STUDIES ON INDIAN TRYPETIDAE (DIPTERA).

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Through the kindness of Dr. H. S. Pruthi, the Imperial Entomologist of India, New Delhi, and of Mr. J. C. M. Gardner, Systematic Entomologist, Forest Research Institute, Dehra Dun, I have been able to examine a number of specimens of Trypetidae from India. I am also indebted to Dr. B. Prashad, Director, Zoological Survey of India, for assistance of the staff of the Indian Museum, Calcutta, in the examination of types and for the loan of specimens.

A study of the insect fauna of India is of great interest both on account of its geographical position and of the variations in climate. As far as the Trypetidae are concerned, the connections with the palaearctic and with the oriental representatives are very evident, and of not less interest, the relationships with species and genera found in Africa. Conversely, it may be said that the African Trypetidae, or at least certain groups, cannot be fully understood without a study of the Indian forms. It is hoped that the notes and observations in the following pages will be of use in furthering the study and interpretation of the relationships of the faunas of the two areas.

Types of new species described are being returned to the Imperial Entomologist.

Callistomyia pavonina Bez.

1913. *Callistomyia pavonina*, Bezzi, *Mem. Ind. Mus.*, III, p. 125, pl. ix, fig. 36.

Two males from Mr. Gardner (Dehra Dun, December 1922, Golataffer : Students' coll.) agree closely with Bezzi's description. The frons is a little less than one-third the width of the head, and has a little brown pubescence ; the lunule is semicircular and yellow ; on the dorsum of the thorax the pubescence is black on the black stripes, as it is also on the black bands and the anterior third of the fifth segment on the male abdomen. The disc of the scutellum is quite flat and has some yellow pubescence.

Gastrozona montana Bez.

1913. *Gastrozona montana*, Bezzi, *Mem. Ind. Mus.*, III, p. 106, pl. viii, fig. 17.

A rather rubbed female (Shillong, 5,000 ft., 22nd May 1928, Fletcher coll. from the Imperial Entomologist) agrees with Bezzi's description. A few points may be noted. The bristles are mostly broken off, but there appear to be two superior and four inferior orbitals, the ocellars short and fine, and a little pale pubescence on the frons. The dorsum of the thorax is light ferruginous, yellowish above the wings. On the

abdomen the pubescence is black on the black bands. The base of the ovipositor ferruginous, black at the tip and with black pubescence; it is about as long as segments three to six together.

Chelyophora ceratitina (Bez.).

1913. *Stictaspis ceratitina*, Bezzi, *Mem. Ind. Mus.*, III, p. 103, pl. viii, fig. 13.

Two males and three females, Dehra Dun, 11th December 1927, C. C. Ollenbach, from bamboo shoot (received from Mr. Gardner).

The species was described from a female. The male is similar and the following notes may be added. The specimens agree with Bezzi's description quite well although they are rather teneral. In the female the third segment of the abdomen is light brown, the fourth and the anterior half of the fifth rather lighter. The base of the ovipositor is as long as the last three segments of the pre-abdomen. In the male the second segment is large, covering about two-fifths of the pre-abdomen, and is yellow with pale pubescence; the third and the front edges of the fourth and fifth are brown, but the whitish bands on the second, fourth and fifth, mentioned by Bezzi, are not particularly evident in these specimens. The genitalia are small and inconspicuous.

Chelyophora gladiella, sp. nov.

A species of which the scutellum has the black divided by yellow lines into a large and a pair of smaller lateral areas, and the marginal band on the wing united to the basal. It is very like *C. ceratitina* (Bez.), but differs in the more extensive black markings on the dorsum of the thorax, there being a median stripe, and the post-scutellum entirely black.

Type male, Pusa, Bihar, 27th April 1913, F. M. H., paratype male, Karallabag, Allahabad, 29th March 1913, F. M. H., type female, Pusa, Bihar, 10th September 1913, F. M. H., paratype female, Pusa, Bihar, 6th April 1929, Fletcher coll., and Calcutta, 1st June 1909, C. V D.

Length, male, 5·0 mm., female, 6·7 mm., wing-length, male, 5·0 mm., female, 5·5 mm. *Head*, yellowish, normal, short, length half width and two-thirds height; *frons* reddish with black pubescence, two superior and three inferior orbitals, ocellars and genal strong, all bristles black, except an odd yellow bristle on back portion of lower occiput, where hairs are also yellow. Antennae with apical point, arista plumose. *Face* yellowish. *Thorax*: bristles normal, black except yellow cervicals; two mesopleurals. Dorsum (text-fig. 1) pubescence yellow. Post-scutellum shining black, the lower portion with slight dust on the sides. Pleura and sterna yellowish with pale pubescence. *Legs* normal. *Wing* as in *ceratitina*, the marginal united to basal, the cubital to marginal, but the medial only faintly. *Abdomen*, male, second segment very large, nearly half abdomen, yellow with pale pubescence except some black along hind margin, the short third segment is brown with black pubescence, fourth yellow but brown along front edge and pale pubescence, fifth chestnut with pale pubescence, bristles on hind edges of third, fourth and fifth segments. Genitalia inconspicuous. Female,

chestnut, the second, fourth and fifth segments with their hind halves paler and barely silvery-dusted ; pubescence black from hind edge of

TEXT-FIG. 1.—*Chelyophora gladiella*, sp. nov. Dorsum of thorax. The dotted areas are yellow, the cross-ruling shows the whitish dust on the chestnut areas.

second segment, pale before this. Base of ovipositor chestnut, blackish at apex, pubescence black ; about as long as last three segments of preabdomen.

Ceratitis capitata Wied.

Although Wiedemänn's type of this species is recorded as having come from the " East ", the locality has been doubted as the species has not subsequently been found in the oriental region proper. An authentic record that it occurs in India is therefore of interest.

Among the specimens sent to me by the Imperial Entomologist are three females, labelled " Pusa, Bihar, 20.8.07—bred from peach ", and a male and a broken specimen " Pusa, Bihar, 23.9.08." It may be noted that these specimens were collected before the appearance of Bezzi's monograph on the Indian Trypetidae in 1913. They are all in rather poor condition, but there is no doubt, especially on account of the spatulate bristles of the male, that they are the Mediterranean fruit-fly.

Phagocarpus immsi Bez.

