

DIPTERA FROM NEPAL



THE FRUIT FLIES (DIPTERA : TEPHRITIDAE)

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AND

THE BLOW FLIES (DIPTERA : CALLIPHORIDAE)

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DIPTERA FROM NEPAL

THE FRUIT FLIES (DIPTERA: TEPHRITIDAE) *

By D. ELMO HARDY

SYNOPSIS

Only twenty specimens of Tephritidae were collected by the British Museum (Natural History) Expedition to East Nepal, 1961-62. This small group, however, contained four subfamilies, six tribes, nine genera, and eleven species ; six of the species are apparently undescribed.

THIS collection is a most important one since it represents the first information we have concerning the fruit fly fauna of this little known region and I am most grateful to R. L. Coe and the British Museum (Nat. Hist.) for having had the privilege of studying this interesting material. For the art work I am indebted to Mrs. Elizabeth Twigg-Smith Pfeffer.

TAXONOMIC ARRANGEMENT OF THE TEPHRITIDAE IN THE COLLECTION

Subfamily Dacinae

Tribe Dacini

Callantra nepalensis sp. n.

Subfamily Aciurinae

Tribe Aciurini

Oxyaciura monochaeta (Bezzi)

Tribe Tephrellini

Platensina zodiacalis (Bezzi)

Subfamily Trypetinae

Tribe Gastrozonini

Taeniostola limbata Hendel

Tribe Trypetini

Chetostoma interrupta sp. n.

Rhagoletis rumpomaculata sp. n.

Subfamily Tephritinae

Tribe Tephritini

Actinoptera sp. n., being described by Ito

Stylia sororcula (Wiedemann)

Tephritis coei sp. n.

T. daedala sp. n.

T. spilopectera Bezzi

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KEY TO TEPHRITIDAE FROM NEPAL IN THE BRITISH MUSEUM EXPEDITION COLLECTION

- 1 Chaetotaxy normal, with the usual complement of head and thoracic bristles.
Antennae not elongated ; abdomen not petiolate 2
- Ocellar, postocellar, dorsocentral, presutural, humeral, and sterno-pleural bristles lacking. Antennae elongate (Text-fig. 1) ; abdomen petiolate (Text-fig. 4) ; wasp-like flies. Subfamily Dacinae **Callantra nepalensis** sp. n.
- 2 Occipital hairs and postocellar bristles thin, pointed and brown to black in colour. Microchaetae of mesonotum not scale-like. Wings banded with brown (Text-figs. 13, 21 and 26), or predominantly black with hyaline wedges extending from the costal margin into cell R_1 and also with hyaline marks along the posterior margin (Text-fig. 7) 3
- Occipital row with at least some yellow-white scale-like setae ; postocellar bristles yellow-white and flattened. Mesonotum covered with scale-like setae. Wings variously spotted 6
- 3 Arista short-pubescent. Thorax predominantly or entirely black 4
- Arista plumose (Text-fig. 12). Thorax yellow with four black vittae extending down mesonotum (Text-fig. 14). Wings as in Text-fig. 13. Subfamily Trypetinae, Tribe Gastrozonini **Taeniostola limbata** Hendel
- 4 Wings banded with brown (Text-figs. 21 and 26). Scutellum with four bristles. Subfamily Trypetinae, Tribe Trypetini 5
- Wings black with hyaline markings along costal margin and a round hyaline spot in cell R_5 (Text-fig. 7). Only two scutellar bristles. Female ovipositor very elongate (Text-fig. 9). Subfamily Aciurinae, Tribe Aciurini **Oxyaciura monochaeta** (Bezzi)
- 5 Each gena with a dense clump of black bristles (Text-fig. 18). Vein R_{4+5} setose to beyond the $r-m$ cross-vein. A complete brown band extends across the wing at a level with the m cross-vein (Text-fig. 21) **Chetostoma interrupta** sp. n.
- Genae rather sparsely setose. Vein R_{4+5} with only two setae at the base. Wing with no such cross-band and marked as in Text-fig. 26 **Rhagoletis rumpomaculata** sp. n.
- 6 Abdomen densely gray-pollinose and covered with yellow-white, scale-like hairs. Anterior dorsocentral bristles situated distinctly anterior to the supra-alar bristles, usually near the suture. Wings 2.6-2.8 times longer than wide, spotted or marked with brown as in Text-figs. 28, 31, 34, 36 and 38. Subfamily Tephritinae, Tribe Tephritini 7
- Abdomen polished black, and black setose, marked with yellow basally. Anterior dorsocentral bristles situated about in line with the anterior supra-alars. Wings broad, only two times longer than wide and black with hyaline spots (Text-fig. 11). Subfamily Aciurinae, Tribe Tephrellini **Platensina zodiacalis** (Bezzi)
- 7 Lower margin of head longer than upper. Proboscis elongate and geniculate (Text-fig. 29). Wings irregularly spotted as in Text-fig. 31 **Stylia sororcula** (Wiedemann)
- Not as above 8
- 8 Scutellum with four bristles. Two pairs of superior fronto-orbital bristles present. Wings as in Text-figs. 34, 36 and 38 **Tephritis** Latreille 9
- Only two scutellar bristles and one pair of superior fronto-orbitals present. Wings as in Text-fig. 28. **Actinoptera** sp. n.
to be described by Ito
- 9 A large dark brown to black spot covers the anterior median portion of the wing above the $r-m$ cross-vein (Text-fig. 34). Femora black **coei** sp. n.
- Wings lacking such a spot. Femora yellow 10
- 10 Mesonotum with three brown vittae. Scutellum with a brown spot on each side. Terga three to five each with a pair of submedian brown spots. Apices of cells R_5 and 2nd M_2 hyaline ; wing marked with narrow, transverse streaks of brown (Text-fig. 38) **spiloptera** Bezzi

- No spots or vittae on thorax or abdomen. Apices of cells R_5 and 2nd M_2 marked with brown ; wings largely grey-brown with round hyaline spots (Text-fig. 36)

daedala sp. n.

Subfamily DACINAE

Tribe Dacini

CALLANTRA Walker

Callantra Walker, 1860, *Linn. Soc. Lond. (Zool.)* 4 : 154.

Mellesis Bezzi, 1916, *Bull. ent. Res.* 7 : 114.

Calantra Hendel, 1914, *Wien. ent. Ztg.* 33 : 74.

This genus, composed of approximately two dozen known species, is apparently confined to the Oriental and Pacific regions. These are wasp-like in appearance and are readily differentiated from other Dacini by the elongate, slender antennae (Text-fig. 1) ; the second and third segments combined are about equal to the vertical length of the head, and the length of the entire antenna is greater than the combined lengths of the front and the face ; the first antennal segment is equal in length to the second and at least half as long as the face ; and by the strongly clavate and petiolate abdomen, which bears a prominent hump on each side of the first segment (Text-fig. 4).

Type species : *Callantra smieroides* Walker.

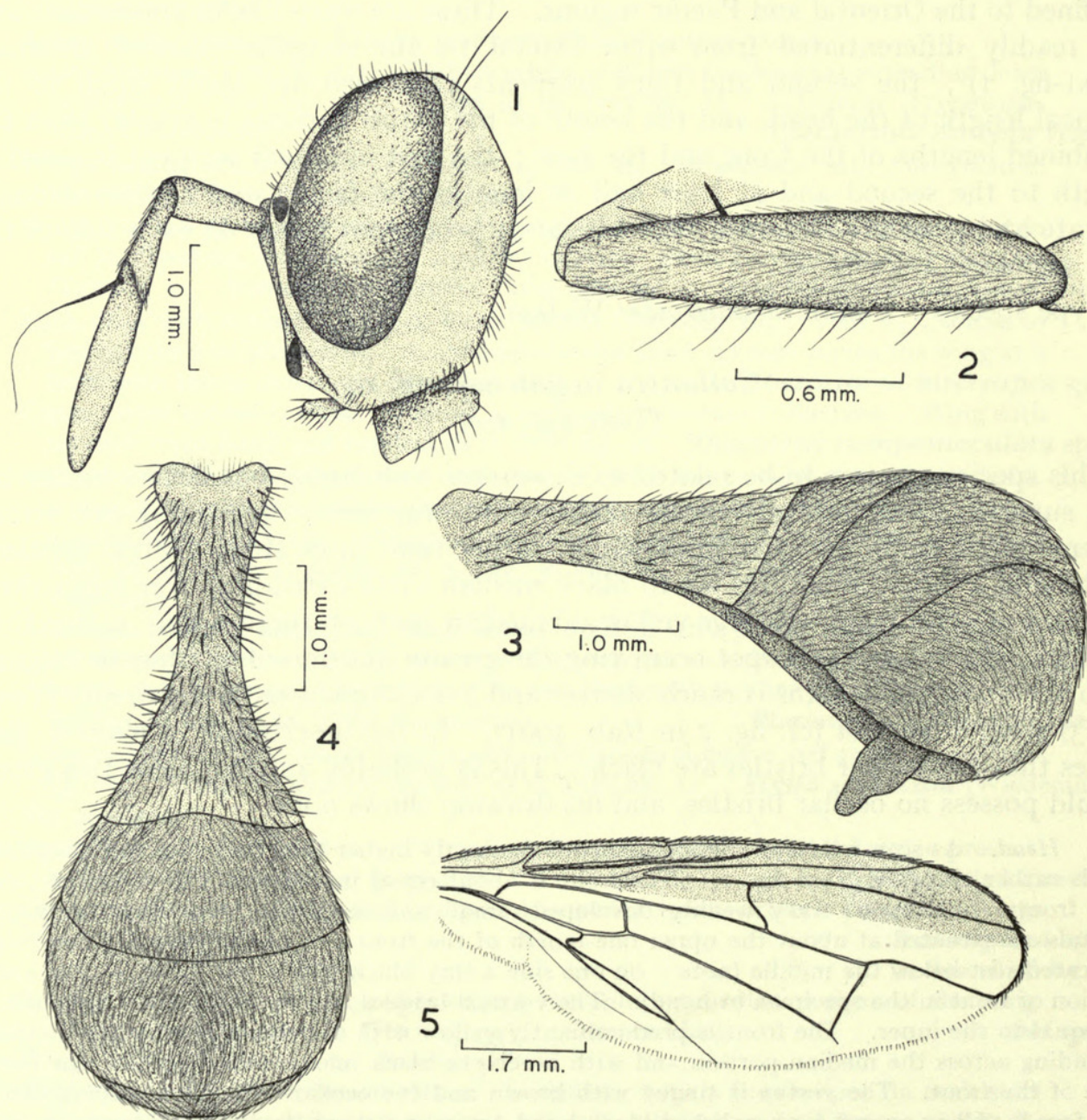
Callantra nepalensis sp. n.

