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	PAGE
XLIII. Revision of the Oriental Leptidæ. <i>E. Brunetti</i> ...	417
XLIV. Revised and Annotated Catalogue of Oriental Bombylidæ, with descriptions of new species. <i>E. Brunetti</i> ...	437

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XLIII. REVISION OF THE ORIENTAL LEPTIDÆ.¹

By E. BRUNETTI.

The present paper is an endeavour to recognise the described Oriental species in this family and to add some new ones existing in the Indian Museum collection. Some of these latter bear names by Bigot (apparently *nomina nuda*), with "sp. nov." affixed, and these I have described herein. Most of them are placed wrongly, generically, and one "sp. nov." which he calls "*Leptis dichroma*" is a *Plecia* (*Bibionidæ*) and is in too dilapidated a condition to describe. My thanks are due to Mr. C. O. Waterhouse of the British Museum for some valuable information respecting some of Walker's types and Rondani's genus *Leptipalpus*, and also to Prof. M. Bezzi for notes on the latter genus.

SURAGINA, Wlk.

- | | |
|------------------------------|----------|
| 1. <i>illucens</i> , Wlk. | Celebes. |
| 2. <i>signipennis</i> , Wlk. | Gilolo. |

Walker mentions the great length of the discal cell ("nearly six times longer than broad") as characteristic of his genus, and Osten Sacken notes its affinity with *Atherix* (Berl. Ent. Zeits., xxvi, 101); as Walker had labelled with the generic name *Suragina*, the specimen which Osten Sacken makes the type of his species *Atherix limbata*. The latter author seemed doubtful of the validity of *Suragina*. Osten Sacken does not mention the proportionate shape of the discal cell in his *limbata*. In the five species of *Atherix* that I have been able to examine it is only from 3 to 4 times longer than broad, and in the two common European species (*marginata* and *ibis*) only slightly over 3 times. (In my measurement, I have regarded the "breadth" as its breadth in the middle—or the average breadth.)

Failing a comparison with types, it is well to let *Suragina* stand provisionally. Moreover Walker says the antennæ have the third joint round, whereas in *Atherix* it is kidney-shaped.

From the descriptions, *S. illucens* is a cinereous black species, with two large lateral testaceous spots at the base of the abdomen, the tip of which is also testaceous; whilst in *S. signipennis* it is black, with hoary tomentum. The legs are differently coloured, but the size of both species is about identical.

¹ Since concluding this and the succeeding paper, I have seen two new species of *Chrysopilus*, two of *Bombylius* and one of *Geron*, all acquired by the Indian Museum: these will be described shortly.—E. Brunetti.

ATHERIX, Mg.*Table of Oriental species.*

- A Abdomen with distinct red or yellow markings.
- B Hind femora without a distinct ring near tip.
1. All the femora wholly reddish tawny *nigritarsis*, Döl.
2. Basal half of all the femora black.
Basal half of abdomen all tawny: wings with distinct, wide brown stripe in middle *calopa*, mihi, sp. nov.
Abdomen mainly black, but base at sides reddish tawny: wings pale brown with indistinct darker band in middle .. *lanopyga*, mihi, sp. nov.
3. All femora wholly black, except base of "posterior" femora .. *labiata*, Big.
- BB Hind femora brownish yellow, with a broad brown ring before the tip .. *limbata*, Os. Sac.
- AA Abdomen practically all black: at most a bluish grey band at base, or first segment pale yellow.
- C Abdomen with bluish grey transverse band towards base: hind metatarsi normal . *cincta*, mihi, sp. nov.
- CC Abdomen with first segment pale yellow: hind metatarsi distinctly and uniformly thickened .. *metatarsalis*, mihi, sp. nov.

Atherix limbata* (?), Os. Sac.Redescription.*

(Plate xii, fig. 4, ♀, wing.)

♀ Lower Burma. Long. 8 mm.

Head.—Vertex cinereous grey with a few blackish hairs, upper half of frons dull coal-black, lower part bluish grey with (seen from above) a central small black spot, lower part of face blackish grey, proboscis brown. Antennæ blackish grey with a few hairs at base, third joint tawny, arista long. Eyes blackish. Back of head bluish grey, with a fringe of light hairs, which are longest behind the sides of the eyes. Palpi black, hairy below.

Thorax.—Dorsum aënous black, the colour not attaining anterior margin except as a wide stripe in the centre, but extending to both wings and to the scutellum. Humeral calli tawny, with a whitish grey tomentose spot, contiguous to each, on the anterior border. A bluish grey spot in front of each wing, placed almost on the dorsum. Sides of thorax yellowish grey posteriorly; mesopleuræ, bluish grey. Scutellum yellow, base blackish; metanotum blackish grey.

Abdomen.—Brownish yellow, with a black dorsal stripe on first three segments, which spreads out over the greater part of the fourth and fifth segments, tip of abdomen yellow, sides with a blackish line and a fringe of black hairs mixed with some paler ones. Belly yellowish. Some short pale hairs over the dorsal surface of the abdomen.

Legs.—Fore coxæ yellowish with bluish grey reflections, posterior coxæ blackish, all of them black at the junction with the femora, which are yellow, with the tips narrowly black, the middle pair having a very small black streak on the under side near the base, and the hind pair a wide black ring in the middle. Remainder of legs black, but middle tibiæ dark brownish yellow.

Wings.—Pale grey, a rather dark brown middle stripe from the centre of the costa, narrowing posteriorly and reaching hind margin of wing at tip of anal cell; distal part of wing dark grey, down to the fifth posterior cell, the centre of which is pale grey (reaching to the border) but a rather wide pale grey space remains between the dark brown stripe and the distal dark grey part, this clearer part ceasing at the fifth posterior cell. Fifth longitudinal vein dark brown suffused. Wing rather strongly iridescent. Upper transverse vein placed just before one-third of the discal cell. Halteres yellowish, knob black.

Described from a single perfect ♀ in the Indian Museum collection captured by Dr. Annandale.

N.B.—I describe under the above specific name a ♀ specimen (now in the Indian Museum collection) captured by Dr. Annandale at the base of the Dawna Hills, Amherst District (Lower Burma), on 1-iii-08, and which I at first thought was a new species. It differs from *limbata*, O.S., by the presence of the clearer space in the dark distal part of the wing, and by the hind femoral band being in the middle, not near the tip; other minor differences hardly being specific. My augmented description may enable others to identify it definitely either as *limbata* or as new.

A. nigratarsis, Dol.

A. limbata, Os. Sac.

A. calopa, mihi, sp. nov.

The two former are very closely allied, as noted by the late Baron Osten Sacken (Berl. Ent. Zeits., xxvi, 100) in describing his species from the Philippines. My *calopa* is also near both, yet I believe all three species to be distinct.

Atherix lanopyga*, mihi, sp. nov.(Chrysopila lanopyga, Bigot, nom. nud.)***(Plate xii, fig. 3, ♀, full insect.)**

♀ Assam. Long. 10 mm.

Head.—Rather more than the upper half of frons velvet-black, remainder of frons, the vertex, and face below antennæ, blackish, with bluish grey reflections. Antennæ, two basal joints brown (third missing). Eye facets of uniform size. Proboscis and palpi blackish, the latter pubescent above and below. Back of head blackish grey with a continuous fringe of short grey hair.

Thorax.—Black, with whitish grey reflections at the sides and on the humeri. Scutellum black, with black hairs; posterior border brown.

Abdomen.—Mainly black. First segment dark brown, the colour extending as a wide dorsal stripe across the second; sides of first two segments occupied by a large, light yellow translucent spot. Third segment velvet-black, with a bicoloured spot at the sides of the posterior border, the anterior half of this spot being orange, and the posterior half grey; the orange colour extending along the sides of the abdomen in a streak, until it reaches the large translucent side spots in front of it. Remaining segments black, whitish grey posteriorly, the sides of the sixth and seventh being light orange-brown. Anal process black. Dorsum of abdomen with yellowish hair, which at the tip becomes brown. Belly yellow, with soft, yellow hair, the middle segments with some irregular black marks.

Legs.—Coxæ brown, with bluish white shimmer, and soft, silky white hair; femora yellow, base of fore pair and basal half of middle and hind pairs, light brown; tibiæ brownish yellow, hind pair darker; tarsi brownish black. The femora have a little pale yellow hair, which is brown on the tibiæ, bright golden brown on hind pair and black on the tarsi.

Wings.—Pale grey, a faint brown streak from the elongated brown stigma reaches nearly to the posterior border: a small, elongated, clear spot in the middle of the discal and of the fifth posterior cells. Discal cell $3\frac{1}{2}$ times as long as broad. Halteres yellow, knobs black. Tegulæ pale yellow, transparent.

Described from one ♀ in good condition in the Indian Museum collection from Sadiya (Assam).

Atherix calopa*, mihi, sp. nov.(Id. id., Bigot, nom. nud.)***(Plate xii, fig. 2, abdomen, ♂.)**

♂ Assam and Tenasserim. Long. 8 to 10 mm.

Head.—Vertex black; frons blackish with bluish grey shimmer; proboscis and palpi blackish, the latter hairy below.

Antennæ brownish yellow, with a trace of bluish grey dust on upper side of two basal joints. Back of head blackish grey, with a thick fringe of long whitish grey hair which is absent on the upper part. Lower facets of eye barely smaller than upper ones.

Thorax.—Dark brownish black, moderately shining; humeri shining brown; sides of thorax brown, light bluish grey dusted. Scutellum dark brown, with erect brown hairs.

Abdomen.—First four segments mainly yellow, but dark brown at the upper side of the first at the base, and a narrow dark brown dorsal line, with a narrow line at each side of the abdomen; these three lines extending over the four segments. Posterior border of fourth segment dark brown, the colour extending forward in the centre, till it joins the dorsal stripe. Remainder of abdomen dark shining brown, the posterior border of each segment bearing a little bluish grey dust. Belly yellowish. The whole abdomen with moderately long hairs of similar colours to that of the respective parts on which they are placed. Genitalia moderately large, dark brown, shining, with black hairs.

Legs.—Coxæ, dark brownish with bluish grey shimmer; femora yellow, basal third in fore pair, basal half in middle pair and basal two-thirds in hind pair black; tibiæ yellow, knees brown; basal half of tarsi yellow, apical half black. Legs with very short black hairs.

Wings.—Very pale grey, apical half a little darker; discal cell three times as long as broad; no distinct stigma; a brownish irregular streak from the centre of the fore border, reaching to about half way across the wing. Halteres yellow, knobs black; tegulæ blackish with yellow edges.

Described from three ♂♂ in fairly good condition, in the Indian Museum collection. The type is from Sadiya and the others from Tenasserim.

***Atherix cincta*, mihi, sp. nov.**

(Plate xii, fig. 1, wing.)

♀ Assam. Long. 10 mm.

Head.—Frons dull black, bare, the part immediately above antennæ with ash-grey reflections and a few hairs. Vertex blackish, only slightly indented; ocelli dull red-brown. Eyes brown, with a bronze reflection, facets of uniform size. Back of head grey, with a fringe of short, black hairs on upper half, which are replaced by longer, scattered white hairs on lower half. Antennæ dark brown, normal, first joint hairy above only, second joint hairy above and below. Face below antennæ ash-grey: palpi and proboscis cinereous grey, with scattered hairs, the former with some strong black hairs at tip.

Thorax.—Ground colour blackish, with traces of cinereous grey close pubescence, which in perfect examples probably covers all the dorsum and sides; with also some scattered longer hairs over the whole thorax. Scutellum blackish, with scattered yellowish

grey hairs and reddish brown posterior border carrying a fringe of black and grey hairs.

Abdomen.—Shining dark blackish brown, shoulders prominent, forming tawny brown calli with grey hair. The under side of the first segment is in front continued in a yellow scaly process extending downwards till it reaches the hind coxæ. The first and second segments are occupied by a pale bluish grey transverse band, narrowly interrupted in the middle, and extending over the sides to a considerable extent. This band carries pale concolorous hair which is continued along the lower sides of the whole abdomen to the tip. The dorsum is clothed with short black pubescence which, beginning with the third segment, extends round the sides until it meets the line of grey side hairs. A very narrow bluish grey border to the fourth and fifth segments, the extreme edge in the fifth and sixth segments being orange-brown.

Legs.—Blackish brown, minutely pubescent: apical half of all femora and the whole of the middle tibiæ reddish tawny. Some whitish grey hairs below femora; hind tibiæ shortly pubescent, with reddish bronze reflections.

Wings.—Pale grey, apical half pale brownish. No distinct stigma, but an ill-defined rather broad brown band runs from the stigmatic portion of the costa towards the posterior border, but fades away before reaching it. Discal cell three times as long as broad; anal cell closed just before the border. By a strong convergence of the veins the fourth posterior cell (*termin*, O.S.) is almost closed; thus (if a stable specific character) separating this species from all other Oriental species in this genus. Halteres yellowish, knobs black, rather large. Tegulæ cinereous grey.

Described from one ♀ from Margherita, and two ♀ ♀ from the base of the Dawna Hills, Amherst District, Lower Burma, the latter taken by Dr. Annandale, 1-iii-08; all in the Indian Museum collection and in good condition.

***Atherix metatarsalis*, mihi, sp. nov.**

(Plate xii, fig. 5, wing; 6, hind leg.)

♂ Lower Burma. Long. 5 mm.

Head.—Vertex small, prominent, with a few bristly hairs: eyes contiguous for a moderate distance, the facets of the lower third much smaller. Antennæ pale yellow, with a few bristles and nearly straight arista. Face bluish grey, palpi black. Lower side of face with some long black hairs. Back of head grey encircled with a row of irregular bristly hairs of different lengths.

Thorax.—Rich shining brown with a semi-livid tinge towards the sides in front; sides with bluish grey reflections. Scutellum concolorous, with a row of minute black bristles on posterior border. Dorsum of thorax with scattered minute black bristles.

Abdomen.—First joint pale yellowish with a few black hairs and bristles; remainder shining black. Dorsum of second with a slight

pale yellowish tinge; whole abdomen with black bristly hairs. Belly black, pale yellow at base; genitalia black, hairy, apparently in three pieces, moderately prominent.

Legs.—Pale brownish yellow, posterior coxæ shining brown, middle femora brownish except at base and tip, hind femora with distal half dark brown; hind tibiæ dark brown, hind metatarsi much thickened. All the legs shortly pubescent, the hairs being softer and longer below the femora and shorter and more bristly on the tibiæ (especially the hind pair) and tarsi.

Wings.—Clear, with three distinct broad dark brown bands from the costa towards the hind margin: the first beginning at the basal cross-veins, filling one-half of the basal cells, and one-third of the anal cell, thence disappearing; the second is rather narrower and in exactly the middle of the wing, reaching from the costa almost to the hind border but leaving a narrow clear margin; this band encloses the inner cross-vein and nearly fills the basal half of the discal cell; the third is joined on the costa to the second by the stigma, extends nearly to the tip of the wing, leaving a narrow clear margin, and reaches the posterior border, filling the whole of the second, third and fourth posterior cells. Stigma very dark brown, filling all the cell as far inwards to just above the origin of the third longitudinal vein. Halteres rather long and prominent, pale yellow; clubs black, elongated.

Described from a perfect unique specimen taken by Dr. Annandale on the Dawna Hills (2—3,000 ft.), 2—3-iii-08. In the Indian Museum collection. A very distinct species, and with the appearance of a *Chrysopilus*.

LEPTIS, Fab.

Leptis apicipennis, mihi, sp. nov.

(Plate xii, fig. 7, wing.)

♀ Assam. Long. 6 mm.

Head.—Frons and face grey dusted, with a large, shining black, inverted heart-shaped tubercle in the middle, and extending on each side to the eyes. Ocelli reddish tawny, semi-transparent, situated on the extreme vertex. First antennal joint bright tawny (rest absent). Proboscis shining chestnut-brown, bare, grey dusted at sides. Palpi large, tawny brown, hairy. Back of head semi-circular, with a weak, irregular fringe of short pale hairs.

Thorax.—Dorsum brown, moderately shining, sides dark greyish. Scutellum yellowish tawny, with a very few short irregular black hairs.

Abdomen.—Tawny with scattered pale hairs: with a blackish brown, dorsal, wide, irregular band which occupies the whole of the last two or three segments; and with a blackish irregular line on the sides of the abdomen.

Legs.—(Middle pair wanting.) Tawny yellow, fore tibiæ yellowish white; hind tibiæ rather brownish, paler towards tip; tarsi tawny brown.

Wings.—Pale grey. A moderately dark brown apical spot begins on the costa in a straight line with the fork of the third longitudinal vein, extends thence to the tip of the wing, and posteriorly until it fills half the first posterior cell, also the whole of the second posterior cell, and then, by bending slightly outwards, the greater part of the third posterior cell.

A brown streak also begins at the inner cross-vein, passes over the basal part of the discal cell, passes longitudinally through the fourth posterior cell, nearly filling it, and spreading over part of the fifth posterior cell also; and on attaining the border, extending each way, meeting on one side the hind part of the apical spot, and extending on the inner side towards the anal lobe of the wing. No distinct stigma. Halteres tawny yellow.

Described from one ♀ in the Indian Museum collection from Margherita. It is in fair condition, except for the absence of part of the antennæ and the middle legs.

N.B.—As Walker's two species of *Leptis* prove to belong to the genus *Chrysopilus* (*decisa* and *impar*), there now remain in this genus only Osten Sacken's *uniguttata*, and my new one.

Macellopalpus fulvidus, mihi, sp. nov.

(*Id. id.*, Bigot, *nom. nud.*)

(**Plate xii**, fig. 8, ♀, head in profile.)

♀. Assam. Long. 10 mm.

Head.—Frons with a deep vertical central groove, terminating before reaching the vertex, on which the three brownish yellow ocelli are very prominent. Frons, just above antennæ, grey dusted, the remainder of it shining black, quite smooth. Face below antennæ, and cheeks, grey dusted. Antennæ brownish yellow, third joint darker, with long arista. Proboscis light brown (tip broken off): palpi blackish brown, lighter at base. Eyes black, facets of uniform size. Back of head bluish grey with fringe of yellow hair, which behind the vertex is replaced by two or three irregular rows of stout black bristles.

Thorax.—Light brown, with sparse, short hair. Sides with a slight yellowish tinge; metanotum lighter. Scutellum light brown. (Though in the unique type the scutellum is bare, there are traces of it having borne bristles along the posterior border; and others, to a less extent, on the dorsum.)

Abdomen.—Light brown, nearly bare; posterior borders of segments narrowly blackish. Belly light brown with a central blackish stripe.

Legs.—Missing, except the coxæ, and the femur and tibia of one hind leg. All these are uniformly light brown, the femur having a very narrow black ring at the base.

Wings.—Pale yellow, costal border darker yellowish brown; stigma brown, distinct. Halteres light brown, with a black spot on upper side of knob.

Described from one specimen in the Indian Museum collection from Sibsagar, in fairly good condition except as regards the legs. Bigot's description of his *flaveolus* is very short, and would apply to the present species, but as he marked *fulvidus* himself as a new species I presume it to be distinct.

N.B.—I am very strongly of opinion that *Macellopalpus* is synonymous with *Leptipalpus*, Rond. (1850), and that *Heliomyia*, Dol., is another synonym, but I allow *Macellopalpus* to stand until the ♂ is known (I have seen no mention of this sex).

It resembles *Leptis* in the large palpi, and *Chrysopilus* in the closed anal cell. If the ♂ is found to have long, thin palpi as in *ferruginea*, Wied. (♂), the three species *C. ferruginosa*, Wied., *M. flaveolus*, Big., and my *fulvidus*, would form a natural group, which would be the *Heliomyia* of Doleschall, erected for his *ferruginea* (= *ferruginosa*, Wied.).

The re-establishment of *Heliomyia* was hinted at by Osten Sacken (Ann. Mus. Gen., xvi, 421), and he also suspected that his *Chrysopila lupina* was congeneric with Wiedemann's species.

The only specimen of *ferruginosa*, Wied., that I have seen is a perfect ♀ taken by myself at Batavia, 5-vii-06; and in this the spatulate palpi seem to separate it from the other species of *Chrysopilus*, and to approximate it to *Macellopalpus*.

Osten Sacken claimed that Schiner was wrong in placing *ferruginosus* in *Chrysopilus*, as although the ♂ has the long thin palpi characteristic of the genus, the spatulate palpi of the ♀ makes the species an abnormal one, and is a sexual character only.

On the other hand, if *Leptipalpus* has long thin palpi in the ♂ and *Macellopalpus* is found to have the same, the former name must be adopted, and in that case the full synonymy of the genus and species would be as follows:—

LEPTIPALPUS, Rond., 1850, Nuov. Ann. d. sci. Bolog., ii, 183.

Heliomyia, Dol., 1857, Nat. Tijd. Ned. Ind., xiv, 402.

Macellopalpus, Big., 1886, Bull. So. Ent. Fr., xlviii.

1. *ferruginosa*, Wied. (*Leptis id.*, Zool. Mag., iii; Dip. Ex., i; and Auss. Zwei., i, 224. *Heliomyia ferruginea*, Dol., *loc. cit. ante*, pl. vii, 5.)
2. *flaveolus*, Big., 1886. (*Macellopalpus id.*, Big., *loc. cit. ante.*)
3. *waigiensis*, Big., 1887 (? *Leptipalpus*), Bull. So. Zool. Fr., xii, 108.
4. *fulvidus*, mihi, sp. nov. (*Macellopalpus id.*, Big., *nom. nud.*)

Leptipalpus waigiensis, Big.

Placed by the author provisionally in this genus, the head in the type specimen being in bad condition. I have not seen the species mentioned since.

Rondani, in erecting the genus in 1850, noted its intermediate character between *Leptis* and *Chrysopilus*, having the palpi and antennæ of the former, with the venation of the latter.

CHRYSOPILUS, Macq.

Of Oriental species this genus is the best represented in the family, as, including two species of Walker's, removed here from *Leptis*, one new species each by Herr Meijere and Prof. Bezzi, and seven new ones herein described, the total number now amounts to nineteen.

To draw up a satisfactory table of species is very difficult but the following may serve for the present, and at any rate it will show the relative positions of my new species. I have found it impossible to include Walker's two species, *maculipennis* and *guttipennis*, owing to the lines on which I have drawn up my table, as from his descriptions of the wings it is not obvious whether they would come in my group A or AA.

Of *maculipennis* he says, "Wings limpid, with three irregular brown bands; second and third bands broad, connected, adorned with several limpid spots, veins black."

Of *guttipennis* he says, "Wings ample, blackish brown, limpid towards the base and with several limpid spots, some of which are confluent, and form a band across the middle; veins black, yellowish at the base; halteres yellowish, with a black sub-apical band."

Table of species.