1913. *Phagocarpus immsi*, Bezzi, *Mem. Ind. Mus.*, III, p. 131, pl. x, fig. 72.

A female, Simla, June 1909, F. M. H. (from the Imperial Entomologist) undoubtedly belongs here. Bezzi refers to the species as " dark yellow ", but it is perhaps better described as reddish or chestnut. On the frons there is some rather sparse, fine, black pubescence ; the lunule is short ; the antennae about three-fourths the length of the face, and the arista microscopically pubescent. On the dorsum of the thorax is black, strongly shining pubescence and slight dust, the latter leaving a median and a pair of dorso-central, narrow, shining stripes ; the dorsocentral bristles are nearer the prescutellars than to the anterior supra-alars, there are two mesopleurals. The scutellum is rather more convex

above than flat and has four bristles. The abdomen has a more blackish tinge, but the greyish borders to the segments are not apparent in this specimen. The base of the ovipositor is short and broad and about as long as the fifth and sixth segments together, the sixth being very short; it is shining black, but somewhat reddish in the middle, the pubescence black.

Vidalia Rob.-Desv.

1830. *Vidalia*, Robineau-Desvoidy, *Essai sur les Myodaires*, p. 719.
1870. *Stemonocera*, Rondani, *Prodr.*, VII, *Ortalid.* p. 30.
1913. *Vidalia*, Bezzi, *Mem. Ind. Mus.*, III, p. 135.
1915. *Vidalia*, Hendel, *Ann. Mus. Nat. Hung.*, XIII, p. 443.
1920. *Straussia*, Enderlein, (*nec.* Rob.-Desv.), in Brohmer, *Fauna. v. Deutschland*, p. 302.
1923. *Hoplandromyia*, Bezzi, *Ann. Mus. Nat. Paris*, XXIX, p. 577.
1924. *Hoplandromyia*, Bezzi, *Bull. Ent. Res.*, XV, p. 111.
1927. *Vidalia*, Bezzi, in Lindner, *Fl. Pal. Reg.*, XLIX, Tryp., p. 71.
1933. *Vidalia*, Shiraki, *Tryp. Jap. Empire*, p. 240.

In considering the genus *Vidalia*, it may be noted that the genotype, *V impressifrons*, does not appear to have been recorded again since it was first described. There is also no further information on the type by later authors. Whether the type is still extant may be queried; Hendel, 1915, refers to " der unbekannte Typus ", but this may only mean that it was not known to him personally, but then he would probably have said so definitely. When, however, he says " und eine ' chète plumosule ' hat ", he is incorrect, but seems to have changed his opinion later in 1927. In any case, although Robineau-Desvoidy's description of *Vedalia* is very brief, it is in a way definite. He says " Charactères des Strauzies : chète plumosule. À l'exception du chète, ce genre réunit tous les charactères des Strauzies." One point at least is thus definite, that since the arista is plumose in *Straussia*, it cannot be more than pubescent in *Vidalia*. Thus, even if the type of *impressifrons* is lost, the genus may be regarded as sufficiently recognisable. Finally, if the name *impressifrons* cannot be retained owing to the lack of the type and to the insufficiency of the description, then *V ceratophora* Bez. is proposed as what may be termed a " neogenotype " Hendel's diagnosis (1927) may be accepted although it is very probably not based on the genotype.

Allied to *Vidalia* is *Aischrocrania* Hendel (1927). The genotype is *A. aldrichi* Hend. of which only the male type is known. The characters used to distinguish it are largely those of the male, and the correct relationships of the genus may be better understood when the female has been discovered. The female head may be quite normal, or it may show some modification, particularly of the antennae as is the case in *Ceriocera*. Hendel records scattered, microscopic hairs on the eyes, but these are also present in species of *Vidalia*.

Straussia Rob. Desv. is also similar. It has, however, a peculiarly shaped head, the frons projecting strongly before the small eyes as in *Platyparea*. The ocellar bristles seem stronger in both sexes, and the wing is narrow and pointed outwardly, but the cross-veins are not as strongly approximated as would seem to be indicated by Hendel. Like *Vidalia* it is also distinguished by the curious ornamentation of the head

of the male, and the thickened orbital bristles. Hendel states that the superior orbital bristle is also thickened in *Straussia*, but an examination of specimens of *S. longipennis* it was found that the four bristles on the carina are all the inferior orbitals, and that the superior orbital, in the male, has disappeared.

The species of *Vidalia* may be divided into three groups according to the ornamentation of the male head, and, more or less parallel with these, four groups of wing-pattern may be recognised; these will be explained first.

Two are mentioned by Hendel and include those species having a reduced pattern like that of either (*a*) *Trypeta artemisiae*, or (*b*) *Trypeta zoë*. In the other two groups are species with a more heavily-marked pattern as found in (*c*) species of *Euleia* (*Myiolia*, auct.) and (*d*) species of *Pseudospheniscus*. Species are fairly readily placed in one or other of these groups, and they are perhaps of more use in separating females. When, however, the species are arranged in accordance with the three types of ornamentation of the male head, there is some over-lapping.