(Text-figs. 1–5)

This species appears to be related to *C. munroi* Rab (1961) but differs by having two superior fronto-orbital bristles rather than only one ; by having one strong anteroventral spine on each front femur, rather than three stout ventral bristles ; by having a longitudinal, brown to black median vitta extending over terga three and four separating off two large yellow submedian spots on tergum four, rather than having a single large pale spot occupying the greater portion of the fourth tergum. Also the female ovipositor is much shorter and less conspicuous in *nepalensis* (Text-fig. 3) than in *munroi* (cf. fig. 2 in Rab, 1961). In the description of *munroi*, Rab states that the ocellar bristles are black. This is probably an error since this group should possess no ocellar bristles, and his drawing shows none.

♀. *Head.* As seen in lateral view the head is distinctly higher than long and the compound eye is rather elongate (Text-fig. 1). The front is about equal in width to the compound eye. The frontal bristles are very weakly developed, small and setae-like, two superior fronto-orbitals are situated at about the upper one-fourth of the front and one inferior fronto-orbital is located just below the middle (note : on one side a tiny black seta is also present near lower portion of front in the specimen at hand). The vertical bristles are well developed, the outer is subequal to the inner. The front is predominantly yellow with a transverse grey-black streak extending across the median portion and with a velvety black mark on each side at the lower edge of the front. The vertex is tinged with brown and the ocellar triangle is shining black. The face is yellow except for a polished black band extending along the lower margin. A faint indication of a brownish discoloration is present at the lower portion of each gena. The occiput, mouthparts, and palpi are yellow, the latter lack bristles or prominent setae. The antennae are

rufous, tinged with brown. The first two segments are approximately equal in length, the third is almost equal to the two basal segments (Text-fig. 1). *Thorax*. Predominantly rufous, brightly marked with yellow on the humeri, on the suture, the notopleural calli, the scutellum, the posterior one-third to two-fifths of each mesopleuron, the major portion of each metapleuron, and with a spot of yellow at the upper median edge of each sternopleuron. A faint indication of a median yellow mark is present, extending from behind the suture about halfway to the hind margin of the mesonotum. The anterior margin of the scutellum is narrowly bordered with black. The metanotum is shining black on the sides and a vertical streak of black extends through the median portion of each mesopleuron; the front portion of the mesopleuron is yellow, tinged with rufous. Only the postalar bristles are developed on the mesonotum except for the small notopleural bristles. One pair of small scutellar bristles are present. These are approximately equal in size to the posterior supra-alars. The scutellum is approximately three times wider than long. *Legs*. Predominantly rufous, tinged with brown. The bases of the



FIGS. 1-5. *Callantra nepalensis* sp. n. 1. head, lateral; 2. front femur; 3. ♀ abdomen, lateral; 4. ♀ abdomen, dorsal; 5. wing.

mid and hind femora are pale yellow. The hind femora are blackened ventrally. The tarsi are yellow, tinged with brown. The legs are yellow pilose. Each front femur has one strong posteroventral spine at about the apical third of the segment plus a small black bristle (Text-fig. 2). *Wings*. With a broad yellow-brown band along the costal margin, extending across the wing into the upper one-third to one-half of cell R_5 (Text-fig. 5). The second, third and fifth costal sections are approximately equal in length; the fourth costal section is approximately one-fifth longer than the others. The $r-m$ cross-vein is situated near the middle of cell 1st M_2 and is rather strongly curved. The cubital cell is developed into a long slender apical point which is approximately equal in length to the basal portion of the cell (Text-fig. 5). *Abdomen*. Very strongly petiolate, predominantly red, tinged with brown and densely white pilose, especially on the sides. The base of the first tergum is yellow, the apex of the second is yellow, and a pair of large yellow submedian spots are present on terga four and five, these are separated by a median brown to black vitta (Text-fig. 4). The ovipositor is short, inconspicuous, mostly concealed within the ventral concavity of the abdomen and protrudes but a short distance beyond the margins of the terga (Text-fig. 3).

Length : Body, 9.6 mm. ; wings, 8.9 mm.

♂ unknown.

Holotype ♀. E. NEPAL : Evergreen shrubs in rocky ravine on east shore of River Arun, c. 2000', 25.xii.1961 (R. L. Coe), B.M. (Nat. Hist.).

Subfamily ACIURINAE

Tribe Aciurini

OXYACIURA Hendel

Oxyaciura Hendel, 1927, 49. Trypetidae, in Lindner, *Die Fliegen der Palaearkt. Reg.* 5 : 111.

This genus is readily recognized by the bare vein R_{4+5} ; by having only two scutellar bristles; and by having the $r-m$ cross-vein situated well beyond the middle of cell 1st M_2 . The only previously recorded Oriental species is *O. formosae* (Hendel), which was placed in this genus by Shiraki, 1933 : 358. This combination was also listed by Chen (1948 : 70).

Type species : *Aciura tibialis* Robineau-Desvoidy.

***Oxyaciura monochaeta* (Bezzi) comb. n.**

(Text-figs. 6-9)

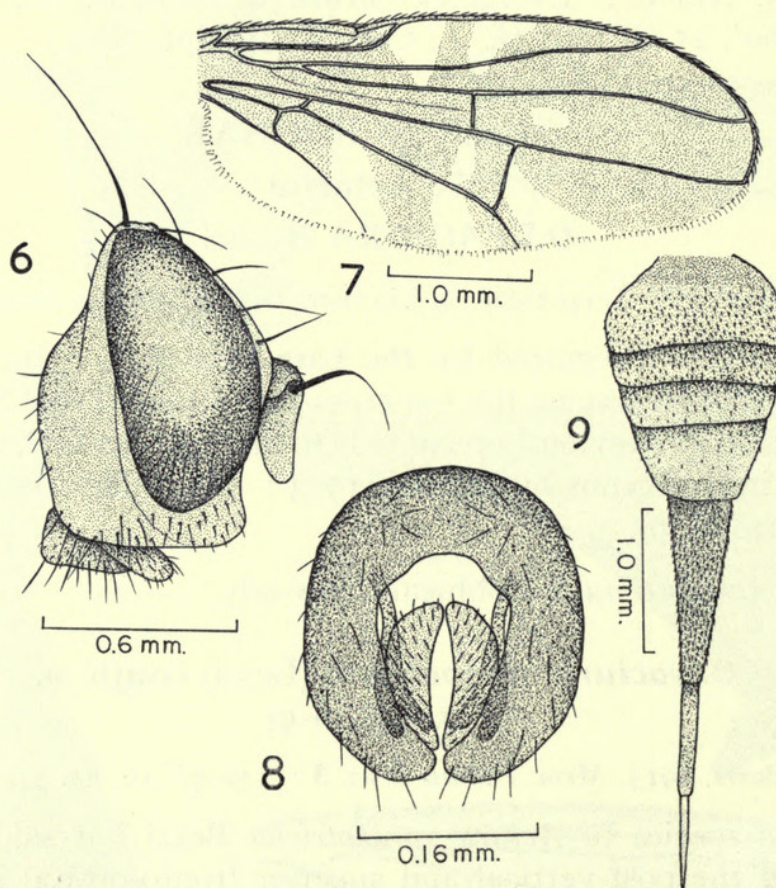
Aciura monochaeta Bezzi, 1913, *Mem. Indian Mus.* 3 : 150, pl. 10, fig. 54.

Bezzi allied this species to *Aciura xanthotricha* Bezzi but said that *monochaeta* differed by having the post-vertical and superior fronto-orbital bristles black, the median portion of the front very sparsely haired, and the ovipositor narrow and equal in length to the abdomen; rather than having the post-vertical and the superior fronto-orbital bristles pale yellow, the front clothed with short and thick whitish hairs, and the ovipositor broader, shorter than the abdomen in *xanthotricha*. As noted above, it is probable that the latter species also fits in the genus *Oxyaciura*.

This species is readily recognized by the generic characters, by the distinctive wing markings (Text-fig. 7), the predominantly black coloration, and the long ovipositor of the female (Text-fig. 9).

The antennae are yellow, the third segment is three times longer than wide. The aristae are distinctly pubescent. The palpi are entirely yellow, thickly setose around the margins. The head bristles are entirely black. The ocellar and postocellar bristles are short, approximately two-thirds as long as the superior fronto-orbital bristles. The front possesses one pair of superior fronto-orbitals and three pairs of inferior fronto-orbitals. The front is yellow to rufous, tinged lightly with brown and rather thickly covered with yellow-brown pollen. The front is approximately equal in width to one compound eye. The head is shaped as in Text-fig. 6. The thorax is entirely polished black in ground colour, covered with grey pollen. The anterior dorsocentral bristles are situated slightly in front of a line drawn between the anterior supra-alars. The scutellar bristles are strong, approximately two times longer than the posterior dorsocentrals. The wings are marked as in Text-fig. 7. The coxae and femora are predominantly dark brown to black, tinged with yellow on the apices of the first two pairs. The tibiae and tarsi are yellow. The abdomen is polished brown to black in ground colour, covered with light grey pollen. The ovipositor when fully extended is considerably longer than the abdomen (Text-fig. 9). The ovipositor measures approximately 3 mm. (In the specimen figured the piercer is not completely extended.) The male genitalia are as in Text-fig. 8.

Length : Body, 3.7–4.0 mm.; wings, 3.9–4.5 mm.



FIGS. 6–9. *Oxyaciura monochaeta* (Bezzi). 6. head, lateral; 7. wing; 8. ♂ genitalia; 9. ♀ abdomen, dorsal.

Type locality : INDIA : Calcutta.

Type in the Zoological Survey of India collection.

E. NEPAL : Taplejung Distr., Dobhan, c. 3500', small pockets of plants on arid slopes above R. Maewa, 1 ♂, 2.i.1962 (R. L. Coe).

INDIA : U. P., Tanakpur, 1 ♂, 1 ♀, iv.1949 (N. D. Waters).

