

ON THE TENTHREDINIDÆ & PARASITIC HYMEN-  
OPTERA COLLECTED IN BALUCHISTAN BY  
MAJOR C. G. NURSE.

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PART I.

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Up till now information regarding the Tenthredinidæ and Parasitic Hymenoptera of Baluchistan has been a complete blank. The collection, small though it is, made by Major Nurse at Quetta and Peshin, forms a welcome addition to our knowledge of the Hymenoptera of that part of our Indian Empire. As we know practically nothing about the species inhabiting North-West India, of Afghanistan on the north and of Persia on the west of Baluchistan, it is useless to discuss the geographical relationship of the species. It may, however, be remarked that the affinity of the species appears to be with the Palearctic, rather than with the Oriental Zoological Region. The occurrence of a species of *Nematus* (a large and typical Palearctic and Nearctic genus, and found, too, only commonly in the northern parts of these regions) is very interesting. The occurrence of the common European *Ichneumon*, *Bassus letatorius*, Fab., is not of much importance in deciding the geographical affinities of the Baluchistan species; for the reason that it has now spread itself (probably in comparatively recent years) all over the globe, following its host, some wide ranging Dipteron, no doubt.

The species in the collection are of small or medium size. The large species of *Ichneumonidæ* (*Ichneumon*, *Amblyteles*, &c.) appear to be comparatively rare. Undernoted is a summary of the collection:—

Tenthredinidæ ...	...	...	...	1 species.
Cynipidæ ...	...	...	...	1 "
Chalcididæ ...	...	...	...	11 "
Proctotrypidæ ...	...	...	...	2 "
Evanidæ ...	...	...	...	3 "
Braconidæ ...	...	...	...	13 "
Ichneumonidæ ...	...	...	...	25 "
Bethylidæ ...	...	...	...	1 "
				—
Total ...				57 "

## TENTHREDINIDÆ.

*Nematus orientalis*, sp. nov.

Pale straw-green (probably bright green when alive), the centre of the front and vertex and the mesonotum fulvous. The antennæ, a mark at the base of the scutellum on either side, a large elongate mark on its sides, a narrow line bordering the cenchri behind, a large mark behind them, a narrow line bordering the blotch and one or more transverse marks on the base of the abdomen, black. Wings hyaline, the costa and stigma green, the nervures black. Legs coloured like the body, the tarsi blackish. ♀.

Length 5.6 mm.

Quetta. August.

The 3rd joint of the antennæ is as long as the 4th. Head smooth and shining; frontal area flat, clearly defined laterally, the sides being raised, the raised part reaching to the inner side of the laterally ocelli; at its end are 2 large round tuberoles, below which the front is depressed. Ocellar region raised; there is a deep furrow between the ocelli. Apex of clypeus rounded. Mandibles fulvous at the apex; the apical tooth long. Palpi green, infuscated. Middle lobe of mesonotum furrowed on the basal half in the middle. Cerci long, infuscated. Sheaths of saws broad, projecting, its apex infuscated, roundly narrowed from the top to the bottom. The 1st transverse cubital nervure faint in the middle; the 3rd cubital cellule is fully one-third longer than its width at the base, not much wider at the apex than at the base; the 2nd recurrent nervure is received not far from the 2nd transverse cubital—about one-fourth of the length of the latter. Tarsal joints not spinose at the apex; patellæ distinct, becoming gradually longer; claws bifid.

The ♂ is black above, including the middle of the vertex and front broadly and the occiput still more broadly; the antennæ are thicker, distinctly closely pilose; brownish, black above, longer than the body, the mesopleuræ are fulvous, as are also the hind femora; the hind tibiæ are broadly infuscated. It is smaller (3.5 mm.) than the ♀.

The occurrence of a species of *Nematus* in Baluchistan is of much interest. The genus is one of the most abundant in arctic and Northern Europe and America, being rare in the temperate regions and very rare in the South of Europe. Its occurrence clearly indicates the presence of a Palearctic element in the Fauna. The species belongs to the group of *N. miliaris*, Fz.

## CYNIPIDÆ.

*Onychia rufithorax*, sp. nov.

Black; the antennæ, thorax, except the mesosternum, and base of abdominal petiole rufous, the forelegs rufous, the 4 posterior black, their coxæ rufous; wings clear hyaline, the nervures pale fuscous, the arcolet knob-shaped, darker coloured. ♂

Length 3 mm.

Quetta. August.

Head and thorax densely covered with white pubescence. Face closely, finely punctured; from each antennæ a stout keel runs down to shortly below the face; they converge below, the converging parts being much thinner than the upper. A stout keel runs down from the lower, innerside of the outer antennæ along the innerside of the eyes; on the upper part of the front are some irregular oblique striae. Ocelli large, placed in a curve on the edge of the vertex. Occiput transverse; on its top are 2 stout and a thinner, lower curved keel. Basal slope of pronotum smooth, the sides bordered by a stout keel; the propleurae irregularly, somewhat strongly striated. Mesonotum with 4 stout longitudinal keels, the central stouter than the others; it is irregularly transversely striated. Sides and centre of scutellum stoutly keeled, the central keel stouter than the others. There are 2 keels down the centre of the metanotum. Meso- and metapleurae smooth and shining; the latter thickly covered with white pubescence. Abdominal petiole with the dilated basal part as long as the hind coxæ, smooth. The mesosternum is bordered laterally by a shallow furrow. Antennæ longer than the body, the 3rd joint twisted, slightly longer than the 4th; they are 14-jointed.

I have described in Manch. Memoirs, 1888, an *Onychia striolata* from Bengal; it may be known by the thorax being entirely black, besides the structural differences.

## CHALCIDIDÆ.

*Leucospis quattuensis*, sp. nov.