The latter three groups are :—

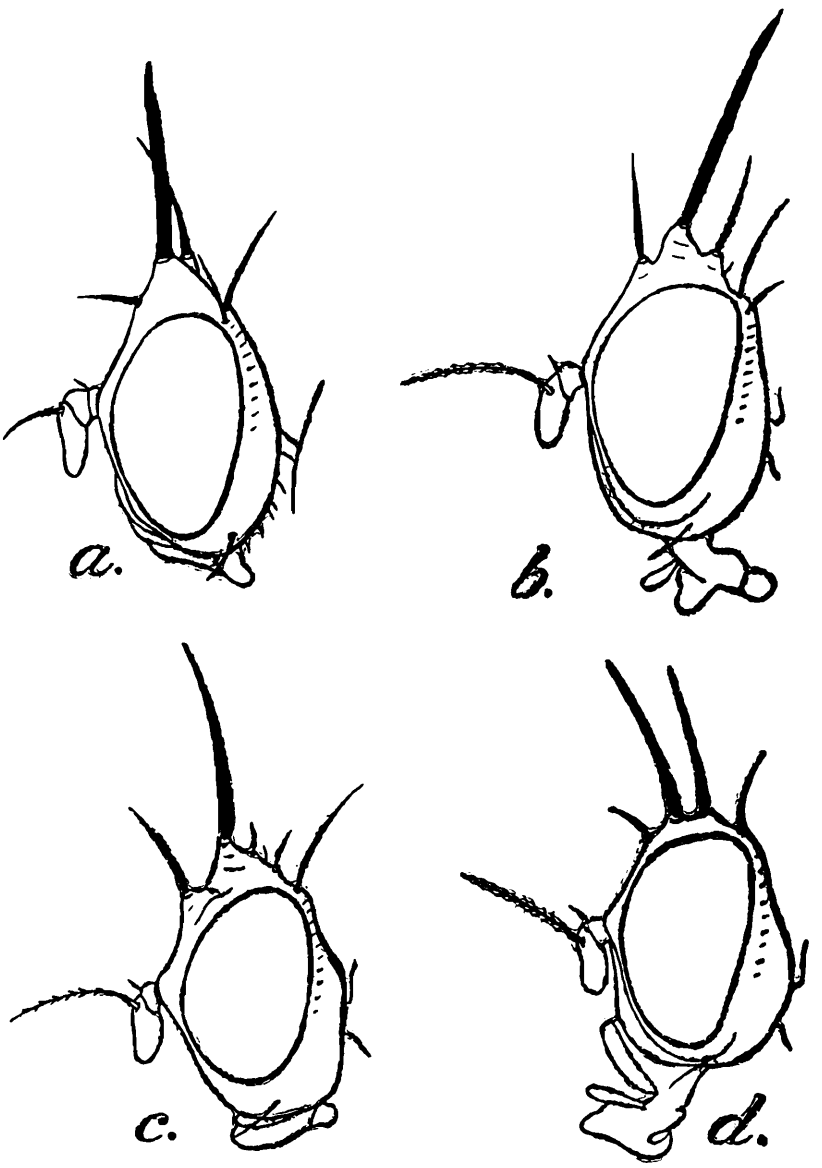
1. Species in which the sides of the anterior portion of the orbits on the frons are produced forward as tubular horns of moderate to considerable length ; all, or most, of the inferior orbital bristles occur on the horns, and are black and ribbon-like. In this group are *cervicornis* Brun., *cornuta* Scop., and *appendiculata* Hend., which have an *artemisiae* wing-pattern, and *hendeli* Mro., that of *zoë*.

In regard to these species, two points may be noted. In *appendiculata* the sides of the frons appear, from Hendel's figure, to be merely broadly produced and not distinctly tubular, the species in this particular thus being intermediate between this group and the next. Then, the appearance of the wing-pattern cannot be quite satisfactorily established in the absence of specimens or of figures of the wing, especially in the case of *hendeli*.

2. Species in which the anterior sides of the frons are raised into moderately broad, irregular carinae, more prominent in front. All or most of the inferior orbital bristles are found on top of the ridge, and usually two are ribbon-like. In this group is *armifrons* Portsch, which appears to have an *artemisiae* pattern. Further, there are *spinifrons* Schroed., *triceratops* Bez., and *melanonotum* Brun. with a *zoë* pattern.

3. Here the position is curious and interesting (text-fig. 2, *a-d*). The carinae are on the hind portion of the sides of the frons. At first sight they would seem to be largely due to the enlargement of the vertical plates, with one, two or three points, three bristles being present. As interpreted by Bezzi, these three bristles might be regarded as two superior and one inferior orbital. It must be noted that Bezzi had no females of the three species he described. It was thus with much interest that I found two pairs of the South African *junodi* Bez. in some material received from the British Museum. A comparison of the heads of the sexes, since the head in the female is quite normal, with one superior and three inferior orbitals, soon convinced me that the three bristles on the carina in this species are all inferior orbitals. Thus in the development of the carinae, the anterior sides of the frons have retreated,

and the fore-most inferior orbital is at about the middle of the frons. The vertical plates are inconspicuous on the inner, lower, hind margins



Text-fig. 2.—Heads of the males of species of *Vidalia* in which the carinae bearing the inferior orbital bristles have retreated backwards. *a. ceratophora* Bez., *b. fletcheri*, sp. nov., *c. bidens* Hend., *d. junodi* (Bez.), (fig. *a.* is redrawn from a sketch of the type kindly made in the Indian Museum).

of the carinae, where the single, small superior orbital is seen. In the description of *junodi* Bezzi says " all 'intorno della prima or. si nota una piccola setola ricurva all' indietro ", but he did not realise what it is. In the case of *Vidalia bidens*, of which he had both sexes, Hendel recognised what the bristles are on the carinae. In this the vertical plates and the single superior orbital are on the top of the hind edges of the carinae. Usually two of the inferior orbitals are enlarged and ensiform.

The last two types of wing-pattern are found here. Those with the *Euleia* pattern are *ceratophora* Bez., *bidens* Hend., *fletcheri* sp. nov., and as far as may be judged, the genotype, *impressifrons* Rob.-Desv.; these are all oriental species. The two African species, *tetracera* Bez. and *junodi* (Bez.) (described under *Hoplandromyia*) have a *Pseudospheniscus* wing-pattern.

From a consideration of the known species, there seems to be some, although slight, correlation between the two series, as, for instance, no species with tubular horns has a heavily marked wing-pattern. At the same time, since other species may be discovered, it is premature to attempt any division of the genus *Vidalia* at present.

Of *Hoplandromyia*, Bezzi states that it " differs generically from the oriental forms ascribed to the genus *Vidalia*," but he does not say in what way. Probably he had in mind the wing-pattern, but this does not appear to have the importance in generic distinctions given to it by him. I have only seen specimens of the South African *junodi*. This is certainly congeneric with the species of group 3 (male head) known to me, and as there is little doubt that *impressifrons* should be placed there as well, *Hoplandromyia* must be regarded as a synonym of *Vidalia*. Thus is another link between African and Indian Trypetidae established.

Vidalia cervicornis Brun.

1917. *Vidalia cervicornis*, Brunetti, *Rec. Ind. Mus.*, XIII, p. 95, figs. 2, 3.