Tribe **Tephrellini**
PLATENSINA Enderlein

Platensina Enderlein, 1911, *Zool. Jb., Abt. Syst.* **31** (3) : 453.

Tephrostola Bezzi, 1913, *Mem. Indian Mus.* **3** : 153.

The genus is readily recognized by its broad wings with distinctive wing markings and by the presence of two costal bristles at the apex of the subcostal vein.

Type species : *Platensina sumbana* Enderlein.

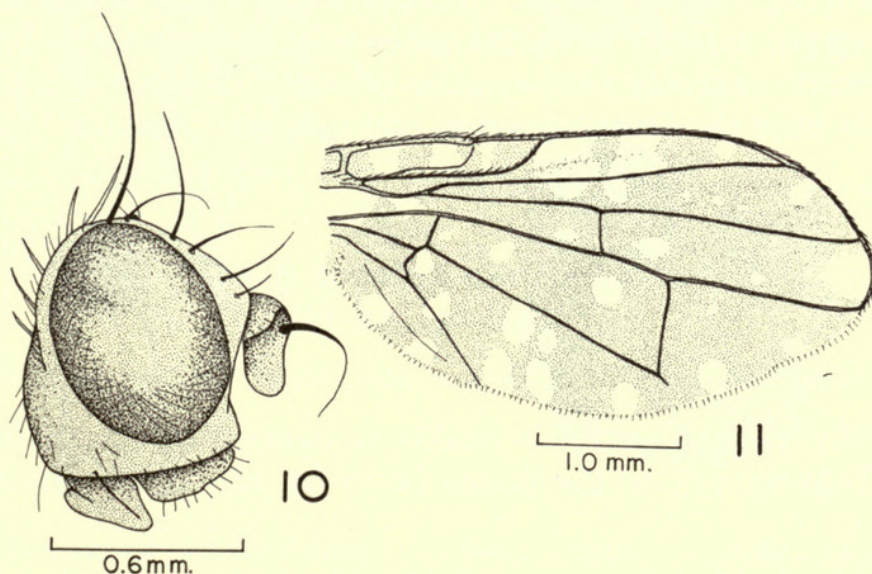
Platensina zodiacalis (Bezzi)
(Text-figs. 10-11)

Tephritis zodiacalis Bezzi, 1913, *Mem. Indian Mus.* **3** : 163, pl. 10, fig. 65.

This species was badly misplaced by Bezzi and should actually have fitted in his genus *Tephrostola* (1913 : 153), which is a synonym of *Platensina* Enderlein (cf. Hendel (1915 : 461) and Hardy (1959 : 208)).

This species is differentiated from other *Platensina* by the distinctive wing markings as shown in Text-fig. 11 and by having only two scutellar bristles developed.

The head excepting the compound eyes is yellow, covered with brownish yellow pollen over the front. The front is approximately equal in width to one compound eye and has numerous small, flat setae in the middle just above the lunule. Two superior fronto-orbital and three inferior fronto-orbital bristles are present. A small dark brown to black spot is present at the base of each frontal bristle (excepting the upper superior fronto-orbitals), and a small brown to black streak is present on each side at the extreme lower margin of the front, opposite the bases of the antennae. The antennae are yellow, the third segment is one and one-half to two times longer than high and is straight on the upper margin (Text-fig. 10). The aristae are conspicuously pubescent. The mouthparts and palpi are pale yellow-white, the palpi are very sparsely setose along the upper margin. As seen in lateral view, the head is shaped as in



FIGS. 10-11. *Platensina zodiacalis* (Bezzi). 10. head, lateral ; 11. wing.

Text-fig. 10. The dorsum of the thorax is black in ground colour, densely grey-pollinose and with a distinct brown mark at the base of each bristle, a brown mark on each side in line with the suture, and a faint discoloration of brown extending down the anteromedian half of the mesonotum. The pleura are largely rufous, tinged with brown in ground colour and densely grey-pubescent. The metanotum is black, covered with grey pollen. The legs are entirely yellow. Each front femur has three rather strong posteroventral bristles on the apical two-fifths of the segment. The wings are as in Text-fig. 11. Two prominent costal bristles are present. The abdomen is predominantly polished black, discolored with yellow in the median portion of the first tergum and with yellow markings on the sides of the first four terga.

Length : Body, 3.75 mm.; wings, 4.3 mm. by approximately 2.15 mm. in width.

The above description is based upon a single male specimen.

The species has been previously recorded only from INDIA. The type locality is Calcutta. The type is in the Indian Zoological Survey collection.

E. NEPAL : Arun Valley, east shore of R. Arun below Tumlingtar, c. 1800', swept from *Ricinus communis* L., 1 ♂, 23.xii.1961 (R. L. Coe).

Subfamily TRYPETINAE

Tribe Gastrozonini

TAENIOSTOLA Bezzi

Taeniostola Bezzi, 1913, *Mem. Indian Mus.* 3 : 119.

This genus is differentiated by the plumose arista ; by having vein R_{4+5} setose ; by the middle tibia having only one apical spine ; the third antennal segment rounded at the apex ; the ocellar bristles strongly developed ; two or three inferior fronto-orbital bristles present ; and the wings with characteristic transverse bands.

This genus shows close relationship to *Gastrozona* and is separated largely on the basis of the strong orbital bristles. Apparently the number of inferior fronto-orbital bristles is somewhat variable ; the type was reported to have two inferior fronto-orbitals and several of the species described by Hering have been reported to have three inferior fronto-orbitals. It is probable that *Taeniostola gracilis* Bezzi (1913 : 120) does not actually fit in this genus since this species has only one inferior fronto-orbital bristle and only two scutellar bristles. The genus is presently known from five species from the Oriental region and one from Borneo.

Type species : *Taeniostola vittigera* Bezzi.

Taeniostola limbata Hendel

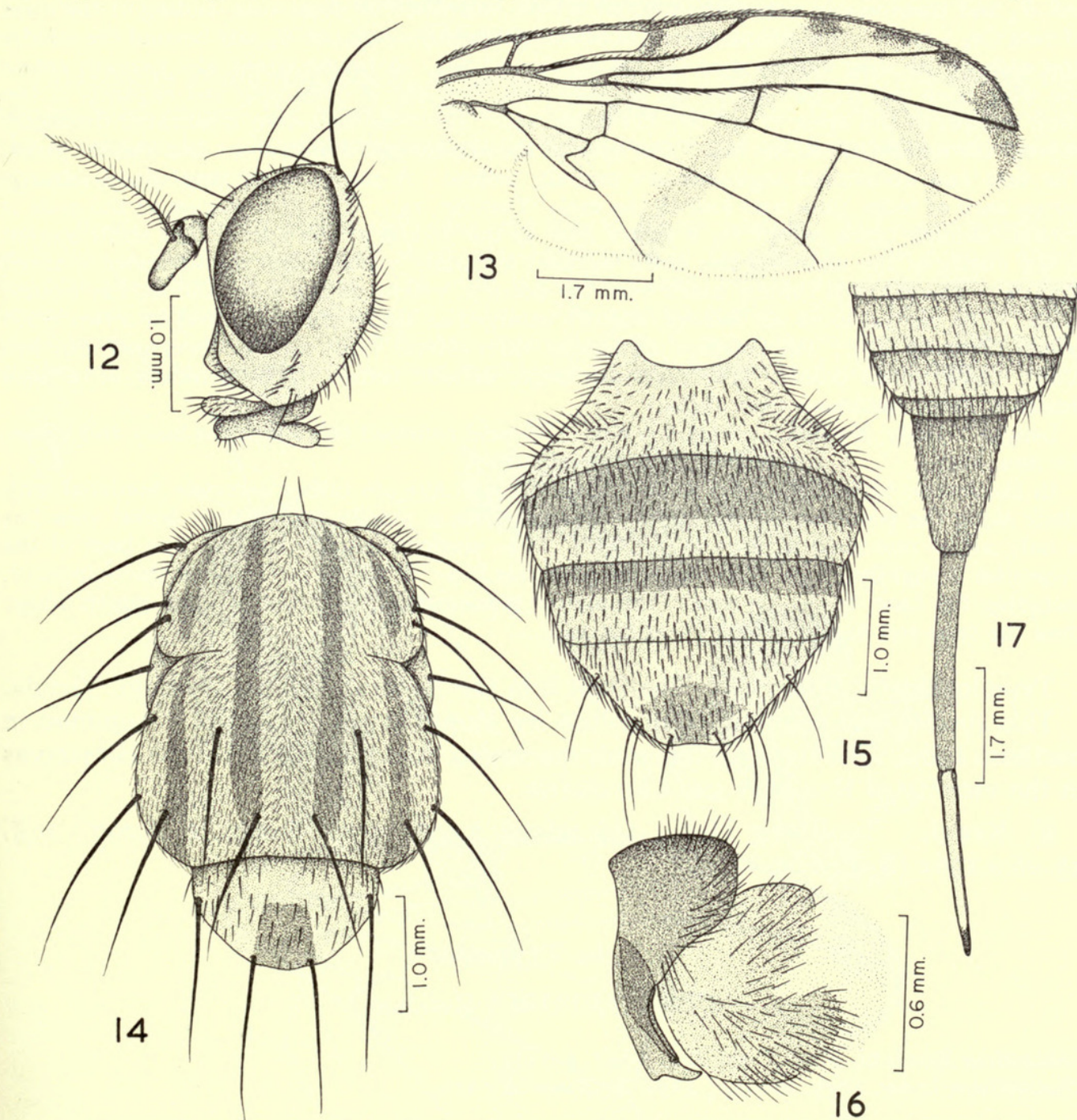
(Text-figs. 12-17)

Taeniostola limbata Hendel, 1915, *Ann. hist-nat. Mus. Hung.* 13 : 435, pl. 8, fig. 3.

This beautifully marked species is readily recognized by the pattern of markings on the wings (Text-fig. 13), on the thorax (Text-fig. 14), and on the abdomen (Text-fig. 15).

The species is predominantly yellow, the mesonotum has four longitudinal vittae extending the entire length of the segment ; the lateral vittae are slightly interrupted at the suture.

