

**TAXONOMY OF INDIAN TRICHOGRAMMATIDAE  
(HYMENOPTERA : CHALCIDOIDEA)**

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## INTRODUCTION

The members of the family Trichogrammatidae are minute 0.2–1.0 mm long, widely distributed and are characterised by 3-segmented tarsi. They constitute an economically important group of hymenopterous parasites attacking eggs of various groups of insect pests mostly on Lepidoptera and Hemiptera, few on Coleoptera, Diptera and Thysanoptera. They keep the population of their respective host species under check in nature. Keeping in view the economic importance of these parasites in Biological control, it was decided to carry out a comprehensive plan of collecting, rearing and identifying the parasites upto species. This scheme necessitated to take extensive survey of the country by visiting different agricultural spots in India. The survey yielded a good number of species representing Trichogrammatidae.

Westwood (1840) assigned his genus *Trichogramma* in the subfamily Encyrtides. Haliday in Walker (1851) proposed the family group name Trichogrammini. Foerster (1856) named the family as Trichogrammatoidae. Thomson (1878) demoted the family to the rank of tribe Trichogrammina and assigned it under the family Pteromalidae. Ashmead (1904a) recognized Trichogrammatidae as family and divided it into two subfamilies: Trichogramminae and Oligositinae based on discal ciliation of the fore wings.

Girault (1912c) rejected the system of classification proposed by Ashmead (1904a). He divided the family into two subfamilies: Trichogrammatinae and Chaetostrichinae, based on wing venation. He divided the subfamily Trichogrammatinae into two tribes: Trichogrammatini and Poropoeini, on the basis of normal or sigmoid condition of fore wing venation. Also he split Chaetostrichinae into two tribes: Chaetostrichini and Lathromerini on the basis of the presence or absence of funicle.

Kryger (1918) divided the subfamily Trichogrammatinae into three tribes: Trichogrammatini, Oligositini and Brachistini.

Nowicki (1933) divided the family Trichogrammatidae into two subfamilies: Trichogrammatinae and Ophioneurinae, the latter subfamily was proposed by the author himself. He (1935) named the family as Trichogrammidae.

Nikolskaya's (1952) "The Chalcid fauna of the USSR" contains twenty-five genera representing fifty-five species from USSR. She discarded Ashmead's (1904a) and Girault's (1912c) systems of classifying Trichogrammatidae into subfamilies and tribes respectively.

Peck *et al.* (1964) divided the family Trichogrammatidae into two subfamilies: Trichogrammatinae and Lathromerinae.

Doutt & Viggiani (1968), Lin (1981) and Hayat & Subba Rao (1985) followed Nikolskaya (1952) in discarding the suprageneric classification and gave an artificial key to genera of the family Trichogrammatidae.

Viggiani (1971c) divided the family into two subfamilies : Trichogrammatinae and Oligositinae. He further divided the subfamily Trichogrammatinae into two tribes : Trichogrammatini and Paracentrobiini, and the subfamily Oligositinae into Oligositini and Chaetostrichini. Also he proposed a key to subfamilies, tribes and some genera of Trichogrammatidae, mainly based on male genitalic characters.

The present authors recognized two subfamilies and five tribes under the family Trichogrammatidae as follows :

1. Subfamily Trichogrammatinae Haliday, 1851
  - A. Tribe Trichogrammatini Haliday, 1851  
= Poropocini Girault, 1912. Syn. n.
  - B. Tribe Aphelinoidini trib. n.
2. Subfamily Oligositinae Ashmead, 1904
  - = Chaetostrichinae Girault, 1912. Syn. n.
  - A. Tribe Megaphragmini trib. n.
  - B. Tribe Oligositini Ashmead, 1904  
= Chaetostrichini Girault, 1912. Syn. n.  
= Paracentrobiini Viggiani, 1971. Syn. n.
  - C. Tribe Lathromerini Girault, 1912

Taxonomic contributions on Trichogrammatid parasites made by earlier workers from Indian region are as follows.

Ayyar (1925), Beeson (1941), Beeson & Chatterjee (1939), Cherian & Margbandhu (1949), Fazaluddin & Nagarkatti (1971), Hayat (1980, 1981), Hayat & Husain (1981), Hayat & Shuja-Uddin (1980), Hayat & Subba Rao (1985, 1986), Hayat & Viggiani (1981, 1984), Jonathan & Julka (1975), Khan (1975, 1975a, 1976), Khan & Shafee (1977), Livingstone & Yacoob (1983, 1983a), Mani (1935a, 1935b, 1939), Manjunath (1972), Nagaraja (1973, 1978), Nagaraja & Nagarkatti (1969), Nagarkatti (1972), Nagarkatti & Jaya Singh (1974), Nagarkatti & Nagaraja (1968, 1971, 1977, 1979), Pajni & Singh (1973), Subba Rao (1969), Viggiani (1982), Viggiani & Hayat (1974), Yousuf & Shafee (1984a, 1984b, 1984c, 1985a, 1985b, 1985c, 1986a, 1986b).

Doutt & Viggiani (1968) recognized 64 genera and 344 species of Tricho-

grammatidae. Hayat & Viggiani (1984) catalogued 88 species representing 36 genera from Oriental region. Later, Hayat & Subba Rao (1986) listed 63 species representing 25 genera from India and adjacent countries. It is simply a repetition of the earlier catalogue. Yousuf & Shafee (1986a) published "Catalogue of genus-group names of world Trichogrammatidae". In this catalogue they listed 130 genus-group names (71 valid and 59 invalid names). The same authors (1986b) recognized 549 species as valid under the family Trichogrammatidae.

At present the family Trichogrammatidae is known to contain 589 species (including 40 new species) representing 72 genera. 108 species (including 40 new species) representing 26 genera have been reported from India.

Illustrations (figs. 1-3) are provided for better understanding of the morphological structures. Check-list of genera along with distributional data, key to subfamilies, tribes and genera of Indian Trichogrammatidae are provided. All the Indian species have been included to make the work complete, however some of them have not been examined. The characters included in generic diagnosis, specific keys and illustrations are sufficient for the identification of the species. Therefore, the known species have not been redescribed. The new species are described and illustrated.

Two new tribes (Aphelinoidini and Megaphragmini) and one new genus (Parhispidophila) are proposed. Forty new species are proposed : *Aphelinoidea longiclavata* sp. n., *Brachygrammatella jaipurensis* sp. n., *Chaetostricha magniclavata* sp. n., *Epiligosita albiscutellum* sp. n., *Lathromeroidea ajmerensis* sp. n., *Megaphragma aligarhensis* sp. n., *Megaphragma magniclava* sp. n., *Oligosita breviclavata* sp. n., *Oligosita brevifringiata* sp. n., *Oligosita debatensis* sp. n., *Oligosita kasimpurensis* sp. n., *Oligosita longirhinaria* sp. n., *Oligosita ruficorpa* sp. n., *Oligosita younusi* sp. n., *Oligositoides fumipennis* sp. n., *Oligositoides latipennis* sp. n., *Paracentrobia ajmerensis* sp. n., *Paracentrobia bharatpurensis* sp. n., *Paracentrobia brevifringiata* sp. n., *Paracentrobia longipedicelata* sp. n., *Paracentrobia longipennis* sp. n., *Paracentrobia maduraiensis* sp. n., *Paracentrobia neoflava* sp. n., *Paracentrobia parflava* sp. n., *Paracentrobia pubipennis* sp. n., *Paratrichogramma quilonensis* sp. n., *Parhispidophila singularis* sp. n., *Trichogramma brevifringiata* sp. n., *Tumidiclava agraensis* sp. n., *Tumidiclava longiclavata* sp. n., *Tumidiclava magnicorpa* sp. n., *Tumidiclava sasniensis* sp. n., *Tumidiclava tenkasiensis* sp. n., *Ufens alami* sp. n., *Ufens angustipennis* sp. n., *Ufens gurgconensis* sp. n., *Ufens jaipurensis* sp. n., *Ufens latipennis* sp. n., *Ufens singularis* sp. n., *Uscana alami* sp. n.

The tribal names : Chaetostrichini Girault and Paracentrobiini Viggiani

are synonymized with *Oligositini* Ashmead and *Poropoeini* Girault with *Trichogrammatini* Haliday. The genus *Zaga* Girault is synonymized with *Uscana* Girault.

Ten new combinations are established : *Chaetogramma singularis* (Yousuf & Shafee) comb. n. from *Brachygrammatella*, *Hayatia longiclavata* (Yousuf & Shafee) comb. n. from *Paruscianoidea*, *Lathromeroidea angustipennis* (Yousuf & Shafee) comb. n. from *Zaga*, *Ufens afrangiata* (Viggiani & Hayat) comb. n. from *Mirufens*, *Ufens albiscutellum* (Khan & Shafee) comb. n. from *Mirufens*, *Ufens brevifuniculata* (Khan & Shafee) comb. n. from *Mirufens*, *Ufens longiclavata* (Khan & Shafee) comb. n. from *Mirufens*, *Ufens longifuniculata* (Viggiani & Hayat) comb. n. from *Mirufens*, *Ufens magniclavata* (Khan & Shafee) comb. n. from *Mirufens*, *Ufens mangiferae* (Viggiani & Hayat) comb. n. from *Mirufens*.

Two genera : *Lathromeroidea* Girault and *Tumidiclava* Girault and one species : *Lathromeroidea nigrella* Girault are reported for the first time from India.

An attempt has been made for the first time to propose the phylogeny, mainly based on conventional as well as genitalic characters.

The present study is supported by 258 illustrations arranged in 35 plates. The entire study is based on the specimens collected by the authors, as well as on the specimens in the collections of Zoological Museum, Aligarh Muslim University, Aligarh and I. A. R. I., New Delhi. Holotypes, Paratypes and other material examined by the authors, have been deposited in Zoological Museum, Aligarh Muslim University, Aligarh, India.

TABLE 1

Check-list of genera of Trichogrammatidae along with distributional data in six zoogeographical regions of the world.

	Australian	Ethiopian	Nearctic	Neotropical	Oriental	Palearctic
1. <i>Aphelinoidea</i> Girault, 1911	+	+	+	+	+	+
Syn. <i>Diaclava</i> Blood & Kryger, 1928						
<i>Encyrtogramma</i> De Santis, 1957						
<i>Krygeriola</i> Nowicki, 1933						
<i>Lathromerooides</i> Girault, 1913						
<i>Lengerkeniola</i> Nowicki, 1946						

	Australian	Ethiopian	Nearctic	Neotropical	Oriental	Palaeartic
<i>Tanygramma</i> De Santis, 1957						
<i>Thalesanna</i> Girault, 1938						
2. <i>Apseudogramma</i> Girault, 1915	+					
3. <i>Asynacta</i> Foerster, 1856						+
4. <i>Australufens</i> Girault, 1935	+					
5. <i>Bloodiella</i> Nowicki, 1935				+		+
6. <i>Brachista</i> Haliday in Walker, 1851 Syn. <i>Brachysticha</i> Foerster, 1856 <i>Brachystira</i> Mayr, 1904 <i>Chaetostrichella</i> Girault, 1914						+
7. <i>Brachygrammatella</i> Girault, 1915 Syn. <i>Pseudbrachygramma</i> Girault, 1915	+	+			+	
8. <i>Brachyia</i> Strand, 1926, replacement name for <i>Brachygramma</i> Girault	+					
9. <i>Brachyufens</i> Viggiani, 1968			+	+		
10. <i>Ceratogramma</i> De Santis, 1957				+		+
11. <i>Chaetogramma</i> Doult, 1974		+	+		+	
12. <i>Chaetostricha</i> Haliday in Walker, 1851 Syn. <i>Centrobia</i> Foerster, 1856 <i>Centrobiella</i> Girault, 1912 <i>Ratzeburgalla</i> Girault, 1938	+	+	+	+	+	+
13. <i>Doirania</i> Waterston, 1928						+
14. <i>Epoligosita</i> Girault, 1916, replacement name for <i>Paroligosita</i> Girault & Dodd.	+	+			+	+
15. <i>Eteroligosita</i> Viggiani, 1976						+
16. <i>Eutrichogramma</i> Lin, 1981						+
17. <i>Giraultiola</i> Nowicki, 1936 Syn. <i>Giraultia</i> Steffan, 1954			+			+
18. <i>Gnorimogramma</i> De Santis, 1972				+	+	
19. <i>Haeckeliana</i> Girault, 1912	+				+	+
20. <i>Hayatia</i> Viggiani, 1982					+	
21. <i>Hispidophila</i> Viggiani, 1968					+	+
22. <i>Hydrophylita</i> Ghesquiere, 1946, replacement name for <i>Hydrophylax</i> Matheson & Crosby. Syn. <i>Lutzmicron</i> Costa Lima, 1960			+	+		

	Australian	Ethiopian	Nearctic	Neotropical	Oriental	Palaeartic
23. <i>Japania</i> Girault, 1911 Syn. <i>Parufens</i> Girault, 1913	+					+
24. <i>Lathrogramma</i> De Santis, 1952				+		
25. <i>Lathromeris</i> Foerster, 1856 Syn. <i>Garouella</i> Risbec, 1956 <i>Lathromerella</i> Girault, 1912	+	+	+	+	+	+
26. <i>Lathromeroidea</i> Girault, 1912 Syn. <i>Centrobiopsis</i> Girault, 1918	+				+	+
27. <i>Lathromeromyia</i> Girault, 1914	+			+	+	+
28. <i>Megaphragma</i> Timberlake, 1923 Syn. <i>Sethosiella</i> Kryger, 1932		+	+	+	+	+
29. <i>Mirufens</i> Girault, 1915 Syn. <i>Trachocera</i> Blood & Kryger, 1928	+				+	+
30. <i>Monorthochaeta</i> Blood, 1923 Syn. <i>Monorthochaeta</i> Blood & Kryger, 1928				+		+
31. <i>Neobrachista</i> Girault, 1912	+					
32. <i>Neobrachistella</i> Girault, 1912	+					
33. <i>Neocentrobia</i> Girault, 1912	+					
34. <i>Neocentrobiella</i> Girault, 1915	+				+	
35. <i>Neolathromera</i> Ishii, 1934					+	+
36. <i>Oligosita</i> Haliday in Walker, 1851 Syn. <i>Paroligosita</i> Kurdjumov, 1911 <i>Pseudoligosita</i> Girault, 1913 <i>Westwoodella</i> Ashmead, 1904 <i>Zorontogramma</i> Silvestri, 1915	+	+	+	+	+	+
37. <i>Oligositoides</i> Doutt, 1968		+			+	
38. <i>Ophioneurus</i> Ratzeburg, 1852 Syn. <i>Mooa</i> Girault, 1930	+					+
39. <i>Paracentrobia</i> Howard, 1897 Syn. <i>Abbella</i> Girault, 1911 <i>Abbellisca</i> Ghesquiere, 1946 <i>Brachistella</i> Girault, 1911 <i>Ittys</i> Girault, 1911 <i>Jassidophthora</i> Perkins, 1912	+	+	+	+	+	+
40. <i>Paraittys</i> Viggiani, 1973						+



	Australian	Ethiopian	Nearctic	Neotropical	Oriental	Palearctic
41. Paratrichogramma Girault, 1912	+		+		+	
42. Parhispidophila gen. n.					+	
43. Paruscanoidea Girault, 1915	+				+?	
44. Poropoea Foerster, 1851 Syn. <i>Poropoeoides</i> Nowicki, 1936					+	+
45. Prestwichia Lubbock, 1864 Syn. <i>Austromicron</i> Tillyard, 1926	+				+	+
46. Probrachista Viggiani, 1968					+	+
47. Prochaetostricha Lin, 1981						+
48. Prosoligosita Hayat & Husain, 1981					+	
49. Pseudobrachysticha Girault, 1915					+	
50. Pseudogrammina Ghesquiere, 1946, replacement name for <i>Pseudogramma</i> Girault.	+					
51. Pseudoxenufens Yashimoto, 1976				+		
52. Pterandrophysalis Nowicki, 1935						+
53. Pterygogramma Perkins, 1906 Syn. <i>Abbelloides</i> Brethes, 1928	+			+		
54. Soikiella Nowicki, 1934						+
55. Szelenyia Nowicki, 1940						+
56. Thoreauia Girault, 1916 Syn. <i>Austrobelia</i> Girault, 1923 <i>Austrobella</i> Girault, 1928 <i>Tennysoniania</i> Girault, 1920	+					
57. Trichogramma Westwood, 1833 Syn. <i>Aprobosca</i> Westwood, 1879 <i>Calleptiles</i> Haliday, 1833 <i>Neotrichogramma</i> Girault, 1911 <i>Oophthora</i> Aurivillius, 1897 <i>Pentarthron</i> Packard, 1872 <i>Pentarthrum</i> Dalla Torre, 1898 <i>Trichogrammatana</i> Girault, 1932 <i>Xanthoatomus</i> Ashmead, 1904	+	+	+	+	+	+
58. Trichogrammatella Girault, 1911 Syn. <i>Uscanagrammatella</i> Girault, 1911				+		
59. Trichogrammatoidea Girault, 1911	+	+	+	+	+	+

	Australian	Ethiopian	Nearctic	Neotropical	Oriental	Palaeartic
60. Trichogrammatomyia Girault, 1916			+			
61. Tumidiclava Girault, 1911	+		+		+	+
Syn. <i>Orthoneura</i> Blood, 1922						
<i>Orthoneurella</i> Blood & Kryger, 1929						
replacement name for <i>Orthoneura</i> Blood						
62. Tumidifemur Girault, 1911				+		
63. Ufens Girault, 1911	+	+	+	+	+	+
Syn. <i>Grantanna</i> Girault, 1939						
<i>Neocentrobia</i> Blood, 1923						
<i>Neocentrobia</i> Blood & Kryger, 1928						
<i>Stephanotheisa</i> Soika, 1931						
<i>Ufensia</i> Girault, 1913						
64. Urogramma Girault, 1920	+					
65. Uscana Girault, 1911	+	+	+	+	+	+
Syn. <i>Bruchoctonus</i> Grese, 1923						
<i>Zaga</i> Girault, 1911 Syn. n.						
66. Uscanella Girault, 1911				+		
67. Uscanoidea Girault, 1911				+		
68. Uscanopsis Girault, 1916				+		+
69. Xenufens Girault, 1916			+			
70. Xenufensia Girault, 1938	+					
71. Xiphogramma Nowicki, 1940		+			+	+
72. Zagella Girault, 1918				+		+
Syn. <i>Burksiella</i> De Santis, 1957						

### MATERIAL AND METHODS

Collections were made by visiting important agricultural areas of the country. Plant parts infested with insect eggs were cut into small pieces and put in rearing jars (4" × 2"). The open end of the jars were covered with paper held with rubber bands. Attempts have also been made to rear the host up to adult stage for identification. A complete record of rearing was maintained indicating reference number, locality, date of collection, name of host plant and name of host insect. The collections were examined daily for the emerged parasites. The emerged parasites were preserved in 80% alcohol in glass vials. The preserved specimens were separated upto specific level under the binocular with the help of fine needles. Collections were also made by sweeping the vegetation in the field.

The permanent slides were prepared to enable detail study of important structures of the parasites. The normal process of dehydration was adopted and clearing was done in clove oil. The specimens were dissected in clove oil medium. The dissected parts were placed on a micro-slide in a drop of canada balsam and oriented to the required position. The slides were allowed to dry for some time. This was followed by adding required quantity of canada balsam to the slides and cover slips were placed. The slides were put in thermostat for five to six days to make them completely dry.

Drawings of important structures were made with the help of Camera lucida. Measurements of whole insects were made with the help of an ocular micrometer.

## FAMILY TRICHOGRAMMATIDAE HALIDAY

Trichogrammini Haliday in Walker, 1851 : 212.

Trichogrammatoidae, Foerster, 1856 : 1-152.

Trichogrammina, Thomson, 1876 : 307 pp.

Trichogrammatidae, Ashmead, 1904a : 230, 358.

Trichogrammatidae, Girault, 1912c : 87.

Diagnosis : Body small, usually less than 1 mm in length; antennae short, 4 to 8-segmented, funicle usually present, rarely absent; mesoscutum with distinct parapsidal furrows; fore wings narrow or broad, disc sparsely or densely setose, setae usually arranged in rows; marginal vein usually long, postmarginal vein rudimentary or absent, stigmal vein usually well developed, rarely rudimentary; legs with tarsi 3-segmented; parasitic on eggs of other insects.

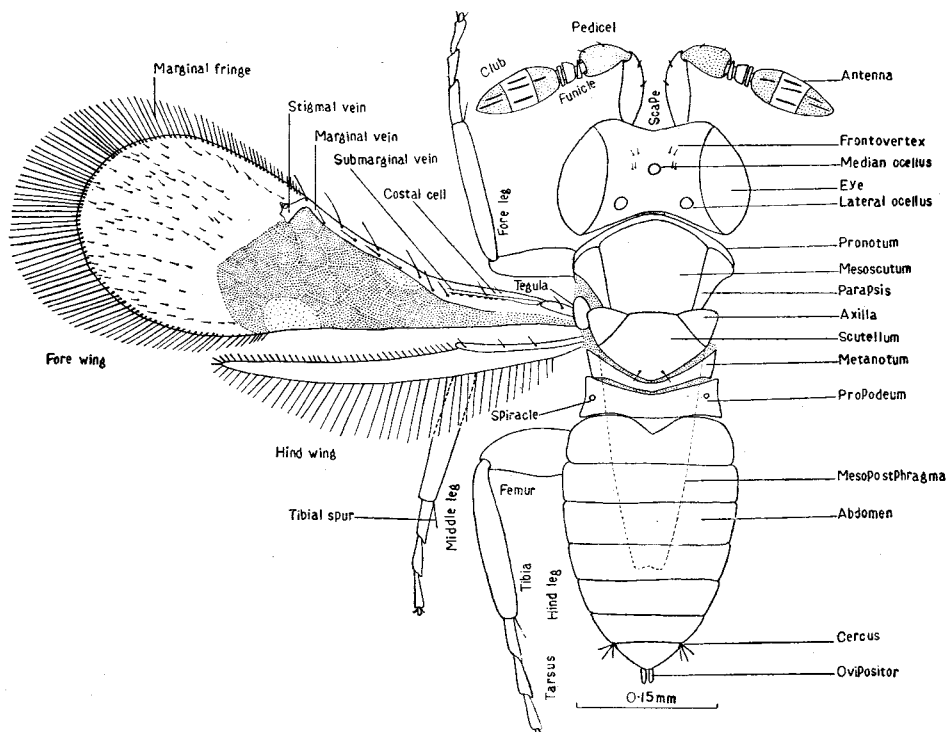


Fig. 1. *Paracentrobia magniclavata* Yousuf & Shafee, ♀

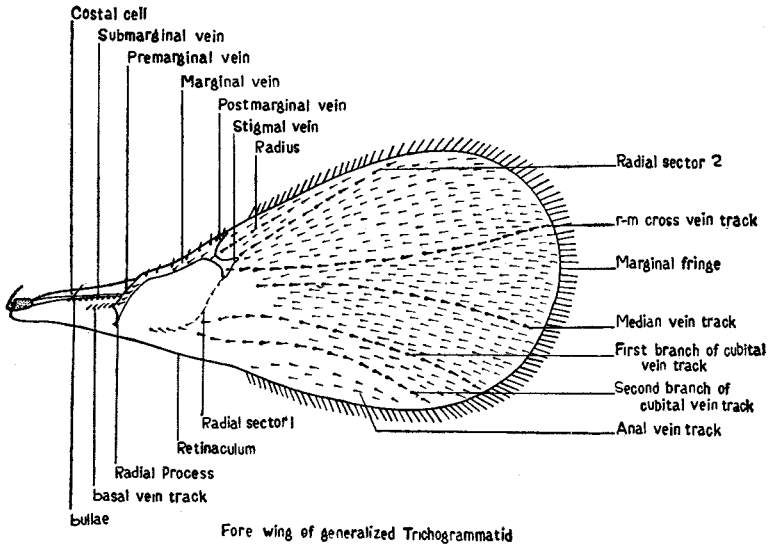


Fig. 2

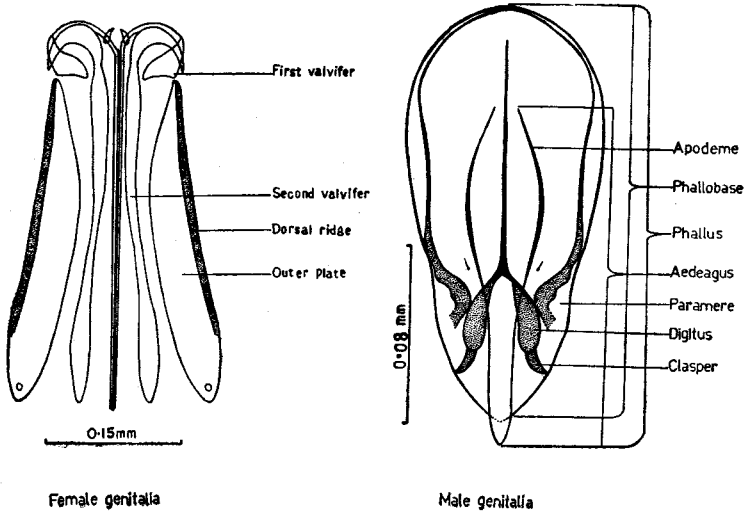


Fig. 3

Key to subfamilies, tribes and genera of Indian **Trichogrammatidae**

1. Fore wings with marginal vein short; male genitalia with digiti and claspers in Trichogrammatini (fig. 10F), without in Aphelinojdini (fig. 16G) ..... **TRICHOGRAMMATINAE** Haliday, 1851.....2
- Fore wings with marginal vein long or thickened with numerous setae; male genitalia without digiti and claspers (fig. 30F)..... **OLIGOSITINAE** Ashmead, 1904.....8
2. **TRICHOGRAMMATINAE** : Female antennae with funicle; male genitalia with digiti and claspers..... **TRICHOGRAMMATINI** Haliday, 1851.....3
- Female antennae without funicle; male genitalia without digiti and claspers ..... **APHELINOIDINI** trib. n.....7
3. **TRICHOGRAMMATINI** : Female antennae with club 3-segmented.....4
- Female antennae with club 1-segmented.....5
4. Fore wings with venation normal, never sigmoid type; marginal vein touching wing margin..... **Ufens** Girault, 1911
- Fore wings with venation sigmoid type; marginal vein not touching wing margin..... **Poropoea** Foerster, 1851
5. Female antennae with 2-segmented funicle; fore wings with venation sigmoid type, stigmal vein well developed.....6
- Female antennae with 1-segmented funicle; fore wings with venation never sigmoid type, stigmal vein rudimentary... **Paratrichogramma** Girault, 1912
6. Fore wings with vein track Rs 1; male antennae not differentiated into funicle and club..... **Trichogramma** Westwood, 1833
- Fore wings without vein track Rsl; male antennae differentiated into 2-segmented funicle and 3-segmented club..... **Trichogrammatoidea** Girault, 1911
7. **APHELINOIDINI** : Antennal club never terminating into rod-like projections; fore wings with premarginal vein of uniform thickness; male genitalia (fig. 16G) with aedeagus never bifurcated apically..... **Aphelinoidea** Girault, 1911
- Antennal club always terminating into rod-like projections; fore wings with premarginal vein narrower than marginal vein; male genitalia (fig. 17D) with aedeagus bifurcated apically..... **Tumidiclava** Girault, 1911
8. **OLIGOSITINAE** : Body normal, never dorsoventrally flattened.....9
- Body dorsoventrally flattened; fore wings very narrow, marginal fringe very

- long.....MEGAPHRAGMINI trib. n.  
**Megaphragma** Timberlake, 1923
9. Antennae with funicle.....OLIGOSITINI Ashmead, 1904.....10  
 — Antennae without funicle.....  
 .....LATHROMERINI Girault, 1912.....20
10. OLIGOSITINI : Funicle distinctly or indistinctly 2-segmented.....11  
 — Funicle 1-segmented.....17
11. Female ovipositor much exerted; antennae with first funicle segment well developed, never ring like.....12  
 — Female ovipositor hidden or slightly exerted; antennae with first funicle segment variable.....13
12. Antennal club 3-segmented with long and thick setae; fore wings with discal setae arranged in rows.....**Neocentrobiella** Girault, 1915  
 — Antennal club 1-segmented with short thin setae; fore wings with disc densely setose.....**Xiphogramma** Nowicki, 1940
13. Antennae with first funicle segment never ring like.....14  
 — Antennae with first funicle segment almost ring like, broadly attached to second segment.....**Chaetostricha** Haliday, 1851
14. Fore wings with marginal vein much thickened with numerous setae; antennae with club usually 1-segmented, rarely indistinctly 2-segmented...15  
 — Fore wings with marginal vein normal; antennae with club 2-3 segmented ..... 16
15. Antennae with funicle broadly attached to club, fore wings with rudimentary stigmal vein; female genitalia with outer plate much broader and longer than second valvifer (fig. 21 D).....  
 .....**Brachygrammatella** Girault, 1915  
 — Antennae with funicle distinctly separated from club; fore wings with well developed stigmal vein; female genitalia with outer plate shorter than second valvifer.....**Chaetogramma** Doutt, 1974
16. Fore wings without vein track Rsl; antennae with funicle distinctly 2-segmented, club with thin setae.....**Paracentrobia** Howard, 1897  
 — Fore wings with vein track Rsl; antennae with funicle indistinctly 2-segmented, club with thick setae.....**Parhispidophila** gen. n.
17. Fore wings without vein track Rsl.....18  
 — Fore wings with vien track Rsl.....**Oligositoides** Doutt, 1968
18. Fore wings with disc usually setose; mid and hind legs with tarsal segments normal; antennae with club usually 3-segmented.....19

- Fore wings with disc bare (fig. 26B); mid and hind legs with tarsal segments long; antennae with club usually 2-segmented...**Epiligosita** Girault, 1916
- 19. Antennae with funicle and club distinctly separated; ovipositor hidden; mid and hind tibiae not spiny, claws normal.....**Oligosita** Haliday, 1851
- Antennae with funicle broadly attached to club; ovipositor exerted; mid and hind tibiae spiny, claws long.....**Prestwichia** Lubbock, 1864
- 20. LATHROMERINI : Fore wings with vein track Rsl.....21
- Fore wings without vein track Rsl.....24
- 21. Antennal club normal with thin and short setae.....22
- Antennal club large with thick and long setae.....  
.....**Haeckeliana** Girault, 1912
- 22. Fore wings with stigmal vein short; second segment of antennal club normal.....23
- Fore wings with stigmal vein about as long as marginal vein; second segment of antennal club small, almost triangular (fig. 31C; Douth & Viggiani, 1968, fig. 14A).....**Neolathromera** Ishii, 1934
- 23. Antennae with club 5 to 6-segmented, first segment smaller than second .....**Lathromeroidea** Girault, 1912
- Antennae with club 4-segmented, first segment never smaller than second .....**Uscana** Girault, 1911
- 24. Antennae with club elongated with few setae; fore wings with disc sparsely setose, marginal fringe about as long as wing width.....25
- Antennae (fig. 33A) with club oval and densely setose; fore wings with disc densely setose, marginal fringe about one-half of wing width.....  
.....**Lathromeromyia** Girault, 1914
- 25. Antennae (fig. 34A) with club 4-segmented.....  
.....**Prosiligosita** Hayat & Husain, 1981
- Antennae (fig. 34E) with club 3-segmented.....**Hayatia** Viggiani, 1982



## A. SUBFAMILY TRICHOGRAMMATINAE HALIDAY

Trichogrammini Haliday in Walker, 1851 : 212.

Trichogramminae, Ashmead, 1904a : 360.

Trichogrammatinae, Girault, 1912c : 87.

Diagnosis : Fore wings with marginal vein short, male genitalia with digiti and claspers in Trichogrammatini (fig. 10F), without in Aphelinoidini (fig. 16G).

The subfamily Trichogrammatinae is divided into two tribes : Trichogrammatini and Aphelinoidini on the basis of presence or absence of funicle in antennae and presence or absence of digiti and claspers on male genitalia.

## TRIBE TRICHOGRAMMATINI HALIDAY

Trichogrammini Haliday in Walker, 1851 : 212.

Trichogrammatini, Girault, 1912c : 87.

Poropoeini Girault, 1912c : 88. Syn. n.

Diagnosis : Antennae with funicle (except males of *Trichogramma*); male genitalia (fig. 10F; Viggiani, 1971, fig. 1 : 2) with digiti and claspers; fore wings with marginal vein short.

The genera *Trichogramma* Westwood and *Poropoea* Foerster are closely related on the basis of having antennae with 2-segmented funicle; fore wings with sigmoid venation and male genitalia with digiti and claspers. Therefore, it is inevitable to place them under one tribe. The tribe Trichogrammatini has priority over Poropoeini, hence the latter name is synonymised with Trichogrammatini.

Genus **Ufens** Girault, 1911

*Ufens* Girault, 1911d : 32-35.

Type-species : *Trichogramma nigrum* Ashmead, by monotypy.

*Ufensia* Girault, 1913d : 101. Syn. by Doult & Viggiani, 1968 : 576.

Type-species : *Ufensia pretiosa* Girault, by monotypy.

*Neocentrobia* Blood, 1923 : 254. Syn. quoted by Doult & Viggiani, 1968 : 576.

Type-species : *Neocentrobia hirticornis* Blood.

*Stephanotheisa* Soika, 1931 : 111. Syn. quoted by Doult & Viggiani, 1968 : 576.

Type-species : *Stephanotheisa vitoldi* Soika, by monotypy.

*Grantanna* Girault, 1939 : 324. Syn. quoted by Doult & Viggiani, 1968 : 576.

Replacement name for *Neocentrobia* Blood, not Girault.

Diagnosis : Antennae with funicle 2-segmented, club in female 3-segmented, in male 4-segmented. Fore wings with discal setae arranged in rows; costal cell broad; marginal vein short; stigmal vein about as long as marginal vein; male genitalia (fig. 5J) with well developed digiti and claspers.

Comments : The genus is more closely related to *Mirufens* Girault in having the similar antennal formula and fore wings broad with short marginal vein. It differs from that genus in lacking a row of spine-like projections on outer margin of fore tibia.

The genus is known to contain 31 species including 7 new combinations and 6 new species. 13 species are reported from India and a key for their separation is given below :

Key to Indian species of **Ufens** Girault, based on females :

1. Fore wings with marginal vein much shorter than stigmal and premarginal veins separately.....2
- Fore wings with marginal vein as long as or longer than stigmal vein.....4
2. Antennae with first funicle segment shorter than second.....3
- Antennae with first funicle segment longer than second; male genitalia (Viggiani & Hayat, 1974, fig. III : 4) with claspers small.....  
.....1. **mangiferae** (Viggiani & Hayat) comb. n.
3. Antennae (fig. 4G) with first funicle segment more than one-half the length of second, club slightly more than two times as long as wide.....  
.....2. **alami** sp. n.
- Antennae (fig. 4I) with first funicle segment one-fourth the length of second, club more than three times as long as wide.....3. **singularis** sp. n.
4. Antennae with first funicle segment as long as or shorter than second, club less than four and a half times as long as wide.....5
- Antennae with first funicle segment distinctly longer than second, club five times as long as wide.....4. **longifuniculata** (Viggiani & Hayat) comb. n.
5. First funicle segment as long as second.....6
- First funicle segment shorter than second.....12
6. Fore wings with marginal fringe.....7
- Fore wings without marginal fringe.....  
.....5. **afrangiata** (Viggiani & Hayat) comb. n.
7. Fore wings with discal setae almost arranged in rows; antennae with funicle segments not cylindrical.....8

- Fore wings (fig. 4C) densely setose, setae mostly never arranged in rows; antennae (fig. 4A) with funicle segments together cylindrical.....6. **gurgaonensis** sp. n.
- 8. Ovipositor arising from base of abdomen.....9
- Ovipositor never arising from base of abdomen.....11
- 9. Antennae with club more than four times as long as wide.....10
- Antennae with club two and a half times as long as wide.....7. **albiscutellum** (Khan & Shafee) comb. n.
- 10. Antennae (fig. 5G) with funicle segments distinctly separated; fore wings with basal vein track having 1-seta, vein track Rsl short, not reaching beneath premarginal vein.....8. **longiclavata** (Khan & Shafee) comb. n.
- Antennae (fig. 6E) with funicle segments broadly attached; fore wings with basal vein track having 4-setae, vein track Rsl long reaching beneath premarginal vein.....9. **angustipennis** sp. n.
- 11. Fore wings (fig. 5C) about two times as long as wide; antennae with scape three and a half times as long as wide, club about four times as long as wide.....10. **brevifuniculata** (Khan & Shafee) comb. n.
- Fore wings (fig. 6D) broad, one and a half times as long as wide; antennae with scape less than three times as long as wide, club about three times as long as wide.....11. **latipennis** sp. n.
- 12. Antennae with first funicle segment more than one-half the length of second, club less than three times as long as wide; fore wings with basal vein track having 1-seta.....12. **magniclavata** (Khan & Shafee) comb. n.
- Antennae with first funicle segment less than one-half the length of second, club three and a half times as long as wide; fore wings with basal vein track having 4-setae.....13. **jaipurensis** sp. n.

1. **Ufens mangiferae** (Viggiani & Hayat) comb. n.

*Mirufens mangiferae* Viggiani & Hayat, 1974 : 148.

Host : Associated with *Nipaecoccus* sp.  
*Oxyrachis* near *tarandus* (Fabricius).

Distribution : INDIA : Aligarh, Kancheepuram.

2. **Ufens alami\*** sp. n. (Fig. 4 G-H)

Female.

Head dark brown, wider than long in facial view; ocelli orange, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 4G) yellow; scape cylindrical; pedicel slightly longer than wide; single ring segment present; funicle 2-segmented, each segment wider than long; first funicle segment more than one-half the length of second; club 3-segmented, slightly more than two times as long as wide.

Thorax dark brown. Fore wings (fig. 4H) hyaline, broad, less than two times as long as wide, outer margin broadly rounded; discal setae almost arranged in rows; costal cell broad; premarginal vein longer than marginal and stigmal veins separately; marginal vein very short, about one half of stigmal vein; postmarginal vein absent; marginal fringe very short, less than one-tenth the wing width; vein track R<sub>1</sub>l present. Legs yellow; fore legs normal without dentate tibia; middle tibial spur simple.

Abdomen dark brown, shorter than thorax; ovipositor hidden; arising from base of abdominal venter.

Body length : 0.62 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of *Oxyrachis tarandus* (Fabricius), 30.i.1985, M. Yousuf.

Comments : *Ufens alami* sp. n. differs from all the known species of *Ufens* Girault by having antennae with first funicle segment more than one-half the length of second; fore wings with marginal vein one-half the length of stigmal vein.

3. **Ufens singularis** sp. n. (Fig. 4 I-J)

Female.

Head dark brown, slightly wider than long in facial view; ocelli orange; eyes dark; malar space slightly longer than eye width. Antennae (fig. 4I) yellow; scape slightly less than three times as long as wide; pedicel about as long as wide; single ring segment present; funicle 2-segmented; first segment much wider than long, about one-fourth the length of second; second segment longer

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\* Named after Prof. S. Mashhood Alam, in recognition of his contribution to our knowledge on insect taxonomy and morphology.

than wide; club 3-segmented, slightly more than three times as long as wide, segments with long setae.

Thorax dark brown. Fore wings (fig. 4J) hyaline, one and a half times as long as wide, outer margin broadly rounded; disc densely setose, setae almost arranged in rows; costal cell broad with two rows of setae; marginal vein much shorter than pre-marginal and stigmal veins separately; marginal fringe very short, less than one-tenth of wing width. Legs yellow.

Abdomen dark brown, longer than thorax; ovipositor hidden, arising from the basal one-third of abdominal venter.

Body length : 0.73 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of *Oxyrachis* sp., 14. v. 1985, M. Yousuf.

Comments : *Ufens singularis* sp. n. is closely related to *U. dilativena* Nowicki, from which it can be separated by having antennae with first funicle segment one-fourth the length of second; fore wings with vein track Rsl reaching beneath radial process.

4. ***Ufens longifuniculata*** (Viggiani & Hayat) comb. n. (Fig. 5 K-L)

*Mirufens longifuniculata* Viggiani & Hayat, 1974 : 147.

*Specimens examined* : 1 ♀, INDIA : Uttar Pradesh, Aligarh, 31.i.1985, 1 ♂, 22.viii.1985, by sweeping, M. Yousuf.

Host : Associated with *Rastrococcus* sp.

Distribution : INDIA : Aligarh, Pathankot.

5. ***Ufens afrangiata*** (Viggiani & Hayat) comb. n.

*Mirufens afrangiata* Viggiani & Hayat, 1974 : 145.

Host : *Oxyrachis* near *tarandus* (Fabricius).

Distribution : INDIA : Aligarh, Jullendar.

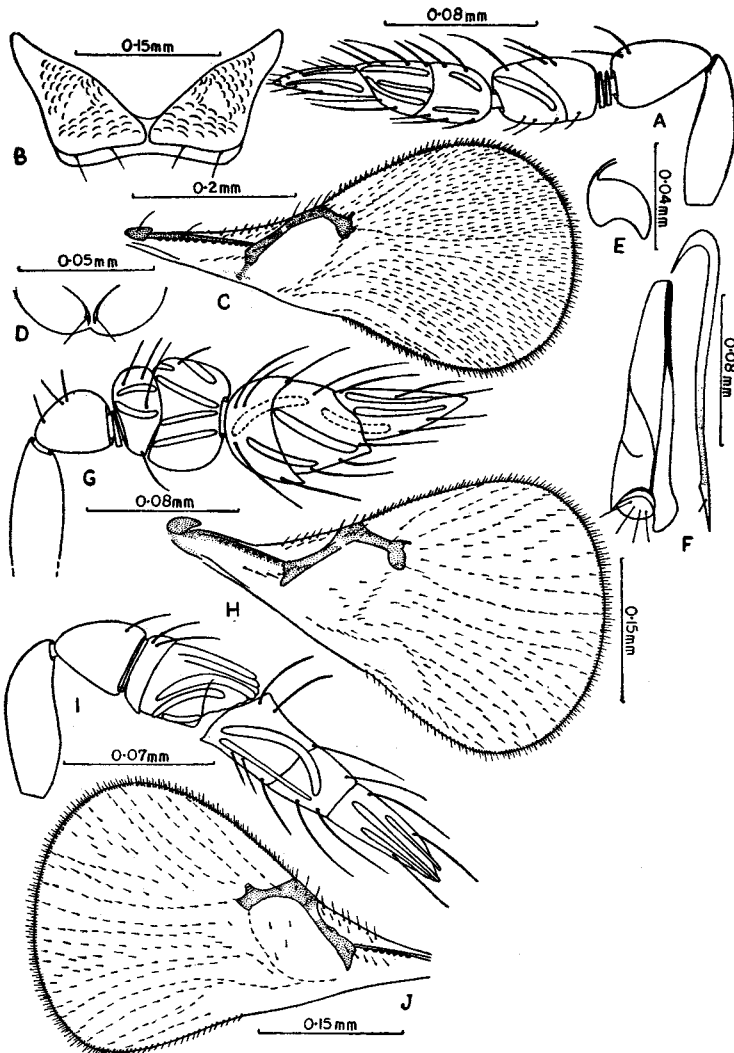
6. ***Ufens gurgaonensis*** sp. n. (Fig. 4 A-F)

Female.

Head orange yellow with few small setae, about as long as wide in facial view; eyes dark; malar space longer than eye width; mandibles tridentate. Antennae (fig. 4A) yellow; scape moderately long, slightly more than three times

as long as wide; pedicel one and a half times as long as wide; two ring segments present; funicle 2-segmented, segments subequal in length and broadly attached, combined cylindrical; club 3-segmented, apical segment longest.

Thorax orange yellow. Fore wings (fig. 4C) hyaline, about two times as long as wide, densely setose, setae mostly not arranged in rows; costal cell



**Fig. 4.** A-F, *Ufens gurgaonensis* sp. n.: A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, subgenital plate, ♀; E, first valvifer, ♀; F, part of external genitalia, ♀. G-H, *Ufens alami* sp. n.: G, antenna, ♀; H, fore wing, ♀. I-J, *Ufens singularis* sp. n.: I, antenna, ♀; J, fore wing, ♀.

broad; marginal vein about as long as stigmal and shorter than premarginal vein; marginal fringe very short, less than one-tenth the wing width. Legs yellow.

Abdomen orange yellow, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length : 0.58 mm.

Holotype : ♀, INDIA : Haryana : Gurgaon, 1.x.1984, collected by sweeping, A. K. Chishti.

Comments : *Ufens gurgaonensis* sp. n. is closely related to *U. brevifuniculata* (Khan & Shafee), but it can be distinguished by having fore wings densely setose, setae not arranged in rows except a few vein tracks; antennae with funicle cylindrical.

7. ***Ufens albiscutellum*** (Khan & Shafee) comb. n. (Fig. 6 G-H)

*Mirufens albiscutellum* Khan & Shafee, 1977 : 32.

*Specimen examined* : ZM, AMU Collection : INDIA : Aligarh, holotype ♀, 10.x.1975, reared from eggs of *Oxyrachis tarandus* (Fabricius) on *Acacia* sp. M. Younus Khan.

Host : *Oxyrachis tarandus* (Fabricius)

Distribution : INDIA : Aligarh.

8. ***Ufens longiclavata*** (Khan & Shafee) comb. n. (Fig. 5 G-J)

*Mirufens longiclavata* Khan & Shafee, 1977 : 34.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, holotype ♀, 10.ix.1975, reared from eggs of *Oxyrachis tarandus* (Fabricius) M. Younus Khan; 1 ♀, 1 ♂, 9.vii.1985, by sweeping, M. Yousuf.

Host : *Oxyrachis tarandus* (Fabricius)

Distribution : INDIA : Aligarh.

9. ***Ufens angustipennis*** sp. n. (Fig. 6 E-F)

Female.

Head dark brown; ocelli dark, arranged in obtuse triangle; eyes dark; malar space slightly shorter than eye width. Antennae (fig. 6E) yellowish brown; scape long, slightly more than four times as long as wide; pedicel one and a half

times as long as wide; two ring segments present; funicle slightly flattened, 2-segmented, segments each wider than long, broadly attached; club 3-segmented, four and a half times as long as wide, segments with long and thick setae.

Thorax dark brown. Fore wings (fig. 6F) hyaline, slightly less than two times as long as wide, outer margin broadly rounded, discal setae almost arranged in rows; costal cell broad; marginal vein as long as stigmal and pre-marginal veins separately; basal vein track with four setae; vein track Rsl long, reaching beneath pre-marginal vein; marginal fringe very short, less than one-tenth of wing width. Legs yellow.

Abdomen dark brown, longer than thorax; ovipositor arising from base of abdominal venter.

Body length : 0.72 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of *Oxyrachis* sp. 1.ii.1985, M. Yousuf.

Paratypes 1 ♀, 1 ♂, (same data as for Holotype).

Comments : *Ufens angustipennis* sp. n. is closely related to *U. foersteri* (Kryger), but differs from it by its having fore wings with stigmal vein longer than marginal vein, vein track Rsl long and reaching beneath pre-marginal vein, costal cell broad with two rows of setae.

#### 10. *Ufens brevifuniculata* (Khan & Shafee) comb. n. (Fig. 5 A-F)

*Mirufens brevifuniculata* Khan & Shafee, 1977 : 31.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, holotype ♀, 10.x.1975, reared from eggs of *Oxyrachis tarandus* (Fabricius) M. Younus Khan; 2 ♀, 30.i.1985, by sweeping, M. Yousuf.

Host : *Oxyrachis tarandus* (Fabricius).

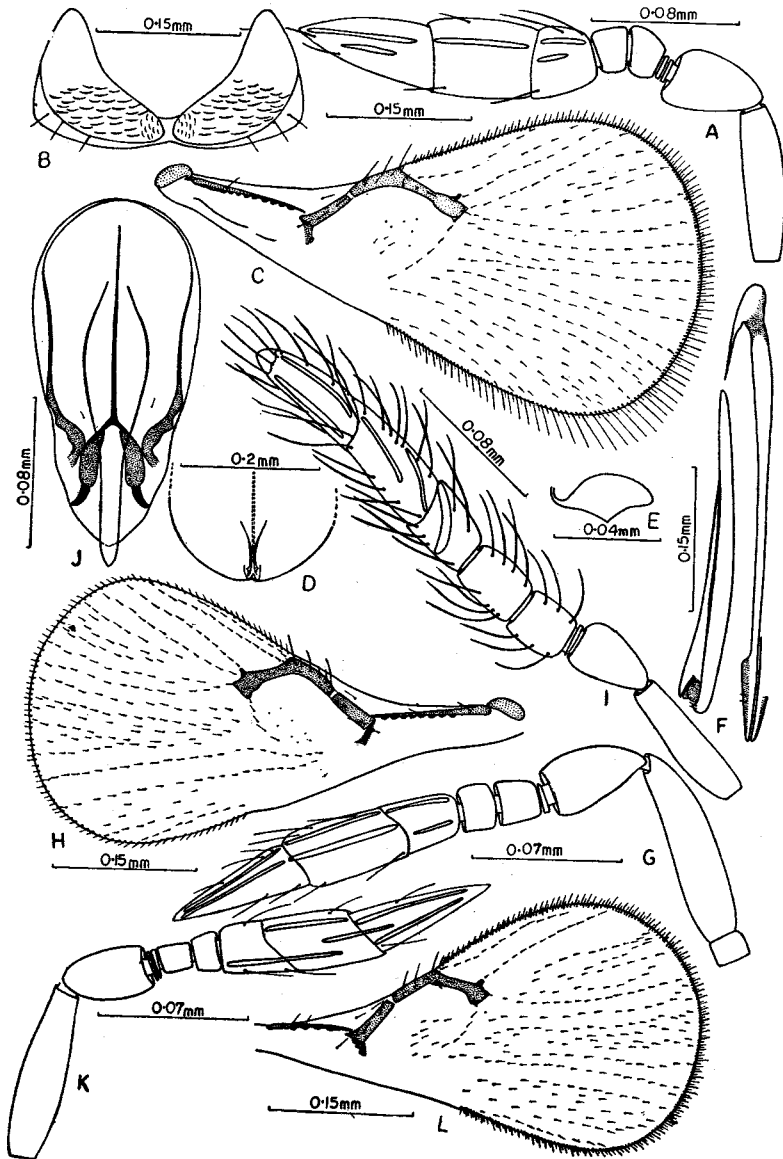
Distribution : INDIA : Aligarh.

#### 11. *Ufens latipennis* sp. n. (Fig. 6 C-D)

Female.

Head dark brown, slightly wider than long in facial view; ocelli orange, arranged in obtuse triangle; eyes dark; malar space about as long as eye width. Antennae (fig. 6C) yellowish brown; scape cylindrical, about three times as long as wide; pedicel about one and a half times as long as wide; single ring segment;





**Fig. 5.** A–F, *Ufens brevifuniculata* (Khan & Shafee) comb. n.: A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, subgenital plate, ♀; E, first valvifer, ♀; F, part of external genitalia, ♀. G–J, *Ufens longiclavata* (Khan & Shafee) comb. n.: G, antenna, ♀; H, fore wing, ♀; I, antenna, ♂; J, Genitalia, ♂. K–L, *Ufens longifuniculata* (Viggiani & Hayat) comb. n.: K, antenna, ♀; L, fore wing, ♀.

funicle 2-segmented, segments obliquely attached, second segment longer than first; club long, 3-segmented, about three times as long as wide, segments with few thin setae.

Thorax dark brown. Fore wings (fig. 6D) hyaline, slightly more than one and a half times as long as wide, outer margin broadly rounded; disc densely setose, setae arranged in rows; costal cell broad; marginal vein as long as stigmal and premarginal veins separately; postmarginal vein absent; marginal fringe short, less than one-tenth of wing width. Legs yellow.

Body length : 0.76 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of membracids, 6.viii.1985, M. Yousuf.

Comments : *Ufens latipennis* sp. n. is closely related to *U. africana* (Viggiani); but differs from the latter by having much broad fore wings; antennae with scape less than three times as long as wide.

## 12. *Ufens magniclavata* (Khan & Shafee) comb. n.

*Mirufens magniclavata* Khan & Shafee, 1977 : 32.

*Specimen examined* : ZM, AMU Collection : INDIA : Uttar Pradesh; Aligarh, Holotype ♀, 10.ix.1975, reared from eggs of *Oxyrachis tarandus* (Fabricius), M. Younus Khan.

Host : *Oxyrachis tarandus* (Fabricius)

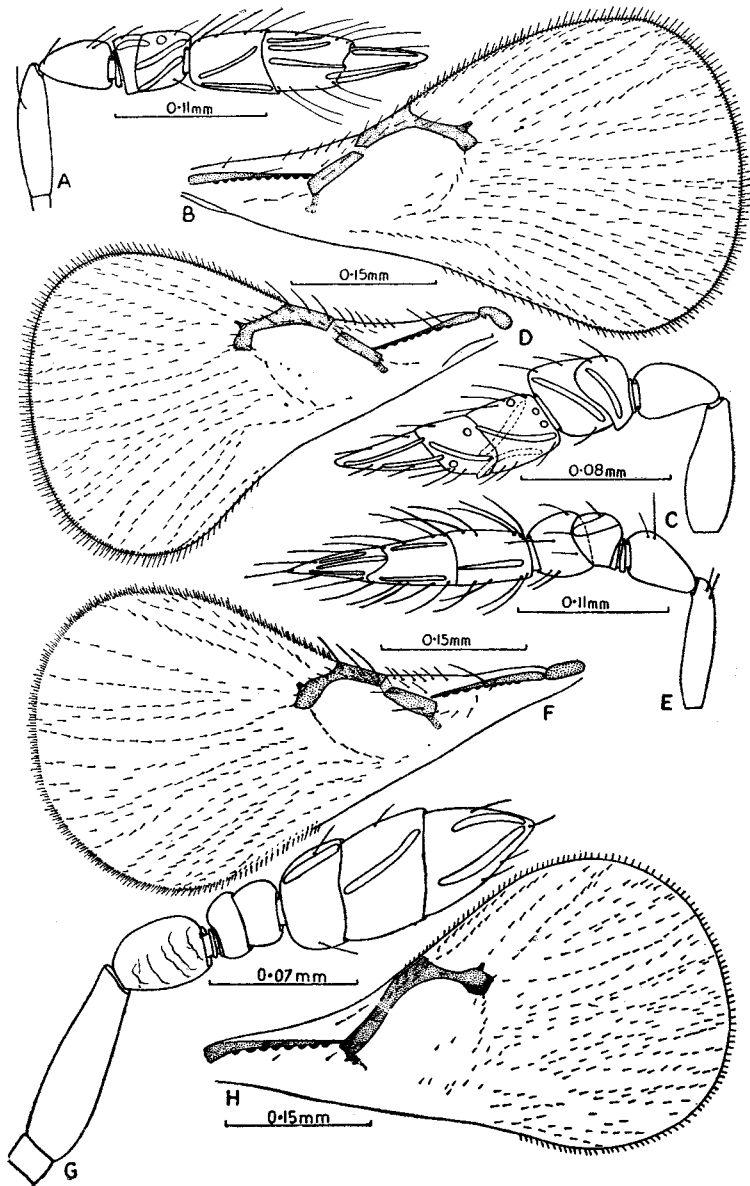
Distribution : INDIA : Aligarh.

## 13. *Ufens jaipurensis* sp. n. (Fig. 6 A-B)

Female.

Head dark brown, slightly longer than wide in facial view; ocelli orange, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 6A) dark brown; scape about four times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle 2-segmented, segments obliquely attached, first segment about one-half the length of second; club 3-segmented, slightly more than three and a half times as long as wide.

Thorax dark brown. Fore wings (fig. 6B) hyaline, slightly more than one and a half times as long as wide, outer margin broadly rounded; disc densely setose, setae almost arranged in rows; costal cell broad; marginal vein about



**Fig. 6.** A-B, *Ufens jaipurensis* sp. n.: A, antenna, ♀; B, fore wing, ♀. C-D, *Ufens latipennis* sp. n.: C, antenna, ♀; D, fore wing, ♀. E-F, *Ufens angustipennis* sp. n.: E, antenna, ♀; F, fore wing ♀. G-H, *Ufens albiscutellum* (Khan & Shafee) comb. n.: G, antenna, ♀; H, fore wing, ♀.

as long as stigmal and premarginal veins separately; marginal fringe very short, less than one-tenth the wing width. Legs almost yellow except trochanters and femora dark.

Abdomen dark brown, longer than thorax; ovipositor slightly exserted, arising from the one-sixth of abdominal venter.

Body length : 0.76 mm.

Exserted part of ovipositor : 0.04 mm.

Holotype ♀. INDIA : Rajasthan, Jaipur, 16.x.1985, collected by sweeping, M. Yousuf.

Comments : *Ufens jaipurensis* sp. n. is closely related to *U. magniclavata* (Khan & Shafee), but differs from latter in having antennae with first funicle segment less than one-half the length of second, club three and a half times as long as wide; fore wings with basal vein track having 4 setae.

#### Genus **Poropoea** Foerster, 1851

*Poropoea* Foerster, 1851 : 28.

Type-species : *Poropoea stollwerckii* Foerster, by monotypy.

*Poropoeoides* Nowicki, 1936 : 125 (Syn. by Doutt & Viggiani, 1968 : 515).

Diagnosis : Antennae with funicle 2-segmented, club 3-segmented; fore wings with discal setae arranged in rows, venation sigmoid type, vein track R<sub>1</sub> present, marginal vein not touching wing margin; ovipositor much exserted.

Comments : The genus is closely related to *Trichogramma* Westwood in having fore wings with sigmoid venation. *Poropoea* is immediately distinguished by the strongly sigmoid venation which fails to touch the anterior margin of the fore wings and discal setae arranged in rows.

The genus is known to contain 10 species of which one species *Poropoea indica* Subba Rao has been reported from India.

#### 1. **Poropoea indica** Subba Rao

*Poropoea indica* Subba Rao, 1969b : 322.

Host : *Apoderus sissu* Marshall

Distribution : INDIA : Delhi.

Genus **Paratrichogramma** Girault, 1912

*Paratrichogramma* Girault, 1912c : 82.

Type-species : *Paratrichogramma cinderella* Girault, by original designation.

Diagnosis : Female antennae (fig. 7D) with single ring segment, 1-segmented funicle and 1-segmented club; male antennae (fig. 7A) with 2-segmented funicle, second segment unusual bottle-shaped forming a neck which joins club; fore wings (fig. 7B) with short marginal vein, postmarginal vein and stigmal vein absent, disc sparsely setose; male genitalia (fig. 7C) with digiti and claspers.

Comments : The genus *Paratrichogramma* Girault is closely related to *Trichogramma* Westwood in possessing 1-segmented club in female; it differs from that genus for having 1-segmented funicle in female, fore wings lacking sigmoid venation and vein track Rsl.

The genus is known to contain 7 species including one new species, of which 2 species are reported from India. A key for the separation of Indian species is given below :

Key to Indian species of *Paratrichogramma* Girault, based on females

1. Antennae with scape four and a half times as long as wide, pedicel slightly more than two times as long as wide, funicle segment two times as long as wide, fore wings (Hayat & Shuja-Uddin, 1980, fig. 1 : 2) with marginal vein slightly more than two times as long as wide.....1. **giraulti** Hayat & Shuja-Uddin
- Antennae with scape about three and a half times as long as wide, pedicel distinctly less than two times as long as wide; funicle segment slightly longer than wide; fore wings (fig. 7E) with marginal vein more than three times as long as wide.....2. **quilonensis** sp. n.

1. **Paratrichogramma giraulti** Hayat & Shuja-Uddin (Fig. 7 A-C)

*Paratrichogramma giraulti* Hayat & Shuja-Uddin, 1980 : 199.

*Specimen examined* : 1 ♂, INDIA : Uttar Pradesh, Aligarh, 31.i.1985, by sweeping, M. Yousuf.

Host : *Acrocercops orthostacta* Meyrick

Distribution : INDIA : Aligarh.

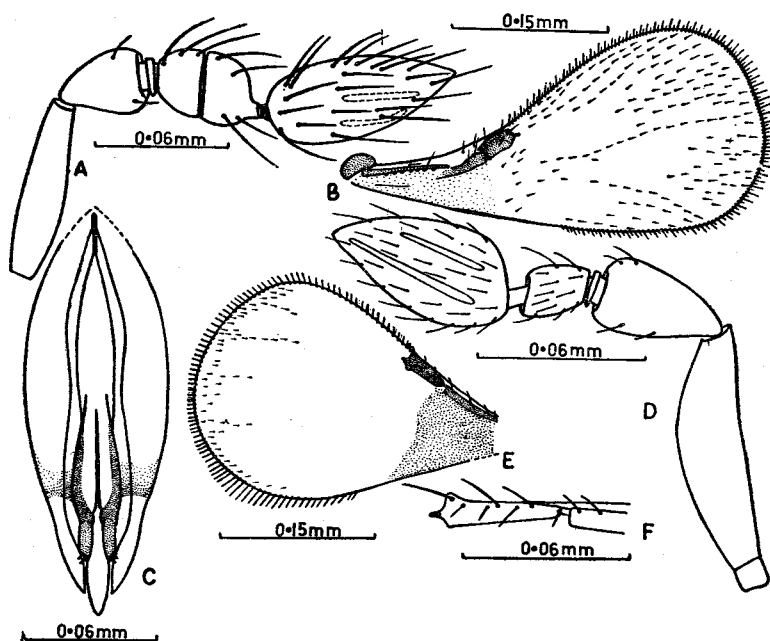
2. *Paratrichogramma quilonensis* sp. n. (fig. 7 D-F)

Female.

Head dark brown, slightly wider than long in facial view; ocelli orange; eyes dark; malar space slightly shorter than eye width. Antennae (fig. 7D) yellow; scape cylindrical, about three and a half times as long as wide; pedicel distinctly less than two times as long as wide; single ring segment present; funicle segment slightly longer than wide; club 1-segmented, slightly less than two times as long as wide, densely setose.

Thorax brown. Fore wings (fig. 7E) hyaline with area beneath submarginal and premarginal veins infuscated, about one and a half times as long as wide, outer margin broadly rounded; disc apically with few setae, arranged in rows; costal cell narrow; marginal vein slightly more than three times as long as wide (fig. 7F); marginal fringe short, about one-tenth of wing width. Legs yellow except pretarsus dark brown.

Abdomen dark brown, longer than thorax; ovipositor hidden, arising from base of abdominal venter.



**Fig. 7.** A-C, *Paratrichogramma giraulti* Hayat & Shuja-Uddin: A, antenna, ♂; B, Fore wing, ♂; C, genitalia, ♂. D-F, *Paratrichogramma quilonensis* sp. n.: D, antenna, ♀; E, fore wing, ♀; F, part of fore wing venation, ♀.

Body length : 0.52 mm.

Holotype ♀. INDIA : Kerala; Quilon, 28.ii.1984, by sweeping, M. Yousuf.

Comments : *Paratrichogramma quilonensis* sp. n. is related to *P. giraulti* Hayat & Shuja-Uddin, but is distinguished by having antennae with scape about three and a half times as long as wide, pedicel distinctly less than two times as long as wide, funicle segment slightly longer than wide; fore wings with marginal vein more than three times as long as wide.

### Genus *Trichogramma* Westwood, 1833

*Trichogramma* Westwood, 1833 : 444.

Type-species : *Trichogramma evanescens* Westwood, by monotypy.

*Calleptiles* Haliday, 1833 : 340. Syn. quoted by Peck, 1963 : 51.

Type-species : (*Calleptiles latipennis* Haliday) = *Trichogramma evanescens* Westwood, by monotypy.

*Pentarthron* Packard, 1872 : 8. Syn. quoted by Peck, 1963 : 51.

Type-species : *Trichogramma minutum* Riley, by monotypy.

*Aprobosca* Westwood, 1879 : 592. Syn. quoted by Doutt & Viggiani, 1968 : 533.

Type-species : *Trichogramma (Aprobosca) erosicornis* Westwood, by monotypy.

*Oophthora* Aurivillius, 1897 : 250. Syn. quoted by Doutt & Viggiani, 1968 : 533.

Type-species : *Oophthora semblidis* Aurivillius, by monotypy.

*Xanthoatomus* Ashmead, 1904a : 360. Syn. quoted by Peck, 1963 : 52.

Type-Species : (*Xanthoatomus albipes* Ashmead) = *Trichogramma minutum* Riley, by monotypy.

*Neotrichogramma* Girault, 1911d : 38-39. Syn. quoted by Doutt & Viggiani, 1968 : 533.

Type-species : *Neotrichogramma acutiventre* Girault, by monotypy.

*Trichogrammatana* Girault, 1932a : 1. Syn. by Doutt & Viggiani, 1968 : 533.

Type-species : *Trichogrammatana singularis* Girault, by monotypy.

Diagnosis : Female antennae with 2-segmented funicle and 1-segmented club; fore wings with sigmoid venation, discal setae arranged in rows; vein track Rsl present; pronotum (fig. 10C) with anterior margin U shaped; male genitalia (fig. 10F) with broad phallobase, digiti and claspers well developed.

The genus is known to contain 104 species, including one new species, of which 15 species have been reported from India. Nagaraja (1973) gave a key

to twelve Indian species of *Trichogramma* mainly based on male genitalic characters. His key is reproduced below :

Key to Indian species of *Trichogramma* Westwood

1. DEG with expanded spatulate posterior extremity extending beyond level of GF.....2
- DEG not as above.....3
2. Male genitalia with sharply converging GF; spatula of DEG rounded posteriorly with narrow "waist".....1. **flandersi** Nagaraja & Nagarkatti
- Male genitalia with GF not as sharply converging as above; spatula of DEG broadly rounded posteriorly with broader "waist"...2. **hesperidis** Nagaraja
3. DEG horse-shoe shaped at base; MVP apparently absent; ovipositor about  $1\frac{1}{2}$  times (or more) the length of hind tibia.....4
- DEG not as above; MVP present (though very inconspicuous in *achaeae* and *raoi*, ovipositor not as long as above (except in *T. agriae*).....5
4. Females with white ventral region of thorax; ovipositor extruding markedly beyond last abdominal segment.....3. **pallidiventris** Nagaraja
- Females without white pigmentation on thorax; ovipositor not extruding as markedly as in above species.....4. **japonicum** Ashmead
5. Monomorphic males.....6
- Dimorphic males; alate males with normal and apterous males with gynecoid antennae.....5. **semblidis** (Aurivillius)
6. DEG with prominent lateral lobes.....7
- DEG without prominent lateral lobes.....8
7. Lateral lobes of DEG narrow and widely separated; less than 40 hairs on male antennal flagellum; adults somewhat dark pigmented; parasitised *Corcyra* eggs turning brown.....6. **Poliae** Nagaraja
- Lateral lobes of DEG broader and not as widely separated as above; more than 40 hairs on male antennal flagellum; adults lighter pigmented; parasitised *Corcyra* eggs turning black.....7. **australicum** Girault
8. DEG narrow at base; without marked constrictions, narrow posterior extremity having nearly parallel sides; MVP extremity minute; aedeagus with apodemes shorter than entire genitalia.....9

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Explanation of abbreviations :

DEG : Dorsal expansion of gonobase; GF : Gonoforceps; CS : Chelate structure; MVP : Median ventral projection; CR : Central ridges; GB : Gonobase,



- DEG broader at base with marked constrictions; posterior extremity broadly converging; MVP distinct though small in some species; aedeagus with apodemes as long as entire genitalia.....10
- 9. CS and posterior extremity of DEG reaching level of GF; male antennal hairs nearly 3 times maximum width of flagellum.....  
.....8. **achaeae** Nagaraja & Nagarkatti
- DEG below level of CS; CS slightly below level of GF; male antennal hairs nearly 4 times maximum width of flagellum.....9. **raoi** Nagaraja
- 10. CS slightly below level of GF; MVP small, far below level of CS; DEG with marked constriction and bulging slightly at base.....11
- CS markedly below level of GF; MVP long, nearly reaching level of CS; DEG without marked constriction and not bulging at base.....  
.....10. **chilotraeae** Nagaraja & Nagarkatti
- 11. Male antennal hairs long, tapering, longest being  $3\frac{1}{2}$  times maximum width of flagellum; DEG with blunt posterior extremity, not reaching level of MVP; ovipositor nearly  $1\frac{1}{2}$  times the length of hind tibia.....  
.....11. **agriae** Nagaraja
- Male antennal hairs short, almost blunt, longest being about 2 times maximum width of flagellum; DEG with short posterior extremity, extending beyond level of MVP but below level of CS; ovipositor only slightly longer than hind tibia.....12. **plasseyens** Nagaraja

1. **Trichogramma flandersi** Nagaraja & Nagarkatti

*Trichogramma flandersi* Nagaraja & Nagarkatti, 1969 : 394.

Hosts : *Agrius convolvuli* (Linnaeus)  
*Chilo infuscatellus* (Snellen)

Distribution : INDIA : Karnataka; Karaswadi, Haniyambadi.

2. **Trichogramma hesperidis** Nagaraja (Fig. 9 C-E)

*Trichogramma hesperidis* Nagaraja, 1973 : 276.

*Specimens examined* : IARI Collection, INDIA : South Kanara, 1 ♀ & 1 ♂, Paratypes, October, 1969, H. Nagaraja.

Hosts : *Corcyra cephalonica* (Stainton)  
Hesperiid eggs

Distribution : INDIA : South Kanara.

### 3. *Trichogramma pallidiventris* Nagaraja (Fig. 9 F-G)

*Trichogramma pallidiventris* Nagaraja 1973 : 277.

*Specimens examined* : IARI Collection, INDIA : South Kanara, 1 ♀ & 1 ♂, Paratypes, October, 1969, H. Nagaraja.

Hosts : *Corcyra cephalonica* (Stainton)  
*Scirpophaga incertulas* (Walker)

Distribution : INDIA : South Kanara.

### 4. *Trichogramma japonicum* Ashmead (Fig. 11 A-G)

*Trichogramma japonicum* Ashmead, 1904b : 165.

*Specimens examined* : INDIA : Delhi, IARI Biological Control Unit, 15 ♀ & 10 ♂, 20.ix.1986, M. Yousuf.

Hosts : *Scirpophaga incertulas* (Walker)  
*Sepedon sauteri* Hendel  
*Trichoplusia ni* (Huebner)  
Hesperiid eggs

Distribution : INDIA : Andhra Pradesh, Bihar, Jammu & Kashmir, Karnataka, Orissa.

### 5. *Trichogramma semblidis* (Aurivillius)

*Oophthora semblidis* Aurivillius, 1897 : 253.

*Pentarthron semblidis* (Aurivillius), Girault, 1911a : 48-50.

*Trichogramma semblidis* (Aurivillius), Girault, 1914c : 176.

Hosts : *Achaea janata* (Linnaeus)  
*Chilo infuscatellus* (Snellen)  
*Corcyra cephalonica* (Stainton)  
*Heliiothis armigera* (Huebner)

Distribution : INDIA : Karnataka.

### 6. *Trichogramma poliae* Nagaraja (Fig. 8 A-C)

*Trichogramma poliae* Nagaraja, 1973 : 279.

*Specimens examined* : IARI Collection : INDIA : Plassey, 1 ♀ & 1 ♂, Paratypes, September 1968, K. R. Nair.

Hosts : *Chilo infuscatellus* (Snellen)  
*Corcyra cephalonica* (Stainton)

Distribution : INDIA : Plassey.

7. **Trichogramma australicum** Girault (Fig. 9 A-B)

*Trichogramma australicum* Girault, 1912a : 109.

*Specimens examined*: 2 ♀, INDIA : Uttar Pradesh, Aligarh, 7.x.1985, by sweeping, M. Yousof.

Hosts : *Achaea janata* (Linnaeus)  
*Agrius convolvuli* (Linnaeus)  
*Chilo indicus* (Kapur)  
*Chilo infuscatellus* (Snellen)  
*Chilo partellus* (Swinhoe)  
*Chilo suppressalis* (Walker)  
*Heliiothis armigera* (Huebner)  
*Polyocha depressella* (Swinhoe)  
*Psara* sp.  
*Scirpophaga incertulas* (Walker)  
*Spodoptera litura* (Fabricius)  
*Tiracola plagiata* Walker  
*Trichoplusia ni* (Huebner)

Distribution : INDIA : Aligarh, Bangalore, Chickaballapur, Cuddalore; Kalimpong, Ludhiana, Motipur, Plassey.

8. **Trichogramma achaeae** Nagaraja & Nagarkatti

*Trichogramma achaeae* Nagaraja & Nagarkatti, 1969 : 396.

Hosts : *Achaea janata* (Linnaeus)  
*Agrius convolvuli* (Linnaeus)  
*Corcyra cephalonica* (Stainton)  
*Earias insulana* Boisduval  
*Earias vitella* (Fabricius)  
*Heliiothis armigera* (Huebner)  
*Pectinophora gossypiella* (Saunders)  
*Tiracola plagiata* Walker

Distribution : INDIA : Gujarat, Karnataka, Punjab, West Bengal.

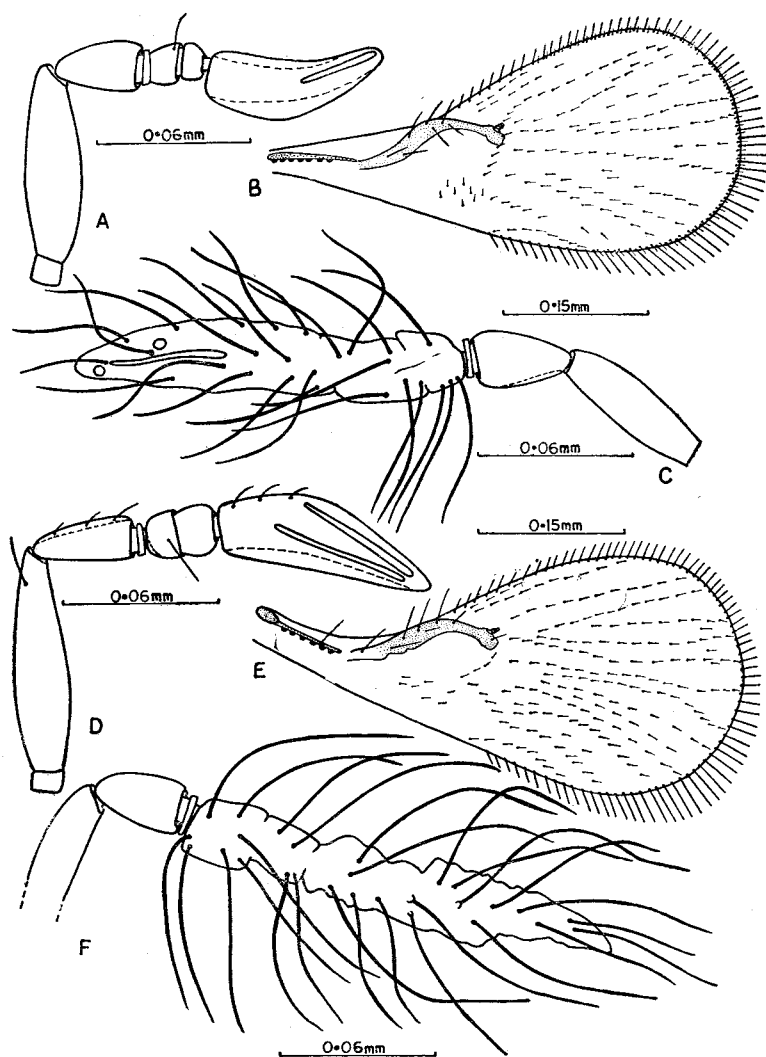
9. **Trichogramma raoi** Nagaraja (Fig. 8 D-F)

*Trichogramma raoi* Nagaraja, 1973 : 279.

*Specimens examined* : IARI Collection : INDIA : South Kanara, 1 ♀ & 1 ♂, Paratypes, October 1968, H. Nagaraja.

Host : *Corcyra cephalonica* (Stainton)

Distribution : INDIA : South Kanara.



**Fig. 8.** A-C, *Trichogramma poliae* Nagaraja : A, antenna, ♀; B, fore wing, ♀; C, antenna, ♂. D-F, *Trichogramma raoi* Nagaraja : D, antenna, ♀; E, fore wing, ♀; F, antenna, ♂.

10. **Trichogramma chilotraeae** Nagaraja & Nagarkatti

*Trichogramma chilotraeae* Nagaraja & Nagarkatti, 1969 : 394.

Hosts : *Chilo infuscatellus* (Snellen)  
*Chilo partellus* (Swinhoe)  
*Chilo suppressalis* (Walker)  
*Corcyra cephalonica* (Stainton)  
*Heliothis armigera* (Huebner)  
*Ostrinia furnacalis* Gn.

Distribution : INDIA : Punjab and West Bengal.

11. **Trichogramma agriae** Nagaraja (Fig. 10 G-I)

*Trichogramma agriae* Nagaraja, 1973 : 277.

*Specimens examined* : IARI Collection : INDIA : Bangalore, 1 ♀ & 1 ♂, Paratypes, May 1969, H. Nagaraja; 10 ♀, 6 ♂, Aligarh, 16.xii.1985, by sweeping, M. Yousuf.

Hosts : *Agrius convolvuli* (Linnaeus)  
*Corcyra cephalonica* (Stainton)

Distribution : INDIA : Aligarh, Bangalore.

12. **Trichogramma plasseyensis** Nagaraja (Fig. 9 H-I)

*Trichogramma plasseyensis* Nagaraja, 1973 : 278.

*Specimen examined* : IARI Collection : INDIA : Plassey, 1 ♂, Paratype, ex eggs of *Chilo infuscatellus* (Snellen) September 1968, K. R. Nair.

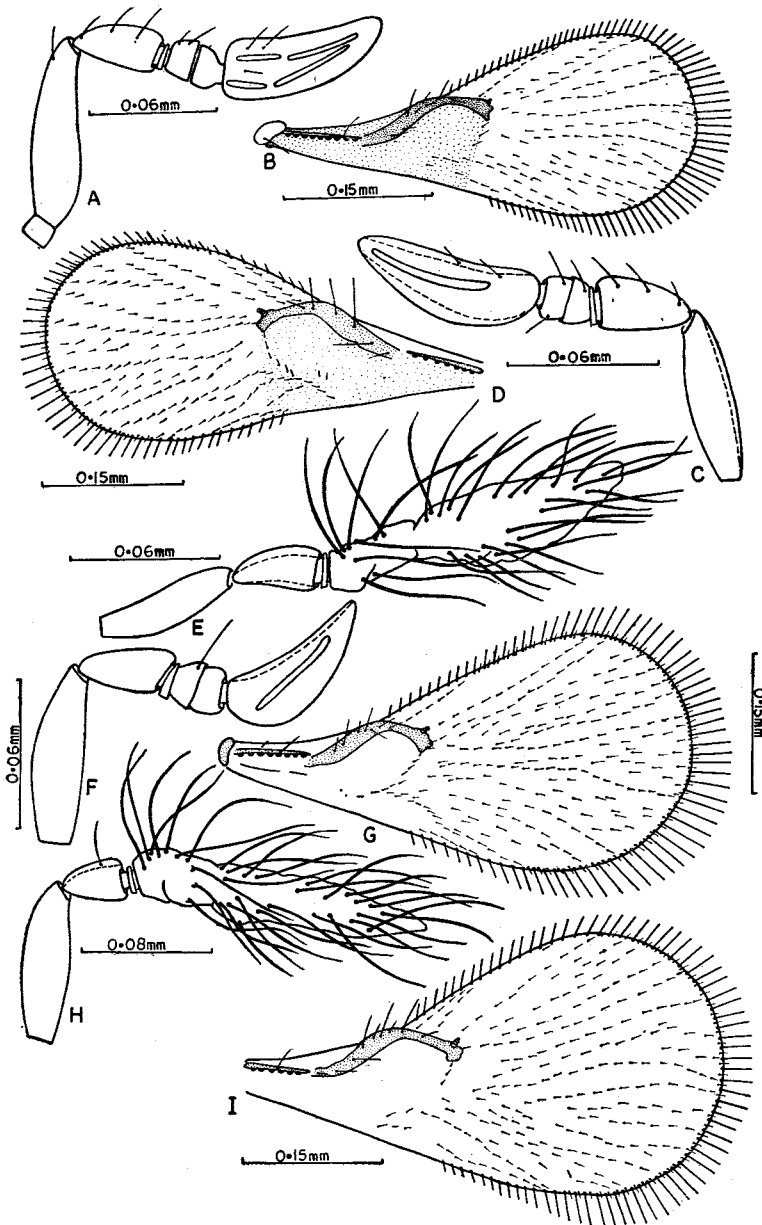
Hosts : *Chilo infuscatellus* (Snellen)  
*Corcyra cephalonica* (Stainton)

Distribution : INDIA : Plassey.

13. **Trichogramma brevifringiata** sp. n. (Fig. 10 A-F)

Female.

Head yellow; ocelli orange, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 10A) yellow; scape slightly more than three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle 2-segmented, segment each wider than long; club 1-segmented, two times as long as wide.



**Fig. 9.** A-B, *Trichogramma australicum* Girault : A, antenna, ♀; B, fore wing, ♀. C-E, *Trichogramma hesperidis* Nagaraja : C, antenna, ♀; D, fore wing, ♀; E, antenna, ♂. F-G, *Trichogramma pelldiventris* Nagaraja : F, antenna, ♀; G, fore wing, ♀. H-I, *Trichogramma plasseyensis* Nagaraja : H, antenna, ♂; I, fore wing, ♂.

Thorax honey yellow. Fore wings (fig. 10B) hyaline, slightly more than two times as long as wide; disc densely setose, setae almost arranged in rows; costal cell broad; venation sigmoid type; vein track Rsl with 5 setae; marginal fringe short, about one-tenth of wing width. Legs yellow.

Abdomen honey yellow, about as long as thorax; ovipositor slightly exerted, arising from the basal one-third of abdominal venter.

Body length : 0.61 mm.

Male.

Antennae and genitalia are shown in figs. 10 E, F.

Holotype ♀, INDIA : Uttar Pradesh, Aligarh, ex eggs of *Chilo infuscatellus* (Snellen), on sugarcane, 26.v.1983, M. Yousuf.

Paratypes : 4 ♀ & 3 ♂ (Same data as for holotype).

Comments : *Trichogramma brevifringiata* sp. n. is closely related to *T. pallidiventris* Nagaraja from which it can be separated by its having fore wings with short marginal fringe and male genitalia with narrow phallobase.

#### 14. *Trichogramma pretiosum* Riley (Fig. 11 H-M)

*Trichogramma pretiosum* Riley, 1879 : 161.

Female (Redescribed).

Head yellow, about as long as wide in facial view; ocelli red, arranged in obtuse triangle; malar space longer than eye width. Antennae (fig. 11H) yellow; scape about four times as long as wide; pedicel one and a half times as long as wide; funicle 2-segmented, first segment slightly shorter than second; club about three times as long as wide.

Thorax yellow. Fore wings (fig. 11 I) hyaline except area beneath venation lightly infuscated, disc densely setose, setae almost arranged in rows; vein track Rsl with 3 setae. Legs yellow.

Abdomen yellow; ovipositor hidden, arising from the basal one-fourth of abdominal venter, slightly shorter than hind tibia (fig. 11 J, K).

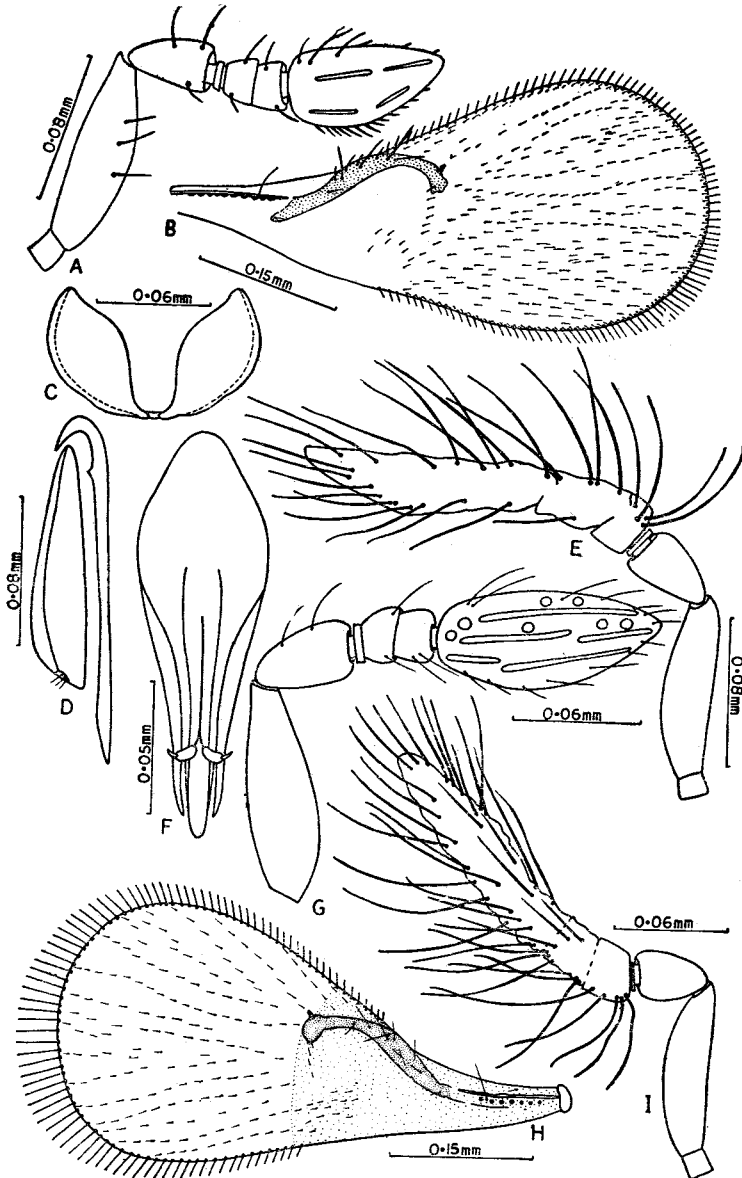
Body length : 0.5 mm.

Male.

Antennae and aedeagus as shown in fig. 11 L, M; aedeagus much shorter than hind tibia.

Body length : 0.45 mm.

*Specimens examined* : INDIA : Delhi, IARI Biological Control Unit, 8 ♀ & 6 ♂, 20.ix.1986, M. Yousuf.



**Fig. 10.** A-F, *Trichogramma brevifringiata* sp. n. : A, antenna, ♀; B, fore wing, ♀; C, pronotum, ♀; D, part of external genitalia, ♀; E, antenna, ♂; F, genitalia, ♂. G-I, *Trichogramma agriae* Nagராஜா : G, antenna, ♀; H, fore wing, ♀; I, antenna, ♂.



Host : *Trichoplusia ni* (Huebner)

Distribution : INDIA : Delhi.

Comments : *T. pretiosum* Riley has not been incorporated in Nagaraja's (1973) key to species. Through the kindness of Dr. S. K. Bhatia, Head, Division of Entomology, IARI, New Delhi, Senior author examined some specimens of *T. pretiosum* Riley. The specimens agree in every respect with the illustrations and descriptions given by Oatman *et al.* (1982) for *T. pretiosum* Riley.

15. **Trichogramma chilonis** Ishii (Fig. 12 A-H)

*Trichogramma chilonis* Ishii, 1941 : 173.

Female (Redescribed).

Head yellow, wider than long in facial view; ocelli orange, arranged in obtuse triangle. Antennae (fig. 12A) yellow; scape three and a half times as long as wide; pedicel about two times as long as wide; funicle 2-segmented, segments combined slightly longer than wide; club two and a half times as long as wide.

Thorax honey yellow. Fore wings (Fig. 12C) hyaline except area beneath venation lightly infuscated; disc densely setose, setae arranged in rows; costal cell broad; vein track R<sub>1</sub> with 6 setae; marginal fringe about one-sixth the wing width. Legs yellow.

Abdomen yellow, slightly longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter, about as long as hind tibia.

Body length : 0.51 mm.

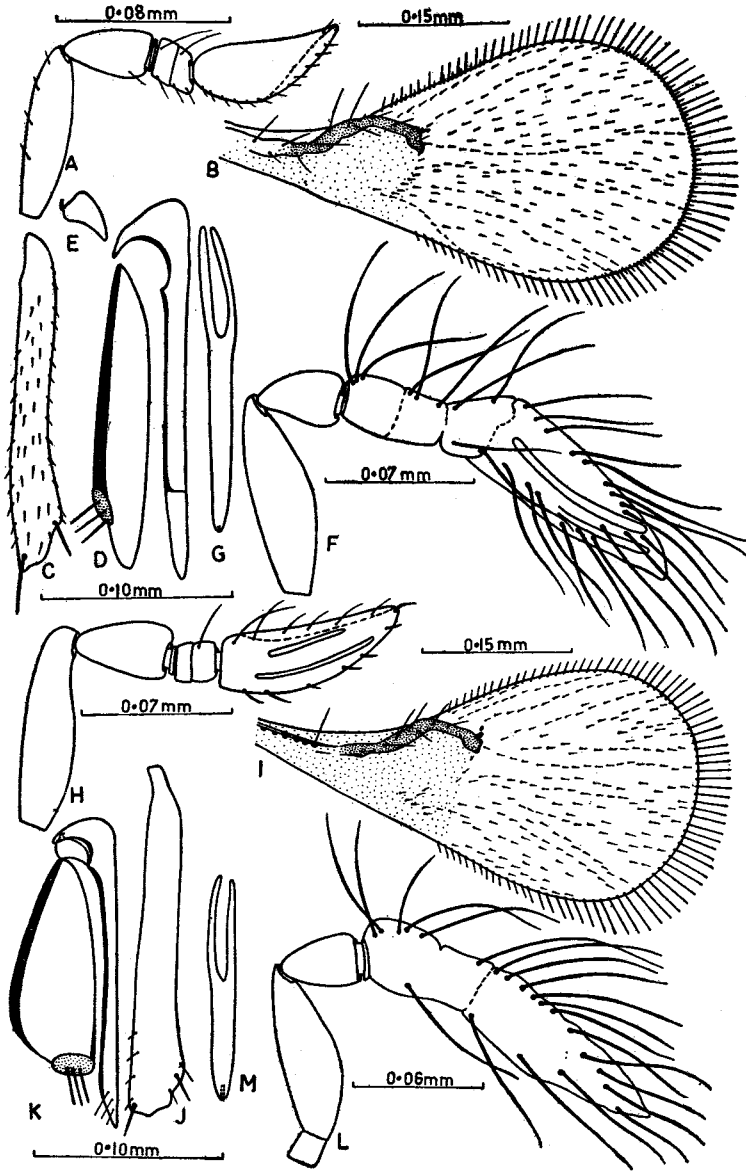
Male.

Antenna and aedeagus, are shown in figs. 12 G, H; aedeagus much shorter than hind tibia.

Body length : 0.48 mm.

*Specimens examined* : INDIA : Delhi, IARI Biological Control Unit, 20 ♀ & 32 ♂, 20.ix.1986, M. Yousuf.

Hosts : *Achaea janata* (Linnaeus)  
*Agrius convolvuli* (Linnaeus)  
*Chilo indicus* (Kapur)  
*Chilo infuscatellus* (Snellen)  
*Chilo partellus* (Swinhoe)

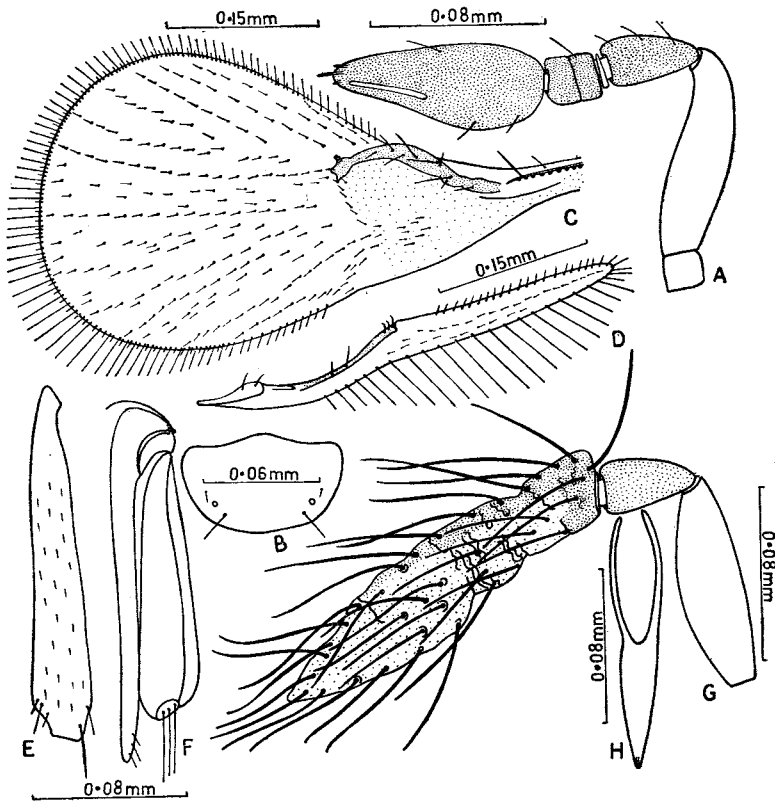


**Fig. 11.** A-G, *Trichogramma japonicum* Ashmead : A, antenna, ♀; B, fore wing, ♀; C, hind tibia, ♀; D, part of external genitalia, ♀; E, first valvifer, ♀; F, antenna, ♂; G, aedeagus, ♂. H-M, *Trichogramma pretiosum* Riley : H, antenna, ♀; I, fore wing, ♀; J, hind tibia, ♀; K, part of external genitalia, ♀; L, antenna, ♂; M, aedeagus, ♂.

*Chilo suppressalis* (Walker)  
*Corcyra cephalonica* (Stainton)  
*Earias insulana* (Boisduval)  
*Earias vitella* (Fabricius)  
*Heliiothis armigera* (Huebner)  
*Scirpophaga incertulas* (Walker)  
*Spodoptera litura* (Fabricius)  
*Tiracola plagiata* Walker  
*Trichoplusia ni* (Huebner)

Distribution : INDIA : Delhi.

Comments : *T. chilonis* Ishii has not been incorporated in Nagaraja's (1973) key to species. Through the kindness of Dr. S. K. Bhatia, Head, Division of



**Fig. 12.** A-H, *Trichogramma chilonis* Ishii : A, antenna, ♀; B, mesoscutellum, ♀; C, fore wing, ♀; D, hind wing, ♀; E, hind tibia, ♀; F, part of external genitalia, ♀; G, antenna, ♂; H, aedeagus, ♂.

Entomology, IARI, New Delhi, Senior author examined some specimens of *T. chilonis* Ishii. The specimens agree in every respect with the description given by Ishii (1941), description and illustrations given by Oatman *et al.* (1982) for the species *T. chilonis* Ishii.

Genus **Trichogrammatoidea** Girault, 1911.

*Trichogrammatoidea* Girault, 1911d : 13-15.

Type-species : *Chaetostricha nana* Zehntner, by monotypy.

Diagnosis : Antennae with funicle 2-segmented; club 1-segmented in female, 3-segmented in male; fore wings with sigmoid venation, discal setae arranged in rows. Vein track Rsl absent; male genitalia (fig. 13E) with well developed digiti and claspers.

Comments : The genus *Trichogrammatoidea* is closely related to *Trichogramma* in having female antennae with 2-segmented funicle, 1-segmented club; fore wings with sigmoid venation and male genitalia with well developed digiti and claspers, but can be separated by its having male antennae with 2-segmented funicle and 3-segmented club; fore wings lacking vein track Rsl. Presence or absence of vein track Rsl has been taken as a generic character by all the recent workers (Doutt & Viggiani, 1968; Nagaraja, 1978; Hayat & Subba Rao, 1985).

The genus is known to contain 21 species, of which 7 species have been reported from India. A key for their separation is given below :

Key to Indian species of *Trichogrammatoidea* Girault

1. Fore wings with stigmal vein much longer than premarginal vein.....2
- Fore wings with stigmal vein as long as or slightly longer than premarginal vein.....4
2. Fore wings broad, two times as long as wide.....3
- Fore wings narrow, two and a half times as long as wide.....
- .....1. **fumata** Nagaraja
3. Fore wings with marginal fringe about one-fourth the wing width.....
- .....2. **armigera** Nagaraja
- Fore wings with marginal fringe more than one-third the wing width.....
- .....3. **nana** (Zehntner)
4. Fore wings with marginal fringe short, less than one-half of wing width...5
- Fore wings (fig. 13B) with marginal fringe slightly more than one half the wing width.....4. **bactrae** Nagaraja

5. Female antennae with first funicle segment as long as second, club less than three times as long as wide.....6  
 — Female antennae with first funicle segment longer than second, club three times as long as wide.....5. **prabhakeri** Nagaraja
6. Fore wings with a row of setae beneath venation; marginal fringe one-third the wing width.....6. **fulva** Nagaraja  
 — Fore wings without row of setae beneath venation; marginal fringe one-fourth the wing width.....7. **robusta** Nagaraja

1. **Trichogrammatoidea fumata** Nagaraja (Fig. 14 A-C)

*Trichogrammatoidea bactrae fumata* Nagaraja, 1978 : 503.

*Specimens examined* : IARI Collection : INDIA : Holotype ♀, Paratype ♂, ex. Unidentified Lepidopterous eggs on *Achyranthus aspera*, 1971, K. C. Mathur & K. R. Nair.

Host : Eggs of Lepidoptera.

Distribution : INDIA : Uttar Pradesh.

2. **Trichogrammatoidea armigera** Nagaraja (Fig. 13 F-G)

*Trichogrammatoidea armigera* Nagaraja, 1978 : 499.

*Specimen examined* : IARI Collection : INDIA : Mandya, Neotype ♂, designated by Nagaraja, ex eggs *Heliothis armigera* (Huebner), on *Cajanus cajan*, ix.1969, H. Nagaraja.

Hosts : *Heliothis armigera* (Huebner)  
*Lampides boeticus* Linnaeus

Distribution : INDIA : Karnataka.

3. **Trichogrammatoidea nana** (Zehntner)

*Chaetostricha nana* Zehntner, 1896 : 14-16.

Host : *Bactra venosana* Zeller

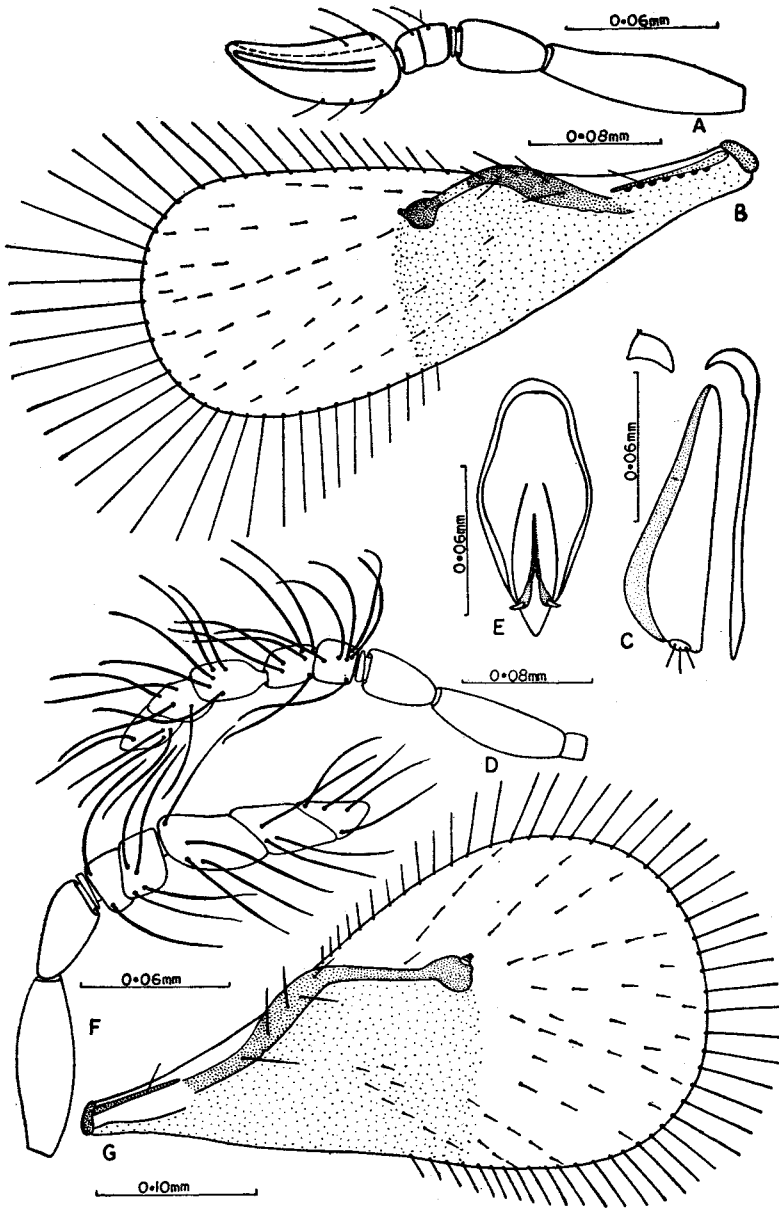
Distribution : INDIA : Motipur.

4. **Trichogrammatoidea bactrae** Nagaraja (Fig. 13 A-E)

*Trichogrammatoidea bactrae* Nagaraja, 1978 : 501.

*Specimens examined* : IARI Collection : INDIA : Hesaraghatta,

Holotype ♂, Allotype ♀, ex eggs *Bactra venosana* Zeller on *Cyperus rotundus*, 1968, H. Nagaraja.



**Fig. 13.** A-E, *Trichogrammatoidea bactrae* Nagaraja : A, antenna, ♀; B, fore wing, ♀; C, part of external genitalia, ♀; D, antenna, ♂; E, genitalia, ♂. F-G, *Trichogrammatoidea armigera* Nagaraja : F, antenna, ♂; G, fore wing, ♂.

Hosts : *Agrius convolvuli* (Linnaeus)  
*Bactra venosana* Zeller  
*Chilo infuscatellus* (Snellen)  
*Nymphula depunctalis* (Guenee)  
*Pelopidas mathias* (Fabricius)  
*Polyocha depressella* (Swinhoe)  
*Sepedon sauteri* Hendel  
*Trichoplusia ni* (Huebner)

Distribution : INDIA : Bangalore, Hesaraghatta, Motipur, Plassey, Vijayapura.

5. **Trichogrammatoidea prabhakeri** Nagaraja (Fig. 15 F-H)

*Trichogrammatoidea prabhakeri* Nagaraja, 1978 : 514.

*Specimens examined* : IARI Collection : INDIA, Mandya, Holotype ♂, Allotype ♀, ex eggs *Achaea janata* (Linnaeus), on castor, 1971, H. Nagaraja.

Host : *Achaea janata* (Linnaeus)

Distribution : INDIA : Mandya.

6. **Trichogrammatoidea fulva** Nagaraja (Fig. 14 D-F)

*Trichogrammatoidea fulva* Nagaraja, 1978 : 507.

*Specimens examined* : IARI Collection : INDIA : Bangalore, Holotype ♂, Allotype ♀, ex eggs *Cryptophlebia ombrodelta* (Lower) on *Acacia concinna*, Feb. 1973, H. Nagaraja.

Host : *Cryptophlebia ombrodelta* (Lower)

Distribution : INDIA : Bangalore, Gauhati.

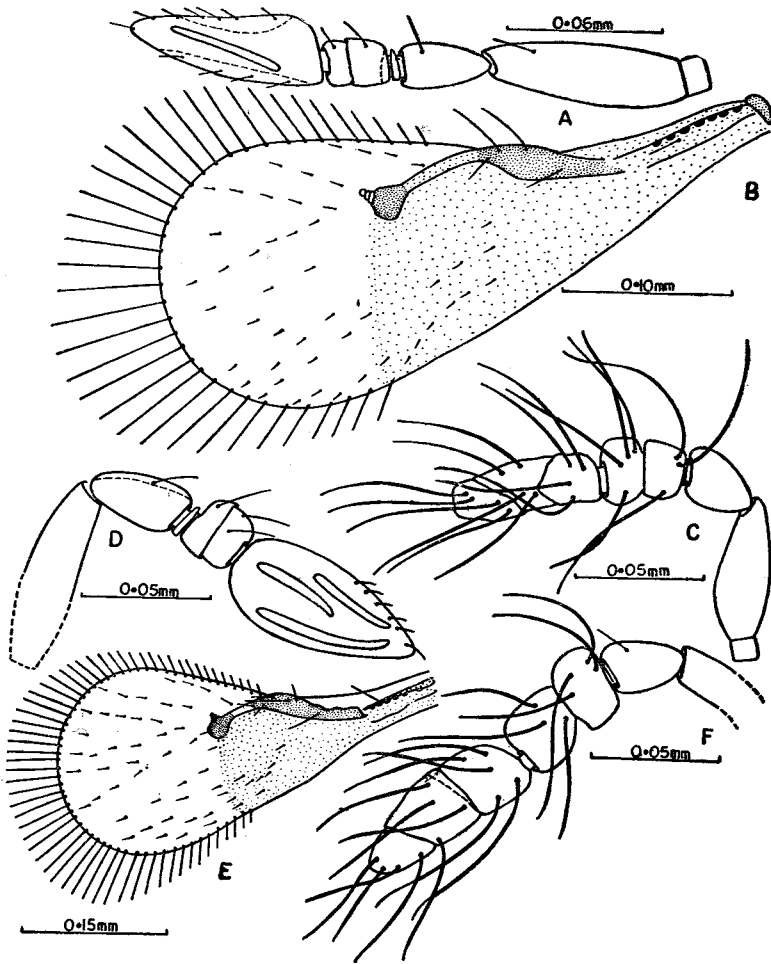
7. **Trichogrammatoidea robusta** Nagaraja (fig. 15 A-E)

*Trichogrammatoidea robusta* Nagaraja, 1978 : 515.

*Specimens examined* : IARI Collection : INDIA : Kalimpong, Holotype ♂, Allotype ♀; ex eggs *Hypsipyla robusta* (Moore), on *Cedrella toona*, September 1968, V. R. Phalak; Aligarh, 5 ♀, 4.x.1984, by sweeping, M. Yousuf.

Host : *Hypsipyla robusta* (Moore)

Distribution : INDIA : Uttar Pradesh, West Bengal.



**Fig. 14.** A-C, *Trichogrammatoidea fumata* Nagaraja : A, antenna, ♀; B, fore wing, ♀; C, antenna, ♂. D-F, *Trichogrammatoidea fulva* Nagaraja : D, antenna, ♀; E, fore wing, ♀; F, antenna, ♂.

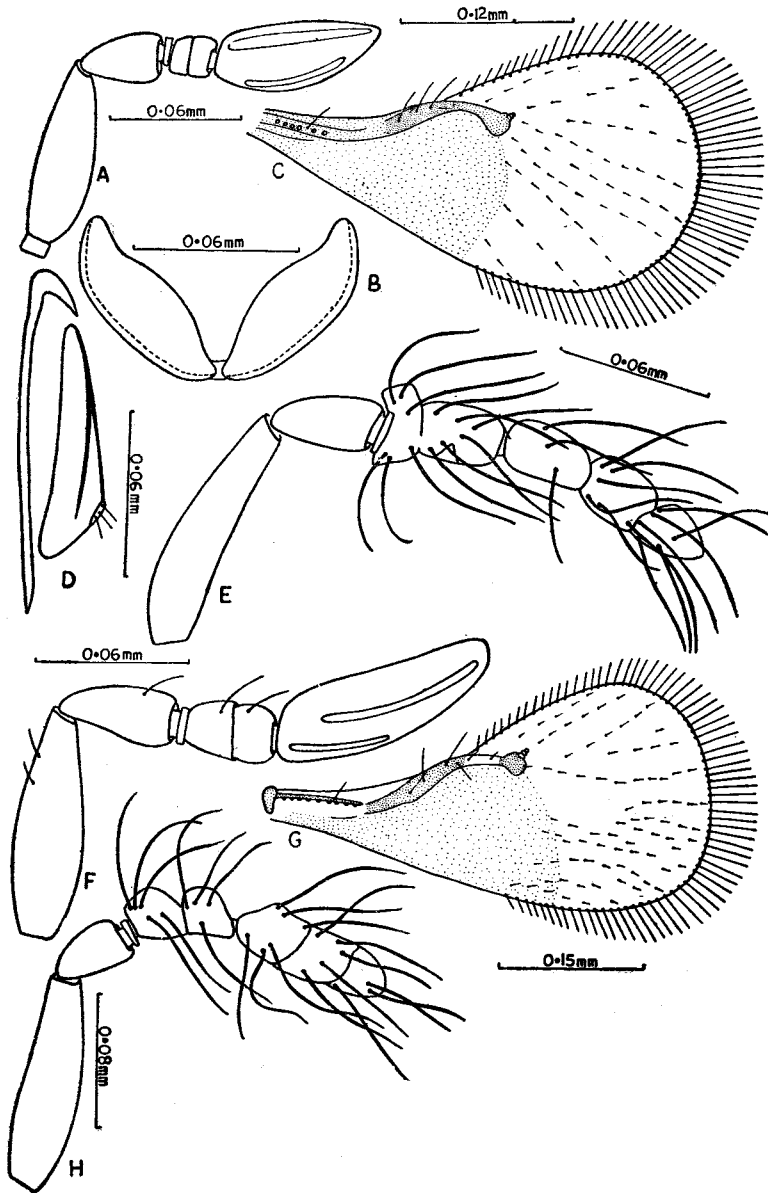
#### APHELINOIDINI TRIB. N.

Diagnosis : Antennae without funicle; fore wings with marginal vein short, stigmal vein short or rudimentary; discal setae usually dense, rarely sparse; male genitalia (fig. 16 G) without digiti and claspers.

Type-genus : *Aphelinoidea* Girault

Comments : Aphelinoidini trib. n. can be separated from Trichogrammatini





**Fig. 15.** A-E, *Trichogrammatoidea robusta* Nagaraja : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, part of external genitalia, ♀; E, antenna, ♂. F-H, *Trichogrammatoidea prabhakeri* Nagaraja : F, antenna, ♀; G, fore wing, ♀; H, antenna, ♂.

on the basis of its having antennae without funicle, absence of digiti and claspers on male genitalia. The genera *Aphelinoidea* Girault and *Tumidiclava* Girault are assigned under Aphelinoidini trib. n.

Genus **Aphelinoidea** Girault, 1911

*Aphelinoidea* Girault, 1911d : 2.

Type-species : *Aphelinoidea semifuscipennis* Girault, by monotypy.

*Lathromeroides* Girault, 1913e : 211. Syn. by Doult & Viggiani, 1968 : 527.

Type-species : *Lathromeroides longicarpus* Girault, by monotypy.

*Diaclava* Blood & Kryger, 1928 : 213. Syn. by Doult & Viggiani, 1968 : 527.

Type-species : *Diaclava waterhousei* Blood & Kryger, by monotypy.

*Krygeriola* Nowicki, 1933 : 3. Syn. quoted by Peck, 1963 : 75.

Type-species : *Krygeriola dolichoptera* Nowicki, by monotypy.

*Thalesanna* Girault, 1938a : 80. Syn. by Doult & Viggiani, 1968 : 527.

Type-species : *Thalesanna nigrioculae* Girault, by monotypy.

*Lengerkeniola* Nowicki, 1946 : 45. Syn. by Doult & Viggiani, 1968 : 527.

Type-species : *Lengerkeniola bischoffi* Nowicki, by monotypy.

*Encyrtogramma* De Santis, 1957a : 33. Syn. by Doult & Viggiani, 1968 : 527.

Type-species : *Encyrtogramma habros* De Santis, by monotypy.

*Tanygramma* De Santis, 1957a : 38. Syn. by Doult & Viggiani, 1968 : 527.

Type-Species : *Tanygramma xiphias* De Santis, by monotypy.

Diagnosis : Antennae without funicle, club 2 to 3-segmented, fore wings densely setose, venation short, stigmal vein rudimentary; pronotum (fig. 16B) V-shaped; female subgenital plate (fig. 16D) V-shaped, bilobed anteriorly; female genitalia (fig. 16F) with second valvifers and outer plates long; male genitalia (fig. 16G) without digiti and claspers, aedeagus never bifurcated apically.

The genus *Aphelinoidea* Girault is known to contain 32 species including one new species, of which 2 species are reported from India and a key for their separation is given below :

Key to Indian species of **Aphelinoidea** Girault, based on females.

1. Fore wings (fig. 16C) two and a half times as long as wide, uniformly infuscated beneath venation, stigmal vein rudimentary; antennae (fig. 16A)

- with pedicel about two times as long as wide, club three times as long as wide.....1. **gwaliorensis** Yousuf & Shafee
- Fore wings (fig. 16J) slightly more than two times as long as wide, infuscated beneath marginal vein, stigmal vein developed; antennae (fig. 16I) with pedicel two and a half times as long as wide, club four times as long as wide.....2. **longiclavata** sp. n.

1. **Aphelinoidea gwaliorensis** Yousuf & Shafee (Fig. 16 A-H)

*Aphelinoidea gwaliorensis* Yousuf & Shafee, 1985c : 303.

*Specimen examined* : ZM, AMU Collection : INDIA : Gwalior, Holotype, ♀, 5.xi.1983, by sweeping, M. Yousuf.

Host : Unknown

Distribution : INDIA : Gwalior

The species has been described in detail by Yousuf & Shafee (1985c).

2. **Aphelinoidea longiclavata** sp. n. (Fig. 16 I-J)

Female.

Head yellow, slightly longer than wide in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 16I) yellow; scape cylindrical, about four times as long as wide; pedicel two and a half times as long as wide; single ring segment present; funicle absent; club very long, 3-segmented, four times as long as wide.

Thorax dark brown. Fore wings (fig. 16J) hyaline, except area beneath marginal vein infuscated, slightly more than two times as long as wide, outer margin broadly rounded; disc densely setose; costal cell narrow; venation short; marginal vein longer than premarginal vein; stigmal vein developed, about as long as premarginal vein; marginal fringe short, slightly less than one-tenth of wing width. Legs yellow.

Abdomen brown, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

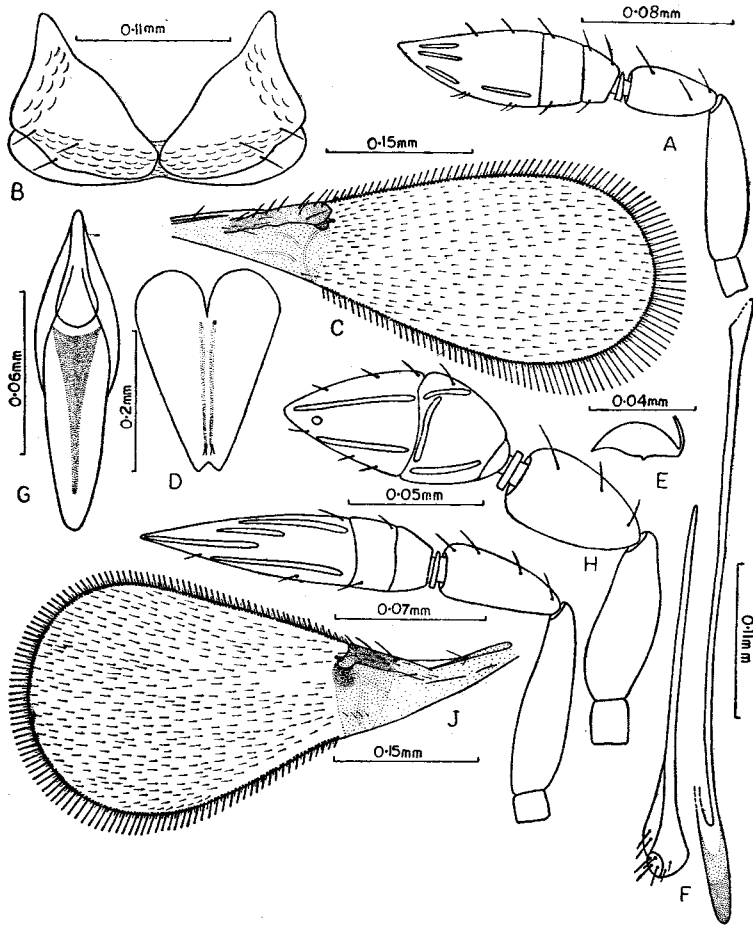
Body length : 0.57 mm.

Holotype ♀, INDIA : Uttar Pradesh, Aligarh, ex eggs of *Apoderus sissu* Marshall on *Dalbergia sissoo*, 7.v.1985, M. Yousuf.

Paratypes. 4 ♀ (Same data as for holotype).

Comments : *Aphelinoidea longiclavata* sp. n. is closely related to *A. xiphias*

(De Santis), but can easily be separated from the latter species by having fore wings slightly more than two times as long as wide, infuscation beneath marginal vein, well developed stigmal vein; antennae with club more than four times as long as wide.



**Fig. 16.** A-H, *Aphelinoidea gwalliorenensis* Yousuf & Shafee : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, subgenital plate, ♀; E, first valvifer, ♀; F, part of external genitalia, ♀; G, genitalia, ♂; H, antenna, ♂. I-J, *Aphelinoidea longiclavata* sp. n. : I, antenna, ♀; J, fore wing, ♀.

Genus **Tumidiclava** Girault, 1911

*Tumidiclava* Girault, 1911d : 6-8.

Type-species : *Tumidiclava pulchrinotum* Girault, by monotypy.

*Orthoneura* Blood, 1923 : 257–258. Syn. quoted by Doult & Viggiani, 1968 : 549.

Type-species : *Orthoneura bimaculata* Blood, by monotypy.

*Orthoneurella* Blood & Kryger, 1928 : 322. Replacement name for *Orthoneura* Blood, preoccupied by *Orthoneura* Macquant, Syrphidae.

Diagnosis : Antennae without funicle, club 3–4 segmented, terminating into rod like projections; fore wings with disc densely setose, marginal vein short, postmarginal vein absent, stigmal vein rudimentary; male genitalia (fig. 17D) without digiti and claspers, aedeagus bifurcated apically.

Comments : The genus *Tumidiclava* Girault is closely related to *Aphelinoidea* Girault, but can be separated by its apical segment of antennal club terminating into rod-like projections; male genitalia (fig. 17D) with apically bifurcated aedeagus.

The genus is known to contain 13 species including 5 new species. All the new species are reported from India and a key for their separation is given below :

Key to Indian species of **Tumidiclava** Girault, based on females.

1. Fore wings usually broad, less than two and a half times as long as wide; disc beyond venation densely setose, setae never arranged in rows; marginal fringe short, less than one-fourth of wing width.....2
- Fore wings (fig. 18B) narrow, more than two and a half times as long as wide; disc beyond venation sparsely setose, setae arranged in rows; marginal fringe long, about one-half of wing width.....1. **sasniensis** sp. n.
2. Antennae with pedicel less than two times as long as wide, club 3-segmented; fore wings with marginal vein normal.....3
- Antennae (fig. 17A) with pedicel two times as long as wide, club 4-segmented; fore wings with marginal vein much thickened.....2. **magnicorpa** sp. n.
3. Antennae with club less than two and a half times as long as wide, terminating into three or more rod-like projections.....4
- Antennae (fig. 17E) with club more than two and a half times as long as wide, terminating into 2 long rod-like projections.....3. **longiclavata** sp. n.
4. Antennae (fig. 17G) with pedicel about one and a half times as long as wide, club terminating into 3-rod like projections.....4. **tenkasiensis** sp. n.
- Antennae (fig. 18C) with pedicel slightly longer than wide, club terminating into 4-rod like projections.....5. **agraensis** sp. n.

1. **Tumidiclava sasniensis** sp. n. (Fig. 18 A-B)

Female.

Head dark brown, slightly longer than wide in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space about as long as eye width. Antennae (fig. 18A) yellow; scape three times as long as wide; pedicel slightly longer than wide; 2-ring segments present; club 3-segmented, about two times as long as wide, apical segment longest with two rod-like projections.

Thorax dark brown. Fore wings (fig. 18B) hyaline except basal one-half of disc lightly infuscated, slightly less than three times as long as wide; disc sparsely setose, setae almost arranged in rows; costal cell narrow; submarginal vein about as long as pre-marginal and marginal veins together; pre-marginal vein shorter than marginal vein; stigmal vein very short; postmarginal vein absent; marginal fringe long, about half of the wing width. Legs yellow.

Abdomen dark, longer than thorax; ovipositor hidden, arising from the basal one-third of abdominal venter.

Body length : 0.51 mm.

Holotype ♀, INDIA : Uttar Pradesh, Aligarh, Sasni, 2.i.1986, by sweeping, M. Yousuf.

Comments : *Tumidiclava sasniensis* sp. n. is closely related to *T. tenkasiensis* sp. n. but differs by having fore wings narrow, more than two and a half times as long as wide; disc beyond venation sparsely setose, setae arranged in rows; marginal fringe long, about one-half of wing width.

2. **Tumidiclava magnicorpa** sp. n. (Fig. 17 A-D)

Female.

Head brown, about as long as wide in facial view; ocelli red, arranged in obtuse triangle; eyes red; malar space longer than eye width. Antennae (fig. 17A) yellow; scape slightly more than three times as long as wide; pedicel long, about two times as long as wide; 1-ring segment present; funicle absent; club moderately long, 4-segmented, about two times as long as wide, apical segment longest, terminating into 2 rod like projections.

Thorax yellow. Fore wings (fig. 17B) hyaline, slightly more than two times as long as wide; disc densely setose, setae never arranged in rows; costal cell narrow; venation short and thick; marginal vein short, about as long as pre-marginal vein; postmarginal vein absent; stigmal vein rudimentary; marginal fringe short, about one-seventh the wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from the basal one-third of abdominal venter.

Body length : 0.51 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of *Apoderus sissu* Marshall on *Dalbergia sissoo*, 24.vii.1985, M. Yousuf.

Paratype 1 ♂ (Same data as for holotype).

Comments : *Tumidiclava magnicorpa* sp. n. can easily be separated from all the known species of *Tumidiclava* Girault, by having antennae with pedicel two times as long as wide, club 4-segmented; fore wings with marginal vein much thickened.

### 3. *Tumidiclava longiclavata* sp. n. (Fig. 17 E-F)

Female.

Head yellow, about as long as wide in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 17E) yellow; scape cylindrical, slightly more than four times as long as wide; pedicel slightly more than one and a half times as long as wide; one ring segment present; funicle absent; club 3-segmented, slightly more than two and a half times as long as wide, apical segment longest, terminating into two rod like projections.

Thorax yellow. Fore wings (Fig. 17F) hyaline, broad; disc densely setose, setae never arranged in rows; costal cell narrow; venation short; submarginal vein longer than marginal and shorter than premarginal vein; marginal vein with 2 setae; postmarginal vein absent; stigmal vein rudimentary. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from basal one-half of abdominal venter.

Body length : 0.52 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 4.vii.1985, by sweeping, M. Yousuf.

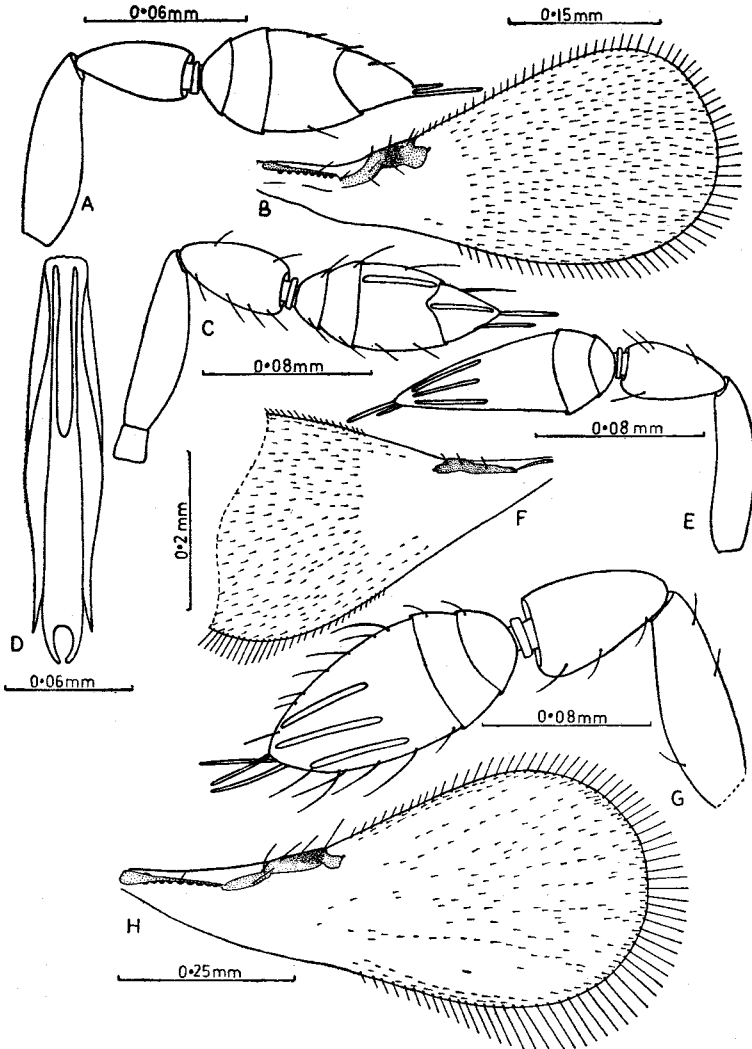
Comments : *Tumidiclava longiclavata* sp. n. is closely related to *T. magnicorpa* sp. n. but differs from it by having antennae with club 3-segmented, more than two and a half times as long as wide.

### 4. *Tumidiclava tenkasiensis* sp. n. (Fig. 17 G-H)

Female.

Head yellowish brown, slightly wider than long in facial view; ocelli red,

arranged in obtuse triangle; eyes dark; malar space slightly shorter than eye width. Antennae (Fig. 17G) yellow, inserted at lower level of eyes; pedicel about one and a half times as long as wide; 1 ring segment present; funicle absent; club moderately long, 3-segmented, slightly more than two times as long as wide, apical segment terminating into 3 rod-like projections.



**Fig. 17.** A-D, *Tumidiclava magnicorpa* sp. n. : A, antenna, ♀; B, fore wing, ♀; C, antenna, ♂; D, genitalia, ♂. E-F, *Tumidiclava longiclavata* sp. n. : E, antenna, ♀; F, fore wing, ♀. G-H, *Tumidiclava tenkasiensis* sp. n. : G, antenna, ♀; H, fore wing, ♀.



Thorax yellowish brown with few small setae. Fore wings (fig. 17H) hyaline, slightly more than two times as long as wide; disc beyond venation sparsely setose; marginal vein longer than stigmal and premarginal veins separately; premarginal vein longer than stigmal vein; marginal fringe about one-fifth of wing width. Legs yellow.

Abdomen yellowish brown except apical two-third dark brown, longer than thorax; ovipositor hidden, arising from the mid of abdominal venter.

Body length : 0.69 mm.

Holotype ♀, INDIA : Tamil Nadu, Tenkasi, ex unidentified eggs of Coleoptera, on rice, 18.ii.1984, M. Yousuf.

Comments : *Tumidiclava tenkasiensis* sp. n. is closely related to *T. bimaculata* (Blood), but differs from latter by having antennae with pedicel about one and a half times as long as wide, club terminating into 3 rod-like projections; fore wings hyaline.

#### 5. *Tumidiclava agraensis* sp. n. (Fig. 18 C-D)

Female.

Head yellow, slightly longer than wide in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly shorter than eye width. Antennae (Fig. 18C) yellow; pedicel short, slightly longer than wide; 1 ring segment present; club 3-segmented, slightly more than two times as long as wide, apical segment longest, terminating into 4 rod-like projections.

Thorax dark brown. Fore wings (fig. 18D) hyaline, about two times as long as wide, apical margin broadly rounded; disc densely setose, setae never arranged in rows; costal cell broad; submarginal vein longer than premarginal and marginal veins separately; premarginal vein longer than marginal vein; stigmal vein less developed; postmarginal vein absent; marginal fringe small, about one-sixth the wing width. Legs yellow.

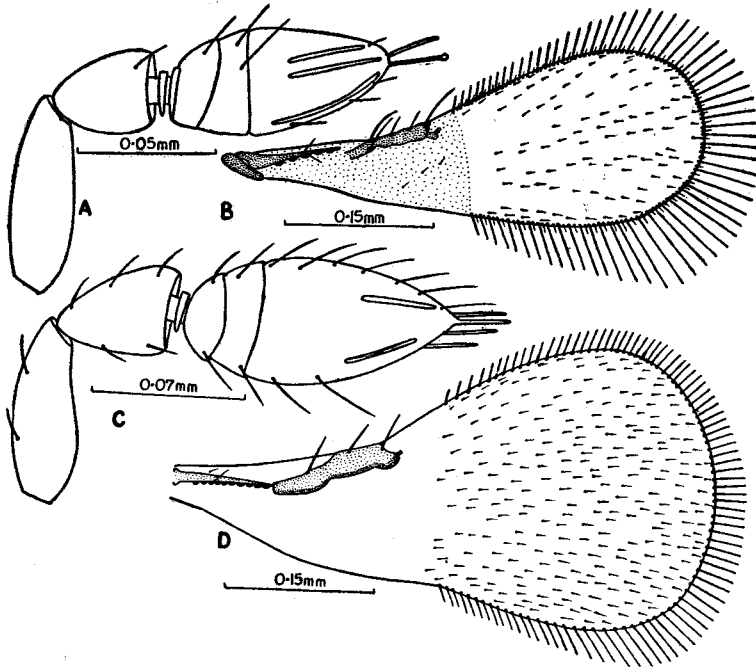
Abdomen dark brown, longer than thorax; ovipositor hidden, arising from the base of abdominal venter.

Body length : 0.63 mm.

Holotype ♀. INDIA : Uttar Pradesh, Agra, 21.xi.1985, by sweeping, M. Yousuf.

Comments : *Tumidiclava agraensis* sp. n. is closely related to *T. minuscula* Nowicki, from which it can be separated by having antennae with pedicel

slightly longer than wide, club terminating into 4 rod-like projections; fore wings with marginal fringe one-fifth the wing width.



**Fig. 18.** A-B, *Tumidiclava sasniensis* sp. n. : A, antenna, ♀; B, fore wing, ♀. C-D, *Tumidiclava agraensis* sp. n. : C, antenna, ♀; D, fore wing, ♀.

#### B. SUBFAMILY OLIGOSITINAE ASHMEAD

Oligositinae Ashmead, 1904a : 359.

Chaetostrichinae Girault, 1912c : 83. Syn. n.

**Diagnosis :** Fore wings with marginal vein long or thickened with numerous setae; male genitalia (fig. 30f) without digiti and claspers.

**Comments :** Ashmead (1904a) and Girault (1912c) independently proposed the subfamilies : Oligositinae and Chaetostrichinae based on the genera *Oligosita* Haliday and *Chaetostricha* Haliday respectively. The type genera of the above subfamilies are closely related on the basis of their having fore wings (figs. 20E, 30C) with long marginal vein, antennae (figs. 20C, 30A) with 3-segmented club, male genitalia (figs. 20H, 30F) without digiti and claspers. Therefore, it is inevitable to place them under one subfamily. We have no hesitation in placing Chaetostrichinae in synonymy with Oligositinae.

The subfamily Oligositinae is divided into three tribes : Megaphragmini tribe. n., Oligositini Ashmead and Lathromerini Girault, on the basis of the characters as given in the key.

#### MEGAPHRAGMINI TRIB. N.

Diagnosis : Body extremely minute, dorsoventrally flattened; fore wings (fig. 19B) very narrow, with long marginal fringe.

Type-genus : *Megaphragma* Timberlake

The genus *Megaphragma* Timberlake is distinct from all the known genera of Trichogrammatidae for having extremely small dorso-ventrally flattened Body and very narrow fore wings. These characters necessitated the erection of new tribe Megaphragmini.

#### Genus **Megaphragma** Timberlake, 1923

*Megaphragma* Timberlake, 1923 : 412.

Type-species : *Megaphragma mymaripenne* Timberlake, by monotypy.

*Sethosiella* Kryger, 1932 : 38. Syn. by Ghesquiere, 1939 : 33-34.

Type-species : *Sethosiella priesneri* Kryger, by monotypy.

Diagnosis : Body dorsoventrally flattened; antennae with 1-segmented funicle, 2-segmented club; fore wings narrow with marginal fringe very long, marginal vein long, postmarginal vein absent, stigmal vein rudimentary.

Comments : Doult & Viggiani (1968) stated, "The genus is quite distinct both morphologically and biologically. It is not closely related to any other genus, but the antennae and wings have features that suggest a derivation from the same stock that gave rise to the *Oligosita* complex of genera".

The genus *Megaphragma* Timberlake is known to contain 6 species including 2 new species, of which 3 species are reported from India and a key for their separation is given below.

Key to Indian species of **Megaphragma** Timberlake, based on females

1. Fore wings with discal setae arranged in single row; antennae with pedicel less than two times as long as wide; funicle segment as long as or longer than wide, separated from club.....2
- Fore wings (fig. 19D) without discal setae; antennae (fig. 19C) with pedicel about three times as long as wide; funicle segment wider than long, broadly attached to club.....1. **aligarhensis** sp. n.

2. Fore wings with marginal fringe about four and a half times as long as wing width; antennae with funicle longer than wide, first club segment more than two times as long as wide.....2. **longiciliatum** Subba Rao  
 — Fore wings with marginal fringe about five and a half times as long as wing width; antennae with funicle about as long as wide, first club segment about one and a half times as long as wide.....3. **magniclava** sp. n.

1. **Megaphragma aligarhensis** sp. n. (Fig. 19 C-D)

Female.

Head yellowish brown, slightly wider than long in facial view; ocelli dark, arranged in obtuse triangle; eyes dark; malar space shorter than eye width. Antennae (fig. 19C) yellowish brown; scape cylindrical; pedicel about three times as long as wide; single ring segment present; funicle 1-segmented, segment wider than long; broadly attached to club; club 2-segmented, first segment two and a half times as long as wide, apical segment longest.

Thorax brown. Fore wings (fig. 19D) hyaline, about seven and a half times as long as wide; disc bare; costal cell very narrow; marginal vein long; stigmal vein absent; marginal fringe very long, about five times the wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from the basal one-third of abdominal venter.

Body length : 0.21 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, Associated with thrips, on wild plant, 20.ix.1985, M. Yousuf.

Paratypes 2 ♀ (Same data as for holotype)

Comments : *Megaphragma aligarhensis* sp. n. is closely related to *M. priesneri* (Kryger), but it can be separated by having fore wings without discal setae; antennae with pedicel about three times as long as wide; funicle segment wider than long, broadly attached to club.

2. **Megaphragma longiciliatum** Subba Rao

*Megaphragma longiciliatum* Subba Rao, 1969a : 114.

Host : *Frankliniella liliivora* Takahashi

Distribution : INDIA : Bangalore.

3. *Megaphragma magniclava* sp. n. (Fig. 19 A-B)

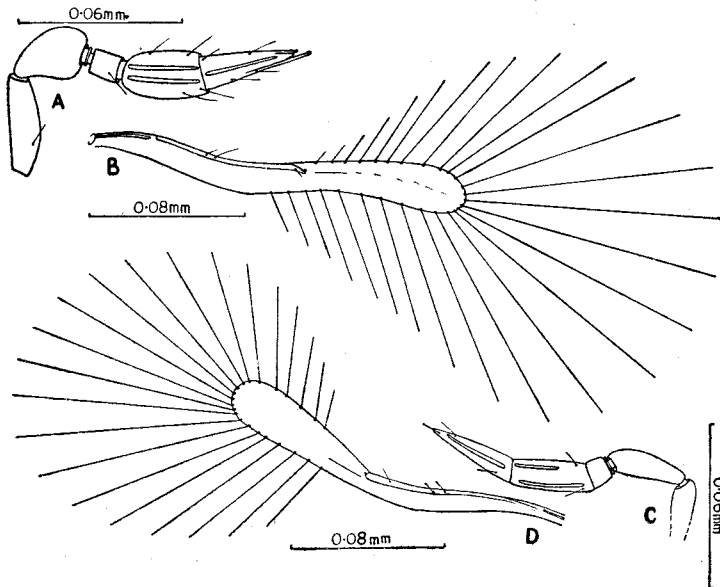
Female.

Head yellow, slightly wider than long in facial view; ocelli orange; eyes dark; malar space slightly longer than eye width. Antennae (fig. 19A) brown; scape cylindrical, slightly more than three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle segment about as long as wide, separated from club; club 2-segmented, first segment about one and a half times as long as wide, second segment about three times as long as wide and terminating into two distinct spines.

Thorax yellow. Fore wings (fig. 19B) hyaline, about eight and a half times as long as wide; disc with few setae, arranged in a single row; costal cell narrow; marginal vein very long; stigmal vein rudimentary; postmarginal vein absent; marginal fringe very long, five and a half times as long as wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from the basal one-third of abdominal venter.

Body length : 0.23 mm.



**Fig. 19.** A-B, *Megaphragma magniclava* sp. n. : A, antenna, ♀; B, fore wing, ♀. C-D, *Megaphragma aligarhensis* sp. n. : C, antenna, ♀; D, fore wing, ♀.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 25.ix.1985, by sweeping, M. Yousuf.

Paratype 1 ♀ (Same data as for holotype).

Comments : *Megaphragma magniclava* sp. n. is closely related to *M. longiciliatum* Subba Rao, but can be distinguished by having fore wings with marginal fringe about five and a half times as long as wing width; antennae with funicle about as long as wide, first club segment about one and a half times as long as wide.

#### TRIBE OLIGOSITINI ASHMEAD

Oligositinae Ashmead 1904a : 230, 358.

Oligositini Ashmead : Kryger 1918 in Viggiani, 1971c : 211.

Oligositini Ashmead : Viggiani, 1971c : 213.

Chaetostrichini Girault, 1912c : 83. Syn. n.

Paracentrobiini Viggiani, 1971c : 212. Syn. n.

Diagnosis : Antennae with funicle; fore wings with marginal vein long or thickened; male genitalia (fig. 30F) without digiti and claspers.

The genera *Oligosita* Haliday, *Chaetostricha* Haliday and *Paracentrobia* Howard are related for having antennae with funicle, fore wings with long marginal vein, male genitalia (figs. 20H, 24E & 30F) without digiti and claspers. This necessitated the placement of all the three genera under one tribe. The tribe Oligositini Ashmead has priority over Chaetostrichini Girault and Paracentrobiini Viggiani. Therefore, Chaetostrichini and Paracentrobiini are treated here as synonyms of Oligositini.

#### Genus **Neocentrobiella** Girault, 1915

*Neocentrobiella* Girault, 1915a : 149.

Type-species : *Neocentrobiella rara* Girault, by monotypy.

Diagnosis : Female antennae long, 2-segmented funicle and 3-segmented club; fore wings with discal setae arranged in rows, marginal vein long, stigmal vein well developed; ovipositor much exerted.

The genus is known to contain 3 species of which 2 species have been reported from India. A key for their separation is given below:

Key to Indian species of **Neocentrobiella** Girault, based on females

1. Ovipositor arising from base of abdominal venter; antennae with two ring

- segments, first club segment about one-half the length of second; fore wings without postmarginal vein.....1. **viggianii** Hayat
- Ovipositor arising from basal one-third of abdominal venter; antennae with single ring segment, first club segment more than one-half the length of second; fore wings with postmarginal vein rudimentary.....  
.....2. **terebrator** Yousuf & Shafee

### 1. **Neocentrobiella viggianii** Hayat

*Neocentrobiella viggianii* Hayat, 1980 : 203.

Host : Unknown.

Distribution : INDIA : Aligarh.

### 2. **Neocentrobiella terebrator** Yousuf & Shafee (Fig. 20 A-B)

*Neocentrobiella terebrator* Yousuf & Shafee, 1985a : 31.

*Specimen examined* : ZM, AMU collection : INDIA : Agra, holotype ♀, 4.xi.1983, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Agra.

The species has been described in detail by Yousuf & Shafee (1985a).

### Genus **Xiphogramma** Nowicki, 1940

*Xiphogramma* Nowicki, 1940 : 640.

Type-species : *Xiphogramma holorhoptra* Nowicki, by monotypy.

*Diagnosis* : Antennae with funicle 2-segmented, club 1-segmented; fore wings with disc densely setose, marginal vein long; ovipositor very long with valvulae sabre shaped.

*Comments* : The genus *Xiphogramma* Nowicki is closely related to *Brachygrammatella* Girault but differs from it by its having antennae with funicle segments distinctly separated; fore wings without thickened marginal vein; much exerted ovipositor with sabre-shaped valvulae.

The genus is known to contain 3 species, of which 1 species *Xiphogramma indicum* Hayat has been reported from India.

1. **Xiphogramma indicum** Hayat

*Xiphogramma indicum* Hayat, 1980 : 205.

Host : Unknown

Distribution : INDIA : Aligarh, Bareilly.

Genus **Chaetostricha** Haliday, 1851

*Chaetostricha* Haliday in Walker, 1851 : 210.

Type-species : *Chaetostricha dimidiata* Haliday, by monotypy.

*Centrobria* Foerster, 1856 : 87. Syn. by Doult & Viggiani, 1968 : 556.

Type-species : *Centrobria walkeri* Foerster, by monotypy.

*Centrobiella* Girault, 1912a : 90. Syn. by Doult & Viggiani, 1968 : 556.

Type-species : *Centrobiella mulierum* Girault, by monotypy.

*Ratzeburgalla* Girault, 1938a : 80. Syn. by Doult & Viggiani, 1968 : 556.

Type-species : *Parufens spinosus* Girault, by monotypy.

Diagnosis : Antennae with funicle 2-segmented, first segment very small, club 3-segmented; fore wings with discal setae arranged in rows, vein track  $RS_1$  present, marginal vein long and straight, stigmal vein much shorter than marginal vein; ovipositor usually exerted. Some additional generic characters are suggested which are as follows : Pronotum (fig. 20D) with anterior margin U-shaped; ovipositor (fig. 20G) with third valvulae long and narrow, articulated with second valvifers; male genitalia (fig. 20H) without digiti and claspers.

Comments : The genus *Chaetostricha* Haliday is closely related to *Oligosita* Haliday but differs from it in having antennae with 2-segmented funicle and fore wings with vein track  $RS_1$ .

The genus is known to contain 19 species, of which 2 species have been reported from India. A key for their separation is given below :

Key to Indian species of **Chaetostricha** Haliday, based on females.

1. Ovipositor exerted, exerted part about one-half the length of abdomen; fore wings (fig. 20E) more than two times as long as wide, marginal fringe one-third the wing width; antennae with club three and a half times as long as wide.....1. **terebrator** Yousuf & Shafee
- Ovipositor hidden; fore wings (fig. 20J) less than two times as long as wide, marginal fringe one-sixth the wing width; antennae with club less than two times as long as wide.....2. **magniclavata** sp. n.



1. ***Chaetostricha terebrator*** Yousuf & Shafee (Fig. 20 C-H)

*Chaetostricha terebrator* Yousuf & Shafee, 1985b : 301.

*Specimens examined.* ZM, AMU Collection : INDIA : Meerut, Holotype ♀, 15.xi.1983, by sweeping M. Yousuf; Aligarh, 5♀ & 2♂, 5.vii.1986, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh, Meerut.

2. ***Chaetostricha magniclavata*** sp. n. (Fig. 20 I-J)

Female.

Head dark brown, about as long as wide in facial view; ocelli reddish brown; eyes dark; malar space slightly longer than eye width. Antennae (fig. 20I) yellowish brown; scape cylindrical, about three times as long as wide; pedicel one and a half times as long as wide; single ring segment present; funicle 2-segmented, first segment much shorter than second; club 3-segmented, slightly less than two times as long as wide.

Thorax dark brown. Fore wings (fig. 20J) hyaline with light infuscation beneath venation, slightly less than two times as long as wide, outer margin broadly rounded; disc densely setose, setae almost arranged in rows; costal cell narrow; stigmal vein as long as premarginal vein, much shorter than marginal vein; vein track  $RS_1$  present; marginal fringe short, one-sixth the wing width. Legs yellow.

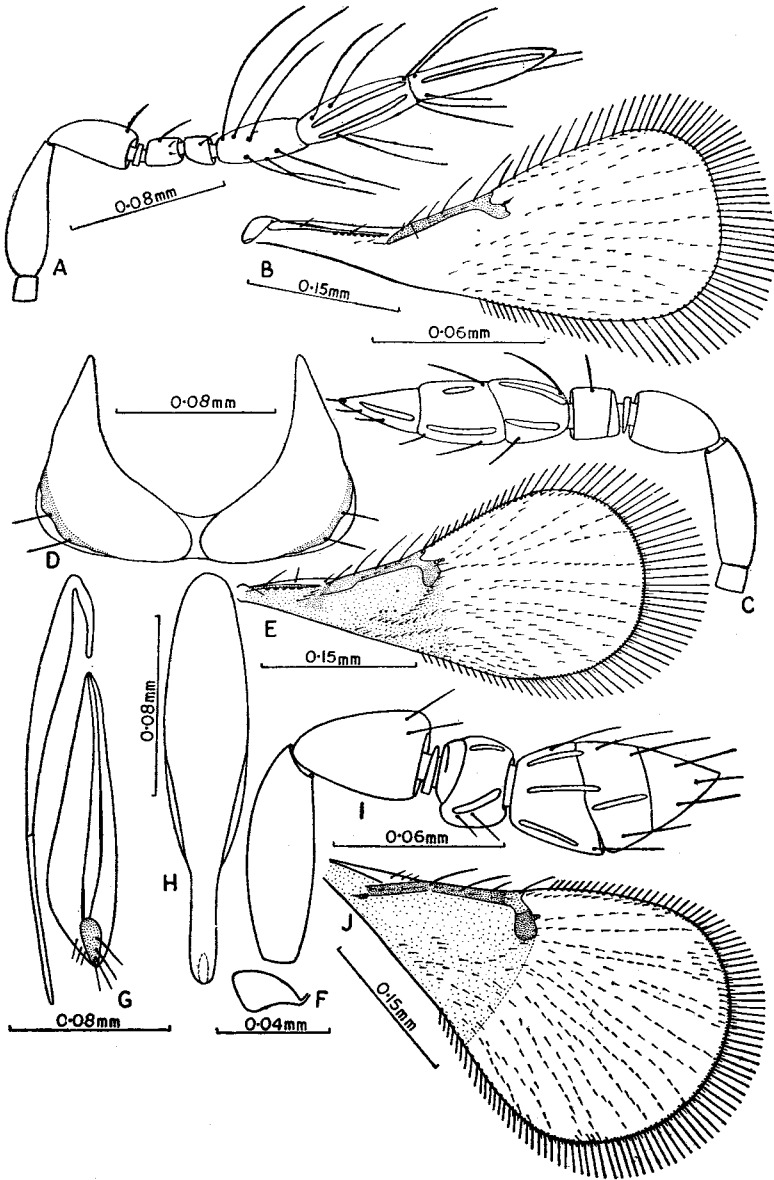
Abdomen dark brown, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length : 0.63 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of *Bruchus* sp. on rice, 25.v.1985, M. Yousuf.

Paratypes 4 ♀ & 1 ♂ (Same data as for holotype).

Comments : *Chaetostricha magniclavata* sp. n. is closely related to *C. miridiphaga* Viggiani but can easily be separated by having ovipositor hidden; fore wings less than two times as long as wide, marginal fringe one sixth the wing width; antennae with club less than two times as long as wide.



**Fig. 20.** A-B, *Neocentrobiella terebrator* Yousuf & Shafee : A, antenna, ♀; B, fore wing, ♀. C-H, *Chaetostricha terebrator* Yousuf & Shafee : C, antenna, ♀; D, pronotum, ♀; E, fore wing, ♀; F, first valvifer, ♀; G, part of external genitalia, ♀; H, genitalia, ♂. I-J, *Chaetostricha magniclavata* sp. n. : I, antenna, ♀; J, fore wing, ♀.

Genus **Brachygrammatella** Girault, 1915

*Brachygrammatella* Girault, 1915a : 147.

Type-species : *Brachygrammatella nebulosa* Girault, by monotypy.

*Pseudbrachygramma* Girault, 1915a : 148. Syn. by Doult & Viggiani, 1968 : 516.

Type-species : *Pseudbrachygramma perplexa* Girault, by original designation.

Diagnosis : Antennae with 2-segmented broadly attached funicle, club 1 to 2-segmented; fore wings with disc densely setose, marginal vein thick with numerous setae, stigmal vein rudimentary; female genitalia (fig. 21D) with outer plate much longer than second valvifers; male genitalia (fig. Viggiani & Hayat 1974; iv :3) without digiti and claspers.

Comments : The genus *Brachygrammatella* is unique in having fore wings with densely setose disc, thick marginal vein, rudimentary stigmal vein. It is closely related to *Brachyia* Strand but differs from it in having antennal club broadly attached with funicle; fore wings with densely setose disc and thickened marginal vein.

The genus is known to contain 9 species including one new species, of which 4 species have been reported from India. A key for their separation is given below :

Key to Indian species of **Brachygrammatella** Girault, based on females

1. Antennae with funicle distinctly 2-segmented; fore wings with marginal vein thickly setose.....2
- Antennae (fig. 21G) with funicle indistinctly 2-segmented; fore wings (fig. 21H) with marginal vein sparsely setose.....1. **jaipurensis** sp. n.
2. Fore wings with marginal fringe, marginal vein with 21-27 setae.....3
- Fore wings without marginal fringe, marginal vein with 19 setae.....2. **indica** Viggiani & Hayat
3. Fore wings broad, less than two times as long as wide; antennae with pedicel longer than wide, club less than two times as long as wide.....3. **aligarhensis** Khan
- Fore wings narrow, two times as long as wide; antennae with pedicel as long as wide, club two times as long as wide.....4. **longiclavata** Khan

1. **Brachygrammatella jaipurensis** sp. n. (Fig. 21 G-H)

Female.

Head yellow, slightly longer than wide in facial view; ocelli red, arranged

in obtuse triangle; eyes dark; malar space shorter than eye width. Antennae (fig. 21G) yellow; scape long, slightly more than three times as long as wide; pedicel slightly more than one and a half times as long as wide; single ring segment present; funicle indistinctly two segmented, slightly wider than long; club 1-segmented, slightly less than two times as long as wide.

Thorax brown. Fore wings (fig. 21H) hyaline except the area beneath venation infuscated, slightly more than two times as long as wide; disc beyond venation densely setose; costal cell narrow; marginal vein about as long as premarginal vein; stigmal vein rudimentary; marginal fringe very short, less than one-tenth the wing width. Legs yellow.

Abdomen dark brown, slightly longer than thorax; ovipositor hidden, arising from the base of abdominal venter.

Body length : 0.71 mm.

Holotype ♀. INDIA : Rajasthan, Jaipur, 15.x.1985, by sweeping, M. Yousuf.

Comments : *Brachygrammatella jaipurensis* sp. n. differs from all the known species of *Brachygrammatella* Girault by having antennae with funicle indistinctly 2-segmented; fore wings with marginal vein sparsely setose.

## 2. *Brachygrammatella indica* Viggiani & Hayat

*Brachygrammatella indica* Viggiani & Hayat, 1974 : 150.

Host : *Oxyrachis* near *tarandus* (Fabricius)

Distribution : INDIA : Aligarh, Jullendar, Manmad, Tuticorin.

## 3. *Brachygrammatella aligarhensis* Khan (Fig. 21 E-F)

*Brachygrammatella aligarhensis* Khan, 1976 : 392. Replacement name for *Brachygrammatella indica* Khan, 1975 : 431.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 18.ix.1974, ex eggs of *Oxyrachis tarandus* (Fabricius), M. Younus Khan; Ajmer, 1 ♀, 18.xi.1985, by sweeping, M. Yousuf.

Host : *Oxyrachis tarandus* (Fabricius)

Distribution : INDIA : Ajmer, Aligarh.

## 4. *Brachygrammatella longiclavata* Khan (Fig. 21 A-D)

*Brachygrammatella longiclavata* Khan, 1975a : 635.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 18.ix.1974, ex eggs of *Oxyrachis tarandus* (Fabricius), M. Younus Khan; Agra, 2 ♀, 21.xi.1985, by sweeping, M. Yousuf.

Host : *Oxyrachis tarandus* (Fabricius)

Distribution : INDIA : Agra, Aligarh.

### Genus *Chaetogramma* Doutt, 1974

*Chaetogramma* Doutt, 1974 : 238.

Type-species : *Chaetogramma occidentalis* Doutt, by original designation.

Diagnosis : Antennae with funicle 2-segmented, club 1-segmented; fore wings with disc densely setose, vein track RS1 absent, marginal vein thick with numerous setae.

Comments : The genus *Chaetogramma* Doutt is closely related to *Brachygrammatella* Girault in having antennae with 2-segmented funicle; densely setose fore wings. It differs from the latter for its antennae with funicle distinctly separated from club.

The genus is known to contain 4 species including one new combination, of which 2 species have been reported from India. A key for their separation is given below :

#### Key to Indian species of *Chaetogramma* Doutt, based on females

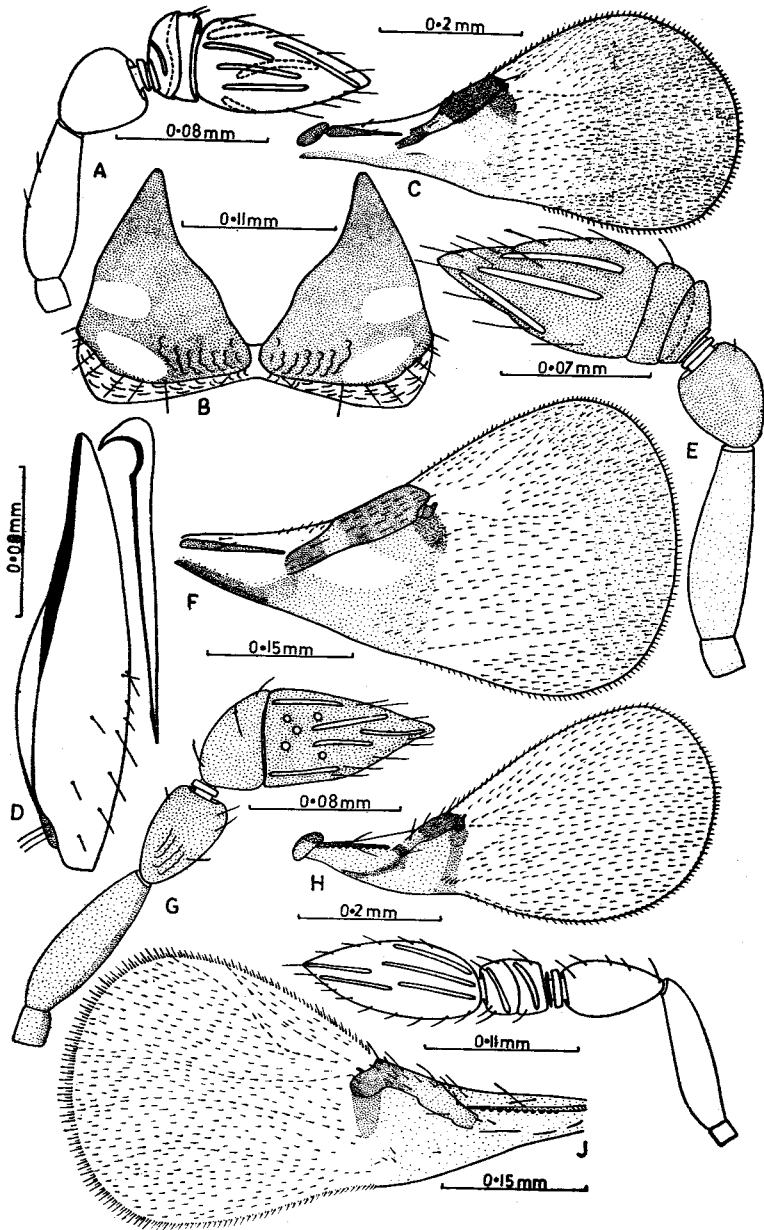
1. Antennae (Hayat, 1981, fig. 1 : 1 A) with pedicel three times as long as wide, distinctly longer than funicle; funicle segments combined one and a half times as long as wide; fore wings (Hayat, 1981, fig. 1 : 2) with stigmal vein rudimentary.....1. **maculata** Hayat
- Antennae (fig. 21I) with pedicel less than two times as long as wide, slightly longer than funicle; funicle segments combined as long as wide; fore wings (fig. 21J) with stigmal vein well developed.....  
.....2. **singularis** (Yousuf & Shafee) comb. n.

#### 1. *Chaetogramma maculata* Hayat

*Chaetogramma maculata* Hayat, 1981 : 74.

Host : Unknown

Distribution : INDIA : Aligarh.



**Fig. 21.** A–D, *Brachygrammatella longiclavata* Khan : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, part of external genitalia, ♀. E–F, *Brachygrammatella aligarhensis* Khan : E, antenna, ♀; F, fore wing, ♀. G–H, *Brachygrammatella jaipurensis* sp. n. : G, antenna, ♀; H, fore wing, ♀. I–J, *Chaetogramma singularis* (Yousuf & Shafee) comb. n. : I, antenna, ♀; J, fore wing, ♀.

2. ***Chaetogramma singularis*** (Yousuf & Shafee) comb. n. (fig. 21 I-J)

*Brachygrammatella singularis* Yousuf & Shafee, 1985c : 305.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 26.iii.1985, by sweeping, M. Akbar; 2 ♀, 6.viii.1985, by sweeping, M. Yousuf.

Host : Unknown

Distribution : INDIA : Aligarh.

The species has been described in detail by Yousuf & Shafee (1985c).

Genus ***Paracentrobia*** Howard, 1897

*Paracentrobia* Howard, 1897 : 178.

Type-species : *Paracentrobia punctata* Howard, by monotypy.

*Abbella* Girault, 1911d : 9-11. Syn. by Doutt & Viggiani, 1968 : 562.

Type-species : *Abbella subflava* Girault, by original designation.

*Brachistella* Girault, 1911g : 184. Syn. by Doutt & Viggiani, 1968 : 562.

Type-species : *Trichogramma acuminata* Ashmead, by monotypy.

*Jassidophthora* Perkins, 1912 : 17. Syn. by Doutt & Viggiani, 1968 : 562.

Type-species : *Jassidophthora prima* Perkins, by monotypy.

*Abbellisca* Ghesquiere, 1946 : 371. Syn. by Doutt & Viggiani, 1968 : 562.

Replacement name for *Abbella* Girault, 1911.

Diagnosis : Antennae with funicle 2-segmented, segments broadly attached; club usually 3-segmented, rarely 2-segmented; fore wings with long marginal vein; stigmal vein well developed; premarginal vein present; discal setae sparsely or densely arranged; male genitalia (fig. 24E) without digiti and claspers.

The genus *Paracentrobia* Howard is known to contain 45 species, of which 11 species have been reported from India. A key for their separation is given below :

Key to Indian species of ***Paracentrobia*** Howard, based on females

1. Antennae with club 3-segmented, apical segment always less than two times as long as preceding segment.....2
- Antennae (fig. 22I) with club 2-segmented, apical segment more than two times as long as preceding segment.....1. ***maduraiensis*** sp. n.

2. Fore wings narrow, three times or more as long as wide.....3  
 — Fore wings broad, less than three times as long as wide.....5
3. Fore wings with marginal fringe less than one-half the wing width; antennae with funicle segments combined wider than long.....4  
 — Fore wings (fig. 23F) with marginal fringe more than one-half the wing width; antennae (fig. 23E) with funicle segments combined as long as wide .....2. **neoflava** sp. n.
4. Antennae (fig. 22A) with two ring segments; fore wings with four infuscated patches.....3. **ajmerensis** sp. n.  
 — Antennae (fig. 23G) with single ring segment; fore wings with single infuscated patch beneath stigmal vein.....4. **parflava** sp. n.
5. Antennae with club very long, more than three times as long as wide.....6  
 — Antennae with club short, less than three times as long as wide.....8
6. Fore wings with a transverse band of infuscation medially; antennae with scape three and a half times or more as long as wide, club about four times as long as wide.....7  
 — Fore wings (fig. 22F) with three dark infuscated patches beneath venation; antennae with scape three times as long as wide, club less than four times as long as wide.....5. **pubipennis** sp. n.
7. Antennae (fig. 24A) with pedicel less than two times as long as wide, funicle segments combined wider than long; fore wings (fig. 24B) with marginal fringe less than one-fifth the wing width.....6. **longiclavata** Yousuf & Shafee  
 — Antennae (fig. 23A) with pedicel more than two times as long as wide, funicle segments combined longer than wide; fore wings (fig. 23B) with marginal fringe more than one-fifth the wing width.....7. **longipedicelata** sp. n.
8. Fore wings with venation never extending beyond mid of wing, small infuscated patches beneath venation, marginal fringe one-third or less the wing width.....9  
 — Fore wings (fig. 24D) with venation extending beyond mid of wing, area beneath venation infuscated, marginal fringe about one-third the wing width.....8. **magniclavata** Yousuf & Shafee
9. Fore wings with venation extending beyond one-third the wing length...10  
 — Fore wings (fig. 22H) with venation extending upto one-third the wing length.....9. **longipennis** sp. n.



10. Fore wings (fig. 23J) with marginal vein about as long as premarginal vein, two infuscated patches beneath stigmal and premarginal veins, marginal fringe about one-sixth the wing width.....10. **brevifringiata** sp. n.
- Fore wings (fig. 23D) with marginal vein longer than premarginal vein, two infuscated patches beneath stigmal vein, marginal fringe about one-third the wing width.....11. **bharatpurensis** sp. n.

1. **Paracentrobia maduraiensis** sp. n. (Fig. 22 I-J)

Female.

Head yellow; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 22 I) yellow; scape about three times as long as wide; pedicel slightly more than one and a half times as long as wide; single ring segment present; funicle 2-segmented, first segment longer than second, segments wider than long; club 2-segmented, about three times as long as wide, apical segment more than two times as long as preceding segment.

Thorax yellow. Fore wings (fig. 22 J) hyaline except an infuscated patch beneath stigmal vein; disc sparsely setose; costal cell narrow; marginal vein with three long setae, longer than stigmal and premarginal veins separately; postmarginal vein rudimentary; stigmal vein well developed; marginal fringe slightly more than one-third the wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.71 mm.

Holotype ♀. INDIA : Tamil Nadu, Madurai, 6.ii.1984, by sweeping, M. Yousuf.

Comments : *Paracentrobia maduraiensis* sp. n. differs from all the known species of genus *Paracentrobia* Howard by having antennae with club 2-segmented, apical segment more than two times as long as preceding segment.

2. **Paracentrobia neoflava** sp. n. (Fig. 23 E-F)

Female.

Head brownish yellow, slightly wider than long in facial view; ocelli orange, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 23E) yellowish; scape about three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present;

funicle 2-segmented, first segment longer than second; club 3-segmented, two and a half times as long as wide, basal segment longest, apical segment slightly longer than preceding segment.

Thorax yellow. Fore wings (fig. 23F) hyaline except three infuscated patches in triangle beneath venation, about three times as long as wide, outer margin broadly rounded; discal setae almost arranged in rows; costal cell narrow; submarginal vein as long as marginal vein; stigmal vein well developed, as long as premarginal vein; marginal fringe long, more than one-half the wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from mid of abdominal venter.

Body length : 0.50 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 22.vii.1985, by sweeping, M. Yousuf.

Paratype 1 ♀ (same data as for Holotype); Rajasthan, Jaipur, 1 ♂, 16.xi.1985, by sweeping, M. Yousuf.

Comments : *Paracentrobia neoflava* sp. n. is closely related to *P. perditrix* (Gahan), but is distinguished by having fore wings with marginal fringe more than one-half the wing width; antennae with funicle segments combined as long as wide, club two and a half times as long as wide.

### 3. *Paracentrobia ajmerensis* sp. n. (Fig. 22 A-D)

Female.

Head yellowish brown, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 22A) yellow; scape cylindrical, three times as long as wide; pedicel long, about one and a half times as long as wide; two ring segments present; funicle 2-segmented, combined slightly wider than long; club 3-segmented, slightly more than two times as long as wide, apical segment slightly longer than preceding segment.

Thorax yellowish brown. Fore wings (fig. 22B) hyaline except four infuscated patches, about three times as long as wide; costal cell narrow; disc densely setose; premarginal vein shorter than marginal vein; stigmal vein well developed, shorter than premarginal vein; postmarginal vein absent; marginal fringe short, about one-third the wing width. Legs yellow.

Abdomen yellowish brown, longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.69 mm.

Holotype ♀. INDIA : Rajasthan, Ajmer, ex eggs of Coleoptera, on *Sorghum* sp., 18.xi.1985, M. Yousuf.

Paratypes, 2 ♀ (same data as for Holotype).

Comments : *Paracentrobia ajmerensis* sp. n. is closely related to *P. bicolor* (Girault), but differs from latter by having antennae with pedicel one and a half times as long as wide; fore wings with premarginal vein about as long as stigmal vein; disc with four infuscated patches.

#### 4. *Paracentrobia parflava* sp. n. (Fig. 23 G-H)

Female.

Head yellow, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly shorter than eye width. Antennae (fig. 23G) yellow except basal club segment dark; scape cylindrical, slightly less than three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle 2-segmented, combined wider than long; club 3-segmented, slightly more than two times as long as wide, apical segment slightly longer than preceding segment.

Thorax dark brown. Fore wings (fig. 23H) hyaline except an infuscated patch beneath stigmal vein, about three times as long as wide; disc densely setose; costal cell broad; premarginal vein shorter than marginal vein; stigmal vein well developed, about one-half the length of premarginal vein; marginal fringe short, about one-fourth the wing width. Legs yellow.

Abdomen dark brown, about twice the length of thorax; ovipositor hidden arising from base of abdominal venter.

Body length : 0.67 mm.

Holotype ♀. INDIA : Rajasthan; Ajmer, 18.xi.1985, by sweeping, M. Yousuf.

Paratype 1 ♀, (same data as for Holotype).

Comments : *Paracentrobia parflava* sp. n. is closely related to *P. israelica* Subba Rao, but can easily be separated by having fore wings narrow, about three times as long as wide, disc with single infuscated patch beneath stigmal vein; antennae with scape less than three times as long as wide, funicle segments together wider than long.

5. **Paracentrobia pubipennis** sp. n. (Fig. 22 E-F)

Female.

Head yellowish; ocelli red; eyes dark; malar space slightly longer than eye width. Antennae (fig. 22E) yellow, inserted at lower level of eyes; scape three times as long as wide; pedicel about two times as long as wide; two ring segments present; funicle 2-segmented, segments combined wider than long, second segment longer than first; club 3-segmented, slightly more than three times as long as wide, apical segment slightly longer than preceding segment.

Thorax yellow. Fore wings (fig. 22F) hyaline with three infuscated patches beneath venation; slightly more than two times as long as wide; costal cell narrow; disc densely setose; marginal vein long; stigmal vein well developed, about as long as premarginal vein; marginal fringe short, about one-third the wing width. Legs yellow.

Abdomen dark brown, slightly longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.71 mm.

Holotype ♀. INDIA : Kerala, Shoranur, 13.ii.1984, by sweeping, M. Yousuf.

Paratype 1 ♀ (same data as for Holotype).

Comments : *Paracentrobia pubipennis* sp. n. is closely related to *P. dimorpha* (Kryger), but differs from latter by having fore wings with three dark infuscated patches beneath venation; antennae with club more than three times as long as wide.

6. **Paracentrobia longiclavata** Yousuf & Shafee (Fig. 24 A-B)

*Paracentrobia longiclavata* Yousuf & Shafee, 1985b : 299.

*Specimens examined* : ZM, AMU, Collection : INDIA : Gwalior, Holotype ♀, 5.xi.1983; Aligarh, 1 ♀, 31.i.1985, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh, Gwalior.

The species has been described in detail by Yousuf & Shafee (1985b).

7. **Paracentrobia longipedicelata** sp. n. (Fig. 23 A-B)

Female.

Head yellowish brown, slightly wider than long in facial view; ocelli orange,

arranged in obtuse triangle; eyes dark; malar space about as long as eye width. Antennae (fig. 23A) yellow; scape cylindrical, about four times as long as wide; pedicel very long, about two and a half times as long as wide; single ring segment present; funicle 2-segmented, segments combined slightly longer than wide; club very long, about four and a half times as long as wide, apical segment about as long as preceding segment.

Thorax brown. Fore wings (fig. 23B) hyaline with a transverse infuscated band medially; slightly more than two times as long as wide, outer margin broadly rounded; discal setae almost arranged in rows; costal cell broad; premarginal vein longer than marginal vein; stigmal vein well developed; marginal fringe short, slightly longer than one-fifth the wing width. Legs yellow.

Abdomen brown, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length : 0.83 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 1.ii.1985, by sweeping, M. Yousuf.

Comments : *Paracentrobia longipedicelata* sp. n. is closely related to *P. cassidivora* Subba Rao, but is distinguished by having antennae with pedicel more than two times as long as wide, funicle segments combined longer than wide; fore wings with marginal fringe more than one-fifth the wing width.

#### 8. *Paracentrobia magniclavata* Yousuf & Shafee (Fig. 1 & 24 C-E)

*Paracentrobia magniclavata* Yousuf & Shafee, 1985b : 301.

*Specimens examined* : ZM, AMU Collection : INDIA : Bulandshahr, Holotype ♀, 11.x.1983, by sweeping; Aligarh, 80 ♀, 6 ♂, ex eggs of Coleoptera on *Ameranthus* sp., 8.x.1984, M. Yousuf.

Host : Eggs of Coleoptera.

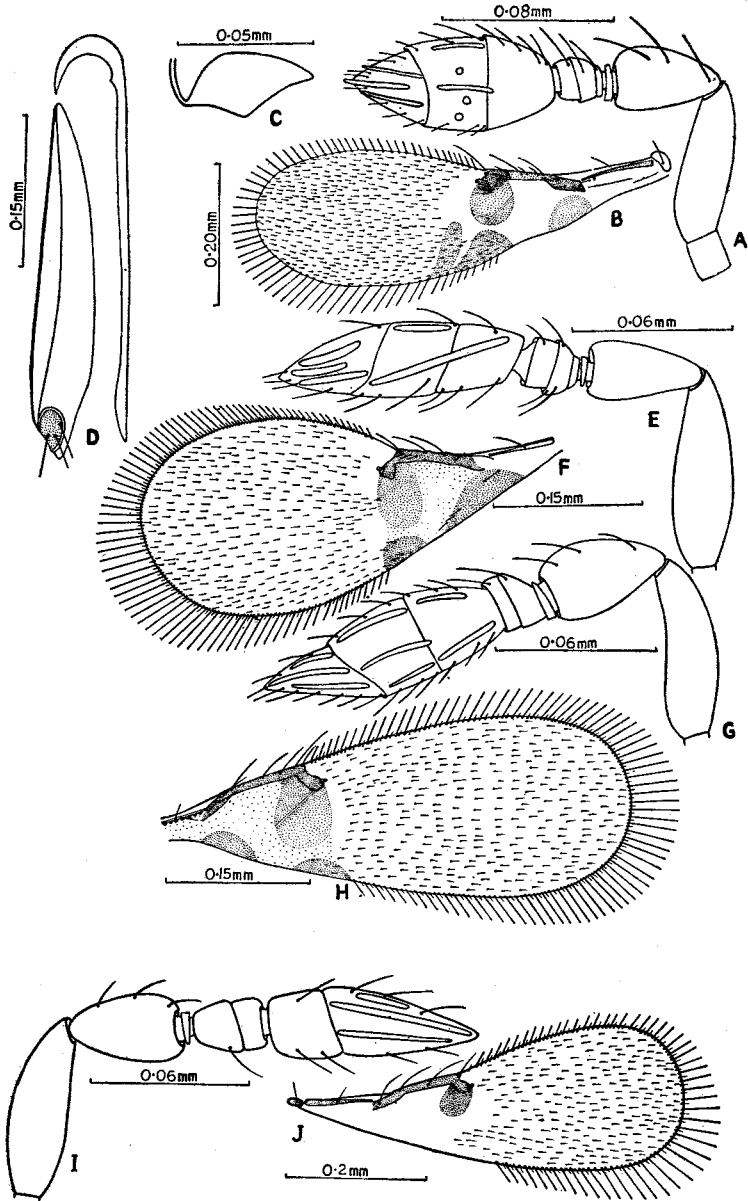
Distribution : INDIA : Aligarh, Bulandshahr.

The species has been described in detail by Yousuf & Shafee (1985b).

#### 9. *Paracentrobia longipennis* sp. n. (Fig. 22 G-H)

Female.

Head yellow, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space longer than eye width. Antennae (fig. 22G) brown, inserted at lower level of eyes; scape long, slightly more than



**Fig. 22.** A–D, *Paracentrobia ajmerensis* sp. n. : A, antenna, ♀; B, fore wing, ♀; C, first valvifer, ♀; D, part of external genitalia, ♀. E–F, *Paracentrobia pubipennis* sp. n. : E, antenna, ♀; F, fore wing, ♀. G–H, *Paracentrobia longipennis* sp. n. : G, antenna, ♀; H, fore wing, ♀. I–J, *Paracentrobia maduraiensis* sp. n. : I, antenna, ♀; J, fore wing, ♀.

three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle 2-segmented, segments combined wider than long; club 3-segmented, slightly less than three times as long as wide, apical segment slightly longer than preceding segment.

Thorax brown with few fine setae; fore wings (fig. 22H) hyaline with three dark infuscated patches beneath venation, about two and a half times as long as wide; disc densely setose; costal cell narrow; venation extending up to one-third the wing length; marginal vein long, longer than premarginal and stigmal veins combined; stigmal vein well developed, about as long as premarginal vein; marginal fringe short, less than one-third the wing width. Legs yellow.

Abdomen dark brown, slightly longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.71 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 14.x.1984, by sweeping, M. Yousuf.

Comments : *Paracentrobia longipennis* sp. n. is closely related to *P. garuda* Subba Rao, but it can be separated from latter by having fore wings with three infuscated patches beneath venation, venation extending up to one-third the wing length; antennae with two ring segments.

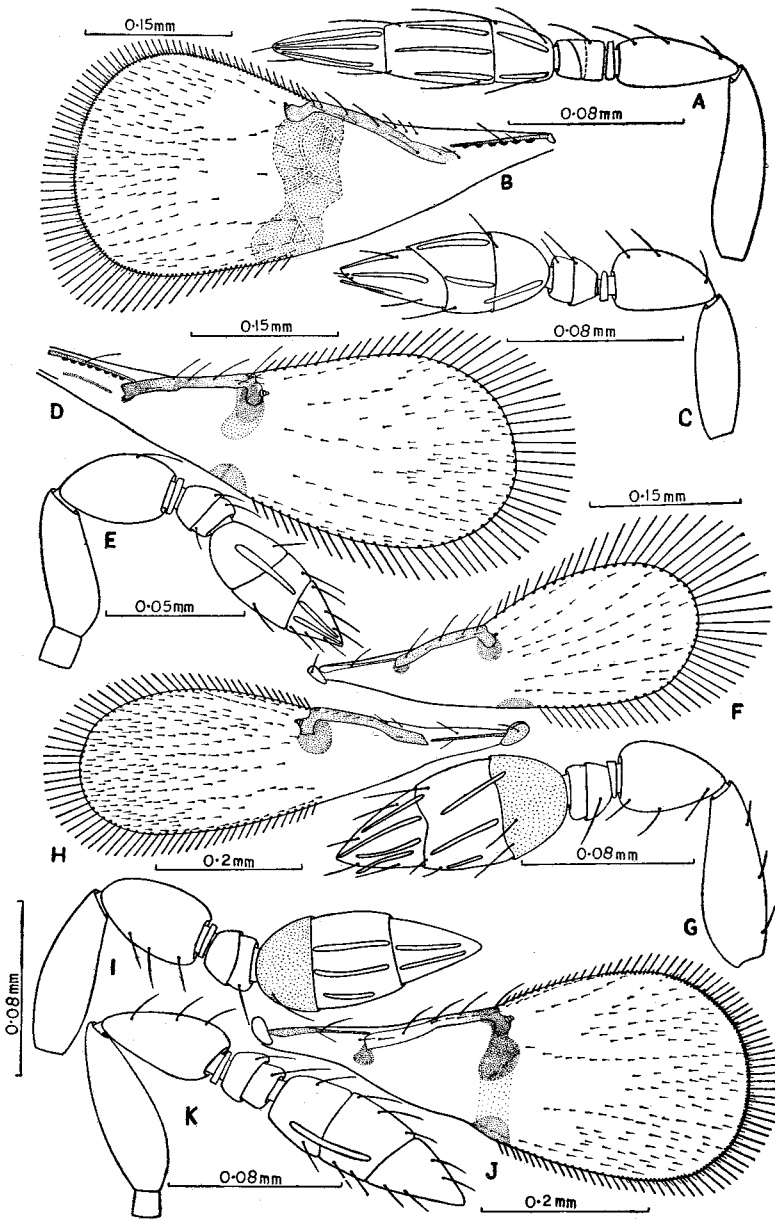
#### 10. *Paracentrobia brevifringiata* sp. n. (Fig. 23 I-K)

Female.

Head yellow, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space shorter than eye width. Antennae (fig. 23 I) yellow; scape cylindrical, three times as long as wide; pedicel one and a half times as long as wide; funicle 2-segmented, segments combined wider than long; club 3-segmented, about two and a half times as long as wide, apical segment slightly longer than preceding segment.

Thorax yellow. Fore wings (fig. 23 J) hyaline except three infuscated patches beneath stigmal and premarginal veins, two and a half times as long as wide; discal setae sparsely arranged; costal cell narrow; venation extending up to mid of wing length; premarginal vein about as long as marginal vein; stigmal vein well developed; marginal fringe short, about one-sixth the wing width. Legs yellow.

Abdomen yellow, distinctly longer than thorax; ovipositor hidden, arising from base of abdominal venter.



**Fig. 23.** A–B, *Paracentrobia longipedicelata* sp. n. : A, antenna, ♀; B, fore wing, ♀. C–D, *Paracentrobia bharpurensis* sp. n. : C, antenna, ♀; D, fore wing, ♀. E–F, *Paracentrobia neoflava* sp. n. : E, antenna, ♀; F, fore wing, ♀. G–H, *Paracentrobia parflava* sp. n. : G, antenna, ♀; H, fore wing, ♀. I–K, *Paracentrobia brevifringiata* sp. n. : I, antenna, ♀; J, fore wing, ♀; K, antenna, ♂.



Body length : 0.63 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 14.ix.1985, by sweeping, M. Yousuf.

Paratypes 1 ♀, 1 ♂ (same data as for holotype).

Comments : *Paracentrobia brevisfringiata* sp. n. is closely related to *P. yasumatsui* Subba Rao, from which it can be separated by having fore wings with marginal vein about as long as premarginal vein; antennae with two ring segments, club two and a half times as long as wide.

#### 11. *Paracentrobia bharatpurensis* sp. n. (Fig. 23 C-D)

Female.

Head yellow, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 23C) yellow; scape cylindrical, about three times as long as wide; pedicel one and a half times as long as wide; single ring segment present; funicle 2-segmented, segments combined wider than long; club 3-segmented, about two and a half times as long as wide, apical segment slightly longer than preceding segment.

Thorax yellow. Fore wings (fig. 23D) hyaline except two infuscated patches beneath stigmal vein, about two and a half times as long as wide, outer margin broadly rounded; disc sparsely setose, setae almost arranged in rows; costal cell narrow; venation never extending beyond the mid of wing; premarginal vein shorter than marginal vein; stigmal vein well developed; marginal fringe short, about one-third the wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.57 mm.

Holotype ♀. INDIA : Rajasthan, Bharatpur, 20.xi.1985, by sweeping, M. Yousuf.

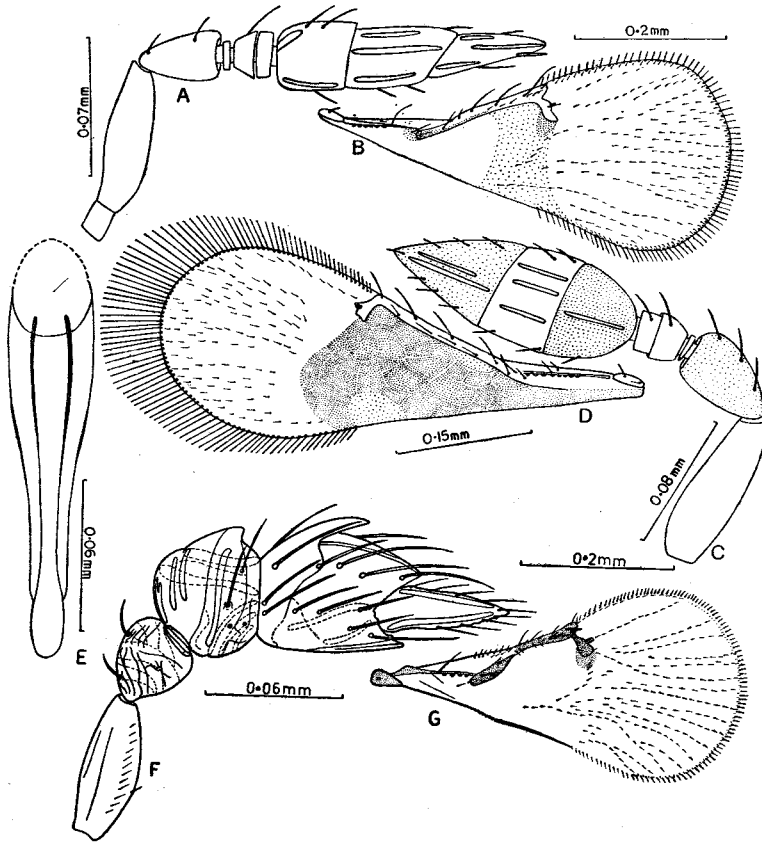
Comments : *Paracentrobia bharatpurensis* sp.n. is closely related to *P. masovica* (Nowicki) but differs from latter by having fore wings with two infuscated patches beneath stigmal vein, marginal fringe about one-third the wing width; antennae with funicle segments together wider than long, club two and a half times as long as wide.

**Parhispidophila gen. n.**

Type-species : *Parhispidophila singularis* sp. n.

Diagnosis : Antennae with funicle indistinctly 2-segmented, segments obliquely attached; club robust, 3-segmented with thick setae; fore wings with disc sparsely setose, setae arranged in rows; costal cell broad; premarginal vein as long as marginal vein, distinctly longer than stigmal vein, postmarginal vein rudimentary; vein track RS1 present.

Comments : *Parhispidophila* gen. n. apparently resembles to *Hispidophila* Viggiani, but differs from it by its having antennae with 2-segmented funicle.



**Fig. 24.** A-B, *Paracentrobia longiclavata* Yousuf & Shafee ; A, antenna, ♀; B, fore wing, ♀. C-E, *Paracentrobia magniclavata* Yousuf & Shafee : C, antenna, ♀; D, fore wing, ♀; E, genitalia, ♂. F-G, *Parhispidophila singularis* sp. n. : F, antenna, ♀; G, fore wing, ♀.

In the key to genera of family Trichogrammatidae given by Peck *et al.* (1964), Douth & Viggiani (1968) and Hayat & Subba Rao (1985) the new genus runs close to *Paracentrobia* Howard (=Abbella Girault) but can be distinguished by having antennae with funicle segments obliquely fused, club robust with thick setae; fore wings with stigmal vein abruptly arising from marginal vein.

***Parhispidophila singularis* sp. n. (Fig. 24 F-G)**

Female.

Head dark brown; ocelli red, arranged in obtuse triangle; eyes dark. Antennae (fig. 24F) yellow; scape about two and a half times as long as wide; pedicel about as long as wide; funicle 2-segmented, segments obliquely fused; club robust, 3-segmented, slightly less than two times as long as wide, segments with long and thick setae.

Thorax dark brown. Fore wings (fig. 24G) hyaline except an infuscated patch beneath stigmal vein, about two times as long as wide; costal cell broad; discal setae arranged in rows; premarginal vein about as long as marginal vein; stigmal vein well developed, abruptly arising from the marginal vein; post-marginal vein rudimentary; marginal fringe very short, less than one-tenth the wing width. Legs dark brown except tarsal segments which are yellow.

Abdomen dark brown, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length : 0.53 mm.

Holotype ♀. INDIA : Haryana; Gurgaon, Punhana, 1.x.1984, by sweeping, A. K. Chishti.

Paratype 1 ♀. INDIA : Uttar Pradesh, Aligarh, 28.vi.1985, by sweeping, M. Yousuf.

**Genus *Oligositoides* Douth, 1968**

*Oligositoides* Douth in Douth & Viggiani, 1968 : 541.

Type-species : *Oligositoides fletcheri* Douth, by monotypy.

Diagnosis : Antennae with 1-segmented funicle and 3-segmented club. Fore wings with discal setae arranged in rows; marginal vein long, longer than premarginal and stigmal veins separately; postmarginal vein absent; vein track RS1 present. Female genitalia with first valvifers (fig. 25D) semicircular, second valvifer (fig. 25E) long and narrow. Male genitalia (fig. 25G) without digiti and claspers, aedeagus bifurcated apically.

Comments : The genus is closely related to *Oligosita* Haliday in having 1-segmented funicle and 3-segmented club, but differs from that genus in having fore wings with vein track RS1; apically bifurcated aedeagus.

The genus is known to contain 6 species including 2 new species, of which 4 species have been reported from India. A key for their separation is given below :

Key to Indian species of **Oligositoides** Doult, based on females

1. Antennae with funicle wider than long; fore wings usually less than two and a half times as long as wide, marginal fringe less than one-third the wing width; ovipositor hidden or slightly exerted.....2
- Antennae (fig. 25L) with funicle as long as wide; fore wings (fig. 25M) two and a half times as long as wide, marginal fringe one-third the wing width; ovipositor much exerted.....1. **terebratus** Yousuf & Shafee
2. Fore wings broad, less than two times as long as wide; antennae with pedicel about one and a half times as long as wide.....3
- Fore wings (fig. 25K) narrow, more than two times as long as wide; antennae with pedicel about two times as long as wide.....2. **gudurensis** Yousuf & Shafee
3. Ovipositor hidden; antennae (fig. 25A) with club short, two and a half times as long as wide; fore wings with marginal fringe less than one-fifth the wing width.....3. **fumipennis** sp. n.
- Ovipositor slightly exerted; antennae (fig. 25H) with club long, three and a half times as long as wide; fore wings with marginal fringe one-fourth the wing width.....4. **latipennis** sp. n.

1. **Oligositoides terebratus** Yousuf & Shafee (Fig. 25 L-M)

*Oligositoides terebratus* Yousuf & Shafee, 1984c : 369.

*Specimen examined* : ZM, AMU Collection : INDIA : Gudur, Holotype ♀, 30.i.1984, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Gudur.

2. **Oligositoides gudurensis** Yousuf & Shafee (Fig. 25 J-K)

*Oligositoides gudurensis* Yousuf & Shafee, 1984c : 369.

*Specimen examined* : ZM, AMU Collection : INDIA : Gudur, Holotype ♀, 30.i.1984, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Gudur.

### 3. *Oligositoides fumipennis* sp. n. (Fig. 25 A-G)

Female.

Head yellow, slightly longer than wide in facial view; ocelli orange, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. antennae (fig. 25A) yellow; scape cylindrical, slightly less than three times as long as wide; pedicel one and a half times as long as wide; single ring segment present; funicle segment wider than long; club 3-segmented, about two and a half times as long as wide.

Thorax dark brown. Fore wings (fig. 25C) hyaline except area beneath venation infuscated; slightly less than two times as long as wide, outer margin broadly rounded; discal setae almost arranged in rows; costal cell narrow; marginal vein distinctly longer than premarginal and stigmal veins separately; postmarginal vein absent; vein track RS1 present; marginal fringe short, less than one-fifth the wing width. Legs yellow.

Abdomen dark brown, longer than thorax, ovipositor hidden, arising from the basal one-third of abdominal venter.

Body length : 0.54 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, ex eggs of Heteroptera, 4.v.1985, M. Yousuf.

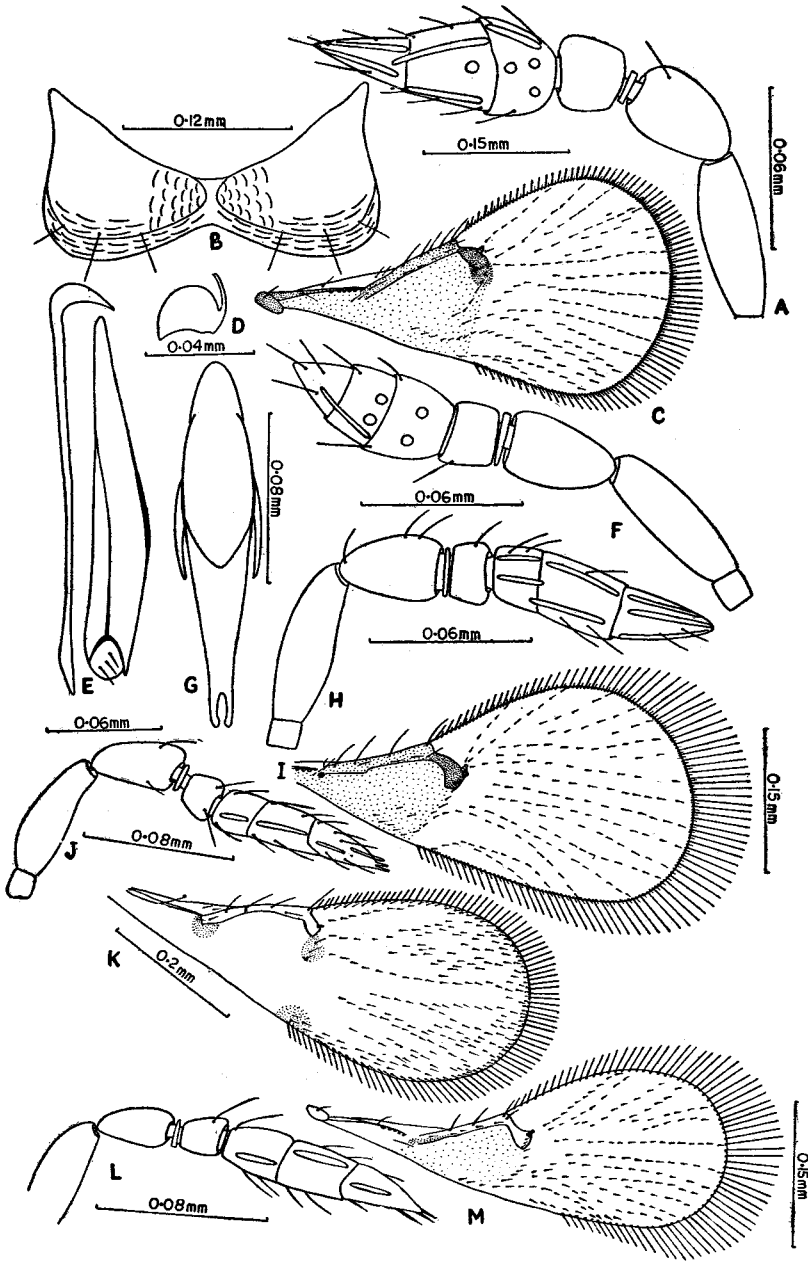
Paratypes 5 ♀, 2 ♂ (same data as for holotype).

Comments : *Oligositoides fumipennis* sp. n. is closely related to *O. fletcheri* Doutt, but can be separated by having antennae with club short, two and a half times as long as wide; fore wings with marginal fringe about one-sixth the wing width, discal setae arranged in rows.

### 4. *Oligositoides latipennis* sp. n. (Fig. 25 H-I)

Female.

Head yellow; ocelli orange, arranged in acute triangle; eyes red. Antennae (fig. 25 H) yellow; scape long, about three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle



**Fig. 25.** A–G, *Oligositoides fumipennis* sp. n. : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, first valvifer, ♀; E, part of external genitalia, ♀; F, antenna, ♂; G, genitalia, ♂. H–I, *Oligositoides latipennis* sp. n. : H, antenna, ♀; I, fore wing, ♀. J–K, *Oligositoides gudurensis* Yousuf & Shafee : J, antenna, ♀; K, fore wing, ♀. L–M, *Oligositoides terebratus* Yousuf & Shafee : L, antenna, ♀; M, fore wing, ♀.

1-segmented, wider than long; club 3-segmented, about three and a half times as long as wide, apical segment longest.

Thorax dark brown. Fore wings (fig. 25 I) hyaline with an infuscation beneath venation, about two times as long as wide; discal setae arranged in rows; costal cell narrow; marginal vein longer than stigmal and premarginal veins together; stigmal vein well developed; vein track  $RS_1$  present; marginal fringe about one-fourth the wing width. Legs yellow.

Abdomen dark brown, slightly longer than thorax; ovipositor slightly exerted, arising from mid of abdominal venter.

Body length : 0.51 mm.

Exserted part of ovipositor : 0.09 mm.

Holotype ♀. INDIA : Pondicherry, 20.ii.1984, by sweeping, M. Yousuf.

Comments : *Oligositoides latipennis* sp. n. is closely related to *O. semicinctum* De Santis, but can be distinguished by having antennae with pedicel one and a half times as long as wide, funicle segment wider than long; fore wings with discal setae almost arranged in rows.

#### Genus **Epologosita** Girault, 1916

*Parologosita* Girault & Dodd, 1915 : 145.

Type-species : *Parologosita biclavata* Girault & Dodd, by monotypy.

*Epologosita* Girault, 1916a : 206. Replacement name for *Parologosita* Girault & Dodd, preoccupied by *Parologosita* Kurdjumov.

Diagnosis : Antennae with funicle 1-segmented, club usually 2-segmented rarely 1-segmented; fore wings with disc bare, marginal vein longer than pre-marginal and stigmal veins together, post marginal vein absent, marginal fringe long; mid and hind legs with first and second tarsal segments long.

Comments : The genus *Epologosita* Girault is closely related to *Oligosita* Haliday. It differs from that genus by its having fore wings with bare disc, first and second tarsal segments of mid and hind legs usually long.

The genus *Epologosita* is known to contain 10 species including 1 new species, of which 4 species have been reported from India. A key for their separation is given below :

Key to Indian species of **Epologosita** Girault, based on females

1. Fore wings hyaline or basal one third infuscated, marginal fringe less than two times the wing width.....2

- Fore wings with basal two-third infuscated, marginal fringe more than two times the wing width.....1. **duliniae** Livingstone & Yacoob
- 2. Antennae with funicle as long as or longer than wide, pedicel about as long as scape, club more than three times as long as wide.....3
- Antennae with funicle wider than long, pedicel shorter than scape, club less than three times as long as wide.....2. **clara** Hayat & Viggiani
- 3. Fore wings slightly less than four times as long as wide, basal one-third infuscated, marginal fringe one and a half times as long as wing width.....  
.....3. **bicolor** Hayat & Viggiani
- Fore wings slightly less than three times as long as wide, hyaline, marginal fringe about as long as wing width.....4. **albiscutellum** sp. n.

#### 1. **Epoligosita duliniae** Livingstone & Yacoob

*Epoligosita duliniae* Livingstone & Yacoob, 1983 : 213.

Host : *Dulinius conchatus* Distant.

Distribution : INDIA : Palghat

#### 2. **Epoligosita clara** Hayat & Viggiani

*Epoligosita clara* Hayat & Viggiani, 1981 : 119.

Host : Unknown

Distribution : INDIA : Aligarh.

#### 3. **Epoligosita bicolor** Hayat & Viggiani

*Epoligosita bicolor* Hayat & Viggiani, 1981 : 121.

Host : Unknown

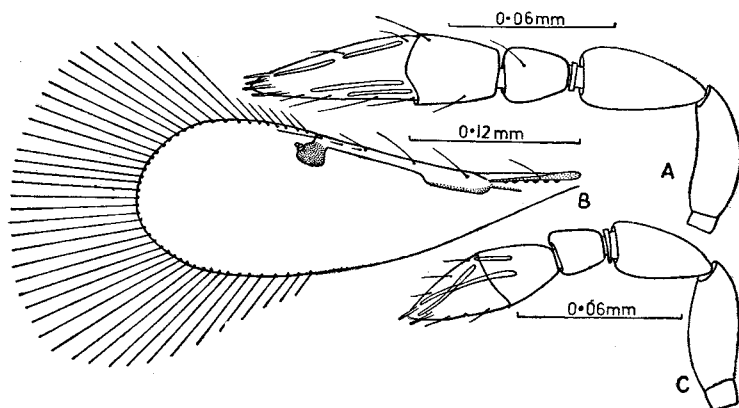
Distribution : INDIA : Aligarh.

#### 4. **Epoligosita albiscutellum** sp. n. (Fig. 26 A-C)

Female.

Head yellow, slightly wider than long in facial view; ocelli dark, arranged in obtuse triangle; eyes dark; malar space slightly longer than eye width. Antennae (fig. 26A) yellow; scape two and a half times as long as wide; pedicel about two times as long as wide, about as long as scape; single ring segment present; funicle 1-segmented, slightly longer than wide; club 2-segmented, three and a half times as long as wide, apical segment longest.





**Fig. 26.** A-C, *Epolligosita albiscutellum* sp. n. : A, antenna, ♀; B, fore wing, ♀; C, antenna, ♂.

Thorax yellow. Fore wings (fig. 26B) hyaline, about three times as long as wide; disc bare; costal cell narrow; marginal vein longer than premarginal and stigmal veins together; stigmal vein well developed, longer than premarginal vein; marginal fringe long, about as long as wing width. Legs yellow.

Abdomen yellowish brown, longer than thorax; ovipositor hidden, arising from mid of abdominal venter.

Body length : 0.51 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 6.viii.1985, by sweeping, M. Yousuf.

Paratype 1 ♂ (same data as for holotype).

Comments : *Epolligosita albiscutellum* sp. n. is closely related to *E. bicolor* Hayat & Viggiani, but differs from latter in having fore wings hyaline, slightly less than three times as long as wide, marginal fringe about as long as wing width.

#### Genus *Oligosita* Haliday, 1851

*Oligosita* Haliday in Walker, 1851, 212.

Type-species : *Oligosita collina* Haliday, by monotypy.

*Westwoodella* Ashmead, 1904a : 359. Syn. quoted by Peck, 1963 : 77.

Type-species : *Oligosita subfasciata* Westwood, by monotypy.

*Paroligosita* Kurdjumov, 1911 : 434. Syn. quoted by Douth & Viggiani, 1968 : 537.

Type-species : *Paroligosita flava* Kurdjumov, by monotypy.

*Pseudoligosita* Girault, 1913d : 104. Syn. quoted by Douth & Viggiani, 1968 : 537.

Type-species : *Pseudoligosita arnoldi* Girault, by monotypy.

*Zorontogramma* Silvestri, 1915 : 104. Syn. quoted by Douth & Viggiani, 1968 : 537.

Type-Species : *Zorontogramma distinctum* Silvestri, by monotypy.

Diagnosis : Antennae with 1-segmented funicle, and 3-segmented club; fore wings narrowly rounded with few to numerous discal setae; marginal fringe usually long; marginal vein long, stigmal vein well developed; ovipositor hidden. Female genitalia (fig. 30D) with second valvifers and outer plates long and narrow; male genitalia (fig. 30F; Viggiani, 1971, fig. x : 2) without digiti and claspers.

Comments : Nowicki (1936) recognized four subgenera : *Oligosita* Haliday, *Westwoodella* Ashmead, *Epoligosita* Girault and *Zorontogramma* Silvestri under the genus *Oligosita* Haliday. Later, Douth & Viggiani (1968) treated *Epoligosita* Girault as valid genus. The genus has been revised by Viggiani (1976b, 1977, 1981a, 1981b).

The genus is known to contain 113 species including 7 new species, of which 15 species have been reported from India. A key to Indian species is given below :

Key to Indian species of **Oligosita** Haliday, based on females\*

1. Fore wings with discal setae few, arranged in a single row.....2
- Fore wings sparsely or densely setose, setae arranged in many rows.....3
2. Fore wings (fig. 27B) long and narrow, slightly less than four times as long as wide; marginal fringe longer than wing width; antennae (fig. 27A) with funicle segment longer than wide, club very long, slightly more than five times as long as wide.....1. **ruficorpa** sp. n.
- Fore wings (fig. 28E) moderately broad, about three times as long as wide, marginal fringe about as long as wing width; antennae (fig. 28D) with funicle segment as long as wide, club two times as long as wide.....2. **aligarhensis** Yousuf & Shafee
3. Fore wings three times or less as long as wide.....4
- Fore wings more than three times as long as wide.....6
4. Antennae with funicle segment wider than long, club less than three times as long as wide; fore wings sparsely setose.....5

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\* *Oligosita manii* Viggiani is not included in the key due to inadequate characters.

- Antennae with funicle segment longer than wide, club more than three times as long as wide.....3. **latipennis** Yousuf & Shafee
- 5. Antennae (fig. 27C) with club slightly more than two times as long as wide, terminating into 2 prominent rod-like projections; fore wings (fig. 27D) with marginal fringe shorter than wing width.....  
.....4. **meerutensis** Yousuf & Shafee
- Antennae (fig. 29E) with club slightly longer than wide, terminating into a small rod-like projection; fore wings (fig. 29F) with marginal fringe about as long as wing width.....5. **kasimpurensis** sp. n.
- 6. Antennae with funicle segment distinctly wider than long.....7
- Antennae with funicle segment as long as or longer than wide.....8
- 7. Fore wings (fig. 27H) with disc densely setose, marginal fringe shorter than wing width; antennae (fig. 27G) with club slightly less than three times as long as wide.....6. **nephoteticum** Mani
- Fore wings (fig. 28B) with disc sparsely setose, marginal fringe one and a half times as long as wing width; antennae (fig. 28A) with club one and a half times as long as wide.....7. **breviclavata** sp. n.
- 8. Fore wings with marginal fringe shorter than wing width.....9
- Fore wings with marginal fringe as long as or longer than wing width...11
- 9. Antennae with pedicel less than two times as long as wide, club less than three times as long as wide; fore wings with discal setae never arranged in rows.....10
- Antennae (fig. 29G) with pedicel two times as long as wide, club three and a half times as long as wide; fore wings (fig. 29H) with discal setae arranged in rows.....8. **brevifringiata** sp. n.
- 10. Fore wings (fig. 30C) with marginal fringe more than one-half the wing width; antennae (fig. 30A) with pedicel longer than ring and funicle segments together, club never terminating into rod-like projection.....  
.....9. **singularis** Yousuf & Shafee
- Fore wings (fig. 28G) with marginal fringe one-half the wing width; pedicel as long as ring and funicle segments together, club terminating into two rod-like projections.....10. **gilvus** Yousuf & Shafee
- 11. Antennae with funicle segment longer than wide, club more than two and a half times as long as wide.....12
- Antennae (fig. 29A) with funicle segment as long as wide, club two times as long as wide.....11. **debaiensis** sp. n.
- 12. Antennal club with rod-like projections; fore wings sparsely setose.....13

- Antennal club without rod-like projections; fore wings densely setose.....  
.....12. **longicilia** Yousuf & Shafee.
13. Antennae (fig. 29C) with funicle segment distinctly longer than wide, pedicel two times as long as wide; fore wings (fig. 29D) without a band of infuscation.....13. **longirhinaria** sp. n.
- Antennae (fig. 30G) with funicle segment slightly longer than wide, pedicel one and a half times as long as wide; fore wings (fig. 30H) with a band of infuscation beneath stigmal vein.....14. **younusi** sp. n.

1. **Oligosita ruficorpa** sp. n. (Fig. 27 A-B)

*Oligosita sanguinea* (Girault); Yousuf & Shafee, 1984a : 20. Misidentification.

Female.

Head red, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space about as long as eye width. Antennae (fig. 27A) yellow, scape cylindrical, three and a half times as long as wide; pedicel about one and a half times as long as wide; funicle segment about one and a half times as long as wide; club very long, slightly more than five times as long as wide, apical segment terminating into two rod-like projections.

Thorax red. Fore wings (fig. 27B) hyaline except a patch of infuscation beneath stigmal vein, slightly less than four times as long as wide; discal setae few, arranged in single row; costal cell narrow; marginal vein long; postmarginal vein absent, stigmal vein well developed; marginal fringe longer than wing width. Legs red except tarsi yellow.

Abdomen red, slightly longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.53 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 25.v.1984, by sweeping, M. Yousuf.

Paratypes : INDIA : Uttar Pradesh, Aligarh, 6 ♀, 1 ♂, 24.i.1985, Agra, 1 ♀, 21.xi.1985; Rajasthan, Jaipur, 1 ♀, 16.xi.1985, by sweeping, M. Yousuf.

Comments : *Oligosita ruficorpa* sp. n. is closely related to *O. sanguinea* (Girault), but can be separated by having fore wings with discal setae arranged in a single row on apical margin, marginal fringe longer than wing width.

2. **Oligosita aligarhensis** Yousuf & Shafee (Fig. 28 D-E)

*Oligosita aligarhensis* Yousuf & Shafee, 1984a : 16.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 28.iv.1983; 5 ♀, 10.x.1984, by sweeping, M. Yousuf; Ranchi, 2 ♀, Paratypes, 3.i.1984, by sweeping, S. M. Shamim.

Host : Unknown.

Distribution : INDIA : Aligarh, Ranchi.

The species has been described in detail by Yousuf & Shafee (1984a)

### 3. **Oligosita latipennis** Yousuf & Shafee (Fig. 27 E-F)

*Oligosita latipennis* Yousuf & Shafee, 1984a : 20.

*Specimens examined* : ZM, AMU Collection : INDIA : Bulandshahr, Holotype ♀, 11.x.1983, by sweeping, M. Yousuf; Ranchi, 2 ♀, Paratypes, 1.i.1984, by sweeping, S. M. Shamim; Aligarh, 2 ♀, 10.xi.1983; Ajmer, 2 ♀, 18.xi.1985, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Ajmer, Aligarh, Bulandshahr, Ranchi.

The species has been described in detail by Yousuf & Shafee (1984a).

### 4. **Oligosita meerutensis** Yousuf & Shafee (Fig. 27 C-D)

*Oligosita meerutensis* Yousuf & Shafee, 1984a : 20.

*Specimens examined* : ZM, AMU Collection : INDIA : Meerut, Holotype ♀, 10.xi.1983, by sweeping, M. Yousuf; Aligarh, 20 ♀, 23.ix.1985; Jaipur, 1 ♀, 16.xi.1985; Ajmer, 1 ♀, 18.xi.1985; Agra, 2 ♀, 21.xi.1985, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Agra, Ajmer, Aligarh, Jaipur, Meerut.

The species has been described in detail by Yousuf & Shafee (1984a).

### 5. **Oligosita kasimpurensis** sp. n. (Fig. 29 E-F)

Female.

Head yellow; ocelli and eyes dark; malar space about as long as eye width. Antennae (fig. 29E) yellow; scape cylindrical, about three times as long as wide; pedicel slightly longer than wide; single ring segment present; funicle 1-segmented, wider than long; club 3-segmented, slightly longer than wide, terminating into a small rod-like projection.

Thorax brown. Fore wings (fig. 29F) hyaline with an infuscated patch beneath stigmal vein, about three times as long as wide; disc sparsely setose; costal cell narrow; submarginal vein about as long as marginal, longer than premarginal vein; stigmal vein well developed; postmarginal vein absent; marginal fringe about as long as wing width. Legs yellow.

Abdomen dark brown, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length : 0.48 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 14.ix.1985, by sweeping, M. Yousuf.

Paratypes 2 ♀ (same data as for holotype).

Comments : *Oligosita kasimpurensis* sp. n. is closely related to *O. tumidiclava* Viggiani, but can be separated from latter by having antennae with pedicel slightly longer than wide; fore wings with an infuscated patch beneath stigmal vein, marginal fringe about as long as wing width.

#### 6. *Oligosita nephoteticum* Mani (Fig. 27 G-H)

*Oligosita nephoteticum* Mani, 1939 : 92.

*Oligosita nephoteticum* Mani; Yousuf & Shafee, 1984a : 22.

*Specimens examined* : ZM, AMU Collection : INDIA : Bulandshahr, 1 ♀, 11.x.1983; Aligarh, 50 ♀, 18.xi.1984; 3 ♀, 31.viii.1985; 1 ♀, 18.xii.1985, by sweeping, M. Yousuf; Ranchi, 3 ♀, 3.i.1984, by sweeping, S. M. Shamim.

Host : *Nephotettix bipunctatus* (Uhler).

Distribution : INDIA : Ajmer, Aligarh, Bulandshahr, Jaipur, Pusa, Ranchi.

The species has been described in detail by Mani (1939).

#### 7. *Oligosita breviclavata* sp. n. (Fig. 28 A-C)

Female.

Head yellow, slightly wider than long in facial view; ocelli dark, arranged in obtuse triangle; eyes dark; malar space longer than eye width. Antennae (fig. 28A) yellow; scape cylindrical, slightly less than three times as long as wide; pedicel one and a half times as long as wide; single ring segment present; funicle segment distinctly wider than long; club short, 3-segmented, about one and a half times as long as wide, apical segment terminating into 3 rod-like projections.

Thorax yellow. Fore wings (fig. 28B) hyaline with an infuscated patch beneath stigmal vein, three and a half times as long as wide; disc sparsely setose; costal cell narrow; marginal vein long; stigmal vein well developed; marginal fringe one and a half times as long as wing width. Legs yellow.

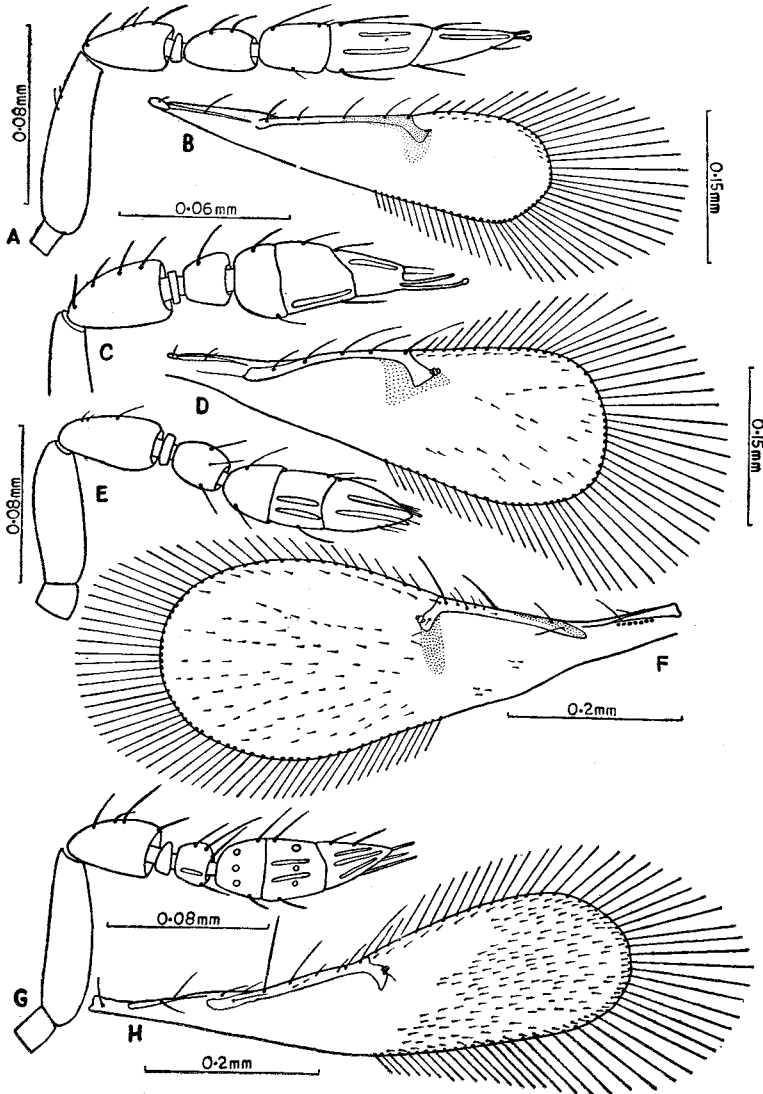


Fig. 27. A-B, *Oligosita ruficorpa* sp. n. : A, antenna, ♀; B, fore wing, ♀. C-D, *Oligosita meerutensis* Yousuf & Shafee : C, antenna, ♀; D, fore wing, ♀. E-F, *Oligosita latipennis* Yousuf & Shafee : E, antenna, ♀; F, fore wing, ♀. G-H, *Oligosita nephotticum* Mani : G, antenna, ♀; H, fore wing, ♀.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length : 0.51 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 17.viii.1985, by sweeping, M. Yousuf.

Paratypes : INDIA : Aligarh, 3 ♀, 17.viii.1985; Jaipur, 1 ♀, 16.xi.1985, by sweeping, M. Yousuf; Agra, 1 ♀, 21.xi.1985, by sweeping, A. K. Chishti,

Comments : *Oligosita breviclavata* sp. n. is closely related to *O. shibuyae* Ishii, but can be distinguished from latter by having fore wings with marginal fringe one and a half times the wing width; antennae with funicle wider than long, club one and a half times as long as wide.

#### 8. *Oligosita brevifringiata* sp. n. (Fig. 29 G-H)

Female.

Head orange yellow, slightly wider than long in facial view; ocelli dark, arranged in acute triangle; eyes dark; malar space shorter than eye width. Antennae (fig. 29G) yellow; scape moderately long, about three times as long as wide; pedicel about two times as long as wide; single ring segment present; funicle 1-segmented, slightly longer than wide; club 3-segmented, about three and a half times as long as wide.

Thorax yellow. Fore wings (fig. 29H) hyaline except an infuscated patch beneath stigmal vein, about three and a half times as long as wide; disc with few setae, almost arranged in rows; costal cell narrow; stigmal vein well developed, longer than premarginal vein; marginal vein long, longer than submarginal vein; postmarginal vein absent; marginal fringe slightly more than one-half the wing width. Legs yellow.

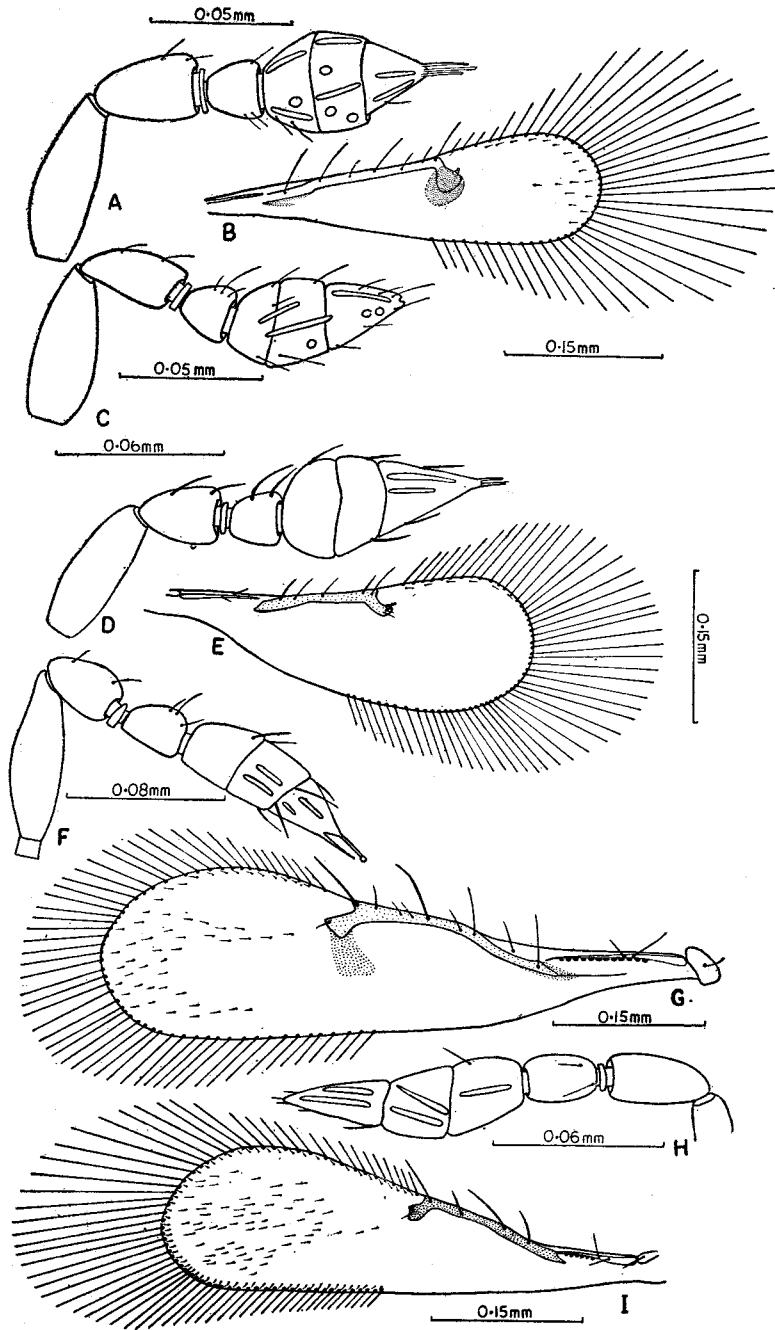
Abdomen yellow, slightly longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.58 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 18.vi.1983, by sweeping, M. Yousuf.

Comments : *Oligosita brevifringiata* sp. n. is closely related to *O. numiciae* Viggiani, but differs from latter by having antennae with pedicel two times as long as wide; fore wings three and a half times as long as wide; discal setae arranged in rows.





**Fig. 28.** A-C, *Oligosita breviclavata* sp. n. : A, antenna, ♀; B, fore wing, ♀; C, antenna, ♂. D-E, *Oligosita aligarhensis* Yousuf & Shafee : D, antenna, ♀; E, fore wing, ♀. F-G, *Oligosita gilvus* Yousuf & Shafee : F, antenna, ♀; G, fore wing, ♀. H-I, *Oligosita longicilia* Yousuf & Shafee : H, antenna, ♀; I, fore wing, ♀.

**9. *Oligosita singularis* Yousuf & Shafee (Fig. 30 A-F)**

*Oligosita singularis* Yousuf & Shafee, 1984a : 17.

*Specimens examined* : ZM, AMU Collection : INDIA : Bulandshahr, Holotype ♀, 11.x.1983; Aligarh, 2 ♀, 1 ♂, 12.vii.1986, by sweeping, M. Yousuf; Ranchi, 3 ♀, Paratypes, 3.i.1984, by sweeping, S. M. Shamim.

Host : Unknown.

Distribution : INDIA : Aligarh, Bulandshahr, Ranchi.

The species has been described in detail by Yousuf & Shafee (1984a).

**10. *Oligosita gilvus* Yousuf & Shafee (fig. 28 F-G)**

*Oligosita gilvus* Yousuf & Shafee, 1984a : 17.

*Specimens examined* : ZM, AMU Collection : INDIA : Bulandshahr, Holotype ♀, 10.x.1983; Aligarh 2 ♀, 1 ♂, 12.vii.1986, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh, Bulandshahr.

The species has been described in detail by Yousuf & Shafee (1984a).

**11. *Oligosita debaiensis* sp. n. (Fig. 29 A-B)**

Female.

Head yellowish brown, slightly wider than long in facial view; ocelli and eyes dark; malar space slightly shorter than eye width. Antennae (fig. 29A) yellowish brown; scape cylindrical, slightly more than three times as long as wide; pedicel about one and a half times as long as wide; single ring segment present; funicle segment as long as wide; club short, about two times as long as wide, apical segment terminating into 3 rod-like projections.

Thorax yellowish brown. Fore wings (fig. 29B) hyaline except an infuscated patch beneath stigmal vein, slightly less than four times as long as wide, outer margin broadly rounded; discal setae few, almost arranged in rows; costal cell narrow; marginal vein about as long as submarginal vein; premarginal vein about as long as stigmal vein; postmarginal vein absent; marginal fringe long, slightly longer than wing width. Legs yellow.

Abdomen yellowish brown, longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.63 mm.

Holotype ♀. INDIA : Uttar Pradesh, Debai, 28.x.1985, by sweeping, M. Yousuf.

Paratype 1 ♀ (same data as for holotype).

Comments : *Oligosita debaiensis* sp. n. is closely related to *O. hilaris* (Perkins), from which it can be separated by having antennae with funicle segment as long as wide, club two times as long as wide; fore wings less than four times as long as wide.

## 12. *Oligosita longicilia* Yousuf & Shafee (Fig. 28 H-I)

*Oligosita longicilia* Yousuf & Shafee, 1984a : 18.

*Specimens examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 21.iii.1983, by sweeping, M. Yousuf; Ranchi, 2 ♀, Paratypes, 4.i.1984, by sweeping, S. M. Shamim.

Host : Unknown.

Distribution : INDIA : Aligarh, Ranchi.

The species has been described in detail by Yousuf & Shafee (1984a).

## 13. *Oligosita longirhinaria* sp. n. (Fig. 29 C-D)

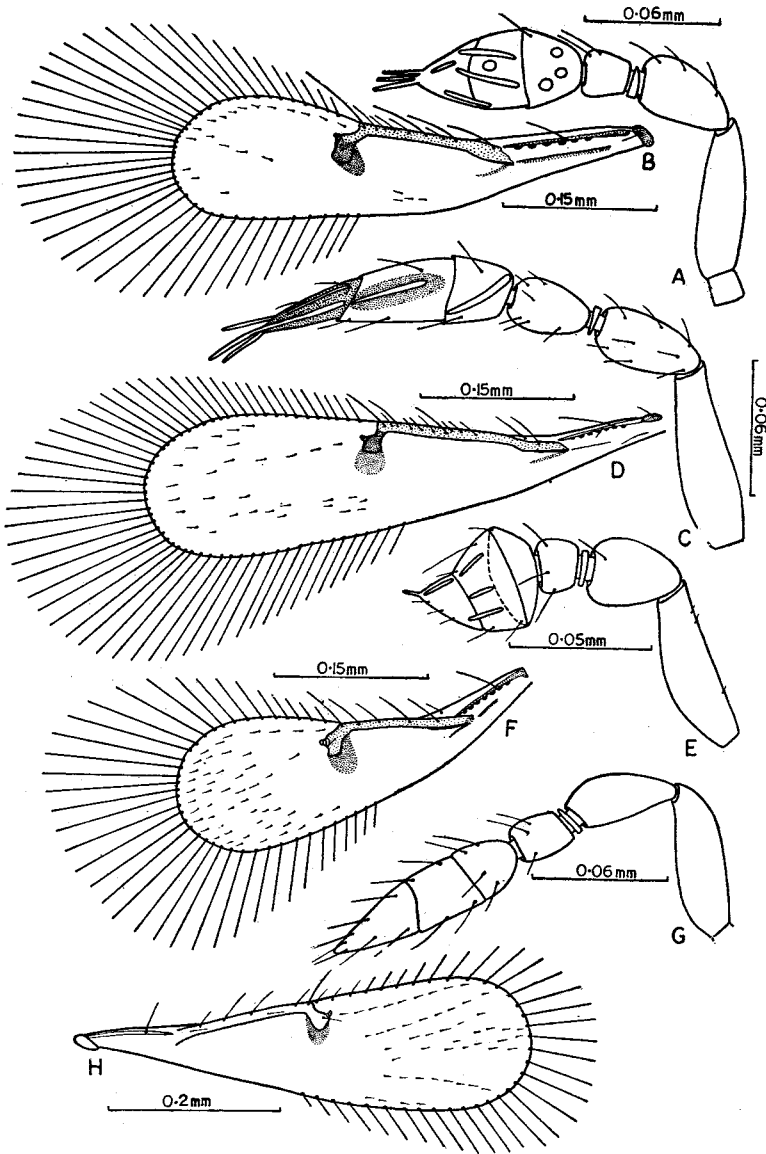
Female.

Head yellowish brown, slightly longer than wide in facial view; ocelli dark, arranged in acute triangle; eyes dark; malar space slightly shorter than eye width. Antennae (fig. 29C) yellow; scape cylindrical, about three times as long as wide; pedicel about two times as long as wide; single ring segment present; funicle segment about one and a half times as long as wide; club 3-segmented, slightly less than four times as long as wide, apical segment terminating into 3 long rod-like projections.

Thorax brown. Fore wings (fig. 29D) hyaline except an infuscated patch beneath stigmal vein, slightly less than four times as long as wide, outer margin broadly rounded; disc sparsely setose, setae arranged in few rows; costal cell narrow; submarginal vein shorter than marginal vein; marginal vein about as long as submarginal and premarginal veins together; stigmal vein well developed; marginal fringe about as long as wing width. Legs yellow.

Body length : 0.66 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 9.v.1985, by sweeping, M. Yousuf.



**Fig. 29.** A-B, *Oligosita debaiensis* sp. n. : A, antenna, ♀; B, fore wing, ♀. C-D, *Oligosita longirhinaria* sp. n. : C, antenna, ♀; D, fore wing, ♀. E-F, *Oligosita kasimpurensis* sp. n. : E, antenna, ♀; F, fore wing, ♀. G-H, *Oligosita brevifringiata* sp. n. : G, antenna, ♀; H, fore wing, ♀.

Paratype 1 ♀ (same data as for holotype).

Comments : *Oligosita longirhinaria* sp. n. is closely related to *O. hawaiiiana* Viggiani, but differs from latter in having antennae with club about four times as long as wide bearing long sensoria; fore wings with marginal fringe longer than wing width.

#### 14. *Oligosita younusi*\* sp. n. (Fig. 30 G-I)

Female.

Head yellow, slightly wider than long in facial view; ocelli dark, arranged in obtuse triangle; eyes dark; malar space longer than eye width. Antennae (fig. 30G) yellow; scape cylindrical, slightly less than three times as long as wide; pedicel one and a half times as long as wide; funicle segment slightly longer than wide; club long, three times as long as wide, terminating into 3 rod-like projections.

Thorax yellow. Fore wings (fig. 30H) hyaline with a transverse infuscated band medially and a small patch beneath premarginal vein, slightly less than four times as long as wide; disc with few setae, almost arranged in rows; costal cell narrow; marginal vein long; stigmal vein well developed, about as long as premarginal vein; marginal fringe slightly longer than wing width. Legs yellow.

Abdomen yellow, longer than thorax; ovipositor hidden, arising from mid of abdominal venter.

Body length : 0.52 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 10.i.1986, by sweeping, M. Yousuf.

Paratypes 1 ♀, 1 ♂ (same data as for holotype).

Comments : *Oligosita younusi* sp. n. is closely related to *O. magnifica* Dozier, but can be separated by having antennae with pedicel one and a half times as long as wide; fore wings less than four times as long as wide, disc with infuscated patches beneath premarginal and stigmal veins.

#### 15. *Oligosita manii* Viggiani

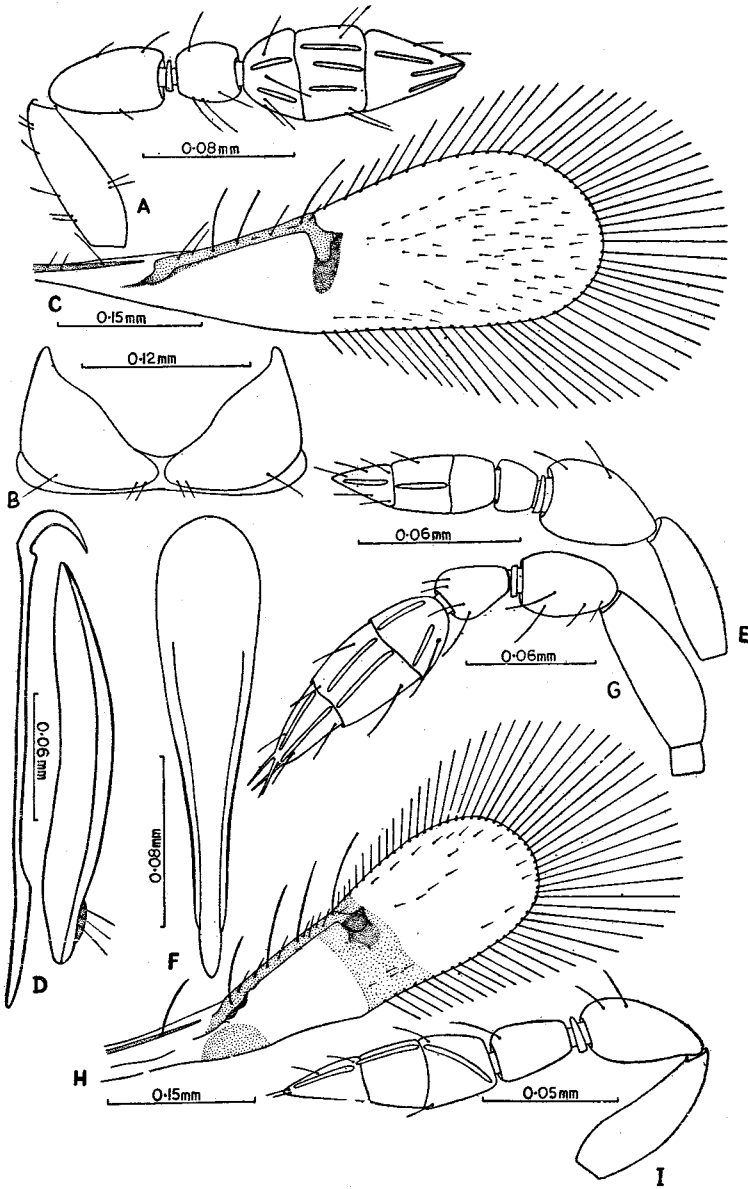
*Oligosita manii* Viggiani, 1981b : 126. Replacement name for *Westwoodella nephotetticum* Mani, 1939 : 92.

Host : *Nephotettix bipunctatus* (Uhler)

Distribution : INDIA : Balasore.

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\* Named after Dr. M. Younus Khan in recognition of his work on Chalcidoidea.



**Fig. 30.** A–F, *Oligosita singularis* Yousuf & Shafee : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, part of external genitalia, ♀; E, antenna, ♂; F, genitalia, ♂. G–I, *Oligosita younusi* sp. n. : G, antenna, ♀; H, fore wing, ♀; I, antenna, ♂.

Genus **Prestwichia** Lubbock, 1864

*Prestwichia* Lubbock, 1864 : 140.

Type-species : *Prestwichia aquatica* Lubbock, by monotypy.  
*Austromicron* Tillyard, 1926 : 279. Syn. by Doutt & Viggiani, 1968 : 496.

Type-species : *Austromicron zygoterorum* Tillyard, by monotypy.

Diagnosis : Antennae with funicle 1-segmented; club 3-segmented; fore wings narrow with long marginal fringe; marginal vein long, postmarginal vein absent, stigmal vein well developed; vein track  $RS_1$  absent; mid and hind tibiae spiny with long claws; ovipositor much exerted.

Comments : The genus *Prestwichia* Lubbock is closely related to *Oligosita* Haliday in having antennae with 1-segmented funicle, 3-segmented club and fore wings with long marginal vein but is distinguished by its having very long ovipositor, spiny mid and hind tibiae with long claws.

The genus is known to contain 4 species, of which single species has been reported from India.

1. **Prestwichia indica** Jonathan & Julka

*Prestwichia indica* Jonathan & Julka, 1975 : 165.

Hosts : *Anisops bowieri* Kirkaldy.  
*Plea frontalis* (Fieber).

Distribution : INDIA : Barrackpur, Cuttack.

## TRIBE LATHROMERINI GIRAULT

Lathromerini Girault, 1912c : 83.

Lathromerinae Girault; Peck, 1964 : 108.

Diagnosis : Antennae without funicle; fore wings with long marginal vein; male genitalia (fig. 32G; Viggiani, 1971, fig. IV : 3) without digiti and claspers.

Comments : The tribe Lathromerini can be separated from its closely allied tribe Oligositini on the basis of its having antennae without funicle. The following Indian genera : *Haeckeliana* Girault, *Neolathromera* Ishii, *Lathrome-roidea* Girault, *Uscana* Girault, *Lathromeromyia* Girault, *Prosoligosita* Hayat & Husain, *Hayatia* Viggiani are assigned under the tribe Lathromerini.

Genus **Haeckeliana** Girault, 1912

*Haeckeliana* Girault, 1912a : 97.

Type-species : *Haeckeliana haeckeli* Girault, by monotypy.

Diagnosis : Antennae without funicle, complex 5-segmented club bearing thick spines; fore wings with discal setae arranged in rows, vein track  $RS_1$  present.

The genus *Haeckeliana* Girault is known to contain 5 species, of which single species has been reported from India.

1. **Haeckeliana magniclavata** Yousuf & Shafee (Fig. 31 A-B)

*Haeckeliana magniclavata* Yousuf & Shafee, 1984b : 36.

Specimen examined : ZM, AMU Collection : INDIA : Chandausi, Holotype ♀, 25.xi.1983, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Chandausi.

The species has been described in detail by Yousuf & Shafee (1984b).

Genus **Neolathromera** Ishii, 1934

*Neolathromera* Ishii, 1934 : 125.

Type-species : *Neolathromera kishidai* Ishii, by monotypy.

Diagnosis : Antennae without funicle; club 5-segmented, second segment small, almost triangular; fore wings with premarginal, marginal and stigmal veins well developed; stigmal vein about as long as marginal vein; discal setae arranged in rows, vein track  $RS_1$  present.

Comments : Antennal formula of the genus *Neolathromera* Ishii is similar to *Pterygogramma* Perkins and *Lathromeroidea* Girault; arrangement of discal setae of fore wings and presence of vein track  $RS_1$  suggests that *Neolathromera* Ishii is closely related to *Lathromeroidea* Girault, but fore wings with long stigmal vein and almost triangular second segment of antennal club are the distinguishing characters of the genus.

The genus is known to contain 2 species, of which single species, *N. latipennis* Yousuf & Shafee has been reported from India.



1. *Neolathromera latipennis* Yousuf & Shafee (Fig. 31 C-D)

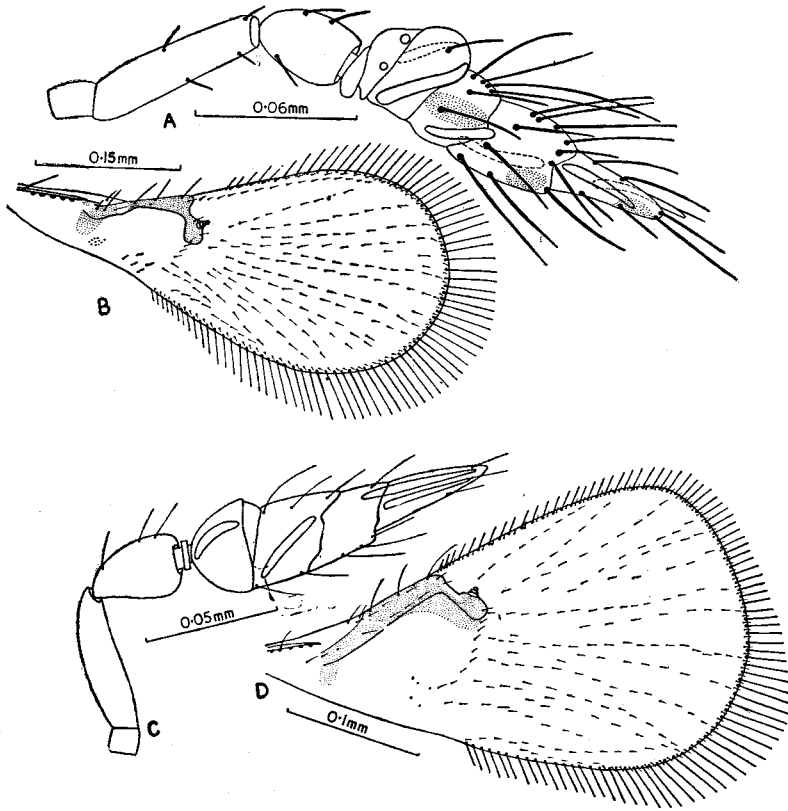
*Neolathromera latipennis* Yousuf & Shafee, 1985a : 32.

*Specimen examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 15.iv.1985, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh.

The species has been described in detail by Yousuf & Shafee (1985a).



**Fig. 31.** A-B, *Haeckeliania magniclavata* Yousuf & Shafee : A, antenna, ♀; B, fore wing, ♀. C-D, *Neolathromera latipennis* Yousuf & Shafee : C, antenna, ♀; D, fore wing, ♀.

Genus *Lathromeroidea* Girault, 1912

*Lathromeroidea* Girault, 1912a : 94.

Type-species : *Lathromeroidea nigra* Girault, by original designation.

*Centrobiopsis* Girault, 1918 : 4, 7. Syn. by Doult & Viggiani, 1968 : 506.

Type-species : *Centrobia odonatae* Ashmead, by monotypy.

Diagnosis : Antennae without funicle, club 5 to 6-segmented; fore wings moderately narrow, marginal vein long, discal setae arranged in rows, vein track  $RS_1$  present; female genitalia with first valvifer (fig. 32D) semicircular with basal and apical angles in one plane, second valvifers (fig. 32E) long and narrow; male genitalia (fig. 32G; Viggiani, 1984, fig. II : 5, 6), without parameres, digiti and claspers.

Comments : The genus *Lathromeroidea* Girault is closely related to *Lathromeromyia* Girault, but differs from that genus by its having fore wings with vein track  $RS_1$  and antennae with 5 to 6 segmented club.

The genus *Lathromeroidea* Girault is known to contain 6 species including one new species and one new combination, of which 3 species have been reported from India and a key for their separation is given below :

Key to Indian species of **Lathromeroidea** Girault, based on females

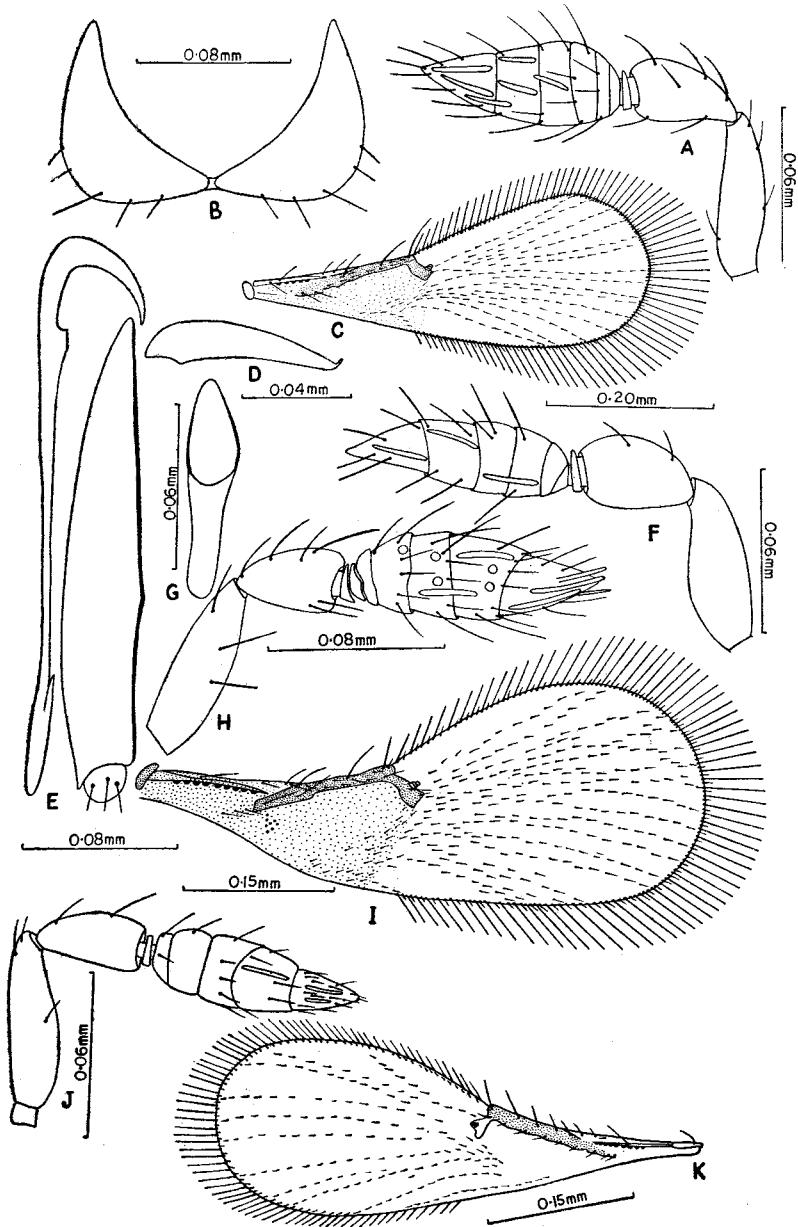
1. Fore wings with stigmal vein less than one-half the length of marginal vein, basal vein track absent.....2
- Fore wings with stigmal vein more than one-half the length of marginal vein, basal vein track present and with 3 setae.....1. **ajmerensis** sp. n.
2. Antennae with club 6-segmented; fore wings with marginal fringe more than one-third the wing width, area beneath venation infuscated.....2. **nigrella** Girault
- Antennae with club 5-segmented; fore wings with marginal fringe about one-fourth the wing width, completely hyaline.....3. **angustipennis** (Yousuf & Shafee) comb. n.

1. **Lathromeroidea ajmerensis** sp. n. (Fig. 32 H-I)

Female.

Head dark, slightly wider than long in facial view; ocelli red, arranged in obtuse triangle; eyes dark; malar space shorter than eye width. Antennae (fig. 32H) dark; scape cylindrical, about three times as long as wide; pedicel about one and a half times as long as wide; 2 ring segments present; funicle absent; club long, 5-segmented, slightly more than two and a half times as long as wide.

Thorax dark. Fore wings (fig. 32 I) hyaline except area beneath venation infuscated, slightly more than two and a half times as long as wide; disc densely



**Fig. 32.** A-G, *Lathromeroidea nigrella* Girault : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, first valvifer, ♀; E, part of external genitalia, ♀; F, antenna, ♂; G, genitalia, ♂. H-I, *Lathromeroidea ajmerensis* sp. n. : H, antenna, ♀; I, fore wing, ♀. J-K, *Lathromeroidea angustipennis* (Yousuf & Shafee) comb. n. : J, antenna, ♀; K, fore wing, ♀.

setose, setae almost arranged in rows; costal cell narrow; stigmal vein well developed, more than one half the marginal vein; marginal vein long, post-marginal vein rudimentary; basal vein track with 3 setae; marginal fringe small, slightly less than one third the wing width. Legs dark brown.

Abdomen dark, longer than thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Holotype ♀. INDIA : Rajasthan, Ajmer, 18.xi.1985, by sweeping, M. Yousuf.

Comments : *Lathromeroidea ajmerensis* sp. n. is closely related to *L. nigrella* Girault, but differs from latter in having fore wings with stigmal vein more than one-half the length of marginal vein, basal vein track present with 3 setae; antennae with club more than three times as long as wide.

## 2. *Lathromeroidea nigrella* Girault (Fig. 32 A-G)

*Lathromeroidea nigrella* Girault, 1912a : 96.

*Specimens examined* : INDIA : Aligarh, 30 ♀ & 6 ♂, 8.x.1984, ex eggs of *Nephotettix* sp., M. Yousuf.

Host : *Nephotettix* sp.

Distribution : AUSTRALIA : Queensland; INDIA : Aligarh.

The species has been described in detail by Girault (1912a) and illustrated by Doult & Viggiani (1968).

## 3. *Lathromeroidea angustipennis* (Yousuf & Shafee) comb. n. (Fig. 32 J-K)

*Zaga angustipennis* Yousuf & Shafee, 1984c : 367.

*Specimen examined* : ZM, AMU Collection : INDIA : Aligarh, Holotype ♀, 10.x.1983, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh.

The species has been described in detail by Yousuf & Shafee (1984c).

## Genus *Uscana* Girault, 1911

*Uscana* Girault, 1911d : 22.

Type-species : *Uscana semifumipennis* Girault, by monotypy.

*Zaga* Girault, 1911d : 30. Syn. n.

Type-species : *Zaga latipennis* Girault, by monotypy.

*Bruchoctonus* Greese, 1923 : 117. Syn. quoted by Peck, 1963 : 82.

Type-species : *Bruchoctonus senex* Greese, by monotypy.

Diagnosis : Antennae without funicle, club 4-segmented; fore wings with stigmal vein well developed, about as long as premarginal vein; discal setae almost arranged in rows, vein track  $RS_1$  present; male genitalia (Viggiani, 1971; fig. VIII : 7) simple, tubular without digiti and claspers.

Comments : The genera *Uscana* Girault and *Zaga* Girault are closely related on the basis of number of characters viz., 4-segmented antennal club, arrangement of discal setae in rows and presence of vein track  $RS_1$ . Therefore, *Zaga* Girault is treated here as synonym of *Uscana* Girault.

The genus *Uscana* Girault is known to contain 16 species including one new species and one new combination. 2 species have been reported from India and a key for their separation is given below :

Key to Indian species of **Uscana** Girault, based on females

1. Fore wings slightly more than two times as long as wide, marginal fringe one-fourth the wing width; antennal club three times as long as wide, with long setae.....1. **mukerjii** (Mani)
- Fore wings (fig. 33G) two and a half times as long as wide, marginal fringe one-third the wing width; antennal club (fig. 33F) slightly more than two times as long as wide, with short setae.....2. **alami** sp. n.

1. **Uscana mukerjii** (Mani)

*Chaetostricha mukerjii* Mani, 1935b : 337.

*Uscana mukerjii* (Mani); Doult & Viggiani, 1968 : 554.

Hosts : *Bruchus quadrimaculatus* Fabricius.

*Callosobruchus analis* (Fabricius)

*Callosobruchus chinensis* (Linnaeus)

*Callosobruchus maculatus* (Fabricius)

Distribution : INDIA : Calcutta, Chandigarh.

2. **Uscana alami** sp. n.\* (Fig. 33 F-G)

Female.

Head orange yellow, slightly longer than wide in facial view; eyes dark;

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\* Named after Prof. S. Mashhood Alam, in recognition of his contributions to our knowledge on insect taxonomy and Morphology.

ocelli red. Antennae (fig. 33F) yellow; scape cylindrical, three times as long as wide; pedicel slightly longer than wide; single ring segment present; funicle absent; club 4-segmented, about two and a half times as long as wide, apical segment longest, segments with long setae.

Thorax yellow. Fore wings (fig. 33G) hyaline except an infuscated patch beneath premarginal vein, about two and a half times as long as wide; discal setae almost arranged in rows; vein track  $RS_1$  present with numerous setae, reaching beneath the premarginal vein; costal cell narrow; post marginal vein rudimentary; stigmal vein well developed, about as long as premarginal vein. Legs yellow except femora of mid and hind legs dark.

Abdomen yellow, slightly longer than thorax; ovipositor hidden, arising from base of abdominal venter.

Body length : 0.54 mm.

Holotype ♀. INDIA : Uttar Pradesh, Aligarh, 8.x.1984, by sweeping, M. Yousuf.

Comments : *Uscana alami* sp. n. is closely related to *U. mukerjii* Mani, but can be distinguished by having fore wings two and a half times as long as wide, marginal fringe one-third the wing width; antennae with club slightly more than two times as long as wide, with short setae.

### 3. *Uscana latipennis* (Girault) comb. n.

*Zaga latipennis* Girault, 1911d : 30.

Host : Unknown.

Distribution : Virginia.

### Genus *Lathromeromyia* Girault, 1914

*Lathromeromyia* Girault, 1914a : 308.

Type-species : *Lathromeromyia perminuta* Girault, by monotypy.

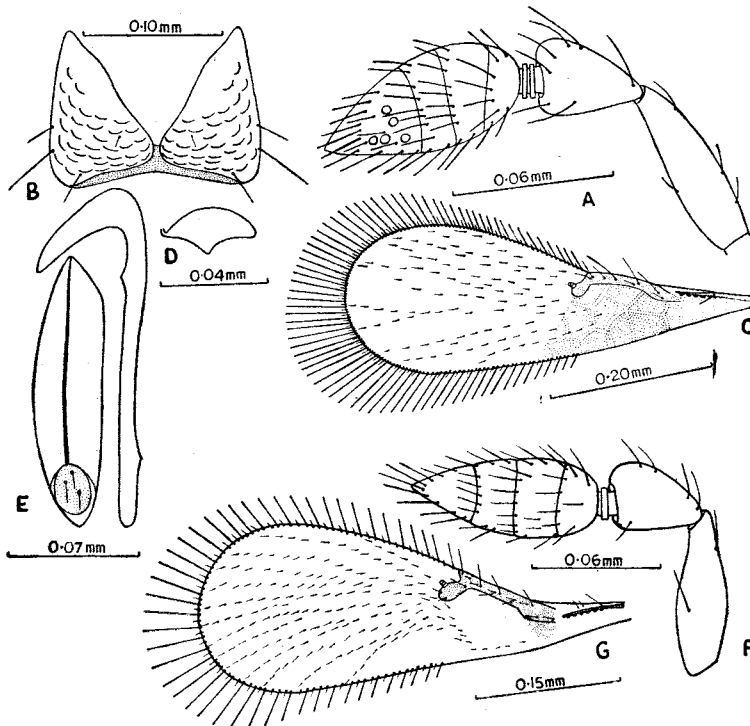
Diagnosis : Antennae without funicle; club almost oval, 4-segmented bearing numerous setae; fore wings with discal setae arranged in rows, marginal vein long, premarginal vein short, stigmal vein well developed, vein track  $RS_1$  absent; female genitalia with first valvifer (fig. 33D) almost triangular, second valvifer (fig. 33E) long; male genitalia (Livingstone & Yacoob, 1983, fig. I : 8) tubular without digiti and claspers.

Comments : The genus comes close to *Uscana* Girault but differs from that genus in absence of vein track  $RS_1$ .

The genus *Lathromeromyia* Girault is known to contain 4 species, of which 2 species have been reported from India and a key for their separation is given below :

Key to Indian species of **Lathromeromyia** Girault, based on females

1. Fore wings (fig. 33C) about two and a half times as long as wide, venation not reaching mid of wing, marginal fringe shorter than one-half of wing width; antennae (fig. 33A) with pedicel slightly longer than wide.....  
.....1. **dimorpha** Hayat
- Fore wings (Livingstone & Yacoob, 1983, fig. I : 4) slightly more than three times as long as wide, venation reaching beyond mid of wing, marginal fringe as long as wing width; antennae (Livingstone & Yacoob, 1983, fig. I : 3) with pedicel about two times as long as wide.....  
.....2. **tingiphaga** Livingstone & Yacoob



**Fig. 33.** A-E, *Lathromeromyia dimorpha* Hayat : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, first valvifer, ♀; E, part of external genitalia, ♀. F-G, *Uscana alami* sp. n. : F, antenna, ♀; G, fore wing, ♀.

1. **Lathromeromyia dimorpha** Hayat (Fig. 33 A-E)

*Lathromeromyia dimorpha* Hayat, 1981 : 77.

*Specimens examined* : INDIA : Aligarh, 6 ♀, 11.ix.1984, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh, Bareilly.

2. **Lathromeromyia tingiphaga** Livingstone & Yacoob

*Lathromeromyia tingiphaga* Livingstone & Yacoob, 1983a : 303.

Hosts : *Aconchus urbanus* (Horvath)  
*Agramma graminii* Livingstone  
*Cochlochila bullita* (Stal)  
*Habrochila laeta* (Drake)

Distribution : INDIA : Karnataka, Kerala, Tamil Nadu.

Genus **Prosoligosita** Hayat & Husain, 1981

*Prosoligosita* Hayat & Husain, 1981 : 81.

Type-species : *Prosoligosita perplexa* Hayat & Husain, by monotypy.

Diagnosis : Antennae without funicle, club 4-segmented; fore wings with long marginal vein; postmarginal vein absent, stigmal vein developed, vein track  $RS_1$  absent; female genitalia (fig. 34D) with second valvifers long and narrow.

Comments : The genus *Prosoligosita* Hayat & Husain is closely related to *Pterygogramma* Perkins but differs by its having 4-segmented club.

The genus is known to contain a single species, *Prosoligosita perplexa* Hayat & Husain.

1. **Prosoligosita perplexa** Hayat & Husain (Fig. 34 A-D)

*Prosoligosita perplexa* Hayat & Husain, 1981 : 81.

*Specimens examined* : INDIA : Aligarh, 5 ♀, 21.x.1985, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Aligarh.

The species has been described in detail by Hayat & Husain (1981).



Genus *Hayatia* Viggiani, 1982

*Hayatia* Viggiani, 1982 : 27.

Type-species : *Hayatia indica* Viggiani, 1982 : 27, by monotypy.

Diagnosis : Antennae without funicle, club 3-segmented with numerous sensoria; fore wings with marginal vein long, postmarginal vein absent; stigmal vein well developed, disc sparsely setose; male genitalia (Viggiani, 1982, fig. 1 : 4-6) without digiti and claspers, aedeagus bisegmented.

The genus *Hayatia* Viggiani is known to contain two species including one new combination and a key for their separation is given below :

Key to species of *Hayatia* Viggiani

1. Fore wings two and a half times as long as wide, marginal fringe slightly more than one-half the wing width.....1. *indica* Viggiani

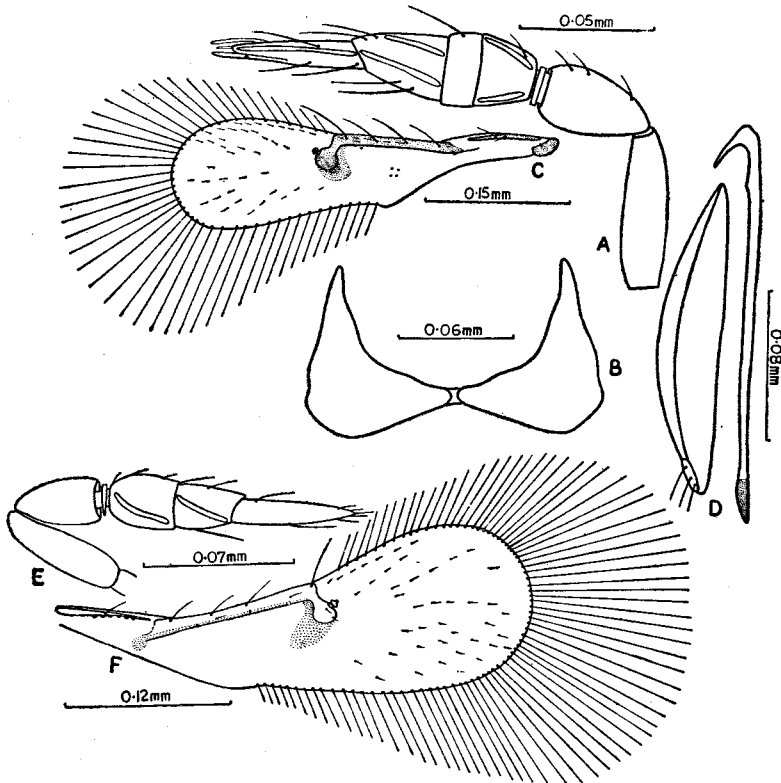


Fig. 34. A-D, *Prosoligosita perplexa* Hayat & Husain : A, antenna, ♀; B, pronotum, ♀; C, fore wing, ♀; D, part of external genitalia, ♀. E-F, *Hayatia longiclavata* (Yousuf & Shafee) comb. n. : E, antenna, ♀; F, fore wing, ♀.

- Fore wings (fig. 34F) three times as long as wide, marginal fringe as long as wing width.....2. **longiclavata** (Yousuf & Shafee) comb. n.

### 1. **Hayatia indica** Viggiani

*Hayatia indica* Viggiani, 1982 : 27.

Host : Unknown.

Distribution : INDIA : Aligarh, Elephanta caves.

### 2. **Hayatia longiclavata** (Yousuf & Shafee) comb. n. (Fig. 34 E-F)

*Paruscanoidea longiclavata* Yousuf & Shafee, 1984b : 35.

*Specimen examined* : ZM, AMU Collection : INDIA : Moradabad, Holotype ♀, 22.xi.1983, by sweeping, M. Yousuf.

Host : Unknown.

Distribution : INDIA : Moradabad.

The species has been described in detail by Yousuf & Shafee (1984b).

## TRICHOGRAMMATID PARASITES AND THEIR HOSTS, IN INDIA

Parasite	Host
1. <i>Aphelinoidea gwaliorensis</i> Yousuf & Shafee	Unknown
2. <i>Aphelinoidea longiclavata</i> sp. n.	<i>Apoderus sissu</i> Marshall
3. <i>Brachygrammatella aligarhensis</i> Khan	<i>Oxyrachis tarandus</i> (Fabricius)
4. <i>Brachygrammatella indica</i> Viggiani & Hayat	<i>Oxyrachis</i> sp. near <i>tarandus</i> (Fabricius)
5. <i>Brachygrammatella jaipurensis</i> sp. n.	Unknown
6. <i>Brachygrammatella longiclavata</i> Khan	<i>Oxyrachis tarandus</i> (Fabricius)
7. <i>Chaetogramma maculata</i> Hayat	Unknown
8. <i>Chaetogramma singularis</i> (Yousuf & Shafee)	Unknown
9. <i>Chaetostricha magniclavata</i> sp. n.	<i>Bruchus</i> sp.
10. <i>Chaetostricha terebrator</i> Yousuf & Shafee	Unknown
11. <i>Epoligosita albiscutellum</i> sp. n.	Unknown
12. <i>Epoligosita bicolor</i> Hayat & Viggiani	Unknown
13. <i>Epoligosita clara</i> Hayat & Viggiani	Unknown
14. <i>Epoligosita dulinia</i> Livingstone & Yacoob	<i>Dulinius conchatus</i> Distant
15. <i>Haeckeliana magniclavata</i> Yousuf & Shafee	Unknown
16. <i>Hayatia indica</i> Viggiani	Unknown

Parasite	Host
17. <i>Hayatia longiclavata</i> (Yousuf & Shafee) comb. n.	Unknown
18. <i>Lathromeroidea ajmerensis</i> sp. n.	Unknown
19. <i>Lathromeroidea angustipennis</i> (Yousuf & Shafee) comb. n.	Unknown
20. <i>Lathromeroidea nigrella</i> Girault	<i>Nephotettix</i> sp.
21. <i>Lathromeromyia dimorpha</i> Hayat	Unknown
22. <i>Lathromeromyia tingiphaga</i> Livingstone & Yacoob	<i>Aconchus urbanus</i> (Horvath) <i>Agramma graminii</i> Livingstone <i>Cochlochila bullita</i> (Stal) <i>Habrochila laeta</i> (Drake)
23. <i>Megaphragma aligarhensis</i> sp. n.	Thrips
24. <i>Megaphragma longiciliatum</i> Subba Rao	<i>Frankliniella lilivora</i> Takahashi
25. <i>Megaphragma magniclava</i> sp. n.	Unknown
26. <i>Neocentrobiella terebrator</i> Yousuf & Shafee	Unknown
27. <i>Neocentrobiella viggiani</i> Hayat	Unknown
28. <i>Neolathromera latipennis</i> Yousuf & Shafee	Unknown
29. <i>Oligosita aligarhensis</i> Yousuf & Shafee	Unknown
30. <i>Oligosita breviclavata</i> sp. n.	Unknown
31. <i>Oligosita brevifringiata</i> sp. n.	Unknown
32. <i>Oligosita debaiensis</i> sp. n.	Unknown
33. <i>Oligosita gilvus</i> Yousuf & Shafee	Unknown
34. <i>Oligosita kasimpurensis</i> sp. n.	Unknown
35. <i>Oligosita latipennis</i> Yousuf & Shafee	Unknown
36. <i>Oligosita longicilia</i> Yousuf & Shafee	Unknown
37. <i>Oligosita longirhinaria</i> sp. n.	Unknown
38. <i>Oligosita manii</i> Viggiani	<i>Nephotettix bipunctatus</i> (Uhler)
39. <i>Oligosita meerutensis</i> Yousuf & Shafee	Unknown
40. <i>Oligosita nephotetticum</i> Mani	<i>Nephotettix bipunctatus</i> (Uhler)
41. <i>Oligosita ruficorpa</i> sp. n.	Unknown
42. <i>Oligosita singularis</i> Yousuf & Shafee	Unknown
43. <i>Oligosita younusi</i> sp. n.	Unknown
44. <i>Oligositoides fumipennis</i> sp. n.	Heteroptera
45. <i>Oligositoides gudurensis</i> Yousuf & Shafee	Unknown
46. <i>Oligositoides latipennis</i> sp. n.	Unknown
47. <i>Oligositoides terebratus</i> Yousuf & Shafee	Unknown
48. <i>Paracentrobia ajmerensis</i> sp. n.	Coleoptera
49. <i>Paracentrobia bharpurensis</i> sp. n.	Unknown
50. <i>Paracentrobia brevifringiata</i> sp. n.	Unknown

Parasite	Host
51. <i>Paracentrobia longiclavata</i> Yousuf & Shafee	Unknown
52. <i>Paracentrobia longipedicelata</i> sp. n.	Unknown
53. <i>Paracentrobia longipennis</i> sp. n.	Unknown
54. <i>Paracentrobia maduraiensis</i> sp. n.	Unknown
55. <i>Paracentrobia magniclavata</i> Yousuf & Shafee	Coleoptera
56. <i>Paracentrobia neoflava</i> sp. n.	Unknown
57. <i>Paracentrobia parflava</i> sp. n.	Unknown
58. <i>Paracentrobia pubipennis</i> sp. n.	Unknown
59. <i>Paratrichogramma giraulti</i> Hayat & Shuja-Uddin	<i>Acrocercops orthostacta</i> Meyrick
60. <i>Paratrichogramma quilonensis</i> sp. n.	Unknown
61. <i>Parhispidophila singularis</i> sp. n.	Unknown
62. ? <i>Paruscanoidea indica</i> Mani	<i>Egropa bengalensis</i> (Distant)
63. <i>Poropoea indica</i> Subba Rao	<i>Apoderus sissu</i> Marshall
64. <i>Prestwichia indica</i> Jonathan & Julka	<i>Anisops bowieri</i> Kirkaldy <i>Plea frontalis</i> (Fieber)
65. <i>Prosoligosita perplexa</i> Hayat & Husain	Unknown
66. <i>Trichogramma achaeae</i> Nagaraja & Nagarkatti	<i>Achaea janata</i> (Linnaeus) <i>Agrius convolvuli</i> (Linnaeus) <i>Corcyra cephalonica</i> (Stainton) <i>Earias insulana</i> Boisduval <i>Earias vitella</i> (Fabricius) <i>Heliothis armigera</i> (Huebner) <i>Pectinophora gossypiella</i> (Saunders) <i>Tiracola plagiata</i> Walker
67. <i>Trichogramma agriae</i> Nagaraja	<i>Agrius convolvuli</i> (Linnaeus) <i>Corcyra cephalonica</i> (Stainton)
68. <i>Trichogramma australicum</i> Girault	<i>Achaea janata</i> (Linnaeus) <i>Agrius convolvuli</i> (Linnaeus) <i>Chilo indicus</i> (Kapur) <i>Chilo infuscatellus</i> (Snellen) <i>Chilo partellus</i> (Swinhoe) <i>Chilo suppressalis</i> (Walker) <i>Heliothis armigera</i> (Huebner) <i>Polyocha depressella</i> (Swinhoe) <i>Psara</i> sp. <i>Scirpophaga incertulas</i> (Walker) <i>Spodoptera litura</i> (Fabricius)

<b>Parasite</b>	<b>Host</b>
	<i>Tiracola plagiata</i> Walker
	<i>Trichoplusia ni</i> (Huebner)
69. <i>Trichogramma brevifringiata</i> sp. n.	<i>Chilo infuscatellus</i> (Snellen)
70. <i>Trichogramma chilonis</i> Ishii	<i>Achaea janata</i> (Linnaeus)
	<i>Agrius convolvuli</i> (Linnaeus)
	<i>Chilo indicus</i> (Kapur)
	<i>Chilo infuscatellus</i> (Snellen)
	<i>Chilo partellus</i> (Swinhoe)
	<i>Chilo suppressalis</i> (Walker)
	<i>Corcyra cephalonica</i> (Stainton)
	<i>Earias insulana</i> (Boisduval)
	<i>Earias vitella</i> (Fabricius)
	<i>Heliothis armigera</i> (Huebner)
	<i>Scirpophaga incertulas</i> (Walker)
	<i>Spodoptera litura</i> (Fabricius)
	<i>Tiracola plagiata</i> Walker
	<i>Trichoplusia ni</i> (Huebner)
71. <i>Trichogramma chilotraeae</i> Nagaraja & Nagarkatti	<i>Chilo infuscatellus</i> (Snellen)
	<i>Chilo partellus</i> (Swinhoe)
	<i>Chilo suppressalis</i> (Walker)
	<i>Corcyra cephalonica</i> (Stainton)
	<i>Heliothis armigera</i> (Huebner)
	<i>Ostrinia furnacalis</i> Gn.
72. <i>Trichogramma flandersi</i> Nagaraja & Nagarkatti	<i>Agrius convolvuli</i> (Linnaeus)
73. <i>Trichogramma hesperidis</i> Nagaraja	<i>Chilo infuscatellus</i> (Snellen)
	<i>Corcyra cephalonica</i> (Stainton)
	Hesperiid
74. <i>Trichogramma japonicum</i> Ashmead	Hesperiid
	<i>Scirpophaga incertulas</i> (Walker)
	<i>Sepedon sauteri</i> Hendel
	<i>Trichoplusia ni</i> (Huebner)
75. <i>Trichogramma pallidiventris</i> Nagaraja	<i>Corcyra cephalonica</i> (Stainton)
	<i>Scirpophaga incertulas</i> (Walker)
76. <i>Trichogramma plasseyensis</i> Nagaraja	<i>Chilo infuscatellus</i> (Snellen)
	<i>Corcyra cephalonica</i> (Stainton)
77. <i>Trichogramma poliae</i> Nagaraja	<i>Chilo infuscatellus</i> (Snellen)
	<i>Corcyra cephalonica</i> (Stainton)
78. <i>Trichogramma pretiosum</i> Riley	<i>Trichoplusia ni</i> (Huebner)
79. <i>Trichogramma raoi</i> Nagaraja	<i>Corcyra cephalonica</i> (Stainton)

<b>Parasite</b>	<b>Host</b>
80. <i>Trichogramma semblidis</i> (Aurivillius)	<i>Achaea janata</i> (Linnaeus) <i>Chilo infuscatellus</i> (Snellen) <i>Corcyra cephalonica</i> (Stainton) <i>Heliothis armigera</i> (Huebner)
81. <i>Trichogrammatoidea armigera</i> Nagaraja	<i>Heliothis armigera</i> (Huebner) <i>Lampides boeticus</i> Linnaeus
82. <i>Trichogrammatoidea bactrae</i> Nagaraja	<i>Agrius convolvuli</i> (Linnaeus) <i>Bactra venosana</i> Zeller <i>Chilo infuscatellus</i> (Snellen) <i>Nymphula depunctalis</i> (Guenee) <i>Pelopidas mathias</i> (Fabricius) <i>Polyocha depressella</i> (Swinhoe) <i>Sepedon sauteri</i> Hendel <i>Trichoplusia ni</i> (Huebner) <i>Cryptophlebia ombrodelta</i> (Lower)
83. <i>Trichogrammatoidea fulva</i> Nagaraja	Lepidoptera
84. <i>Trichogrammatoidea fumata</i> Nagaraja	<i>Bactra venosana</i> Zeller
85. <i>Trichogrammatoidea nana</i> (Zehntner)	<i>Achaea janata</i> (Linnaeus)
86. <i>Trichogrammatoidea prabhakeri</i> Nagaraja	<i>Hypsipyla robusta</i> (Moore)
87. <i>Trichogrammatoidea robusta</i> Nagaraja	Unknown
88. <i>Tumidiclava agraisensis</i> sp. n.	Unknown
89. <i>Tumidiclava longiclavata</i> sp. n.	<i>Apoderus sissu</i> Marshall
90. <i>Tumidiclava magnicorpa</i> sp. n.	Unknown
91. <i>Tumidiclava sasniensis</i> sp. n.	Coleoptera
92. <i>Tumidiclava tenkasiensis</i> sp. n.	<i>Oxyrachis</i> sp. near <i>tarandus</i> (Fabricius)
93. <i>Ufens afrangiata</i> (Viggiani & Hayat) comb. n.	<i>Oxyrachis tarandus</i> (Fabricius)
94. <i>Ufens alami</i> sp. n.	<i>Oxyrachis tarandus</i> (Fabricius)
95. <i>Ufens albiscutellum</i> (Khan & Shafee) comb. n.	<i>Oxyrachis tarandus</i> (Fabricius)
96. <i>Ufens angustipennis</i> sp. n.	<i>Oxyrachis</i> sp.
97. <i>Ufens brevifuniculata</i> (Khan & Shafee) comb. n.	<i>Oxyrachis tarandus</i> (Fabricius)
98. <i>Ufens gurgaonensis</i> sp. n.	Unknown
99. <i>Ufens jaipurensis</i> sp. n.	Unknown
100. <i>Ufens latipennis</i> sp. n.	Membracids
101. <i>Ufens longiclavata</i> (Khan & Shafee) comb. n.	<i>Oxyrachis tarandus</i> (Fabricius)
102. <i>Ufens longifuniculata</i> (Viggiani & Hayat) comb. n.	<i>Rastrococcus</i> sp.
103. <i>Ufens magniclavata</i> (Khan & Shafee) comb. n.	<i>Oxyrachis tarandus</i> (Fabricius)

- |   |  |
|---|--|
| 104. <i>Ufens mangiferae</i> (Viggiani & Hayat)<br>comb. n. | <i>Nipaecoccus</i> sp.<br><i>Oxyrachis</i> near <i>tarandus</i><br>(Fabricius)   |
| 105. <i>Ufens singularis</i> sp. n.                         | <i>Oxyrachis</i> sp.   |
| 106. <i>Uscana alami</i> sp. n.                             | Unknown  |
| 107. <i>Uscana mukerjii</i> (Mani)                          | <i>Bruchus quadrimaculatus</i><br>Fabricius<br><i>Callosobruchus analis</i> (Fabricius)<br><i>Callosobruchus chinensis</i><br>(Linnaeus)<br><i>Callosobruchus maculatus</i><br>(Fabricius) |
| 108. <i>Xiphogramma indicum</i> Hayat                       | Unknown  |

HOSTS (INSECT PESTS) AND THEIR TRICHOGRAMMATID  
PARASITES, IN INDIA

Host	Parasite
<b>A. COLEOPTERA</b>	
Attelabidae	
<i>Apoderus sissu</i> Marshall	<i>Aphelinoidea longiclavata</i> sp. n. <i>Poropoea indica</i> Subba Rao <i>Tumidiclava magnicorpa</i> sp. n.
Bruchidae	
<i>Bruchus quadrimaculatus</i> Fabricius	<i>Uscana mukerjii</i> (Mani)
<i>Bruchus</i> sp.	<i>Chaetostricha magniclavata</i> sp. n.
<i>Callosobruchus analis</i> (Fabricius)	<i>Uscana mukerjii</i> (Mani)
<i>Callosobruchus chinensis</i> (Linnaeus)	<i>Uscana mukerjii</i> (Mani)
<i>Callosobruchus maculatus</i> (Fabricius)	<i>Uscana mukerjii</i> (Mani)
Coleoptera identified	<i>Paracentrobia ajmerensis</i> sp. n. <i>Paracentrobia magniclavata</i> Yousuf & Shafee <i>Tumidiclava tenkasiensis</i> sp. n.
<b>B. DIPTERA</b>	
Sciomyzidae	
<i>Sepedon sauteri</i> Hendel	<i>Trichogramma japonicum</i> Ashmead <i>Trichogrammatoidea bactrae</i> Nagaraja

<b>Host</b>	<b>Parasite</b>
<b>C. HEMIPTERA</b>	
Cicadellidae	
<i>Nephotettix bipunctatus</i> (Uhler)	<i>Oligosita manii</i> Viggiani <i>Oligosita nephoteticum</i> Mani
Membracidae	
Membracids	
<i>Oxyrachis tarandus</i> (Fabricius)	<i>Ufens latipennis</i> sp. n. <i>Brachygrammatella aligarhensis</i> Khan <i>Brachygrammatella longiclavata</i> Khan <i>Ufens alami</i> sp. n. <i>Ufens albiscutellum</i> (Khan & Shafee) comb. n. <i>Ufens brevifuniculata</i> (Khan & Shafee) comb. n. <i>Ufens longiclavata</i> (Khan & Shafee) comb. n. <i>Ufens magniclavata</i> (Khan & Shafee) comb. n. <i>Brachygrammatella indica</i> Viggiani & Hayat <i>Ufens afrangiata</i> (Viggiani & Hayat) comb. n. <i>Ufens mangiferae</i> (Viggiani & Hayat) comb. n.
<i>Oxyrachis</i> sp. near <i>tarandus</i> (Fabricius)	<i>Ufens angustipennis</i> sp. n. <i>Ufens singularis</i> sp. n.
<i>Oxyrachis</i> sp.	
Notonectidae	
<i>Anisops bouvieri</i> Kirkaldy	<i>Prestwichia indica</i> Jonathan & Julka
Pleidae	
<i>Plea frontalis</i> (Fieber)	<i>Prestwichia indica</i> Jonathan & Julka
Pseudococcidae	
<i>Nipaecoccus</i> sp.	<i>Ufens mangiferae</i> (Viggiani & Hayat) comb. n.
<i>Rastrococcus</i> sp.	<i>Ufens longifuniculata</i> (Viggiani & Hayat) comb. n.



**Host****Parasite**

## Tettigometridae

*Egropa bengalensis* (Distant)? *Paruscanoidea indica* Mani

## Tingidae

*Aconchus urbanus* Horvath*Lathromeromyia tingiphaga* Livingstone & Yacoob*Agramma graminii* Livingstone*Lathromeromyia tingiphaga* Livingstone & Yacoob*Cochlochila bullita* (Stal)*Lathromeromyia tingiphaga* Livingstone & Yacoob*Dulinius conchatus* Distant*Epoligosita dulinae* Livingstone & Yacoob*Habrochila laeta* (Drake)*Lathromeromyia tingiphaga* Livingstone & Yacoob

Heteroptera

*Oligositoides fumipennis* sp. n.

## D. LEPIDOPTERA

## Gelechiidae

*Pectinophora gossypiella* (Saunders)*Trichogramma achaeae* Nagaraja & Nagarkatti

## Gracillariidae

*Acrocercops orthostacta* Meyrick*Paratrichogramma giraulti* Hayat & Shuja-Uddin

## Hesperiidae

*Pelopidas mathias* (Fabricius)*Trichogrammatoidea bactrae* Nagaraja

Hesperiids

*Trichogramma hesperidis* Nagaraja*Trichogramma japonicum* Ashmead

## Lycaenidae

*Lampides boeticus* Linnaeus*Trichogrammatoidea armigera* Nagaraja

## Noctuidae

*Achaea janata* (Linnaeus)*Trichogramma achaeae* Nagaraja & Nagarkatti*Trichogramma australicum* Girault*Trichogramma chilonis* Ishii

<b>Host</b>	<b>Parasite</b>
	<i>Trichogramma semblidis</i> (Aurivillius)
	<i>Trichogrammatoidea prabhakeri</i>
	Nagaraja
<i>Earias insulana</i> (Boisduval)	<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma chilonis</i> Ishii
<i>Earias vitella</i> (Fabricius)	<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma chilonis</i> Ishii
<i>Heliothis armigera</i> (Huebner)	<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma chiloetraeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma semblidis</i> (Aurivillius)
	<i>Trichogrammatoidea armigera</i> Nagaraja
<i>Spodoptera litura</i> (Fabricius)	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
<i>Tiracola plagiata</i> Walker	<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
<i>Trichoplusia ni</i> (Huebner)	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma japonicum</i> Ashmead
	<i>Trichogramma pretiosum</i> Riley
	<i>Trichogrammatoidea bactrae</i> Nagaraja
<b>Pyralidae</b>	
<i>Chilo indicus</i> (Kapur)	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
<i>Chilo infuscatellus</i> (Snellen)	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma brevifringiata</i> sp. n.
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma chiloetraeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma flandersi</i> Nagaraja & Nagarkatti

<b>Host</b>	<b>Parasite</b>
	<i>Trichogramma plasseyensis</i> Nagaraja
	<i>Trichogramma poliae</i> Nagaraja
	<i>Trichogramma semblidis</i> (Aurivillius)
<i>Chilo partellus</i> (Swinhoe)	<i>Trichogrammatoidea bactrae</i> Nagaraja
	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma chilotraeae</i> Nagaraja & Nagarkatti
<i>Chilo suppressalis</i> (Walker)	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma chilotraeae</i> Nagaraja & Nagarkatti
<i>Corcyra cephalonica</i> (Stainton)	<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma agriae</i> Nagaraja
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma chilotraeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma hesperidis</i> Nagaraja
	<i>Trichogramma pallidiventrtris</i> Nagaraja
	<i>Trichogramma plasseyensis</i> Nagaraja
	<i>Trichogramma poliae</i> Nagaraja
	<i>Trichogramma raoi</i> Nagaraja
	<i>Trichogramma semblidis</i> (Aurivillius)
<i>Hypsipyla robusta</i> (Moore)	<i>Trichogrammatoidea robusta</i> Nagaraja
<i>Nymphula depunctalis</i> (Guenee)	<i>Trichogrammatoidea bactrae</i> Nagaraja
<i>Ostrinia furnacalis</i> Gn.	<i>Trichogramma chilotraeae</i> Nagaraja & Nagarkatti
<i>Polyocha depressella</i> (Swinhoe)	<i>Trichogramma australicum</i> Girault
	<i>Trichogrammatoidea bactrae</i> Nagaraja
Psara sp.	<i>Trichogramma australicum</i> Girault
<i>Scirpophaga incertulas</i> (Walker)	<i>Trichogramma australicum</i> Girault
	<i>Trichogramma chilonis</i> Ishii
	<i>Trichogramma japonicum</i> Ashmead
	<i>Trichogramma pallidiventrtris</i> Nagaraja
Sphingidae	
<i>Agrius convolvuli</i> (Linnaeus)	<i>Trichogramma achaeae</i> Nagaraja & Nagarkatti
	<i>Trichogramma agriae</i> Nagaraja

**Host****Parasite**

*Trichogramma australicum* Girault  
*Trichogramma chilonis* Ishii  
*Trichogramma flandersi* Nagaraja &  
 Nagarkatti  
*Trichogrammatoidea bactrae* Nagaraja

## Tortricidae

*Bactra venosana* Zeller

*Trichogrammatoidea bactrae* Nagaraja  
*Trichogrammatoidea nana* (Zehntner)

*Cryptophlebia ombrodelta* (Lower)  
 Lepidoptera identified

*Trichogrammatoidea fulva* Nagaraja  
*Trichogrammatoidea fumata* Nagaraja

## E. THYSANOPTERA

## Thripidae

*Frankliniella lilivora* Takahashi  
 Thrips identified

*Megaphragma longiciliatum* Subba Rao  
*Megaphragma aligarhensis* sp. n.

## DUBIOUS RECORDS

Hayat & Subba Rao (1986) have shown the report of the following genera and species from Indian region. They are excluded from the present work due to various reasons.

*Gnorimogramma* De Santis : Viggiani (1984) expressed his view that this genus can be treated as junior synonym of *Chaetostricha* Haliday. The present authors also agree with him.

*Pseudobrachysticha* Girault : The placement of *Paruscanoidea indica* Mani under *Pseudobrachysticha* Girault by Hayat & Subba Rao (1986) is erroneous.

*Oligosita aesopi* Girault and *Oligosita niais* Girault are of doubtful record from Indian region.

*Trichogramma minutum* Riley : Report of this species from India is erroneous according to Flanders in Nagarkatti & Nagaraja (1979).

*Trichogramma brasiliensis* Ashmead, *Trichogramma embryophagum* (Hartig), *Trichogramma exiguum* Pinto *et al.*, *Trichogramma fasciatum* (Perkins), *Trichogramma pallida* Meyer, *Trichogramma perkinsi* Girault, *Trichogramma pintoi* Voegelé : These species were imported for rearing in various Indian laboratories and have not been established in nature.

The genera and species mentioned above have not been included in the present work since it deals only with the Indian Trichogrammatidae.

## DISCUSSION

### A. *Significance of morphological structures in the classification of Trichogrammatidae :*

Ashmead (1904a) utilized discal ciliation of fore wings in separating the subfamily Trichogrammatinae from Oligositinae. Girault (1912c) discarded the discal ciliation character, instead he used the condition of fore wings venation in separating the subfamily Trichogrammatinae from Chaetostrichinae. Further, he utilized the presence or absence of antennal funicle character for separating the tribe Chaetostrichini from Lathromerini. Peck *et al.* (1964) also utilized the presence or absence of antennal funicle for separating the subfamily Trichogrammatinae from Lathromerinae.

Viggiani (1971c) for the first time utilized the male genitalic characters for the separation of subfamilies, tribes and genera of Trichogrammatidae. According to him the Phallus features appear to be constant among the species of the same genus and are of high diagnostic value for generic and specific discrimination.

Nagarkatti & Nagaraja (1971, 1977, 1979), Nagaraja & Nagarkatti (1973), Nagaraja (1973, 1978), Nagarkatti (1974), Oatman *et al.* (1982), Pinto *et al.* (1982, 1983) and Oatman & Platner (1983) utilized the male genitalic characters viz., dorsal expansion of gonobase, condition of gonoforceps, condition of chelate structures, condition of median ventral projection, central ridges and gonobase for the separation of various species of *Trichogramma* Westwood and *Trichogrammatoidea* Girault.

The present authors made an attempt to utilize the conventional as well as genitalic characters in separating the subfamilies and tribes of the family Trichogrammatidae. Also they utilized the same characters in proposing the phylogeny.

Length of marginal vein of fore wings and presence or absence of digiti and claspers on male genitalia are regarded as subfamily characters. Presence or absence of antennal funicle and condition of body are regarded as tribal characters. In Trichogrammatini, Oligositini and Megaphragmini funicle present, where as in Lathromerini and Aphelinoidini funicle absent.

Number and shape of antennal segments, condition of attachment of funicle with club, presence or absence of thick setae on antennal club, presence or

absence of vein track  $RS_1$  on fore wings, normal or thickened condition of marginal vein of fore wings, condition of premarginal and stigmal veins of fore wings, hidden or exerted condition of ovipositor, simple or apically bifurcated condition of aedeagus are regarded as generic characters. Body colour, shape of antennal segments, presence or absence of rod-like projections on antennal club; narrow or broad, hyaline or infuscated condition, length of marginal fringe and arrangement of discal ciliation of fore wings are regarded as specific characters.

Based on conventional as well as on genitalic characters, the following sub-families and tribes are recognised under the family Trichogrammatidae.

1. Subfamily Trichogrammatinae Haliday, 1851
  - A. Tribe Trichogrammatini Haliday, 1851  
= Poropoeini Girault, 1912. Syn. n.
  - B. Tribe Aphelinoidini trib. n.
2. Subfamily Oligositinae Ashmead, 1904  
= Chaetostrichinae Girault, 1912. Syn. n.
  - A. Tribe Megaphragmini trib. n.
  - B. Tribe Oligositini Ashmead, 1904  
= Chaetostrichini Girault, 1912. Syn. n.  
= Paracentrobiini Viggiani, 1971. Syn. n.
  - C. Tribe Lathromerini Girault, 1912.

## B. Phylogeny :

According to Ashmead the family Trichogrammatidae is related to the Eulophidae, connecting the latter with the Mymaridae (Imms, 1979 : 1225).

Hayat & Subba Rao (1985) also expressed, "The recent forms appear to have been derived from Eulophidae or some ancestor resembling Eulophids". But on the basis of the primitive and advance characters, the family Trichogrammatidae is related to Eretmocerinae of the family Aphelinidae. It is supposed to be the most highly evolved family among Chalcidoidea.

An attempt has been made for the first time to propose the phylogeny based on investigations of comparative morphology of the main body structures. The characters viz., 4-segmented tarsi, large body size, presence of digiti and claspers on male genitalia, presence of antennal funicle, densely setose condition of fore wings and the presence of vein track  $RS_1$  are regarded as primitive characters. On the other hand, 3-segmented tarsi, small body size, absence of digiti and claspers on male genitalia, absence of antennal funicle, sparsely

setose condition of fore wings and absence of vein track  $RS_1$  are regarded as advanced characters.

Based on the above primitive and advanced characters phylogeny of Trichogrammatidae is proposed. The tribe Trichogrammatini represents the primitive status and evolved from Aphelinid-like (Eretmocerinae) ancestor

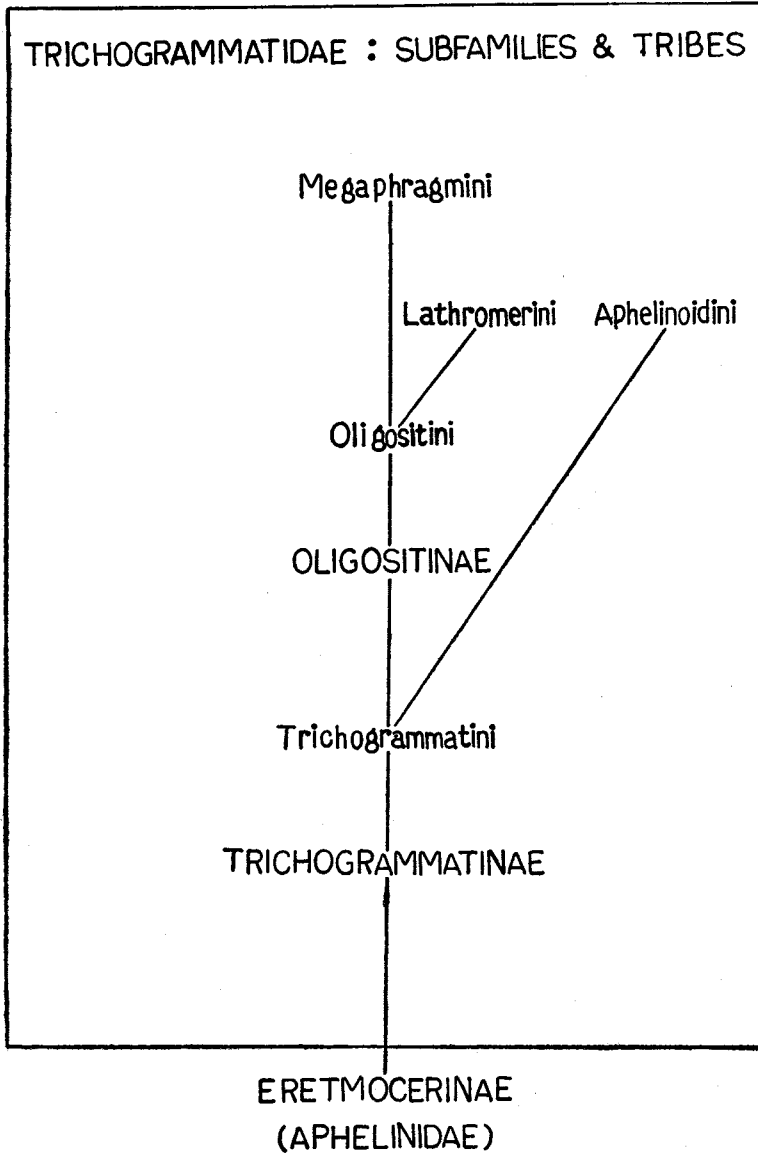


Fig. 35. Phylogeny of the family Trichogrammatidae.

which is having 4-segmented tarsi, body and male genitalia of trichogrammatid type. Aphelinoidini is an off shoot of the former. It lacks the digiti and claspers on male genitalia and the antennal funicle.

The subfamily Oligositinae has evolved independently from the tribe Trichogrammatini. It also lacks digiti and claspers on male genitalia. The tribes Megaphragmini and Lathromerini have probably evolved independently from tribe Oligositini.

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#### REFERENCES

- Ashmead, W. H. 1904a. Classification of the chalcid flies of the superfamily Chalcidoidea with descriptions of new species in the Carnegie Museum, collected in South America by Herbert H. Smith. *Publ. Carnegie Mus. Soc.* nr. 21, *Mem. Carnegie Mus.* 1 : 225-551.
- Ashmead, W. H. 1904b. Descriptions of new Hymenoptera from Japan II, *J. N. Y. Entomol. Soc.*, 12 : 146-165.
- Aurivillius, Ch. 1897. En ny svensk agparasit. *Entomol. Tidskr.* 18 : 249-255.
- Ayyar, T. V. R. 1925. A check list of Indo-Ceylon chalcid flies, Chalcidoidea. *Spolia. Zeylan. Bull. Natl. Mus. Ceylon*, 14 : 235-254.
- Beeson, C. F. C. 1941. The ecology and control of the forest insects of India and the neighbouring countries. F. R. I., Dehra Dun, PP. 767.
- Beeson, C. F. C. & Chatterjee, S. N. 1939. Further notes on the biology of parasites of teak defoliators in India. *Indian Forest Res. (Entomol.)*, 5 : 355-379.
- Blood, T. C. 1923. Notes on Trichogrammatinae taken around Bristol. *Ann. Rept. Proc. Bristol Nat. Soc.* 5 : 253-258.



- Blood, R. N. & Kryger, J. P. 1928. New genera and species of Trichogrammatidae with remarks upon the genus *Asynacta* (Hym. : Trichogrammatidae). *Entomol. Medd.* 16 : 203-222.
- Cherian, M. C. & Margabandhu, V. 1949. *Trichogrammatoidea nana* Zehnt. (Hym. : Chalcidoidea) — an egg parasite of the sugarcane borer *Argyria sticticraspis* Hampson : a new record from South India. *J. Bombay Nat. Hist. Soc.* 48 : 157-158.
- De Santis, L. 1957a\*. *Notas Mus. La Plata Zool.* 19 : 33-43.
- De Santis, L. 1957b. Description de nouveaux genres et espèces de Chalcidoidea Argentinos. II. (Hymenoptera). *Notas Mus. La Plata Zool.* 19 : 129-144.
- Doutt, R. L. 1974. *Chaetogramma*, a new genus of Trichogrammatidae (Hym. : Chalcidoidea). *Pan. Pac. Entomol.* 50 : 238-242.
- Doutt, R. L. & Viggiani, G. 1968. The classification of the Trichogrammatidae (Hymenoptera : Chalcidoidea). *Proc. Calif. Acad. Sci.* 35 : 477-586.
- Fazaluddin, M. & Nagarkatti, S. 1971. Reproductively incompatible crosses of *Trichogramma cacoeciae*, *pallida* with *T. minutum* and *T. pretiosum*. *Ann. Entomol. Soc. Am.* 64 : 1470-1471.
- Foerster, A. 1851\*. *Verh. Nat. F. preus*, 8 : 28.
- Foerster, A. 1856\*. Hymenopterologische studien. Heft. 2, Chalcidiae und Proctotrupii. *Aachen.* 1-152.
- Ghesquiere, J. 1939. Contributions a l'étude des Hymenopteres du congo belge. VI. Description d'un Mymaride nouveau et remarques sur le Gn. *Megaphragma* Timb. (Trichogrammatidae). *Rev. Zool. Bot. Afr.* 33 : 33-41.
- Ghesquiere, J. 1946. Contribution a l'étude des Microhymenopteres du congo belge, X-XI. *Rev. Zool. Bot. Afr.* 34 : 367-373.
- Girault, A. A. 1911a. Synonymic and descriptive notes on the chalcidoid family Trichogrammatidae with descriptions of new species. *Trans. Am. Entomol. Soc.* 37 : 43-83.
- Girault, A. A. 1911b. On the identity of *Trichogramma*, *Neotrichogramma japonicum* (Ashmead). *Can. Entomol.* 43 : 192-194.
- Girault, A. A. 1911c. On the identity of the most common species of the family Trichogrammatidae (Hymenoptera). *Bull. Wisconsin. nat. hist. Soc.* 9 : 135-165.

- Girault, A. A. 1911d. Descriptions of nine new genera of the chalcidoid family Trichogrammatidae. *Trans. Am. Entomol. Soc.* 37 : 1-42.
- Girault, A. A. 1911e\*. *Entomologist*, 44 : 198-199.
- Girault, A. A. 1911f\*. *Arch. Naturg.* 77 : 126 : 130.
- Girault, A. A. 1911g\*. *Jour. N. Y. Entomol. Soc.* 19 : 184.
- Girault, A. A. 1912a. Australian Hymenoptera Chalcidoidea I. The family Trichogrammatidae with descriptions of new genera and species. *Mem. Queensl. Mus.* 1 : 66-116.
- Girault, A. A. 1912b. Australian Hymenoptera Chalcidoidea. *Mem. Queensl. Mus.* 1 : 143-144.
- Girault, A. A. 1912c. The chalcidoid family Trichogrammatidae. *Bull. U. S. Natl. Hist. Soc.* 10 : 81-100.
- Girault, A. A. 1913a\*. Notes on the chalcidoid Hymenoptera of the family Trichogrammatidae with descriptions of a new sub-genus from Australia. *Rev. russe Entomol. Petersburg*, 13 : 292-294.
- Girault, A. A. 1913b. Diagnosis of new chalcidoid Hymenoptera from Queensland, Australia. *Arch. Naturg.*, 79 : *Abst. A. Heft.* 6 : 90-107.
- Girault, A. A. 1913c. The chalcidoid family Trichogrammatidae. II. Systematic history and completion of catalogue and table. *Bull. Wisconsin. natl. Hist. Soc.* 11 : 150-179.
- Girault, A. A. 1913d\*. *Mem. Queensl. Mus.* 2 : 101-106.
- Girault, A. A. 1913e\*. *Entomol. News.* 24 : 211-212.
- Girault, A. A. 1913f\*. *Mem. Queensl. Mus.* 2 : 108.
- Girault, A. A. 1914a\*. *Z. Wiss. insektenbiol.*, 10 : 308 pp.
- Girault, A. A. 1914b\*. The chalcidoid family Trichogrammatidae. II. Systematic History and completion of the catalogue and Tables. *Bull. Wisconsin. Natl. Hist. Soc.* 55-71.
- Girault, A. A. 1914c. Hosts of insect egg parasites in Europe, Asia, Africa and Australia, with supplementary American list. *Z. Wiss. Insektenbiol.*, 10 : 87, 91, 135-139, 175-178 and 238-240.
- Girault, A. A. 1915a. Australian Hymenoptera Chalcidoidea. I. Second Supplement. *Mem. Queensl. Mus.* 3 : 142-153.

- Girault, A. A. 1915b. Some chalcidoid Hymenoptera from north Queensland. *Can. Entomol.* 47 : 17-20.
- Girault, A. A. 1916a. Australian Hymenoptera Chalcidoidea. General Supplement. *Mem. Queensl. Mus.* 5 : 205-230.
- Girault, A. A. 1916b. Notes on north American Mymaridae and Trichogrammatidae. *Entomol. News.* 27 : 4-6.
- Girault, A. A. 1918\*. North American Hymenoptera Trichogrammatidae. Privately published, PP. 11.
- Girault, A. A. 1932a\*. New lower Hymenoptera from Australia and India. Privately published, p. 1.
- Girault, A. A. 1932b\*. New pests from Australia X. Privately published, PP. 5.
- Girault, A. A. 1938a. Some new Australian insects which are parasite. (Hym. : Chalcidoidea). *Rev. Entomol. Rio. de Janeiro* 9 : 80-89.
- Girault, A. A. 1938b. New Trichogrammatidae and Mymaridae from Australia. *Rev. Entomol. Rio. de Janeiro* 9 : 282-396.
- Girault, A. A. & Dodd, 1915\*. *Mem. Queensl. Mus.* 3 : 145.
- Greese, 1923\*. *Bull. Saratov Seed Select. Admin. Sugar Trust. Kiev.* 7 : 117.
- Haliday, A. H. 1833\*. *Entomol. Mag.* 1 : 340.
- Hayat, M. 1980. The genera *Neocentrobiella* and *Xiphogramma* from India with descriptions of two new species (Hymenoptera : Trichogrammatidae). *Boll. Lab. Entomol. Agr. Portici.* 37 : 203-207.
- Hayat, M. 1981. The genera *Chaetogramma* and *Lathromeromyia* from India with descriptions of two new species (Hym. : Trichogrammatidae). *Boll. Lab. Entomol. Agr. Portici.* 38 : 73-79.
- Hayat, M. & Husain, T. 1981. A new genus of Trichogrammatidae from India (Hym. : Chalcidoidea). *Boll. Lab. Entomol. Agr. Portici* 38 : 81-83.
- Hayat, M. & Shuja-Uddin, 1980. The genus *Paratrachogramma* from India with description of a new species (Hymenoptera : Trichogrammatidae). *Boll. Lab. Entomol. Agr. Portici.* 37 : 199-201.
- Hayat, M. & Subba Rao, B. R. 1985. Reviews of families and keys to families and genera (Trichogrammatidae). *Orient. insects* 19 : 239-245.

- Hayat, M. & Subba Rao, B. R. 1986. A catalogue of Chalcidoidea of India and the adjacent countries (Trichogrammatidae) *Orient insects* 20 : 193-208.
- Hayat, M. & Viggiani, G. 1981. The genus *Epoligosita* from India, with descriptions of two new species. *Boll. Lab. Entomol. Agr. Portici* 38 : 119-123.
- Hayat, M. & Viggiani, G. 1984. A preliminary catalogue of the oriental Trichogrammatidae (Hym. : Chalcidoidea). *Boll. Lab. Entomol. Agr. Portici*, 41 : 23-52.
- Howard, L. O. 1897\*. *J. Linn. Soc. London Zool* 26 : 178.
- Imms, A. D. 1979. *A general text book of Entomology*. 10th ed. (revised) New York 2 : 421-1354.
- Ishii, T. 1941. The species of *Trichogramma* in Japan, with descriptions of two new species. *Kontyu*, 14 : 169-176.
- Jonathan, J. K. & Julka, J. M. 1975. A new species of *Prestwichia* (Chalcidoidea : Trichogrammatidae) from India. *Orient. Insects* 9 : 165-168.
- Khan, M. Y. 1975. A new species of the genus *Brachygrammatella* Girault (Hymenoptera : Trichogrammatidae) from Aligarh, India. *Curr. Sci.* 44 : 430-433.
- Khan, M. Y. 1975a. A new species of Trichogrammatidae (Hymenoptera) reared from the eggs of *Oxyrachis tarandus* Fabr. (Homoptera : Membracidae). *Curr. Sci.* 44 : 635-636.
- Khan, M. Y. 1976. A new name for *Brachygrammotella indica* Khan (Hymenoptera : Trichogrammatidae). *Curr. Sci.* 45 : 392.
- Khan, M. Y. & Shafee, S. A. 1977. Indian species of the genus *Mirufens* Girault (Hym. : Trichogrammatidae). *Entomophaga* 22 : 31-35.
- Kryger, J. P. 1918\*. *Entomol. Medd.* 6, pp. 115.
- Kryger, J. P. 1932. One new genus and species, and three new species of Trichogramminae from Egypt with remarks upon *Neocentrobia hirticornis*, *Alaptus minimus* and *Trichogramma evanescens* *Bull. Soc. Entomol. Egypte*, 16 : 38-44.
- Kurdjumov, N. V. 1911\*. *Rev Russe d'Entomol.* 11 : 434-436.
- Lin, K. S. 1981. Genera of the Trichogrammatidae (Hymenoptera : Chalcidoidea) of Taiwan with descriptions of new taxa. *J. Agric. Res. China*, 30 : 426-433.

- Livingstone, D. & Yacoob, MD., 1983. A new subgenus of *Epoligosita* (Hym. : Trichogrammatidae) an egg parasite of Tingidae (Het.) from southern India. *Entomophaga* 28 : 213-216.
- Livingstone, D. & Yacoob, MD., 1983a. A new subgenus of *Lathromeromyia* (Hym. : Trichogrammatidae) an egg parasite of Tingidae (Het.) from India. *Entomophaga* 28 : 303-308.
- Lubbock, J. 1864. On two aquatic Hymenoptera of which uses its wings in swimming. *Trans. Linn. Soc. London* 24 : 135-142.
- Mani, M. S. 1935a. New Indian chalcidoidea (Parasitic Hymenoptera). *Rec. Indian Mus.* 37 : 241-248.
- Mani, M. S. 1935b. First record of Trichogrammatid chalcid genus *Chaetostri-cha* Walker from India with description of new species. *Rec. Indian Mus.* 37 : 337-338.
- Mani, M. S. 1939. Descriptions of new and records of some known Chalcidoidea and other hymenopterous parasites from India. *Indian J. Entomol.* 1 : 69-105.
- Manjunath, T. M. 1972. Biological studies on *Trichogrammatoidea armigera* Nagaraja, a new dimorphic egg parasite of *Heliothis armigera* (Hubner) in India. *Entomophaga* 17 : 131-147.
- Nagaraja, H. 1973. On some new species of Indian *Trichogramma* (Hymenoptera : Trichogrammatidae). *Orient. Insects* 7 : 275-290.
- Nagaraja, H. 1978. Studies on *Trichogrammatoidea* (Hym. : Trichogrammatidae). *Orient. Insects* 12 : 489-530.
- Nagaraja, H. & Nagarkatti, S. 1969. Three new species of *Trichogramma* (Hymenoptera : Trichogrammatidae) from India. *Entomophaga* 14 : 393-400.
- Nagaraja, H. & Nagarkatti, S. 1973. A key to new world species of *Trichogramma* (Hymenoptera : Trichogrammatidae) with descriptions of four new species. *Proc. Entomol. Soc. Wash.* 75 : 288-297.
- Nagarkatti, S. 1972. Record of *Trichogramma semblidis* Auriv. (Hymenoptera : Trichogrammatidae) in India. *Orient. Insects* 6 : 33-34.
- Nagarkatti, S. 1974. A new species of *Trichogramma* (Hymenoptera : Trichogrammatidae) parasitic on *Papilio* sp. in Japan. *Orient. Insects* 8 : 391-393.
- Nagarkatti, S. & Jayasingh, S. 1974. Studies on *Trichogramma semblidis* (Auriv.), egg parasite of *Tabanus macer* Bigot in India. *Proc. Indian Acad. Sci.* 80 : 299-309.

- Nagarkatti, S. & Nagaraja, H. 1968. Biosystematic studies on *Trichogramma* species. I. Experimental hybridization between *Trichogramma australicum* Girault, *T. evanescens* Westwood and *T. minutum* Riley. *Tech. Bull.* No. 10 CIBC, Indian Station, Bangalore, India. p. 81-96.
- Nagarkatti, S. & Nagaraja, H. 1971. Redescriptions of some known species of *Trichogramma* (Hymenoptera : Trichogrammatidae), showing the importance of the male genitalia as a diagnostic character. *Bull. Entomol. Res.* 61 : 13-31.
- Nagarkatti, S. & Nagaraja, H. 1977. Biosystematics of *Trichogramma* and *Trichogrammatoidea* species. *Ann. Rev. Entomol.* 22 : 157-176.
- Nagarkatti, S. & Nagaraja, H. 1979. The status of *Trichogramma chilonis* Ishii (Hym. : Trichogrammatidae). *Orient Insects.* 13 : 115-118.
- Nikol'skaya, M. N. 1952. *The chalcid fauna of the U. S. S. R.* (Chalcidoidea). *Acad. Sci. U. S. S. R.* 593.
- Nowicki, S. 1933. Descriptions of a new genus and of new species of the superfamily Chalcidoidea (Hymenoptera). *Pol. Pismo. Entomol.* 12 : 1-5.
- Nowicki, S. 1935. Descriptions of new genera and species of the family Trichogrammatidae (Hym. : Chalcidoidea) from the palaeartic region, with notes—I. *Zeit. angew. Entomol.* 21 : 566-596.
- Nowicki, S. 1936. Descriptions of new genera and species of the family Trichogrammatidae (Hym. : Chalcidoidea) from the Palaeartic region with notes—II. *Zeit. angew. Entomol.* 23 : 114-148.
- Nowicki, S. 1940. Descriptions of new genera and species of the family Trichogrammatidae (Hym. : Chalcidoidea) from the palaeartic region, with notes Supplement. *Zeit. angew. Entomol.* 26 : 624-664.
- Nowicki, S. 1946. Weitere Beschreibungen von Trichogrammiden *Zbl. Gesamt. Gzb. Entomol. Lienz* 1 : 44-50.
- Oatman, E. R. & Platner, G. R. 1983. A new species of *Trichogramma* (Hymenoptera : Trichogrammatidae), with notes on other species collected in Guatemala. *Proc. Entomol. Soc. Wash.* 85 : 710-713.
- Oatman, E. R., Pinto, J. D. & Platner, G. R. 1982. *Trichogramma* (Hymenoptera : Trichogrammatidae) of Hawaii. *Pac. Insects.* 24 : 1-24.
- Packard, A. S. 1872\*. *Rec. Am. Entomol.* pp. 8.
- Pajni, H. R. & Singh, T. 1973. A note on the taxonomic position of *Uscana*

- mukerjii* (Mani) an egg parasite of store bruchids (Hym. : Trichogrammatidae). *Res. Bull. Punjab Univ.* 24 : 163-164.
- Peck, O. 1963. A catalogue of the Nearctic Chalcidoidea (Insecta : Hymenoptera). *Can. Entomol.* 30 : 1092 pp.
- Peck, O., Boucek, Z. & Hoffer, A. 1964. Keys to Chalcidoidea of Czechoslovakia (Insecta : Hymenoptera). *Mem. Entomol. Soc. Canada* 34 : 1-122.
- Perkins, R. C. L. 1912. Parasites of insects attacking sugar cane. *Entomol. Ser. Exp. Stat. Hawaiian Sugar Planters Assoc. Bull.* 10 : 27 pp.
- Pinto, J. D., Oatman, E. R. & Platner, G. R. 1982. *Trichogramma australicum* Girault (Hymenoptera : Trichogrammatidae) : redescription and Lectotype designation. *Pan. Pac. Entomol.* 58 : 48-52.
- Pinto, J. D., Oatman, E. R. & Platner, G. R. 1983. The identity of two closely related and frequently encountered species of new world *Trichogramma* (Hymenoptera : Trichogrammatidae). *Proc. Entomol. Soc. Wash.* 85 : 588-593.
- Riley, C. V. 1879\*. Parasite of the cotton worm. *Can. Entomol.* 11 : 161-162.
- Silvestri, F. 1915\*. *Boll. Lab. Zool. Agr. Portici*, 9 : 104.
- Soika, W. 1931\*. *Naturh. Maandbl. Maastricht* 20 : 111.
- Subba Rao, B. R. 1969a. A new species of *Megaphragma* (Hym. : Trichogrammatidae) from India. *Proc. R. Entomol. Soc.* 38 : 114-116.
- Subba Rao, B. R. 1969b. Two new species of *Poropoea* Foerster from the orient with a key to species (Hym. : Trichogrammatidae). *Orient. Insects.* 3 : 319-325.
- Thomson, C. G. 1876\*. *Hymenoptera Skandinaviens* Tom 4 : 307 pp.
- Thomson, C. G. 1878\*. *Hymenoptera Skandinaviens* 5 : 299.
- Tillyard, R. J. 1926\*. *Insects of Australia and New Zealand*, pp. 279 (Angus & Robertson Ltd.).
- Timberlake, P. H. 1923. Descriptions of new chalcid flies from Hawaii and Mexico (Hymenoptera). *Proc. Hawaii. Entomol. Soc.* 5 : 395-417.
- Viggiani, G. 1971a. A new species of *Chaetostricha* Walk. from Africa, XXVI. Researches on the hymenoptera Chalcidoidea (Trichogrammatidae). *J. Entomol. Soc. South Africa* 34 : 33-35.

- Viggiani, G. 1971b. A new African species of *Oligosita* Walk. (Hym. : Trichogrammatidae). Parasitic on the eggs of *Coelaenomenodera elaeidis* Maul. (Col. : Hispidae) in Ivory Coast. *Boll. Soc. Entomol. Italy* 103 : 152-155.
- Viggiani, G. 1971c. Ricerche sugli Hymenoptera, Chalcidoidea. XXVIII. Studio morfologico Comparativo dell'armatura genitale esterna maschile dei Trichogrammatidae. *Boll. Lab. Entomol. Agr. Portici*, 29 : 181-222.
- Viggiani, G. 1976a. Studies of chalcidoid hymenoptera XLIX. *Trichogramma confusum* n. sp. for *T. australicum* Nagarkatti and Nagaraja (1968). nec. Girault (1912), with a note on *Trichogrammatoidea* Girault and description of *Paratrichogramma heliothis* n. sp. *Boll. Lab. Entomol. Agr. Portici*, 33 : 182-187.
- Viggiani, G. 1976b. Ricerche sugli Hymenoptera, Chalcidoidea. 50. Materiali per una revisione del genera *Oligosita* Walk. (Trichogrammatidae) 1. Le specie australiane descritte da A. A. Girault. *Boll. Lab. Entomol. Agr. Portici*, 33 : 188-218.
- Viggiani, G. 1977. Ricerche sugli Hymenoptera, Chalcidoidea, 57, Materiali per una revisione del genera *Oligosita* Walker (Trichogrammatidae) 2. Sensilli antennali. *Boll. Lab. Entomol. Agr. Portici*, 34 : 38-42.
- Viggiani, G. 1981a. Nearctic and Neotropical species of *Oligosita* Walker (Hym. : Trichogrammatidae). *Boll. Lab. Entomol. Agr. Portici*, 38 : 101-118.
- Viggiani, G. 1981b. Notes on some species of *Oligosita* Walker (Hym. : Trichogrammatidae) and description of four new species. *Boll. Lab. Entomol. Agr. Portici*, 38 : 125-132.
- Viggiani, G. 1982. Description of *Hayatia* n. gen., n. sp. (Hym. : Trichogrammatidae) from India. *Boll. Lab. Entomol. Agr. Portici*, 39 : 27-29.
- Viggiani, G. 1984. Further contribution to the knowledge of the male genitalia in the Trichogrammatidae (Hym. : Chalcidoidea). *Boll. Lab. Entomol. Agr. Portici*, 41 : 173-182.
- Viggiani, G. & Hayat, M. 1974. New Trichogrammatids from India (Hymenoptera : Chalcidoidea). *Boll. Lab. Entomol. Agr. Portici*, 31 : 145-151.
- Walker, F. 1851. Notes on Chalcidoidea and descriptions of various new species. *Ann. Mag. natl. Hist. Lond.*, 7 : 210-216.
- Westwood, J. O. 1833. Descriptions of several new British forms amongst the parasitic hymenopterous insects. *Phil. Mag. J. Sci.* 2 : 443-445.



- Westwood, J. O. 1840. *An introduction to the modern classification of insects*. Vol. 2 London (Synopsis. 1-158 pp.)
- Westwood, J. O. 1879. Descriptions of some minute hymenopterous insects. *Linn. Soc. London, Trans. Zool.* 1 : 583-593.
- Yousuf, M. & Shafee, S. A. 1984a. Species of *Oligosita* Walker (Hymenoptera : Trichogrammatidae) from India. *Indian J. syst. Entomol.* 1 : 15-22.
- Yousuf, M. & Shafee, S. A. 1984b. First report of *Paruscanoidea* and *Haeckeliana* (Hymenoptera : Trichogrammatidae) from India, with descriptions of two new species. *Indian J. syst. Entomol.* 1 : 35-38.
- Yousuf, M. & Shafee, S. A. 1984c. First report of *Zaga* Girault and *Oligositoides* Doutt. (Hymenoptera : Trichogrammatidae) from India, with descriptions of three new species. *Bull. Soc. Entomol. Suisse, Switzerland*, 57 : 367-370.
- Yousuf, M. & Shafee, S. A. 1985a. New species of the genera *Neocentrobiella* and *Neolathromera* (Trichogrammatidae : Chalcidoidea) from India. *Indian J. syst. Entomol.* 2(2) : 31-34.
- Yousuf, M. & Shafee, S. A. 1985b. Descriptions of three new species of Trichogrammatidae (Hymenoptera) from India. *Bull. Soc. Entomol. Suisse, Switzerland*, 58 : 299-302.
- Yousuf, M. & Shafee, S. A. 1985c. Descriptions of two new species of Trichogrammatidae (Hymenoptera : Chalcidoidea) from India. *Bull. Soc. Entomol. Suisse, Switzerland*, 58 : 303-305.
- Yousuf, M. & Shafee, S. A. 1986a. Catalogue of Genus-group names of world Trichogrammatidae (Hymenoptera). *Indian J. syst. Entomol.* 3 : 13-27.
- Yousuf, M. & Shafee, S. A. 1986b. Checklist of species and bibliography of the world Trichogrammatidae (Hymenoptera). *Indian J. syst. Entomol.* 3(2) : 29-82.
- Zehntner, 1896\*. *Med. Provefat. Oost. Java* (N. S.) 23 : 14-16.

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\* References not consulted in original.

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