A male, Pusa, Bihar, 23rd January 1912, M. M. B., and three females, Mashobra, 7,500 ft., 7th June 1921, Fletcher coll. (from the Imperial Entomologist of India) ; three males and two females, Kanasar, 6,750 ft., Chakrata, U. P., 19th May 1934, J. C. M. Gardner. On leaves of *Juglans regia*, (from Mr. Gardner).

This species is somewhat like *V cornuta* Scop., but differs in the wing-pattern and in having black, not yellow, pubescence on the dorsum of thorax and abdomen. Also the horns are about twice the head-length, in *cornuta* less, at times only half. In *cervicornis* the bristles are more outwardly directed, two at the tip and four irregularly along the stem ; in *cornuta*, besides the apical two, there are two on the stem, the inner shorter. In both species the inferior orbitals are flat and black.

The male has very slight black pubescence on the frons, stronger and longer in the female ; in *cornuta* slight and yellow. The ocellars are minute in the female, and seem to be quite absent in the male ; there is one superior orbital, four or five inferiors in the female.

On the dorsum of the thorax in the male is a pair of rather wide, sub-median, white-pollinose stripes, widening a little to the dorso-central bristles ; in the female the whole of the middle third of the dorsum appears to be slightly white-pollinose. What Brunetti refers to as " two, thin, darker, well-separated, median lines " may be a pair of brownish stripes on the dorso-central lines, and which are more apparent in the female.

The position of the upper cross-vein is a little variable ; in the male it is somewhat beyond the middle of the discal cell, in the female practically at the middle. The third vein may have one to five setulae between the knot and the upper cross-vein. The band at the apex of the wing is somewhat wider than in Brunetti's figure, and while in the females it may be well-connected to that over the lower cross-vein, in the male it tends to be disconnected.

Vidalia, sp., *prox.* **V. cornuta** Scop.

A female, Mashobra, 7,500 ft., in jungle, 7th June 1921, Fletcher coll. is very like a male I have of *V cornuta*, so much so that in the absence of specimens of the other sex in each case, it seems best to leave the species of this female undetermined for the present.

The head is normal, one superior and four inferior orbital bristles, the ocellars minute, and some pale pubescence on the frons ; the arista is pubescent. Thorax almost entirely chestnut, with a rather indistinct notopleural stripe ; very slight dust and pale pubescence on the dorsum ; chaetotaxy complete, two mesopleurals, pteropleural and sternopleural, four scutellars. The postscutellum is coloured like the rest of the thorax, not black as in *cornuta*. Legs normal. Wing practically as in *cornuta* ; the band over the upper cross-vein begins at the stigma, and passes more or less faintly to the middle of the third posterior cell, that over the lower cross-vein starts at the third vein, and widens over the cross-vein ; that at the middle of the outer part of the marginal cell reaches the third vein ; the outer ends of the marginal, submarginal and the upper outer corner of the first posterior cells are infuscated. The abdomen is reddish chestnut, with black pubescence, which, however, is strongly pale-shining obliquely. The base of the ovipositor is chestnut and just a little longer than the fifth segment.

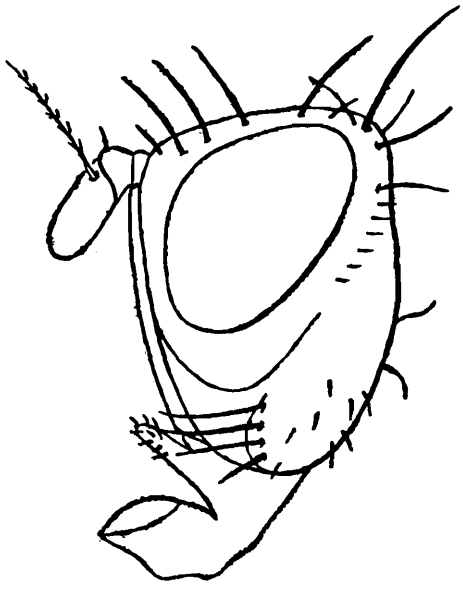
Vidalia trigenata, sp. nov.

A female, Naini Tal, 14th—20th July 1933, P. V Isaac, is somewhat difficult to locate generically in the absence of the male. Referring to what has already been said about *Aischrocrania*, this specimen runs fairly well to this genus in Hendel's tables. This, however, is mainly on account of the stronger ocellar bristles, as, apart from these, it runs to *Vidalia*. But the ocellars in *Vidalia* are variable and may be absent in the male, moderate in the female, that is, about half the distance from the nearest eye-margin in length ; in this specimen they are about as long as this distance. In any case, the female of *Aischrocrania* is still unknown, and it may show some modification corresponding to what is found on the male head. This female is thus perhaps best placed in *Vidalia* as the frons is normal, but it may be noted that the first antennal joint is rather longer than usual. It may be distinguished by the three or four strong genal bristles.

A yellowish species. *Head* (text-fig. 3) width one-fifth greater than height ; the lower occiput is greatly swollen and the eyes small. *Frons* flat, five-twelfths width of head and not quite one-fourth longer than wide ; with slight black pubescence ; bristles black, two superior and four inferior orbitals, ocellars moderate, the dot black. *Lunule* short. *Antennae* about half length of face, first joint longer than usual, arista pubescent. *Face* long and straight, cheeks half width of third antennal joint, genae wide, with a row of three strong bristles and a shorter one and some setulae below. *Eyes* with scattered, microscopic hairs.

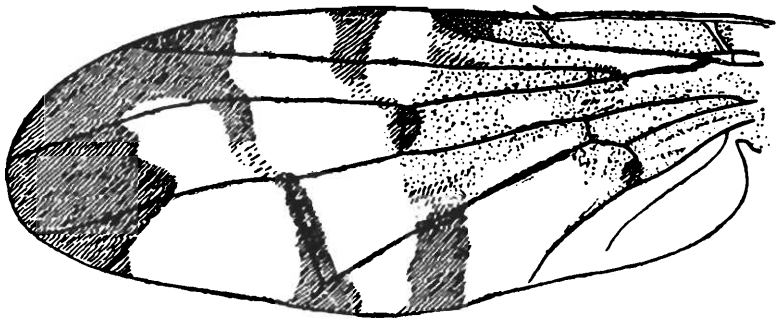
Thorax light chestnut ; dorsum blackish, with a pair of rather indistinct, wide, brownish-yellow stripes to dorso-central bristles, and a pair

above wing-base; pubescence black. Chaetotaxy complete, one mesopleural, the dorso-centrals a little behind line of anterior supra-



Text-fig. 3.—*Vidalia trigenata*, sp. nov. Head of female.

alars. *Scutellum* convex above, with four bristles of equal length. Legs normal. Wing (text-fig. 4) pattern of the *Trypeta artemisiae* type, but



Text-fig. 4.—*Vidalia trigenata*, sp. nov. Wing.

with more complete, although irregular, bands (brown) and rather extensive yellow areas (dotted); third vein with some scattered setulae to upper cross-vein. *Abdomen* shining chestnut with black pubescence; base black with reddish apex; about as long as fifth segment.

