

XIII NEW INDIAN LEPTIDÆ AND BOMBYLIDÆ, WITH A NOTE ON COMASTES, OSTEN SACKEN, v. HETEROSTYLUM, MACQUART.

By E. BRUNETTI.

Atherix intermedia, mihi, sp. nov.

♂ West Bengal. Long. $8\frac{1}{2}$ mm.

This species closely resembles both *limbata* of Osten Sacken and my recently described *calopa*, and takes an intermediate position between the two.

From *limbata* it is distinguished by an all-black thorax, with a little whitish shimmer on the humeral parts, round the edges of the dorsum and in front of the insertion of the wings; also by an oblique, whitish stripe on the sides of the thorax, which, otherwise, are wholly black, as is also the scutellum. The legs are black; the fore femora (except base and tip), the apical half of the middle femora, the middle tibiæ wholly, and the hind femora are yellow, but the latter bear a broad, deep, black band, occupying about the middle half of their length. The wing has a large, very distinct blackish brown stigma, whilst the cross-band on the wing is much darker. The abdomen is differently coloured, closely resembling that of *calopa*, except that the posterior half of the 4th and 5th segments are occupied by a whitish band, which is invisible from certain points of view. The basal half of the 5th, and the whole of the 6th segment, is black.

From *calopa*, the broad band on the hind femora easily separates it, this character being consistent in the ten specimens examined. The wing marks also distinguish it by the prominent stigma and the much more distinct apical part.

Described from ten ♂♂ in excellent condition taken by Dr. Annandale, 16-iv-09, on Paresnath Hill, West Bengal, at an altitude of 2,000 ft., on rocks at the edge of a small jungle stream, where it was present in large numbers.

N.B.—This is evidently a good species, the ten specimens agreeing exactly in all particulars, whilst the three examples of my *calopa* are also consistent; *limbata* of Osten Sacken, however, according to him, appears to be variable. My present species is best described as possessing the abdomen of *calopa* with the wing of *limbata*, with the addition of an all-black thorax and a large, black stigma.

Atherix labiata, Big.

A ♂ in my collection from Maskeliya, Ceylon, taken in March, agrees well enough with Bigot's description for me to have little doubt of its identity with his species. The pale basal third of the hind femora differentiates this species from all other Oriental ones.

Chrysopilus ornatipennis, mihi, sp. nov.

♀ South India. Long. 4 mm.

Head.—Frons blackish grey, grooved down the centre, one-fourth of width of head, only slightly wider towards vertex; ocelli on subtriangular, concolorous, slightly elevated triangle, black, with a narrow, pale border, and a few microscopic bristles. Antennæ, 1st and 2nd joints livid brown, 3rd with greyish pubescence, bristle very long. Proboscis shining, livid brown at base, bright yellow on narrow part, with two very minute dark brown hairy lamellæ. Back of head yellowish grey above, bluish grey below, with numerous minute black bristles, especially towards the vertex.

Thorax yellowish brown, the dorsum covered with microscopic scales, which, seen from behind, are brilliantly emerald-green on the centre and bright blue towards the sides, the posterior part and over the whole of the scutellum. In addition to the scales the entire surface of the thorax and the scutellum is covered with long curved bristly hairs. Sides of thorax uniformly shining tawny yellow.

Abdomen brownish, becoming yellow on posterior border, covered on entire upper surface rather closely with soft black hairs, which extend round the sides and are very short on the yellow belly; they are rather thicker and longer on the fore corners of the abdomen. The 5th segment is much reduced in size, blackish grey; 6th and 7th stylate, blackish grey with a broad, distinct, pale yellow posterior border, supplemented by a long, thick, cylindrical blackish grey ovipositor.

Legs.—Coxæ and femora bright tawny yellow, tibiæ pale brown, tarsi black; coxæ with some bristly hair on and around them, hind pair with a black streak on apical border; middle and hind tibiæ with two short yellow spines at extreme tip.

Wings pale blackish grey, posterior part nearly clear, light grey or nearly clear in the following places: distal ends of basal cells; middle of anal cell; a rather narrow pale yellowish band from the middle of the fore border (adjacent to the black stigma) to the distal end of the discal cell, thence becoming pale grey; a yellowish grey diffused spot just beyond (and contiguous to) the stigma. All the cells below the 3rd longitudinal vein are pale grey or clear in their centres. The upper branch of the third vein bears a small appendix at the bend, which is rectangular. The inner cross-vein is placed at one-third of the discal cell, and the two forks of the upper branch of the fourth vein spring almost simultaneously from the upper corner of the discal cell. Halteres pale yellow.

Described from a single perfect ♀ from Tenmalai in the Western Ghats (Travancore State, South India), taken by Dr. Annandale, 22-xi-08; now in the Indian Museum.

***Chrysopilus flavopunctatus*, mihi, sp. nov.**

♂ South India. Long. 5 mm.

Head.—Vertex very small, elevated, with the ocelli as in *ornatipennis*. Facets in upper half of eyes rather larger than those in lower half. Frons deep black; face dark grey. Antennæ brown, third joint black, bristle long, microscopically hairy. Proboscis dusky yellowish brown; palpi rather robust, pale brown, hairy.

Thorax.—Dorsum and scutellum dark brown, with microscopic hairs which appear bright green when seen from behind; scutellum with some rather long black hairs. Sides shining dark brown, nearly bare.

Abdomen dark brown, nearly black towards tip, with short blackish hairs; belly concolorous.

Legs dark brown; fore coxæ and fore femora wholly; posterior femora towards the tips pale; knees black; all coxæ with black hairs. Hind tibiæ with two pale yellow spines at tip.

Wings blackish brown; stigma in marginal cell, elongated, deep black, extended to costa on the outer side of a short, bright yellow stripe which intersects it in the middle, this stripe also reaching to the costa.

There is a pale, parti-coloured irregular spot (yellowish and pale grey) at the distal end of the 1st basal cell, and extending below into the 2nd. Posterior border of wing fading into light grey, the veins in this part being narrowly suffused with black. Halteres pale yellow.

