



**TAXONOMY OF THE FAMILY CHALCIDIDAE
(HYMENOPTERA : CHALCIDOIDEA)**

**DISSERTATION PRESENTED FOR THE DEGREE OF
MASTER OF PHILOSOPHY
IN
ZOOLOGY
OF
THE ALIGARH MUSLIM UNIVERSITY, ALIGARH**

**BY
Someshwor Dutt**

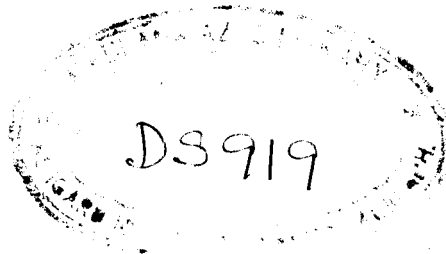
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May, 1986



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This is to certify that Mr. Semeshwer Dutt has completed his M.Phil. work under my supervision on a problem entitled "Taxonomy of the family Chalcididae (Hymenoptera : Chalcidoidea)". This is an original contribution and also a distinct addition to the existing knowledge on the subject. Being satisfied with the quality and quantity of the work he is permitted to submit it for the award of M.Phil. degree in Zoology of the Aligarh Muslim University, Aligarh.



(S. Adam Shafee)

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I. ACKNOWLEDGEMENTS

The present writer is greatly indebted to Dr. S. Adam Shafee, Department of Zoology, Aligarh Muslim University, Aligarh, for his most valuable guidance & supervision and for taking pains in critically going through the manuscript. He is also thankful to Prof. Nawab H. Khan and Prof. Ather H. Siddiqi, Chairman, Department of Zoology, for providing necessary facilities. Thanks are also due to Dr. M. Nayyar Azim, Mr. K. Mainoo Das Singh and Mr. Mohammad Yousuf, for useful suggestions and assistance.

II. INTRODUCTION

Members of the family chalcididae constitute an economically important group of natural enemies, parasitizing various groups of insect: pests (pupae of Lepidoptera, Diptera and Coleoptera ect.). They keep the population of their respective host species under check in nature. Brues (1908) stated that "the balance maintained by the struggle for existence between species is immediately and violently disturbed if the parasites of any particular species is removed. Such a form suddenly begins to increase in number, reproducing itself at a phenomenal rate approaching the geometrical progression, which would theoretically obtain if every individual were permitted to reach maturity and reproduce itself."

Latreille (1825) for the first time proposed the family group name Chalcidites. Westwood (1840) elevated it to the rank of family Chalcididae. Mani (1938) divided the family Chalcididae into two subfamilies : Leucospinae and Chalcidinae. Further, he divided Chalcidinae into five tribes : Brachymerariae, Halticellariae, Chalcidariae (=Smicrariae), Chalcitelleriae and Dirhinariae. Burks (1951) classified the family Chalcididae into four subfamilies :

Haltichellinae, Brachymerinae, Dirhininae and Chalcidinae. Habu (1960) in his revision of Chalcididae of Japan, classified the family Chalcididae into five subfamilies: Brachymerinae, Haltichellinae, Dirhininae, Epitraninae and Chalcidinae. Further, he divided the subfamily Dirhininae into two tribes: Dirhiniⁱ and Aporhiniⁿ.

Important contributions on the family Chalcididae, made by earlier workers from the seven Zoogeographical regions of the world, are as follows :

1. Antarctic region : Ashmead (1901), Fullaway (1950), Lever (1938).
2. Australian region : Dresner (1954), Girault (1913a, 1913b, 1913c, 1921), Lever (1938).
3. Ethiopian region : Bouček (1976), Ferrière (1935), Masi (1929, 1940b).
4. Nearctic region : Burks (1936a, 1936b, 1940, 1947, 1958, 1960a, 1960b, 1979), Cameron (1905a), Crawford (1910a, 1910b, 1911, 1913), Grissell & Schuff (1981), Hallar & Gunther (1936), Howard & Fiske (1911), Muosebeck et al. (1951), Peck (1963).
5. Neotropical region : Girault (1911, 1912), Muosebeck et al. (1951).

6. Oriental region : Ashmead (1905), Ayyar & Margabandhu (1919*, 1925*, 1934*), Cameron (1897, 1905b, 1907, 1911, 1913*), Cherian & Basheer (1938*), Chhotani (1966*), Farooqi (1976*), Farooqi & Manon (1973*), Ferriere (1930), Gahan (1925), Geetha & Shankaran (1977*), Girault (1919), Joseph et al. (1970a*, 1970b*, 1971*, 1972a*, 1972b*, 1972c*, 1972d*, 1972e*, 1972f*, 1972g*, 1973*), Joy & Joseph (1972*, 1973*), Mani (1938*), Mani & Dubey (1972*, 1973*, 1974*), Mani et al. (1973*, 1974*), Mani & Kurian (1953*), Motschulsky (1863), Narendran & Joseph (1975*, 1976*, 1977*), Narendran et al. (1978*) Otanes & Sison (1941), Pruthi & Ayyar (1919), Pruthi & Mani (1940*), Rohwer (1923), Roy & Sissous (1939*) Roy et al. (1940), Tasawar & Agarwal (1981*), Waterston (1922*).

