# STUDIES ON INDIAN ITONIDIDAE (CECIDOMYIDAE: DIPTERA)[1].

## V Descriptions and Records of Midges in the Pusa Collection[2].

*By* M. S. Mani, *M.A., Assistant to the Imperial Entomologist, New Delhi.*

Recent studies on the gall midges in the Pusa collection have brought to light three interesting new forms, one of which, *Anjeerodiplosis peshawarensis*, gen. *et* sp. nov., bred by my colleague Mr. H. L. Bhatia, is a pest of the cultivated country fig in the North-West Frontier Province. It has also been possible to establish the identity of the *Tamarix* shoot gall midge. Notes on the distribution of some little-known species are also added.

The writer's thanks are due to Dr. Hem Singh Pruthi, Imperial Entomologist, New Delhi, for facilities in connection with his work.

### Tribe LASIOPTERARIAE.

**Neolasioptera cephalandra** Mani.

1934. *Neolasioptera cephalandrae*, Mani, *Rec. Ind. Mus.* XXXVI, pp. 397-399, figs. 8-9, ♀.
1936. *Neolasioptera cephalandrae*, Mani, *Rec. Ind. Mus.* XXXVIII, p. 193, ♂.

This species was originally described from specimens bred from the shoot galls of *Coccinia indica* Naud. in the Madras and Bengal Presidencies. It is being recorded here for the first time from Pusa, Bihar and Delhi on the same plant. The species thus appears to have a wide distribution in India.

### Tribe OLIGOTROPHIARIAE.

**Rhabdophaga mangiferae,** sp. nov.

*Female.*—1 mm. long. First palpal segment short, subglobose; second segment slightly longer, stout; third segment nearly as long as the second but somewhat more slender; fourth segment about one and a half times the third, more slender. Antennae nearly as long as body, segments 14; stems gradually growing longer towards apex; third, fourth and fifth segments with a distinct constriction in the middle; third and fourth subequal, each longer than the rest of the segments; fifth with a stem about one fifth the enlargement. Mesonotum dark brownish in spirit specimens. Empodium nearly as long as claws or somewhat shorter. Abdomen with dense black setae. Ovipositor short, terminal

[1] Parts I-IV of this series were published in *Rec. Ind. Mus.* XXXVI, pp. 371-451 (1934); *op. cit.* XXXVII, pp. 425-454 (1935); *op. cit.* XXXVIII, pp. 193-197 (1936); *op. cit.* XXXIX, pp. 281-286 (1937).

[2] "Pusa Collections" means the insect collections of the Imperial Agricultural Resarch Institue, New Delhi.

lamellae oval, somewhat longer than broad, rounded apically, with a short ventral lobe at base.

*Holotype.*—One female dissected on a slide.

*Paratypes.*—Three females in spirit.

Both in the collections of the Imperial Entomologist, New Delhi.

This species was bred from shoot galls of *Mangifera indica* Linn. by Venkitasubayyar, Cochin State Entomologist, Central Farm, Trichur, 6th June, 1937. The genus *Rhabdophaga* Westw. has not been recorded so far from India.

### **Misospatha** Kieffer.

1856. *Cecidomyia*, Amblard, *Ann. Soc. Ent. France* XXV, pp. 169-172 (*Partim*).
1912. *Oligotrophus*, Kieffer, *Ann. Soc. Ent. France* LXXXI, p. 129 (*Partim*).
1912. *Amblardiella*, Kieffer, *Marcellia* XI, p. 169 (*syn. nov.*).
1913. *Misospatha*, Kieffer, *Gen. Ins., Dipt.* (*Cecidomyid.*), p. 44.
1913. *Amblardiella*, Kieffer, *Gen. Ins., Dipt.* (*Cecidomyid.*), p. 84.
1913. *Misospatha*, Kieffer, *Bull. Soc. Hist. Nat. Metz* XXVIII, p. 48.

Recent studies have convinced me that *Amblardiella* described by Kieffer from larvae and pupae only taken from shoot galls of *Tamarix* spp. is identical with *Misospatha* Kieff. Full synonymy is given above.

### **Misospatha tamaricum** (Kieffer) Mani.

1909. *Perrisia tamaricina*, Kieffer, *Bull. Soc. Hist. Nat. Metz* XXV, p. 2 (*syn. nov.*).
1912. *Oligotrophus tamaricum*, Kieffer, *Ann. Soc. Ent. France* LXXXI, p. 129.
1913. *Amblardiella tamaricum*, Kieffer, *Gen. Ins., Dipt.* (*Cecidomyid.*), p. 84.
1935. *Misospatha tamaricis*, Mani, *Rec. Ind. Mus.* XXXVII, p. 432.