- A Wings either distinctly and darkly mottled (*Trypeta*-like) or uniformly dark brown. Long. 3 to 5 mm.
- B Wings mottled.
- C Upper fork of the fourth longitudinal vein, emerging with it from the upper outer corner of discal cell as well-separated veins: outer side of discal cell forming a distinct angle. Long. 3 mm. *albopictus*, mihi, sp. nov.
- CC Above veins emerging practically together from extreme upper corner of discal cell; outer side of discal cell straight. Long. 4 mm. *marmoratus*, mihi, sp. nov.
- BB Wings uniformly dark brown not at all mottled: above veins issue as in *albopictus*, outer side of discal cell with an angle. Long. 5 mm. *luctuosus*, mihi, sp. nov.
- AA Wings never mottled nor dark brown. Either pale grey

- yellowish or clear, with or without more or less distinct cross-bands or apical suffusions.
- D Second posterior cell enlarged, and enclosing a very opalescent oblong spot. Long. 7 mm. *vacillans*, Wlk.
- DD Second posterior cell (presumably) normal.
- E Cross-band (or bands) on wing with well-defined margins.
- F Apical border of wing clear, two distinct cross-bands. Long 7-8 mm. *correctus*, Os. Sac.
- FF Apical border of wing darkened, inner cross-band incomplete or indistinct. Long. 7-8 mm. *lupinus*, Os. Sac.
- EE Cross-band (or bands) on wing with ill-defined margins, generally indistinct or absent.
- G Black species.
1. Wings pale grey, with brownish band. Long. 10½ mm. *segmentatus*, mihi, sp. nov.
 2. Wings unmarked, except for the stigma. Long. 6 mm. *sauteri*, Bezzi.
 3. Wings cinereous, apical half brownish. Long. 7 mm. *impar*, Wlk.
- GG Yellowish, brownish or tawny species.
- H Stigma blackish brown.
1. Abdomen tawny, with ferruginous marks; wings yellow, mixed with grey, tip infuscated. Long. 8 mm. *ferruginosus*, Wied.
 2. Abdomen tawny, with three black bands; black and stylate towards tip. Long. 10 mm. *stylatus*, Wlk.
 3. Abdomen light brown, centre segments lighter; wings brownish, no yellow fore border; under side of face deeper than in *ferruginosus*. Long. 6 mm. *simplex*, Meij.
 4. Abdomen cylindrical, tawny brown; segments with black posterior

- borders. Long. 10–11 mm. .. *frater*, mihi, sp. nov.
5. Abdomen conical, bases of segments blackish. Long. $5\frac{1}{2}$ mm. .. *unicolor*, mihi, sp. nov.
6. Abdomen slender, tawny posterior borders, first three segments with dorsal band, and the greater part of remaining segments blackish. Wings clear, stigma dark brown. Long. 6 mm. .. *stigma*, mihi, sp. nov.
- HH Stigma honey yellow (*insularis*) or (presumably) not distinctly dark (*decisa*).
 Mainly yellow. Long. 8 mm. .. *insularis*, Sch.
 Mainly black. Long. 9 mm. .. *decisus*, Wlk.

N.B.—*C. ferruginosa*, Wied., may require removing to another genus. (*Vide* Note under *Maccellopalpus fulvidus*.)

C. albopictus, mihi, sp. nov.

(*Leptis albopicta*, Bigot, *nom. nud.*)

(Plate xii, fig. 9, wing.)

♀. Assam. Long. 3 mm.

Head.—Wholly black, front about one-fourth width of head; a vertical indentation just above antennæ, with slight greyish tomentum. Antennæ, proboscis and palpi tawny yellow.

Thorax.—Light tawny brown. Sides sublivid. Scutellum concolorous, with some longish hairs on posterior part.

Abdomen.—Dark brown, conical, posterior borders of segments lighter. Belly dark brown.

Legs.—Tawny yellow; femora and coxæ brighter; tarsi darker.

Wings.—Moderately dark brown, with pale grey patches that take the form of three irregular light bands, commencing at, or just below the costa; of which the first begins just beyond the stigma and terminates posteriorly on reaching the fork of the third longitudinal vein; the second crosses the middle of the discal cell and attains the hind border; the third crosses the second basal and the anal cell, and is merged in the light colour of the base of the wing. The centres and hind borders of the posterior cells are also pale grey. The upper fork of the fourth longitudinal vein emerges from the upper corner of the discal cell as two separate veins; the outer side of that cell forming a distinct angle. Stigma dark brown, proportionately large, and there are traces of yellow just before it and also in the basal cells. Halteres brownish yellow.

Described from a specimen in fairly good condition in the Indian Museum collection from Margherita (middle pair of legs wanting, but are probably coloured like the rest). Quite a distinct species from all others except *marmoratus*.

N.B.—Walker's *guttipennis* must be near this species, but appears distinct, and is larger.

C. marmoratus, mihi, sp. nov.

(*Leptis marmorata*, Bigot, *nom. nud.*)

(Plate xii, fig. 10, wing.)

♂ Assam. Long. 4 mm.

Head.—Vertex much elevated, light brown, the ocelli well separated and very distinct, semi-transparent, with black centres. Eyes light chestnut-brown, upper facets rather large, lower ones very small and much darker brown. Eyes contiguous almost down to the antennæ, the frons receding so much as to be invisible; the inner sides of the eyes (seen from in front), also the face below the antennæ, blackish grey. Antennæ, proboscis and palpi brownish yellow.

Thorax.—Moderately dark brown, with sparse gold-yellow hairs on dorsum; slightly paler at sides, and with concolorous scutellum and metanotum, the former bearing some moderately long brownish hairs.

Abdomen.—Dark brown; second segment, and posterior border of first segment lighter. Belly brown. Whole abdomen lightly covered with brownish hairs.

Legs.—Coxæ light brown. The single leg of the (unique) type (fore leg) is concolorous.

Wings.—Rather dark brown, with pale grey spots, of which the clearest is an oval one just beyond the stigma, reaching from the costa to the fork of the third longitudinal vein. Below this spot, follows a spot in each of the first, second and third posterior cells. There is a small one in the centre of the discal cell, which, with a small one in the fourth posterior cell and a large one in the fifth posterior cell, form a row. A small spot is at the tip of the marginal cell, and a larger one at the tip of the submarginal; whilst the whole posterior border of the wing is pale grey, spreading out somewhat in the cells and in the axillary cell. The veinlets forming the upper fork of the fourth longitudinal vein emerge practically together from the upper corner of the discal cell, the outer side of which is practically quite straight. Halteres light brown with large blackish brown knobs.

Described from one specimen from Sadiya in the Indian Museum collection in fairly good condition, except for the absence of nearly all the legs. I, however, do not hesitate to describe it, as it shows by its mottled wings its distinction from all other Eastern species except *albopictus*.

C. luctuosus, mihi, sp. nov.*(Atherix id., Bigot, nom. nud.)*

♂ Assam. Long. 5 mm.

Head.—Vertex, frons and face blackish; antennæ dark brownish yellow; proboscis and palpi blackish. Back of head blackish, with rather long greyish hair at the sides and below. Eyes bright brown, lower facets much smaller than upper ones.

Thorax.—Mouse colour, nearly bare. Scutellum concolorous with a row of long hairs on posterior border.

Abdomen.—Dark brown, with some yellowish grey pubescence. Belly, dark brown.

Legs.—Coxæ dark brown, with brownish grey hair; femora and tibiæ light brownish yellow, with sparse hair on under side of femora, and a row of minute bristly hairs on outer side of hind tibiæ; tarsi brownish yellow, tips black.

Wings.—Anterior half rather dark brown, the colour gradually fading away posteriorly to the pale brown hind border. Mediastinal cell, nearly to its tip, darker brown, no separate stigma. Upper fork of fourth longitudinal vein issues as two separate veins from the discal cell, the outer side of which thus contains a distinct angle. Halteres pale yellow, knobs black.

Described from one ♂ in the Indian Museum collection from Margherita (slightly damaged, but with the specific characters sufficiently distinct).

C. segmentatus, mihi, sp. nov.

(Plate xii, fig. II, abdomen; 12, wing.)

♂ Nepal. Long. 10 mm.

Head.—Vertex jet-black, prominent; ocelli small, equidistant, whitish. Eyes very large, occupying practically the whole of the head, lower facets much smaller than upper ones. Whole of face grey dusted. Antennæ tawny. Proboscis large, shining brown, lower part grey dusted; palpi dark brown with some hair. Back of head grey dusted, studded with black hairs.

Thorax.—Dorsum and sides dark blackish brown. Two narrow, longitudinal, yellowish grey stripes on dorsum, dividing the surface into three equal parts, and a silvery grey reflection on the sides, behind the wings (seen from behind). Humeral calli light yellowish brown.

Abdomen.—Shining black, the segments well separated, with a telescopic appearance. Posterior border of first segment shining steel-blue-grey; second wholly black; rest of segments, seen in certain lights, steely ænous, highly shining, with a dull jet-black moderately wide posterior border.

The whole abdomen moderately thickly clothed with soft black hairs.

Legs.—Blackish brown; base of hind femora, tips of four anterior femora, and the anterior tibiæ wholly, pale tawny brown.

Wings.—Pale grey; stigma brown but ill-defined, elongated and spread over both mediastinal and sub-costal cells, and from this stigmatic spot, a brownish grey band proceeds posteriorly, rapidly narrowing, and disappears on reaching the outer cross-vein, thus forming what at a short distance appears to be a brown triangular cloud, darkest in front. The lower branch of the upper fork of the fourth longitudinal vein issues from below the middle of the outer side of the discal cell which latter has the appearance of having the upper outer corner cut off by the upper branch.

Described from one ♂ in perfect condition in the Indian Museum collection from Gowchar (Nepal). A very distinct and handsome species.

N.B.—Prof. Bezzi's new species (*sauteri*, ♂ ♀) from Formosa, Takao, 15-iv and 11-v-07, falls next to *segmentatus* in my table, but is of quite a different type to all the other species herein mentioned, belonging to the *aureus*, Mg., group of European species, to which group I can refer no species from a truly Oriental locality. Probably Formosa, and the whole of China also, belongs to the Palearctic Region.

C. frater, mihi, sp. nov.

(? ♀, *Leptis punctum*, Big., *nom. nud. in litt.*)

♂ Tenasserim. Long. 10-11 mm.

Head.—Vertex and frons black; antennæ brownish tawny, proboscis and palpi tawny; face below antennæ grey: lower facets of eyes slightly smaller than upper ones. Back of head greyish, with white hair behind the eyes, but absent behind the vertex.

Thorax.—Light tawny brown, nearly bare; lower portion at the sides nearly livid. Scutellum concolorous, with traces of being covered with short hairs.

Abdomen.—Light tawny brown with yellowish grey pubescence, and some black hairs intermixed. Posterior borders of segments narrowly black, the colour being rather broader on the last segments. Black hairs adorn the borders of the segments and the tip of the abdomen. Belly similarly marked.

Legs.—Tawny; coxæ with some gold-yellow hair in front; tibiæ mouse-colour, becoming dark brown towards tips; tarsi dark brown.

Wings.—Yellowish grey; apical portion from just before the end of discal cell rather grey, this colour extending slightly along the posterior border. The veinlets of upper fork of the fourth longitudinal vein issue contiguously from extreme corner of discal cell, the outer side of which is quite straight. Stigma dark brown, oval, distinct. Costal cell yellowish. Halteres yellow, knobs brown.

Described from two examples in fair condition from Tenasserim, in the Indian Museum collection.

N.B.—In general appearance considerably like *ferruginosa*, Wied.

A ♀ in the above collection may be the other sex of this species; it is labelled *Leptis punctum*, Big., which is probably only a *nomen nudum*.

C. unicolor, mihi, sp. nov.

(Plate xii, fig. 13, wing.)

♂. Assam. Long. 5 mm.

Head.—Vertex very small, raised, dark brown, ocelli shining, brownish white, semi-transparent. Face grey dusted; antennæ, proboscis and palpi bright tawny brown. Upper two-thirds of eyes rich brown, with large facets; lower third black, with very much smaller facets.

Thorax.—Dorsum, sides and scutellum bright tawny brown, with scattered gold-yellow hairs, and with black hairs on the scutellum.

Abdomen.—Concolorous; bases of segments (except first and second) narrowly brown; the whole abdomen covered irregularly with black hairs, including a row on the posterior border of every segment. Belly concolorous, with black hairs.

Legs.—(Fore pair, except coxæ, missing.) Uniformly bright tawny brown; tarsi darker brown. Legs practically bare.

Wings.—Pale grey, almost clear. Stigma distinct, but with ill-defined edges. A very light brownish band extending from it posteriorly, partly across the wing. Veins tawny brown. Halteres tawny.

Described from one ♂ in good condition in the Indian Museum collection, from Margherita.

C. stigma, mihi, sp. nov.

(Plate xii, fig. 14, wing.)

♂ Lower Burma. Long. hardly 6 mm.

Head.—Vertex reduced to a very small elevated black triangle on the angles of which are the three prominent ocelli. Eyes dark reddish brown, contiguous for a considerable distance, the facets much larger for a considerable space in front above the antennæ, and with a greenish black tinge and (in certain lights) a narrow bright green horizontal stripe across the middle. Face much withdrawn between the eyes; light grey above and below antennæ. Antennæ yellow, third joint blackish with some hairs and a rather long arista, which is microscopically pubescent. Proboscis cinereous grey, lower part tawny yellow; the palpi tawny yellow with tips broadly black and hairy. A fringe of light hairs around the eyes, back of head light grey.

Thorax.—Greenish with a dorsal narrow brown stripe in front and two small indistinct brown spots in middle of dorsum. Sparse

yellow hairs over the whole dorsum. Sides of thorax cinereous grey, yellowish at base of wing. Scutellum grey; centre with a slight greenish tinge.

Abdomen.—Yellowish, first segments blackish grey, segments 2, 3 and 4 with a blackish, rather wide posterior border and dorsal stripe, remainder of segments blackish. Belly yellow, tip blackish. A few yellow hairs scattered over dorsum of abdomen; black hairs at tip. Genitalia bi-lobed, tawny yellow, with stiff black hairs.

Legs.—Coxæ and femora pale yellow, with a few yellow hairs near the tip, on under side of latter, and with generally distributed microscopic black hairs. Tibiæ blackish yellow, with microscopic black hairs and some stronger bristles; tarsi similar, tips black. Middle tarsi with two long spines at tip.

Wings.—Quite clear, stigma distinct, dark brown but without well-defined limits, traces of a pale yellowish stripe towards tip of wing. Inner cross-vein placed before one-fifth of the discal cell; anal cell closed well before wing-border. Halteres yellow, knobs black.

Described from a single perfect ♂ in the Indian Museum collection, taken by Dr. Annandale, 2-iii-08, at the base of the Dawna Hills, Lower Burma.

N.B.—I have observed a character in the wings which may, if constant, assist in determining the species.

The upper branch of the fourth longitudinal vein, forming the upper side of the discal cell, forks in some species absolutely on the extreme outer corner of that cell, the two veinlets springing simultaneously, the outer side of the discal cell being practically quite straight. In this group I find (1) my new species *frater*; (2) a specimen in the Indian Museum collection labelled "*Leptis pallidus*, Bigot, sp. nov.," but which agrees with Schiner's "*insularis*" except for the black third antennal joint and the absence of white spots above the antennæ; and (3) a ♀ in the above collection which would be *ferruginosa*, Wied., except for the long thin palpi, and for this venation, and which specimen I now regard as the probable ♀ of my *frater*, but which bears a label "*Leptis punctum*, Bigot, sp. nov."

A second group is formed by those species in which the veinlets do not spring simultaneously from the corner of the discal cell, but distinctly separately, the lower one sometimes from the middle of the outer side of the discal cell, which side thus always contains an angle. In (1) *marmoratus*, mihi, and (2) *luctuosus*, mihi, the veins start close together yet quite distinctly apart; in (3) *ferruginosa*, Wied., (4) *correcta*, Os. Sac., (5) *albopictus*, mihi, and (6) *unicolor*, mihi, the lower veinlet emerges from distinctly above the middle of the outer side of the discal cell, whereas in the seventh and last species, *simplex*, Meij., this veinlet emerges barely above the middle.

In group 3 is one species only,—*segmentatus*, mihi,—in which the veinlets separate so early as to appear as if the upper one had cut off the upper corner of the discal cell.

These distinctions may appear trivial, and, of course, may not be consistent. In the plate, my first group is unrepresented, but it may be easily recognised. The wing of my *marmoratus* illustrates the first division of my second group, the wing of my *albo-pictus* illustrates the second division of the second group, and Meijere's figure of his *simplex* (Bijd. Dierk., xviii, pl. viii, fig. 15), the third division of the second group. My third group contains only my *segmentatus*. I conclude this paper by a revised catalogue.

LEPTIDÆ.

SURAGINA, Wlk., 1860.

Proc. Linn. So. Lond., iv, 110.

1. *illucens*, Wlk., 1860, loc. cit., 110, ♀ .. Celebes.
2. *signipennis*, Wlk., 1862, loc. cit., vi, 8, ♀ Gilolo.

ATHERIX, Meig., 1803.

Illig. Mag., ii, 271.

1. *nigritarsis*, Dol., 1858, Nat. Tijd. Ned. Ind., xvii, 92 . Amboina.
2. *limbata*, Os. Sac., 1882, Berl. Ent. Zeits., xxvi, 100, ♀
— ? *Var.*, pl. xii, fig. 4 (wing). Philippines.
3. *labiata*, Big., 1887, Bull. So. Ent. Fr. xii, 117. Ceylon.
4. *calopa*, Brun., sp. nov., ♂, pl. xii, fig. 2 (abdomen) . Tenasserim.
(*Atherix calopus*, Big., *nom. nud.*)
5. *lanopyga*, Brun., sp. nov., ♀, pl. xii, fig. 3 (full ins.) Assam.
(*Chrysopila id.*, Big., *nom. nud.*)
6. *cincta*, Brun., sp. nov., ♀, pl. xii, fig. 1 (wing) . *Id.*
7. *metatarsalis*, Brun., sp. nov., ♂, pl. xii, figs. 5 (wing) and 6 (hind leg) Lower Burma.

LEPTIS, Fab., 1805.

Syst. Antl., 69.

1. *uniguttata*, Os. Sac., 1880, Ann. Mus. Gen., xvi, 422, ♂ Sumatra.
2. *apicipennis*, Brun., sp. nov., ♀, pl. xii, fig. 7 (wing) Assam.

MACELLOPALPUS, Big., 1886.

Bull. So. Ent. Fr. (1886), xlviii.

(? Syn. *Leptipalpus*, Rond.)

1. *flaveolus*, Big., 1886, loc. cit., ♀ Papua.
2. *fulvidus*, Brun., sp. nov., ♀, pl. xii,
fig. 8 (head, profile) Assam.
(*Id. id.*, Big., *nom. nud.*)

LEPTIPALPUS, Rond., 1850.

Nuov. Ann. v. sci. nat., Bologna, ii, 183.

(? *Heliomyia*, Dol.)(? *Macellopalpus*, Big.)

1. (?) *waigiensis*, Big., 1887, Bull. So. Zool.
Fr., xii, 108, ♀ Waigœ.

CHRYSOPILUS, Mcq., 1826.

Rec. Trav. Soc. Sci. Lille, p. 82.

1. *decisus*, Wlk., 1857, Proc. Linn. So.
Lond., i, 15, ♂ (*Leptis decisus*). Malacca.
2. *maculipennis*, Wlk., 1857, loc. cit., i,
118, ♂ ♀ (*Chrysopila id.*) Borneo.
3. *vacillans*, Wlk., 1859, loc. cit., iii, 89,
♂ ♀ Aru Island,
Papua.

N.B.—*Vide* Os. Sac., Ann. Mus. Gen., xvi, 420, notes.

4. *impar*, Wlk., 1861, loc. cit., v, 282, ♀
(*Leptis*) Batjan.
5. *guttipennis*, Wlk., 1861, loc. cit., v, 282,
♀ (*Chrysopila*) *Id.*
6. *stylatus*, Wlk., 1864, loc. cit., vii, 208,
♀ (*C. stylata*) Mysol.
7. *insularis*, Sch., 1868, Dipt. Novara
Reise, 199, ♀ Nicobar Isles.
8. *correctus*, Os. Sac., 1882, Berl. Ent.
Zeits., xxvi, 101, ♀, fig. 2 (wing)
(*correcta*) Philippines.
9. *simplex*, Meijere, 1904, Bijd. Dierk.,
xviii, 97, ♂ Java.
10. *sauteri*, Bezzi, 1907, Ann. Mus. Hung.,
v, 564, ♂ ♀ Formosa.
11. *albopictus*, Brun., sp. nov., ♀, pl. xii,
fig. 9 (wing) Assam.
(*Leptis albopicta*, Big., *nom. nud.*)

12. **marmoratus**, Brun., sp. nov., ♂, pl. **xii**, fig. 10 (wing) Assam.
(*Leptis marmorata*, Big., nom. nud.)
13. **luctuosus**, Brun., sp. nov., ♂ *Id.*
(*Atherix id.*, Big., nom. nud.)
14. **segmentatus**, Brun., sp. nov., ♂, pl. **xii**, fig. 11 (abd.); 12 (wing) Nepal.
15. **frater**, Brun., sp. nov., ♂ Tenasserim.
(♀ ? *Leptis punctum*, Big., nom. nud.)
16. **unicolor**, Brun., sp. nov., ♂, pl. **xii**, fig. 13 (wing) Assam.
17. **stigma**, Brun., sp. nov., ♂, pl. **xii**, fig. 14 (wing) Lower Burma.

N.B.—The above are most certainly true species of *Chrysopilus*. I am indebted to Mr. C. O. Waterhouse for the examination of Walker's types, thus enabling me to definitely place them in this genus.

18. **ferruginosus**, Wied. (? 1823), Zool. Mag., iii, 4 (*Leptis id.*) .. Java, Borneo, Celebes, Ternate.

(*Heliomyia ferruginea*, Dol., Nat. Tijd. Ned. Ind., xiv, 402, pl. vii, fig. 5.)

N.B.—This species may require the erection of a new genus and may be congeneric with *lupinus*, O. S. *Vide* note under *Macellopalpus fulvidus*.

19. **lupinus**, Os. Sac., 1880, Ann. Mus. Gen., xvi, 420, ♀ (*lupina*) Sumatra.

XLIV REVISED AND ANNOTATED CATALOGUE OF ORIENTAL BOMBYLIDÆ WITH DESCRIPTIONS OF NEW SPECIES.

By E. BRUNETTI.

The object of the present paper is mainly to revise the species of the sub-family *Anthracinæ*, by placing them in their correct genera, and to describe a number of new ones which are to be found either in the Indian Museum, the Pusa collection, or my own. These new species all appear very distinct from all previously described, otherwise I would not have ventured to establish them. To these descriptions I have ventured to add some redescriptions of a few species of the older authors (mainly Walker's), which, on account of their brevity, are not easily recognisable.

As regards the disposition of the species in the various genera, Van der Wulp's Catalogue gave twenty-one and forty-six species respectively, under *Exoprosopa* and *Anthrax*, besides six under *Argyramæba*, thus ignoring the genus *Hyperalonia* altogether. To my surprise I find this latter genus also ignored in the new Palæartic Catalogue, for *tantalus*, F, a true *Hyperalonia*, is placed under *Exoprosopa*. It is certainly a valid genus, as admitted and re-characterised by Osten Sacken in the *Biologia Cent. Amer.* (i, 78), and Prof. Bezzi admits it in his recent notes on this group (*Zeits. Hym. u. Dipt.*, 1908, pt. i, p. 26). In the present paper I have included under this genus all those species with four submarginal cells, having had no means of testing them on the other characters proposed by Osten Sacken; still, this character in itself is of generic rank.