The scutellum has a prominent black spot in the middle between the apical scutellar bristles. The metanotum is polished black and a shining black spot is present on each pleuron behind the wing base. The anterior dorsocentral bristles are situated slightly behind a line drawn between the anterior supra-alar bristles. The ocellar bristles are stronger than the orbital bristles and are three-fourths as long as the inner verticals. Two strong superior fronto-orbitals and two strong, plus one weak pair of inferior fronto-orbitals are present (Text-fig. 12). The outer vertical bristles are approximately equal in size to the superior fronto-orbitals and the postocellar bristles are approximately equal in size to the anterior supra-alar bristles. The antennae are entirely yellow; the first and second segments are fringed with black setae around their apices and a prominent black bristle is present on the dorsal surface of the second segment.



FIGS. 12-17. *Taeniostola limbata* Hendel. 12. head, lateral; 13. wing; 14. thorax, dorsal; 15. ♂ abdomen, dorsal; 16. ♂ genitalia, lateral; 17. ♀ ovipositor and abdominal segments 4-6.

The third antennal segment is almost three times longer than wide. The arista is rather long-plumose. The head is shaped as in Text-fig. 12. The legs are entirely yellow. Each front femur has a prominent row of posteroventral bristles extending the entire length of the segment ; also the posterodorsal surface is strongly setose. Each middle femur has two black posteroventral hairs near the apical third of the segment, and the hind femur has two black posteroventral hairs at the middle. The middle tibia has one strong apical spur, this is almost two-fifths as long as the basitarsus. Wings with two almost complete transverse bands plus two brown streaks ; the base of the subcostal cell is black, the remainder of the cell is yellow, this extends as a yellow band transversely across the wing, ending in the apex of the cubital cell. A brown band extends along the wing margin from near the middle of cell R_1 to the middle of cell R_5 and transversely across the wing at a level with the $r-m$ cross-vein, ending at the apex of vein $Cu_1 + 1st A$. An oblique streak of brown extends through cell R_5 just beyond the middle and ends at the wing margin near the tip of cell 2nd M_2 . A brown streak also extends across the wing from cell R_5 just above the m cross-vein, over the m cross-vein and expands at the wing margin in the apex of cell M_4 (Text-fig. 13). The $r-m$ cross-vein is situated distinctly beyond the middle of cell 1st M_2 . The apex of the cubital cell is drawn out to a slender point. The first two abdominal segments are entirely yellow. A broad black basal band extends across each of terga three and four in the male (Text-fig. 15). The fifth tergum of the male is entirely shining black except for a yellow spot in the middle at the apex. The sixth tergum is not visible in the male but the ninth segment is plainly visible when the abdomen is tilted slightly. The ninth is shining black over the dorsum, yellow on the sides and on the ventral lobes. The ventral lobes are slender, slightly enlarged at apices and developed into two blunt points (Text-fig. 16). The claspers are hidden from lateral view, each is developed into two blunt, black apical points. The cerci are large, densely setose. (The genitalia have been described from specimens from India.)

Length : Body, 8.5 mm.; wings, 9.0 mm. (Hendel recorded this species as body and wings, 8.0 mm. long.)

In the female (specimens from India), terga three to five are rather narrowly bordered with black along the posterior margin and the sixth tergum is plainly visible from dorsal view but is only about one-third as long as the fifth. The sixth is entirely black. The base of the ovipositor is slightly longer than segments four plus five. When fully extended the ovipositor, including the base, is 7.4–8.0 mm. The piercer measures 2.7–2.85 mm.; is one-fourth longer than the base and blunt at apex (Text-fig. 17).

Type locality : FORMOSA. The type is in the Natural History Museum, Vienna. This species was recorded from INDIA by Munro (1935 : 17). It is common in northern India. I have seen numerous specimens from the foothills of the Himalayas in the vicinity of Ranikhet and Chaubattia.

E. NEPAL : Taplejung Distr., old mixed forest above Sangu, c. 6,200', 1 ♂, 25–28.x.1961 (R. L. Coe).

Tribe Trypetini

CHETOSTOMA Rondani

Chetostoma Rondani, 1856, *Dipt. Ital. prodr.* 1 : 112.

Chaetostoma Loew, 1873, *Monogr. Dipt. N. Amer.* 3 : 212.

The name has been consistently spelled *Chaetostoma* in the literature but this spelling is preoccupied in the fishes by Tschudi, 1846, *Fauna Peru* : 26. I use the original spelling by Rondani for this genus.

Only nine species of *Chetostoma* have been recorded previously ; two from Europe including Russia, two Nearctic, three from China, one from Burma and one from Japan. This genus is characterized by having a clump of prominent black setae or bristles on the lower portion of each gena (Text-fig. 18) ; by having three pairs of inferior fronto-orbital bristles ; the *r-m* cross-vein situated before the middle of cell 1st M_2 ; and vein R_{4+5} setose to beyond the *r-m* cross-vein.

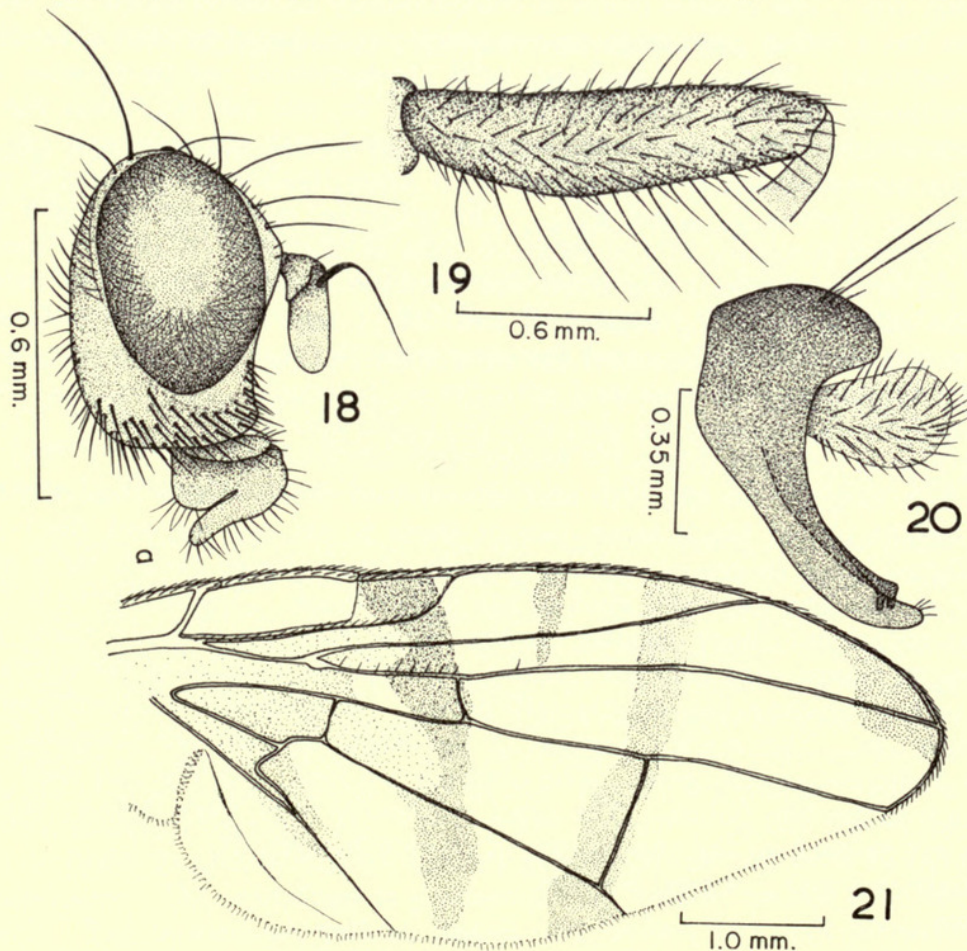
Type species : *Trypeta giraudi* Frauenfeld.

***Chetostoma interrupta* sp. n.**

(Text-figs. 18-21)

This species would resemble *C. diluta* Zia and Chen, from China, by not having the brown band around the apex of the wing continuous with the transverse band over the *m* cross-vein. In other respects however these are not alike and the two species are obviously not related.

♂. *Head*. Distinctly higher than long, the face is almost vertical. The lower margin of each gena is thickly covered with short, black bristles as in Text-fig. 18. The gena is about one-fifth the height of the eye. The front is predominantly yellow, discolored with reddish brown and covered with yellow-grey pollen. The median portion of the front is sparsely black-setose. The front is approximately equal in width to one compound eye. The frontal bristles are strong, two pairs of superior fronto-orbitals and three pairs of inferior fronto-orbital



FIGS. 18-21. *Chetostoma interrupta* sp. n. 18. head, lateral ; 19. front femur ; 20. ♂ genitalia, lateral ; 21. wing.