Black, the sides of the head in front broadly, from the ocelli to shortly below the eyes, the pronotum except the basal slope and a broad transverse line in the middle, a large mark in the centre of the mesonotum, transverse at the base and apex, and gradually, but not much, narrowed towards the apex, the scutellum, except at the base, the black on the base projecting as a triangular wedge into the yellow, a mark, longer than wide, on the sides of the metanotum, its innerside straight, the outer gradually narrowed to the middle, a small conical spot—the narrowed end below—under the wings, a large pyriform mark, extending from the top to the bottom and with the wide end below, on the base of the metapleurae, a broad band on the apex of the 1st abdominal segment, the mark commencing near the top of the apical slope; following this are 2 broad transverse bands, the narrower, extending to the sides and curved; the 2nd broader, not reaching to the sides, not so curved and with the sides more rounded, followed by a large, longer than broad, mark, broadly rounded at the apex, and the apical three-fourths of the ventral surface, yellow. Legs yellow; the greater part of the 4 front coxæ, the hinder coxæ except for a triangular mark on the innerside at the base above, the sides from shortly below the middle and the underside from behind the middle and the teeth, all of which are black. Wings hyaline, suffused with fulvous at the base, the apex with fuscous; the basal nervures fulvous. The 3rd to 5th and the apical joints of the antennæ are fulvous; the scape is fulvous red. ♀.

Length 12 mm.

Quetta. August.

The markings on the head, antennal scape, thorax and legs are vermilion; probably this is owing to discolouration by cyanide of potassium. There are 10 teeth on the hind femora; the basal 5 are thick, blunt, closely pressed together; the following 4 are longer, sharper, more curved and clearly separated; the last is widely separated and is shorter than any of the others. The post-scutellum projects distinctly over the median segment; its apex is unequally bidentate. The entire body is covered with a short white pubescence and is closely, somewhat strongly punctured except the metanotum which is closely reticulated. The joints of the flagellum are distinctly longer than thick, except the 4th to 6th, which are about as wide as thick. There is a smooth broad transverse keel near the apex of the pronotum. The eyes do not converge below; the malar space is nearly as long as the antennal scape. In the centre of the face are 2 furrows which converge roundly towards each other in the centre. The centre of the clypeus is roundly incised, the sides rounded.

*Leucaspis nursei*, sp. nov.

Length 9-10 mm. ♂.

Quetta. May to August.

♂ This species is almost identical in colouration and markings with the preceding, but it is smaller; and may readily be known by there being only 8 teeth on the hind femora, namely, 3 stout, longish basal closely pressed, a stouter one near to them, but clearly separated, 2 longer and sharper ones, widely separated from it and from each other, and still more widely separated is a short stump; the post-scutellum is not so distinctly bidentate; the apex of the clypeus has the lateral lobes more distinct, and broader. As regards colouration the mark below the tegulae is 3 times larger and pyriform, the black line on the pronotum is half the length and thickness, the post-scutellum is marked with yellow, and the 2 marks on the metanotum are much larger and more particularly broader, being not much longer than wide; the lines on the sides of the face are broader and are united at the top by a mark which projects upwards between the antennae; the striation on the vertex is stronger and closer.

If there were only the colouration differences I should feel inclined to regard the 2 as forms of one species; but the structural differences are too great to warrant one in looking upon them as varieties of one species.

The ♀ is larger (14 mm.); the dark markings on the thorax are smaller and are brown rather than black; only the clypeus is black; the antennae have no black; the black transverse marks or lines on the abdomen are narrower; the 3rd is broader than the others, especially on the sides; the ovipositor reaches to the middle of the basal segment; the post-scutellum is more distinctly bidentate; the lobes rounded.

*Dirrhinus erythrocerus*.

Black; the antennae, the 4 anterior femora, tibiae and all the tarsi rufous, the

body and legs sparsely covered with silvery white pubescence; wings hyaline, the nervure fuscous. ♂

Length 3-5 mm.

Quetta. May.

Centre of head above strongly punctured, the punctures round and clearly separated, the centre of the vertex with a broad, strongly aciculated longitudinal band. Occiput broadly roundly incised, the centre depressed. Frontal lobes twice longer than the width of the base; they are narrowed towards the apex, the inner edge has a distinct margin; it is depressed, the inner and apical edges raised, the outer less distinctly margined; the frontal incision becomes gradually widened towards the apex, it being there fully twice the width of the base. Pro- and mesonotum strongly punctured; the former has the apex smooth in the middle, this being also the case with the centre of the scutellum which is largely impunctate. Metanotum closely reticulated striated; there is a short keel in the centre of the apex; on the sides are 2 keels which converge and unite near the apex, forming a longish triangular area. The sides, at the base, are broadly roundly dilated, in the middle is a stout triangular tooth; the apex projects into a shorter tooth. Propleuræ (especially above) strongly punctured; the base of mesopleuræ much less strongly and less closely punctured, opaque; the apex is somewhat strongly, but not very regularly striated, the two parts being separated by a curved keel. Metapleuræ distinctly irregularly reticulated. Abdominal petiole broader than long, the top with 4 stout, longitudinal keels; on the base of the 2nd segment, extending from the base to near the middle, is a closely striated space; the apical segment is broadly, deeply, roundly incised in the centre. The hind coxæ are flat above and finally closely striated in the middle; the basal joint of the trochanters is raised, compressed, oblique, and appears almost to form part of the coxæ; the lower is shorter and projects below into a ball-like mass, longer than broad, and appearing as if it were attached to the underside of the base of the femora.

This cannot well be confounded with any of the described species. Characteristic is the roundly, deeply incised apex of the abdomen. In the species known to me, e.g., *D. excavatus*, Dal. and *D. ruficornis*, Cam., the apex is trilobate, it having a large central, bordered by a small lateral lobe.

*Megacolus pruinosus*, sp. nov

Black, densely covered with silvery pile, the hind coxæ and femora bright red; the 4 anterior tarsi of a darker red; the hinder tibiae of a darker red colour; the wings hyaline, the nervures black. ♀.