Vidalia hendeli, nom. nov.

1927. *Vidalia cervicornis*, Hend. (*nec.* Brun.) in Lindner, *Fl. Pal. Reg.* XLIX, *Tryp.*, p. 73.

As Hendel overlooked the use of the name *cervicornis* by Brunetti (*l. c.*), the above name is proposed for his species, the type of which is in the United States National Museum.

Vidalia triceratops Bez.

1913. *Vidalia triceratops*, Bezzi, *Mem. Ind. Mus.*, III, p. 137, pl. ix, fig. 43.

I have not seen specimens of this species. Some comparisons are given under the following species.

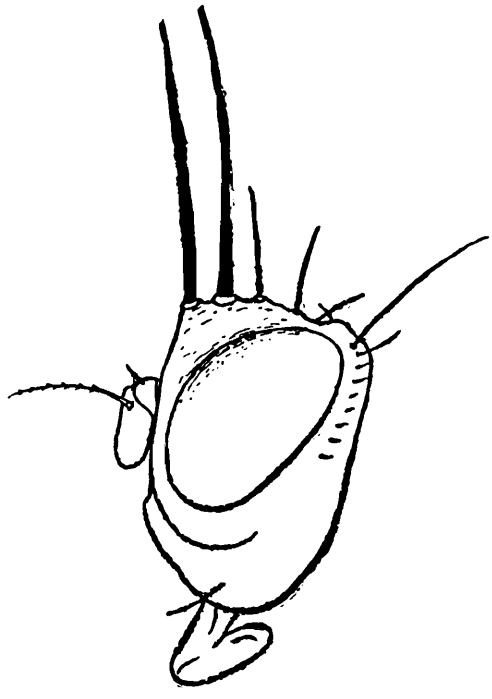
Vidalia melanonotum Brun.

1917. *Vidalia melanonotum*, Brunetti, *Rec. Ind. Mus.*, XIII, p. 96.

Two males and three females received from Mr. Gardner belong to this species, the labels read " Kanasar, 6750, Chakrata, U. P., 19th May 1934, J. C. M. Gardner."

Brunetti described the female. The head and bristles are normal, 4 or 5 inferior orbitals and 2 superior, the ocellars are about half the length of the inferior orbitals. In one female one superior and two of the inferior orbitals are bifid. On the frons is some black pubescence. The thoracic and abdominal pubescence is also black. There are two mesopleural bristles, and a sternopleural and a pteropleural are present ; the dorso-centrals a little behind the anterior supra-alars. Brunetti refers to " last segment (of abdomen) shining black "—this is the base of the ovipositor and is quite flattened as so often happens in dry specimens ; it is as long as the fifth segment.

In the male head (text-fig. 5) the sides of the frons are raised into



TEXT-FIG. 5.—*Vidalia melanonotum* Brun. Head of male.

broad carinae, lower behind ; on these are the four inferior orbital bristles, the anterior two thickened and long (about as long as height of head), the hind two half this length and of normal shape. There is only a single superior orbital, and the ocellars weaker than in the female. Further, the frons seems to be quite bare. The sides of the fourth and fifth segments of the abdomen are more or less black. Otherwise the male is like the female.

This species and *V triceratops* Bez. seem to be very much alike. In *melanonotum* the two anterior inferior orbitals are long and thickened, while in the other the anterior three are (Bezzi refers to them as the " *last* three i. or.") ; further two superior orbitals are recorded for the type, a male. There are also slight differences in the wing-pattern : in *triceratops* the large apical spot is placed obliquely, and there is in

the base of the wing a bar from the inner end of the stigma over the anal cross-veins, the latter absent in *melanonotum*.

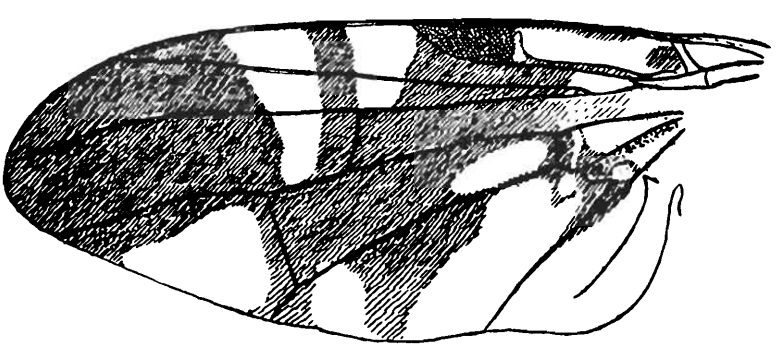
Vidalia fletcheri, sp. nov.

This species is very like *V ceratophora* Bez., but differs in the ornamentation of the head in the male, and in details of wing-pattern.

Type, a male, Sikkim, 5,000 ft., Kurseong, 7th to 20th June 1922, Fletcher coll. (from Imperial Entomologist).

Length 6 mm., of wing, 6 mm. *Head* (text-fig. 2, *b*) yellowish brown, length 1·0 mm., width, 1·8 mm., height to top of eye, 1·3 mm., to top of carina, 1·7 mm. *Occiput* flat, not very prominent below. Frons with carinae on sides of hind half bearing three inferior orbital bristles, the single superior orbital is a short, thin bristle on lower, hind slope, somewhat on inner side ; some integumentary spots on outer side of carinae ; ocellars very minute, slight pale pubescence. *Lunule* inconspicuous. *Antennae* normal, coloured as head, about three-fifths length of face ; arista pubescent. *Face* flat with shallow grooves ; cheeks narrow, appearing linear in profile, about quarter, genae about half width of third antennal joint. *Eyes* rather large. Palpi parallel-sided, bristly outwardly ; proboscis short. Bristles black, anterior two inferior orbitals ensiform, the first 0·5 mm., the second, 1·3 mm. in length, the hindmost of normal shape, rather thin.

