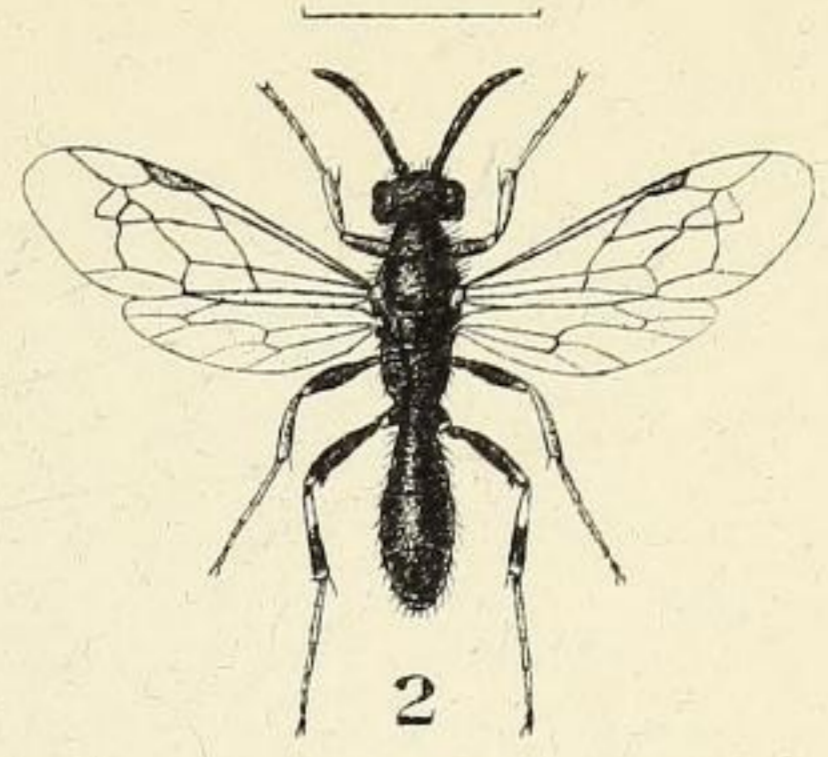
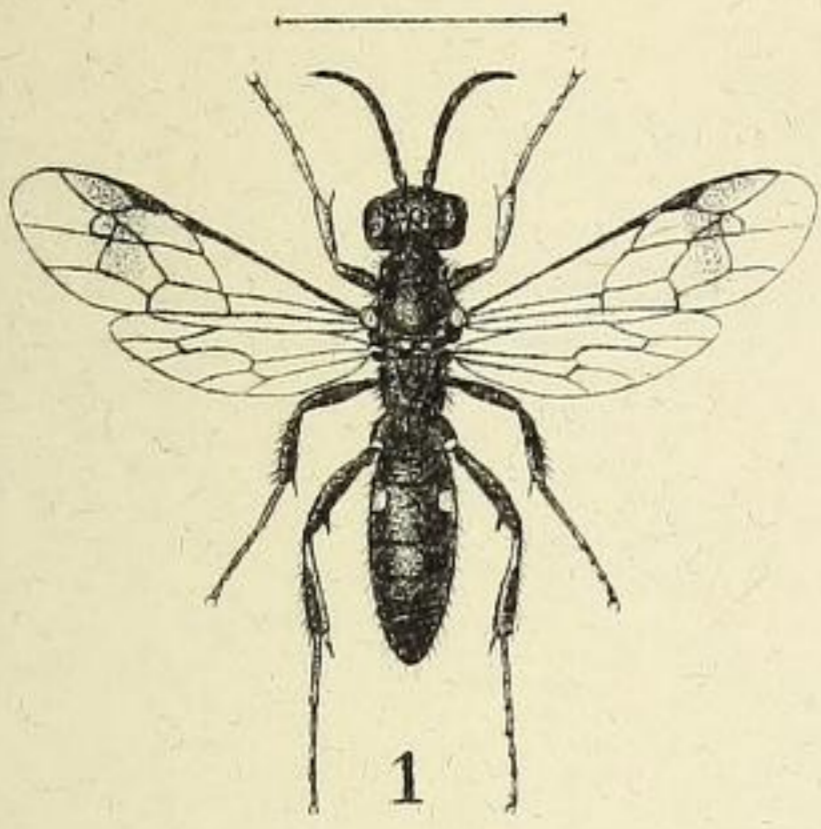
Head black; the front and vertex alutaceous; the former with a shallow longitudinal depression in the centre; the eye incisions and the clypeus and the space below the antennæ densely covered with silvery pubescence; the vertex covered with short fuscous pubescence; the outer orbits except at the top, covered with longish, silvery pubescence; the mandibles piceous towards the apex; the palpi pale yellow. Antennæ entirely black, the scape covered with white hair. Thorax black; the mesonotum very shining, and with a bluish tinge; the pubescence on the pro- and meso-notum and scutellum dense, pale, that on the post-scutellum longer than on the scutellum. At the base the median segment is longi-

tudinally striated; in the centre depressed, and in the middle of the oblique part is a longer, wider, and deeper depression; the apex closely punctured. Pro- and mesopleuræ and sternum densely covered all over with dense white pubescence; the metapleuræ sparsely covered with shorter white hair at the apex. Legs entirely black, except the apices of the four anterior tarsi, which are rufous, and the spurs, which are white. Wings clear hyaline, the apex slightly infuscated; the stigma and costa black; the nervures paler. Abdomen densely covered with short, pale hair; the petiole longer than the second and third segments united; the apex of the petiole and the second and the third segments ferruginous.

Comes nearest to *T. rejector* Sm. from Mainpuri, with which it agrees in coloration, but which differs from our species in having "an impressed line in front of the anterior ocellus, terminating at an elevated carina just above the insertion of the antennæ" (*cf. Trans. Zool. Soc. vii., 189*).

Explanation of Figures in Plate 16.

1. *Alyson annulipes*.
 2. *Didineis orientalis*.
 3. *Diodontus striolatus*.
 4. *Dolichusus clavipes*.
 5. *Pison appendiculatum*.
 6. *Ichneumon mitra*.
 7. *Cryptus perpulcher*.
 8. *Gastrosericus Binghami*.
 9. *Chrysis furiosa*.
 10. *Hedychrum lugubre*.
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J. Purkiss, del. et lith.

HYMENOPTERA ORIENTALIA.