Length 7 mm.; terebra 2 mm.

Quetta. August.

Head rugosely punctured, the cheeks and temples densely, the vertex more sparsely covered with long silvery hair. Malar space almost as long as the eyes; the inner side bordered by a distinct keel. Pro-mesothorax and scutellum strongly punctured, the punctures distinctly separated; the pleuræ closely rugosely punctured. Metanotum laterally bordered by a stout keel; the lower

spine obliquely turned upwards; the upper shorter, bluntly rounded; the central part is stoutly irregularly reticulated, the sides are more closely, irregularly, and less strongly reticulated. The apices of the abdominal segments are punctured, the basal weakly, the apical much more strongly and widely, the basal part of the ovipositor closely, weakly punctured; the sides of the segments, covered with silvery pubescence. Legs densely covered with silvery pubescence; the tarsal spines are rufous.

The hind femora are minutely closely serrate and densely pilose. The antennæ are inserted opposite the lower part of the eyes; the top of the antennal scape reaches to the ocelli. Parapsidal furrows distinct.

*Chalcis responsator*, Walk.

Specimens from Quetta and from Deesa (Bombay) taken by Major Nurse agree fairly well with Walker's description (Trans. Ent. Soc., 1862, 355) of this species from "North Hindostan". The apex of the scutellum is bilobate; the lobes are broader than long and are separated by a rounded incision. Walker calls the apex "bidentate".

*Chalcis fulviteris*, sp. nov.

Black; the apices of all the femora—the apical third of the anterior, the others more narrowly, the base and apex of the 4 posterior tibiae broadly; all the tarsi and the anterior tibiae, rufo-fulvous; the black on the tibiae bordered by fulvous; wings hyaline, the apical nervures black; tegulae yellow. ♂.

Length 5 mm.

Quetta. May.

Apex of antennal scape broadly obscure yellow below, piceous above; the flagellum is stouter than usual, densely covered with white pile. Front and vertex reticulated-punctured; the outer orbits to near the bottom coarsely punctured; the lower part is smooth, shining; this smooth part, above, becomes gradually narrowed from the inner to the outer side; on the inner side it is bordered by a keel. Pro- and mesonotum with the scutellum closely covered with round punctures, each with a raised point in the centre; on the scutellum the punctures are more widely separated; and there is a smooth line down the centre of the basal half; its apex is broadly bilobate. Metanotum irregularly reticulated; the areola deep, about 3 times longer than wide. Basal 4 segments of abdomen smooth and shining; the 5th and 6th strongly, deeply punctured. Upper part of propleurae smooth, the middle aciculated, the lower irregularly punctured. Base of mesopleurae smooth; the middle with 3 large foveae, below which are 3 pairs of irregular ones. Metapleurae strongly, irregularly reticulated; below, the apex of metanotum roundly projects at the sides.

*Oncochalcis quettaensis*, sp. nov.

Black; the apical two-thirds of the fore femora, the apical third of the middle and the fourth of the posterior, the tibiae, tarsi and tegulae bright lemon-yellow, the wings clear hyaline, the nervures black. ♀ and ♂.

Length 5 mm.

Quetta. June to August.

Densely covered with long, glistening white pubescence, except on the base of the abdomen. Apex of scutellum with a broad, rounded, smooth and shining, undivided projection. Metanotum stoutly, widely reticulated. The central basal area fully twice longer than wide; the side rounded, not toothed. Femora with 12 teeth; the basal close together, the apical (except the penultimate, which is smaller and less clearly defined) larger and more widely separated. Basal segment of abdomen smooth and shining; the 2nd sparsely and not very strongly, the others strongly and closely punctured. Centre of face strongly, but not closely punctured above, the lower part smooth and shining; the sides strongly and closely punctured, more or less reticulated, this being also the case with the sides of the front and vertex; middle of front widely, deeply excavated, very smooth and shining, bare. Hind ocelli separated from each other by more than double the distance they are from the eyes. The antennal scape and pedicel are shining, sparsely haired; the other joints opaque, stout, the third is narrowed at the base, twice the length of the pedicel and not much longer than the 4th, the apical joints are brownish. Pro- mesonotum and scutellum strongly, closely punctured. Upper part of propleura smooth, obscurely striated; the lower strongly, but not closely punctured. Meso- and metapleura coarsely, reticulated-punctured; the greater part of the base smooth, shining; of the former, the extreme base is bordered (except near the top) with a row of large foveae, the one below the other. The inner side of the hind tibiae is black. Parapsidal furrows shallow, broad.

Comes near to *C. marginata*, Cam.; the latter species has the abdomen much less strongly punctured; the mesopleura much more distinctly striated; there is only a small smooth space in the centre of the face and all the femora have the apices narrowly yellow, the yellow marks being of the same size on all of them. It is a larger and stouter species; the metanotal areola is longer, acutely pointed above and with a stout keel near the middle, and the reticulations on the apex of the metapleura are wider. *O. deesæ*, Cam., is also closely allied; the smooth space on the face is very small; the structure of the metanotal area is very different; there is no large central areola; there is a row of large basal areas; the abdominal segments in *deesæ* are not punctured.

This species is not unlike *C. bilobatus*, Cam.; that species may be known by the weaker femoral teeth; by the mesopleura being only weakly striated above; by the face being more strongly punctured, the middle being also punctured, and by the much more strongly and regularly reticulated metanotum on which the areola is clearly defined, deep and triangular; and the sides do not project into a blunt tooth behind: in the present species they project into a broad, rounded tooth.

*Oncochalcis rufescens*, sp. nov.

Rufescent, densely covered with silvery pubescence; the vertex darker coloured, infuscated, the pleurae brighter in tint than the mesonotum; the

tegulae, apical half of fore femora, apical fourth of the 4 hinder, the 4 anterior tibiae and tarsi, and the posterior tibiae, except for a rufous band near the middle, pale bright yellow; the hind tarsi yellow, tinged with fulvous: wings clear hyaline; the costal nervure fuscous, the others black. ♀.