7. Palaearctic region : Ashmead (1940b), Boucek (1951, 1954, 1956, 1972), Dufour (1841), Erdos (1955), Habu (1960a, 1960b, 1961a, 1961b, 1962a, 1962b, 1963, 1966), Hauessler (1940), Ishihara (1957), Ishii (1930, 1932, 1950), Kirby (1883), Masi (1916, 1928, 1929a, 1936, 1939, 1947, 1949, 1950), Matsumura (1930, 1931), Nakada (1957), Nikol'skaya (1934, 1952, 1960a, 1960b), Parker (1923), Peck (1963), Peck et al. (1964), Proggatt (1919, 1921),

*Contribution mainly from Indian region.

Ruschka (1922), Steffan (1959a, 1959b, 1962, 1976),
TAKANO
& Yanagihara (1939), Teranishi (1935), Walker (1946),
Wang (1937), Westwood (1936).

Check list of generic names in the family Chalcididae is provided for the first time. The names are arranged alphabetically along with their type-species.

Observations on parasite-host and host-parasite relationships revealed that the abdominal structure and mode of action of ovipositor of female parasite correlated with the nature of the host body. The ovipositor is partly exposed, third valvulae movably articulated with second valvifers. In the act of oviposition only the shaft of the ovipositor extrudes. These species are capable of attacking mostly pupae of Lepidoptera, Coleoptera, Diptera and Hymenoptera.

Brief diagnosis of the family Chalcididae is given. Four subfamilies : Chalcidinae, Brachymerinae, Dirhinae and Haltichellinae are recognised in the family Chalcididae and a key for their separation is given.

The present work deals with the study of four genera and nineteen species of Chalcididae. The genus Brachymeria (Hys. 1887) has also been included.

One new genus (Neopitranus); eight new species (Dirhinus laticornis, Dirhinus longiscapus, Dirhinus singularis, Pitranus singularis, Hockeria aligarhensis, Hockeria binaensis,

Hockeria longicornis, Necepitranus afrimbaitus); two new combination (Hockeria trisulia (Mani & Dubey) comb. n. from Lasiochalcidia, Hockeria mysorensis (Mani & Dubey) comb.n. from Lasiochalcidia); one new name (Epitranus dubey nom.n. for Epitranus malabarensis Mani & Dubey) are proposed. The genus Lasiochalcidia Masi is synonymised with Hockeria Keiffer.

The new species are fully described and illustrated. The work is supported by 50 illustrations arranged in 8 plates. It is a distinct addition to the existing knowledge on the family Chalcididae.

Holotypes, paratypes and other material examined by author are deposited in Zoological museum, Aligarh Muslim University, Aligarh, India.

III. CHECK-LIST OF THE WORLD GENERA OF
CHALCIDIDAE (HYMENOPTERA : CHALCIDOIDEA)

Generic names, both valid and invalid are listed in alphabetical order. The synonyms quoted are the latest recorded in literature. Attempt has been made to quote the first author of a synonym, success may not have been achieved in every case, since earlier authors often merely quoted a list of synonyms without definitely expressing their view on the status of each name. References are abbreviated. The type-species in the original combination of generic name is cited.

Acanthochalcis Cameron

Acanthochalcis Cameron, 1884, Biol. Cent. Amer. Hym. 1 : 100.

Type-species : Acanthochalcis nigricanus Cameron, by monotypy.

Acrocentrus Steffan

Acrocentrus Steffan, 1959, Acta. Ent. Mus. Nat. Pragae. 33 : 137.

Type-species : Acrocentrus erythrothorace Steffan,
by original designation.

Afrochalcis Schmitz

Afrochalcis Schmitz, 1946, Panc. Nat. Albert Miss de Witte
Pase 46 : 115.

Type-species : Afrochalcis exiguus Schmitz,
by original designation.

Anachalcis Steffan

Anachalcis Steffan, 1951, Bull. Mus. Hist. Nat. Paris 23 : 376.

Type-species : Anachalcis rubra Steffan, by monotypy.

(Anacryptus, Kirby) Epitranus Walker

Anacryptus Kirby, 1884, J. Linn. Soc. London 17 : 544.

Type-species : Epitranus impulsator Walker.

Synonymised with Epitranus Walker by Burks, 1936,

Proc. Natl. Acad. Sci. 22 : 283-289.

Anoplochalcidia Steffan

Anoplochalcidia Steffan, 1951, Feuille Nat. (N.S.) 6 : 2.

Type-species : Anoplochalcidia quineensis Steffan,

by monotypy.

Antrocephalus Kirby

Antrocephalus Kirby, 1883, J. Linn. Soc. Zool. Lond. 17 : 63.

Type-species : Halticella fasciicornis Walker.

Aphasganophora Nikolskaya

Aphasganophora Nikolskaya, 1952, Opred Faune SSSR Moscow 44 : 92.

Type-species : Aphasganophora gallica Nikolskaya, by monotypy.

(Arretocera Kirby) Epitranus Walker

Arretocera Kirby, 1884, J. Linn. Soc. London, 17 : 545.

Type-species : Epitranus albipennis Walker.

Synonymised with Epitranus Walker by Burks 1936, Proc. Natl.

Acad. Sci. 22 : 283-289.

(Arretoceroidella Girault) Epitranus Walker

Arretoceroidella Girault, 1913, Arch. Naturg. Jahrg. 79 : 96.

Type-species : Arretoceroidella flava Girault

Synonymised with Epitranus Walker by burks, 1938,

Natl. Acad. Sci. 22 : 283 - 289.

(Arrectoceroides Girault) Epitranus Walker

Arrectoceroides Girault, 1915, Mem. Queensl. Mus. 4 : 351.

Type-species : Arrectoceroides feralis Girault.

Synonymised with Epitranus by Burks, 1936,

Natl. Acad. Sci. 22 : 283 - 289.

(Bactrochalcis Kieffer) Trigonura Sichel

Bactrochalcis Kieffer, 1911, Ann. Soc. Ent. France 80 : 463.

Type-species : Bactrochalcis reticulata Kieffer, by monotypy.

Synonym of Trigonura Sichel, quoted by Burks, 1959,
Ann. Ent. Soc. America 52 : 75.

Belaspidia Masi

Belaspidia Masi, 1916, Ann. Mus. Civ. St. Nat. Geneva, 47 : 101.

Type-species : Belaspidia obscura Masi.

(Brachepitelia Girault) Brachymeria Westwood

Brachepitelia Girault, 1913, Canad. Ent. 45 : 106.

Type-species : Brachepitelia rubripes Girault, by monotypy.

Synonym of Brachymeria Westwood, quoted by Peck, 1963,
Acand. Ent. Suppl. 30 : 853.

Brachymeria Westwood (Brachepitelia Girault, Ceyxia Girault,
Pseudepitelia Girault, Tumidicoxa Girault, Tumidicoxella
Girault, Tumidicoxoides Girault).

Brachymeria Westwood in Stephens, 1829, Nomencl. Brit. Insec. 1 : 36

Type-species : Chalcis minuta Fabricius, by monotypy.

Bucekia Steffan, 1951, Feuille Nat. (N.S.) 6 : 2.

Type-species : Lasiochalcidia differens Steffan, by monotypy.

(Centrochalcidea Gahan & Fagan) Trigonura Sichel

Centrochalcidea Gahan & Fagan, 1923, Bul. U.S. Natl. Mus.

124 : 28. New name for Centrochalcis Cameron.

Synonym of Trigonura Sichel, quoted by Burks, 1959,
Ann. Ent. Soc. America, 52 : 75.

(Centrochalcis Cameron) Trigonura Sichel

Centrochalcis Cameron, 1913, Indian Forest Rec. 4 : 92.

Type-species : Centrochalcis ruficaudis Cameron, by monotypy.
Preoccupied by Centrochalcis Cameron, 1905 in Chalcidoidea

Cephalochalcidia Nikolskaya

Cephalochalcidia Nikolskaya, 1960, Trudy. Zool. Inst. Akad. Nauk. SSSR, 27 : 236.

Type-species : *Cephalochalcidia capitata* Nikolskaya,
by original designation.

Cerachalcis Masi

Cerachalcis Masi, 1944, Ann. Mus. Genova 62 : 115.

Type-species : *Cerachalcis fastuosa* Masi,
by original designation.

**CeratOMICRA Ashmead (Eusayia Ashmead, Melanoomicra Ashmead,
Mischomicra Ashmead, Sayiella Ashmead)**

CeratOMICRA Ashmead, 1904, Mem. Carnegie Mus. 1 : 251.

Type-species : *CeratOMICRA petiolata* Ashmead.

(Ceyxia Girault) Brachymeria Westwood

Ceyxia Girault, 1911, Zool. Jahrb. Abt. f. System Geo. u. Bio. Tiere, 31 : 382.

Type-species : *Ceyxia fumipennis* Girault,
by original designation

Synonym of *Brachymeria* Westwood, quoted by Peck 1963,
Canad. Ent. Suppl. 30 : 853.

Chalcidectus Walker

Chalcidectus Walker, 1852, Ann. Mag. Nat. Hist. 10 : 47.

Type-species : *Chalcidectus maculicornis* Walker,
by monotypy.

Chalcis Fabricius (Smigra spinola, Smiera Spinola)

Chalcis Fabricius, 1789, Mantissa Insect 1 : 272.

Type-species : *Chalcis sispes* Fabricius, designated by
Latreille, 1810, Consid Gen. 436.

(Chalcitella Westwood) Epitranus Walker.

Chalcitella Westwood, 1835, Proc. Zool. Sec. London, 70.

Type-species : *Chalcitella evaniodes* Westwood
Synonymised with *Epitranus* Walker by Hussain & Agerwal,
1981, Oriental Insects, 15 : 414.

(Chalcitelloides Girault) Epitranus Walker.

Chalcitelloides Girault, 1914, Ent. News 25 : 30

Type-species : Chalcitelloides nigriscutum Girault.

Synonymised with Epitranus Walker by Burks, 1936, Natl. Acad. Sci. 22 : 283-287.

Chalcitiscus Ghesquiere (Chalcites)

Chalcitiscus Ghesquiere, 1946, Rev. Zool. Bot. afr. 39 : 367.

(New name for Chalcites)

Dillisca Ghesquiere (Dilla Strand)

Dillisca Ghesquiere, 1946, Rev. Zool. Bot. afr. 39 : 367.

(New name for Dilla Strand).

Diplodontia Ashmead

Diplodontia Ashmead, 1888, Ent. Amer. 4 : 87.

Type-species : (Smicra carolina Ashmead) = Chalcis nigricornis Fabricius, designated by Ashmead, 1904, Mem. Carnegie Mus. 1 : 252.

(Dirrhinoidea Girault) Dirhinus Dalman

Dirrhinoidea Girault, 1912, Arch. f. Naturgesch 78 : 165.

Type-species : Dirrhinoidea maculata Girault, by monotypy.

Synonymised with Dirhinus Dalman by Masi, 1947, Eos 23 : 39 - 78.

(Dirhinoidea Masi) Dirhinus Dalman

Dirhinoidea Masi, 1947, Eos 23 : 49.

Type-species : Dirhinus pachycerus Masi,
by original designation.

Synonymised with Dirhinus Dalman by Habu, 1960, Bull. Natl. Inst. Agri. Sci. Ser. C 11 : 131 - 363.

Dirhinus Dalman (*Dirhinoidea* Girault, *Dirhinoides* Masi, *Eniacella* Girault, *Eniaca* Kirby, *Eniacomorpha* Girault, *Hontalia* Cameron, *Parenia* Crawford).

Dirhinus Dalman, 1818, Handl. K. Svensk Vetensk Akad. 39 : 75.

Type-species : *Dirhinus excavatus* Dalman, by monotypy.

(*Dirrhinus* Dalman) *Dirhinus* Dalman

Dirrhinus Dalman, 1823, Analecta Ent. 29. Unjustified emendation

(*Eniaca* Kirby) *Dirhinus* Dalman

Eniaca Kirby, 1883, J. Linn. Soc. London Zool. 17 : 54.

Type-species : *Chalcis cornigera* Jurine,
by original designation.

Synonymised with *Dirhinus* by Burks, 1936, Natl. Acad. Sci.
Zool. 22 : 283 - 287.

(*Eniacella* Girault) *Dirhinus* Dalman

Eniacella Girault, 1913, Bull. Wis. Nat. Hist. Soc. 11 : 35.

Type-species : *Eniacella ruficornis* Girault, by monotypy.
Synonymised with *Dirhinus* Dalman by Masi, 1947,
Eos. 23 : 39 - 78.

(*Eniacomorpha* Girault) *Dirhinus* Dalman

Eniacomorpha Girault, 1915, Mem. Queenl. Mus. 4 : 354.

Type-species : *Eniacomorpha vulture* Girault, by original
designation.

Synonymised with *Dirhinus* Dalman by Boucek, 1981,
Syst. Ent. 6 : 231.

(*Enneasmicra* Ashmead) *Spilochalcis* Thomson

Enneasmicra Ashmead, 1904, Mem. Carnegie Mus. 1 : 252.

Type-species : *Smicra exinaniens* Walker, by original
designation.

Synonym of *Spilochalcis* Thomson quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 870.

Epitranus Walker (Anacryptus Kirby, Arretocera Kirov,
Arretoceroidella Girault, Arretoceroides Girault,
Chalcitella Westwood, Chalcitelloides Girault,
Neoanacryptus Girault, Paranacryptus Girault,
Pararretoceroides Mani)

Epitranus Walker, 1834.

Type-species : Epitranus flaveseens Walker

Eucbrysia Westwood

Eucbrysia Westwood, 1874, Thesaurus Ent. Oxon. 139

Type-species : Eucbrysia Cleptidea westwood,
designated by Ashmead, 1904, Mem. Carnegie Mus. 1 : 281.

Eucepsis Steffan

Eucepsis Steffan, 1952, Can. Nat. 12 : 8.

Type-species : Eucepsis magrethii Steffan, by monotypy.

Euchalcidia Masi

Euchalcidia Masi, 1916, Ann. Mus. Civ. St. Nat. Genova 47 : 112.

Type-species : Euchalcidia elegantula Masi

(Eusayia Ashmead) Ceratosmicra Ashmead

Eusayia Ashmead, 1904, Proc. Ent. Soc. Wash. 6 : 126.

(New name for Sayiella)

Synonym of Ceratosmicra Ashmead quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 890.

(Eustypiura Ashmead) Spilochalcis Thomson

Eustypiura Ashmead, 1904, Mem. Carnegie Mus. 2 : 251.

Type-species : Eustypiura bicolor Ashmead, by original
designation.

Synonym of Spilochalcis Thomson, quoted by Peck, 1963, Canad.
Entomol. Suppl. 30 : 470.

Eutelisca Hedquist

Eutelisca Hedquist, 1968, Ent. Tidskr. 89 : 39.

Type-species : Eutelisca chilensis Hedquist, by monotypy.

(Halticella Stephens) Haltichella Spinola

Halticella Stephens, 1829, Nomencl. Brit. Insect. 36.

(Invalid emend, unsee(n))

Haltichella Spinola (Halticella Stephens)

Haltichella Spinola, 1811, Ann. Mus. Hist. Nat. 17 : 148.

Type-species : Chalcis pusilla Fabricius, designated by Westwood, 1840, Introd. Mod. Class Insect, Synopsis, 66.

Hastius Schmitz

Hastius Schmitz, 1947, Explor. Proc. Nat. Albert. Miss de Witte 48 : 124.

Type-species : Hastius ochraceus Schmitz, by monotypy.

(Heptasmicra Ashmead) Spilochalcis Thomson

Heptasmicra Ashmead, 1904, Mem. Carnegie Mus. 1 : 252.

Type-species : Smicra obliteranus Walker, by original designation.

Synonym of Spilochalcis Thomson, quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 870.

(Hexasmicra Ashmead) Spilochalcis Thomson

Hexasmicra Ashmead, 1904, Mem. Carnegie Mus. 1 : 252.

Type-species : Smicra transversa Walker, by original designation.

Synonym of Spilochalcis Thomson, quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 870.

Hippota Walker

Hippota Walker, 1871, Notes on Chalcidi : 47.

Type-species : Chalcis pectinicornis Latreille.

Hockeria Walker (Stomatocera Kirby, Stomatocera Ashmead)

Hockeria Walker, 1835, Ent. Mag. 2 : 21.

Type-species : Chalcis baspinosa Fabricius, Designated by Kirby, 1883, Jour. Linn. Soc. Zool. London 17 : 54.

(Hontalia Cameron) Dirhinus Dalman

Hontalia Cameron, 1884, Biol. Cent. Amer. Hym. 1 : 112.

Type-species : Hontalia caerulea Cameron, by original designation.

Synonymised with Dirhinus Dalman, by Burks, 1936, Natl. Acad. Sci. Zool. 22 : 283 - 287.

Hovachalcis Steffan

Hovachalcis Steffan, 1949, Mem. Inst. Sci. Madagascar 3A : 89.

Type-species : Hovachalcis gibberosa Steffan, by monotypy.

Hyperchalcidia Steffan

Hyperchalcidia Steffan, 1951, Feuille Nat. 6 : 2.

Type-species : Hyperchalcidia soudanensis Steffan, by monotypy.

Invreia Masi

Invreia Masi, 1927, Mem. Soc. Ent. Ital. 6 : 210.

Type-species : Invreia subaenea Masi

Lasiochalcidia Masi

Lasiochalcidia Masi, 1927, Mem. Soc. Ent. ital. 6 : 220.

**Type-species : Euchalcis rubripes Kieffer
quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 890.**

Lepidochalcis Nikol'skaya

Lepidochalcis Nikol'skaya, 1952, opred Faune SSSR Moscow 9.91

**Type-species : Lepidochalcis tomentosa Steffan,
by monotypy.**

Macrochalcis Masi

Macrochalcis Masi, 1944, Ann. Mus. Genova 62 : 136.

**Type-species : Macrochalcis bischoffi Masi,
by original designation.**

(Melanosmicra Ashmead) Ceratomicra Ashmead

Melanosmicra Ashmead, 1904, Mem. Carnegie Mus. 1 : 251.

Type-species : Melanosmicra immaculata Ashmead,
by original designation.

Synonym of Ceratomicra, quoted by Peck, 1963, Canad.

Entomol. Suppl. 30 : 890.

Metadontia Ashmead (Plagiosmicra Cameron)

Metadontia Ashmead, 1888, Ent. Amer. 4 : 87.

Type-species : (Smicra montana Ashmead) = Chalcis amoena Say,
monotypy through subsequent reference.

(Mischosmicra Ashmead) Ceratosmicra Ashmead

Mischosmicra Ashmead, 1904, Mem. Carnegie Mus. 1 : 251.

Type-species : (Mischosmicra Kablii Ashmead) = Chalcis
debilix Say, by monotypy.

Synonym of Ceratosmicra Ashmead, quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 890.

(Neoanacryptus Girault) Epitranus Walker

Neoanacryptus Girault, 1913, Arch. Naturg. Jahrg. 79A : 89.

Type-species : Neoanacryptus petiolatus Girault.

Synonymised with Epitranus Walker by Habu, 1962, Fauna
Japonica 127 - 232.

Neohybothorax Nikolskaya

Neohybothorax Nikolskaya, 1960, Trudy. Zool. Inst. Akad.
Nauk. SSSR. 27 : 228.

Type-species : Hybothorax hetera Walker, by original
designation.

Neophasganophora Masi

Neophasganophora Masi, 1942, Tunisia 74 : 82.

Type-species : Phasganophora gallica Westwood, by original
designation.

Nipponochalcidia Habu

Nipponochalcidia Habu, 1976, 22.

Type-species : *Euchalcidia kajimurai* Habu, by original designation.

Nipponohockeria Habu

Nipponohockeria Habu, 1960, Bull. Nat. Inst. Agric Sci. (C) 11:234

Type-species : *Nipponohockeria ishii* Habu, by monotypy.

(Octomicra Ashmead) *Spilochalcis* Thomson

Octomicra Ashmead, 1904, Mem. Carneg. Mus. 1 : 252.

Type-species : *Octomicra laticeps* Ashmead, by original designation.

Synonym of *Spilochalcis* Thomson, quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 870.

Ogloblinisca Hedqvist

Ogloblinisca Hedqvist, 1968, Ent. Tidskr. 39 : 50.

Type-species : *Ogloblinisca maculata* Hedqvist, by monotypy.

Oxycorphiscus Ghesquiere (Oxycoryphus Cameron)

Oxycorphiscus Ghesquiere, 1946, Rev. Zool. Bot. afr. 39 : 368.

New name for *Oxycoryphus* Cameron

(Paranacryptus Girault) *Epitranus* Walker

Paranacryptus Girault, 1915, Mem. Queensl. Mus. 4 : 347.

Type-species : *Paranacryptus sanguineus* Girault.

Synonymised with *Epitranus* Walker by Habu, 1962, Fauna Japonica 127 - 232.

(Pararretoceroides Mani) *Epitranus* Walker

Pararretoceroides Mani, 1938, Cat. Inst. 23 : 149.

Type-species : *Arretoceroides ceylonensis* Mani,

Synonymised with *Epitranus* Walker by Habu, 1962, Fauna Japonica 127 - 232.

Parastypiura Steffan

Parastypiura Steffan, 1951, Bull. Soc. Ent. fr. 55 : 148.

**Type-species : Thaumaletia pulchrypennis Ashmead,
by original designation.**

**Synonym of Dirhinus Dalman, quoted by Peck, 1963, Canad.
Entomol. Suppl. 30 : 865.**

(Pareniaça Crawford) Dirhinus Dalman

Pareniaça Crawford, 1913, Proc. U.S. Natl. Mus. 45 : 312.

**Type-species : Pareniaça schwarzi Crawford, by original
designation.**

**Synonymised with Dirhinus Dalman by Burks, 1936, Natl.
Acad. Sci. Zool. 22 : 283 - 287.**

Peltochalcidia Steffan

Peltochalcidia Steffan, 1948, Bull. Soc. Ent. Fr. 53 : 121.

Type-species : Peltochalcidia benoisti Steffan, by monotypy.

(Pentasmicra Ashmead) Spilochalcis Thomson

Pentasmicra Ashmead, 1904, Mem. Carnegie Mus. 1 : 252.

**Type-species : Pentasmicra brasiliensis Ashmead,
by original designation.**

**Synonym of Spilochalcis Thomson, quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 870.**

Phasgonophora Westwood

**Phasgonophora Westwood, 1832, in Griffith's Cuvier Animal
Kingd. Insecta 2 : 432.**

**Type-species : Phasgonophora sulcata Westwood,
by monotypy.**

Philocentrus Steffan

Philocentrus Steffan, 1959, Acta. Ent. Mus. Pragae 33 : 321.

**Type-species : Philocentrus argentesius Steffan,
by monotypy.**

(Plagiosmicra Cameron) Metadontia Ashmead

Plagiosmicra Cameron, 1904, Invertebrata Pacifica 1 : 56.

Type-species : (Plagiosmicra ashmeadi Cameron) =
Chalcis amoena Say, by monotypy.

Plastochalcis Masi

Plastochalcis Masi, 1953, Boll. Soc. Ent. 75 : 65.

Type-species : Plastochalcis stenogencis Masi, by monotypy.

(Platyhalcis Cameron) Epitranus Walker

Platyhalcis Cameron, 1904,

Synonymised with Epitranus Walker by Burks, 1936, Natl.
Acad. Sci. 22 : 283 - 287.

(Pseudepitelia Girault) Brachymeria Westwood

Pseudepitelia Girault, 1913, Canad. Ent. 45 : 104.

Type-species : Pseudepitelia rubrifemur Girault,
by original designation.

Synonym of Brachymeria Westwood, quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 853.

Psilochalcidia Steffan

Psilochalcidia Steffan, 1951, Feuille Nat. (N.S.) 6 : 4.

Type-species : Psilochalcidia dentata Steffan,
by monotypy.

(Sayiella Ashmead) Ceratosmicra Ashmead

Sayiella Ashmead, 1904, Mem. Carnegie Mus. 1 : 251.

Type-species : Chalcis debilis Say, by monotypy.
Preoccupied by Sayiella Dall in Mollusca

Scwarzella Ashmead

Scwarzella Ashmead, 1904, Mem. Carnegie Mus. 1 : 256.

Type-species : Scwarzella arizonensis Ashmead,
by monotypy.

(Smiera spinola) Chalcis Fabricius

Smiera spinola, 1811, Ann. Mus. Hist. Nat. Paris 17 : 147.

Type-species : **Chalcis sispes** Fabricius,
designated by Ashmead, 1904, Mem. Carnegie Mus. 1 : 250.
Synonym of **Chalcis Fabricius**, quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 866.

Solenochalcidia Steffan

Solenochalcidia Steffan, 1951, Feuille Nat. (N.S.) 6 : 2.

Type-species : **Solenochalcidia bucculenta** Steffan,
by monotypy.

Spilochalcis Thomson (= Diplodontia Ashmead, Enneasmicra
Ashmead, Eustypiura Ashmead, Hexasmicra Ashmead,
Heptasmicra Ashmead, Octosmicra Ashmead, Pentasmicra
Ashmead, Terrasmicra Ashmead, Trimicra Ashmead).

Spilochalcis Thomson, 1875, (1876), Hym. Scand. 4 : 15.

Type-species : **Chalcis xanthostogma**, ^{Dr. Linnaeus,} by monotypy.

Steffanisa Boucek

Steffanisa Boucek, 1952, Acta. Ent. Mus. Nat. 208 : 388.

Type-species : **Steffanisa rubrocincta** Boucek, by monotypy.

(Stomatocera Ashmead) Hockeria Walker

Stomatocera Ashmead, 1894, Trans. Amer. Ent. Soc. 21 : 332.

Erroneous subsequent spelling.

(Stomatoceras) Hockeria Walker

Stomatoceras Kirby, 1883, J. Linn. Soc. London Zool. 17 : 54.

Type-species : **Halticella liberator** Walker, by monotypy.
Synonym of **Hockeria** Walker, quoted by Peck, 1963, Canad.
Ent. Suppl. 30 : 848.

(Tetramicra Ashmead) *Spilochalcis* Thomson

Tetramicra Ashmead, 1904, Mem. Carnegie. Mus. 1 : 252.

Type-species : *Smiera concitata* Walker, by original designation.

Synonym of *Spilochalcis*, quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 870.

Trigonura Sichel (*Bactrochalcis* Kieffer, *Centrochalcidea* Gahan & Fagan, *Centrochalcis* Cameron)

Trigonura Sichel, 1865, Ann. Soc. Ent. France 5 : 358.

Type-species : *Phasganophora* (*Trigonura crassicauda* Sichel, by monotypy).

(Trismicra Ashmead) *Spilochalcis* Thomson

Trismicra Ashmead, 1904, Mem. Carnegie. Mus. 1 : 252.

Type-species : *Smiera contacta* Walker, by monotypy.

Synonym of *Spilochalcis* Thomson, quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 870.

Tropimeris Steffan

Tropimeris Steffan, 1948, Bull. Soc. Ent. Fr. 53 : 118.

Type-species : *Tropimeris excavata* Steffan, by monotypy.

(Tumidicoxa Girault) *Brachymeria* Westwood

Tumidicoxa Girault, 1911, Zool. Jahrb. Aft. f. System. Geog. U. Biol. Tiere 31 : 378.

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

Synonym of *Brachymeria* Westwood, quoted by Peck, 1963, Canad. Entomol. Suppl. 30 : 853.

(Tumidicoxella Girault) *Brachymeria* Westwood

Tumidicoxella Girault, 1913, Trans. Roy. Soc. S. Australia 37 : 74.

Type-species : *Tumidicoxella nigricoxa* Girault, by original designation.

Synonym of *Brachymeria* Westwood, quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 853.

Tumidicoxoides Girault, 1913, Arch. f. Naturgesch, 76A : 86.

Type-species : *Tumidicoxoides kurandaensis* Girault,
by monotypy.

Synonym of *Brachymeria* Westwood, quoted by Peck, 1963,
Canad. Entomol. Suppl. 30 : 583.

Urochalcis Nikolskaya

Urochalcis Nikolskaya, 1952, Opred Faune SSSR, Moscow P.91.

Type-species : *Urochalcis ninas* Nikolskaya.

IV. A. PARASITE - HOST INDEX

PARASITE	HOST
<u>Antrocephalus cariniceps</u> (Cameron)	<u>Opisina arenosella</u> Walker
<u>Antrocephalus destructor</u> Waterston	<u>Hypsiphyla robusta</u> Moore
<u>Antrocephalus shikensis</u> (Ashmead)	<u>Hypsiphyla robusta</u> Moore <u>Opisina arenosella</u> Walker
<u>Antrocephalus phaeospilus</u> Waterston	<u>Opisina arenosella</u> Walker
<u>Antrocephalus venalis</u>	<u>Hypsiphyla robusta</u> Moore
<u>Brachymeria albotibialis</u> (Ashmead)	<u>Parnara mathias</u>
<u>Brachymeria alternipes</u> (Walker)	Unknown
<u>Brachymeria amphissa</u> (Walker)	<u>Earies</u> sp.
<u>Brachymeria atridens</u> Waterston	Unknown
<u>Brachymeria bengalensis</u> Cameron	<u>Earies</u> sp. <u>Sylepta derogata</u> <u>Utetheisa pulchella</u>
<u>Brachymeria burksi</u> Chhotani	<u>Aspidomocopa miliaris</u>
<u>Brachymeria carinata</u>	Unknown

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<u>Brachymeria</u> <u>coxodentata</u> Joseph <u>et al.</u>	Unknown
<u>Brachymeria</u> <u>criculae</u> (Kohl)	<u>Caricula</u> sp. Lasiocampid pupa Wild silk worm
<u>Brachymeria</u> <u>croceogastralis</u> Joseph <u>et al.</u>	Unknown
<u>Brachymeria</u> <u>dunensis</u> Joseph <u>et al.</u>	<u>Dasychira</u> sp.
<u>Brachymeria</u> <u>excarinata</u> Gahan	<u>Apanteles</u> <u>plutellae</u>
<u>Brachymeria</u> <u>femorata</u> (Panzer)	<u>Pieris</u> <u>brassicae</u> Linn. <u>Peiros</u> <u>repae</u> Linn. <u>Pontia</u> <u>deplidica</u> Linn. <u>Zygesa</u> <u>filipensulae</u> Satyridae & Nymphalidae
<u>Brachymeria</u> <u>fiskei</u> (Crawford)	Gipsy moth
<u>Brachymeria</u> <u>fonscolombei</u> (Dufour)	Calliphoridae Muscidae Lepidoptera Trypetidae
<u>Brachymeria</u> <u>fulvitaris</u> Cameron	Lac insect
<u>Brachymeria</u> <u>ghani</u> Joseph <u>et al.</u>	Unknown
<u>Brachymeria</u> <u>hattoriae</u> Joseph <u>et al.</u>	Hairy cat-erpillar

Brachymeria hearseyi Kirby

Brachymeria hime Habu

Brachymeria intermedia (Nees)

Brachymeria jambolana Gahan

Brachymeria jayarajii Joseph et al.

Brachymeria koduvalliensis Joseph et al.

Brachymeria lasus (Walker)

Brachymeria lugubris Walker

Brachymeria margaroniae Joseph et al.

Brachymeria magaspila Cameron

Brachymeria menoni Joseph et al.

Danais chrysiptus
Euploea core
Hypsiphyla robusta Moore
Psara cynaralis

Atteva fabriciella Swed
Coryra cephalopica Staint
Ailanthus excelsa
Grapholita molesta Busck
Hapalia machaeralis Walker
Opisina arenosella

Diptera
Lepidoptera

Carea subtilis

Melanitis ismene
Papilio agamenon
Pelopidas mathias
Tussock Caterpillars

Microplitis maculipennis

Opisina arenosella Walker

Atteva fabriciella

Diaphania indica

Opisina arenosella Walker

Metriona circumdata

1
2
3
4

<u>Brachymeria medicina</u> Joseph et al.	Unknown
<u>Brachymeria minuta</u> (Linn.)	Calliphoridae Sarcophagidae Tachinidae
<u>Brachymeria nephantidis</u> Gahan	<u>Nephantis serinopa</u> <u>Opisina arenosella</u> Walker
<u>Brachymeria nosatoi</u> Habu	<u>Diorvctria splendidella</u> <u>Evetria cristata</u> <u>Nephantis serinopa</u> <u>Opisina arenosella</u>
<u>Brachymeria nursei</u> Cameron	<u>Simplicia robustalis</u>
<u>Brachymeria ornatipes</u> Cameron	Unknown
<u>Brachymeria podagrifera</u> Fabricius	Calliphoridae Muscidae Sarcophagidae Trypetidae
<u>Brachymeria punctifrons</u> Joseph et al.	Unknown
<u>Brachymeria raui</u> Joseph et al.	Unknown
<u>Brachymeria scutellocarinata</u> Joseph et al.	Tachinidae
<u>Brachymeria secundaria</u> (Ruschka)	<u>Meteorus rubens</u> Nees <u>Pontia daplidice</u> Linn. <u>Rhogas</u> sp.
<u>Brachymeria tachardiae</u> Cameron	<u>Eublemma amabilis</u> <u>Hypsiophyla</u> sp.
<u>Brachymeria taiwana</u> (Matsumura)	Unknown
<u>Brachymeria wiebesina</u> Joseph et al.	Sweet Potato beetle

Cnaphalocrocis medinalis Guenee

Dirhinoides mathuri Mani & Dubey

Dirhinus aligarhensis Husain & Agerwal

Dirhinus anthracia Walker

Dirhinus altispina Boucek & Narendran

Dirhinus auratus Ashmead

Dirhinus bakeri (Crawford)

Dirhinus banksi Rohwer

Dirhinus circinus Husain & Agerwal

Dirhinus clavatus Husain & Agerwal

Dirhinus claviger Boucek & Narendran

Dirhinus deplanatus Boucek & Narendran

Dirhinus giffardi

Dirhinus intermedius Mani & Dubey

Dirhinus himalayanus Westwood

Dirhinus ignobilicornis Husain & Agerwal

Cnaphalocrocis medinalis Guenee

Compolechia metagramma Meyric

Homone sp.

Plutella maculipennis curtis

Shorea robusta (Pole)

Unknown

Sarcophaga

Unknown

Unknown

Musca domestica

Unknown

Unknown

Unknown

Unknown

Unknown

Dacus sp.

H. machaeralis

Chrysomya megacephala

Musca domestica

Sarcophaga tuberosa pendelle

Unknown

<u>Dirhinus lakhimpuriensis</u> Husain & Agarwal	Unknown
<u>Dirhinus luzonensis</u> (Rohwer) Husain & Agarwal	Unknown
<u>Dirhinus pilifer</u> Boucek & Narendran	Unknown
<u>Dirhinus trichophthalmus</u> Husain & Agarwal	Unknown
<u>Dromochalcidia indica</u> Mani & Dubey	Unknown
<u>Epitranus acuminatus</u> Husain & Agarwal	<u>Chilo simplex</u> Butl.
<u>Epitranus ambadevia</u> (Mani & Dubey)	Unknown
<u>Epitranus annexia</u> (Mani & Dubey)	Unknown
<u>Epitranus areolatus</u> Husain & Agarwal	<u>Leucinodes arbonalis</u> Guen.
<u>Epitranus borivilia</u> (Mani & Dubey)	Unknown
<u>Epitranus camboorensis</u> (Mani & Dubey)	Unknown
<u>Epitranus dubeyi</u> Nom. n.	Unknown
<u>Epitranus giganticus</u> Husain & Agarwal	Unknown
<u>Epitranus indicus</u> Husain & Agarwal	<u>Leucinodes arbonalis</u> Guen.
<u>Epitranus kashmiriensis</u> Husain & Agarwal	Unknown
<u>Epitranus malabarensis</u> (Mani & Dubey)	<u>Leucinodes arbonalis</u> Guen.
<u>Epitranus marattensis</u> (Mani & Dubey)	Unknown

<u>Epitranus melongenus</u> Husain & Agarwal	Unknown
<u>Epitranus monticola</u> (Mani & Dubey)	Unknown
<u>Epitranus nigrus</u> Husain & Agarwal	Unknown
<u>Epitranus nilamburensis</u> (Mani & Dubey)	Unknown
<u>Epitranus pallava</u> (Mani & Dubey)	Unknown
<u>Epitranus perticellus</u> Husain & Agarwal	<u>Eusophora perticella</u> Rag.
<u>Epitranus rannathi</u> (Mani & Dubey)	Unknown
<u>Epitranus rossicorpus</u> Husain & Agarwal	<u>Leucinodes arbonalis</u> Guen.
<u>Epitranus sancti-johani</u> (Mani & Dubey)	Unknown
<u>Epitranus simplex</u> Husain & Agarwal	Unknown
<u>Epitranus tanjorensis</u> (Mani & Dubey)	Unknown
<u>Epitranus ultima</u> (Mani & Dubey)	Unknown
<u>Eugastrochalcis secundus</u> Mani & Dubey	Unknown
<u>Hockeria aligarhensis</u> sp.n.	Unknown
<u>Hockeria bensensis</u> sp. n.	Unknown
<u>Hockeria keralensis</u> Mani & Dubey	Unknown
<u>Hockeria longicornis</u> sp.n.	Unknown

<u>Hockeria mysorensis</u> (Mani & Dubey) comb.n.	Unknown
<u>Hockeria nilgiriensis</u> Mani & Dubey	Unknown
<u>Hockeria trisulia</u> (Mani & