



ON A COLLECTION OF FLOWER FLIES (DIPTERA :  
SYRPHIDAE) WITH NEW RECORDS FROM  
JAMMU AND KASHMIR

*By*

M. DATTA AND (MISS) M. CHAKRABORTI  
*Zoological Survey of India, Calcutta*

(With 14 Text-figures)

INTRODUCTION

This report is based on the material from Jammu and Kashmir, collected by the senior author in a party led by Dr. R. C. Basu of the Zoological Survey of India in 1977. Of 25 species reported here, 18 species (with an asterisk) are recorded for the first time from the State. In addition, illustrations of male terminalia of 14 species are incorporated in an attempt to establish stability in generic and specific definition. For the preparation of terminalia studies, Nayar (1968) is followed.

SYSTEMATIC ACCOUNT

Subfamily SYRPHINAE

Tribe SYRPHINI

\* 1. *Asarkina (Asarkina) ericetorum* (Fabricius)

(Text-fig. 1 a-b)

1781. *Syrphus ericetorum* Fabricius, *Spec. Insect.*, 2 : 425.

1915. *Asarcina ericetorum* (Fabricius) : Brunetti, *Rec. Indian Mus.*, 11 : 210.

1975. *Asarkina (Asarkina) ericetorum* (Fabricius) : Knutson *et al.*, *A catalog of Diptera of the Oriental Region*, 2 : 309.

*Material examined* : 1 ♂ (ZSI Reg. No. 5665/H<sub>6</sub>) on flowers of *Solanum nigrum*, Talab Tiloo, Jammu, 2.x.1977 ; 1 ♂ (ZSI Reg. No. 5666/H<sub>6</sub>) on flowers of *Lantana camara*, Circuit House campus, Jammu, 4.x.1977 ; 2 ♀ ♀ (ZSI Reg. Nos. 5667/H<sub>6</sub> & 5668/H<sub>6</sub>) on *Amaranthus spinosa* and *Commelina bengalensis*, Udhampur, 27.ix.1977 and 28.ix.1977.

*Distribution* : This species has been reported to occur throughout the Orient and has also been reported from Africa, Australia, Fiji, Moluccas, New Guinea and Samoa (Knutson *et al.*, 1975).

**\*2. Episyrphus balteatus (De Geer)**

1776. *Musca balteata* De Geer, *Me'm. pour serv. Hist. Ins.*, 6 : 116.  
 1908. *Syrphus balteatus* (De Geer) : de Meijere, *Tijdschr. Ent.*, 51 : 297.  
 1975. *Episyrphus balteatus* (De Geer) : Knutson *et al.*, *A catalog of Diptera of the Oriental Region*, 2 : 314.

*Material examined* : 1 ♂ (ZSI Reg. No. 5670/H<sub>6</sub>) on *Foeniculum vulgare*, Baramula, 17.ix.1977 ; 1 ♂, 2 ♀ ♀ (ZSI Reg. Nos. 5671/H<sub>6</sub> - 5673/H<sub>6</sub>) on *Cannabis* sp. and *Trifolium repens*, Bijbihara, 22.ix.1977 ; 6 ♂ ♂, 4 ♀ ♀ (ZSI Reg. Nos. 5674/H<sub>6</sub>-5683/H<sub>6</sub>) on *Rubus ellipticus*, *Nicotiana plumbaginifolia*, *Commelina obliqua* and *Climatis* sp., Udhampur, 27.ix.1977-28.ix.1977 ; 4 ♂ ♂, 6 ♀ ♀ (ZSI Reg. No. 5684/H<sub>6</sub>-5693/H<sub>6</sub>) on *Lantana camara*, *Justicia simplex*, *Commelina bengalensis* and *Climatis* sp., Jammu Circuit House area, 1.x.1977-4.x.1977 ; 1 ♂, 1 ♀, (ZSI Reg. Nos. 5694/H<sub>6</sub>-5695/H<sub>6</sub>) on *Justicia simplex*, Sankarnarayanpur, 20. ix. 1977 ; 1 ♂ (ZSI Reg. No. 5696/H<sub>6</sub>) on *Lantana camara*, Anantnag, 23.ix. 1977 ; 1 ♂ (ZSI Reg. No. 5697/H<sub>6</sub>) on *Climatis* sp., Chhatabal, 18. ix. 1977 ; 1 ♂, 2 ♀ ♀ (ZSI Reg Nos. 5698/H<sub>6</sub>-5700/H<sub>6</sub>) on *Launaea asplenifolia*, Gulmarg, 13.ix. 1977 ; 3 ♀ ♀ (ZSI Reg. Nos. 5701/H<sub>6</sub>-5703/H<sub>6</sub>) on *Duranta plumieri*, Raipur, 3. x. 1977 ; 1 ♀ (ZSI Reg. No. 5704/H<sub>6</sub>) on *Solanum nigrum*, Talab Tiloo, 1.x. 1977.

*Distribution* : The species has been reported to occur in the entire Oriental region (Knutson *et al.*, 1975), and has also been reported from Australia, Bonin Islands and the Palaeartic region.

The male terminalia of the species has been illustrated by Vockeroth (1969).

**\*3. Ischiodon scutellaris (Fabricius)**

1805. *Scaeva scutellaris* Fabricius, *Syst. Antliat.*, p. 252.  
 1975. *Ischiodon scutellaris* (Fabricius) : Knutson *et al.*, *A catalog of Diptera of the Oriental Region*, 2 : 315.

*Material examined* : 1 ♀ (ZSI Reg. No. 5669/H<sub>6</sub>) on *Panicum* sp., Raipur, 3. x. 1977.

*Distribution* : This species has been reported to have wide distribution from the South-East Asia to Japan. This has also been reported from Australia, Hawaii and Micronesia (Knutson *et al.*, 1975). In Jammu and Kashmir the population of the species is seemingly very low.

**4. Ischyrosyrphus sp.**

*Material examined* : 1 ♂ (ZSI Reg. No. 5705/H<sub>6</sub>) on *Cannabis sativa*, Pahalgam, 25.ix. 1977.

*Remarks* : The single unique specimen is left for future study with further material.

### 5. *Sphaerophoria scripta* (Linnaeus)

1758. *Musca scripta* Linnaeus, *Syst. Nat. Ed.*, 10 : 594.

1975. *Sphaerophoria scripta* (Linnaeus) : Knutson *et al*, *A catalog of Diptera of the Oriental Region*, 2 : 319.

*Material examined* : 40 ♂♂, 34 ♀♀ (ZSI Reg. Nos. 5706/H<sub>6</sub>-5778/H<sub>6</sub>) on *Solanum nigrum*, *Ammania* sp., *Justicia simplex*, *Digitaria sanguinalis* and *Cynodon* sp., Anantnag, 23.ix.1977 ; 74 ♂♂, 38 ♀♀ (ZSI Reg. Nos. 5779/H<sub>6</sub>-5891/H<sub>6</sub>) on *Cannabis* sp., *Chrysanthemum* sp., *Justicia simplex* and *Cynodon* sp., Bijbihara, 22. ix. 1977 ; 46 ♂♂, 31 ♀♀ (ZSI Reg. Nos. 5892/H<sub>6</sub>-5968/H<sub>6</sub>) on *Eleusine* sp., *Panicum* sp., *Cannabis sativa* and *Duranta plumieri*, *Kamarwari kamarwari*, 20. ix. 1977 ; 2 ♂♂, 3 ♀♀ (ZSI Reg. No. 5969/H<sub>6</sub>-5973/H<sub>6</sub>) on *Cynodon* sp., Rajbagh, 16.ix.1977 ; 12 ♂♂, 23 ♀♀ (ZSI Reg. Nos. 5974/H<sub>6</sub>-6008/H<sub>6</sub>) on *Solanum nigrum*, *Eleusine indica* and *Cynodon* sp., Kabutarkhana, 19. ix. 1977 ; 23 ♂♂, 17 ♀♀ (ZSI Reg. Nos. 6009/H<sub>6</sub>-6048/H<sub>6</sub>) on *Launaea* sp., *Eleusine* sp. and *Cynodon* sp., Gulmarg, 13. ix. 1977 ; 23 ♂♂, 17 ♀♀ (ZSI Reg. Nos. 6049/H<sub>6</sub>-6088/H<sub>6</sub>) on *Sida* sp., *Tridax* sp., *Sonchus asper* and *Eleusine indica*, Chhatabal, 18. ix. 1977 ; 5 ♂♂, 16 ♀♀ (ZSI Reg. Nos. 6089/H<sub>6</sub>-6109/H<sub>6</sub>) on *Chrysanthemum* sp., *Cannabis* sp. and *Tridax* sp., Hazratbal, 14. ix. 1977 ; 3 ♂♂, 3 ♀♀ (ZSI Reg. Nos. 6110/H<sub>6</sub>-6115/H<sub>6</sub>) on *Cannabis* sp. and *Cynodon* sp., Lalmandi, Srinagar, 10.ix.1977 ; 7 ♂♂, 22 ♀♀ (ZSI Reg. Nos. 6116/H<sub>6</sub>-6144/H<sub>6</sub>) on *Foeniculum vulgare*, *Chenopodium ambrosoides*, *Polygonum orientale* and *Eleusine* sp., Baramula, 17.ix. 1977 ; 4 ♂♂, 4 ♀♀ (ZSI Reg. Nos. 6145/H<sub>6</sub>-6152/H<sub>6</sub>) on *Cannabis sativa* and *Cynodon* sp., Pahalgam, 25.ix.1977 ; 1 ♂ (ZSI Reg.No. 6153/H<sub>6</sub>) on *Cynodon* sp., Sankarnarayanpur, 28.ix.1977 ; 2 ♂♂ (ZSI Reg. Nos. 6154/H<sub>6</sub>-6155/H<sub>6</sub>) on *Nicotiana glauca*, Udampur, 27.ix.77 ; 2 ♂♂ (ZSI Reg. Nos. 6156/H<sub>6</sub>-6157/H<sub>6</sub>) on *Cynodon* sp., Horticulture Garden, Harwan, 15.ix.1977 ; 2 ♂♂ (ZSI Reg. Nos. 6158/H<sub>6</sub> & 6160/H<sub>6</sub>) on *Lantana camara*, Jammu Circuit House area, 1.x.1977 & 4.x.1977.