Of Van der Wulp's twenty-one species of *Exoprosopa*, thirteen belong to *Hyperalonia*, and of the remainder, two (*binotata*, Mcq., and *cæruleopennis*, Dol.) are synonymous; the former with *Exoprosopa collaris*, W., and the latter with *Hyperalonia tantalus*, F.

Of Van der Wulp's forty-six species of *Anthrax*, I refer six to *Hyperalonia*, and seven each to *Exoprosopa* and *Argyramæba*, leaving seventeen as approved species of the genus (*sensu stricto*); two additional ones being synonymous (*carbonaria*, Wlk. = *Argyramæba bipunctata*, F., and *trimaculata*, Wulp = *Argyramæba distigma*, W., var.). Of the residuum of seven species, I refer in a special note to one (*emarginata*, Macq.), leaving six of which it has been impossible to obtain sufficient information to place them generically.

Van der Wulp's four species of *Argyramæba* remain in that genus.

My thanks are due, and are hereby tendered to Mr. E. E. Austen of the British Museum, through whose kindness in examining the

types in that Institution, I am enabled to place in their correct genera a number of Walker's species, these species being noted under each genus in question.

In the case of two species (*aperta*, Wlk., and *manifesta*, Wlk.) which have been compared by Mr. F. M. Howlett with the British Museum types, I have, as the specimens appear to agree well with the descriptions, accepted the identifications.

After obtaining a more or less reliable generic classification, the much more difficult problem of separating the species had to be encountered, and it is to be regretted that, so far as this paper is concerned, the carrying out of this task has been chiefly comparative, analytical tables of the species being obviously impossible without a more precise acquaintance with a larger proportion of the species; Walker's species being known to me almost wholly from descriptions only. Therefore, as hereinafter stated, my provisional "grouping" of species in the genera *Hyperalonia*, *Exoprosopa* and *Anthrax* must be received with a certain amount of caution, and it must be understood that they are not intended to represent natural affinities, being based almost entirely on wing-markings. The reason of this is, that this character is, in cabinet specimens (which are generally more or less damaged, when of questionable antiquity), the *most lasting one*, being the least affected by time, dust, mould, etc. Also it is the only character mentioned by *every* author. Concerning the geographical limits of this catalogue, the only dubious point is the inclusion of a few species described from China. If these latter are from South China, they may be regarded as belonging to the Oriental Fauna, but if proved to occur in North China only, they must be eliminated from this list and relegated to the Palæarctic Catalogue.

N.B.—The descriptions and redescriptions are placed—all together at the conclusion of the catalogue, and after these I have given a supplementary list of those species which are known on the confines of the Oriental Region (Turkestan, Persia, Arabia, and Queensland). Any of these species might easily be met with in the Oriental Region, whilst any of the Palæarctic species may occur in the Himalayas; a list of these latter can be found in the recent Palæarctic Catalogue. I also add a list, probably not so complete as it might be, of Bombylidæ, which have been described from unknown localities, as some of these may prove to be Oriental.

Sub-Family *A N T H R A C I N Æ*.

HYPERALONIA, Rond., 1864.

Archiv. per la Zool. Modena, iii, 1.

HYPERALONIA (revised generic characters), Os. Sac., Biol.-Cent. Am., i, 89.

1. *tantalus*, F., 1794, Ent. Sys., iv, 260 (*Anthrax*).

Anthrax id., Wied., Auss. Zwei., i, 255.

Id. id., Macq., Dip., i, 401.

Exoprosopa id., Macq., Dip. Ex., ii, 1, 37 (315), ♂ ♀.

Id. id., Kat. Pal. Dip., ii, 169.

Hyperalonia id., Rond., Ann. Mus. Gen., vii, 453.

Anthrax cæruleopennis, Dol., Nat. Tijd. Ned. Ind., xiv, 400, pl. ix, 2.

Hyperalonia hux, Bigot, *nom. nud.* (Ind. Mus. Coll. *syn.*, t. m.).

Type in Wiedemann's collection.

Loc.—Tranquebar, Java [t. *Wied.*]; India, China, Berlinhafen (Papua) [all t. *Wulp*]; Borneo [t. *Rond.*]; Celebes [t. *Os. Sac.*]; Semarang (Java) in August [t. *Meijere*]; Sikhim; Nepal (Katmandu, Soondrijal); Assam (Sadiya, Sibsagar); Tenasserim [all ♀ ♀ in *Ind. Mus. Coll.*, t. m.]; Sumatra [*Coll. mihi*]. The Palæarctic Catalogue records it from Japan, under *Exoprosopa*.

2. *chrysolampis*, Jaen., Neue Ex. Dip., 36, pl. i, fig. 8 (*Exoprosopa id.*).

Type in Frankfurt Museum.

Loc.—Java [t. *Jaen.*, *Os. Sac.*]; Moluccas [t. *Wulp*]; Sikhim; W Himalayas (Bhim Tal, 4,500 ft.), 22—27-ix-06 [*Annandale*] [all in *Ind. Mus. Coll.*, t. m.]; Borneo (Kina Balu) [*Coll. mihi*].

N.B.—These two species are very closely allied, Jaenicke's "1st joint of antenna red" applying to only two out of the eight specimens of this species that I have seen. A constant distinctive character is the colour of the hair at the base of the belly, which I found quite white in seven specimens of *tantalus*, and distinctly yellow in eight specimens of *chrysolampis*.

3. *purpuraria*, Wlk., 1852, Ins. Saund., pt. 3, 169, ♀ (*Anthrax id.*).

Loc.—Walker gives Java, but Van der Wulp gives only East India.

4. *confirmata*, Wlk., 1861, Pr. Linn. So. Lond., v, 283, ♂ (*Anthrax id.*).

Loc.—Batjan.

5. *demonstrans*, Wlk., 1860, loc. cit., iv, 112, ♀ (*Anthrax id.*)

Loc.—Macassar (Celebes).

6. *fuscipennis*, Mcq., 1850, Dip. Ex. Supp. 3, 33 (193), ♀, pl. iii, 9 (*Exoprosopa id.*), wing.

Loc.—Java.

7. *tristis*, Wulp, 1868, Tijd. Ent., xi, 107, ♂, pl. iii, 11, wing (*Exoprosopa*).

Loc.—Timor; Tenmalai (S. Ind.), 22-xi-08, at light [*Annandale*].

N.B.—A black-winged species, with the tip quite clear. Very distinct.

8. *dives*, Wlk., 1849, List Dip. Brit. Mus., ii, 240, ♂.

Loc.—Sylhet. Type in British Museum.

N.B.—Wings dark brown at the base, and along the fore border till near the tip, outline of colour regular and nearly parallel to hind border.

9. *sphinx*, F., 1787, Mant. Ins., ii, 329 (*Bibio*).
 Fab., Syst. Antl., 126 (*Anthrax*).
 Wied., Auss. Zwei., i, 258 (*Anthrax*).
 Macq., Dip. Ex., ii, 1, 37 (315), ♀

Loc.—East India; West India and Ceylon; Trivandrum (S. Ind.), 13-xi-08 [*Annandale*]. Type in Fabricius's collection.

N.B.—I possess three specimens from Ceylon of what I have identified as this species, of which two were taken by me at Colombo 1-vii-04. The Pusa collection contains one from Bulsar (Bombay Presid.), 20-v-04, and one from the neighbourhood of Bombay, 21-iii-05, the latter taken on seaweed.

10. *albicincta*, Macq., 1840, Dip. Ex., ii, 1, 38, ♀, pl. xvi, 7, wing (*Exoprosopa*).
Exoprosopa id., Sch. Reise Novara, 118.

Loc.—Shanghai [t. *Sch.*]. Type, in Paris Museum, from an unknown locality.

11. *latifascia*, Wlk., 1860, Tr. Ent. So. Lond. (2nd series), iv, 142 (*Anthrax*).

Loc.—China.

12. *combinata*, Wlk., 1860, loc. cit., 143 (*Anthrax*).

Loc.—China.

13. *aurantiaca*, Guérin, 1843 (?), Icon. du regne anim., iii (Insectes), 539, pl. xcv, 6, a, b, c (*Anthrax*).

Loc.—Bengal.

N.B.—In two specimens undoubtedly of this species in the Pusa collection (also from Bengal) the black dorsal abdominal line is uninterrupted, and the wings are nearly uniformly tinged with brown; whereas Guérin's figure shows the former interrupted, and the dark part of the wings clearly defined and confined to the anterior half. As this author's description is short and not easily accessible I have redescribed the species at the end of this catalogue.

14. *suffusipennis*, mihi, sp. nov., ♀

Plate xii, fig. 15 (wing).

Loc.—India (Purneah Dist.). Type in Indian Museum.

15. *satyrus*, F., 1775, Sys. Ent., 758 (*Bibio*).

Anthrax satyrus, F., Ent. Syst., iv, 259.

Id. id., Wied., Auss. Zwei., i, 322.

Exoprosopa id., Wulp, Tijd. Ent., xi, 106, ♂ ♀, pl. iii, 10 (full insect, coloured).

Loc.—Aru Island. Wiedemann repeats Fabricius's localities of New-Holland and China.

16. *devectā*, Wlk., 1861, Pr. Linn. So. Lond., v, 148, ♀
(*Anthrax id.*).

Loc.—Amboina [t. *Wlk.*]; Key Ins. [*Coll. mihi*].

N.B.—At the end of the catalogue will be found notes on the differences between this species and *doryca*, Boisd. From a comparison of my named specimen of this species with Van der Wulp's description and plate of *satyrus*, F., the two appear very closely allied, and I should not be surprised if they prove identical.

17. *doryca*, Boisd., 1835, Voy. de l'Astrol. Zool., ii, 665,
pl. xii, 12 (*Anthrax*).

Wulp, Notes Leyd. Mus., vii, 81 (*Exoprosopa*).

Os. Sac., Ann. Mus. Gen., xvi, 433 (*Exoprosopa*).

Anthrax ventrimacula, Dol., Nat. Tijd. Ned. Ind.,
xiv, 399, pl. ix, 1, ♀

A. pelops, Wlk., Pr. Linn. So. Lond., iii, 90, ♂

Exoprosopa audouini, Macq., Dip. Ex., ii, 1, 36,
♂, pl. xvi, 1 (full insect and head in profile).

E. leuconæ, Jaen., Neue Ex. Dip., 37.

Loc.—Amboina [t. *Dol.*, *Wulp*, *Os. Sac.*]; Papua (Mansinam, xi, 1871) and Gilolo [t. *Os. Sac.*]; Timor [t. *Wulp*]; Waigøe, Aru [t. *Wlk.*]; Moluccas [t. *Jaen.*]; Key Ins. [*Coll. mihi*].

N.B.—The single example I have seen of this species agrees exactly with Doleschall's plate (*ventrimacula*, v. *supra*). It is quite distinct from the two following species by the brown colour of the wing being very narrow along the costa, leaving most of the marginal cell clear, whilst a brown streak extends along the 3rd longitudinal vein, thinly filling the upper basal cell and leaving the discal cell wholly clear. Doleschall says it is 6 lines in length; my specimen is 16 mm., but most of the species vary considerably in size. I have accepted the synonymy as given by Van der Wulp, which seems to prove it a very variable species, as Walker's two descriptions of his "*pelops*" (♂ and ♀), Jaennicke's *leuconæ*, and Macquart's plate of his *audouini* show important points of difference. It therefore appears advisable to append a description of the specimen I possess, named (by what authority, I have no means of knowing) as *doryca*. As noted by Osten Sacken, this species and the two next are closely allied, but I think the brown colour in the wing not encroaching to the slightest extent on the discal cell, will separate *doryca* from the other two, whilst they may be divided by the yellow-haired belly in *flaviventris*, and the white-haired one in *ænomaus*.

I append at the end of the catalogue a redescription of this species.

18. *flaviventris*, Dol., 1857, Nat. Tijd. Ned. Ind., xiv, 400
(*Anthrax*).

Loc.—Amboina [t. *Dol.*]; Lower Burma, Tenasserim [*Ind. Mus. Coll.*, t. *m.*]; Trivandrum (S. India).

N.B.—With this species I have identified almost with certainty three ♀♀ in the Indian Museum (two from Tenasserim and one from Mergui in Lower Burma).

The under side of the abdomen is nearly wholly *yellow-haired*, as described by Doleschall, but the brown colour of the wing crosses the upper basal part of the discal cell, whereas Osten Sacken (Berl. Ent. Zeits., xxvi, 112) says it should not encroach upon it.

19. *œnomaus*, Rond., 1875, Ann. Mus. Gen., vii, 453.

Loc.—Borneo (Sarawak) [t. *Rond.*]; Philippines [t. *Os. Sack.*]. Type in Genoa Museum.

N.B.—In the Indian Museum are three specimens which appear to be this species (from Sikhim and Mergui), varying in size from 9 to 17 millimetres, Rondani's measurements being 18 mm. Both Rondani and Osten Sacken say, belly with "yellowish white" and "yellow" pile, respectively, but in the above examples it is only whitish; moreover, the 2nd posterior cell is no narrower at the distal than the proximal end (but is contracted in the middle, as occurs in several species); and finally, the white spots at the tip of the abdomen are four in number, and do not resemble cross-bands. I still believe they are this species.

An undescribed "sp. nov." of Bigot's in the Indian Museum (*argyura*: the "type" is headless and in bad condition, but there are two other specimens, evidently of the same species, one of which possesses a head) closely resembles *œnomaus* and may represent the true form. In this the silvery white pile on the abdomen tip is very brilliant, and takes the form of a broad spot, extending over all the last three segments.

The pile on the belly is white, the 2nd posterior cell of uniform width, and the brown band on the wing is rather more restricted and more clearly defined than in the specimens I have identified as *œnomaus*.

20. *obliqua*, Macq., 1840, Dip. Ex., ii, 1, 37 (315), ♀, pl. xvi, 8 (*Exoprosopa*).

Loc.—Timor. Type (♀) in Paris Museum.

Notes on the genus **HYPERALONIA**.

It is quite impossible to separate, in any brief manner, the above twenty species into groups, yet I fully believe they are all or nearly all good species. On Mr. Austen's information that they possess four submarginal cells I have included under this genus the following species of Walker: "*Anthrax*" *confirmata*, *combinata*, *devectora*, *demonstrans* and *latifascia*. Of *devectora* I have since found a named example in my own collection.

The wing-marks appear to me to be reliable characters, as they have been found constant in specimens of the same species examined by me. The following species have been seen by me either in the Indian Museum collection or my own: *tantalus*, F.,

chrysolampis, Jaen., *devecta*, Wlk., *doryca*, Boisd., *sphinx*, F., *aurantiaca*, Guér., *flaviventris*, Dol., and *ænomaus*, Rond., to which I add a new one quite distinct from all by the diffused spots on its wing, viz., *suffusipennis*.

Of the remainder, wing figures have been available of *fuscipennis*, Macq., *tristis*, Wulp, *albicineta*, Macq., *satyrus*, F., and *obliqua*, Macq., and of these, *tristis* and *obliqua* are quite distinct from all others; *devecta*, Wlk., and *satyrus*, F., seem to me to be allied.

Without considering the arrangement to in any way represent natural affinities, I have, in my own mind, merely as a temporary convenience, grouped the species as follows, after much difficulty: (1) species with wings mainly dark brown or blackish, with more or less purplish reflections (*tantalus* to *fuscipennis* incl.); (2) species with wings mainly very dark but with a limited clear tip (*tristis*) or posterior margin (*dives*); (3) an intermediate species with uniformly brown wings but not of such intensity as in the first group (*sphinx*); (4) species with the wings never clear, but with the anterior half (more or less) always much darker, without any distinct line of demarcation between the dark and light portions (*albicineta* to *suffusipennis*); (5) species with grey or light brown wings with darker parts and with the costa and principal veins streaked with yellow (*satyrus* and *devecta*); (6) an intermediate species with mainly clear wings and a distinct narrow dark anterior margin (*doryca*); (7) species with a nearly or quite clear wing bearing the oblique dark baso-costal band which is so common in this sub-family (*flaviventris* and *ænomaus*); and, finally, (8) an isolated species with clear wings and an oblique bilobed band (*obliqua*). Students must remember that this is merely an artificial and temporary sequence pending the better study of the affinities and limits of all the species.

EXOPROSOPA, Macq., 1840.

Dip. Ex., ii, 1, 35.

1. **pennipes**, Wied., 1821, Dip. Ex., 1, 129 (*Anthrax*).
Wied., Auss. Zwei., 1, 272 (*Anthrax*); Macq.,
Dip. Ex., ii, 1, 49 (*Exoprosopa*); Rond., Ann.
Mus. Gen., vii, 452 (*Hyperalonia*).

Loc.—Borneo [t. Rond.]; Karachi (India) and Assam [*Ind. Mus. Coll.*, t. m.]; Pusa (Bengal), on pear tree, 5-v-1906 [*Pusa Coll.*, t. m.].

Type in Westermann's collection.

N.B.—This species is easily known from all others in the genus by the dense black hair on the hind tibiae.

2. **lar**, F., 1781, Sp. Ins., ii, 414 (*Bibio*).
F., Sys. Antl., 110; Wied., Auss. Zwei., 1, 268
(*Anthrax*).

Loc.—Bengal [t. *auct.*]; Belgatchia (Calcutta), August 1906; Bombay Presid., 21-iii-1905, on seaweeds [*Pusa Coll.*, t. *m.*]. Types in the Fabricius collection.

3. *latipennis*, mihi, sp. nov., ♀

Loc.—Assam (Shillong). Type in Indian Museum.

N.B.—These three species can be separated from the others in this genus by the practically wholly black or blackish brown wings. In my species they are wholly black, whereas in *pennipes* the extreme tip is clear, whilst in *lar* the distal portion of the posterior border is rather narrowly clear.

4. *flavipennis*, mihi, sp. nov., ♀

Loc.—Bengal (Pusa), 19-iv-1907 [*Pusa Coll.*, type], and Pusa, 25-v-1906 [*Ind. Mus. Coll.*, co-type].

N.B.—Easily recognised from all other species by the closed 1st posterior cell, in conjunction with the bright yellow wings.

5. *flammea*, mihi, sp. nov., ♀

Loc.—Bengal (Pusa) [type, Pusa, 17-iv-1907, *Pusa Coll.*], Trivandrum (S. Ind.) [*Ind. Mus.*].

N.B.—This is the only other species except *insulata*, Wlk., with closed 1st posterior cell: it has clear wings with two brown bands.

6. *collaris*, Wied., 1828, Auss. Zwei., i, 271 (*Anthrax*).

Anthrax ruficollis, Saund., Tr. Ent. So. Lond. (1841), iii, 59, pl. v, 5 (full insect ♀, coloured).

Anthrax collaris, Wlk., List Dip. Brit. Mus., ii, 247, ♀

Exoprosopa binotata, Mcq., Dip. Ex. Supp., 5, 89, ♂

Loc.—Madras [t. *Walker*]; Central India [t. *Saunders*]; India [t. *Macq.*]; Bangalore, Trivandrum (both South India), Sahibganj (Bengal) [*Ind. Mus. Coll.*, t. *m.*].

Plate xii, fig. 16 (wing). Type in Vienna Museum.

N.B.—I have practically no doubt whatever as to the synonymy given here, and the fact that Wiedemann's type came "probably" from the Cape is not sufficient to discard the identity. Saunders, in describing his *ruficollis*, gives an excellent coloured plate which is unmistakable, and refers to its affinity to the older author's species, though fearing the descriptions of the wing did not quite agree with his specimen. Wiedemann's description, however, appears exact enough; his "guttula" referring to the very small sub-hyaline spot in the 2nd basal cell, adjoining the very base of the discal cell; and this spot is referred to by Macquart, in his *binotata*, as follows, "un point à la base de la cellule discoidale."

Wiedemann's "excisura, apiceque limpidis" is, of course, correct, and Macquart's description also applies. Moreover I am assured of the identity of this latter author's *binotata* by his mention

of the small tuft of white hair on or just below the posterior corners of the thorax.

The three specimens (♀ ♀) in the Indian Museum collection agree well with all the descriptions; the small subhyaline spot in the 2nd basal cell is not always very clear, and the white tufts of hair referred to are only visible in one specimen, whilst the conspicuous, round white hairy spots on the 3rd abdominal segment are easily effaced. The specimens, however, are absolutely uniform in the wing markings, and there is no doubt whatever of their identity with Wiedemann's species, although one of them bears a label in Bigot's handwriting "Exop. bipunctata Macq." It is evidently an error for "*binotata*, Mcq.," as I cannot trace that Macquart ever recorded a species as "bipunctata."

7. *lateralis*, mihi, sp. nov., ♀

Plate xii, fig. 17 (wing).

Loc.—Calcutta. [Type *Ind. Mus. Coll.*]

8. *bengalensis*, Macq., 1840, Dip. Ex., ii, 1, 49 (327), ♀,
pl. xviii, 4 (wing).

Loc.—Bengal. Type (♀) in Paris Museum.

Plate xii, fig. 18 (wing).

N.B.—A good series of this species (but in very indifferent condition) in the Indian Museum collection shows that there is a great tendency to appendiculation, and the presence of additional veinlets in the wings, this feature sometimes appearing in one wing only. The species is at once recognisable from Macquart's plate, and seems rather a consistent one in other characters, and in size.

9. *javana*, Macq., 1840, Dip. Ex., ii, 1, 49 (327), ♀, pl.
xviii, 6 (wing).

Loc.—Java. Type (♀) in Paris Museum.

10. *retrorsa*, mihi, sp. nov., ♀

Loc.—Persia (Bushire). [Type, *Ind. Mus. Coll.*]

Plate xii, fig. 19 (wing).

11. *annandalei*, mihi, sp. nov.

Plate xii, fig. 20 (wing).

Loc.—Lower Burma (Moulmein, 6-iii-1908). [Type, *Ind. Mus. Coll.*]

12. *alexon*, Wlk., 1849, List Dip. Brit. Mus., ii, 246
(*Anthrax*), no sex given.

Loc.—East Indies. Type in British Museum.

N.B.—Van der Wulp's catalogue gives East India both for this and the next species, which is incorrect, Walker's locality being East Indies, which is quite different. He does not mention the sex.

13. *auriplena*, Wlk., 1852, Ins. Saund., pt. 3, 171, ♀
(*Anthrax*).

Loc.—East Indies.

14. *insulata*, Wlk., 1852, loc. cit., 172, ♀ (*Anthrax*).
octonotata, Big., *nom nud.* (Ind. Mus. Coll.).

Loc.—East Indies [t. *Walker*]; Nepal, various localities [*Ind. Mus. Coll. t. m.*]; Mussoorie [*Pusa Coll.*].

Plate xii, fig. 21 (wing).

N.B.—This is essentially a variable species both in size and in wing markings, the Indian Museum series ranging from 7 to 12 millimetres in length, all the specimens hailing from Nepal. In the same collection is Bigot's type of his *octonotata* (a *nomen nudum*) which is, I feel convinced, only a varietal form of *insulata*. In it the eight spots referred to are, presumably, (1) a distinct oval spot on the tip of the 2nd vein, (2) on the base of the fork of the 3rd and (3) at the junction of the veinlet joining this to the 2nd, (4) two small contiguous round ones (probably counted as one spot only) occupying the cross-vein between the 4th vein and its adjacent branch, one each at (5) the base of the lower fork of the 4th vein, (6) the cross-vein uniting this to the 5th vein, and (7) one on the base of the intermediate branch of the 4th vein, finally (8) a dark but distinct spot-like suffusion spread over the discal transverse vein and base of the 2nd vein, thus, on the dark part of the wing but much darker. Moreover the 1st posterior cell is closed distinctly before the border. This specimen is from Dehra Dun (foot of the Mussoorie hills). A second specimen of this variety (from Calcutta) shows the 1st posterior cell closed almost *on* the border.

What I take to be the typical form of *insulata* is shown in plate xii, fig. 21, and in this the brown colour of the wings extends further posteriorly and is darker, thus obliterating what I call Bigot's 3rd spot, but which can usually be perceived if examined closely, and which is invariably present in individuals where the brown colour of the wing is less extensive. The same remark applies to the dark spot over the discal transverse vein, which can invariably be discerned, being distinctly darker than the brown colour which, nevertheless, always entirely surrounds it. A principal difference between typical *insulata* and *octonotata* is the presence of two very small spots on the fork of the 3rd vein, also the spot that I call Bigot's 4th is much larger, more irregular, and takes the form either of a single irregularly shaped spot, two contiguous spots or three contiguous and merged spots. My 6th, 7th and 8th spots of Bigot are generally more enclosed by the brown colour. In nearly all the typical specimens there is a foreshortening of the branches of the 4th vein, or appendices to one or more of them, all tending to prove the considerable range through which this species may vary.

15. *brahma*, Sch., 1868, Novara Reise, 118.

Loc.—Ceylon.

Plate xii, fig. 22 (wing).

N.B.—Schiner does not mention the sex.

16. *semilucida*, Wlk., 1852, Ins. Saunds., pt. 3, 170, ♀
(*Anthrax*).

Loc.—East Indies.

17. *basifascia*, Wlk., 1849, List Dip. Brit. Mus., ii, 248
(*Anthrax*).

Loc.—Bengal. Type in British Museum.

N.B.—Walker does not mention the sex.

18. *albida*, Wlk., 1852, Ins. Saunds., pt. 3, 171, ♀ (*Anthrax*).

Loc.—East Indies.

19. *vitrea*, Bigot, 1892, Ann. So. Ent. Fr., lxi, 344, ♂.

Loc.—Pondicherry. Type in the Bigot collection.

N.B.—In the Pusa collection is a ♂ of what I have little doubt is this species. The wholly clear wings are characteristic of almost this species alone, in this genus; but in the present specimen there is a large white *tomentose* spot towards each side of the abdomen, spreading over the 2nd, 3rd, and 4th segments, leaving the dorsum black. Bigot's "some vestiges of white pile on the sides of the abdomen" is in accordance with this, but I do not perceive the lateral reddishness on the 1st and 2nd segments mentioned by that author.

Notes on the genus **EXOPROSOPA**.

Firstly I have to own indebtedness to Mr. E. E. Austen for informing me of the correct place in this genus, of Walker's species *alexon*, *albida*, *auriplena*, *basifascia*, *insulata*, and *semilucida*, all of which that author described under *Anthrax*.

Having seen only twelve out of the nineteen species of *Exoprosopa* given here, it is unsafe to attempt a tabular view of them, but they seem to be separable into five fairly distinct groups.

1. Species with *wholly black* (or deep blackish brown) wings, with at most an absolutely clear small spot at or near the tip. These are the first three species, of which my *latipennis* has absolutely unmarked blackish brown wings, whilst *pennipes* has a clear wing-tip and long black hair on the hind tibiæ, and *lar* is distinguished by the wing being clear on the distal portion only of the posterior border.

2. Species with a *closed 1st posterior cell*. These are my two new species *flavipennis*, with almost wholly yellow wings, and *flammea*, a fiery reddish orange species with clear wings and two dark cross-bands.

3. An isolated species with clear wings and a broad scalloped dark band on the anterior half: *E. collaris*, Wied.

4. Species with a pale grey, yellowish or clear wing, always distinctly marked with a definite pattern, spots, bands, or the oblique baso-costal band so prevalent in this sub-family. This group may be considered to contain the typical species of the genus, and to it belong also a good number of Palæarctic and North American species.

In the present list all the species from *lateralis* to *brahma* (inclusive) fall in this group.

5. Species with *clear wings*, or at most a very narrow, pale yellowish anterior margin. The four last species belong here. It should here be mentioned that in Van der Wulp's Catalogue he often quotes "East India" for species described by Walker from the "East Indies."

ARGYRAMCEBA, Sch., 1860.

Wien. Ent. Monats., iv, 51.

Sch. F. Aust., i, 52.

1. **bipunctata**, F., 1803, Syst. Antl., 118.

Wied., Auss. Zwei., i, 286.

Anthrax carbonaria, Wlk., Ins. Saund., pt. 3,
173.

Loc.—Tranquebar [t. *Wied.*]; East India [t. *Walk.*]; Karachi, Purneah District, Calcutta (all India) [*Ind. Mus. Coll. t. m.*].

Plate xii, fig. 23 (wing).

N.B.—For the synonymy of *carbonaria*, I have to thank Mr. Austen. This species stands apart from all others by the uniformly dark brown wings.

2. **aterrima**, Doles, 1858, Nat. Tijd. Ned. Ind., xvii, 93
(*Anthrax*).

V. d. Wulp, Tijd. Ent., xxiii, 165, pl. x, 9 (wing).

Anthrax proferens, Wlk., Pr. Linn. So. Lond.,
iv, 113, ♂

Loc.—Amboina [t. *Doles.*]; Macassar (Celebes) [t. *Wlk.*]; Semarang in October, Batavia in July [both Java, t. *Meijere*].

N.B.—In this species the distal half of the posterior border of the wing is irregularly clear, the remainder being wholly blackish. In the remaining Oriental species of this genus, the wings are principally clear, with a dark, oblique baso-costal band, with or without other marks or spots.

3. **melania**, Wulp, 1885, Notes Leyd. Mus., vii, 84 (♂?),
pl. v, 8 (wing).

Loc.—Java; Astrolabe Bay (Papua) [t. *V. d. Wulp*].

4 **emissa**, Wlk., 1864, Pr. Linn. So. Lond., vii, 233, ♀
(*Anthrax*).

Loc.—North Ceram.

5. **emittens**, Wlk., 1861, loc. cit., v, 148, ♀ (*Anthrax*).

Loc.—Amboina.

N.B.—Thanks to Mr. Austen's kind examination I am able to refer this species to this genus.

6. **degenera**, Wlk., 1857, loc. cit., i, 15, ♂ ♀ (*Anthrax*).

Loc.—Singapore, Macassar.

N.B.—Three specimens in my collection (? ♂ ♂) from Kandy (Ceylon), taken October and November, 1907, are, I think, referable to this species.

7. *appendiculata*, Big., 1892, Ann. So. Ent. Fr., 347, ♀
Loc.—Pondicherry. Type in Bigot collection.

8. *fallax*, Meij., 1907, Tijds. v. Ent. L., 244 (no sex mentioned).

Loc.—Semarang (Java) in January.

N.B.—Four specimens in the Pusa collection from Chapra (Bengal) are either *fallax* or a new and closely allied species.

9. *gentilis*, mihi, sp. nov., ♂ ♀
(*Id. id.*, Bigot, *nom. nud.*)

Loc.—Bengal, Assam. Type in Indian Museum collection.

Plate xii, fig. 25 (wing).

10 *distigma*, Wied., 1828, Auss. Zwei., i, 309 (*Anthrax*)
(= ♀ t. Os. Sack., B. E. Z., xxvi, 112); Macq., Dipt. Ex., ii, 1, 58 (336)
(*Anthrax*); V. d. Wulp, Notes Leyd. Mus., vii, 83 (*Argyramœba*); *id.*, Tijds. Ent., xxiii, 166; Os. Sack., B. E. Z., xxvi, 112 (*Argyramœba*).

Anthrax argyropyga, Doles., Nat. Tijds. Ned. Ind., xiv, 401.

Anthrax tripunctata, V. d. Wulp, Tijds. Ent., xi, 109, pl. iv, 1 (wing).

Anthrax trimaculata, V. d. Wulp, loc. cit., p. 110, pl. iv, 2 (wing).

Argyramœba consobrina, Big., *nom. nud.* [*Ind. Mus. Coll. t. m.*].

Loc.—Java, Gorontalo, Celebes, Sumatra, Amboina, Salawatty, Timor [all t. *V. Wulp*]; Nicobar Is. [t. *Sch.*]; Phil. Is., Papua, [both t. *Os. Sack.*]; Darjiling and Java [t. *Meij.*]; Dehra Dun, Lucknow, Purneah Dist., Bangalore, Calcutta (all India and all ♀ ♀ of the *trimaculata*, V. Wulp, form) [*Ind. Mus. Coll. t. m.*]; Kandy, Calcutta, Jullundur (India), 5-v-1905, and Mindanao [*Coll. mihi*]; Friedrich Wilhelmshafen and Erima, Astrolabe Bay (Papua) [t. *V. Wulp*]; Semarang in August and Batavia in July [both Java, t. *Meijere.*]. The Pusa collection possesses a good series extending from 27-iv to 8-vi, and again from 21-viii to 30-xi, the localities being Arrah, 13-ix-1907, Thurla, 13-iv-1905, Chapra (all Bengal); Allahabad, 27-x-1905 [*Howlett*], Bombay, iv-1905 (var. *trimaculata*).

Coquillett records it from Japan (under *Spogostylum*).

Type in Leyden Museum.

N.B.—I accept Herr Meijere's synonymy as to *trimaculata*, V. d. Wulp, which form is the only one I have seen of the species. It appears to be distributed all over the East and is very variable in size (6½ to 10½ millimetres). A specimen in the Indian Museum,

which was taken on board ship, ten miles from the coast, off Masulipatam (Madras), has the hyaline portion of the wings quite clear, thus agreeing with one mentioned by Osten Sacken from the Philippines (*l. c. ante*).

11. *semiscita*, Wlk., 1857, Pr. Linn. So. Lond., i, 118; ♂ (*Anthrax*).

Loc.—Borneo [t. *Wlk.*]; Celebes [t. *Os. Sack.*].

12. *varia*, F., 1794, Ent. Sys., iv, 259 (*Anthrax*).

For good description see Sch. F. Aust., i, 54.

Loc.—Western Himalayas.

N.B.—This species has not before been recorded from the East, but a specimen (♀) taken by the Indian Museum Collector at Bhim Tal (Kumaon District, 4,500 feet, 26-ix-1907) is undoubtedly this species, which is a generally distributed Palæarctic one.

13. *instituta*, Wlk., 1852, Ins. Saund., pt. 3, 183, ♀ (*Anthrax*).

Loc.—East India.

14. *carbo*, Rond., 1875, Ann. Mus. Gen., vii, 453 (*Anthrax*).

Loc.—Borneo. Type (unique) in Genoa Museum.

N.B.—My thanks are due to Dr. R. Gestro of the above Museum for kindly examining the type and supplying me with information enabling me to place the species in *Argyramœba*.

15. *ceylonica*, mihi, sp. nov.

Plate xii, fig. 24 (abdomen).

Loc.—Ceylon. Type in my collection. Trivandrum (S. Ind.), xi-08 (*Annandale*) [Ind. Mus. Coll.].

16. *niveisquamis*, mihi, sp. nov.

Loc.—Baluchistan. Type in Indian Museum.

Notes on the genus ARGYRAMŒBA.

It is difficult to satisfactorily divide the species of this genus, except by an exhaustive table of analysis, which in the present case is impossible, as I have only seen a few of them. *A. bipunctata*, F., and *aterrima*, Dol., are easily separated from all the rest by the practically wholly blackish brown, unmarked wings. The colour is less pronounced posteriorly and the wing has a small clear space in *aterrima*. The others, except *ceylonica* and *niveisquamis*, all have the very common oblique band on the base and costa, more or less clearly cut, with or without additional marks or spots. Two of the three new species that I introduce (*ceylonica* and *niveisquamis*) have the usual appendix to the fork of the 3rd longitudinal vein, also the pencil of hairs at the tip of the antennal style, which also shows the bisection mentioned by Osten Sacken (Biol. Cent. Am., i), but *gentilis*, though I place it here, lacks the appendix and I do not perceive the bisection. The closed anal cell will, however, easily distinguish it. I have introduced most of Walker's species on their own merits alone,

from their inclusion by that author with other species proved to be of *Argyramæba*, because *degenera*, if I have correctly identified it, is the only one of his I have met with myself.

ANTHRAX, Scop., 1763.

Ent. Carn., 358.

1. *leucostigma*, Wulp, 1898, Termes. Füzet., xxi, 419, nom. nov. for *terminalis*, Wulp, preoc. Wied. (1830), Auss. Zwei., ii, 639, for a Mexican species.

terminalis, Wulp, 1868, Tijd. Ent., xi, 108, pl. iii, 12 (wing).

Loc.—Halmaheira. Van der Wulp records two from Astrolabe Bay, Papua.

N.B.—This species should be easily recognised from all others except *satellitica*, Wlk., by its nearly wholly dark brown wings.

2. *satellitica*, Wlk., 1857, Pr. Linn. So. Lond., i, 119, ♂

Loc.—Borneo.

N.B.—Incorrectly spelt *satellita* in Van der Wulp's Catalogue. This should be easily distinguished from *leucostigma* by the black spots on the clear part of the wing.

3. *afra*, F., 1794, Ent. Sys., iv, 258. Sch. F. Aust., i, 50.
fimbriatus, Mg. Klass. I, 205; Sys. Bes., ii, 154, pl. xvii, 13.
sirius, Hoffsg., in coll. ap. Meig.
afra, auct.

Loc.—East Indies [t. Macq.]; India and Burma; Senegal and New Holland.

It is also a commonly distributed Palæarctic species.

N.B.—I have taken this species myself at Jubbulpore, 15-xi-1907; Poona, 19—27-xi-1907; Meerut, 25-iv-1905; Jhansi, 1-iv-1905 (all India). The Indian Museum possesses it from the base of the Dawna Hills (Lower Burma), Puri (Orissa, India), 2-iii-1908; Gonda District (United Provinces, India), 26-ii-1907. The Pusa collection has it from Allahabad, 5—19-x-1905 [Howlett]; Pusa, 23-v-1906; and Chapra (Bengal).

4. *maura*, L., 1761, F. Suec., 1785 (*Musca*).

N.B.—Two specimens, taken May or June 1893 at Naini Tal, are in the Indian Museum (from the Lucknow Museum) and appear to be this species, although showing a little variation in the wing marking, the black colour being rounded off some distance before the margin instead of attaining the posterior border in the 2nd posterior cell, as in the normal form. The two abdominal cross-bands are of a pale greyish white hair instead of yellowish, the cross-veins do not show any clear space or yellowish colour, the black colour being unbroken except for a nearly clear spot in the upper corner of the 2nd basal cell.

5. *absalon*, Wied., 1828, Auss. Zwei., i, 317.
 Loc.—Wiedemann gave "Ostindien," which Van der Wulp reduces to "Java." Types in Wiedemann collection and Copenhagen Museum.
6. *referens*, Wlk., 1852, Ins. Saund., pt. iii, 189, ♀.
 Loc.—East India.
7. *congrua*, Wlk., 1860, Pr. Linn. So. Lond., iv, 112, ♀.
 Loc.—Macassar.
8. *duvaucelii*, Macq., 1840, Dip. Ex., ii, 1, 63 (341), ♂, pl. xx, 7 (wing).
 Loc.—Bengal [t. *Macq.*]; Purneah Dist. (India) [*Ind. Mus. Coll. t. m.*]. Type (♂) in Paris Museum.
 N.B.—I took one ♀ at Cawnpore, 14-ix-1905, and there are two ♂♂ in the Pusa collection taken at Chapra (Bengal).
9. *trogloodyta*, F., 1775, Syst. Ent., 759 (*Bibio*).
 Wied., Auss. Zwei., i, 306.
Anthrax hyalina, Wied., Dip. Ex., i, 141; *Id.*, Auss. Zwei., i, 297; *Id. id.*, Wulp, Tijds. Ent., xxiii, 165.
Anthrax lucens, Wlk., Ins. Saund., pt. iii, 180.
 Loc.—Java, East Indies [t. *Wied.*]; Java, Papua [t. *Wulp*]; East India [t. *Wlk.*]; Semarang (Java), one ♂ in November [t. *Meijere*]. Type in Fabricius's collection.
10. *hottentotta*, L., var. nov. *claripennis*, mihi.
 N.B.—A ♀ specimen of this common Palæarctic species, taken at Bhura, which is situated in the plains although in the Naini Tal (Western Himalayas) district, 14-17-iv-1907, cannot, I think, be separated specifically from this species.
 The minor differences, I perceive, are: the wings are quite clear, except the narrow mediastinal cell; the frons bears only black hairs, except immediately above the antennæ, and the hair on the lower part of the face is yellowish white; the 2nd abdominal segment has a small reddish (ground-coloured) spot at the sides; and the legs are covered more distinctly with yellowish scales, which are nearly whitish on the basal half of the femora.
11. *paniscus*, Rossi, 1790, Faun. Etrus., ii, 276 (*Bibio*).
 Loc.—Lower Himalayas. Naini Tal [*Ind. Mus.*, taken by Capt. Lloyd]; Mussoorie and Simla (both October 1906, taken by Mr. Lefroy) [*Pusa Coll.*]; Mussoorie, 4-v-05 [*Coll. mihi*, taken by me]. All the specimens are identified by me.
12. *clara*, Wlk., 1852, Ins. Saund., pt. iii, 179, ♀.
 Loc.—East India.
 N.B.—Three specimens (I believe ♂♂) undoubtedly of this species are in the Indian Museum collection, one from Dehra Dun (foot of the Mussoorie hills) and two from the Garhwal District, Western Himalayas (6,000 feet). Two other very interesting

examples closely allied to *clara* but I think distinct are described at the end of the catalogue, with a redescription of *clara*, of which Walker considered a 5-line description sufficient.

13. *antecedens*, Wlk., 1860, Pr. Linn. So. Lond., iv, iii, ♀
Loc.—Macassar.

N.B.—A ♀ in the Indian Museum collection, captured at Dehra Dun (foot of the Mussoorie hills) is named by Bigot as this species. There is also a ♂ from Chitlong (Nepal) and a ♀ from Bhim Tal (4,500 ft., Lower Himalayas), both in the same collection, which are certainly of the same species as Bigot's specimen, but I doubt the identity with *antecedens*, Wlk.

It may be noted that Walker had previously used the name *antecedens* (in his Dipt. Saund., p. 193) for a North American species. As, however, that name is considered by Aldrich as synonymous with *Argyramæba* (*Spogostylum*, Macq. apud Aldrich) *limatulus*, Say., there is no necessity to change the name of the Oriental species.

14. *aperta*, Wlk., 1852, Ins. Saund., pt. iii, 180.

Loc.—East India. Western Himalayas.

N.B.—In the Pusa collection and Indian Museum from Mussoorie, 7,000 feet, Oct. 1906 [*Lefroy, Howlett*].

15. *manifesta*, Wlk., 1852, Ins. Saund., pt. iii, 178, ♀

Loc.—East India.

N.B.—Mr. Howlett has taken it recently at Mussoorie, and as he has compared both *aperta* and this species with the types at the British Museum I have redescribed both species more fully.

16. *fulvula*, Wied., 1821, Dip. Exot., i, 148; *id.*, Auss. Zwei., i, 307.

Loc.—Java. Type in Westermann's collection.

17. *dia*, Wied., 1824, Analec. Ent., 23; *id.*, Auss. Zwei., i, 293.

Loc.—Tranquebar. Type in Westermann's collection.

18. *limpida*, Wlk., 1852, Ins. Saund., pt. iii, 179, ♀

Loc.—East India.

19. *lucida*, Wlk., 1852, loc. cit., 179, ♀

Loc.—East India.

20. *leucopyga*, Mcq. 1840, Dip. Ex., ii, 1, 74 (352), pl. xxi, 1 (wing).

Loc.—Timor [t. *Mcq.*]; India [t. *m.*]. Type in Paris Museum.

N.B.—To this species I refer, with but little doubt, three ♂♂ taken by me at Jubbulpore (India), 15-xi-07, and three ♀♀ (?) taken by me at Itarsi (Centr. Ind.), 17-xi-07, and Poona (near Bombay), 19—27-xi-07, all the specimens having been captured in very dry long grass, on hot, dry days. There is a specimen in the Pusa collection from Allahabad, taken by Mr. Howlett, 24-iii-1906.

21. *albofulva*, Wlk., 1852, Ins. Saund., pt. iii, 182, ♂.

Loc.—East India.

N.B.—If I have identified this species correctly, it is a widely distributed one throughout at least India. It has been taken by me at Muttra, 22-iv-05; Meerut, 25-iv-05; Ferozepore, 28-iv-05; and by Mr. Howlett at Allahabad, 24—29-iii-06 (all these localities being in India). In size the above examples vary from barely 4 to 6½ mm. The femora are sometimes darker than usual; in other specimens all the legs are wholly pale yellow.

22. *clausa*, mihi, sp. nov., ♂

Loc.—Lower Burma. Type in Indian Museum.

* * * * *

SPECIES DESCRIBED AS *Anthrax*, BUT REQUIRING CONFIRMATION
AS BELONGING TO THAT GENUS.

1. *angustata*, Dol., 1858, Nat. Tijd. Ned. Ind., xvii, 93.

Loc.—Amboina.

2. *bimacula*, Wlk., 1849, List Dip. Brit. Mus., ii, 254, ♀.

Loc.—China. Type no longer in British Museum, presumably lost.

N.B.—Presumably from South China, as most of the older specimens were from that region, but if it is from North China the species will have to be removed from the Oriental list and admitted to the Palæarctic fauna.

3. *pretendens*, Wlk., 1860, Pr. Linn. So. Lond., iv, iii, ♀

Loc.—Macassar.

4. *prædicans*, Wlk., 1860, loc. cit., p. 112, ♀

Loc.—Macassar.

5. *apicifera*, Wlk., 1865, loc. cit., viii, p. 111.

Loc.—Papua.

N.B.—Of the above five species I can obtain no information as to their generic position.

Note on Anthrax emarginata, Mcq.

A species under this name is included by Van der Wulp as an Eastern species, giving Timor as the locality, but I can trace no Oriental reference to the species at all, and Macquart's type was described from Philadelphia, and is, moreover, retained (under *Exoprosopa*) in Aldrich's recent Catalogue of North American Diptera.

In Macquart's figure the venation is certainly that of *Argyramæba*. Van der Wulp places it under *Anthrax*. Moreover,

in the text, Macquart says the venation is similar to that of his *Exoprosopa tricolor*, of which is also figured a wing, and this latter is undoubtedly an *Exoprosopa*. Pending a definite settlement I have withdrawn the species from my list, presuming it to be North American and (incidentally) an *Exoprosopa*.

Notes on the genus ANTHRAX.

The twenty-two species admitted here as belonging to *Anthrax* proper are, I believe, all correctly placed here. Mr. Austen kindly informs me after examinations of the types, that *satellitica*, *congrua* and *referens* belong here; *afra*, *hottentotta* and *paniscus* are well-known Palæarctic species; *duvaucelii*, *clara*, *antecedens*, *albofulva*, *leucopyga*, *aperta* and *manifesta* have all been identified by me (I think, correctly) with specimens in the Indian Museum, Pusa or my own collection, the last two species being confirmed by Mr. Howlett's comparison of them with the types. Of the remainder, a good plate is available of *leucostigma (terminalis)*, whilst *satellitica* is recognisable by the basal two-thirds of the wing being blackish, the outline of the colour denticulate, the clear part containing four spots; to these being added only one new one, *clausa*.

The rest of the species I have retained in *Anthrax* by their association by authors with groups of species belonging wholly or mainly to this genus, and I believe they will all be found correctly placed here.

These are *absalon*, W., *trogodyta*, F., *fulvula*, W., *dia*, W., *limpida*, Wlk., and *lucida*, Wlk.

As regards the grouping of the species, presuming them all to be true species of *Anthrax*, the difficulty is probably greatest of all in this genus. For my own convenience in studying them I have arbitrarily arranged them in "groups," but these may have no scientific value, based as they are on the wing-markings, simply because this character is the one never overlooked by any of the authors, and again, because it is the most lasting character. These "groups" are (1) wings nearly wholly black, *leucostigma* and *satellitica*; (2) wings with the usual oblique, dark, generally clear-cut baso-costal band, *afra* to *congrua*; (3) wing clear, with some slight suffusions on certain veins, *duvaucelii*; (4) wing excessively limpid, with a silvery shining shoulder-spot, *trogodyta*, but the silvery spot occurs in some other species with non-limpid wings; (5) wing practically clear, but always with a more or less narrow (and generally ill-defined) anterior yellowish or pale brownish margin, *hottentotta* to *lucida* inclusive; (6) wings absolutely clear and unmarked, *leucopyga* to *clausa*, the latter being easily known by its closed anal cell.

It is, of course, difficult to draw satisfactory dividing lines between some of these groups, as they are inclined to merge one in the other, and the discovery of additional species will make the separation of species on these grounds still more difficult. I

therefore repeat that my grouping is only made as a temporary guide to the general appearance of the various species.

It will be seen that I have followed Baron Osten Sacken in retaining *Anthrax* as feminine, although, as he states, the Greek word is masculine; and the latter gender is adopted by Prof. Bezzi in the Palæarctic Catalogue.

COMPTOSIA, Macq., 1840.

Dip. Ex., ii, 1, 80.

1. *brunnipennis*, Wulp, 1868, Tijds. Ent., xi, 110, pl. iv, 3 (wing).

Loc.—Timor.

NEURIA, Newman, 1841.

Entomol., i, 220.

1. *indecora*, Wulp, 1885, Notes Leyd. Mus., vii, 85, ♂
Loc.—Pœlœ Gamœ.

Sub-Family B O M B Y L I I N Æ

BOMBYLIUS, L., 1761.

Faun. Suec., 1918.

1. *orientalis*, Macq., 1840, Dip. Ex., ii, pl. 1, 90 (368), ♂, pl. vi, 2 (full insect and head).
tricolor, Guérin, 1829—1838, Icon. du regne anim., iii, 538, pl. xcv (full insect).

Loc.—Java [t. *Macq.*]; Bengal and South India [t. *m.*].
Type (♂) in Paris Museum.

N.B.—In the Indian Museum collection are four specimens from Bangalore (South India) and Ranchi (North Bengal) of this handsome and unmistakable species; and in the Pusa collection are two others taken at Palamou and Chapra (both Bengal).

I have no hesitation in considering Guérin's *tricolor* as a synonym of Macquart's species, of which Guérin himself said it might be a variety. Both his description and his coloured figure agree with the specimens I have seen from India. Guérin described his species from Java.

2. *maculatus*, F., 1775, Syst. Ent., 803.
Wied., Auss. Zwei., i, 342, ♂

Loc.—Tranquebar [t. *Wied.*]. Type in the Fabricius collection.

N.B.—A specimen in the Indian Museum collection from Chatrapur (Ganjam Dist., Madras Presid., on the borders of Bengal Presidency) appears to be this species, but is too damaged for definite identification.

3. **major**, L., 1761, F. Suec., 1918.

Sch. F. Aust., i, 60, et. auct.

sinuatus, Mik. Mon., Bomb. Bohem., 35, 4,
pl. ii, 4.*variegatus*, D.G., Ins. ed. Gotzé, vi, 107,
pl. xv, 10.var. *australis*, Lw., Neue Beitr., iii, 14.Loc.—Simla hills (8,000 to 8,400 ft.). Taken by Dr. Annandale,
28-iv-07 and 4-v-07 [*Ind. Mus. Coll. t. m.*].N.B.—The specimens do not vary from the common European
form, which also extends to North America.4. **fulvipes**, Big., 1892, Ann. So. Ent. Fr., 362, ♂.Loc.—Pondicherry [*Big.*]; Punjab [*Pusa Coll. t. m.*]. Type
♂ in the Bigot collection.N.B.—Bigot described only the ♂ of this species. A speci-
men in excellent condition from Allahabad, taken by Mr. Howlett,
19-x-05, is in the Pusa collection, and as it is a ♀ (which I think
has not been described), I add a description at the end of the cata-
logue, having practically no doubt of its identity with Bigot's
species.5. **albosparsus**, Big., 1892, loc. cit., 362, ♂ ♀

Loc.—Pondicherry. Type ♂ ♀ in Bigot's collection.

6. **terminalis**, mihi, sp. nov., ♂

Loc.—Punjab. Type in the Pusa collection.

7. **vicinus**, mihi, sp. nov., ♀

Loc.—Punjab. Type in the Pusa collection.

N.B.—Possibly the ♀ of *terminalis*, but I think distinct.8. **erectus**, mihi, sp. nov., ♂ ♀

Plate xii, 27 (abdominal spines).

Type ♂ ♀ in Indian Museum. Co-types in British Museum
and my collection.

Loc.—South India.

N.B.—A very conspicuous species by the strong erect spines
on the abdomen.9. **wulpii**, mihi, nom. nov.*Bombylius pulchellus*, Wulp, 1880, Tijd. v. Ent.,
xxiii, 164, pl. x, 8 (full insect ♀, coloured).*Comastes pulchellus*, Wulp, Cat. Dip. S. Asia, 74.*Eucharimyia dives*, Big., Ann. So. Ent. Fr., Bull
p. cxl.Loc.—Java [t. *Wulp*]; Ceylon [t. *Bigot*]; Tenmalai (S. India),
22-xi-08 [*Annandale*].N.B.—As this species is not a *Comastes* but a *Bombylius*, the
name requires altering, *pulchellus* being preoccupied by Loew in
1863 for a North American species.*Comastes* is not Oriental, and moreover, the name should be
discarded for *Heterostylum*, Macq. (*vide* my future notes).

Notes on the genus **BOMBYLIUS.**

Of this genus Van der Wulp gave seven species as Oriental. Of these, two (*ardens* and *socius*) belong to *Systæchus*, whilst another, *tricolor*, Guérin, I am convinced, is only a synonym of *orientalis*, Macq. To the remainder I add the common Palæarctic species *major*, L., and three new ones.

SYSTÆCHUS, Lw., 1855.

Neue Beits., iii, 34.

1. *ardens*, Wlk., 1849, List. Dip. Brit. Mus., ii, 284.

Loc.—East Indies. Type in British Museum.

2. *socius*, Wlk., 1852, Ins. Saund., pt. 3, 201, ♀

Loc.—East Indies.

N.B.—Van der Wulp in his catalogue quotes “ East India ” for both species, but, although it has since been taken in East India and in the Western Himalayas, he probably only intended to copy Walker’s locality. As Walker, in describing the latter species, says that it belongs to his “ group L., of the List Dip. Brit. Mus.,” to which his *ardens* also belongs, I place them both under *Systæchus*, to which genus Mr. Austen informs me *socius* belongs. Moreover I have a ♂ *Systæchus* taken by me at Mussoorie 20—26-v-05, agreeing exactly with Walker’s description; and a specimen in the Pusa collection, taken in April 1906 at Mohanpur (Bengal), is also in all probability this species.

3. *eupogonatus*, Big., 1892, Ann. So. Ent. Fr., 365, ♂ ♀

Loc.—India. Type ♂ ♀ in Bigot’s collection.

ANASTÆCHUS, Os. Sack., 1877.

West., Dipt., 251.

1. *longirostris*, Wulp, 1885, Notes Leyd. Mus., vii, 85, ♀

Loc.—Himalayas.

DISCHISTUS, Lw., 1855.

Neue Beit., iii, 45.

1. *resplendens*, mihi, sp. nov., ♂ ♀

Loc.—India and Assam.

TOXOPHORA, Mq., 1803.

Illig. Mag., ii, 270.

1. *javana*, Wied., 1821, Dip. Ex., i, 179.

Wied., Auss. Zwei., i, 363.

Loc.—Java. Type in Westermann’s collection.

Plate xii, fig. 28 (full insect in profile).

N.B.—A ♂ and ♀ in the Indian Museum collection were taken in Calcutta, 7-v-07 and 7-vi-07, respectively. I have myself taken both sexes in Calcutta, 26-ix-04 and 30-x-04.

2. *zilpa*, Wlk., 1849, List Dipt. Brit. Mus., ii, 298.

Loc.—China. Type in British Museum.

N.B.—I retain this species as Walker quotes merely "China," and it is advisable to retain the species from South China, at least for the present, in the Oriental lists, but I do not know of the species occurring in any truly Oriental locality.

GERON, Mg., 1820.

Sys. Besch., ii, 223.

1. *simplex*, Wlk., 1859, Pr. Linn. So. Lond., iii, 90, ♂

Loc.—Aru Islands.

N.B.—Van der Wulp records one ♂ and four ♀ ♀ from Selce (Berlinhafen) and Erima (Astrolabe Bay), both Papua.

2. *argentifrons*, mihi, sp. nov., ♂ ♀

Type ♂ in Indian Museum; ♀ in the Pusa collection

Loc.—Lahore, 9-v-08 [*Annandale*]; Pusa.

N.B.—This species must be allied to Macquart's *australis*, described from Port Jackson, and at first I thought it was that species. A closer examination seems to point to its being distinct. Macquart's species was described in his Dip. Ex., ii, 396, pl. xiii, 2 (1840), the plate showing a full insect and the head in profile.

PHTHIRIA, Mg., 1803.

Illig. Mag., ii, 268.

1. *gracilis*, Wlk., 1852, Dip. Saund., pt. 3, 194, ♂

Loc.—East India.

SYSTROPUS, Wied., 1820.

Nov. Gen. Dipt., 19.

1. *eumenoides*, Westw., 1842, Mag. de Zool. (1842), 4, pl. 90.

Westw., Tr. Ent. So. Lond. (1876), 575, pl. x, 13.

Loc.—East India.

2. *ophioneus*, Westw., 1849, Tr. Ent. So. Lond., v, 233, pl. xxiii, 6 (full insect).

Westw., Tr. Ent. So. Lond. (1876), 574.

Loc.—East India.

3. *sphgoides*, Wlk., 1860, Pr. Linn. So. Lond., iv, 113.

Loc.—Macassar (Celebes).

4. *polistoides*, Westw., 1876, Tr. Ent. So. Lond., 575
Loc.—Siam.
5. *tipuloides*, Westw., 1876, loc. cit., 576.
Loc.—Sulu Isle (Malay Arch.).
6. *blumei*, Voll., Versl. en meded. K. acad. wet., xv, 8, fig. 4.
Loc.—Java.
7. *tessellatus*, Voll., loc. cit., 9.
Loc.—Sumatra.
8. *nigricaudus*, mihi, sp. nov., ♂ (?).
(*Id. id.*, Bigot, *nom. nud.*)
Type in Indian Museum.
Loc.—Sikhim, Soondrijal (Nepal), Mussoorie (in September).

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DESCRIPTIONS OF NEW SPECIES, AND REDESCRIPTIONS OF
PREVIOUSLY KNOWN ONES.

***Hyperalonia aurantiaca*, Guérin.**

Redescription.

Bengal. Long. 13 mm.

Head.—Frons moderately widened, a little more than $\frac{1}{4}$ the width of the head, black. Face pale, the face and frons covered with thick golden pubescence, thinning on the frons towards the vertex. On the frons the pubescence is mixed with longer erect black hairs. On the face, pubescence extends to midway between antennæ and insertion of proboscis. Back of head thickened, black, sparsely yellow, pubescent, except at extreme lower part, which is bare, greyish black. Proboscis equal in length to height of head, fairly stout, dark brown, with a few short whitish hairs. Palpi rather more than $\frac{1}{3}$ of the length of proboscis, greyish brown, hairy, the hairs whitish. First antennal joint very nearly twice as long as 2nd, which is slightly flattened and rounded, both clothed with stiff black bristly hairs, and both grey-brown in ground colour; 3rd joint blackish grey, bare, equal in length to 1st and 2nd together (exclusive of the style, which is a little more than $\frac{1}{2}$ the length of the 3rd).

Thorax.—Ground colour of dorsum black, of sides ash-grey. Whole thorax covered with bright yellow hair, which is thickest and deepest on the anterior border and at the sides of the dorsum and behind the wings. The hair just below the wings is paler yellow, becoming whitish on under side; the hair on the dorsum being short and sparse. Along the sides of the dorsum and behind the wings are a few isolated strong black bristles. Scutellum

blackish, with a reddish tinge on the border, clothed with short bright yellow hair and with a row of black bristles on the posterior border.

Abdomen obtusely conical; ground colour black. The middle third of the dorsum forms a nearly bare, black centre stripe with a few black hairs; the outer third on each side is covered with numerous bright *yellow narrow elongated scales*, lying close together, and extending from the base to the posterior border of the 5th segment, being replaced on the 6th and 7th segment by similar scales which are silvery white; these, seen from behind, appearing to form four silvery spots. The whole abdomen is shortly pubescent with black bristles, and the posterior border of each segment has a row of longer bristles. The *sides* of the first three segments of the abdomen are clothed with long yellow hair, which almost become scales; from thence to the tip being replaced by stiff black bristles. Belly black with black bristles and hairs, the major portion of the basal half (except at the sides) being clothed with dense silvery white scales, amidst and above which are silvery white hairs. A genital organ, considerably retracted, is visible, consisting of a pale yellow tubular appendage encircled by a reddish brown semi-circular plate bearing stiff black bristles on its edges: above this is a thick, sub-conical organ, black, with greyish shimmer at the sides, thickly covered with short black spines and cloven at the tip.

Legs.—Coxæ ash-grey, clothed with long pale yellowish hair, with which are intermixed a number of very strong long black spines. Femora black, with small dark grey scales and a little soft, short black hair; fore pair spineless, middle pair with a row of short bristly hairs above and two short strong spines close together on the under side just beyond the middle; hind pair generally beset with short black bristles, and with a row of rather strong short ones on under side. Tibiæ black, shortly spiny, with minute blackish grey scales, the spines being longest on the hind pair. Tarsi black, minutely pubescent.

Wings.—Dark brown (deepest along the costa), becoming lighter towards the posterior border, which is dark grey. A violet iridescence in certain lights. Anal cell narrowly open. Shoulder of wing beset with stiff, short black bristles, and covered at its extreme base with short orange bristles. Tegulæ dark brown with a fringe of rather long, very close, bright yellow scaly hair. Halteres reddish brown, knob very distinct; oval, placed in the cup-shaped enlarged tip of the stem, pale orange, with greyish tomentum.

Described from two specimens, one in the Indian Museum and one in the Pusa collection, both captured at Chapra, Bengal.

N.B.—I have practically no doubt that this is Guérin's species, although the markings of the abdomen are not quite like his figure, which shows an interrupted dorsal black stripe to the abdomen, with lateral extensions, and in his figure the dark part of the wing is more clearly defined and not so extensive. Moreover it was from Bengal that he described it.

***Hyperalonia suffusipennis*, mihi, sp. nov!**

(Plate xii, fig. 15, wing.)

♀ India. Long. 15 mm.

Head.—Frons orange, paling to yellow below antennæ; vertex black; orbit of eyes black above, red at sides and below; antennæ orange-red, 3rd joint black, 1st and 2nd joints with yellow hair above and below; short golden yellow pubescence over the face; eyes bare with slight crimson reflections in certain lights.

Thorax.—Black, with rather thick yellowish hair, which is thicker, longer and deeper in colour on the shoulders, and thick and whitish below the wings. Scutellum tawny brown, with short yellow hair, and a row of stiff long black hairs on posterior border.

Abdomen.—Blackish; dark reddish towards the sides of the 2nd and 3rd segments. Dorsum covered with moderately thick yellowish hair at sides, and posterior borders of segments also. Belly with whitish hair.

Legs.—Brownish tawny, coxæ with whitish hair, tarsi nearly black.

Wings.—Pale grey; darker and more yellowish on anterior and basal parts; a slight but distinct suffusion at nearly all the junctures of the veins and cross-veins. Halteres pale yellowish white; tegulæ similar with a fringe of thick yellow hair.

Described from two ♀ ♀ (in good condition) in the Indian Museum from the Purneah District, India. A very distinct species.

Hyperalonia devecta*, Wlk.Redescription.*

♀ (?). Long. 17 mm. Expanse between wing-tips 42 mm.

This species resembles *doryca*, Boisd., in so many characters that it will be sufficient to denote the differences. The 1st antennal joint is dark ferruginous, the remainder black, 3rd joint elongated, bare, with a long cylindrical style; 1st and 2nd joints with thick black bristles. The reddish colour of the frons extends almost to the vertex. The mouth has a few short, soft, yellow hairs only, *no bristles whatever*. In the *thorax*, the colour of the tuft of soft hair on the sides behind and below the humeral calli is nearly as deep orange as the bunch of scaly bristles in front, whilst the hair on the sides of the thorax below this part is bright yellow, the bunch of white hairs towards the under side being present.

In the *abdomen* (considerably *denuded*) the sides of the 2nd segment are *dull red*, there is no trace of a white band on the 3rd, although it may have been present, and the white spots at the tip are indistinct (owing to the condition of the specimen) but apparently are the same as in *doryca*, the upper pair of spots being possibly smaller. All the *legs* are blackish.

Wings.—Ground colour, rather dark grey, the extreme base is tawny yellow, which colour suffuses more or less narrowly the costa and most of the veins. The central portion of the wing is blackish, becoming merged in the grey, posteriorly and towards the tip. The 2nd posterior cell is equally wide at base and at tip. Halteres dull reddish orange, stem darker.

Described from a single ♀ (?) in my collection, labelled "Key Ins." Though I do not know on whose authority it is identified, there is little doubt of it being Walker's species, with whose description it agrees, the only discrepancy being the reddish instead of black 1st antennal joint. This species *may prove synonymous* with *satyrus*, F., *my specimen* agreeing very closely with Van der Wulp's description of that species, and fairly well with his plate.

Hyperalonia doryca, Boisd.

Redescription.

♀ (?). Long. 15 mm.

Head.—Frons rather narrow on vertex, widening until at the upper part of the mouth-border it attains a width of nearly one-third that of the head: blackish grey with black bristly hair. Lower half of frons and the whole face round and below the antennæ (where it is somewhat prominent), rather bright ferruginous red, with short black bristles. Ocelli very small, close together, at some distance from the eyes and well below the vertex. Antennæ missing, except a single basal joint which is dark ferruginous (nearly black) with thick black bristles. Proboscis black with two apical, striated leaf-shaped ferruginous lamellæ and a stiff, pointed, central, spike-like organ. Mouth-border rather thickly beset with short black bristles. Eyes dark red with bronze reflections, facets very minute, uniform. Back of head dark grey with a fringe of short bright yellow pubescence.

Thorax.—Dorsum black, covered with sparse, very short, yellow pubescence. On the front of the anterior border is a fringe of thick orange-yellow bristly hair, with some shorter soft black hair behind, which probably spreads sparsely over the whole dorsum, standing above the short yellow pubescence. On the posterior border of the dorsum is a row of strong black bristles. On the shoulders this black hair becomes very bristly, and is supplemented by three powerful long black spines just before the insertion of the wings. Just below the humeral calli is a dense bunch of long, fiery orange, erect, scaly bristles, behind which is a large tuft of pale creamy orange, silky pubescence. The fiery orange bristles extend forwards and below, joining the lower part of the anterior fringe of similar colour. The posterior calli bear a similar bunch of dense, similarly coloured bristles. From these calli four powerful long black spines spring, deflected backwards. The sides of the thorax are cinereous grey, with long black bristles below the base of the wings and a dense cluster of them around the fore coxæ,

with a bunch of quite white soft pubescence behind. Long black bristles on the lower part of the thorax in front. Scutellum blackish, posterior border dull red, with long black spines; dorsum with short yellow hairs.

Abdomen.—Black, apparently sparsely covered with short black bristly pubescence. Base of 2nd and 3rd segments with a narrow band of yellowish white hairs; 6th and 7th segments with two spots each of silvery white elongated scales. Sides of abdomen with thick black bristles, except where the transverse bands attain the edge. Belly black, with greyish pubescence towards the base and black bristles on the apical half: the basal three or four segments with a transverse band of silvery white scales on each.

Legs black, with black bristles, which are most numerous on the femora and hind tibiæ, the posterior tibiæ being dark reddish brown, the hind tarsi dark reddish brown with short black bristles and golden brown pubescence.

Wings.—Pale grey. The costal and sub-costal cells wholly, the marginal cell very narrowly, dark brown, the colour reaching to the posterior border at the base of the wing, and extending throughout the 1st basal cell and slightly beyond the discal transverse vein, the anal vein being very slightly suffused. Anal cell distinctly open, though contracted at the border, 2nd posterior cell $1\frac{1}{2}$ times as wide on the border as at base. Tegulæ reddish brown with a thick fringe of fiery orange scaly bristles. Halteres black, club egg-shaped.

Described from one ♀ (?) in my collection from Key Island.

N.B.—I do not know on whose authority the above specimen is identified, but it is the only one I have seen purporting to be this species. It is to be noted that in Doleschall's figure of his *ventrimacula* the anal cell is *closed*, not open as in mine and as is shown in Macquart's plate of his *audouini*, and that the *face* of mine is distinctly reddish, which is not mentioned in any of the synonymic descriptions.

Exoprosopa latipennis, mihi, sp. nov.

♀ Assam. Long. 18 mm.

Head.—Frons dark tawny brown, rather velvety, wide, with a few scattered black hairs; three ocelli on minute protuberance on vertex. Antennæ, 1st and 2nd joints dark brown, with black bristles (3rd joint wanting). Under side of head brown, not produced downward below the eyes.

Thorax.—Black, with bright, rufous, thick hair round sides and in front. (Dorsum denuded of hair.) Black hairs on lower part of thorax. Scutellum black (denuded) with traces of a row of black hairs or fine bristles on posterior edge.

Abdomen.—Black, elongated, with parallel sides, rounded at tip (upper side mostly denuded); 1st segment with a bunch of long, thin, black, erect hairs in centre, sides of 2nd, 3rd and 4th

segments narrowly brick-red. Sides of abdomen with rather thick yellow hair, which becomes thinner and paler towards the tip. Belly black, with black hairs, central segments paler in the middle.