bristles are present. The ocellar bristles are almost equal in length to the postocellars but are much thinner. The outer vertical bristles are approximately equal in size to the upper superior fronto-orbitals. The ocellar setae are black, well developed, one-half to two-thirds as long as the postocellar bristles. The face is entirely yellow-white and has a very slight raised area down the median portion. The palpi and mouthparts are yellow-white. Each palpus is thickly black-setose around the outer and apical margins. The antennae are predominantly rufous, the second and third segments are tinged with brown along their upper and apical margins. The second segment has one rather prominent dorsal bristle and numerous black setae around the apex. The third segment is rounded at the apex and slightly over two times longer than wide. The arista is pubescent. The head is shaped as in Text-fig. 18. *Thorax*. Predominantly polished black in ground colour, rather densely grey-pollinose, subshining on the pleura and with a polished area in the middle of each sternopleuron, also a polished black spot is present in the middle of the metanotum. The humeri, propleura and front margin of each mesopleuron are yellow, tinged faintly with brown. The hind margin and the ventral portion of the scutellum is yellow. The anterior dorsocentral bristles are situated approximately in line with the anterior supra-alars. The mesonotum is densely black-setose. The scutellum is bare except for a few tiny hairs around the margins and for the four strong bristles. The halteres are pale yellow. *Legs*. The front legs are entirely yellow except for a discoloration of brown to black along the posterior surface of each femur. On the middle and hind legs the coxae are brown to black, tinged faintly with yellow. The trochanters are yellow, tinged with brown. The femora are predominantly black, yellow at their apices and on the apico-ventral half of the middle pair. The tibiae and tarsi are yellow except for a tinge of brown to black on the hind tibiae. Each front femur is rather densely bristled over the posterior surface (Text-fig. 19). The middle femur is conspicuously flattened down the ventral surface. Each hind tibia has a rather prominent row of black anterodorsal bristles extending the entire length of the segment. *Wings*. The basal cells are brownish yellow fumose, this marking extends longitudinally through the wing to connect, in cell 1st M_2 , with the dark brown transverse mark which extends across the wing at a level with the subcostal cell and the $r-m$ cross-vein. The pale marking is interrupted by a large hyaline spot situated in cell R just beyond the forking of veins R_{2+3} and R_{4+5} . The subcostal cell is entirely dark brown except for pale yellow-brown fumosity at the extreme base of the cell. A narrow transverse mark extends from the costa at about one-third the distance between the apices of veins R_1 and R_{2+3} , across the cells R_1 and R_3 , ending at vein M_{1+2} well beyond the $r-m$ cross-vein. A complete transverse band extends across the wing from the costal margin just before the apex of cell R_1 to the apex of cell M_4 at a level with the m cross-vein. A prominent brown mark is present at apex of cell R_3 and extends over into the upper apical portion of cell R_5 (Text-fig. 21). The $r-m$ cross-vein is situated distinctly before the middle of cell 1st M_2 . The fourth costal section is one-half longer than the fifth and almost four times longer than the third section. Vein R_{4+5} has eight to ten black setae, one of these is situated beyond the $r-m$ cross-vein. *Abdomen*. Polished black in ground colour, densely grey-pollinose except for a polished black area extending around the sides and apex of the fifth tergum. The abdomen is thickly black-setose and has prominent black bristles on the apical margins of terga three to five. The genitalia are black, tinged with yellow to rufous on the lower margins of the ninth segment and with the cerci yellow, tinged rather faintly with brown. As seen from a lateral view the genitalia are as in Text-fig. 20. The ventral margins of the ninth segment are elongated, extended on each side into a slender ventral lobe. The claspers are long, rod-like and each terminates in two blunt, black finger-like points. The cerci are nearly oval, very densely setose. Several strong bristles are present on the top margin of the ninth segment.

Length : Body, 3.5 mm.; wings, 6.2 mm.

♀. Unknown.

Holotype ♂. E. NEPAL : Taplejung Distr., damp evergreen oak forest above Sangu, c. 9,200', 2-26.xi.1961 (R. L. Coe).

Paratypes. 2 ♂, same data as Holotype.

Type and one paratype in the B.M. (N.H.) ; one paratype in the University of Hawaii collection.

***RHAGOLETIS* Loew**

Rhagoletis Loew, 1862, *Europ. Bohrfliegen* 14 : 44.

This genus is differentiated by having vein R_{4+5} bare or with only two or three setae at base ; by having the third antennal segment pointed at upper apex ; by the hind femora having several long antero-ventral hairs or bristles before the apex ; by having the ovipositor base very short, not longer than the sixth abdominal segment ; and by having the eyes comparatively high and narrow.

About three dozen species of this genus are known, these range throughout the Holarctic and Neotropical regions but are predominantly temperate climate species. The larvae live in fleshy fruits, nuts, and in rose hips.

It should be noted that Stone (1951 : 47) followed Hendel (1927 : 74) in treating *Zonosema* Loew as a synonym of *Rhagoletis*. Rohdendorf (1961 : 177) treats these as distinct genera.

Type species : *Musca cerasi* Linnaeus.

***Rhagoletis rumpomaculata* sp. n.**

(Text-figs. 22-26)

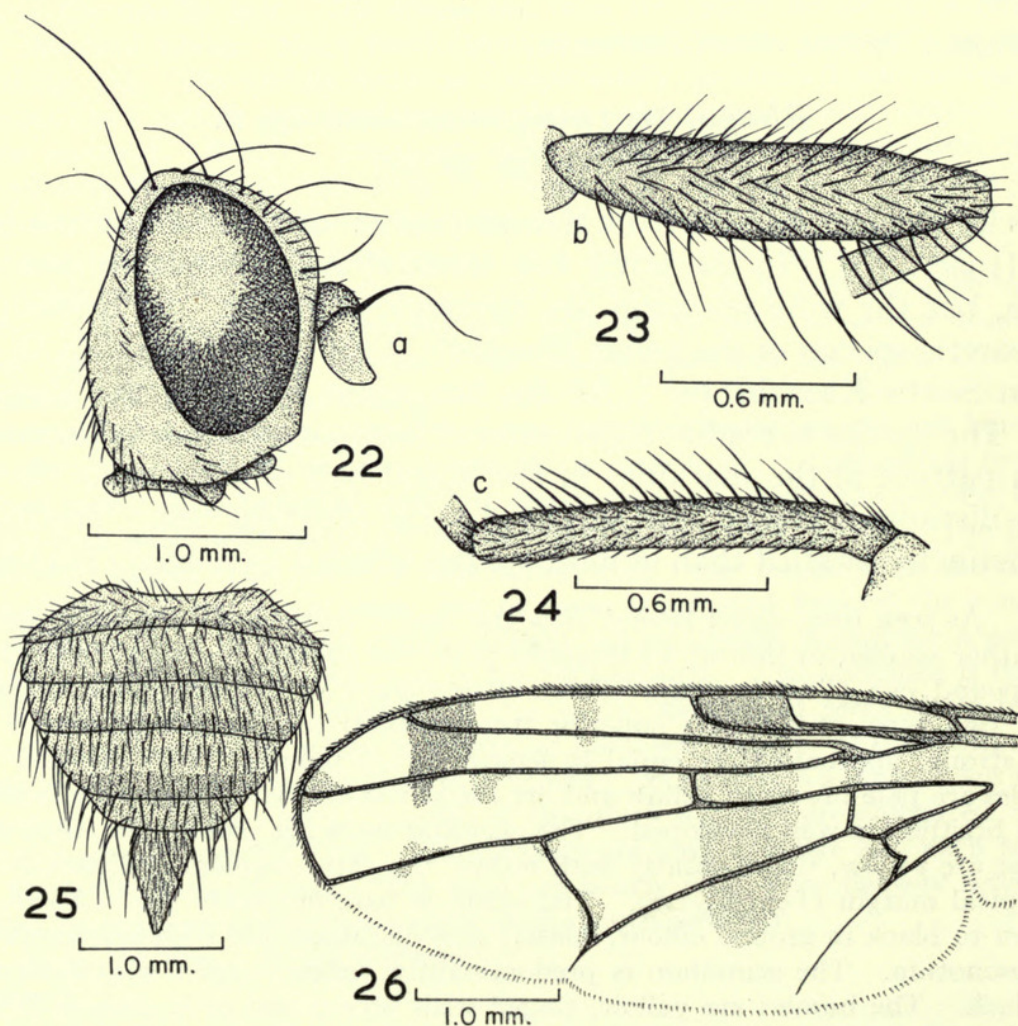
This species runs to *Rhagoletis* in Hendel (1927 : 20), Zia and Chen (1938 : 9), and Chen (1948 : 82). In the latter two works it runs nearest to *reducta* Hering, from China, but the wing markings are strikingly different. In Rohdendorf's key to the Palearctic species of the genus *Rhagoletis* (1961 : 178) this runs to *almatensis* sp. n. from South Kazakhstan, U.S.S.R., but again the wing markings are very different. The species is readily differentiated from any *Rhagoletis* known to me by the broken pattern of the markings in the apical half of the wing ; the bands are completely disrupted, broken into scattered spots (Text-fig. 26). The front femora are more distinctly bristled than in most species which I have seen (Text-fig. 23).

♀. *Head*. As seen from direct lateral view the face is vertical and the lower portion of the occiput is rather swollen so that at its broadest point the occiput is almost one-half the width of the compound eye (Text-fig. 22). Three strong pairs of cruciate inferior fronto-orbital bristles and two pairs of reclinate superior fronto-orbital bristles are present. The ocellar bristles are strong, approximately equal in length to the inferior fronto-orbitals. The post-ocellar bristles are pale brownish yellow and are about two-thirds as long as the ocellar bristles. The vertical bristles are well developed. The occipital setae are pale brown, long and slender. The antennae are yellow, tinged faintly with brown, the third segment is distinctly pointed on the upper apical margin (Text-fig. 22). The arista is bare or nearly so. *Thorax*. Predominantly brown to black in ground colour, densely grey-pollinose and with abundant black setae over the mesonotum. The scutellum is predominantly yellow, tinged with brown, the basal margin is black. The humeri are yellow, tinged with brown and each pleuron is tinged with rufous in the median portion. The propleura and the front margin of each humerus are densely white haired. The anterior dorsocentral bristles are situated approximately opposite the anterior supra-alars. Four strong scutellar bristles are present, these are slightly greater in

length than the dorsocentral bristles. The halteres are yellow. *Legs*. Entirely yellow. The front femora are densely setose and each has a row of strong posteroventral bristles extending the full length of the segment (Text-fig. 23). Each hind femur has several anteroventral bristles before the apex of the segment. Each hind tibia has a prominent row of anterodorsal bristles extending the full length of the segment (Text-fig. 24). *Wings*. With an incomplete brown marking extending across the base; a broad brown mark extending transversely from the costa, filling all of the third costal section (cell Sc), across the wing into the middle of cell M_4 ; also with a single transverse streak across the middle of cell R_1 ; another brown mark at the apex of cell R_1 which extends transversely across vein R_{4+5} into cell R_5 ; another brown spot is present at the apex of vein R_{4+5} ; another is present in the upper median portion of cell R_5 ; a spot is present near the median portion of the last section of vein M_{1+2} ; and one is also present on each end of the m cross-vein as in Text-fig. 26. Vein R_1 is setose throughout its entire length. Vein R_{4+5} has two small setae at its base. The $r-m$ cross-vein is situated at the middle of cell 1st M_2 . The cubital cell is sharply pointed at the apex. *Abdomen*. Predominantly polished black in ground colour, lightly grey-pollinose, each tergum has a distinct yellow band along the posterior margin. Moderately strong bristles are present on the posterior margins of the terga, especially five and six. Tergum six is approximately one-half as long as five. The ovipositor is short, rather inconspicuous, as seen *in situ* the visible portion is approximately equal to abdominal segments five and six (Text-fig. 25).

Length: Body and wings, 5.7 mm.

♂. Unknown.



FIGS. 22-26. *Rhagoletis rumpomaculata* sp. n. 22. head, lateral; 23. front femur, hind view; 24. hind tibia, dorsal; 25 ♀ abdomen, dorsal; 26. wing.

Holotype ♀. E. NEPAL : Taplejung Distr., damp evergreen forest above Sangu, c. 9,200', 2-26.xi.1961 (R. L. Coe), B.M. (Nat. Hist.).

Subfamily **TEPHRITINAE**

Tribe **Tephritini**

ACTINOPTERA Rondani

Actinoptera Rondani, 1871, *Bull. Soc. ent Ital.* **3** : 162.

This genus is readily recognized by having only one pair of superior fronto-orbital bristles, only two scutellar bristles, and by having the anterior dorsocentral bristles situated opposite the suture.

This is predominantly a European genus, though two species have been recorded from China (Zia and Chen, 1938 : 95), one has been recorded from Formosa (Shiraki, 1933 : 447), and one new species is being described from Japan by Dr. S. Ito in a monograph of the Japanese fruit flies (in press) ; I am recording the latter species also from Nepal.

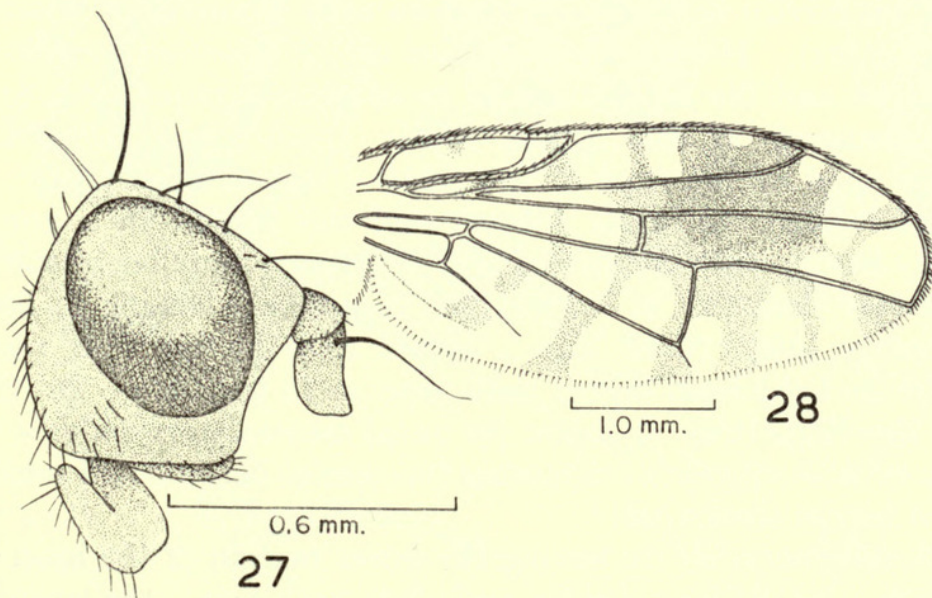
Type species : *Tephritis discoidea* Fallén.

***Actinoptera* sp. n.** (in Ito manuscript, in press)

(Text-figs. 27-28)

Actinoptera ——— sp. n. Ito (in press), Beitrag zur Systematik der Japanischen Trypetiden (Diptera).

I have had access to Dr. Ito's manuscript and feel certain that the species here recorded from Nepal is the same as the one he is describing as new from Japan. This species rather closely resembles *A. discoidea* (Fallén) from Europe but the wing



FIGS. 27-28. *Actinoptera* sp. n. being described by Ito. 27. head, lateral ; 28. wing.

markings differ. The most striking character for separating the new species is the presence of three hyaline marks in cell R_1 beyond vein R_1 rather than two, as in *discoidea*, and by the presence of a faint brown streak extending across the middle of the second costal section.

This is a densely grey-pollinose species with all yellow legs, halteres, antennae and mouthparts. It is being adequately described by Dr. Ito. The profile view of the head is as in Text-fig. 27 and the wings are as in Text-fig. 28.

Length : Body, 2.5 mm. ; wings, 3.0 mm.

It should be noted the specimens from Nepal are slightly shorter than those which will be recorded from Japan by Dr. Ito. His specimens measured : Body, 3.0 mm. ; wings, 3.5 mm.

E. NEPAL : Taplejung Distr., north of Sangu, dry grass above river bank, c. 5,000', 2 ♂, 5.i.1962 (R. L. Coe).

STYLIA Robineau-Desvoidy

Stylia Robineau-Desvoidy, 1830, *Mém. prés. Acad. Soc. Paris* 2 : 754.

Paroxyna Hendel, 1927, 49, Trypetidae, in Lindner, *Die Fliegen der Palearktischen Reg.* 5 : 146.

Dioxyna Frey, 1945, *Comment. Biol., Helsingf.* 8 (10) : 62.

The correct generic name for this group has been most controversial. Hering (1954 : 167) designated *Stylia bidentis* Robineau-Desvoidy (1830) as the type of the genus *Stylia* Robineau-Desvoidy and indicated that this was congeneric with *Trypeta tessellata* Loew (1864), the type of the genus *Paroxyna* Hendel. Hering has treated *Paroxyna* as a synonym of *Stylia*. Munro (1957 : 919) designated *Stylia mentharum* Robineau-Desvoidy as the type of the genus "which thus remains a synonym of *Myopites*". I see no logical reason for Hering's designation not being accepted since it is the better known species and his designation does have priority. I am following his advice in treating *Paroxyna* as a synonym of *Stylia* (cf. Hardy and Adachi, 1956 : 21). Hering obviously does not, in this case, consider the number of scutellar bristles and the head shape to be of generic importance and he treats *sororcula* (Wiedemann) in the genus *Stylia* (1956 : 74). *Trypeta sororcula* Wiedemann was used as the type of the genus *Dioxyna* Frey (1945 : 62). This species is closely related to *Stylia bidentis* and the two fit in a group which is characterized by having only one pair of well-developed scutellar bristles (the apical pair is rudimentary, hair-like in *bidentis* and completely lacking in *sororcula*) and the head distinctly longer than high ; rather than having four well-developed scutellar bristles and the head higher than long, as in *tessellata*. Dr. S. Ito, in his monograph of the Trypetidae of Japan (in press) treats *Paroxyna* as a subgenus of *Stylia* with the typical subgenus containing the species *bidentis* and *sororcula*. This appears to be a logical treatment.

This genus is differentiated by having the lower margin of the head longer than the upper margin ; by the long slender geniculate proboscis ; the long slender palpi (Text-fig. 29) ; and by the irregularly spotted wings (Text-fig. 31).

Styilia sororcula (Wiedemann)
(Text-figs. 29-32)

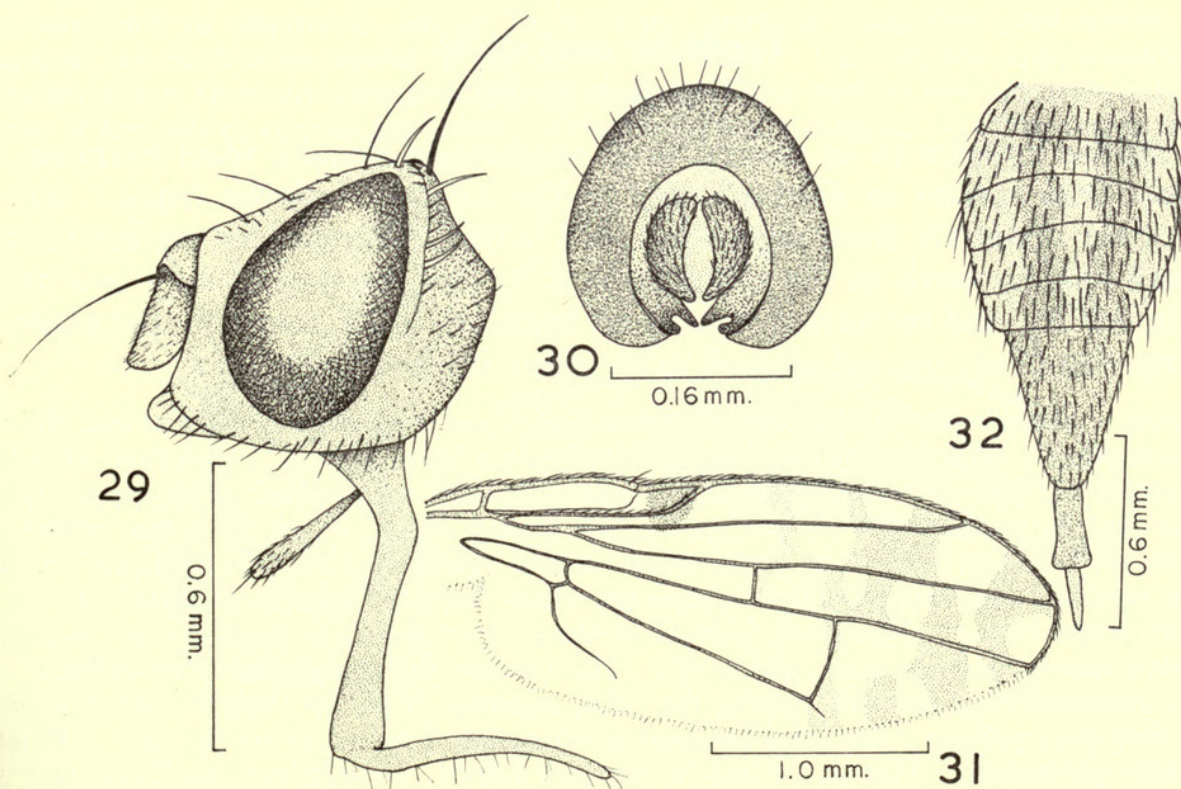
Trypeta sororcula Wiedemann, 1830, *Aussereur. Zweifl. Ins.* 2 : 509.

For the synonymy under this species cf. Munro (1957 : 938-939). The species has been treated in the literature under a variety of generic combinations. Bezzi (1913 : 159) treated it under *Oxyna* Robineau-Desvoidy.

This is a small species, differentiated from *bidentis* by having the femora black except at the apices, by completely lacking the apical scutellar bristles, as well as by its smaller size and other details. *S. bidentis* has the femora entirely reddish yellow and the apical scutellar bristles are rudimentary, hair-like. The above characters along with the distinctive generic characters will readily separate *sororcula*.

The head is shaped as in Text-fig. 29 and the wings are as in Text-fig. 31. The thorax is dark brown to black in ground colour, rather densely grey-pollinose and with conspicuous, yellow, squamose setae extending over the dorsum. On some specimens three indistinct brown vittae extend at least part way down the metanotum. Two inferior fronto-orbital bristles and two superior fronto-orbital bristles are present. The upper superior fronto-orbital is yellow. The palpi are long and slender. The abdomen is densely grey-pollinose, with a pair of submedian, subshining brown spots on each of terga three to five. In the female the ovipositor base is shining black and almost equal in length to segments four to six (Text-fig. 32). The male genitalia are as in Text-fig. 30.

Length : Body, 2.5 mm.; wings, 2.8 mm.



FIGS. 29-32. *Styilia sororcula* (Wiedemann). 29. head ; 30. ♂ genitalia ; 31. wing ; 32. ♀ abdomen, dorsal.

Distribution. Widespread throughout the tropics and subtropics of the world. I have numerous specimens on hand from Northern India.

Hosts. This is a seed infester. It lives in the flower heads of *Bidens*, *Coreopsis*, and other composites. Coe captured it on *Lycopodium* sp.

E. NEPAL : 7 ex., Taplejung Distr., north of Sangu, dry grass above river bank, c. 5,000', 5.i.1962 (R. L. Coe) ; Dobhan, c. 3,500', small pockets of plants on arid slopes above R. Maewa, 2.i.1962 (R. L. Coe) ; and on slope above Sangu, c. 7,800', ex *Lycopodium* sp. 11-14.i.1962 (R. L. Coe).

TEPHRITIS Latreille

Tephritis Latreille, 1804, *Nouv. Dict. d'Hist. Nat.* **24** : 196.

This is a very large, somewhat conglomerate group which, in a broad sense, is recognized by having four scutellar bristles ; two superior fronto-orbital and two inferior fronto-orbital bristles ; the thorax and abdomen pollinose and predominantly covered with recumbent pale scales ; vein R_{4+5} bare or with but a few setae at its base ; and the anterior dorsocentral bristle situated in line with or very near the suture. For the most part the species of *Tephritis* have the wings characteristically spotted with brown over the entire surface. This is predominantly a Palearctic and Nearctic group of flower-head infesting species. The group is poorly known in the Orient. For a comprehensive key to the *Tephritis* cf. Hering (1944).

Type species : *Musca arnicae* Linnaeus.

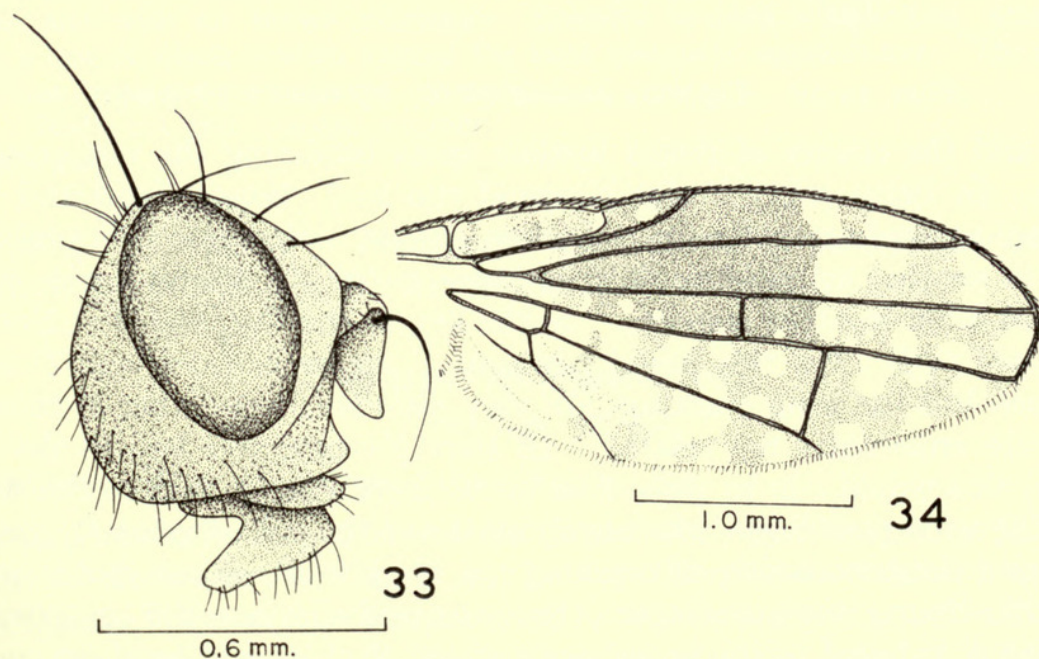
***Tephritis coei* sp. n.**

(Text-figs. 33-34)

This species appears to be related to *T. impunctata* Shiraki, from Formosa, and runs near that species in Hering's key to the known *Tephritis* (1944 : 20). It differs rather distinctly from *impunctata* and is best differentiated by the presence of a small hyaline mark in the subcostal cell, by the presence of only two hyaline marks in cell R_1 , and by having a large all brown to black area situated above the $r-m$ cross-vein (Text-fig. 34), as well as by many other details.

♂. *Head.* Almost quadrate as seen in direct lateral view, the face is vertical and the front almost horizontal ; with the epistoma slightly protruding (Text-fig. 33). Two pairs of superior fronto-orbital and two pairs of inferior fronto-orbital bristles are present. The upper superiors are white and flattened. The ocellar bristles are strong, black, longer than the orbitals and two-thirds to three-fourths as long as the inner vertical bristles. The inner verticals are black, the outer verticals and the postocellar bristles are white, flattened like the occipital setae except about two times longer. The lower portion of the occiput is rather thickly white-setose, the genae have sparse inconspicuous white pile. The median portion of the front is bare. The first two antennal segments are yellow, the third segment is yellow, tinged with brown and covered with grey pollen. The third segment is subacutely pointed (Text-fig. 33). The arista is minutely pubescent. *Thorax.* Black in ground colour, densely grey-pollinose and with five brown vittae extending longitudinally over the mesonotum ; one narrow median vitta extends from the anterior margin to about halfway between the dorsocentral bristles ; one broad vitta extends down each dorsocentral line the full length of the mesonotum ; and one vitta is present on

each side, in line with the inner supra-alars and the presutural bristles but interrupted at the suture. The scutellum has a U-shaped brown mark which extends around the apex and to the base on each side, in line with the posterior bristles. The pleura are slightly discoloured with brown, especially along the hind borders of the mesopleura. The anterior dorsocentral bristles are situated just slightly behind the suture. The mesonotum is covered with white, recumbent, scale-like hairs. The scutellum is bare except for the four strong bristles and except for one flat scale on each side near the base. The apical scutellars are about two-thirds as long as the basal pair and are crossed at their apices. The halteres are yellow, tinged faintly with brown. *Legs.* The coxae are black, tinged faintly with yellow. The femora are black, covered with grey pollen, except for their extreme apices which are yellow. The tibiae and tarsi are yellow. The trochanters are yellow, tinged faintly with brown. The front femur has five posteroventral bristles extending the full length of the segment. *Wings.* Marked as in Text-fig. 34. With only one bristle present at the apex of the subcostal vein, vein R_1 setose and vein R_{4+5} bare. Vein R_{2+3} very slightly undulated in the median portion. The third costal section, between vein Sc and R_1 , is about equal in length to the fifth section, between the apices of vein R_{2+3} and R_{4+5} and the fourth costal section is approximately three times longer than either the third or the fifth. The $r-m$ cross-vein is situated near the apical one-fourth of cell 1st M_2 and the cubital cell has a short apical point. The second costal cell (between the humeral cross-vein and vein Sc) has three brown marks. A large rather quadrate, dark brown mark extends over the area of the wing bounded by the costal margin from the end of the subcostal vein to about the median portion of cell R_1 , transversely across the wing to a level extending approximately through the upper median portion of cell R_5 . This area is uninterrupted except for a small hyaline spot in the subcostal cell (Text-fig. 34). Beyond this brown mark are two hyaline spots in cell R_1 , these are continuous into cell R_3 and converge beyond vein R_{2+3} . The hyaline mark extends through the apical portion of cell R_3 just beyond the apex of vein R_{2+3} , this extends transversely into the upper portion of cell R_5 . In addition to this latter spot in R_5 eight round spots are present beyond the $r-m$ cross-vein, also approximately six small round spots are present in cell R before the cross-vein. Cell 2nd M_2 has five round spots. Cell 1st M_2 is hyaline through the basal one-third to one-fourth, except for a brown marking along the basal section of vein M_{3+4} and has six hyaline marks in the apical two-thirds. Cell M_4 has approximately eight brown markings, these are separated into spots at the basal portion but converge in the apical portion of the cell to enclose two brown spots at the wing margin. A brown spot is present



FIGS. 33-34. *Tephritis coei* sp. n. 33. head ; 34. wing.

over the apex of the cubital cell at the basal portion of vein $Cu_{1+1st\ A}$. *Abdomen*. Predominantly grey-pollinose with two large grey-brown submedian spots on each tergum, these are separated by a more distinctly grey, median vitta extending longitudinally the full length of the abdomen. The apices of the terga are also distinctly grey. The abdomen is entirely covered with recumbent, yellow-white scales. The genitalia have not been relaxed for study.

Length : Body, 2.85 mm.; wings, 3.2 mm.

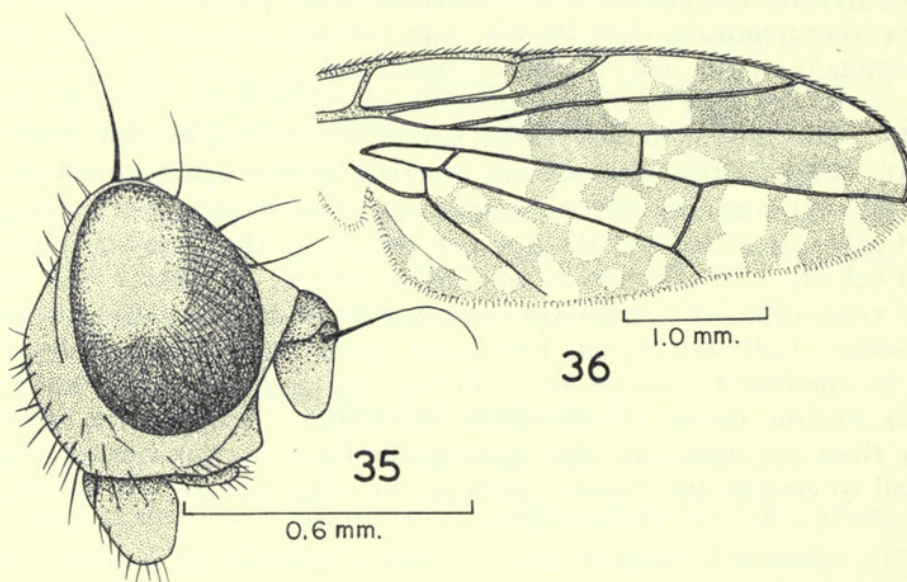
♀. Unknown.

Holotype ♂. E. NEPAL : Taplejung Distr., north of Sangu, dry grass above river bank, c. 5,000', 5.i.1962 (R. L. Coe), B.M. (Nat. Hist.).

***Tephritis daedala* sp. n.**

(Text-figs. 35-36)

This species apparently closely resembles *punctata* Shiraki, from Formosa, but the wing markings are distinctly different, for example the large apical hyaline spot



FIGS. 35-36. *Tephritis daedala* sp. n. 35. head ; 36. wing.

in cell R_5 and the cluster of round hyaline spots bordering the $r-m$ crossvein are distinctive. In Bezzi (1913 : 162) it would run to *T. lyncea* Bezzi and the wing markings are somewhat similar in these two species. However it is probable that *lyncea* fits in another genus since only one superior fronto-orbital bristle is present. The two also differ in other respects. In the key to the Trypetidae of North China (Zia and Chen 1938 : 69) this would run near *T. recurrens* Loew and *T. consimilis* Zia and Chen but the wing markings are very different from either of these species and these are apparently not related. In Hering's extensive key to the *Tephritis* (1944 : 20) this would run to *vespertina* Loew, from Europe and North Africa but differs by the wing markings ; the brown marks at the end of veins R_{4+5} and M_{1+2} do not form a mushroom-shaped marking ; a large white apical spot is present in cell R_5 , rather than a tiny apical spot ; the subapical spot in cell R_3 is separate from a hyaline mark situated in the upper apex of cell R_5 , rather than these spots being fused, etc.

♂. *Head*. Entirely yellow except for a tinge of reddish brown on the front, at the base of the antenna, and on the genae; also the compound eyes are brownish-red with a distinct green sheen, they are red around their margins. Two superior fronto-orbital and two inferior fronto-orbital bristles are present. The upper superior fronto-orbitals are yellow, flat, rather scale-like and approximately equal in size to the occipital setae. The ocellar bristles are strong, about two-thirds to three-fourths as long as the inner vertical bristles. The postocellar and outer vertical bristles are yellow, flat, scale-like, about two times larger than the occipital setae. The lower edge of each gena has numerous dark setae along the margin. The antennae are yellow, the third segment is rounded at the apex. The arista is minutely pubescent. The head is shaped as in Text-fig. 35. *Thorax*. Predominantly black, densely covered with grey pollen and lacking brown vittae on the mesonotum. The mesonotum is covered with yellow-white scales. The anterior dorsocentral bristles are situated in line with the suture. Four pairs of scutellar bristles are present. The apical bristles are rather small, about one-third as long as the basal bristles and are crossed at their apices. The scutellum has three or four flat, yellow scales on each side, and is otherwise bare. The humeri are yellow-red in ground colour, this colour is obscured however by the dense covering of grey pollen. The halteres are pale yellow. *Legs*. Entirely yellow. The bristling is apparently typical for *Tephritis*. *Wings*. Predominantly grey-black covered with an abundance of hyaline marks as in Text-fig. 36. The portion of the costal cell beyond the humeral cross-vein has a faint indication of a brown mark at the base and another near the middle. The subcostal cell is brown except for a hyaline mark near the apical portion. Cell R_1 has three hyaline marks beyond the apex of vein R_1 . Cell R_3 is hyaline at its base, has two hyaline spots in the middle, connected with the hyaline marks in cell R_1 , and two hyaline spots at the apex of the cell. The base of cell R_2 is hyaline and three or four hyaline spots are found in the apical two-thirds of the cell. Cell R_5 has two hyaline spots adjoining the $r-m$ cross-vein and about six spots beyond this point, the apical spot is enlarged (Text-fig. 36). The basal third of cell 1st M_2 is hyaline and approximately five hyaline spots are present in the apical two-thirds of this cell. Cell 2nd M_2 has six hyaline spots, three of these are on the wing margin. Nine hyaline spots are present in the apical two-thirds of cell M_4 , the basal portion of this cell is hyaline. The fourth costal section (between the apices of veins R_1 and R_{2+3}) is about two times longer than the fifth section and approximately three times longer than the third costal section. The $r-m$ cross-vein is situated near the apical one-fifth of cell 1st M_2 , scarcely more than its own length from the m cross-vein. *Abdomen*. Entirely black, covered with brownish grey pollen and with no brown markings. Entirely covered with yellow, scale-like setae except for a row of black bristles around the hind margin of segment five. The genitalia are rufous. These have not been relaxed for study.

Length : Body, 2.5 mm.; wings, 2.9 mm.

♀. Unknown.

Holotype ♂. E. NEPAL : Taplejung Distr., north of Sangu, dry grass above river bank, c. 5,000', 5.i.1962 (R. L. Coe), B.M. (Nat. Hist.).

Tephritis spilopectera Bezzi

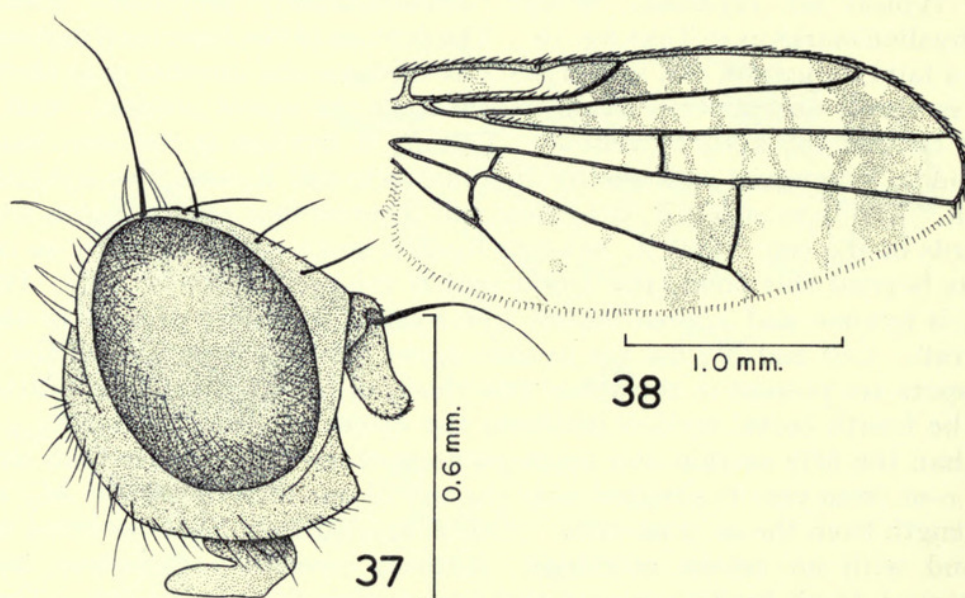
(Text-figs. 37-38)

Tephritis spilopectera Bezzi, 1913, *Mem. Indian Mus.* 3 : 165.

In Shiraki's key to the Trypetidae of the Japanese Empire (1933 : 375) this species would run to *Teratephritis* Shiraki by having the dorsocentral bristles situated distinctly behind the suture. This is not a *Teratephritis* however, the front is bare, not setose, the hind femora lack ventral bristles, etc. and I feel it is best to treat this as a *Tephritis*.

This species is very readily differentiated by the peculiar markings on the wings as shown in Text-fig. 38 ; by having three distinct brown vittae extending down the mesonotum ; two dark brown spots on the scutellum, one each at the bases of the anterior bristles ; and by abdominal terga three to five each having a pair of prominent brown spots. The head is as in Text-fig. 37. The thorax is predominantly black in ground colour, densely grey-pollinose and with a brown vitta extending down each dorsocentral row and also a median brown vitta on the mesonotum.

I see no way to differentiate this from *T. spilopectera* Bezzi except that he indicates that that species has only one superior fronto-orbital bristle and there are slight differences in the brown markings in cell *R*. In view of the fact that these are so similar, however, and a specimen of *spilopectera* is not available for comparison, I prefer to call this species *spilopectera* and assume that Brezzi's reference to a single superior fronto-orbital bristle must have been an error.



FIGS. 37-38. *Tephritis spilopectera* Bezzi. 37. head; 38. wing.

I am unable to find any related species in the literature. In Zia and Chen's key (1938 : 69) *spilopectera* would run near *T. oedipus* Hendel and *T. ramulosa* Zia and Chen. But the wing markings are very different and it could not be confused with these species. The hyaline apices of cells *R*₅ and *M*₂ and the transverse streaking effect of the black markings near the median portion of the wing will readily separate *spilopectera* (Text-fig. 38).

The humeri are yellow in ground colour. The scutellum is yellow except for the dark brown spot at the base of each of the anterior bristles. The mesonotum is densely covered with white scales and the scutellum has numerous white scales scattered over the disc. The apical scutellar bristles are strong, almost equal in length to the basal bristles. The legs are entirely yellow except for a faint discoloration of brown to black in the middle of the ventral margin of the hind femur. The abdomen is predominantly black in ground colour, densely grey-

pollinose and white-pilose. The apices of the terga are narrowly yellow and the brown, submedian spots on terga three to five are prominent. The male genitalia are yellow to rufous ; these have not been relaxed for study.

Length : Body, 2.85 mm. ; wings, 3.0 mm. (Bezzi gave the length as 3.0 mm., I presume this was for the body).

Type locality : Calcutta.

Type in the Zoological Survey of India collection.

E. NEPAL : Arun Valley : Tumlingtar Plateau, c. 2,000', collected on yellow blooms of cultivated composite, 10-16.xii.1961 (R. L. Coe), B.M. (Nat. Hist.).

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