*Distribution* : This species has been reported from India (Kashmir) and Nepal, and also from Palearctic region (Knutson *et al*, 1975).

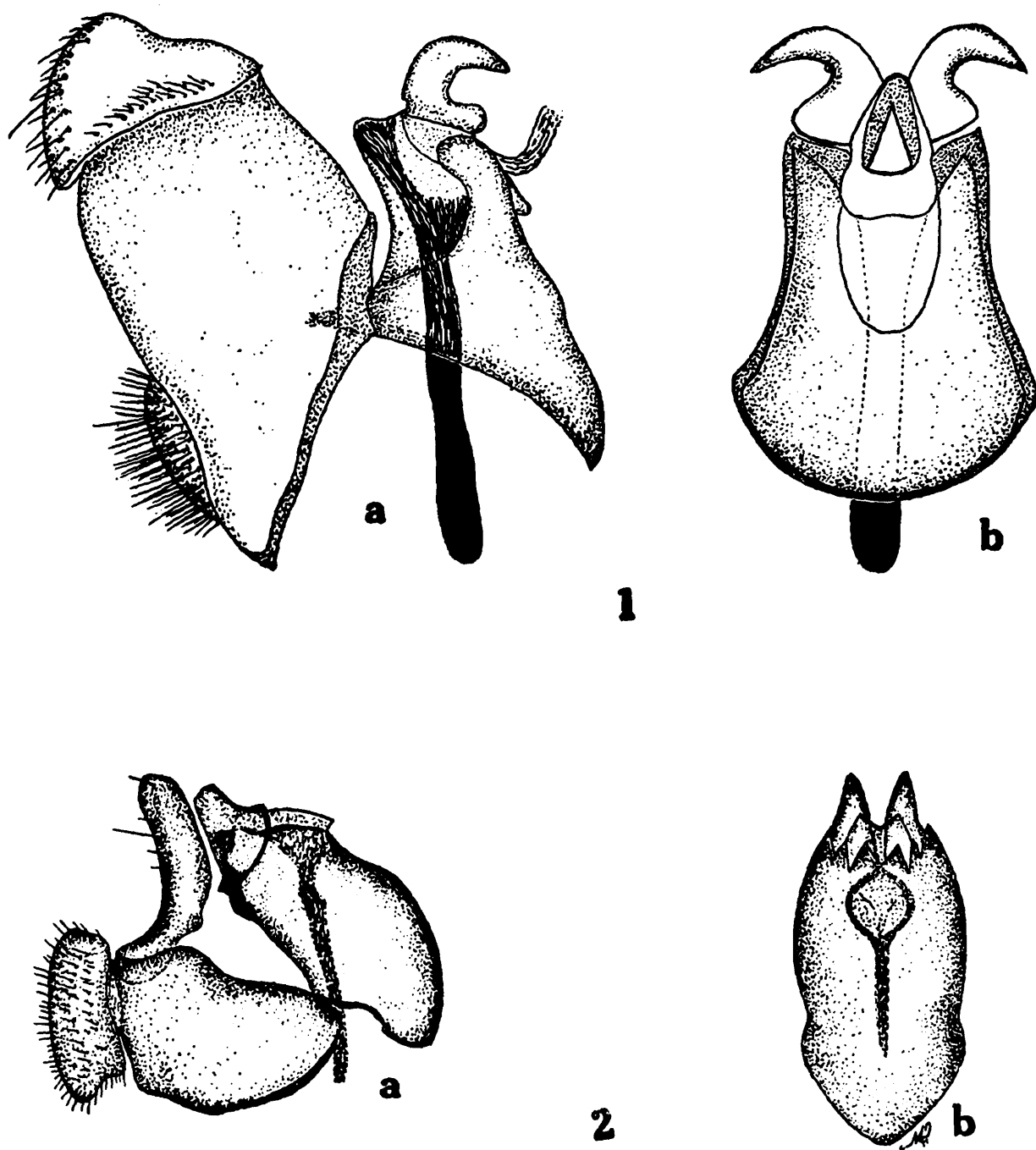
The male terminalia of the species has been illustrated by Vockeroth (1969).

### 6. *Sphaerophoria* sp.

*Material examined* : 3 ♂♂, 2 ♀♀ (ZSI Reg. Nos. 6162/H<sub>6</sub>-6166/H<sub>6</sub>) on *Solanum nigrum* and *Justicia simplex*, Anantnag, 23.ix.1977 ; 4 ♂♂

(ZSI Reg. Nos. 6167/H<sub>6</sub>-6170/H<sub>6</sub>) on *Eleusine indica* and *Sonchus asper*, Chhatabal, 18.ix.1977; 1 ♂ (ZSI Reg. No. 6171/H<sub>6</sub>) on *Panicum* sp., Kamarwari, 20.ix.1977.

*Remarks* : On the preparation of the male terminalia this species appears to be new. But all the specimens are so damaged by the fungal growth that it is desirable not to describe the species until further material is available for studies.



Text-fig. 1. *Asarkina (Asarkina) ericetorum* : a, terminalia (lateral view); b, sternite 9, superior lobes and aedeagal base (ventral view).

Text-fig. 2. *Melanostoma orientale* : a, terminalia (lateral view); b, sternite 9, superior lobes and aedeagal base (ventral view).

\* 7. **Syrphus latifasciatus** (Macquart)

1829. *Syrphus latifasciatus* Macquart, *Ins. Dipt. N. Fr.*, 4 : 94 (242).

1975. *Metasyrphus (Metasyrphus) latifasciatus* (Macquart) : Knutson *et al.*, *A catalog of Diptera of the Oriental region*, 2 : 317.

*Material examined* : 1 ♀ (ZSI Reg. No. 6172/H<sub>6</sub>) on *Cannabis* sp., Bijbihara, 22.ix.1977 ; 1 ♀ (ZSI Reg. No. 6173/H<sub>6</sub>) on *Cynodon* sp., Kamarwari, 26.ix.1977 ; 1 ♀ (ZSI Reg. No. 6174/H<sub>6</sub>) on *Cynodon* sp., Kabutarkhana, 12.ix.1977 ; 1 ♀ (ZSI Reg. No. 6175/H<sub>6</sub>) on *Cannabis* sp., Hazratbal, 14.ix.1977 ; 1 ♀ (ZSI Reg. No. 6176/H<sub>6</sub>) on *Cynodon* sp., Gulmarg, 13.ix.1977 ; 1 ♀ (ZSI Reg. No. 6177/H<sub>6</sub>) on *Polygonum* sp., Pahalgam, 25.ix.1977 ; 1 ♀ (ZSI Reg. No. 6178/H<sub>6</sub>) on *Justicia simplex*, Anantnag, 23.ix.1977.