Legs.—Dark brown, bare; hind femora with a row of spines below.

Wings.—Uniformly rich dark brown, unmarked; wide across the centre.

Described from a unique ♀ in the Indian Museum from Shilong (Assam). The type is in good condition except for the partial denudation of the abdomen. The species is quite distinct from all others.

***Exoprosopa flavipennis*, mihi, sp. nov.**

♀ Bengal. Long. 14–18 mm.

Head.—Frons and ocelli as in *flammea*. Frons orange with golden orange, close, short hairs. Mouth-border yellow, antennæ orange: 1st two joints sub-cylindrical, wider at tip, with yellow hairs, 2nd shorter than 1st; 3rd joint twice as long as first two together, bare, the upper side quite straight, the under side rapidly narrowing from base to tip, a very distinct cylindrical style at tip. Proboscis brown, shorter than the head. Eyes reddish brown, bare, with small, uniform facets. Back of head reddish orange, bare, considerably prominent, with a narrow fringe of very short bright yellow hairs on the margin of the cavity behind.

Thorax.—Ferruginous orange with black dorsum and blackish grey under side. A fringe of long yellow hair on anterior margin; a bunch of fiery orange-red bristly hairs on shoulders, and shorter similar ones on the humeral calli; the dorsum clothed with moderately close, short orange hairs; several long fiery orange-red bristles, directed backwards, on the posterior calli. Under side nearly bare, a few blackish hairs here and there. Scutellum orange-red, covered with short, similarly coloured pubescence; posterior margin with a horizontal row of concolorous strong bristles.

Abdomen.—Sub-conical; ground colour black, apparently with short, close, black pubescence. A bunch of orange-red hairs at the shoulders of the 1st segment; sides of 2nd segment dull reddish. Belly black, unmarked. Genital apparatus in one specimen, orange, subspherical, slightly protruding, and apparently twisted to the left.

Legs.—Coxæ and femora dark brown; anterior tibiæ brownish yellow, hind pair black; all the knees pale; tarsi black; fore legs practically bare, posterior, minutely pubescent and with distinct black bristles, which are stronger on the hind pair; posterior tarsi closely pubescent, with black bristles on under side.

Wings.—*First posterior cell closed some distance before the border* as in *flammea*. Rather more than the proximal half bright orange-yellow, apical part and a narrow margin along the posterior margin almost to the base, quite clear. An intermediate dark brown,

ill-defined cross-band, commencing at the upper edge of the marginal cell, the width of the band being about one-third of the length of the 1st sub-marginal cell, across the middle of which it passes; continuing across the middle of the closed portion of the 1st posterior cell, the distal half of the discal cell and the bases of the 2nd and 3rd posterior cells, after which it is narrowed to a streak and turning, extends towards the base of the wing, separating the yellow part from the clear margin. Tegulæ reddish orange with a short dense fringe of concolorous hair.

Described from two specimens from Pusa (Bengal). One (type) in the Pusa collection, taken 19-iv-07; the other in the Indian Museum collection, taken 25-v-06.

N.B.—These two species, *flammea* and *flavipennis* are distinct from all the other Eastern *Exoprosopæ* known to me, by the 1st posterior cell being closed some distance before the border, the 4th longitudinal vein meeting the 3rd before the origin of the anterior branch of the latter (in *flammea*), or just below it (in *flavipennis*). They therefore belong to the group for which Rondani established the genus *Argyropsyla* (emended by Verrall from *Argyropsyla*), but which the late Baron Osten Sacken says (Biol. Cent. Am. Dip., i, 78) cannot be sustained, this character in various species showing all stages between a closed and open cell, sometimes even in the same species. Of the species of *Exoprosopa* admitted in this paper the following have not been seen by me; I cannot say, therefore, whether any of them possess a closed posterior cell or not: *alexon*, *auriplena*, *semilucida*, *basifascia*, *albida*, all by Walker.

Exoprosopa flammea, mihi, sp. nov.

♀. Bengal. Long. 18 mm.

Head.—Entire frons and face orange-yellow, covered with short golden yellow hairs; lemon-yellow round the mouth, with short bright yellow hairs. Frons at level of antennæ one-third the width of the head, narrowing towards vertex. Ocelli small, close together in front of the vertex. Antennæ *missing*, except 1st joint which is reddish. Proboscis brown, shorter than length of head. Eyes dark reddish brown, facets very small, uniform. Back of head brick-red, rather prominent, with sparse, short golden yellow hairs.

Thorax.—Cinereous; humeral and posterior calli orange-tawny, the latter bearing five or six concolorous bristles pointing backwards. The anterior border and shoulders are covered with thick long fiery reddish yellow hair, which is also abundant behind the wings. The dorsum (slightly denuded) is evidently lightly clothed with short orange-yellow hairs. Under side of thorax cinereous, with a moderate amount of orange-yellow hair. Scutellum reddish brown, the posterior margin bearing a row of concolorous strong bristles directed backwards and downwards. Dorsum with sparse yellowish hairs.

Abdomen.—Sub-conical, ground colour chiefly reddish brown, 2nd segment with a narrow anterior, and rather wider posterior band connected by a thin dorsal stripe, a rather wide irregular, not well-defined black transverse band on 3rd segment, which is repeated less distinctly on the following two or three segments. The extreme posterior border of all the segments is reddish brown, and the whole dorsum is covered lightly with short, bright orange hairs, which become brightest, longest and fiery red at the abdominal tip. Belly cinereous, posterior borders of all the segments orange-yellow; whole belly covered with short orange hairs.

Legs.—Coxæ, femora and most of the tibiæ reddish orange, the tibiæ towards the tips (especially the hind pair) and all the tarsi, black. The middle femora have a few black short spines below, the hind pair a row of stronger ones; the posterior tibiæ are beset with black short bristles, which are longer on the hind pair. The posterior tibiæ have a circlet of strong black spines at the tip, and the whole legs, especially the tibiæ and tarsi, are minutely but densely spinose.

Wings clear; *first posterior cell closed some distance before the border*, the 4th longitudinal vein joining the 3rd just above the junction of the anterior branch of the 3rd. Two broad dark brown bands. Base of wing bright orange-yellow, the colour extending across the wing from the costa to (and including) the alula, and reaching distally as far as to just enter the two basal cells. The costal cell is orange-yellowish, also a spot on and over the discal cross-vein, and another small spot in the centre of the upper basal cell.

The first brown band begins in the upper basal cell, which it fills, extending posteriorly, filling the 2nd basal cell and basal fourth of discal cell, thence narrowing, to the hind border of the wing, leaving about the distal fourth of both the anal and axillary cells clear. The second band begins approximately on the costa, blending with the orange colour of the costal cell, fills three-fourths of the 1st submarginal and 1st posterior cells, thence narrowing somewhat, it fills nearly the distal half of the discal cell and terminates distinctly clear of the posterior margin of wing, entering the 2nd and 3rd posterior cells. A small round quite clear spot is in the extreme upper angle of the lower basal cell. A few very short stiff black bristles at the base of the costa, and some short close yellowish orange hairs on the margin of the alulæ and the orange tegulæ. Halteres yellow.

Described from a single ♀ in the Indian Museum collection, taken at Pusa, Bengal, 17-iv-07.

***E. lateralis*, mihi, sp. nov.**

(Plate xii, fig. 17, wing.)

♀ Calcutta. Long. 14-18 mm.

Head.—Dark brown, cinereous on vertex, with numerous stiff black hairs and soft, golden rufous hair. Antennæ brown, 1st and 2nd joints with black bristles.

Thorax.—Black (dorsum denuded), with thick, bright ferruginous hair in front, at the sides, and below. Lower part of thorax bare, with ferruginous marks. Scutellum dull red ferruginous, base brown with a row of long black spines on posterior border. Traces of golden yellow pubescence on (at least posterior part of) scutellum.

Abdomen.—Elliptical oval. Black, the sides more or less broadly brick-red; this coloration is very variable in quantity, as in one specimen it only moderately narrowly borders the abdomen, and in another one it extends so far inwards as to reduce the black part almost to a dorsal row of spots. Bunches of ferruginous hair at each side of 1st and 2nd segments, and a small tuft of stiff black hairs at the sides of each segment. The dorsum is thinly covered with short tawny yellow and black hairs. Last segment reddish, black at the middle of the base. Belly brownish brick-red with sparse yellow hair.

Legs.—Tawny brown: hind femora and tibiæ with short black spines.

Wings.—Dark brown, tip, and posterior border nearly to the base, clear, the clear part extending into the discal cell. Traces of a small, round, clear spot in upper corner of 2nd basal cell.

Described from three ♀ ♀ in good condition in the Indian Museum from Calcutta.

E. retrorsa, mihi, sp. nov.

(Plate xii, fig. 19, wing.)

♀. Persia (Bushire). Long. 15 mm.

Head.—Frons moderately broad, yellowish grey with yellow hair. Antennæ black, 2nd joint short, first two joints cylindrical, cup-shaped at tips, 3rd longer than 2nd, but shorter than 1st, onion-shaped, with short, distinct style. Posterior orbit of eyes very narrowly fringed with grey hairs.

Thorax.—Dark grey, covered with greyish yellow hair, which is thickest in front and at the sides; a few long, strong black bristles on sides of thorax and several on the posterior calli, directed horizontally backwards.

Abdomen.—Broadly ovate, blackish; the posterior borders of segments with rather thick yellowish grey hair, which is also present to some extent on the surface of the segments. A bunch of nearly white hairs on each side of first and second segments, and this is extended less thickly down the sides of the abdomen. Belly similar to dorsum.

Legs.—Tawny brown, with short, black, stiff hairs, and a row of small black bristles on under side of all the femora.

Wings.—Pale grey, veins ferruginous brown, and showing a rather abnormal form of venation. The veinlet joining the upper branch of the third longitudinal vein is deflected backwards instead of being more or less vertical, and does not meet the second

longitudinal until nearly half-way towards its base, where a short stump vein connects the latter with the third longitudinal directly over the upper transverse vein, and where also a distinct appendix is directed backwards. On the upper and lower transverse veins, base of second longitudinal, and at each spot where the veinlet joins this to the third longitudinal is a small suffusion; also a similar spot in the centre of the upper basal cell. Anterior part of wing slightly yellowish.

Described from a perfect unique specimen in the Indian Museum collection. A very conspicuous species.

***Exoprosopa annandalei*, mihi, sp. nov.**

(Plate xii, fig. 20, wing).

♀. Lower Burma. Long. 9-12 mm.

Head.—Vertex, frons and face blackish, with short sparse yellowish hairs, and some stiff bristly black hair on frons which is considerably narrowed on the vertex, where the ocellar triangle is very small. Mouth-opening yellowish, proboscis dark brown, palpi black, short, filamentous, with a single row of hairs. Antennæ yellowish, first joint hairy, third rather elongated, with moderately long style. Back of head dark grey, eyes dark brown, with some yellowish hair, which is whitish behind the eyes.

Thorax.—Blackish; tawny yellow hair rather thickly placed on fore border, and on the sides, where there is a pale tawny spot on the pleuræ. Dorsum nearly bare (? denuded). Scutellum light brown, posterior border with a row of black spiny bristles and short sparse yellowish hair. Metanotum hidden.

Abdomen.—Ovate, chestnut-brown (ground colour), with a row of dorsal black irregularly oval spots at the base of each segment, and with traces of a narrow black line almost on the posterior borders of some of the segments. A sparse band (interrupted in the middle) of whitish short hairs on the anterior part, and a similar band of blackish hairs on the posterior part, of each segment; the second segment possessing a basal row of short sparse tawny hairs and a bunch of white longer hair on each side at the base. The short whitish hairs on the dorsum may possibly extend over the greater part of the surface, and appear more like scales than hairs. Belly chestnut-brown, with irregular black marks and with short white scaly hairs generally distributed over it.

Legs.—Tawny brown, fore coxæ similar, posterior coxæ blackish brown; hind femora with a few hairs below, posterior tibiæ moderately covered with short bristles; tarsi, blackish brown, minutely pubescent below.

Wings.—Pale grey with a dark brown oblique baso-costal band, which has an indentation on the lower side. The brown colour extends along the costa to the tip of the first longitudinal vein, its outer edge extending posteriorly to just behind the second

posterior cell, the colour thus filling slightly more than half the first longitudinal and discal cells, and extending in an irregularly straight line from the latter cell to the base of the wing, filling half the anal cell. Round brown spots, all of equal size, are placed at the tip of the second longitudinal vein, at the base of the fork of the third longitudinal and at the tip of the veinlets dividing the second, third and fourth posterior cells. On the upper corner (adjoining the base of the discal cell) of the lower basal cell, a small bluish opalescent spot. At extreme base of wings and along the stronger veins a distinct tawny colour. Halteres yellowish white.

Described from two ♀ ♀ in perfect condition (the thorax and abdomen show very little trace of denudation). Types in Indian Museum collection, taken at Moulmein, Lower Burma, 6-iii-08, by Dr. Annandale, after whom I have pleasure in naming this handsome species, which, he says, was not rare in that locality.

Argyramœba gentilis, mihi, sp. nov.

(Plate xii, fig. 25, wing.)

(*Id. id.*, Bigot, *nom. nud.*)

♂ ♀. Bengal (♂), Assam (♀). Long. $4\frac{1}{2}$ mm.

Head.—Frons and face dull black, with black hairs; antennæ black, third joint much flattened, forming an irregularly oval disc, style distinct, black, no apparent bisection, with small pencil of short hairs at tip. Proboscis short, thick. Back of head blackish grey, bare.

Thorax.—Black, with a collar of stiff black hairs on anterior margin, and soft black hairs on dorsum and sides, intermixed with some black bristles on the shoulders and posterior calli. Posterior margin with some long black bristles deflected backwards. Scutellum black, with short black pubescence, and some longer, curved bristles on posterior border.

Abdomen.—Dull black, with short, rather sparse black pubescence, and a bunch of long black hairs on each shoulder. Some black hairs at the sides and some longer, thicker black hair at tip. Belly black.

Legs black, minutely pubescent; tibiæ a little lighter, with short black bristles (including fore pair).

Wings clear, elongated, *anal cell closed*. A blackish brown band from the base, extending along the costa to just above the fork of the third longitudinal vein. The rather irregular proximal border of this band extends to the posterior wing-border, just in front of the anal cell, which the dark band wholly fills. The band does not quite reach the fork of the third vein, nor the outer transverse. Near the wing-tip is an oblong (almost sub-triangular) blackish brown spot on the costa, barely united to the broad band, and extending downwards and outwards to just below the proximal end of the fork of the third vein, thus leaving the absolute

wing-tip narrowly clear. The second longitudinal vein forms nearly a sharp angle at the commencement of the downward loop, somewhat as in *Lepidanthrax*.

Described from a ♂ (type) in the Pusa collection, taken, 24-iii-06, at Larksom (Bengal), and from a ♀ in the Indian Museum collection from Margherita (Assam).

N.B.—I retain this species under *Argyramæba*, mainly because the pencil of hairs at the tip of the antennal style is regarded by Osten Sacken as the most important generic character, and, though small, these hairs are present in the new species. The bisection of the style is, however, not apparent, nor does the fork of the third vein show the usual appendix. The very flattened, irregularly oval, third antennal joint, the long, rather narrow abdomen, and the long wings approximate it to *Argyramæba* rather than to *Anthrax*. In one or two respects it resembles *Astrophanes*, O.S., a genus containing but one species (from Mexico); these are the "almost rudimentary development of the base of the costa and the closed anal cell." These two characters, in conjunction with the contiguity of the eyes on the vertex in the ♂, are regarded as the main generic distinction of the genus. As, however, I believe both sexes to be before me, my species cannot be an *Astrophanes*. The angled loop of the second vein approximates it to *Lepidanthrax*, O.S., so that for the present it should be regarded as somewhat of an aberrant species. It seems to bear some resemblance to Bigot's *Argyramæba appendiculata*, and it is just possible it may be identical with it, but the ♀ in the Indian Museum collection is labelled as a distinct species by Bigot (erroneously as a ♂), and I therefore treat it as such. When the two sexes are placed side by side the difference of width in the frons is sufficiently noticeable.

Argyramæba ceylonica, mihi, sp. nov.

(Plate xii, fig. 24, abdomen.)

♂ Ceylon, Bengal. Long. 9 mm.

Head.—Frons and face quite black, with thick short black hair; antennæ black, third joint short, onion-shaped, with moderate style, basal joints with black bristles. Proboscis and palpi withdrawn, apparently blackish brown. Back of head narrow, blackish grey, almost bare.

Thorax.—Black, with short yellow hairs which are thickest on the shoulders and round the sides. Sides of thorax ash-greyish, with scattered yellow hairs. Scutellum black, with sparse yellow hair.

Abdomen.—Ovate, black, first segment with a conspicuous fan-shaped bunch of bright yellow hairs at the sides. Remaining segments towards the sides wholly tawny, this colour continuing at the actual sides of the segments up to the tip of the abdomen, which is blackish above. Belly tawny yellow with yellow hair.

Dorsum nearly bare, some microscopic black hairs on the black part. Genitalia rounded, inconspicuous, rather large, tawny, mainly withdrawn within the body.

Legs.—Uniformly tawny yellow, with minute bristles and hairs; coxæ ash-grey, with whitish hairs; tarsi dark brown.

Wings.—Grey, costal cell yellowish, mediastinal cell blackish for its whole length. Second longitudinal vein with rather a deep loop towards its tip: fork of the third vein with a distinct appendix, the vein parallel to the second. A small greyish black mark in the upper corner of the lower basal cell, and a similar one on the strong vein just above it. Halteres yellowish, knobs yellowish white, with a black mark above.

Described from three specimens taken by Mr. Green at Kandy, Ceylon, in October and November 1907, all in fairly good condition; also from three in the Pusa collection taken from 3-vii-07 to 24-viii-07 at Pusa. Type in my collection. It bears some resemblance to Doleschall's "*Anthrax*" *angustata* from Amboina, but is twice the size of that species, which, by the way, does not seem to have been seen since its author first met with it.

Argyramœba niveisquamis, mihi, sp. nov.

♀ Baluchistan. Long. 7–8 mm.

Head.—Frons widening gradually from one-fifth the width of the head on the moderately wide vertex (where the ocelli are very close together on a very reduced tubercle), to fully one-third the width at the level of the antennæ. Frons and face densely covered with long drooping snow-white scales; a few longer, thin black hairs intermixed, also (more numerous) white bristles, which are longer than the scales. Oral orifice oblong, white; proboscis (in one specimen, the other is headless) wholly withdrawn. Antennæ black, second joint very short, third blackish grey, onion-shaped, tip drawn out into a blunt definite style. (There is no trace of the usual pencil of hairs, but the antennæ, of which only one remains, may be incomplete.) Back of head and under side dark grey, thickly coloured with snow-white scales.

Thorax.—Black, almost wholly covered with snow-white bristly hair, which is longest in front, below; in front of the wings and below them. This hair becomes scaly in places and on the posterior border of the scutellum is a moderately thick band of white scales.

Abdomen.—Black, the segments covered thickly with short creamy white and snow-white scales. A fan-shaped bunch of snow-white, comparatively softer, long hair on the anterior corners. A few long scattered black bristles on the dorsum, and, rather more numerous, along the sides of the abdomen. Belly with scaly and bristly hairs mixed, tip of abdomen with a few rather long brownish yellow bristly hairs with some longer fine black hairs below.

Legs.—Femora dark brown with closely set small snow-white scales; posterior femora with black isolated strong bristles; tibiæ

pale brown, with silvery snow-white scales, and more numerous short, black, spiny bristles; tarsi brown, with scattered small white scales; tips of each joint blackish, claws black.

Wings.—Clear, at the base of the costa a bunch of snow-white scales with some black bristles intermixed. A very small pale brown suffusion at the base of the third vein and on the discal cross-vein; mediastinal and marginal veins brown, also the narrow intervening space. A strong appendix at the base of the second vein and at the base of the fork of the third vein; discal cell rather long; second posterior cell two-and-a-half times as wide on wing-border as at base. Halteres pale brown, club much lighter. Tegulæ whitish, nearly transparent, with a fringe of very short white hairs.

Described from two specimens in the Indian Museum collection from Baluchistan (one headless, otherwise in fair condition).

N.B.—I thought this might be *nivea* of Ross or perhaps Griffini's var. *lioyi*, but no mention is made by them of the scales with which it is covered, moreover the other differences are sufficient to warrant regarding my species as quite distinct.

Anthrax clara, Wlk.

Redescription

♂ (?). Long. 11 mm.

Head.—Frons widens rapidly from the narrow vertex, and is covered with black bristles, which are thick and long round base of antennæ. Face widest just below antennæ, rather less than one-third of the head, with thick yellow bristly hair and a row of black ones along upper part of mouth-border. Mouth and proboscis black. Antennæ black, first joint with a linear row of strong black bristles on the outer and inner sides. Back of head blackish grey; below shining black, bare.

Thorax.—Black; dorsum with some rather thinly scattered, soft, black hair: entire anterior part, above and below, and the shoulders, with thick rich yellow hair. Under side cinereous, with sparse paler yellow hair. Scutellum (denuded) black, smooth, with traces of black or grey hair.

Abdomen.—Linear, tip rather blunted, as broad as thorax (Walker says "obconical"), black, with dorsum (? denuded) nearly bare. The sides with thick rich yellow hair, containing a tuft of black hairs on each side towards the tip. Belly black, with sparse yellow hair, which has a tendency to form transverse bands.

Legs.—Black. Femora with a little short yellow hair below middle pair, and on upper side of hind pair; tibiæ with short black bristles, which, on the hind pair, are mixed with short linear black scales.

Wings.—Quite clear. Fore border narrowly dark brown, the colour only extends to the basal half of the marginal cell, or about as far as the origin of the second vein. Halteres pale brownish yellow, club lighter. Tegulæ brown, with a thick fringe of soft bright yellow hair.

Described from three ♂♂ (?) in the Indian Museum collection; one identified by Bigot, taken at Dehra Dun (foot of Mussoorie hills), the others from the Western Himalayas (Garhwal District, 6,000 ft.). These two are in perfect condition. The dorsum of the thorax, scutellum and abdomen may be denuded, but I am inclined to think the present condition is the natural one.

N.B.—Two other specimens are closely allied to the above species; one of which may be *A. lucida*, Wlk. It differs from *clara* as follows:—

The frons possesses short, pale yellow pubescence (which is quite absent in *clara*) below the longer black hairs; the face is wholly covered with pale yellow pubescence and there are *no* black bristles at all; the postocular orbit shows silvery pile at the sides; both the posterior part of the thoracic dorsum and the scutellum bear short, bright yellow pubescence; the abdomen has evidently been covered with sparse pale yellow hair forming at least narrow bands at the bases of the segments: the apical part of the abdomen bears, mainly at the sides, strong, brownish black scales, with a small bunch of *white scales* on each side of the fifth segment and a larger bunch of similar scales on the posterior corners of the last segment; the belly has more yellow hair than *clara*; the coxæ have each a bunch of yellow hair, the femora are nearly covered with yellow hair above, and the hind tibiæ are closely covered with distinct *brownish black scales*; the costal cell is *quite clear*, as is the entire wing except for the brown, very narrow mediastinal cell.