Length 5 mm.

Quetta. June.

Head closely, rugosely punctured. Frontal depression smooth, shining; not quite so wide as the sides, there is a thick, smooth, wide keel on the centre, bordered on either side by an oblique, somewhat pyriform, raised smooth and shining space. Pro-mesothorax and scutellum closely, strongly punctured; the scutellum large, somewhat broader than long, the apex broadly rounded above, projecting and bluntly bilobate above; the apex is more densely haired than the rest. Metanotum short, vertical, shining, widely reticulated, the central area long, extending from the top to the bottom, sharply, obliquely narrowed above; the bottom slightly roundly narrowed. Propleurae closely, minutely punctured, a stout oblique keel below the middle. The upper part of the mesopleurae at the base is smooth; in the centre are 5 round, deep foveae; its apex is raised, it being thus separated from the posterior part, which is depressed above, raised below and stoutly irregularly striated, or keeled at the base. Metapleurae reticulated closely; their sides behind broadly rounded. Abdomen closely minutely punctured, the 2nd and following segments densely covered with a longish silvery pile. The ovipositor is broad; it projects slightly beyond the top of the apical dorsal segment. Hinder femora closely serrate, pilose below.

*Neochalcis ? forticaudis*, sp. nov.

Black, densely covered with silvery pubescence, the hind coxae and femora bright red, the hind tibiae of a darker red, darker behind, the 4 anterior tarsi red, tinged with yellowish fulvous; wings hyaline, the nervures black. ♀.

Length 7 mm.

Quetta. August.

Head rugosely punctured, the front laterally reticulated; the frontal depression finely closely transversely striated, except shortly below the middle and above the bottom. The temples are more closely reticulated, the malar space more strongly; it is stoutly keeled on the outside; above, below the eyes, is a raised triangular space, sharply pointed below. Apex of scutellum not quite rounded, slightly roundly incised in the middle. Metanotum stoutly irregularly reticulated, with a small smooth triangular area near the top in the middle; the sides are broadly rounded, densely covered with long white hair. The basal 5 abdominal segments are shining, closely, finely punctured; except at the base the 6th segment is coarsely, rugosely reticulated-punctured; the apical segments on the sides are thickly covered with long white pubescence.

*Neochalcis* is the only described genus into which this species will fit. The single large tooth on centre of the hind femora is bluntly pointed; the rest is minutely serrate. The ovipositor is short, stout, obliquely narrowed at the apex.



*Etoxys xanthopus*, sp. nov.

Green variegated with brassy and blue tints, the metanotum indigo blue; the abdomen of a brighter colour than the thorax; the antennal scape dark fulvous; the flagellum fuscous; legs pale straw yellow; the anterior coxæ except at the apex, dark golden; wings clear hyaline, iridescent, the nervure pale testaceous, ♀.

Length 3 mm.

Quetta, June.

Head closely, distinctly punctured, the front and vertex slightly more strongly than the face; the clypeus indistinctly separated from the face, closely, longitudinally, slightly obliquely striated. Palpi yellow. Pro- and mesothorax with scutellum punctured like the head; the metanotum is much more obscurely punctured; there is a keel down the middle; at the base laterally is a distinct fovea. the obscure punctuation is intermixed with fine striæ. On the centre of the metapleuræ is a deep, wide longitudinal furrow, which is narrowed at the base. Abdomen as long as the head and thorax united, smooth and shining, gradually narrowed to a fine point at the apex.

The antennæ are more slender and the parapsidal furrows less distinct than they are in the British species of *Etoxys*. I have used the original spelling of this word as used by Ashmead in his "Classification of the Chalcid Flies." It has been spelled *Aetoxys* and *Hetoxys*.

*Etoxys marginicollis*, sp. nov.

Dark coppery green, the abdomen of a brighter green colour, largely tinged with coppery patches; the antennal scape and base of mandibles rufo-testaceous; the flagellum fusco-testaceous, darker above; the legs dark green, with coppery tints; the apex of femora, the tibiae and tarsi pale straw yellow; wings clear hyaline, the nervures pale yellow. ♀.

Length 3 mm.

Quetta, June.

Head closely, finely, distinctly, but not deeply punctured; the clypeus not separated from the face, closely, regularly, distinctly striated. Thorax punctured like the head, the punctures running into reticulations, especially on the mesonotum; the sides of the metanotum are smooth, shining and bright green; its centre is somewhat more strongly punctured than the scutellum. Pleuræ darker coloured than the scutellum; the apex of the pro- and meso- smooth and shining; the rest closely punctured-reticulated. Abdomen not quite so long as the head and thorax united; the apical half is gradually narrowed towards the apex, and is covered with a white pubescence.

Apart from the difference in the colouration of the legs this species may be known from *E. xanthopus* by the shorter and broader abdomen and by the much more strongly and regularly punctured-reticulated metanotum. The abdomen is shorter and broader than it is in typical *Etoxys*; and it may not really belong to that genus. The mandibles are 3-dentate; the apical tooth is larger and more clearly separated than the other two. The antennal scape is

shorter, it not extending to the hinder ocelli as in *xanthopus*; the hinder ocelli are separated from each other by a slighter greater distance than they are from the eyes. The head is wider than the thorax. The pronotum is transverse and margined at the base, not broadly rounded, and narrowed laterally as in *xanthopus*, which has a larger prothorax. In the forewings the stigmal branch is nearly as long as the ulna. The apical 3 joints of the antennæ are thickened.

#### SCELIONINI.

##### *Sparasion albo-pilosellus*, sp. nov.

Black, densely covered with long white pubescence; the antennal scape and the legs, except the coxæ, bright rufo-fulvous; the antennal flagellum fuscous below; wings hyaline, the nervures fuscous, the stigma black. ♂.