*Distribution* : All these female specimens do not run to the key to the genus given by Vockeroth (1969) but to the key to the genus and species by Brunetti (1923). Hence, the original citation has been maintained. This species has been reported to occur in India (Himachal Pradesh). The species has originally been described from France (Knutson *et al.*, 1975).

Subfamily SYRPHINAE

Tribe MELANOSTOMATINI

\*8. **Melanostoma orientale** (Wiedemann)

(Text-fig. 2 a-b)

1824. *Syrphus orientalis* Wiedemann, *Analecta Ent.* : p. 36.

1975. *Melanostoma orientale* (Wiedemann) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 325.

*Material examined* : 2 ♂♂ (ZSI Reg. Nos. 6179/H<sub>6</sub>-6180/H<sub>6</sub>) on *Cannabis* sp., Bijbihara, 22. ix. 1977 ; 4 ♂♂, 15 ♀♀ (ZSI Reg. Nos. 6181/H<sub>6</sub>-6199/H<sub>6</sub>) on *Justicia simplex*, *Digitaria sanguinalis* and *Cynodon* sp., Sankarnarayanpur, 20. ix. 1977 ; 6 ♂♂, 4 ♀♀ (ZSI Reg. Nos. 6200/H<sub>6</sub>-6209/H<sub>6</sub>) on *Cynodon* sp. and *Rubus ellipticus*, Udhampur, 27.ix. 1977 ; 3 ♂♂ ; 1 ♀ (ZSI Reg. Nos. 6210/H<sub>6</sub>-6213/H<sub>6</sub>) on *Ammannia* sp. and *Solanum nigrum*, Anantnag, 18. ix. 1977 ; 1 ♂, 1 ♀ (ZSI Reg. Nos. 6214/H<sub>6</sub>-6215/H<sub>6</sub>) on *Sida* sp., Chhatabal, 4.x.1977 ; 2 ♂♂, 3 ♀♀ (ZSI Reg. Nos. 6216/H<sub>6</sub>-6220/H<sub>6</sub>) on *Lantana camara*, Jammu, 3. x. 1977 ; 1 ♀ (ZSI Reg. No. 6221/H<sub>6</sub>) on *Cynodon* sp., Talabtiloo, 2. x. 1977 ; 1 ♀ ZSI Reg. No. (6222/H<sub>6</sub>) on *Cynodon* sp., Raipur, 2.x.1977.

*Distribution* : This species has been reported to occur throughout the Orient (Knutson *et al.*, 1975).

9. *Melanostoma* sp.

*Material examined* : 6 ♀♀ (ZSI Reg. Nos. 6224/H<sub>6</sub>-6229/H<sub>6</sub>) on *Solanum nigrum* and *Eleusine indica*, Kabutarkhana, 12. ix. 1977 ; 4 ♀♀ (ZSI Reg. Nos. 6230/H<sub>6</sub>-6233/H<sub>6</sub>) on *Solanum nigrum*, Anantnag, 23. ix. 1977 ; 1 ♀ (ZSI Reg. 6234/H<sub>6</sub>) on *Cynodon* sp., 13. ix. 1977 ; 2 ♀♀ (ZSI Reg. Nos. 6235/H<sub>6</sub>-6236/H<sub>6</sub>) on *Solanum nigrum*, Chhatabal, 18. ix. 1977 ; 6 ♀♀ (ZSI Reg. Nos. 6237/H<sub>6</sub>-6242/H<sub>6</sub>) on *Cannabis* sp. and *Chrysanthemum* sp., Bijbihara, 22. ix. 1977.

*Remarks* : This species is left for confirmation in future when male specimens will be available for studies.

## Subfamily SYRPHINAE

## Tribe CHRYSOTOXINI

\*10. *Chrysotoxum baphyrus* Walker

(Text-fig. 3 a-b)

1849. *Chrysotoxum baphyrus* Walker, *List Dipt. Br. Mus.*, 3 : 542.

1975. *Chrysotoxum baphyrus* Walker : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 326.

*Material examined* : 1 ♂ (ZSI Reg. No. 6243/H<sub>6</sub>) on *Cynodon* sp., Jammu C. H. Campus, 14. x. 1977 ; 1 ♀ (ZSI Reg. No. 6244/H<sub>6</sub>) on *Ipomoea* sp., Sankarnarayanpur, 29. ix. 1977 ; 1 ♀ (ZSI Reg. No. 6245/H<sub>6</sub>) on *Climatis* sp., Chhatabal, 18. ix. 1977.

*Distribution* : This species has been reported to occur in Uttar Pradesh in India (Knutson *et al.*, 1975) and has also been reported from Sri Lanka, Indochina, Laos, Nepal and possibly Java.

## Subfamily SYRPHINAE

## Tribe PARAGINI

\* 11. *Paragus (Paragus) serratus* (Fabricius)

(Text-fig. 4 a-b)

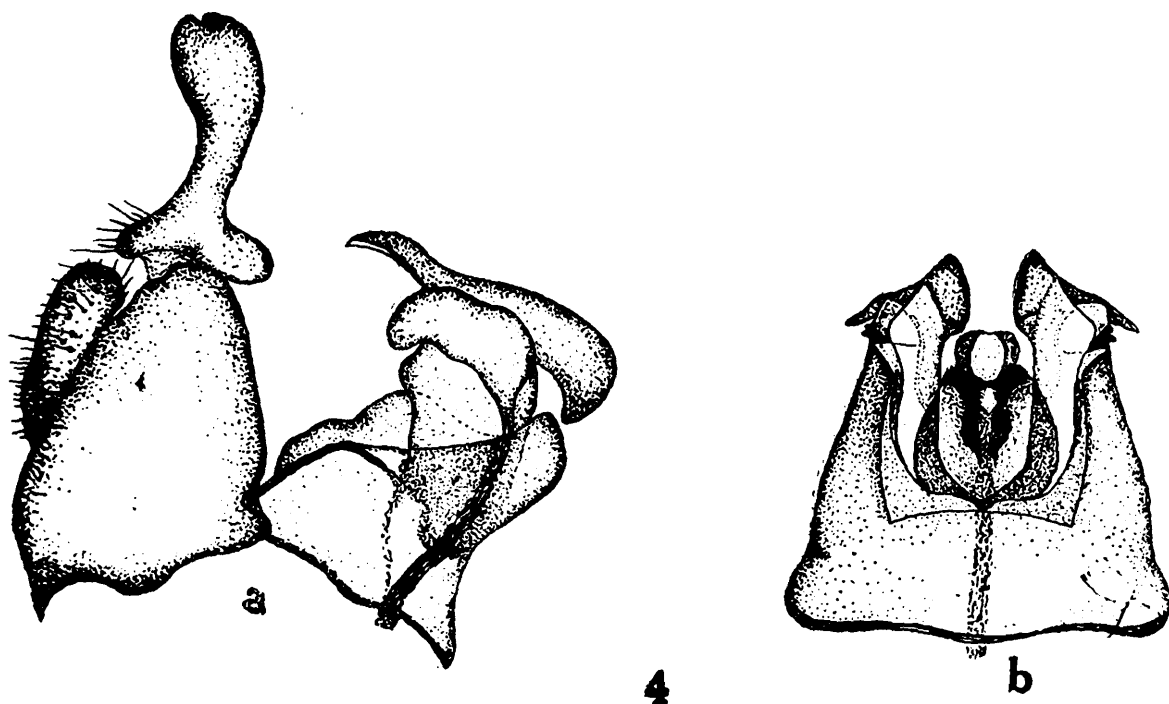
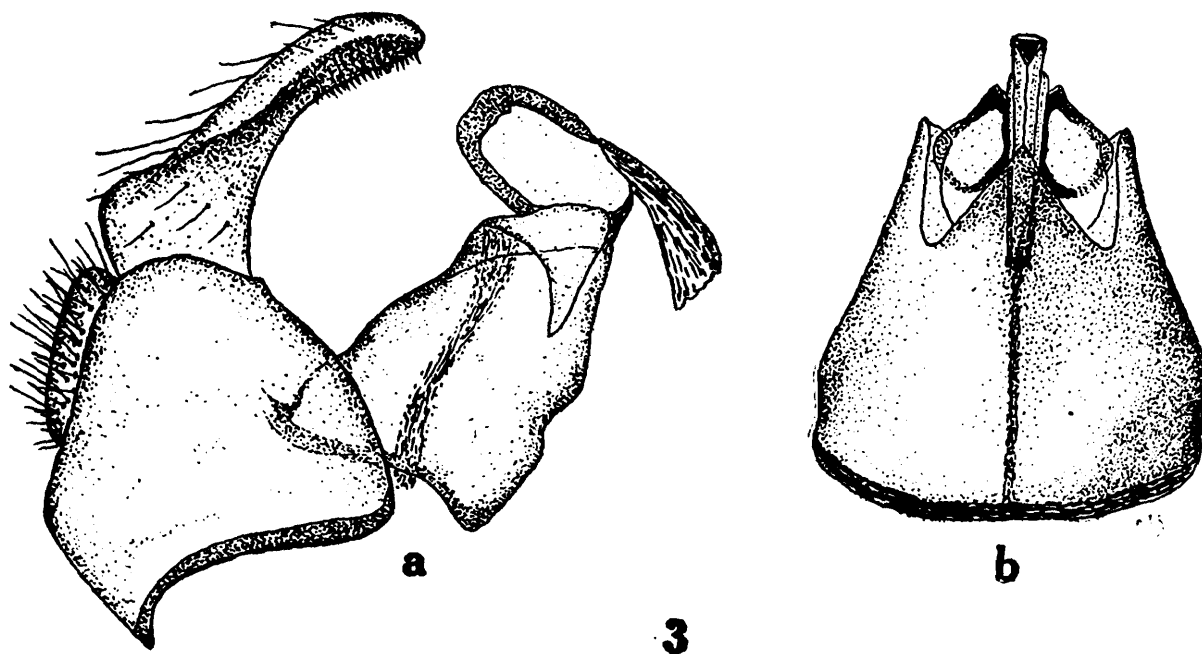
1805. *Mulio serratus* Fabricius, *Syst. Antliat.* : 186.

1830. *Paragus serratus* (Fabricius) : Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 88.

1975. *Paragus (Paragus) serratus* (Fabricius) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 327.

*Material examined* : 2 ♂♂, 1 ♀ (ZSI Reg. Nos. 6246/H<sub>6</sub>-6248/H<sub>6</sub>) on *Solanum nigrum*, Chhatabal, 18. ix. 1977 ; 1 ♀ (ZSI Reg. No. 6249/H<sub>6</sub>) on *Solanum nigrum*, Sankarnarayanpur, 20. ix. 1977 ; 9 ♂♂, 1 ♀ (ZSI Reg. Nos. 6250/H<sub>6</sub>-6257/H<sub>6</sub> and 6262/H<sub>6</sub>-6263/H<sub>6</sub>) on *Ageratum conyzoides*, *Polygonum orientale* and *Lantana camara*, Jammu, 1. x. 1977-4. x.

1977 ; 1 ♂ (ZSI Reg. No. 6258/H<sub>6</sub>) on *Lantana camara*, Rangawara, 19.ix.1977 ; 1 ♂ (ZSI Reg. No. 6259/H<sub>6</sub>) on *Solanum nigrum*, Raipur, 3.x. 1977 ; 2 ♂ ♂ (ZSI Reg. No. 6260/H<sub>6</sub>-6261/H<sub>6</sub>) on *Solanum nigrum*, Talabtiloo, 1.x.1977.



Text-fig. 3. *Chrysotoxum baphyrus* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

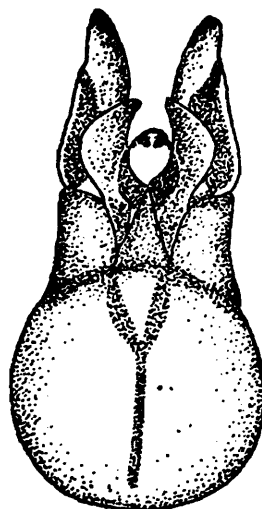
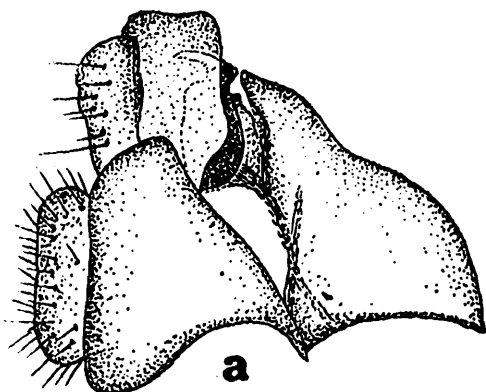
Text-fig. 4. *Paragus (Paragus) serratus* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

*Distribution* : This species has been reported to occur in Madhya Pradesh, Maharashtra, Tamil Nadu, Karnataka and Punjab in India (Knutson *et al*, 1975).



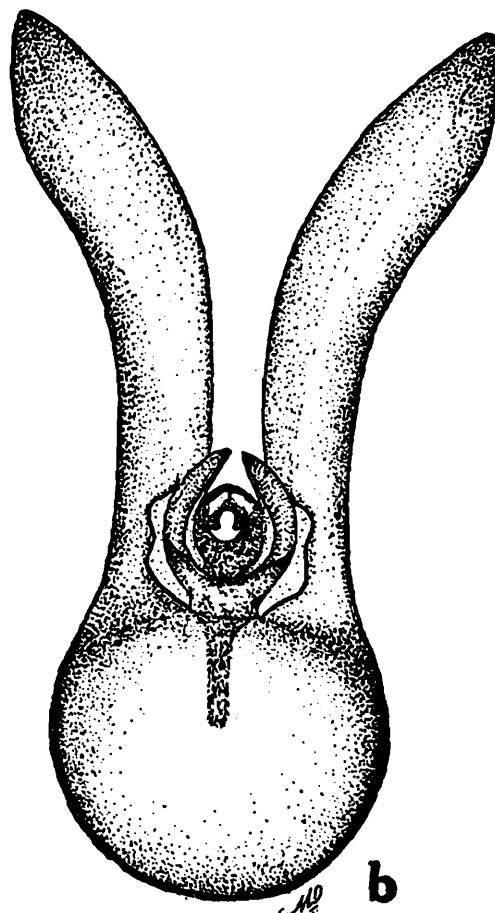
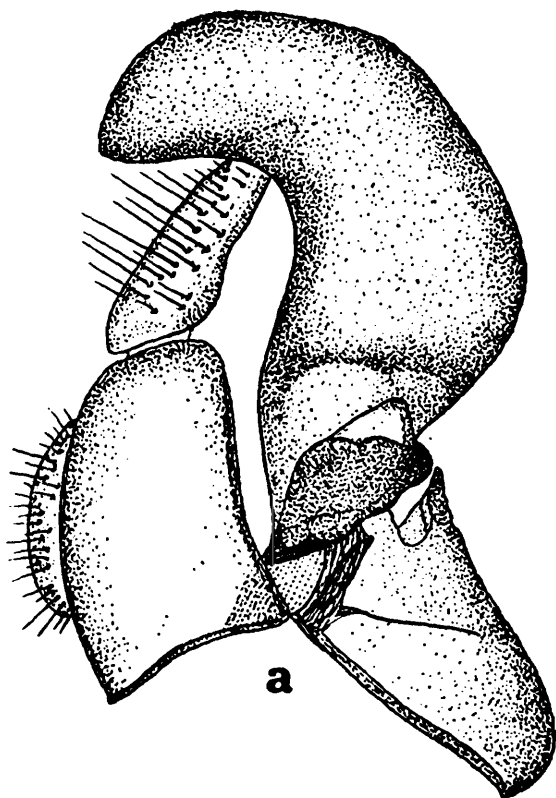
\* 12 *Paragus* (*Pandasyophthalmus*) *tibialis* (Fallén)

(Text-fig. 5 a-b)

1817. *Pipiza tibialis* Fallén, *Syrphici Sveciae*, : 60.1862. *Paragus tibialis* (Fallén) : Schiner, *Fauna Austr.*, 1 : 257.1975. *Paragus* (*Pandasyophthalmus*) *tibialis* (Fallén) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 328.

5

b



6

b

Text-fig. 5. *Paragus* (*Pandasyophthalmus*) *tibialis* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).Text-fig. 6. *Paragus* (*Pandasyophthalmus*) *rufiventris* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

*Material examined* : 1 ♂, 1 ♀ (ZSI Reg. Nos. 6293/H<sub>6</sub>-6294/H<sub>6</sub>) on *Solanum nigrum*, Chhatabal, 18.ix. 1977 ; 2 ♂♂, 1 ♀ (ZSI Reg. Nos. 6295/H<sub>6</sub>-6297/H<sub>6</sub>) on *Cynodon* sp., Udhampur, 27.ix.1977-28.ix.1977 ; 1 ♂ (ZSI Reg. No. 6298/H<sub>6</sub>) on *Cynodon* sp., Kabutarkhana, 12.ix.1977 ; 6 ♀♀ (ZSI Reg. Nos. 6299/H<sub>6</sub>-6304/H<sub>6</sub>) on *Solanum nigrum* and *Amaranthus spinosa*, Jammu, 4.x.1977 ; 2 ♀♀ (ZSI Reg.No. 6305/H<sub>6</sub>-6306/H<sub>6</sub>) on *Solanum* sp., Bijbihara, 22.ix.1977 ; 1 ♀ (ZSI Reg. No. 6307/H<sub>6</sub>) on *Cynodon* sp., Sankarnarayanpur, 29.ix.1977 ; 1 ♀ (ZSI Reg. No. 6308/H<sub>6</sub>) on *Cynodon* sp., Talabtiloo 1.x.1977, 1 ♀ (ZSI Reg. No. 6309/H<sub>6</sub>) *Cynodon* sp., Raipur, 3.x.1977.