Thorax : yellowish-brown, with slight integumentary spotting ; on dorsum slight silvery dust, but no indication of stripes, pubescence pale ; pleura and sterna more yellowish with an indistinctly yellow notopleural stripe. *Scutellum* and post-scutellum like dorsum, apex of former yellower with much integumentary spotting on rather flat disc. Bristles normal, black ; cervicals small, two mesopleurals, a sternopleural and pteropleural ; dorso-centrals midway between anterior and the inner posterior supra-alars ; four scutellars of about equal length. *Legs* yellow, anterior femora with usual row of long bristles below, middle tibiae with strong, black, apical spur, hind tibiae with strong row of short bristles. *Wing* (text-fig. 6) with black pattern very like that of



TEXT-FIG. 6.—*Vidalia fletcheri,* sp. nov. Wing.

V ceratophora, only second basal and anal cells, and oval area in base of discal hyaline ; third vein setulose to upper cross-vein.

Abdomen slightly more reddish brown than thorax, and largely black mottled ; pubescence black and strong bristles on sides of last three segments. *Genitalia* blackish, with rather long " forceps " and rather prominent, black, anal region.

Vidalia junodi (Bez.).

1926. *Hoplandromyia junodi*, Bezzi, *Boll. Lab. Zool. Portici*, XVIII, p. 286, fig. I, F.

Among some African Trypetid material of the British Museum collections kindly sent to me by Dr. John Smart are two pairs of this interesting species: two males, Mossel Bay, Cape Province, South Africa, July 1930, and August 1932, and a female, May 1930, as well as another female from the Katberg, Cape Province, September 1933, all collected by R. E. Turner. The type, a male, was taken at Elim, near Louis Trichardt, in the northern Transvaal. It seems opportune to include a record of these specimens here.

This is a striking species, with the head, thorax and legs reddish, the abdomen shining black and with a *Pseudospheniscus*-like wing-pattern. In the male, the carinae are on the hind part of the frons, and bear the inferior orbital bristles (text fig. 2, *d*); the female head is normal, the uppermost of the three inferior orbitals is close to and slightly before the single superior orbital; ocellars absent; there is slight, black pubescence anteriorly. Bezzi refers to differences in the wing-pattern between this and *tetracera* Bez. (the genotype), but after reading his description, it seems that the wing-pattern in the two species must be very much alike, hence that of *tetracera* also *Pseudospheniscus*-like. The post-scutellum (mesophragma of Bezzi) is reddish in *junodi*, black in *tetracera*.

Rhacochlaena Loew and **Staurella** Bezzi.

1913. *Staurella*, Bez., *Mem. Ind. Mus.*, III, p. 121.
1927. *Rhacochlaena*, Lw. *see* Hendel in Lindner, *Fl. Pal. Reg.*, XLIX, *Tryp.*, p. 69.

These two genera are closely allied, more so, perhaps, to each other than either is to *Euphranta* Lw. They agree in general appearance and in most characters, especially the peculiarly dusted and pseudo-punctate appearance of the dorsum of the thorax, dust being absent in *Euphranta*. In both, too, the single superior orbital bristle and the upper of the inferior orbitals are in close proximity. It may be said that *Staurella* differs from *Rhacochlaena* in having two, and not three, inferior orbitals. On the wing the whitish spot at the tip, absent in *Euphranta*, is characteristic in both; in *Staurella* the upper cross-vein is rather before the middle of the discal cell, while the wing-pattern is banded, strongly so in the genotype, *S. crux* Fabr. and in *S. dissoluta* Bez., but more broken in *S. nigripeda* Bez. (In the absence of specimens it is difficult to determine the position of *Staurella zeylanica* S. W which has a wing-pattern different from any of those noted). Species of *Rhacochlaena* have a characteristically reduced pattern, and it may be noted that, with regard to *S. nigripeda*, the wing-pattern, added to the fact that it has three inferior orbitals (as stated by Bezzi) seems to suggest that it might be better placed in *Rhacochlaena*.

As far as African species of *Rhacochlaena* are concerned, it may be noted that the eye is larger and the cheeks and genae correspondingly narrower, almost linear, than in the genotype, *R. toxoneura* Lw., of which

I have been able to examine a pair kindly sent to me on loan by Dr. M. Hering of Berlin-Dahlem.

The following new species is of interest as it appears to be the first from India definitely located in *Rhacochlaena*

Rhacochlaena cassiae, sp. nov.

As far as may be judged, the nearest ally of this species is the South African *Rhacochlaena major* Bez[1]. with which it agrees in general appearance, in wing-pattern, and in having a more plumose arista. There are only two inferior orbital bristles, as in *Staurella*, but it may be noted that although Bezzi states the type of *major* has three inferior orbital bristles, I have a large series of specimens most of which have only two, some three or a weak third. Thus *cassiae* and *major* seem to occupy a more or less intermediate position between *Staurella* and *Rhacochlaena*, but are perhaps best placed in the latter genus. The chief difference between *cassiae* and *major* is that in the former the head is distinctly —about one-eighth—wider than, and in the latter, as wide as the thorax at the notopleural bristles. In *cassiae* the dorsum of the thorax and of the abdomen is fairly uniformly blackish, while in *major* there is a pair of wide, brownish-black stripes, and the middle third of the abdomen yellow, the sides black. Also in *cassiae* there is a much wider and stronger, yellow notopleural stripe from and including the humerus.

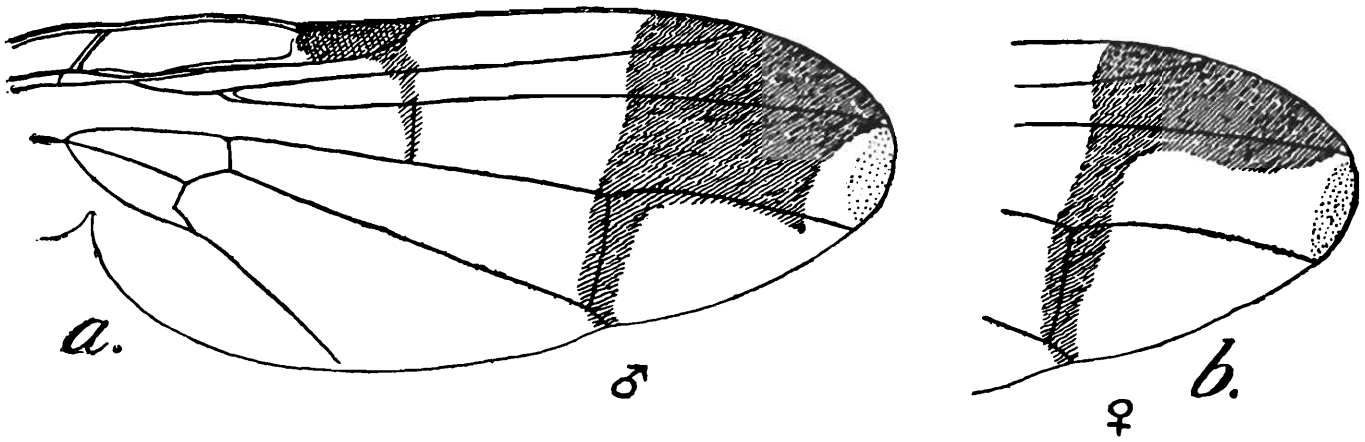
Holotype male, allotype female, two male and six female paratypes, Pusa, 2nd January 1934, Rangi coll. (received from the Imperial Entomologist of India) ; four male and four female paratypes, Dehra Dun, U. P., 12th December 1932, J. C. M. Gardner (received from Mr. Gardner).

Length, male, 6·5 mm., female, 7·0 mm., of wing in both 6·0 mm. *Head* about one-eighth wider than thorax at notopleural bristles, proportions of length, height and width, 4, 5 and 7, perhaps a fraction shorter in female than in male ; *occiput* flat, not prominent below, the bristles fine and black, *frons* moderately prominent before eyes, rather hollowed, parallel-sided, about two-fifths longer than wide, and as wide as an eye, yellow, broadly shining brown centrally, the brown including the ocellar dot, the upper inferior orbital, the superior orbital and barely touching lunule ; rather sparse black pubescence ; bristles black, the single superior next to, but slightly behind, the upper of the two inferior orbital bristles, ocellars minute and fine. *Lunule* yellow, short. *Antennae* about as long as face, light brownish, blackish on outer sides, end of third joint moderately acuminate but rounded at end, arista short plumose (or long pubescent). *Face* concave, triangular, being wide across the moderately prominent epistome, yellow, dull brown across lower half ; cheeks and genae narrow, yellow, genal bristle strong. *Eyes* rather large, rounded and prominent. Yellow palpi broadened to bristly apex, proboscis short yellow.

Thorax moderately large, but rather narrow—a quarter longer than wide—notum shining blackish in front, dark brownish with white silvery dust centrally, paler laterally, and on hind half a median triangular fascia widened behind to include prescutellar bristles ; humeri and upper

[1] Bezzi, *Bull. Ent. Res.*, XV, p. 110 (1924).

half of mesopleura bright yellow, otherwise pleura and rest of thorax dark blackish-brown, except scutellum, yellow, flat on top and more or less triangular. Bristles normal, black, no presuturals, dorso-centrals half-way between anterior supra-alars and pre-scutellars, one mesopleural, pteropleural and sternopleural present. *Halteres* pale yellowish. *Legs* yellow with black clothing, front femora rather thickened. *Wing*



TEXT-FIG. 7.—*Rhacochlaena cassiae*, sp. nov. *a*. Wing of male *b*. outer end of wing of female, showing slight difference in pattern ; the whitish apical spot is dotted.

(text-fig. 7) with reduced pattern with white apical spot ; venation, normal, third vein setulose to upper cross-vein.

Abdomen narrow ; shining blackish-brown, yellowish at extreme base, and segments two and three in male, two, three and four (least on four) largely with yellowish tinge centrally the combined first and second tergites are unusually long, but are separated from one another by a transverse ridge ; pubescence black, whitish on the yellow parts, hind marginal bristles strong on fifth segment, otherwise weak. Male genitalia with bulbous part black, and a pair of long, yellow processes, there is also a curious, flattened, bristly appendage which is probably the proctodaeum or anus. The base of the ovipositor is flattened and appears as wide as the segment before, it is about as long as segments three, four and five together, brownish like the pre-abdomen, the short pubescence black.

Biology.—According to notes on both lots of specimens they were reared from larvae infesting the pods of *Cassia fistula* (Leguminosae). This is of much interest both because the Leguminosae are a group of plants not usually infested by Trypetidae, and that it seems to be the first record of the rearing of a species of *Rhacochlaena*, and of allied genera.

Staurella crux (Fabr.).

1794. *Musca crux*, Fabricius, *Ent. Syst.*, IV, p. 358, fig. 190.
1805. *Dacus crux*, Fabricius, *Syst. Antl.*, p. 277, fig. 23.
1830. *Trypeta crux*, Wiedemann, *Auss. Zweift. Ins.*, II, p. 488, fig. 19.
1913. *Staurella crux*, Bezzi, *Mem. Ind. Mus.*, III, p. 122, pl. ix, fig. 33.

In the material from the Imperial Entomologist is a female, Pusa, Bihar, 20th March 1913, F. M. H.

The following notes show a few differences from and additions to what Bezzi has recorded : The upper of the two inferior orbital bristles

is near the single superior orbital. The face is short and flat, with the epistome jutting out at an angle. The dorsum of the thorax has a peculiar, punctate appearance with slight whitish dust; the anterior two-thirds is largely brownish with brown pubescence, but on the sides before the suture the pubescence is yellowish, the posterior third is yellow with yellow pubescence. The pubescence on the pleura is brownish. The wing-pattern is like that given in Bezzi's figure, but the band from the stigma over the upper cross-vein reaches the hind margin of the wing; the third vein has a few setulae to the upper cross-vein and one just beyond; the costal bristle is inconspicuous. The abdomen is brown at the base, but most of the second and all the third segment yellow with yellow pubescence; segments four, five and six are brown with brown pubescence, the last the darkest. The base of the ovipositor is dark brown with brown pubescence, and about as long as the last three tergites of the pre-abdomen.

Staurella dissoluta Bez.