In 1909 Kieffer described *Perrisia tamaricina* only from galls on the branches of *Tamarix gallica* from Africa. In 1912 he described from Egypt the same gall and the larvae producing it under the name *Oligotrophus tamaricum.* Again in 1913, he erected the genus *Amblardiella* from larvae and pupae only from the same galls and from the same locality, with *O. tamaricum* as the type. He did not, however, describe the adult midges. Recently I examined some specimens labelled *Oligotrophus tamaricum*, in the Pusa collection and found them to be identical with my species *Misospatha tamaricis*, described from adult midges bred from shoot galls of *Tamarix dioica* at Dehra Dun and later also from similar galls of *Tamarix gallica* at Pusa. The larval and pupal characters of *Misospatha tamaricis* and *Amblardiella tamaricum* are also identical.

The following observations are recorded on Cage Slip No. 2806 in the files of the Imperial Entomologist, New Delhi: Several maggots are found in a single gall, each maggot forming a cavity, in which it feeds and pupates. The full-grown pupa is about 4 mm. long and 1 mm. broad, brownish red in colour in the beginning, gradually becomes darker and just before the adult emerges it is black. The pupal period was found to be 8-10 days at Pusa in January. Large numbers of the Chalcid parasite *Eutelus tamaricum* Ferr. (previously known only from Algeria) were also bred from the galls.

The cervical armature of the pupa is strong, red and composed of two slightly curved, pointed spines. Antennal armature is much longer. Frontal armature short and stout. Anal cerci prominent.

## Tribe ASPHONDYLARIAE.

### **Asphondylia lantanae** Felt.

1920. *Asphondylia lantanae*, Felt, *Mem. Depart. Agric. Ind., Ent. Ser.* VII, p. 2.

I refer to this species two females and three males in the Pusa collection, labelled as having been bred from flowers of *Lantana*. Terminal clasp segment of male genitalia is minutely bidentate ; one tooth is larger than the other.

## Tribe ITONIDIDINARIAE.

### **Anjeerodiplosis**[1], gen. nov.

This genus belongs to the Bifila group. In Felt's[2] key it runs to the genus *Thorodiplosis* Felt, from which it is easily distinguished by the relatively longer, heavily chitinised and subaciculate ovipositor, uniformly binodose male antennal segments, absence of lobes on the basal clasp segment and by the slender terminal clasp segment.

The following is a full description of the genus :

Palpi quadriarticulate. Antennae with 14 segments ; third and fourth segments fused together ; segments in the female subcylindrical, stemmed ; in the male all binodose, circumfila two, loops longer than the stems. Wings nearly three times as long as broad ; third vein reaching margin at apex ; costa not thickened basally. Claws simple on all legs. Ovipositor subaciculate, lobes not fleshy, long, chitinised. Dorsal plate truncate apically, emarginate. Ventral plate and style as long as dorsal plate. Basal clasp segment elongate, simple ; terminal clasp segment slender, unidentate. Eyes not separated above in both the sexes.

*Genotype.—Anjeerodiplosis peshawarensis*, sp. nov.

### **Anjeerodiplosis peshawarensis,** gen. *et* sp. nov.

*Female.*—1·25-1·50 mm. long. Brownish fuscus. First palpal segment short, subglobose ; second nearly twice the length of the first ; third segment about one and a half times the length of the second, slender ; fourth segment about one and a half times the third, more slender, fusiform. Antennal segments with an apical and a basal whorl of setae, basal band of circumfila at about the middle, the apical band subapical ; third segment longest ; fourth segment about three fourths the length of third ; enlargment of fifth segment with a length nearly twice its diameter, stem about one third the length of enlargement ; terminal segment with a cylindrical prolongation about half the length of the segment. Mesonotum brownish. Scutellum lighter. Claws about twice the length of empodium, stout.

*Male.*—Basal stems of basal antennal segments somewhat shorter than the apical stems, subequal elsewhere. Circumfila loops somewhat

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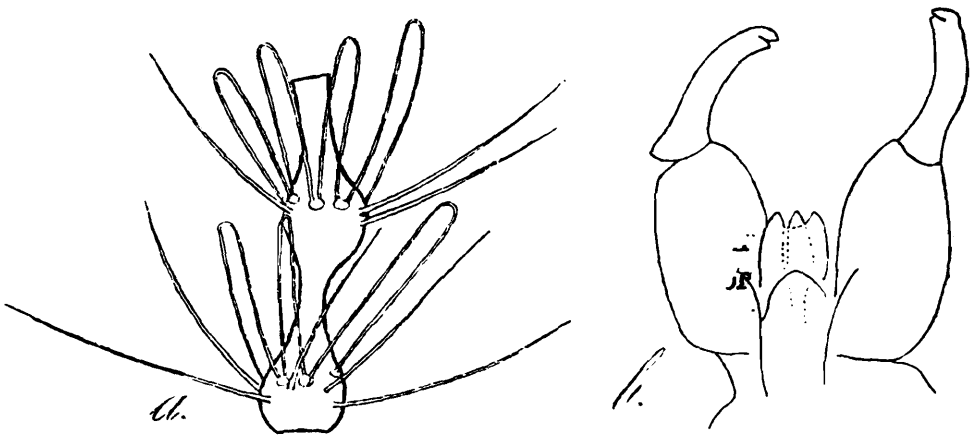
[1] *Anjeerodiplosis* from *anjeer*, the Hindustani name for the cultivated country fig., *Ficus carica*, from which the midges were bred.

[2] Felt, E. P., *Bull. N. Y. State Mus.* No. 275, p. 155 (1925).

longer than stems. Basal enlargement of the third segment oval, apical enlargement subglobose. Fifth segment with the basal stem



TEXT-FIG. 1.—*Anjeerodiplosis peshawarensis*, gen. *et* sp. nov. *a*. Fifth antennal segment of male ; *b*. Genitalia of male.

about three fourths the basal enlargement, apical stem equal to apical enlargement. Terminal segment with an apical prolongation nearly half the length of the apical, oval enlargement ; basal enlargement globose, length three fourths its diamater. Dorsal plate broadly and deeply truncate apically, broadly emarginate. Basal clasp segment subrectangular. Terminal clasp segment about four fifths the basal segment, elongate, slender, slightly curved, unidentate apically ; tooth large, chitinised. Style as long as dorsal plate.

*Holotype.*—One female dissected on two slides.

*Allotype.*—One male dissected on two slides.

*Paratypes.*—One female and three males in spirit.

Bred from the figs of *Ficus carica*, the cultivated country fig, Peshawar, H. L. Bhatia, May-July, 1937. In the collections of the Imperial Entomologist, New Delhi.

**Lobopteromyia prosopidis,** sp. nov.

*Female.*—About 1·75 mm. long. General colour of body pale yellow or white. First segment of palpus short, second segment nearly equal or slightly longer, terminal segment about one and two thirds the length of third segment. Fifth antennal segment : enlargement with a length about one and a half times its diameter, stem less than one fourth the length of enlargement ; terminal segment with an apical prolongation about one and two thirds the enlargement. Mesonotum dark brown. Scutellum white. Postscutellum darker. Claws slender, equal to empodium. Abdomen white, ovipositor subaciculate, long.

*Male.*—About 1·50 mm. long. White. First segment of palpus short, stout apically ; second segment a little longer or nearly equal but distinctly stouter than first ; third segment one and a half times the second, more slender ; terminal segment slightly longer and more slender than third. Fifth antennal segment : basal enlargement subglobose, basal stem with a length equal to its diameter, apical enlargement with a length about one and one fifth its diameter, apical stem twice its diameter in length. Terminal antennal segment : basal enlargement

ovate, basal stem shorter than the basal enlargement, apical enlargement elliptic-ovate, about one and a half times the basal enlargement and with an apical prolongation over half its length. Mesonotum brown. Genitalia : ventral plate longer than dorsal plate, deeply bilobed ; harpes simple, short ; basal clasp segment much longer than the inner parts, broad basally, cordate, simple ; terminal clasp segment slender, only slightly thicker basally than apically, three fourths the length of basal clasp segment, with one chitinous tooth apically.

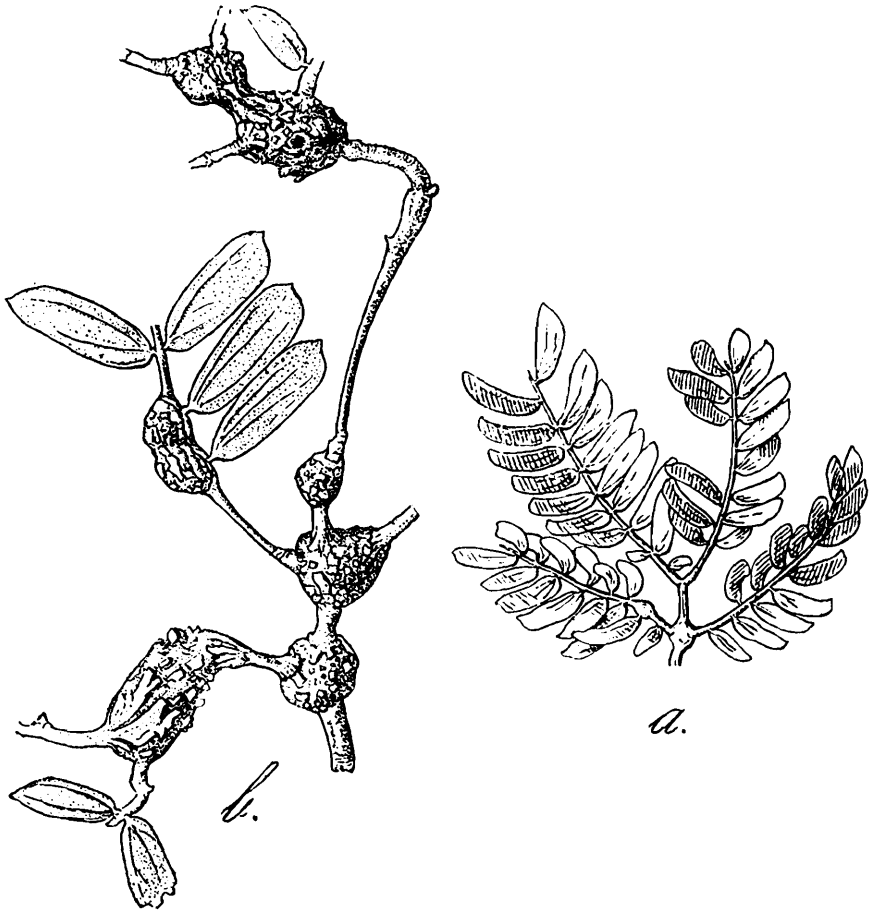
*Holotype.*—One female dissected on a slide.

*Allotype.*—One male dissected on a slide.

*Paratypes.*—One female and one male in spirit.

All in the collections of the Imperial Entomologist, New Delhi. Bred from galls on leaf of *Prosopis spicigera* Linn., M. S. Mani, New Delhi, 30th September, 1937.

Specimens of this species were bred by the author[1] from galls on the rachides of *Prosopis spicigera* as early as 1931 in Tanjore, S. India but owing to the unsatisfactory nature of the material the species was not then described. The genus *Lobopteromyia* Felt itself has not been recorded from India so far.




TEXT-FIG. 2.—*Lobopteromyia prosopidis*, sp. nov. *a*. A leaf showing some galls ; *b*. A single pinna with galls magnified showing surface details.

The galls appear in Delhi about the month of June and adult midges emerge in August-September. Galls form on rachides of leaves and are solid, globose, woody structures measuring up to about 7 mm. in

[1] Mani, M. S., *Rec. Ind. Mus.* XXXVII, p. 449 (1935).

diameter, usually brownish in colour and containing one to two midges. Sometimes galls form crowded together resulting in a compound moniliform production. Several examples in formalin in Imperial Entomologist's collection and Zoological Survey of India collection, Calcutta.

### **Odinadiplosis** Mani.

1935. *Odinadiplosis*, Mani, *Rec. Ind. Mus.* XXXVII, p. 435.

Since this genus was erected by me in 1935 with *O. odinae* Mani as the type, Barnes[1] has transferred to it another interesting species *Cecidomyia amygdali* Anagnos., which is a serious pest of almonds in Greece. *Odinadiplosis amygdali* (Anagnos.) produces galls on the buds of almond trees and thus seriously affects its growth and fruit production. The genus thus appears to have a wide range of distribution extending from the Palaearctic to the Indian regions.

### **Diadiplosis indica** Felt.

1934. *Diadiplosis indica*, Mani, *Rec. Ind. Mus.* XXXVI, p. 424.

I refer to this species one female and one male in the Pusa collection labelled as having been bred from the scale insect *Phaenococcus hirsutus* at Pusa, October-November, 1918.

Basal clasp segment of male genitalia broad; terminal clasp segment short, about three fourths the length of the basal; moderately stout, slightly curved, apically armed with a long, sharp, curved spine.

### **Raodiplosis orientalis** Felt.

1920. *Raodiplosis orientalis*, Felt, *Mem. Depart. Agric. Ind., Ent. Ser.* VII, p. 6.

To this species are referred several males and females in the Pusa collection labelled as having been bred from maggots found under the bark of a mango tree in Thaton, Burma.

### **Orseoliella apludae** Felt.

1920. *Orseoliella apludae*, Felt, *Mem. Depart. Agric. Ind., Ent. Ser.* VII, p. 8.

I refer to this species three specimens in the Pusa collections labelled as having been bred from galls on *Apluda varia* at Coimbatore by Y. R. Rao.

### **Pachydiplosis oryzae** Mani.

1934. *Pachydiplosis oryzae*, Mani, *Rec. Ind. Mus.* XXXVI, p. 433.

I refer to this species one female and one male in the Pusa collection labelled as having been bred from the silver-shoot gall of *Oryza sativa* at Coimbatore by Y. R. Rao, 31st July, 1916.

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[1] Barnes, H. F., *Journ. South-Eastern Agric. Coll., Wye, Kent* XXXVIII, pp. 75-77 (1936).