One example in the Indian Museum collection from Kawkareik (Amherst District), Tenasserim, captured by Dr. Annandale, 5-ii-08.

I assume its affinity to, and perhaps identity with, *clara*, in spite of Walker's brief description, also, on account of its having been placed next to that species by that author.

The second specimen is also in the Indian Museum collection, is in good condition, and was also taken by Dr. Annandale on 2-iii-08 on the Dawna Hills (2—3,000 ft.), Lower Burma.

This differs from *clara* as follows:—

The frons contains yellow pubescence as well as black hairs, the face has black hairs all over its surface instead of their being confined to a central row, and the abdomen is longer and more conical at the tip, the whole body being much narrower than in *clara*.

From the specimen I ally with *lucida* the present example differs mainly in the longer, narrower body, and also in the absence of the apical white abdominal spots, and as regards the scales on the hind tibiæ, which are clothed with simple, short, black bristly hairs. Long. 10 mm.

Anthrax aperta, Wlk.*Redescription.*

Long. 10 mm.

Head.—Frons black, narrowed on vertex, where the ocelli are placed on a small protuberance which does not touch the eyes; frons at widest part (at the base of the antennæ) nearly one-third of the head. Eyes black, with a tinge here and there of reddish bronze; facets small, uniform. The frons above the antennæ bears sparse black hairs, which become much thicker and more bristly about the base of each antenna, and on the face below the antennæ are stiff black hairs covering it. Just below the base of the antennæ, on each side of the raised centre edge of the face above the mouth is a *cluster of reddish yellow scales*, showing prominently amongst the thick black bristles. Antennæ black; first joint cylindrical, second sub-spherical, shorter than the first and of the same length as the third, which is conical and drawn out into a long apical style. The first two joints have short black bristles, the third is bare, with a little grey tomentum on upper side. Back of head black, nearly bare, under side of head black, with some short white hairs. Proboscis black.

Thorax.—Ground colour of dorsum black, a thick fringe of bright reddish tawny hairs along the anterior border, continued irregularly below, where is also a *thick collar of strong black bristles*.

The dorsum is covered with moderately short blackish brown hair, which is thinnest on the posterior half (partly denuded). On the shoulders a stripe of long whitish grey hair extends downward from the base of the wing, at which place some short grey and red hairs unite the stripe with the anterior border of reddish tawny hair. On each posterior callus is a bunch of long, thick white hair, which below becomes tawny yellow. Scutellum black, with soft (not numerous) black hairs and traces of grey hairs on posterior border.

Abdomen.—Broad as thorax, linear, with rounded tip. Black, with moderately short soft black hairs, generally distributed over the dorsum. On each anterior corner is a thick bunch of long white soft hairs, and these are apparently connected by a sparse basal band of white hairs. At about two-thirds the distance from the base is a transverse band of *short yellowish white scales*, terminating at each side of the abdomen in a bunch of silvery white long scales, below which are some yellowish ones. A small bunch of prominent silvery scales is placed on each side of the abdomen near the tip. The sides of the abdomen, posterior to the basal bunch of white hairs are clothed with black stiff bristles, with which some long brown scales are intermixed; and posterior to the transverse white band the sides are clothed with these brown scales only. Belly black with black hair and some transverse bands of yellowish grey hair.

Legs.—Black, femora with some soft long hairs; tibiæ with some apparently irregularly placed, short black bristles; tarsi, minutely pubescent. Hind tibiæ with a number of elongated brown scales intermixed with the black bristly spines, which are longest on this pair.

Wings.—Quite clear. Mediastinal and sub-costal veins with the intervening space dark brown, remaining veins black. The extreme base of the wing is blackish brown. On the wing-shoulder, in front of the costal basal cell, is an elongated patch of *erect short silvery white scales*, with a fan-shaped bunch of similar longer scales, contiguous, but placed on the adjoining part of the thorax. Halteres pale yellow.

Described from a specimen I believe to be a ♀ in the Indian Museum collection, in perfect condition except that the posterior part of the thorax, and the scutellum, show traces of being partly denuded.

N.B.—The specimen here described is probably Walker's *aperta*, it having been compared with the type (from this latter the head is missing) by Mr. Howlett; but the general description of the author does not apply so well as it might, as he does not mention the conspicuous collar of black bristles on the lower anterior border of the thorax, which (in a headless specimen) ought to have been plainly noticeable. Some minor differences are also to be noted. My redescription will enable the present species to be either confirmed or refuted as Walker's species.

Anthrax manifesta, Wlk.

Redescription:

♀ (?). Long. 14 mm.

Head.—Frons narrowed considerably on vertex (as in *aperta*) on which is the small protuberance bearing the ocelli, not touching the eyes; frons at widest part (base of antennæ) equal to one-third the width of the head; black, clothed with short stiff black hair, which becomes longest and thickest round the base of the antennæ, and is continued along the middle line of the face below, whilst there are scattered black bristly hairs on the face below the antennæ, intermixed with the thick bright orange-yellow bristly hair which covers the face; some orange-yellow distinct scales being also present amidst the lower part of this hair. Antennæ black, first joint much broader at the tip, and on both the outer and inner sides a closely set row of strong long black spines; second joint bead-like, short, with a few bristles; third conical, bare, shining, elongated into a long style. Back of head black, with microscopic black pubescence.

Thorax.—Ground colour black. The anterior border, the shoulders and the sides, as far as the wings, clothed with dense, long, bright orange-yellow hair. A thick tuft of similar hair on the posterior calli, just behind the tegulæ, it being paler on the lower

part. Dorsum with soft short black hair which is replaced on the posterior border by yellowish grey, rather longer hair. Scutellum black, with soft blackish brown hair.

Abdomen.—Broad as thorax, linear, tip rounded. Black, the dorsum occupied with rather sparse black and brown hairs, with which, towards the base, are mixed some pale yellow hairs. The sides from the base to the tip are clothed with dense, soft, bright orange-yellow hair, which is interrupted just before the tip by a tuft of thick soft black hair on each side. The extreme tip of the abdomen bears only a few black hairs, and the yellow hairs on each side of these are much paler. Belly covered with paler yellow hairs.

Legs.—Black. Femora with a little soft black hair, tibiæ with a few short black irregularly placed spines, posterior tibiæ with a circlet of short spines at the tip. Hind tibiæ with strong long black spines, intermixed with black and brown elongated scales which are rather numerous. All the femora have on the upper and hinder sides, and the anterior tibiæ on the hinder sides; small scattered orange-yellow scales, lying close to the surface.

Wings.—Very pale grey. Extreme base (barely encroaching on basal and anal cells) dark brown, which colour extends deeply along the costa to the end of the sub-costal vein (first longitudinal), and in a slightly paler shade to the fourth longitudinal vein, and distally to just beyond the origin of the second vein, which is almost opposite the discal transverse vein, the marginal cell being similarly coloured for about its basal half. Halteres pale yellowish white. Tegulæ brownish, with a fringe of long orange scales.

Described from three specimens taken by Mr. Howlett at Mussoorie (W. Himalayas).

N.B.—This species was compared by the above gentleman with Walker's type at the British Museum, and as that author's description agrees very well, I have accepted the identification and redescribed the species.

***Anthrax clausa*, mihi, sp. nov.**

♂. Lower Burma. Long. $8\frac{1}{2}$ mm.

Head.—Slightly broader than thorax and abdomen. Frons and face black, clothed with dense short black hair. Eyes distinctly separated at vertex, the ocelli being placed well forward, the frons widening very rapidly, until at the insertion of the antennæ it occupies half the width of the head. Antennæ black; first joint cylindrical, second sub-spherical, much shorter than first; third onion-shaped, with long style, small, narrower and shorter than second. Under side of face uniformly black, proboscis almost invisible. Back of head dark grey with a few whitish hairs.

Thorax.—Ground colour dull black; anterior border with a rather thick fringe of grey hairs, which apparently cover both dorsum and sides.

Abdomen.—Linear with conical tip, of same width as thorax. Dull black (*denuded*), probably when in good condition the whole abdomen is covered with whitish grey hairs. The present specimen has bunches of such hair at the sides of the abdomen towards the base, also at the tip. The dorsum shows little traces of hair, and on it the hair is probably always sparser. At the sides of the abdomen towards the base are patches of all black hairs. Belly black, nearly bare.

Legs.—Blackish, the inner sides of the anterior tibiæ with a brown tint. Femora below with some soft moderately long blackish hairs; fore tibiæ with a single row of small black bristles, middle pair with a similar row on both outer and inner sides, and hind pair rather thickly clothed with them.

Wings.—Clear; *anal cell* closed immediately before the border; discal cross-vein placed just beyond one-third of the discal cell; first posterior cell widely open; fork of the third vein showing a tendency to form an appendix. Halteres cream-white; tegulæ small, dirty white, transparent, with fringe of short grey hairs.

Described from a unique ♂ in the Indian Museum collection from Moulmein (Lower Burma), taken by Dr. Annandale early in March, 1908.

N.B.—Although belonging to the genus *Anthrax*, which, in spite of my best efforts, I must leave still in an unsatisfactory state for the present, I do not hesitate to describe this species as new, on account of the difference in venation from the usual form. None of the species described from the East are recorded as having the anal cell closed.

Bombylius fulvipes, Bigot.

♀. *Head*.—Frons at the level of the antennæ occupying one-third the width of the head, narrowing at vertex to one-fourth; clothed with short, golden yellow pubescence and some longer brownish yellow hairs. Under side of face with rather close, golden yellow hairs of moderate length; mouth-border bright lemon-yellow, with moderately long yellow hairs. Antennæ black: first joint rather long, sub-cylindrical, widening gradually to the tip, with some long yellow hairs on outer side; second joint sub-cylindrical, barely half as long as the first, with short black hairs; third joint twice as long as first, bare, partly flattened vertically, and "pinched" just before the middle, terminating in a very short, whitish blunt style. Ocelli on small prominence on the absolute vertex, equidistant. Eyes black, bare; facets small, uniform. Back of head covered with rather long bright yellow hair.

Thorax.—Covered with rather long yellowish grey hair, extending entirely over the sides and scutellum. Ground colour of both dorsum and scutellum black.

Abdomen.—Densely covered with pale yellowish grey hair, which becomes whitish on the tip. Ground colour blackish. Belly with close pale yellowish grey hair.

Legs.—Coxæ closely clothed with yellowish grey hair. Femora, tibiæ and base of tarsi pale tawny: extreme base of femora and apical half of tarsi black. Anterior femora with only a very little soft hair below, hind pair with a row of six or seven moderately strong black spines below. All the tibiæ irregularly beset with short black bristles which become spinose on the hind pair; and all the tibiæ have a circlet of very short black spines at the tip.

Wings.—Hyaline. Upper basal cell only a little, but distinctly longer than the lower one. Costal cell and base of wing as far as the origin of the basal cells tawny yellowish; the colour then, gaining an admixture of blackish, extends to three-fourths of the upper and the whole of the lower basal cell, leaving the whole discal cell quite clear; thence extending to the posterior margin of the wing, filling the basal halves of the anal and axillary cells, and the whole of the alulæ. The discal cross-vein is almost imperceptibly suffused. *The first posterior cell is closed just before the border.*

Described from a perfect single specimen in the Pusa collection, captured by Mr. F. M. Howlett at Allahabad, 19-x-05. As far as I am aware the ♀ has not previously been described, and though I cannot be absolutely sure of the identity, I think the present specimen can hardly fail to be Bigot's species.

***Bombylius terminalis*, mihi, sp. nov.**

♂, N.-W. India. Long. 5 mm.

Head.—Vertex of moderate size, dark grey. Eyes contiguous for two-thirds of the distance from the vertex to the antennæ; reddish brown. Antennæ wholly black; first joint longer than second, third nearly double the first and second together, bearing a short, minute bristle; first and second joints with pale hairs. Frons and face with yellowish hair, and snow-white pile around the antennæ, lower part of head white with white hair. Proboscis black, 3 mm. long. Back of head with short yellowish hair above and white hair below.

Thorax.—Thickly clothed with yellowish grey hair. Scutellum similar, the dark body colour being visible through the hair on both thorax and scutellum. Sides of thorax with similar hair, which becomes whitish on the under side.

Abdomen with thick yellowish grey hair, which is thinnest on the dorsum and thickest at the sides, becoming whitish towards the tip of the abdomen, the last two segments of which are covered with brilliant snow-white silvery pile and some whitish hairs. Belly with yellowish grey hairs, white towards tip.

Legs.—Pale yellow, the femora and tibiæ showing a slight whitish reflection in certain lights. Tips of all the tarsi black; the hind tarsi are mainly brownish, with black tips. A few soft hairs below the femora and a row of about six well-separated spines on under side of hind pair; tibiæ with minute spines, which are longest on hind pair.

Wings.—Clear, veins towards base yellowish. Discal transverse vein placed at one-third of the discal cell. First posterior cell closed half-way between border and origin of fork of fourth longitudinal vein. Halteres yellowish white.

Described from a unique ♂ in perfect condition in the Pusa collection, captured by Mr. F. W. Howlett at Allahabad, 3-iv-06.

N.B.—So far as his brief description goes, my species agrees fairly well with Bigot's *albosparsus*, but he distinctly says "legs and halteres black," which makes it appear as a different species.

***Bombylius vicinus*, mihi, sp. nov.**

♀. N.-W. India. Long. 4 mm.

This species is so closely allied to *terminalis* that I had almost decided to regard it as the ♀ of that species.

The differences, however, appear sufficient to be specific. The hair on the front is more whitish, that on the back of the head uniformly greyish yellow, very dense, the posterior orbit of the eyes is snow-white with minute white hairs. *First antennal joint pale yellow*, second somewhat lighter than in *terminalis*. *Base of proboscis yellow*. The hair on the thorax appears whiter, that on the sides and under side being quite white.

The scutellum, posterior portion of the thorax and the abdomen are covered with rather short brownish yellow hairs. Some white hairs at the base of the abdomen at the sides, and a few white hairs at the tip, but *no snow-white pile at the tip of the abdomen*.

Legs as in *terminalis*.

Described from a unique ♀ in the Pusa collection taken by Mr. Howlett at Allahabad, 3-iv-06.

N.B.—Possibly the ♀ of *terminalis*.

***Bombylius erectus*, mihi, sp. nov.**

(Plate xii, fig. 27, abdominal spines.)

♂ ♀. South India. Long. 8-12 mm.

Head.—Frons covered with short bright yellow hair, with two arched rows of stiff black bristles, one just above, the other just below, the antennæ and reaching from eye to eye. Sides of face with rather long, silky, cream-coloured hair. Lower part of face light grey, with long, snow-white hair. Mouth-border reddish. Antennæ black. Back of head with yellow hair. Eyes bare, distinctly excavated behind in the middle.

Thorax.—Cinereous black, with (in semi-denuded condition) traces of a thick yellow pile, an elongated bunch of strong black bristles at the side, in front of the wings. Sides of thorax with long, greyish white hair, yellowish hair immediately below the wings. Scutellum ferruginous, black at base, with a row of strong black bristles round the posterior edge, with yellow hair below it: dorsum with yellow hair.

Abdomen.—Ground colour apparently blackish brown, thickly clothed with yellowish and whitish hair, which is generally yellowish on the basal segments and apical one, and generally whitish on the others, but variable. Sides of third and fourth segments with thick tufts of white hair, and the sides of the fifth segment with a tuft of black hair; posterior borders of second and subsequent segments each with a row of closely placed, black, strong, erect spines, forming two arcs when viewed from behind (*vide* figure 27). Belly blackish, dorsum of segment with white pile, some black spines towards the tip.

Legs.—Blackish brown, with small spines and a silvery sheen seen in certain lights.

Wings.—Absolutely clear, extreme base slightly tawny, a small row of black bristles at base of costa. Tegulæ pale yellow, with a narrow fringe of yellow hair. Halteres light brown.

Described from thirteen ♂♂ and twelve ♀♀ from Bangalore in fairly good condition except for the general absence of thoracic and abdominal pubescence: the abdominal spines have also been rubbed off most of the specimens.

Types in the Indian Museum collection. Co-types in the British Museum and my collection.

Dischistus resplendens, mihi, sp. nov.

♂ ♀ India and Assam. Long. 5–6 mm.

Head.—Face below antennæ rather prominent, black. Antennæ black, very elongated; first very long, second very short, both with long black hair, third longest of all, flat, with parallel sides and a minute white style at tip. Proboscis strong, black, as long as head and thorax together. In the ♂ the eyes are contiguous from just below the vertex nearly to the antennæ, facets very small, those above and towards the front being rather larger. The whole of the face is clothed with greyish, soft long hair, surrounded by a fringe of stronger, long, bristly black hair placed round the inner orbit of the eyes. Vertex wholly occupied by the ocellar tubercle and a tuft of long black hairs; the three ocelli being placed in contact with the eyes. Under side of head with soft black and grey hairs. Back of head with a thick fringe of long soft yellowish grey hair, and a single row of black long hairs on the extreme ocular orbit.

In the ♀ the frons is one-third the width of the head, black, with sparse long black hairs and with a number of brilliant emerald-green and rose-pink small scales, intermixed and lying close to the surface. These are also very numerous on the back of the head, where the dense grey hair is replaced by a moderately thick fringe of pale yellow hairs. The face is shining black, bare, the mouth-border pale yellow, bare. Under side of head with greyish white soft hairs.

Thorax and scutellum denuded, but ground colour black, and dorsum surrounded in front, at the sides and behind with a dense

border of thick grey hair in the ♂, or a much sparser border in the ♀. The dorsum shows signs of having been covered lightly with yellowish grey hair. Attached to the surface of the dorsum of both thorax and scutellum are a number of brilliant bright green small scales, with a lesser number of rose-pink similar scales. Both coloured scales extend numerously over the sides of the thorax. In the ♂ is a quantity of black soft hair on the sides just below and in front of the wing-insertions.

Abdomen.—Similar to the thorax, with similarly coloured scales. In the ♂ the shoulders have a bunch of nearly white soft hair, with a fringe of yellow hairs between them. The sides with thick nearly white hair. In the ♀ the shoulders have yellow instead of white hair, and the coloured scales appear more numerous. In both sexes some long black hairs occur over the dorsum, and the belly is black with grey hairs and a few coloured scales.

Legs.—Black; tibiæ and metatarsi pale brownish yellow with short spines, hind pair darker, tarsi with black rather long bristles.

Wings.—Rather dark grey, brownish on anterior part. Venation normal. Halteres blackish. Tegulæ brownish with yellowish grey fringe.

Described from one ♂ (type) from Dharampur (Simla hills, 5,000 ft., 6—8-v-07), and five ♀♀ from Nepal (Sukhwani, 15-ii-08), Naini Tal, 14—17-iv-07, and Assam (Mergue): all the specimens being in the Indian Museum. They are not more denuded of pubescence than is usual in this family, but that which remains is sufficient to show that perfect specimens would be of most resplendent beauty.

Geron argentifrons, mihi, sp. nov.

♂ ♀ India. Long. $2\frac{1}{2}$ mm.

Head.—Eyes contiguous, from the very reduced vertex to the antennæ; facets of moderate size, uniform. Ocelli well separated, semi-transparent, pale brown, placed on a slightly raised triangular tubercle. Antennæ normal, in ♂ black, in ♀ first two joints and base of third reddish. Frons from above, in ♂ with shining silvery white pile; in ♀ occupying one-fourth the width of the head, greyish white dusted, with a silvery appearance in certain lights, and some silvery white pile around base of antennæ.

Thorax (? denuded), ground colour deep, almost velvet-black, slightly greyish in front of the wings. Anterior part of thorax covered with pale greyish dust (which may possibly be present over the whole dorsum in perfect specimens). Scutellum apparently similar. Both thorax and scutellum with a few pale hairs. Sides of thorax greyish white, appearing silvery in certain lights.

Abdomen (? denuded) black, sides greyish; some light scattered hairs on dorsum, which is microscopically grey dusted. There are some silvery white bristly hairs towards the tip (♀). Belly black, grey dusted, with some grey hairs and silver pile towards tip.

Legs.—Coxæ rather pale brown, with some moderately long and thick greyish hair. Femora concolorous with scattered greyish hairs. Tibiæ pale yellowish brown, with short black spines and a circlet of them at the tip, which is slightly darker. Tarsi blackish, with some short black spines and microscopic black pubescence; base of metatarsi pale.

Wing.—Quite clear, iridescent; veins pale yellow; tegulæ pale yellow with short hairs. Halteres rather large and prominent, egg-shaped, pale lemon-yellow, nearly white.

Described from one ♂ (type of the species) in the Indian Museum, taken by Dr. Annandale at Lahore, 9-v-08; also one ♂ and several ♀ ♀ in the Pusa collection from Bombay and Pusa at which latter place it was bred (24-iv-06) from caterpillars found under the bark of the shisham tree (*Dalbergia sissoo*, Roxb.).

N.B.—This must be something like Macquart's *australis*, but in that species, according to the plate, there is a wide, well-defined grey border running round the front and sides of the thorax.

***Systropus nigricaudus*, mihi, sp. nov.**

(*Id. id.*, Bigot, *nom. nud.*)

♂ ♀ W. Himalayas (Mussoorie). Long. 16 mm.

Head.—Vertex reduced almost to a point. Eyes black, bare; contiguous for rather more than half the distance from the vertex to the antennæ, gradually diverging until at the mouth-border they occupy nearly one-third the width of the head: facets small, of uniform size, the frons and face combined appear as an isosceles triangle, the inner portion being very deeply retracted, leaving a broad white margin on the three sides. Above this the antennæ are placed on a slight yellowish white (almost quite white) prominence, and from the cavity below protrudes the long black proboscis, $3\frac{1}{2}$ mm. long., which is brown at the base below. Antennæ: first joint white at the extreme base, becoming immediately pale yellow, graduating into orange, which forms the centre part, and deepening into black for about the apical third; the whole joint with scattered short black spines; second joint half the length of the first, wholly black, closely covered with black spines; third joint all black, quite bare, slightly shorter than the first. Back of head silvery white, with some short white hairs.

Thorax.—Dorsum black, finely punctate, with very sparsely scattered very short golden yellow hairs. Two rather narrow central grey stripes close together run from the anterior margin to the middle where they coalesce, and continue, united to the posterior margin. These stripes are only visible when viewed from behind. On the shoulders are placed three calli, the upper and largest one being almost bisected, the intermediate one very small and triangular, the lower one as large as the upper and also triangular. The upper one is contiguous to a more or less oblong spot on the dorsum, directed inwards and backwards; the remaining

calli are placed vertically beneath the upper one, all being contiguous to one another, the lower ones touching the concolorous fore coxæ. All these spots are pale yellowish white. A scale-like callus is placed in front of the wing, and is yellowish white on the anterior half, and black on the remainder, which reaches back to the posterior callus which is yellowish white. Below this callus is a small round yellowish white scale, by the *side* of the scutellum, and below the wing is an orange-yellow scale-like process, connected by a thin membrane to the just-mentioned scale. The sides of the thorax are black, with a little blackish brown hair and a little whitish grey hair in front of the insertion of the wings, and a larger quantity of longer similar hair on the large sternopleura.