1913. *Staurella dissoluta*, Bezzi, *Mem. Ind. Mus.*, III, p. 123, pl. ix, fig. 34.

This species is very like the preceding; there are two females, Dehra Dun, 7th June 1932, P. V Isaac coll., and another Pusa, Bihar, 27th April 1913, F. M. H., from the Imperial Entomologist. Bezzi's description deals with the wing alone, and, apart from the general resemblance to *S. crux*, the following points may be noted. *Frons*; pubescence black, the vertical plates rather conspicuous and shining translucent in these specimens, the upper of the two inferior orbital bristles not quite as close to the single superior orbital as in *crux*, the ocellars weak. *Antennae* a little longer than the short face, the arista short, plumose, the epistome projecting as in *crux*. *Thorax* discoloured in specimens, but generally as in *crux*, pubescence pale, two mesopleural and four scutellar bristles. *Wing* as in Bezzi's figure, the apex whitish and a few setulae at base of third vein. *Abdomen* black with black pubescence, on second segment a semilenticular area on hind half, and a shallow one on hind edge of third, the pubescence on these areas yellow. Base of ovipositor rather narrow, black with some reddish tinge and black pubescence; as long as last four segments of pre-abdomen.

Spheniscomyia Bezzi.

1913. *Spheniscomyia*, Bezzi, *Mem. Ind. Mus.*, III, p. 146.
1927. *Spheniscomyia*, Hendel, in Linder, *Fl. Pal. Reg.*, XLIX, *Tryp.*, p. 105.
1931. *Spheniscomyia*, Hendel, *Bull. Soc. R. Ent. d'Egypte*, V (n. s.), p. 4.
1933. *Spheniscomyia*, Shiraki, *Mem. Fac. Sci. Agric., Taihoku Univ.*, VIII, p. 353.

It seems that only four species should be included in this genus at present. Various other African species have been included by authors, but these have or should be removed. The four are: (1) *filiola* Lw., the genotype, and *quadrincisa* Wied. (recorded from India by Bezzi, *l. c.*) both of which have three hyaline indentations on the hind margin of the wing. (2) *sexmaculata* Macq. the ethiopian, and *atilia* Walk. the oriental species. These have four indentations on the hind margin

of the wing and the third vein setulae ; they may be distinguished from one another as follows :—

Hind tibiae yellow, dorsum of thorax more strongly yellow-dusted and the first hyaline indentation from base of wing narrower. *atilia* Walk.

Hind tibiae black, only yellow distally, dorsum of thorax thinly dusted, showing as a rule three bare stripes, first hyaline indentation broader. *sexmaculata* Macq.

Spheniscomyia atilia Walk.

1913. *Spheniscomyia sexmaculata*, Bezzi (*nec* Macquart), *Mem. Ind. Mus.*, III, p. 148.

Three specimens, New Forest, Dehra Dun, a male, 26th September 1927, R. N. Mathur, a male, 21st November 1928, N. C. Chatterjee, and a female, 27th March 1928, S. D. Bhatt. (from Mr. Gardner).

These are rather small and in poor condition. As they are rubbed, the dorsum of the thorax is not as thickly dusted as in specimens I have seen from Formosa. They agree otherwise with *atilia*, particularly as the hind tibiae are yellow. The first hyaline indentation from the base of the wing is narrower, but not much more so, than the black before it.

S. atilia is probably common in India, and, as is the case of *S. sexmaculata* in South Africa, will be found to breed in the flowers of Labiate plants.

The numerous specimens recorded by Bezzi (*l. c.*) are undoubtedly this species because he states that the hind tibiae are yellow.

Platensina acrostacta Wied.

1824. *Platensina acrostacta*, Wiedemann, *Anal. Ent.*, LIV, p. 119.
1830. *Trypeta acrostacta*, Wiedemann, *Auss. Zweit. Ins.*, II, p. 501, fig. 39.
1842. *Ensina guttata*, Macquart, *Mem. Soc. Lille*, I, p. 387, pl. xxxi, fig. 10.
1913. *Tephrostola acrostacta*, Bezzi, *Mem. Ind. Mus.*, III, p. 153, pl. x, fig. 57.

The group to which this species belongs has been termed the Platensinini and it is dealt with in a paper appearing in Vol. 2, pt. 2 of the Entomology Memoirs (Dept. of Agric., Union of South Africa).

There are from the Imperial Entomologist four males and a female all collected at Pusa, Bihar, 31st May 1906, Y. R. C., 4th March 1912, and 2nd April 1913, C. S. S., 27th October 1913, Md. S., and 19th March 1914, J. L. M.

There is a little, coarse, yellow pubescence on the frons ; on the third vein three or four setulae at the base and a sparse row from upper cross-vein to third quarter of last section of the vein ; on the hind tibiae a row of setae as in *Pliomelaena*, or it may be only weakly developed ; the abdomen quite shining black or more or less extensively reddish ; the base of the ovipositor as long as the third to sixth segments together.

Pliomelaena zonogastra (Bez.).

1913. *Tephritis zonogastra*, Bezzi, *Mem. Ind. Mus.*, III, p. 164, pl. x, fig. 66.

A male, Simla, October 1908, F. M. M. labelled " *Tephritis zonogastra* Bez. det. Brunetti," (from the Imperial Entomologist) and two males, Mussoorie, 23rd June 1927, C. C. Ollenbach (from Mr. Gardner).

An examination of these specimens showed that the species should be placed in the genus *Pliomelaena*, and that it is indeed very similar to certain South African species. These, like the previous one, are also included in the Platensinini. The two to which *zonogastra* shows most resemblance are *P. rufiventris* Bez., and *P. stevensoni* Mro. (a newly described species) both of which have a more predominantly reddish abdomen, and the hyaline spots on the wing developing an anchor-like pattern. *P. stevensoni* is distinguished by the two pteropleural bristles and the third vein setulose over the discal cell ; in the other two there is a single pteropleural as usual, but in *zonogastra* the third vein is practically bare, or with only two or three setulae near the base and the dorso-central bristles just on or barely before the anterior supra-alars, while in *rufiventris* the third vein is setulose to the middle of the first posterior cell and the dorso-centrals close to the suture.

African species infest the flowers of Acanthaceous plants, and it may be expected that the Indian species do as well.