Length 4.5 mm.

Quetta. May.

Frontal ledge broad, smooth, shining, the edges broadly rounded; the front is raised above it, broadly rounded and with a raised border; immediately behind the border it is smooth; between this border and the ocelli it is irregularly, mostly obliquely striated. Except on the sides in front, the vertex is irregularly transversely striated-reticulated. Pro- and mesonotum shining; the hairs issue from punctures; there are no furrows except on the apex, where they are deep. Scutellum smooth at the base, the rest strongly punctured; it is semicircular, large; the basal furrow is stoutly crenulated. The centre of the metanotum is depressed, bordered by a keel which, at the apex, curves outwardly, then runs backwards obliquely to the base of the segment, there being thus formed 2 areas; shortly beyond the middle of the inner keels is a stout transverse keel, with a more irregular one on either side, besides a few broken keels; the sides have a stout keel which broadly projects and is united to the apex of the central keel; the apical slope is almost smooth. The upper part of the prothorax is margined on the outer side, broadly rounded; the basal slope is smooth. The base of the mesopleuræ is punctured, the rest smooth, except the apical half above which is raised and strongly striated. The upper part of the metapleuræ is strongly closely striated; the striae curved and interlacing; the base above is punctured, the lower part stoutly striated, the upper apical smooth. The basal 3 abdominal segments are closely, strongly longitudinally striated; the 4th is weakly and irregularly striated and the 5th still more so; the segmental divisions are distinct and crenulated.

The post-scutellum is flat and strongly striated; the ventral segments are weakly striated at the base. Palpi rufo-testaceous.

#### HELORINÆ.

##### *Helorus striolatus*, sp. nov.

Black; the tegulæ, tibiae and tarsi testaceous, the hinder pair darker coloured; mandibles and palpi dark piceous, the wings clear hyaline, the nervures black. ♂.

Length 4 mm.

Quetta, June.

The 3rd joint of antennæ as long as the 4th. Head and thorax covered with a minute white pile. Face closely, distinctly, the clypeus more sparsely punctured; it is separated from the face by a broad curved depression ending laterally in a round fovea. Front and vertex laterally closely punctured; in the centre they are more sparsely and less strongly punctured; above, and between the antennæ, is a large, broad fovea; there is a curved furrow behind the hinder ocelli. Mesonotum and scutellum shining, only minutely punctured; the apex of the latter has on the sides a few short keels. On the sides of the post-scutellum, at the base, are 3 deep foveæ clearly separated by keels. Metanotum stoutly irregularly reticulated. Upper part of propleuræ smooth; the lower part at the base rugose, on the apex are 5 stout keels which become gradually shorter from the top to the bottom. On the base of the mesopleuræ is a stout keel running from the top to the bottom, it is longitudinally irregularly striated on either side. Metapleuræ irregularly closely reticulated, almost rugose. Abdominal petiole nearly half the length of the rest of the abdomen; it is irregularly punctured-striated on the sides; on the basal half above are 2 keels, which unite at the apex and converge, but do not unite at the base; the dilated part is thickly covered with white pubescence. The basal abscissa of the radius is dilated below. The abdominal petiole is longer than usual.

#### EVANIIDÆ.

*Ecania nurseana*, sp. nov.

Black, covered with a white down; wings clear hyaline, the nervures black; the metasternal process stout, long, widely diverging. ♀ and ♂.

Length 6-7 mm.

Quetta, June to August.

Face shining, strongly but not closely punctured; the sides of clypeus widely depressed, the central part gradually narrowed towards the apex, which is transverse. Malar space smooth, fully half the length of the eyes. Front and vertex almost impunctate; smooth, shining; from the ocelli a deep furrow runs down to the antennæ; below the middle they curve obliquely inwardly, then run parallel, close to each other, downwards; outside these a narrower furrow runs obliquely from the outerside of the ocelli to the outerside of the antennæ. Hinder ocelli separated from each other by a distinctly greater distance than they are from the eyes. Middle of mesonotum strongly, deeply, closely punctured; the sides almost impunctate; the furrows deep. Scutellum strongly, but not very closely, punctured all over. Metanotum strongly reticulated, more closely at the base; the apical slope covered with white pile. Abdominal petiole smooth, shining. Antennal scape long, as long as the pedicel and the following joint united; these two united are as long as the 4th and 5th joints united. Tibiæ and tarsi sparsely, minutely spinose. The base and lower part of the propleuræ are strongly deeply punctured, the

apex above smooth. The basal, upper half of the mesopleura smooth and shining; the raised lower part bears round, clearly separated punctures, the apex bears stout, longitudinal keels and is more or less reticulated.

The tarsi are covered with a dense white pile: the long spur of the hind tibiae does not reach to the middle of the metatarsus by a perceptible space; it is as long as the 2nd joint. Sides of thorax at the base broadly rounded, as are also the sides of median segment. Temples short, sharply oblique.

The ♂ is similar; it is, if anything, more densely pilose.

This species, in Schletterer's tables, as regards the ♂, would come in near *E. verrucosa*, Schl.; the ♀ near *E. princeps* with which it cannot be confounded. In size and appearance it is not unlike *E. appendigaster*, but that has not the tibiae and tarsi spinose and the scutellum is not strongly and closely punctured as it is in the present species.

*Gasteruption buluchistanense*, sp. nov.

Black, the 2nd to 5th abdominal segments red; a line on the underside of the four anterior tibiae and tarsi and a short ring near the base of the hind tibiae, white; the end of the sheaths of the ovipositor white; wings clear hyaline, the nervures and stigma black. ♀ and ♂.

Length 13; terebra 15 mm.; ♂ 11 mm.

Quetta. May-July.

Head and thorax densely covered with white pubescence. The 3rd joint of the antennae is distinctly shorter than the 4th; it and the 2nd together are not much longer than the 4th. The apex of the clypeus is shortly, roundly incised; the centre is depressed. Malar space as long as the 2nd antennal joint. Eyes parallel, not converging. Hinder ocelli separated from each other by double the distance they are from the eyes; the anterior half of the hinder are placed behind the eyes. Temples long, roundly narrowed. Occiput roundly incised, sharply margined. Collar short, as long as the width at the apex. Middle lobe of mesonotum somewhat strongly, but not very closely, punctured; the lateral are much more sparsely and finely punctured. Scutellum sparsely punctured along the sides. Metanotum irregularly reticulated, more widely and distinctly on the apex than on the base; on the apex are 2 longitudinal keels. Pro- and mesopleurae finely rugose, densely covered with white pubescence; the apex of the latter is smooth above; the lower part is striated; the striae are clearly separated.

In one specimen there is a white line on the apical half of the metatarsus. The upper discoidal cellule is closed and is longer than the lower. Comes near to *G. subulosum* in Schletterer's arrangement.

*Gasteruption quettaense*, sp. nov.

Length 7.8 mm. Ovipositor longer than the body.

Quetta. May to August.

This species is much smaller than the preceding; has the abdomen much less narrowly red; may otherwise be known by the occiput not being incised, but transverse.

Head smooth, the upper part sparsely, the lower thickly covered with white pile. Hind ocelli separated from each other by double the distance they are from the eyes; they are placed slightly behind the hinder edge of the eyes. Temples about one-half the length of the eyes, roundly narrowed behind. Malar space about as long as the pedicle of the antennæ. Throax alutaceous, opaque, covered with a white down; the metanotum almost rugose, a smooth shining line down its centre. The lower part of the propleuræ is shining, sparsely punctured and is separated from the upper part by a narrow furrow. The 3rd antennal joint distinctly shorter than the 4th; it is twice the length of the pedicle, the scape is not twice longer than wide. The 4 front tibiæ and tarsi are for the greater part white; there is a narrow white line at the base of the tibiæ and a wider one on the base of the metatarsus.

The amount of red colour on the abdomen varies; the ♂ appears to want the white mark on the metatarsus. Probably the quantity of white colour on the 4 anterior tibiæ and tarsi varies. The stigma is fuscous; the posterior discoidal cellule is shorter than the anterior. The punctuation on the thorax is sparse, but distinct.

## BRACONIDÆ.

*Microgasterinus*.*Dapsilotoma*, gen. nov.

Antennæ 36-jointed. Radial cellule long, narrow, lanceolate, extending to the apex; arcolet triangular, the basal nervure roundly curved, the apical straight, oblique; transverse median nervure received distinctly beyond the transverse basal; the recurrent nervure in the 1st cubital cellule clearly distant from the first transverse cubital. Basal abscissa of cubitus distinct. Eyes hairy; there is a distinct malar space. Clypeus separated from the face by a narrow furrow. Median segment reticulated, keeled down the middle. Basal two abdominal segments longer than the others; the 1st longer than wide, longer than the 2nd, which is square.

There is a crenulated furrow on the mesopleuræ; the legs are stout, the spurs short; stigma large, broad; the radius issues from its middle; there is a distinct cubitus and radius in the hind wings. Ovipositor short, its sheaths broad.

This genus should be readily known by the large number of joints in the antennæ. 23 is the largest number hitherto recorded, namely in the Brazilian genus *Oligoneurus*, the other genera having from 14 to 21 joints. The affinities of my genus are with *Microgaster* and *Microplitis*.

*Dapsilotoma testaceipes*, sp. nov.

Black, the flagellum of antennæ rufo-fuscous; the legs rufo-testaceous; the coxæ black; wings hyaline; the costa and apical two-thirds of stigma black, the base of stigma white, the nervures testaceous. Mandibles and oral region rufus; the palpi testaceous. Head and thorax obscurely, minutely punctured, covered with a white down. Metanotum strongly reticulated; the upper side of the pleuræ obliquely, closely striated. Abdomen smooth,

shining; the centre of the 1st segment raised, clearly separated from the sides. Hind tarsi stout, pilose; the metatarsus slightly longer than the following two joints united; the long spur of the calcaria about one-third of its length; the last joint of the hind tarsi is longer than the penultimate; the pulvillus large. ♀.

Length  $2\frac{1}{2}$  mm.

Quetta. June.

*Protapanteles ? nigrescens*, sp. nov.

Black, smooth, and shining, covered with a white down: the base of 4 hinder tibiae and anterior tibiae and tarsi testaceous as are also the palpi; wings clear hyaline; the costa and stigma fuscous, the nervures pale. ♀.

Length 2 mm.

Quetta. August.

Antennae much longer than the body, stout, the joints elongated, the 3rd shorter than the 4th. Face with a broad smooth, impressed line down the middle. Eyes densely haired. Mesonotum and scutellum minutely shagreened; the metanotum smooth and shining. Central region of 1st abdominal segment narrowed towards the apex; the sides are paler coloured; the 2nd segment with oblique furrows enclosing a triangle, the apex of which is at the base of the segment.

Except that apparently *Protapanteles* does not possess grooved lines on the 2nd abdominal segment this species agrees better with it than with any of the Ashmeadian genera. *Protapanteles* is not adopted by Szepligeti, who sinks also 4 other of Dr. Ashmead's genera. Cf. Gen. Ins. Brac. 105.

CARDIOCHILINÆ.

*Cardiochiles nigricollis*, sp. nov.

Black, the apex of the fore femora and their tibiae and tarsi testaceous; wings hyaline, the apex of the anterior from the 2nd transverse cubital nervure and the apex of the posterior more narrowly, dark fuscous; the stigma and nervures black. ♂.

Length 6 mm.

Quetta. May.

Smooth and shining, except the metanotum, which is coarsely rugosely punctured. In the centre of the latter is a large area which is wide in the middle, gradually narrowed to a sharp point at the base and apex; its sides are bordered by a stout keel. Pro- and mesopleuræ smooth and shining; their apices crenulated; below the middle of the latter is a curved striated band. Metapleuræ rugosely punctured, more strongly below than above.

The occiput is transverse. Middle of mandibles testaceous. Sutureform articulation and the oblique furrows on the 2nd abdominal segment deep, clearly defined. Calcaria black, the long spur of the hinder reaching to shortly beyond the middle of the metatarsus; the tarsal joints are densely pilose below.

*Cardiochiles erythronotus*, sp. nov.

Black, the mesonotum red; the apex of the fore femora, the tibiae and tarsi

and a narrow band on the base of the middle tibiae and the calcaria rufo-testaceous. Wings hyaline, the apex smoky from the apex of the stigma; costa and stigma black, the middle nervures testaceous. ♂.

Length 5 mm.

Quetta. May.

Smooth, shining, densely covered with white pubescence; the base of the metanotum irregularly rugose; the areola widely separated from the base, semicircular. Pro- and mesopleurae smooth; the meta- smooth at the base; the rest closely rugosely reticulated-punctured; the centre at the base with 3 longitudinal keels. Temples roundly dilated; the occiput roundly incised.

Apart from the differences in colouration this species may be known from *C. nigricollis* by the areola being semicircular and by the occiput not being transverse. In colouration it agrees with *C. ruficollis*, Cam., from Bombay. The differences between them may be expressed thus:

Areola extending from the base to the apex of the segment, whitened in the middle, narrowed towards the base and apex; a large square area on either side; occiput transverse: calcaria black ..... *ruficollis*.

Areola not extending from the base to the apex, semicircular; no area on either side; occiput not transverse, calcaria testaceous ..... *erythronotus*.

*Ruficollis* has the pubescence denser and longer, and the tubercles are red.

#### CHELONINE.

##### *Chelonus arcuatus*, sp. nov.

Black, the 4 anterior knees, tibiae and tarsi, the basal half of the hind tibiae and the base of the tarsi narrowly, yellowish testaceous; wings hyaline, the costa and nervures pale testaceous, the stigma black. Base of metanotum with a large area, somewhat longer than wide, in the centre; it is slightly roundly narrowed at the base and apex. ♀.

Length 3.5 mm.

Quetta. May.

Antennae 20-jointed. Face closely punctured; the clypeus shining, its apex depressed, broadly rounded. Front and vertex finely, closely punctured; below the ocelli finely closely transversely striated. Mesonotum finely closely punctured; the apex and sides of the scutellum closely striated. Metanotum closely rugosely punctured-reticulated; in the centre are 2 keels, roundly curved at the base, forming an area which is longer than broad; it is irregularly reticulated and has a stout keel down the centre; the apical slope is closely, strongly punctured; the lateral teeth short, broad. Pleurae closely punctured, more or less striated. Radius short, not reaching to the apex of the basal third of the apical part of the wings; it is roundly curved; the basal two abscissae are equal in length. Striation-reticulation on the abdomen strong at the base, becoming gradually weaker towards the apex.

##### *Chelonus fortispinus*, sp. nov.

Black, the apex of the 4 anterior femora, their tibiae and tarsi testaceous, a broad band at and behind the middle of the hind tibiae, the basal two-thirds

of the metatarsus and the calcaria, white. Wings hyaline, the costa, stigma and apical nervures black, the basal nervures and metatarsus white. ♀.

Length 5 mm.

Quetta. August.

Antennæ 28-jointed and over, as long as the body. Face transversely rugose-punctured. Clypeus closely punctured, broad at the base, gradually narrowed towards the apex; the latter is smooth, transverse. Malar space closely transversely rugose. Sides of front stoutly obliquely striated; the sides of the vertex longitudinally rugose, the posterior part transversely striated. Mesonotum longitudinally rugosely punctured, most strongly and coarsely behind. Middle of scutellum smooth at the base, the rest rugosely punctured; its sides keeled. Apical slope of metanotum keeled above, its sides projecting into sharp, longish teeth; the base is deeply depressed, crenulated; the basal part is closely reticulated; in the centre are 3 longitudinal keels, of which the central is thinner than the others; the apical slope is closely, strongly transversely reticulated-punctured. Propleuræ closely reticulated-punctured, below, at the base, striated. Mesopleuræ closely, the metapleuræ more strongly and widely reticulated. Base of abdomen strongly longitudinally striated, intermixed with weaker transverse striæ; the striæ are strongest at the base; the striæ are continued to the apex, becoming gradually weaker. The transverse basal nervure is thickened and white at its junction with the stigma; the basal abscissa of the radius is thickened and is not much shorter than the 2nd; the 3rd does not reach to the middle of the space between the stigma and end of wing and is slightly, but distinctly, longer than the 2nd abscissa of cubitus; the recurrent nervure is interstitial.

The puncturation and striation vary in strength.

#### MACROCENTRINÆ.

##### *Macrocentrus rufo-testaceus*, sp. nov.

Rufo-testaceous, the metanotum and the greater part of the back of abdomen black; legs rufo-fulvous; flagellum of antennæ blackish, the basal joints fuscous; wings clear hyaline, the stigma fuscous, its base broad, the apex narrowly white; nervures testaceous. ♀.

Length 4; terebra about 2 mm.

Quetta. July.

Smooth and shining; the median segment thickly covered with white pubescence. Middle lobe of mesonotum clearly separated; the part at its apex rugosely striated. Third joint of antennæ clearly longer than the fourth. Second cubital cellule much narrowed at the apex; the lower part of the 1st transverse cubital nervure and the 2nd abscissa of the cubitus at the base are faint, almost obliterated, the latter on the basal half; the transverse median nervure is received shortly beyond the transverse basal.

##### *Macrocentrus fuscipes*, sp. nov.

Black, shining, smooth, the legs fuscous; the 4 anterior paler, more testaceous in colour than the hinder pair, the coxæ black; clypeus and mandibles, except



the teeth, fulvo-testaceous; palpi fuscous; wings hyaline, the stigma and nervures fuscous; the base of the former broadly, its apex narrowly white. ♂.

Length 4 mm.

Quetta.

Antennal scape black, suffused with testaceous; the flagellum blackish, paler below, densely covered with a short pile; its first joint is not much longer than the second. Metanotum closely transversely striated, the base smooth and shining; the smooth part triangularly dilated laterally. Pro- and metapleuræ shagreened; the base of the former is testaceous below; the mesopleuræ obscurely punctured below. The lower part of the 1st transverse cubital and the basal half of the 2nd abscissa of the cubitus are pale.

#### BLACINÆ.

##### *Orgilus nigromaculatus*, sp. nov.

Rufo-testaceous, antennæ, ocelli, median segment except for a broad band on the sides, narrowed behind, a large mark on the apex of the mesopleuræ in the centre, a mark in the middle of the 1st abdominal segment, the apex of the 2nd and the greater part of the others, black. Anterior legs rufo-testaceous, their coxæ black at the base; the middle black, the coxæ, femora and base of tibiæ broadly dark red; the posterior black, the base of the femora and tibiæ dark red; the calcaria rufous. Wings clear hyaline, the costa and stigma black; the nervures white. ♀.

Length 4 mm; terebra 2 mm.

Quetta. May.

Densely covered with a white pile; minutely closely punctured. Antennæ 29-jointed; the third joint a little shorter than the 4th; the flagellum densely covered with a dense white pile. Malar space fully as long as the antennal scape. Clypeus less closely punctured than the face and more shining; its apex is broadly rounded. Scutellum broader than long, its apex broadly rounded. Metanotum sparsely irregularly striated, its base depressed. Pleuræ closely punctured; the lower part of the mesopleuræ smooth and shining; the longitudinal furrow wide, crenulated. First abdominal segment sessile, slightly widened towards the apex; it is nearly as long as the 2nd and 3rd united; these are wider than long; the 2nd longer than the 3rd; it has a narrow smooth line down the middle. Calcaria short. Stigma broad compared with its width.

The transverse median nervure is received beyond the transverse basal; it is therefore an *Orgilus sensu str.*

#### BRACONINÆ.

##### *Bracon quettaensis*, sp. nov.

Rufo-testaceous, palpi, antennæ, a large spot on the sides of mesonotum at the scutellum at the base, base of metanotum broadly, mesosternum, a mark at the base of the basal 2 abdominal segments and the sheaths of the ovipositor, black. Wings light fuscous, the stigma and costa testaceous, the nervures of a darker testaceous colour. ♀. and ♂.

Length 3 mm.; the ovipositor slightly longer.

Quetta. May to August.

Shining, the head and thorax smooth; the abdomen closely minutely punctured and striated. Body and legs thickly covered with short white pubescence. There is no area on the base of the 2nd abdominal segment. Sheaths of ovipositor thickly covered with short stiff black hair.

The amount of black on the legs varies. In the male they may be testaceous with the femora lined above with black; the apex of the tibiae broadly and the tarsi black. The mark on the base of the metanotum may be entire or divided; its stigma, too, is darker. The apical abscissa of the radius is about one-fourth longer than the basal two united.

*Bracon iridipennis*, sp. nov.

Rufo-testaceous, the antennae, ocellar region, palpi, mandibles, occiput broadly, apical half of mesonotum broadly on the sides, sternum, metanotum, the basal abdominal segment and the others, less distinctly in the centre, black. Legs black, the knees broadly testaceous, the spurs black. Wings hyaline, highly iridescent, the stigma dark fuscous, the costa and nervures black. ♂.

Length 3 mm.

Quetta. May.

Head and thorax smooth and shining, sparsely covered with white pubescence. The 2nd and 3rd abdominal segments are closely finely punctured, more or less obscurely striated laterally. Third abscissa of radius nearly twice the length of the basal two united. Sutureform articulation and the furrow at the base of the 3rd segment closely striated.

Apart from the differences in colouration this species should be known from *quettaensis* by the longer third and shorter second abscissa of the radius.

*Vipio nursei*, sp. nov.

Rufous, the antennae, ocelli, a small spot on the base of the middle lobe of the mesonotum, a broad line on the apical half of the lateral, the meso- and metasternum, the 4 hinder coxae below and the posterior at the apex above, the apex of the hind tibiae and the hind tarsi, black. Wings dark fuscous, the nervures, costa and apical half of the stigma black, the basal half of the latter yellow. ♀ and ♂.

Length 8-12 mm.; terebra 40 mm.

Quetta. June—August.

Face minutely closely punctured; malar furrow distinct; there are a few long hairs over the clypeus. Mandibles covered with long fulvous hair. Thorax smooth; the metanotum punctured, but not closely or strongly; the apical slope with a shallow furrow. Basal two abdominal segments coarsely rugosely punctured; the 3rd less strongly on the basal two-thirds, the 4th on the basal half. The basal triangular area on the 3rd segment smooth; the furrows, transverse and the curved ones on the base of the 3rd crenulated; the apical segments are smooth. Hypopygium large, cultriform, projecting largely beyond the dorsal segment. The middle ventral segments are marked with black.

The ♂ is similar. In size the species varies considerably.

*Vipio unicolor*, sp. nov.

Rufo-testaceous, the flagellum of antennæ black; the wings fuscous, with the usual hyaline spots, the basal half of stigma ochraceous. ♀.

Length 13 mm.; terebra 28 mm.

Quetta. August.

Face closely punctured, the front and vertex smooth. Mesonotum strongly, but not closely punctured; the scutellum almost impunctate. Metanotum deeply closely punctured, almost reticulated in parts. Pleuræ smooth. Basal 3 abdominal segments closely rugosely reticulated-punctured; the furrows closely crenulated, wide.

(To be continued.)