Described from a perfect ♂ in the Indian Museum collection, taken by Dr. Annandale at Maddathorai (Travancore State, South India), 18-xi-08.

***Chrysopilus magnipennis*, mihi, sp. nov.**

♀ Ceylon. Long. $4\frac{1}{2}$ mm: long. alar $6\frac{1}{2}$ mm.

Head mainly brownish yellowish grey, a little darker here and there, especially just above the base of the antennæ. Ocellar triangle distinct. Antennæ black, the joints subequal in length, 2nd narrowly white at tip, 3rd with grey hair, style long. Palpi blackish brown, brownish grey dusted. Proboscis blackish brown, with a few hairs. Under side of head with a little black hair.

Thorax.—(Denuded.) Ground colour black, also at sides. Traces of a little grey hair and some golden yellow hairs around base of wings and on scutellum.

Abdomen black, moderately close grey hair, with which are intermixed some golden yellow ones. Belly with grey hair.

Legs wholly yellowish, except coxæ, a very narrow ring at base of femora, and the tarsi tips black.

Wings practically clear; venation as in my *segmentatus*, except that the upper branch of the 2nd longitudinal vein takes towards its tip a slight downward curve, thence curving rather sharply upwards to the costa, and enclosing a well-marked, large, dark brown stigma. Halteres: stem black, club yellowish.

Described from a perfect ♀ (except denudation of thorax and scutellum) in my collection, from Maskeliya, Ceylon, taken in August, and sent me by Mr. E. Green.

N.B.—This species should be near Bezzi's *sauteri*, but differs by the black antennæ; yellow hairs on abdomen; and the very different proportionate lengths of the body and the wings.

***Exoprosopa niveiventris*, mihi, sp. nov.**

♀ West Bengal. Long. 18—20 mm.

Head.—Frons, at widest (level of antennæ), one-third the width of the head, narrowing at vertex to half this width; dark brown, covered with close, light brownish orange scales, which become lighter coloured below the antennæ. The whole frons is also covered with short black hairs; the ocelli are small, black, close together, placed on a small tubercle. Mouth border yellow, proboscis dark brown. Antennæ black, first and second joints thickly beset above and at the sides with strong black bristles; third joint rather long, absolutely bare, with a very distinct style, which itself bears a microscopic but distinct apical joint. From the base of the antennæ obliquely to the edge of the eye, there is on each side of the frons a narrow groove, quite destitute of scales or pubescence. Back of head broad behind the eye, with minute black pubescence, and covered towards the sides with yellowish white, soft scales, which may perhaps extend over nearly all the back of the head in some specimens. A fringe of short, bright orange-yellow hairs encircles the back part of the head, meeting the dense pubescence of the thorax.

Thorax dull black, with some short black hairs towards anterior border, and in front of the scutellum.

The front part of the thorax (not extending to the dorsum proper) is covered densely with narrow, elongated, bright yellow scales, which also extend to the sides of the thorax, and form fan-shaped bunches below each shoulder, and behind each wing. These scales become almost thick pubescence at the sides of the dorsum, being especially thick above each wing. The true dorsum is very sparsely covered with very short yellowish scales, which probably even in perfect specimens never wholly cover the surface. The scales at the sides of the thorax are more yellow than orange. The posterior calli are prominent, ferruginous, covered with irregular small black bristles, with some yellowish white long scaly pubescence on the outer side, and there are four powerful long black spines placed close together and directed horizontally backwards.

Scutellum ferruginous brown, an irregular double row of black spines on posterior margin, and short yellow scales round the

dorsum, which is quite bare in the middle, both of scales and hairs.

Abdomen.—Ground colour black, covered with microscopic black scales. Thick, scaly, whitish pubescence at the sides of the 1st segment. At the base of the 2nd segment (which is the widest) a wide band of scaly yellow-white pubescence; the remaining segments also bear similar bands at their bases, of more whitish scaly pubescence, this being shortest on the 5th segment. On the posterior borders of the 1st, 6th and 7th segments is placed a row of rather strong black bristles, directed backwards. Genital organ distinct, black, encircled towards the posterior part and at the sides by a rather thick fringe of orange hairs; the tip itself more greyish, and bearing two vertical rows (containing seven in each) of rather long, roseate scales, like the teeth of a comb. Belly black, nearly covered, except towards the tip, with close, nearly snow-white, scaly pubescence, the tip with black bristles.

Legs black. Coxæ with yellowish white scales and distinct black bristles. Femora with similar scales and short black hairs, the middle pair with two rows of short, distinct spines on under side; the hind pair with a similar row. Fore tibiæ bare; middle tibiæ beset somewhat irregularly with four rows (one on each side) of conspicuous but moderately short bristles. Hind tibiæ closely beset with dirty white, elongated scales, lying close to the surface, and intermixed with strong, moderately short, black bristles. An irregular circlet of black spines at tip, most of them on the under side. Tarsi minutely but closely pubescent, with a row of minute spines below, being longest on hind pair.

Wings pale grey, costal cell and the basal parts of all the veins ferruginous brown. Costal apparently bare, but viewed microscopically it presents a very closely placed row of minute black spines, which are conspicuous on the extreme base of the costa, where they are larger, and are intermixed with close-lying, dark greyish scales. At the extreme base of the costa is a very powerful, thick, black, curved spine. Tegulæ bright orange, with a fringe of elongated scales, which are black on outer part of the edge and dirty white towards the base. Alula of wing grey, with a fringe on posterior border of grey scales, which continue for a short distance along the posterior margin of the wing. Halteres: stem brownish, club very pale creamy orange.

Described from two ♀♀ in almost perfect condition (dorsum of thorax and scutellum may possibly have been rubbed), in the Indian Museum, taken by Dr. Annandale at the base of Paresnath Hill, West Bengal, 16-iv-09 (1,000 ft.) A conspicuous species, resembling a *Hyperalonia* of my fourth group (*Rec. Ind. Mus.*, ii, 443).

***Exoprosopa* ? *niveiventris* ♂**

? ♂. West Bengal. Long. 16 mm.

Head almost exactly as in *niveiventris*, except that the first joint of the antennæ is pale, and the back part of the head is less

puffed out behind the eyes, where it is covered closely with very small creamy orange scales. Mouth border whitish, bare.

Thorax.—Dorsum dusky olive-brown, with two faint but distinct, narrow, widely separated blackish lines. Anterior part and sides with pubescence as in *niveiventris*, except that it is whitish below the posterior calli. Scutellum as in *niveiventris*.

Abdomen as in *niveiventris*. The genital organ is concealed within the body, but is covered with whitish shimmer and fine black bristles, its tip apparently consisting of a pair of rather complex orange-coloured claspers; the upper side of the tip being covered with thick, black, bristly spines.

Legs.—The under side of the fore femora is pale, and the spines below the hind tarsi less conspicuous.

Wings wholly very pale grey, including costal cell. The veins in the middle at the base of the wing are pale orange, as are also the subcostal, third and fifth longitudinals. Halteres cream colour.

Described from a single example taken by Dr. Annandale in company with *niveiventris* ♀, of which species I conclude the present specimen is the ♂. The frons is barely appreciably narrower, therefore the narrowness of the back of the head above, the difference in shape of the genital organs, and the nearly clear wings are the only points in which it materially differs from the previously described species.

Exoprosopa collaris, W

One from either the Kangra Valley (4,500 ft.) or Sikkim.

Argyramœba obscurifrons, mihi, sp. nov.

♀ Simla district. Long. 7 mm.

Head.—Frons moderately wide at vertex, increasing to double the width at level of antennæ, where it forms one-third the width of the head; grey, with blackish patches; covered rather thickly with black hairs, and with some whitish scales intermixed just above the antennæ. Ocellar triangle distinct, small, with some hairs. Antennæ, first and second joints black, bristly; third grey-dusted, bare, apical style rather short. Under side of head blackish grey, a moderately thick band of bristly hairs across lower part of face. Proboscis withdrawn, apparently dark brown. Back of head dark grey, minutely pubescent, some minute pale scales just behind the eyes, which latter are black.

Thorax.—Dorsum blackish grey, with a rather thick fringe of bristly hair in front, reaching over the shoulders and continued below. Bristly hairs between the shoulders and the roots of the wings. Sides lighter grey, with occasional whitish reflections, nearly bare. Scutellum blackish grey, with soft black hair.

Abdomen black, covered mainly with soft black hairs. A thick bunch of white hair on each shoulder, behind which, on the

posterior border of the 1st segment, near each side, are a few snow-white scales. There is also a row of white scales (more or less interrupted in the middle) to the posterior border of the 2nd segment, and another on the last segment. Belly black, softly pubescent, some whitish hairs in centre, and a longitudinal stripe of short yellowish hairs near the tip.

Legs black, minutely pubescent; femora with a little soft black hair below; posterior tibiæ with short bristles on outer and hinder sides.

Wings very pale grey, with the oblique baso-costal dark brown band occupying nearly half the wing, passing across the middle of the discal cell (where it is somewhat extended) to the hind margin of the wing which it reaches just before the tip of the anal cell. The colour is extended also from the costa to about the middle of the first posterior cell, enclosing a clear spot near the base of the first submarginal cell, and another near the base of the first posterior cell. On the outer cross-vein there is a circular spot, and a trace of a small one on the costa, near the tip of the marginal cell. Halteres yellowish.

Described from a single specimen taken by Dr. Annandale at Phagu (9,000 ft.), Simla district, 14—15-v-09.

Argyramœba limitarsis, mihi, sp. nov.

♀ Western Himalayas. Long. 5 mm.

Head.—Frons one-fourth of head at vertex, widening to one-third at level of antennæ, with rather thick brownish black hair. Ocellar triangle inconspicuous. Face blackish, with hair which from above appears whitish grey. Antennæ, first joint black (remainder absent). Proboscis withdrawn, apparently, with mouth border reddish brown. Back of head only slightly puffed out, blackish grey, with some whitish hairs.

Thorax shining black, with some yellowish white hair, and stiffer bristles towards the posterior corners. Sides of thorax black, with some whitish hair. Scutellum dark cinereous grey, with vestiges of some short yellow hair, and a few pale yellow bristles on posterior margin.

Abdomen blackish grey, with a slight brownish fringe, covered more or less sparsely with short pale yellow hair, most conspicuous on borders of segment. A bunch of whitish hair on each shoulder of the 1st segment. Belly with whitish hair.

Legs.—Coxæ yellowish grey with whitish pubescence. Femora and tibiæ pale yellow, the latter with minute bristles; tarsi blackish towards tips.

Wings nearly clear. A rather bright yellowish brown baso-costal band extends along the costa just beyond the middle, thence extending posteriorly along a line comprising the inner cross-vein, the base of the discal cell, and the outer side of the second basal cell. Below this cell the colour immediately fades away to a pale

grey, which covers the anal and axillary cells. Appendiculation of the upper fork of the second vein short but distinct. Halteres creamy yellow.

Described from a perfect specimen (except the missing antennæ) in the Indian Museum from Hathikund, Garhwal district, base of Western Himalayas, 3-v-09.

N.B.—The species falls in the central one of my groups in this genus.

Argyramœba claripennis, mihi, sp. nov.

♀ Punjab. Long. 7 mm.

Head.—Frons one-fourth width of head at vertex, broadening at level of antennæ to one-third; dark grey, with yellowish hair, which on the face becomes greyish or nearly white. Ocellar triangle inconspicuous. Antennæ black, with the upper sides of the joints greyish; basal joints with rather thick hair; bisection of style obvious, pencil of hairs small. Proboscis dark, withdrawn. Back of head dark grey, with thick yellowish grey hair in the middle.

Thorax.—Dorsum blackish grey, with short yellow hair, of which a bunch of paler colour is placed on each shoulder; a long and a shorter yellow spine in front of each wing, and five or six long yellow bristles towards each posterior corner, also some yellow bristles towards posterior margin of dorsum. Scutellum dark grey, with short yellow hair, and some yellow bristles on posterior margin. Sides of thorax ash-grey, white dusted, with a bunch of greyish white hair below each shoulder, and whitish hairs below this again.

Abdomen blackish, hardly shining, posterior margins of segments with rather wide, light brown bands. Whole dorsal surface apparently covered with short, soft, bright yellow hairs which become longest towards the sides on the posterior margin of the anal segments; where the brown segmental margins are also widened.

Belly blackish grey, with minute elongated whitish scales; belly becomes reddish yellow towards tip. There are two long pendent bristles towards the posterior margin, about the middle of each ventral segment. Genitalia not conspicuous but withdrawn.

Legs uniformly pale yellow except blackish towards the tarsi tips. The coxæ and femora are rather thickly, the tibiæ slightly, covered with minute whitish woolly scales, the tibiæ bearing moderately short black bristles in addition, as do also the hind femora near the tip. There is a row of microscopic bristles on the hinder side of the hind tibiæ.

Wings quite clear; submarginal cell brownish yellow; appendiculation not obvious; upper branch of second vein forming a very distinct downward loop towards its end. Halteres yellow.

Described from a single perfect example in the Indian Museum collection from Lahore, 8-v-08.

***Argyramœba nigrofemorata*, mihi, sp. nov.**

♂ Western Himalayas. Long. 5 mm.

Head.—Frons very narrow, about one-twelfth of the width at vertex, enlarging to nearly one-third at level of antennæ; dark grey in colour, becoming gradually ash-grey on the face below the antennæ. Frons with moderately thick black hair; face with thick soft white hair. Antennæ black, normal, bisection of style distinct, pencil of hairs very short. Proboscis brown. Back of head ash-grey, with minute pubescence and some rather short thick yellowish hair towards lower part.

Thorax—Dorsum blackish grey with short yellow hairs intermixed with stiff short black bristly hairs; anterior margin with rather long bristly yellow hair; a longer and a shorter yellow spiny bristle in front of each wing base. Sides of thorax light grey, with pale yellowish or whitish hairs. Scutellum concolorous with thoracic dorsum, and with some longer bristles towards posterior margin.

Abdomen subconical, blackish grey, with soft short yellow hairs. Belly mainly yellow with longer yellow hair. Genitalia apparently large and complicated, but withdrawn.

Legs.—Coxæ blackish, with reddish yellow tips and whitish hairs; femora black, with bases and tips reddish yellow, whitish grey scales and a little soft whitish hair below; tibiæ reddish yellow, with small black bristles, and with thicker shorter black bristles on hinder side, all the bristles on the hinder pair being stronger than on the other pairs; tarsi brown, closely pubescent, black towards tips, pulvilli yellow.

Wings quite clear; subcostal cell yellowish brown; appendiculation distinct; upper branch of second vein forming very distinct downward loop towards its end. Halteres rather deep yellow.

Described from a perfect ♂ in the Indian Museum collection taken at Hathikund, Garhwal district, base of Western Himalayas, 3-v-09.

Argyramœba duvaucelii*, Macq.Redescription.*

This species was first described under *Anthrax*, and I retained it in this genus in my recent paper; but a number of specimens recently obtained by the Indian Museum afford me the opportunity of recognising it as a true *Argyramœba*, the pencil of hairs at the tip of the antennal style being conspicuous, whilst the anterior branch of the third longitudinal vein shows a strong tendency to appendiculation, although it is actually appendiculated in one specimen only, in which, moreover, an additional veinlet (in one wing only) produces the particular submarginal cell characteristic of *Hyperalonia*. As this species was very insufficiently described by its author, I venture to append a redescription.

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♂ ♀ Long. 8—10 mm.

Head.—Frons at level of antennæ, one-third the width of the head, narrowing at vertex to one-third of this width (♂) or about half this width (♀); blackish grey, with short, soft black hairs. Face with moderately long and thick white hair. Mouth border very narrowly yellow; proboscis dark brown, shining, hairy.

Antennæ black, with a little greyish white shimmer; first two joints with black bristles, third bare, prolonged into the usual style, which is pale at the tip, the pencil of hairs quite distinct. Vertex of head with a distinct but short and deep indentation, which is almost better described as a *hole*, from which a central dark grey hairy protuberance arises, bearing the red ocelli, placed closely together.

Thorax dark cinereous, the dorsum with sparse yellowish short hairs round the edges. Anterior part of thorax with a dense fringe of very narrow long greyish white scales, intermixed behind with long, soft, black hairs, these latter continuing more or less over the whole dorsum, but rather shorter.

Sides of thorax with greyish white long thick scaly pubescence, thickest and most scaly below the humeral region; thinner, shorter and whiter posteriorly. It extends somewhat sparsely above the insertion of the wings. Scutellum blackish cinereous, covered with rather sparse but long soft black hairs and with traces of a little short yellow hair around the whole scutellum. A row of stiff hairs on posterior margin. Several strong black spines below the edge of the dorsum anterior to insertion of wing; the posterior calli also, moderately conspicuous themselves, bear a few stiff long bristles.

Abdomen blackish grey, 2nd segment distinctly but not greatly longer than the five remaining ones. The whole dorsum apparently covered with small yellowish white or quite white scales, which may be thickest at the bases and posterior margins of the segments. The whole surface is also covered lightly with moderately long, soft, black hairs, and there is a bunch of long whitish scaly pubescence at each side of the first segment. This pubescence is continued along the sides of the abdomen. Belly blackish, with short white hairs; longer white pubescence towards the base and the last segment (in the ♂ only), with rather closely placed, somewhat large and elongated snow-white scales, which sometimes spread over the last two, or even three, segments and extend round over the sides.

In the ♀, these white scales below the abdomen are absent, and are replaced by long black hair on the ultimate segment. The genital organs in the ♂ consist of a pair of stout upper claspers (?), the apical half tapering to a blunt point, each with a small lamella at the tip. This large organ is rufous brown, a little blackish above at the base, and with some reddish yellow hairs on the inner sides. Below these large claspers are some further, apparently complex organs which are not easily visible, the whole being protected by a large,

black, curved ventral plate, bearing on its margin reddish hair near the base and black hair posteriorly. In the ♀ the genital organs consist of a rather large subconical process with dense reddish or yellowish hair. In one example this organ is almost wholly withdrawn within the abdomen.

Legs black. Coxæ with rather long silky white hair; femora and tibiæ with small whitish scales, which extend, more sparsely, to the tarsi. All the femora with soft hairs below and some irregular weak bristles. The tibiæ generally with small, apparently irregularly placed spines, the most regular being a row on the outer side of the hind tibiæ. All the legs minutely pubescent.

Wings almost clear, first posterior cell rather widely open; fifth generally narrowly open, but in two specimens closed exactly on the margin; the lower side of the discal cell occasionally with the beginning of a very small appendix. Costal cell and extreme base of wing, brownish yellow; subcostal cell dark brown, very narrow. Fork of the third longitudinal vein sharply angled, and with only a tendency to appendiculation (which actually occurs only in two or three specimens, in two of which, moreover, there is an additional veinlet in one wing only, this veinlet producing the cell usually characteristic of *Hyperalonia*).

A dark brown suffusion, distinct but small, occurs at the base of the second vein, joined to that over the inner cross-vein; suffusions also at the angle of the fork of the third vein; over the outer cross-vein, the colour carried upwards along the inner side of the discal cell; also over the lower extremity of the veinlet, connecting the two branches of the fourth longitudinal.

Costa minutely spinose, with the usual spiny portion at the base. Halteres light brown, tip of club creamy. Tegulæ milk-white, with snow-white hair. Alulæ concolorous with wing, bearing a fringe of minute black hairs.

Described from several of each sex taken at Bhogaon, Purneah district (N. Bengal), 19—26-iii-09, by Mr. Paiva. These were in good condition and quite uniform in the specific characters. The Indian Museum also has a specimen from Sahelwa, Bahraich district (United Provinces, India), 11-iii-09 [Hodgart].

Argyramœba fallax, Meij.

One ♀ from Calcutta, 1-vi-09, presuming my previous identification of the species to be correct.

Argyramœba distigma, W

Several taken by Dr. Annandale, 16-iv-09, at Paresnath (West Bengal) on the edge of a small mountain stream at an elevation of 2,000 feet, and again at an elevation of 4,400 feet. One ♀ from Jalaban, in the plains of the Naini Tal district, 21-v-09.

Anthrax afra, F.

Two from Pipera, Gonda District (United Provinces, India), 9-iii-09, taken by Mr. Hodgart.

Anthrax insulata, Wlk.

Four headless specimens from Kūmdhik, Nepal Terai, 22-iii-09, but undoubtedly this species. Also a ♀ in good condition from Pipera [Hodgart].

Anthrax himalayensis, mihi, sp. nov.

♀ West Himalayas. Long. $6\frac{1}{2}$ —11 mm.

This species very closely resembles *maura*, L., of Europe, and for some time I was doubtful as to its specific distinctness, the first two specimens seen by me coming from Naini Tal, taken in May or June, 1893 (from the Lucknow Museum, now in the Indian Museum collection).

However, on Dr. Annandale capturing five further examples in the Simla district (7,000 to 9,000 ft.), 12—16-v-09, I have no hesitation in considering the form distinct, though allied very closely to *maura*, which must therefore be deleted from the Oriental catalogue.

The difference, though not great, is invariably consistent in the seven specimens before me, compared with four specimens of *maura* from Europe.

1. The abdominal bands of hair are white, not yellow.

2. The basal dark half of the wing bears no narrow pale yellow spaces around the cross-veins of that region as is the case in *maura*; but there is a small oval sub-hyaline spot in the upper corner of the first basal cell, with a narrow transverse streak above it, both these being weak or absent in *maura* (see text-figs. 1 and 2).

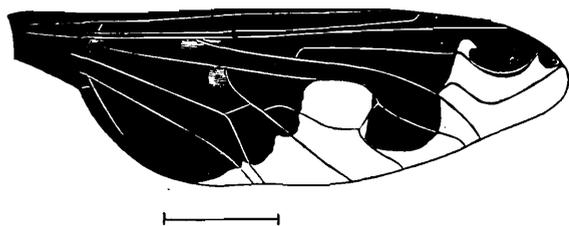


FIG. 1.

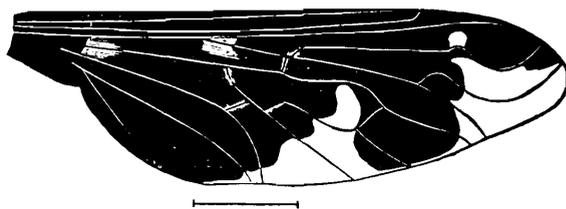


FIG. 2.

FIG. 1.—Wing of *A. himalayensis*.
 „ 2. „ „ „ *maura*.

3. The lobe of the dark part (which in *maura* extends broadly to the posterior margin of the wing) attains only the middle of the second posterior cell, where it is rounded off; and the apical portion of the dark part, near the tip of the wing, more nearly forms a small additional lobe than in *maura*.

4. In *maura* there are generally a few very small pale spots towards the upper and outer part of the dark portion of the wing. These are altogether absent in *himalayensis*, in which the dark colour moreover, is in some specimens quite black, in others dark brown.

N.B.—The remains (a thorax and upper part of each wing) of a large specimen in the Indian Museum (without history) bears a label "*A. bidens* Big., n. sp. Ind." It evidently is a specimen of my new species.

Anthrax aperta, Wlk.

Four examples taken by Dr. Annandale at Simla, 16-v-09, agree very closely with those in the Pusa collection and from Mussoorie previously referred to this species by me.

Taken on *Sedum* and the common marguerite.

Anthrax aureo-hirta, mihi, sp. nov.

♂ Calcutta. Long. 5 mm.

Head.—Frons at vertex one-eighth width of head, widening to barely double this width at the level of the antennæ; black, slightly shining. Ocelli on small raised tubercle.

Face black. Some white dust on each margin of the lower part of frons and of the face, and yellow and black short hair intermixed, above and below the antennæ, which are wholly black, the first two joints bearing some stiff black hairs, the third, soft white microscopic pubescence. Proboscis somewhat large, blackish at base, brownish towards tip, with some hairs.

Eye margins rather deeply cut away at the middle of the side. Back of head considerably puffed out, black, with golden yellow hair at the sides and a fringe of stiff bright yellow hair at the back, and with microscopic black hairs on the remaining portions.

Thorax.—Dorsum black, with short, not thick, bright golden yellow hairs; also a bunch of bristly yellow hair on each side, just behind the shoulder, with some yellow bristles; some yellow hair on anterior margin. A large reclinate yellow spine above each wing base and three or four black bristles on posterior portion of dorsum. Sides of thorax ash-grey, with some patches of whitish hair. Scutellum black, with golden yellow hair, and some black bristles towards posterior margin.

Abdomen moderately shining black, rather closely covered with short, bright golden yellow hair, which forms a large fan-shaped bunch on each side of the 1st segment, where it becomes almost scaly. There are short black hairs intermixed with the yellow towards the sides of the dorsum. Belly with close, soft, bright yellow hair.

Legs.—Coxæ black, with whitish hair; femora and tibiæ yellow, with short black bristles, which are longest on the latter,

and form a circlet at the tibiæ tips; tarsi black, with very short pubescence and bristles.

Wings very pale brown up to just beyond the middle where the colour fades away. Halteres creamy yellow.

Described from a unique specimen in perfect condition in the Indian Museum collection, from Calcutta, taken 1-vi-09.

N.B.—This species does not quite fall naturally into any of my temporary divisions of this genus, as the darkening of the wing does not partake of the usual oblique form; the coloration extending over the whole basal half of the wing.

***Bombylius scintillans*, mihi, sp. nov.**

♂ South India. Long. 5 mm. without proboscis, which measures 3 mm.

Head nearly as broad as thorax, black; eyes barely contiguous, but for about half the distance from the vertex to the antennæ; facets divided horizontally, those of upper half of eye much larger. Vertex distinct, ocelli red. Antennæ and proboscis entirely black, the former with microscopic white hairs on 3rd joint seen under a microscope. Bushy long black hair at the base of the antennæ, on the face and on under side of head. Some *elongated silvery white scales* in a row across the frons just above the antennæ, and more numerous ones in a small patch of them on each side of the face. The *surface* of the face itself is silvery white with a faint bluish shimmer when seen in certain directions. Back of head blackish, covered on upper part with bushy bright yellow hair, and on lower part with long black hair.

Thorax.—Surface deep velvet-black, with some black hairs at the sides and round the bases of the wings. The anterior part of the dorsum with bright yellowish hairs. (The surface is denuded posteriorly, but bears a few white scales with which it may normally be covered, but which may have accidentally come from the abdomen.) Scutellum black.

Abdomen dull shining black, bare of hairs on dorsum; a few at sides and on the wholly black belly. A thick row of *silvery white scales* at the posterior border of each segment, and distributed over the surface; in perfect specimens the dorsum of the whole abdomen is probably covered with them.

Legs black, with minute bristly pubescence on tarsi; middle femora with soft black hairs below; hind femora with several spiny bristles below; posterior tibiæ with numerous bristles.

Wings deep smoky brown, nearly black at base and on basal part of costa; posterior border paler; a blackish spot on upper angle of 2nd basal cell. Halteres black.

Described from a unique ♂ in perfect preservation (except for some denudation of the thorax and abdomen) in the Indian Museum, captured by Dr. Annandale at Kulattupuzha, at the western base of the Western Ghats (Travancore, South India), 19-xi-08.

Bombylius comastes, mihi, sp. nov.

♀ South India. Long. $3\frac{3}{4}$ mm. + proboscis 2 mm.

Head.—Frons as broad as thorax, dark olive-brown, with some long erect black hairs; two large oval raised spots, concolorous just below vertex. Ocelli distinct, small, bright red, situated at extreme vertex, at which is a small bunch of long black hairs. Antennæ black, first joint with rather long black hair, style of third joint minute. Mouth, proboscis and under side of head black. A small cluster of *snow-white scales* on the face at each side of the antennæ, with a larger cluster of longer ones immediately below the smaller cluster, some few isolated small similar scales scattered along the mouth border. One or two small similar scales are placed on each side of the frons, just below the vertex, on the raised spots. Back of head grey, with thick yellowish hair on upper part, and a row of snow-white scales behind the outer orbit of eyes, for a considerable distance.

Thorax.—Ground colour velvet-black; dorsum partly denuded but with some small scales remaining of a brilliant emerald-green hue, while in front of the base of the wings are some small snow-white scales. Anterior part of dorsum with yellowish hair, some yellowish hair on sides and snow-white ragged hair on the lower part of the thorax in front. Black bristly hair appears scattered sparsely over the thorax, with a few bristles near the base of the wings. Scutellum dull black (denuded), with traces of green scales similar to those on the thorax.

Abdomen.—Ground colour dull black; traces of variegated scales, emerald-green, pink and white; some grey hair at sides of 2nd segment, with a few snow-white scales, which latter also appear to occur at the sides of the 4th segment. The sides of the abdomen and the whole of the tip bear long black hairs, as does also the belly.

Legs black, hind femora and posterior tibiæ with short spiny bristles. Some yellowish grey long hair around the coxæ.

Wings clear. Costal cell pale yellowish brown on distal half. Wings at base (including the tegulæ) similarly coloured, up to the base of the basal cells which are absolutely colourless. *The veinlet closing the first posterior cell* is in a direct line with that joining the two branches of the fourth longitudinal, the venation otherwise being that of normal *Bombylius*. Halteres black.

Described from a single ♀ (perfect except for some denudation of the thorax and abdomen) in the Indian Museum collection, taken by Dr. Annandale at Trivandrum (Travancore State, South India), 13-xi-08.

N.B.—In the unusual venation referred to, this species resembles the genus *Comastes*, Os. Sac., but, possessing neither the remarkably long antennal style nor the distinct emargination of the eyes characteristic of that genus, it must remain in *Bombylius*. The broad head, as wide as the thorax, is also characteristic of

Comastes, in opposition to the usually comparatively small and narrow head in typical *Bombylius*.

***Bombylius vicinus*, mihi.**

Two ♀ ♀ from Kumdhik, Nepal Terai, taken in company with *Anthrax insulata*.

***Bombylius propinquus*, mihi, sp. nov.**

I have a ♂, taken at Haragama, Ceylon, in January 1908, which closely resembles *terminalis*, mihi, but, intermixed with the yellowish brown soft hair on the front part of the head, are numerous long black bristly hairs. There is no snow-white pile around the antennæ; the lower part of the head is brownish yellow (not white), and without white hair; the base of the proboscis is yellow, and there is no snow-white pile at the abdomen tip. The wings have a blackish brown baso-costal band, occupying nearly half the surface of the wing; 1st posterior cell closed some distance from the border. The proboscis is 4 mm. long; the whole insect only 5 mm. From my *vicinus* it is also distinguished by the wholly black antennæ. Type in my collection.

***Bombylius wulpii*, mihi.**

Bigot's description of the ♂ of this species is quite good. It is very unlike the ♀, as it has the last four segments of the abdomen (except the extreme tip) snow-white. I recently received a ♂ and ♀ from Mr. E. Green, taken *in cop.*, at Peradeniya, Ceylon, in April 1909.

***Systæchus socius*, Wlk.**

One ♀ from near Theog, Simla district, 14-v-09 (7,000 ft.), taken by Dr. Annandale, agrees very well with Walker's description.

***Dischistus resplendens*, mihi.**

Four ♀ ♀ taken by Dr. Annandale on a hillside below Theog (Simla district), 14-v-09.

N.B.—The suggestions in my description of this species, as to the normal appearance of it in perfect condition, are fully borne out by the above four perfect examples. Dr. Annandale describes this species as hovering slowly over banks of wild thyme, with its hind legs curved upwards, and as having much the appearance on the wing of a large mosquito, such as *Toxorhynchites*; the proboscis being extended in front of the head adds to the resemblance, while the glittering scales give the insect a splendour comparable to that of *T. immisericors*, Wlk., which in life is one of the most gorgeous of Indian Diptera.

Usia sedophila, mihi, sp. nov.

♂ ♀ Simla. Long. $2\frac{3}{4}$ — $3\frac{1}{2}$ mm.

♂ *Head*.—Vertex prominent, black, shining; a few erect long hairs. Ocelli distinct, whitish. Eyes black, bare, contiguous for more than half the distance from vertex to antennæ; facets in front and above distinctly larger than those behind and below, but no distinct dividing line. Antennæ black, bare, except for an occasional hair; first two joints short, third somewhat flattened, but thick and slightly curved, elongate, and with a peculiar notch towards the tip on upper side in which is a single hair.

Proboscis about twice the length of the head, black, cylindrical, stiff, straight, bent upwards at tip, bare, except for a few minute hairs at tip. Face dark greyish, with some stiff black hairs on each cheek, and a long, elevated, shining black callus between the median line and the eye margins. Back of head black, not produced behind margins of eyes, with long sparse black hairs, continued on under side of head.

Thorax dull black, velvety on dorsum, some black and pale hairs towards the sides, and three whitish grey elongate spots on anterior border, of which the middle one is often absent, and the outer ones are occasionally indistinct or absent also. Lower part of thorax more or less dark grey. Scutellum black, with some erect light tawny hairs.

Abdomen dull black, conical, 1st segment narrow, wholly black, the remaining six broader, but of diminishing length and breadth to the tip, and with a rather bright yellow narrow posterior border to each segment.

Dorsum comparatively bare, but the sides of the abdomen with pale yellow hairs. Genitalia small, inconspicuous, conical, blackish. Belly blackish, posterior margins of segments whitish grey.

Legs uniformly black, very shortly pubescent; femora with a little soft hair; hind tibiæ with short bristles.

Wings nearly clear; subcostal cell pale yellow, venation normal. Halteres dark brown or blackish, knobs large.

♀ In this sex the eyes are separated by a wide frons equaling one-third of the head. The upper half of the frons, as also the whole back of the head, is greyish yellow, the latter with black hairs as in the ♂; the upper half of the frons with a row of hairs near the margin of the eyes. Vertical triangle distinct, dark. Two narrow fuscous vertical lines lead from the vertical triangle to an irregular transverse dark streak dividing the upper from the lower half of the frons, the latter part being more ash-grey and unmarked. Lower part of the head greyish. Proboscis and mouth larger than in the ♂, thus narrowing the cheeks considerably.

Thorax yellowish grey, with median pair of narrow fuscous lines, with an outer broader stripe, more or less divided into three

spots, the anterior one small and conical, the other two more elongate. There is also an indistinct central line between the median pair of narrow ones, and a small spot above the insertion of the wings. Sides of thorax, cinereous grey. Scutellum yellowish grey, with some yellow hairs as in ♂

Abdomen black, bare, posterior margin of segment rather broadly yellow, sides with a little less hair than in ♂. Belly blackish. Ovipositor pale yellow, inconspicuous.

Legs and wings as in ♂

Described (♂ ♀) from several of both sexes taken by Dr. Annandale at Simla, 16-v-09, where it was common on *Sedum rosulatum* (white stone-crop); the species was not seen anywhere except on this plant.

Usia marginata, mihi, sp. nov.

♂ Simla. Long. 4 mm.

Head.—Eyes contiguous for a shorter space than in *sedophila*, black, bare; upper facets larger than lower, and more sharply defined from one another than in *sedophila*. Frons ash-grey, small, with a few black hairs. Vertex prominent, with some black hairs, ocelli distinct. Front margins of eyes and cheeks with long black hair, which is considerably thicker on the under side, and which extends over the whole of the back of the head. Antennæ as in *sedophila*, but the third joint with a pale ring at the base, giving the appearance of a minute basal joint, and the tip bears on its upper side a minute style-like process, just beyond the sub-apical depression. First joint with some bristly black hairs, second with one or two minute hairs, third bare.

Thorax dull black, almost velvety, covered lightly on dorsum, and more thickly in front and at sides with long black hairs. Anterior margin of thorax broadly whitish grey, which in the centre is produced posteriorly into four narrow stripes, of which the outer pair just reach the suture, the inner pair being very slightly shorter. Sides of thorax black, with long black hairs, and the whitish grey colour of the anterior margin of dorsum extends downwards somewhat below the shoulders.

Abdomen dull black, posterior margins of segments narrowly yellowish, with the colour continued over the sides and across the belly. A row of grey hairs on posterior border of segments, and the sides of the abdomen with rather thick whitish grey hair. Belly concolorous.

Legs black, minutely pubescent; femora with rather long soft black hair on upper and lower sides; hind tibiæ very shortly bristly.

Wings nearly clear; subcostal cell very pale yellow. Halteres pale brown, clubs chalk-white.

Described from one ♂ taken by Dr. Annandale at Simla (16-v-09) in company with the previous species.

***Geron albescens*, mihi, sp. nov.**

♂. Orissa Province (Bengal Presidency). Long. 5 mm.

Head black. Eyes contiguous almost to the antennæ, reducing the frontal triangle almost to a point. Facets of uniform size. Vertex considerably raised, small, with some rather short black hairs; ocelli red. Mouth black, grey bordered; face small, squarish, black, a cluster of drooping snowy scales on each side of the base of the antennæ. Proboscis black, tip curled. Antennæ black, microscopically grey dusted, tips of first and second joints narrowly pale, which joints are covered with greyish hair. Back of head black, long yellow hair above and greyish below. Some white small scales on hind border of eyes.

Thorax velvet-black; dorsum covered with bright yellowish hair, which on the shoulders becomes greyish, below which can be seen the humeral calli, grey, perforated with small holes. Under side ash-grey, covered with long grey hair and some grey scales. Scutellum black, yellow-haired.

Abdomen black, covered close to the surface with small recumbent yellow hairs; each segment bearing on its extreme posterior border a row of long deflexed grey hairs. Sides with somewhat thick and long grey hair. Belly wholly covered with small silvery white scales and long grey hair.

Legs (fore legs missing) pale tawny, with a pinkish white microscopic pubescence; coxæ, tips of femora, hind tarsi wholly, and middle pair towards tip, black. Middle femora with a little soft hair below.

Wings quite clear, veins pale yellowish on basal half. Halteres yellowish, knob bright lemon-yellow.

Described from a nearly perfect ♂ in the Indian Museum collection, taken by Mr. Cauater at Balugaon, Puri district of Orissa, on the east coast of India, 14-xii-08.

NOTE ON *COMASTES*, Os. SAC.

This genus, I am convinced, is not Oriental, although the late Herr van der Wulp removed a species of his own (*pulchellus*) from *Bombylius* to this genus. Described first in the Tijds. voor Ent., xxiii, 164, with an excellent plate (plate x, fig. 8) giving the full insect, he referred it to *Comastes*, in Notes Leyd. Mus., vii, 85. It is, however, certainly not a *Comastes*, as that genus possesses three characters which are altogether absent in *pulchellus*; these are the long style, as long as the third antennal joint itself, the emarginated eyes, and the punctiform contact of the second submarginal with the first posterior cell. There can be no possible doubt that a perfect specimen, a female, captured recently in South India by Dr. Annandale, belongs to this species, being identical with van der Wulp's description and plate, and it is far too brilliant and conspicuous a species to be mistaken. Moreover that

author distinctly says an "extremely small" style, referring to his species, and the plate distinctly shows the normal venation of *Bombylius*, and not that described by Osten Sacken.

The head is as broad as the thorax in *pulchellus*, and in that character alone it differs from the typical *Bombylius*, in which genus it must therefore remain.

A second question is whether *Comastes* or *Heterostylum*, Macq., should stand. Prof. Aldrich adopts the latter in his recent Cat. N. Amer. Diptera. Osten Sacken admits the identity of the two genera (Cat. N. Amer. Dipt., Add., p. 267, 1878) but upholds his own generic name on the ground that Macquart's principal character, the pubescence of the third antennal joint, had no existence in reality, Osten Sacken having examined the type in Bigot's collection and found the supposed pubescence to be dust. The two other characters of the genus admitted by Osten Sacken, namely, the emarginate eyes and the venation mentioned above, were, however, also given by Macquart in his diagnosis.

Osten Sacken has himself remarked somewhere that a generic name founded upon an absolutely incorrect character seems justly to require alteration, as being scientifically wrong and misleading, but the name *Heterostylum* is not intrinsically incorrect, for though the alleged pubescence is not present, the antennal style is sufficiently differently formed (Macquart distinctly says "la forme du style, diferente," etc.) to justify the retention of his name.

Therefore, because it may be regarded from this point of view, I think *Heterostylum* should stand. The genus, however, has not yet been found in the Orient.

[N.B.—The types of all the new species described in this paper are in the Indian Museum collection, except where otherwise stated.]