Scutellum black, finely punctate, posterior half with some grey hairs.

Abdomen.—First joint at base wider than the scutellum, rapidly contracting posteriorly, forming a triangle; black, finely punctate on dorsum, with some very short grey hairs. At the sides are both black and grey much longer hairs. Second to fifth segments (inclusive) very narrow, dorsum black, sides and belly orange-yellow, fifth slightly widening at tip. Sixth, seventh and eighth segments widened into an elongated club, but the segments themselves are all shorter than the others, the eighth being shortest of all, sixth segment orange, seventh and eighth reddish brown. The whole abdomen at sides with very short, scattered, golden yellow hairs; on dorsum with microscopic black hairs, and the last three segments with very short black hairs which are also present on the posterior borders of these latter. The anal appendage (σ), withdrawn within the ninth segment (which latter is peculiar to the σ only, in accordance with Osten Sacken's views in the Biol. Cen. Am., i, 157), consists of an orange process bearing an upper pair of jet-black conical "claspers," there being also an orange-coloured plate projected from the eighth segment, bearing a very small pair of black conical "claspers" at the tip.

Legs.—Coxæ: fore pair wholly pale yellowish white, bare; middle pair yellowish white, with a large black mark on the outer side, on the basal half, and bearing a few dark hairs; hind pair black, with a little pale colour on inner sides below. Femora: fore pair pale yellowish white, with a dark brown streak behind, about the middle; middle pair black, extreme base and tip pale yellowish white; hind pair, basal half pale yellow, deepening to orange on the apical half, extreme base black above. Tibiæ: fore pair pale yellowish white, bare; middle pair similar but with a few very small black spines at the tip; hind pair yellowish orange, streaked here and there with black above, with irregularly placed black spines, and with a circlet of some short black spines at the tip. Tarsi: anterior ones pale yellow, upper side blackish on apical half; hind pair black, minutely pubescent, slightly yellowish at extreme base, and with a row of minute black spines below.

Wings.—Light brownish grey, unmarked. Halteres lemon-yellow.

Described from one ♂ from Soondrijal (Nepal), which is the type specimen, also from a ♀ from Mussoorie. Both of these are in the Indian Museum, with Bigot's type specimen (from Sikhim), which is, however, in such bad condition that it is necessary to select another specimen as the type of the species, although it can be seen that Bigot's example is undoubtedly of this species. The species is also in the Pusa collection, taken by Mr. Howlett in September 1906, at Mussoorie.

N.B.—The two species by Vollenhoven, *blumei* and *tessellatus*, from Java and Sumatra, respectively, are not known to me, descriptions not being available; I therefore describe this species as new, the wide difference in locality rendering it highly probable that it is distinct.

LIST OF SPECIES OF BOMBYLIDÆ DESCRIBED FROM LOCALITIES
ADJACENT TO THE ORIENTAL REGION.

EXOPROSOPA, Macq.

- | | |
|---|------------|
| 1. <i>lugubris</i> , Macq., 1840, Dip. Ex., ii, 1, 42
(320), ♀, pl. xvii, 1 (wing) | Arabia. |
| 2. <i>olivierii</i> , Macq., 1840, l.c., ♀, pl. xvii, 4
(wing) | <i>Id.</i> |
| 3. <i>bagdadensis</i> , Macq., 1840, l.c., 43 (321),
♀, pl. xvii, 5 (wing) | <i>Id.</i> |

N.B.—The above three species are true *Exoprosopæ*, all with the first posterior cell closed.

- | | |
|---|---------------|
| 4. <i>dedecor</i> , Lw., 1870, Schrift Ges. Freund.
Nat., Moscow, 56 | Turkestan. |
| 5. <i>melæna</i> , Lw., 1874, Zeits. Ges. Natur-
wiss., xliii, 416 | North Persia. |
| 6. <i>nubeculosa</i> , Lw., 1874, l.c., p. 56 | Turkestan. |

N.B.—These are in all probability true *Exoprosopæ*, as Loew would hardly have confounded the genus with any other.

- | | |
|---|---------|
| 7. <i>singularis</i> , Macq., 1840, Dip. Ex., ii, 1,
41 (319), ♀, pl. xvii, 3 (wing) | Arabia. |
|---|---------|

N.B.—A true *Exoprosopa* with the peculiarity of having the first posterior cell divided by a cross-vein placed just before the middle. This may be accidental but Macquart mentions its presence in the only four specimens examined.

- | | |
|---|------------|
| 8. <i>disrupta</i> , Wlk., 1871, Entomologist, v, 261 | Arabia. |
| 9. <i>paupera</i> , Wlk., 1871, <i>Id.</i> , 261 | <i>Id.</i> |
| 10. <i>antica</i> , Wlk., 1871, <i>Id.</i> , 261 | <i>Id.</i> |

ARGYRAMÆBA, Sch.

1. *etrusca*, F., 1794, Ent. Syst., iv, 257 . Persia.
2. *testacea*, Macq., 1840, Dip. Ex., ii, 1
(*Anthrax*) (339), pl. xix, 4 Arabia and
Egypt.

N.B.—In the Palæarctic Catalogue this species is quoted as a possible synonym of *Anthrax incanus*, Klug (1832).

ANTHRAX, Scop.

1. *arabicus*, Macq., 1840, Dip. Ex., ii, 1, 63
(341), ♀, pl. xxi, 7 (wing) . Arabia.
2. *percious*, Macq., 1840, l.c., 58 (336), ♂,
pl. xxi, 2 (wing) Persia.

N.B.—The wing figure shows an appendiculation bending towards and nearly touching the second longitudinal vein, whilst the fork of the third vein is very considerably looped.

3. *stenurus*, Lw., 1870, Schrift. Ges. Freund.
Nat., Mosc. (1870), 56, and Besch.
Eur. Dip., ii, 206 (1871) Turkestan.
4. *subarcuatus*, Lw., 1870, loc. cit. (1), p. 56,
et loc. cit. (2), p. 208 *Id.*
5. *tenuis*, Wlk., 1871, Entomologist, v, 271 Arabia.
6. *erythrostomus*, Rond., 1873, Ann. Mus.
Gen., iv, 299 . North Persia.

COMPTOSIA, Mcq.

1. *aurifrons*, Macq., 1851, Dip. Ex. Supp.,
iv, 417, ♀, pl. x, 16 (wing) Australia
("Oriental side").
2. *bicolor*, Macq., 1851, loc. cit., 418, ♀, pl.
x, 17 (head in profile) *Id.*

CALLOSTOMA, Macq.

1. *desertorum*, Lw., 1873, Besch. Eur. Dip.,
iii, 176 Turkestan.
2. *soror*, Lw., 1873, *Id.*, 175 *Id.*

MULIO, Latr.

1. *persicanus*, Beck., 1903, Zeits. Hym. u.
Dipt., ili, 27 and 193 .. Persia.

CYLLENIA, Latr.

1. **globiceps**, Lw., 1870, Schrift. Ges. Freund.
Nat. Mosc. (1870), 57, and
Besch. Eur. Dip., ii, 220
(1871) Turkestan.

AMICTUS, Wied.

1. **insignis**, Lw., 1870, Schrift. Ges. Freund.
Nat. Mosc. (1870), 57, and
Besch. Eur. Dip., ii, 209 Turkestan.
2. **nobilis**, Lw., 1870, loc. cit. (1), p. 57, et
loc. cit. (2), 211 Sarawschan-
Thal (Central Asia).

ANTONIA, Lw.

1. **fedtschenkoi**, Lw., 1873, Besch. Eur.
Dip., iii, 178 Turkestan.

PLATYPYGUS, Lw.

1. **maculiventris**, Lw., 1784, Zeits. Ges.
Naturwiss., xliii, 416 North Persia.

BOMBYLIUS, L.

1. **sericans**, Macq., 1851, Dip. Ex. Supp.,
iv, 420, ♀, pl. xi, 3 (head in
profile) Australia
("Oriental
side").
2. **crassirostris**, *Id.*, loc. cit., 421, ♂ ♀, pl. xi,
4, head in profile *Id.*
3. **albavitta**, *Id.*, loc. cit., 421, ♂, pl. xi,
5 (full insect) *Id.*

N.B.—Very near *crassirostris* but has a long thin proboscis instead of a shorter thick one.

4. **pictipennis**, *Id.*, loc. cit., 422, ♀, pl. xi, 6
(wing) *Id.*
5. **penicillatus**, *Id.*, loc. cit., 422, ♂, pl. xi,
7 *Id.*
6. **candidus**, Lw., 1855, Neue Beitr., iii, 34 Persia.
7. **tephroleucus**, *Id.*, loc. cit., 28 *Id.*
8. **miscens**, Wlk., 1871, Entomologist, v, 271 Arabia.

9. *exiguus*, Wlk., 1871, Entomologist, v, 272 Arabia.
 10. *pericaustus*, Lw., 1873, Bes. Eur. Dip., iii, 188 Turkestan.
 11. *megacephalus*, Ports., 1887, Hor. So. Ent. Ross., xxi, 182 Persia.

ACREOTRICHUS, Macq.

1. *gibbicornis*, Macq., 1851, Dip. Ex. Supp., iv, 425 (sex ?), pl. x, 11 (full insect) Australia ("Oriental side").
 2. *fusicornis*, *Id*, loc. cit., 426, ♀, pl. x, 12 (head in profile) *Id*.

CODIONUS, Rond.

1. *chlorizans*, Rond., 1873, Ann. Mus. Gen., iv, 299 Persia.

PLOAS, Latr.

1. *adunca*, Lw., 1870, Schrift. Ges. Freund. Nat. Mosc. (1870), 57, and Bes. Eur. Dip., ii, 212, ♂ ♀ Turkestan.

N.B.—In Loew's second description, only that of the ♀ applies to this species, the other sex being the ♂ of *bombyliiformis*, Lw.

2. *bombyliiformis*, Lw., 1873, Bes. Eur. Dip., iii, 184; *adunca*, Lw. (1871), loc. cit., ii, 212, ♂ only Turkestan.

* * * * *

LIST OF BOMBYLIDÆ ORIGINALLY DESCRIBED FROM UNKNOWN LOCALITIES.

All the *Anthracinæ* herein given except the two species of *Argyramæba* by Bigot, were described under *Anthrax*, but I have, by a study of the affinities of the other species with which the following were grouped, endeavoured to refer them to their correct genera. The classification must therefore be accepted with some caution.

A. *Species probably belonging to* **HYPERALONIA**.

1. **pulchra**, Wlk., 1852, Ins. Saund., pt. 3, 169, ♀
2. **rufescens**, Wlk., 1849, List. Dip. Br. Mus., ii, 238 (head wanting).
3. **imbutā**, *Id.*, *Id.*, 242.

N.B.—The sex is not given (allied to *A. fulvula*).

B. *Species probably belonging to* **EXOPROSOPA**.

4. **fumipennis**, Wied., 1828, Auss. Zwei., i, 267.

N.B.—The head of the type is wanting. In the Vienna Museum.

5. **meigenii**, Wied., loc. cit., 278.

N.B.—In the Vienna Museum and Wiedemann's collection.

6. **insularis**, Wlk., 1849, List Dip. Br. Mus., ii, 243, ♀ (head wanting).
7. **umbra**, *Id.*, *Id.*, 245, ♀
8. **undans**, *Id.*, *Id.*, 246 (head wanting).
9. **vitreicosta**, *Id.*, *Id.*, 251 (head wanting).

N.B.—In his Ins. Saund. (p. 166) Walker queries this species of his as a synonym of *stupidā*, Rossi, but the Palæarctic Catalogue does not accept the identity.

10. **ignifera**, Wlk., 1852, Ins. Saund., pt. 3, 173, ♂

C. *Species probably belonging to* **ARGYRAMŒBA** ; if not, then probably to **ANTHRAX** (*vera*).

11. **suffusa**, Wlk., 1849, List. Dip. Br. Mus., ii, 251, ♀
12. **noctiluna**, *Id.*, *Id.*
13. **succedens**, Wlk., 1852, Ins. Saund., pt. 3, 192, ♀

D. *Species belonging probably to* **ARGYRAMŒBA** or to **ANTHRAX**.

14. **leucotelus**, Wlk., 1852, Ins. Saund., pt. 3, 175, ♀
15. **reducta**, *Id.*, *Id.*, 184, ♂
16. **gnata**, *Id.*, *Id.*, 186, ♀
17. **congrua**, *Id.*, *Id.*, 186, ♂
18. **illata**, *Id.*, *Id.*, 191, ♀
19. **relata**, *Id.*, *Id.*, 191, ♂.

E. Species belonging probably to ANTHRAX (sensu stricto).

20. **purpurata**, Wied., 1828, Auss. Zwei., i, 300 ("near *A. flava, cingulata*," etc.).

N.B.—Type in Vienna Museum.

21. **emilimpida**, Wied., 1828, Auss. Zwei., i, 310.

N.B.—In Vienna Museum.

22. **confluens**, Macq., 1840, Dip. Ex., ii, 1, 60 (338), ♂, pl. xix, 9 (wing).

Type in Paris Museum.

23. **notabilis**, *Id.*, *Id.*, 50 (348), ♂, pl. xix, 5 (wing).

Type in Paris Museum.

24. **brunnipennis**, *Id.*, *Id.*, 50 (348), ♀, pl. xx, 12 (wing).

Type in Paris Museum.

25. **luctuosa**, *Id.*, *Id.*, 50 (348), ♀, pl. xxi, 4 (wing).

Type in Paris Museum.

26. **subannulus**, Wlk., 1849, List. Dip. Br. Mus., ii, 261, ♂

27. **Argyramœba aterrima**, Big., 1890, Ann. So. Ent. Fr., p. 349, ♂

N.B.—This specific name was preoccupied by Doleschall in 1858.

28. **Argyramœba acroleuca**, Big., loc. cit., ♀.

China is queried as a locality.

29. **Mulio leucoprocta**, Wied., 1828, Auss. Zwei., i, 330.

Type in Vienna Museum.

N.B.—The Palæarctic Catalogue queries North Africa as a locality.

30. **Cyllenia aberrans**, Wlk., 1849, List. Dip. Br. Mus., ii, 297, ♂

N.B.—The Palæarctic Catalogue quotes this as a possible synonym of *Mulio lugubris*, Lw. (Bes. Eur. Dip., iii, 164), from Transcaspia. If the two species are identical, Walker's name will have priority.

31. **Cyllenia afra**, Wied., 1828, Auss. Zwei., i, 358.

N.B.—The author suggested Africa as a possible habitat. He does not mention in what collection the type is to be found.

32. **Phthiria hypoleuca**, Wied., loc. cit., 355.

In Vienna Museum.

33. **Toxophora leucopyga**, Wied., loc. cit., 361.
In Vienna Museum.
34. **Systropus funereus**, Costa, 1865, Ann. Mus. Zool. Nap.,
ii, 152.
35. **Bombylius scutellaris**, Wied., 1828, Auss. Zwei., i,
343, ♀
In Vienna Museum.
36. **B. dimidiatus**, Macq., 1840, Dip. Ex., ii, 1, 368, ♀, pl.
vii, 5 (wing).
N.B.—There is a *dimidiatus*, Mg., a European species, which
= *A. fimbriatus*, Mg.
37. **B. canus**, Macq., loc. cit., p. 372 (♀).
N.B.—Macquart says it may be the ♀ of his *B. latifrons* known
from the Canary Islands and the Cape. Both species are now placed
in *Systæchus*. Macquart also says *canus* is near *hypoleucus*, Wied.,
which was described from the Cape.
38. **B. limbipennis**, Macq., loc. cit., p. 374, ♀
In Paris Museum.
39. **B. tripunctatus**, Macq., loc. cit., p. 379, pl. vii, 6 (wing).
N.B.—First posterior cell open. Type in Paris Museum.
40. **B. maculifer**, Wlk., 1852, Ins. Saund., pt. 3, 200.
41. **B. signifer**, Wlk., *Id.*, *Id.*, 200, ♂.

* * * * *

In addition to the above species, there are a few which were originally described from unknown localities, but which have subsequently been located from some region with certainty. These are—

1. "**Anthrax**" **proserpina**, Wied., Auss. Zwei., i, 257. This is admitted as a North American species by Aldrich (1905) and relegated to *Hyperalonia*.

2. "**Anthrax**" **argyropyga**, Wied., Auss. Zwei., i, 313 (*argyropyga*, *lapsus*). Aldrich also admits this as a North American species, placing it in *Spogostylum*, with *Argyramæba contigua*, Lw., as a certain synonym, and *Argyramæba albosparsa*, Bigot, as a doubtful one. Aldrich adopts *Spogostylum* in place of *Argyramæba*, but the Palæarctic Catalogue adopts the latter, yet retains *Spogostylum* (emended to *Spongostylum*) for two species (*flavipes*, Roder, and *pallipes*, Lw.) from Asia Minor.

3. **Toxophora leucopyga**, Wied., Auss. Zwei., i, 361. This species also Aldrich includes in his North American Catalogue on

Macquart's record of it from Carolina, adding *fulva*, Gray, as a synonym on Osten Sacken's authority.

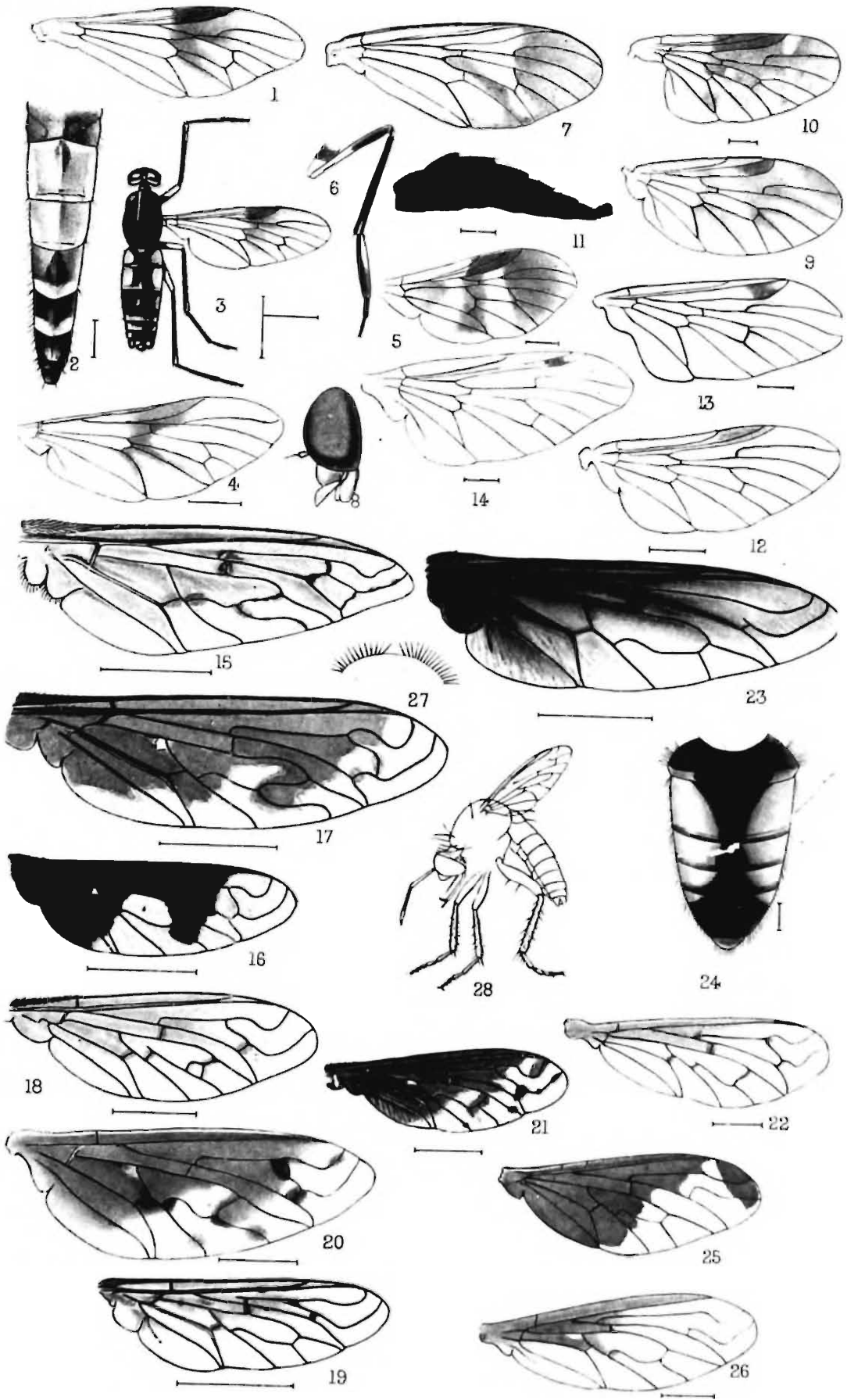
4. **Systropus sallei**, Costa (1865), Ann. Mus. Zool. Nap., ii, 151. Aldrich records this from Mexico.

5. **Systropus funereus**, Costa, loc. cit., p. 152. This species Aldrich thinks as synonymous with *S. fænoides*, Westw., this latter author recording it from Mexico.



EXPLANATION OF PLATE XII.

- FIG. 1. *Atherix cincta*, Brun., ♀, wing.
 ,, 2. ,, *calopa*, Brun., ♂, abdomen.
 ,, 3. ,, *lanopyga*, Brun., ♀, full insect.
 ,, 4. ,, *limbata*, Os. Sac., ♀, wing.
 ,, 5. ,, *metatarsalis*, Brun., ♂, wing.
 ,, 6. ,, *id.*, hind leg.
 ,, 7. *Leptis apicipennis*, Brun., ♀, wing.
 ,, 8. *Macellopalpus fulvidus*, Brun., ♀, head in profile.
 ,, 9. *Chrysopilus albopictus*, Brun., ♀, wing.
 ,, 10. ,, *marmoratus*, Brun., ♂, wing.
 ,, 11. ,, *segmentatus*, Brun., ♂, abdomen.
 ,, 12. ,, *id.*, wing.
 ,, 13. ,, *unicolor*, Brun., ♂, wing.
 ,, 14. ,, *stigma*, Brun., ♂, wing.
 ,, 15. *Hyperalonia suffusipennis*, Brun., ♀, wing.
 ,, 16. *Exoprosopa collaris*, Wied., ♀, wing.
 ,, 17. ,, *lateralis*, Brun., ♀, wing.
 ,, 18. ,, *bengalensis*, Macq., ♀, wing.
 ,, 19. ,, *retrorsa*, Brun., ♀, wing.
 ,, 20. ,, *annandalei*, Brun., ♀, wing.
 ,, 21. ,, *insulata*, Wlk., ♀, wing.
 ,, 22. ,, *brahma*, Sch., wing.
 ,, 23. *Argyramœba bipunctata*, Fab., wing.
 ,, 24. ,, *ceylonica*, Brun., ♂, abdomen.
 ,, 25. ,, *gentilis*, Brun., ♂ ♀, wing.
 ,, 26. *Anthrax*, sp. (Poona), ? ♀, wing.
 ,, 27. *Bombylius erectus*, Brun., ♂ ♀, abdominal spines.
 ,, 28. *Toxophora javana*, Wied., insect in profile.



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