*Distribution* : This is an Oriental species occurring throughout the region (Knutson *et al.*, 1975).

**\* 13. *Paragus (Pandasyophthalmus) rufiventris* Brunetti**

(Text-fig. 6 a-b)

1913. *Paragus rufiventris* Brunetti, *Rec. Indian Mus.*, 8 : 157.

1975. *Paragus (Pandasyophthalmus) rufiventris* Brunetti : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 328 (As subspecies of *P. (P.) tibialis* (Fallén)).

*Material examined* ; 10 ♂♂, 1 ♀ (ZSI Reg. Nos. 6264/H<sub>6</sub>-6274/H<sub>6</sub>) on *Lantana camara*, *Cynodon* sp. and *Solanum nigrum*, Udhampur, 27.x. 1977-28.x.1977 ; 9 ♂♂ (ZSI Reg. Nos. 6275/H<sub>6</sub>-6283/H<sub>6</sub>) on *Lantana camara* and *Solanum nigrum*, Jammu, 1.x.1977 and 4.x.1977 ; 5 ♂♂ (ZSI Reg. Nos. 6284/H<sub>6</sub>-6288/H<sub>6</sub>) on *Solanum nigrum*, Raipur, 3.x.1977 ; 2 ♂♂ (ZSI Reg. Nos. 6289/H<sub>6</sub>-6290/H<sub>6</sub>) on *Lantana camara*, Talabtiloo, 1.x.1977 ; 2 ♂♂ (ZSI Reg. Nos. 6291/H<sub>6</sub>-6292/H<sub>6</sub>) on *Solanum nigrum*, Chhatabal, 18.ix.1977.

*Distribution* : This species has been reported to occur in Assam, Bihar and Uttar Pradesh in India (Knutson *et al.*, 1975). This species has also been recorded from Sri Lanka, Nepal and Pakistan.

This is not treated here as subspecies for its difference in male terminalia (Text-fig. 6) from that of *P. (P.) tibialis* (Fallén).

**\*14. *Paragus (Pandasyophthalmus) atratus* de Meijere**

(Text-fig. 7 a-b)

1906. *Paragus atratus* de Meijere, *Nova Guinea*, 1 : 85.

1975. *Paragus (Pandasyophthalmus) atratus* de Meijere : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 328.

*Material examined* : 4 ♂♂ (ZSI Reg. Nos. 6310/H<sub>6</sub>-6313/H<sub>6</sub>) on *Solanum nigrum*, Udhampur, 27-28.ix. 1977 ; 1 ♂ (ZSI Reg. No. 6314/H<sub>6</sub>) on *Cynodon* sp., Bijbihara, 23.ix. 1977.

*Distribution* : This species has been reported from Uttar Pradesh in India (Knutson *et al*, 1975) and has also been reported from Malaya, Java, Sumatra, Timor and New Guinea.

### 15. *Paragus* sp.

*Material examined* : 1 ♂ (ZSI Reg. No. 6315/H<sub>6</sub>) on *Cynodon* sp., Bijbihara, 23.ix. 1977.

*Remarks* : This species is left for confirmation in future when further material will be available for studies.

### Subfamily MILESIINAE

#### Tribe VOLUCCELLINI

### \*16. *Graptomyza brevirostris* Wiedemann

1820. *Graptomyza brevirostris* Wiedemann, *Nova Dipt. Gen.* : 17.

1975. *Graptomyza brevirostris* Wiedemann : Knutson *et al*, *A Catalog of Diptera of the Oriental Region*, 2 : 333.

*Material examined* : 1 ♀ (ZSI Reg. No. 6316/H<sub>6</sub>) on *Herpestis* sp., Udhampur, 28.ix. 1977.

*Distribution* : This species has been reported from Tamil Nadu in India (Knutson *et al*, 1975). This has also been reported from Nepal, Burma, Philippines, Borneo, Java, Malaya and Sri Lanka.

### Subfamily MILESIINAE

#### Tribe ERISTALINI

### \*17. *Eristalinus taphicus* Wiedemann

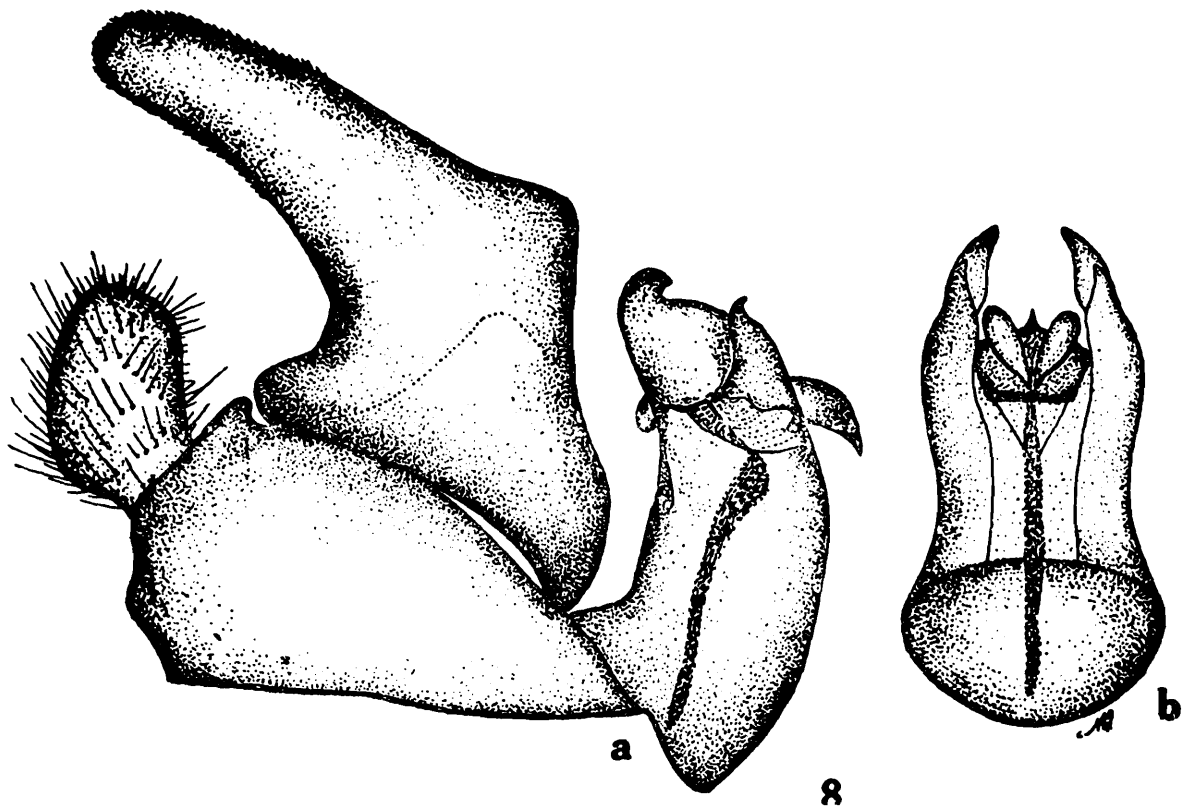
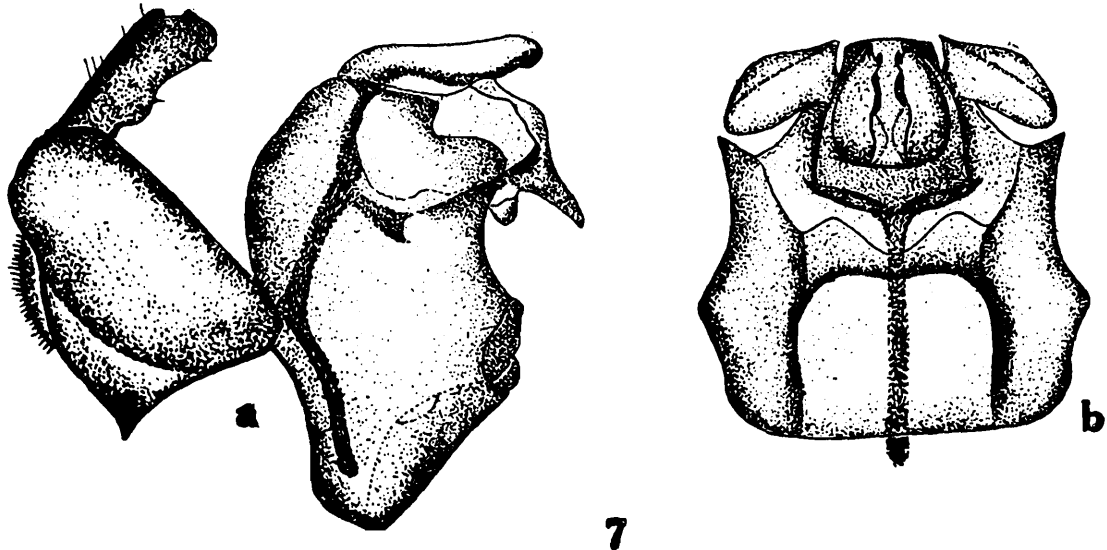
(Text-fig. 8 a-b)

1830. *Eristalis taphicus* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 191.

1975. *Eristalinus taphicus* (Wiedemann) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 347 (As variety of *E. aeneus* (Scopoli)).

*Material examined* : 3 ♂♂ (ZSI Reg. Nos. 6317/H<sub>6</sub>-6319/H<sub>6</sub>) on *Tridax* sp., Lalmandi, Srinagar, 10.ix. 1977 ; 1 ♂ (ZSI Reg. No. 6320/H<sub>6</sub>) on *Zinnia* sp., Kamarwari, 20.ix. 1977 ; 1 ♀ (ZSI Reg. No. 6321/H<sub>6</sub>) on *Tagetes patula*, Rajbagh, 16.ix. 1977 ; 2 ♀♀ (ZSI Reg. Nos. 6322/H<sub>6</sub>-6323/H<sub>6</sub>) on *Tridax* sp., Kabutarkhanna, 12.ix. 1977.

*Distribution* : This species has been reported to occur in Maharashtra and Uttar Pradesh in India (Knutson *et al*, 1975) and has also been reported from China, Pakistan, Cyprus, Egypt, France, Korea and Monaco.



Text-fig. 7. *Paragus (Pandasyophthalmus) atratus* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

Text-fig. 8. *Eristalinus taphicus* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

\* 18. ***Eristalinus arvorum* (Fabricius)**  
(Text-fig. 9 a-b)

1787. *Syrphus arvorum* Fabricius, *Mantissa Insect.*, 2 : 335.

1908. *Eristalis arvorum* (Fabricius) : de Meijere, *Tijdschr. Ent.*, 51 : 247.

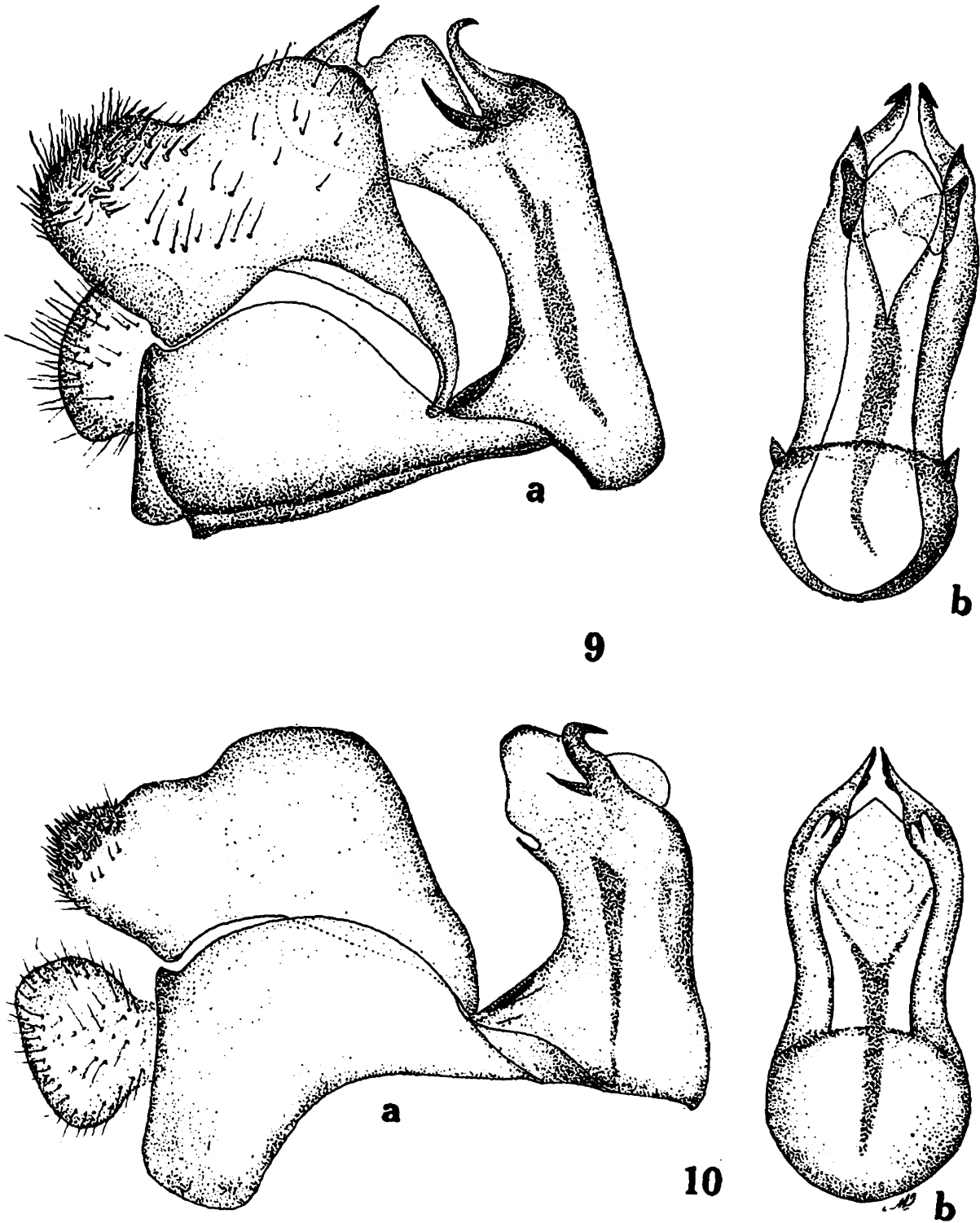
1975. *Eristalinus arvorum* (Fabricius) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 347.

*Material examined* : 3 ♂♂ (ZSI Reg. Nos. 6329/H<sub>6</sub>-6331/H<sub>6</sub>), Rajendra Park, 3.xi.1976. Coll. S. K. Gupta.

*Distribution* : This species has been reported from the entire South-East Asia (Knutson *et al*, 1975). This has also been reported from Australia, Hawaii, Japan and Micronesia.

The male terminalia drawn here (Text-fig. 9) shows differences from that by Nayar (1968).

19. *Eristalinus laetus* (Wiedemann)  
(Text-fig. 10 a-b)



Text-fig. 9. *Eristalinus arvorum* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

Text-fig. 10. *Eristalinus laetus* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

1830. *Eristalis laetus* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 192.

1975. *Eristalinus laetus* (Wiedemann) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 348.

*Material examined* : 1 ♂ (ZSI Reg. No. 6326/H<sub>6</sub>) on *Tagetes patula*, Bijbihara, 22.ix.1977 ; 1 ♀ (ZSI Reg. No. 6327/H<sub>6</sub>) on *Tagetes patula*, Kamarwari, 20.ix.1977 ; 1 ♀ (ZSI Reg. No. 6327/H<sub>6</sub>) on *Tagetes patula*, Rajbagh, Srinagar, 16.ix.1977.

*Distribution* : This species has been reported from Andhra Pradesh, Maharashtra and Kashmir (Brunetti, 1923). This has also been reported from Bangladesh, Sri Lanka, China, Formosa, Malaya, Nepal, Java, Sumatra, Sumbawa and Philippines.

\* 20. ***Eristalinus (Eristalodes) paria*** (Bigot)

(Text-fig. 11 a-b)

1880. *Eristalomyia paria* Bigot, *Annls Soc. ent. Fr.*, 10 : 218.

1975. *Eristalinus (Eristalodes) paria* (Bigot) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 349.

*Material examined* : 1 ♂, 1 ♀ (ZSI Reg. Nos. 6324/H<sub>6</sub>-6325/H<sub>6</sub>) on *Helianthus* sp., Pahalgam, 25.ix.1977.

*Distribution* : This species has been reported from Himachal Pradesh, Tamil Nadu, Karnataka and Uttar Pradesh in India (Knutson *et al.*, 1975) and has also been reported from Sri Lanka, Formosa, Java, Laos, Malaya, Nepal, Japan and Moluccas.

\* 21. ***Eristalis (Eristalis) tenax*** (Linnaeus)

1758. *Musca tenax* Linnaeus, *Syst. Nat. Ed.*, 10 : 591.

1975. *Eristalis (Eristalis) tenax* (Linnaeus) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 351.

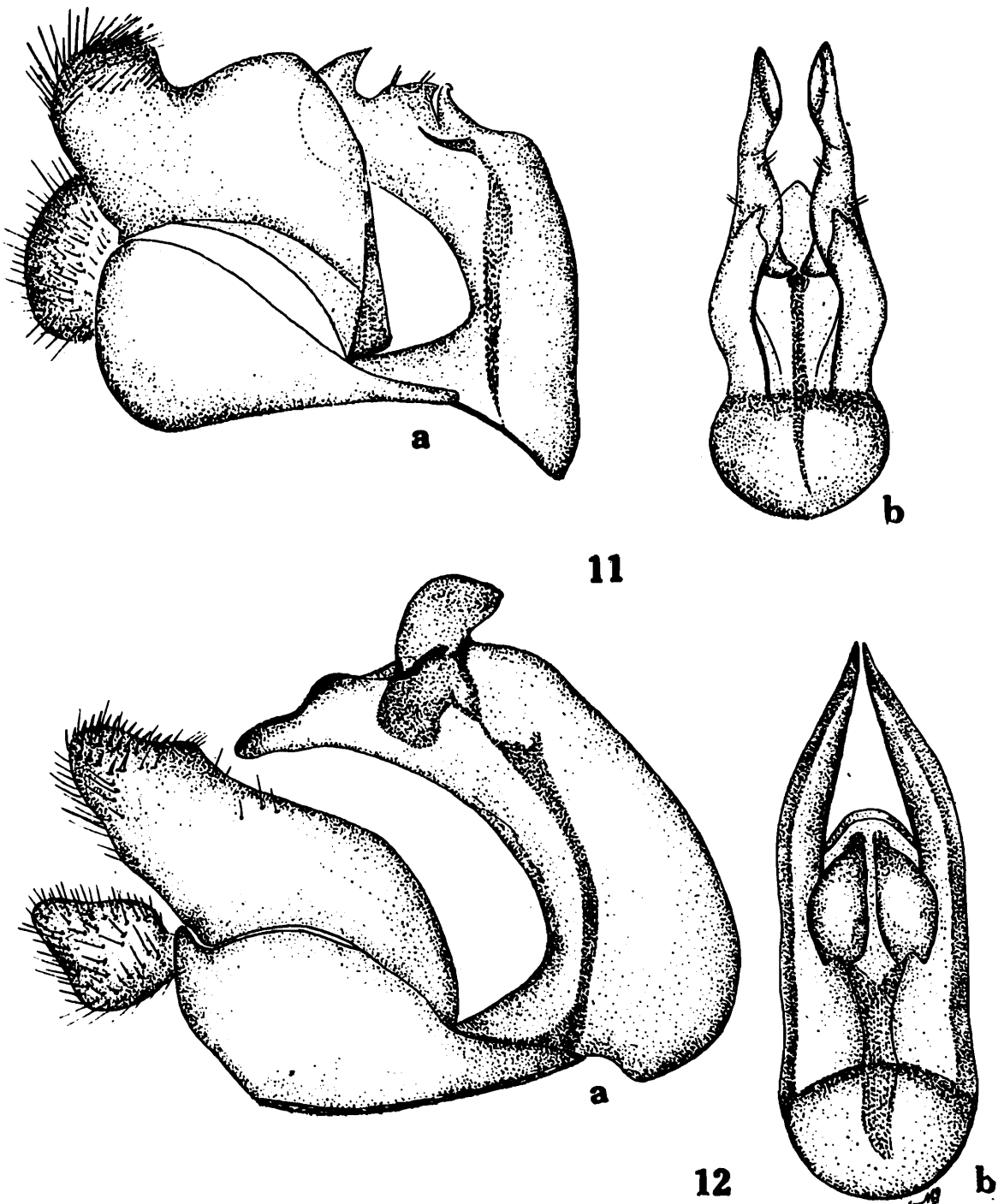
*Material examined* : 9 ♂♂, 3 ♀♀ (ZSI Reg. Nos. 6390/H<sub>6</sub>-6401/H<sub>6</sub>) on *Dahlia* sp., *Helianthus* sp. and *Tagetes patula*, Gulmarg, 13.ix.1977 ; 1 ♂, 4 ♀♀ (ZSI Reg. Nos. 6402/H<sub>6</sub>-6407/H<sub>6</sub>) on *Sonchus asper* and *Chrysanthemum* sp., Pahalgam, 25.ix.1977 ; 1 ♂, 2 ♀♀ (ZSI Reg. Nos. 6408/H<sub>6</sub>-6410/H<sub>6</sub>) on *Tagetes patula*, Hazratbal, 14.ix.1977 ; 1 ♂ (ZSI Reg. No. 6411/H<sub>6</sub>) on *Blumea* sp., Kabutarkhana, 12.ix.1977 ; 1 ♀ (ZSI Reg. No. 6412/H<sub>6</sub>) on *Sonchus asper*, Rangawara, 19.ix.1977 ; 1 ♀ (ZSI Reg. No. 6413/H<sub>6</sub>) on *Tagetes patula*, Lalmandi, Srinagar, 10.ix.1977.

*Distribution* : This species has been reported to occur in the entire Oriental region (Knutson *et al.*, 1975).

For male terminalia, see Nayar (1968).

22. *Eristalis (Eoseristalis) arbustorum* (Linnaeus)

(Text-fig. 12 a-b)

1758. *Musca arbustorum* Linnaeus, *Syst. Nat. Ed.*, 10 : 591.1975. *Eristalis (Eoseristalis) arbustorum* (Linnaeus) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 351.*Material examined* : 1 ♂, 1 ♀ (ZSI Reg. Nos. 6414/H<sub>6</sub>-6414/H<sub>6</sub>) on *Dahlia* sp., Gulmarg, 13.ix.1977 ; 1 ♂, 1 ♀ (ZSI Reg. Nos. 6416/H<sub>6</sub>-Text-fig. 11. *Eristalinus (Eristalodes) paria* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).Text-fig. 12. *Eristalis (Eoseristalis) arbustorum* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).

6417/H<sub>6</sub>) on *Tagetes patula*, Kamarwari, 20.ix.1977 ; 1 ♀ (ZSI Reg. Nos. 6418/H<sub>6</sub>) on *Tagetes patula*, Kabutarkhana 25.ix.1977 ; 2 ♂ ♂ (ZSI Reg. Nos. 6419/H<sub>6</sub>-6420/H<sub>6</sub>) on *Tagetes patula*, Hazratbal, 14.ix. 1977 ; 5 ♂ ♂ (ZSI Reg. Nos. 6421/H<sub>6</sub>-6425/H<sub>6</sub>) on *Tagetes patula*, Lalmandi, Srinagar, 10.ix.1977 ; 5 ♂ ♂ (ZSI Reg. Nos. 6426/H<sub>6</sub>-6430/H<sub>6</sub>) on *Chrysanthemum* sp. and *Sonchus asper*, Pahalgam, 25.ix.1977 ; 8 ♂ ♂ (ZSI Reg. Nos. 6431/H<sub>6</sub>-6438/H<sub>6</sub>) on *Melilotus alba*, *Sida rhombifolia* and *Sonchus asper*, Rajbagh, Srinagar, 16.ix.1977 ; 2 ♂ ♂ (ZSI Reg. Nos. 6439/H<sub>6</sub>-6440/H<sub>6</sub>) on *Lindenbergia* sp., Chhatabal, 18.ix.1977.

*Distribution* : This species has already been reported from Kashmir (Knutson *et al*, 1975). This is mainly a Holarctic species.

For male terminalia, see Text-fig. 12 for differences from that of Nayar (1968) and Thomson (1972).

**\*23. Eristalis (Eoseristalis) cerealis Fabricius**

(Text-fig. 13 a-b)

1805. *Eristalis cerealis* Fabricius, *Syst. Antliat.* : 232.

1975. *Eristalis (Eoseristalis) cerealis* Fabricius : Knutson *et al.*, *A catalog of Diptera of the Oriental Region*, 2 : 351.

*Material examined* : 6 ♂ ♂, 6 ♀ ♀ (ZSI Reg. Nos. 6332/H<sub>6</sub>-6343/H<sub>6</sub>) on *Sonchus asper*, *Chrysanthemum* sp. and *Tagetes patula*, Pahalgam, 25.ix.1977 ; 1 ♂, 10 ♀ ♀ (ZSI Reg. Nos. 6350/H<sub>6</sub>-6360/H<sub>6</sub>) on *Dahlia* sp., *Helianthus* sp. and *Tagetes patula*, Gulmarg, 13.ix.1977 ; 7 ♀ ♀ (ZSI Reg. Nos. 6361/H<sub>6</sub>-6367/H<sub>6</sub>) on *Tagetes patula* and *Xanthium strumarium* and *Erigeron licifolia*, Kabutarkhana, 12.ix.1977 ; 6 ♀ ♀ (ZSI Reg. Nos. 6368/H<sub>6</sub>-6373/H<sub>6</sub>) on *Tagetes patula* and *Ricinus communis*, Lalmandi, Srinagar, 10.ix.1977 ; 5 ♀ ♀ (ZSI Reg. Nos. 6374/H<sub>6</sub>-6378/H<sub>6</sub>) on *Sonchus asper* and *Melilotus alba*, Rajbagh, Srinagar, 16.ix.1977 ; 1 ♀ (ZSI Reg. No. 6382/H<sub>6</sub>) on *Tagetes patula*, Hazratbal, 14.ix.1977 ; 1 ♀ (ZSI Reg. No. 6383/H<sub>6</sub>) on *Tagetes patula*, Kamarwari. 20.ix.1977 ; 2 ♀ ♀ (ZSI Reg. Nos. 6384/H<sub>6</sub>-6385/H<sub>6</sub>) on *Chrysanthemum* sp., Bijbihara, 20.ix.1977.

*Distribution* : This species has been reported to occur throughout the Oriental region (Knutson *et al*, 1975).

**\*24. Phytomia (Phytomia) errans (Fabricius)**

1787. *Syrphus errans* Fabricius, *Mantissa Insect.*, 2 : 337.

1975. *Phytomia (Phytomia) errans* (Fabricius) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 357.

*Material examined* : 1 ♀ (ZSI Reg. No. 6440/H<sub>6</sub>) on *Lantana camara*, Udhampur, 28.ix.1977.

*Distribution* : This species has been reported to occur throughout South-East Asia (Knutson, *et al* ; 1975), and China and Japan.

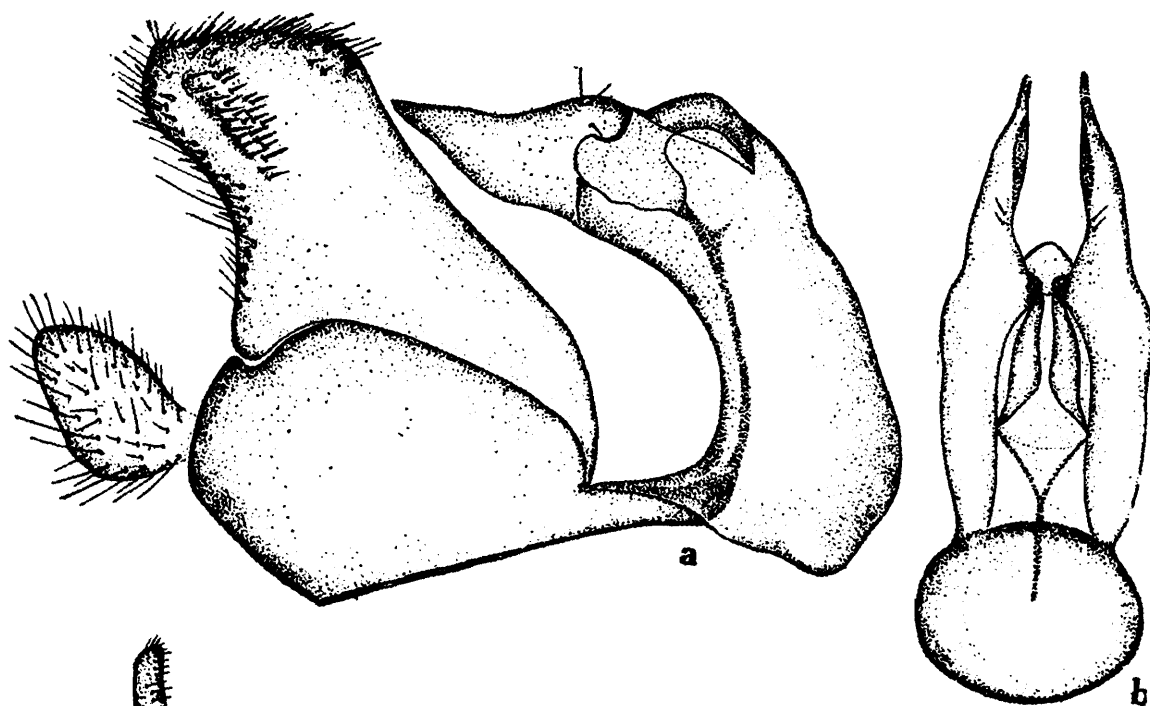


## Subfamily MILESINAE

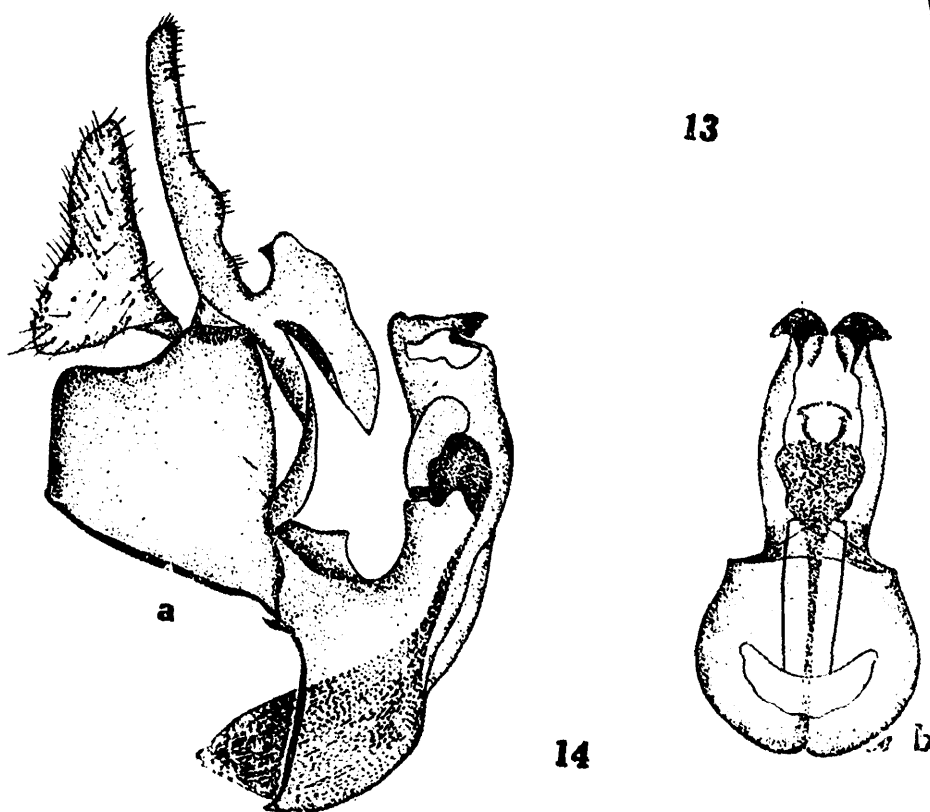
## Tribe MILESINI

\*25. *Syritta pipiens* (Linnaeus)

(Text-fig. 14 a-b)

1758. *Musca pipiens* Linnaeus, *Syst. Nat. Ed.*, 10 : 594.1975. *Syritta pipiens* (Linnaeus) : Knutson *et al.*, *A Catalog of Diptera of the Oriental Region*, 2 : 365.

13



14

Text-fig. 13. *Eristalis (Eoseristalis) cerealis* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).Text-fig. 14. *Syritta pipiens* : a, terminalia (lateral view) ; b, sternite 9, superior lobes and aedeagal base (ventral view).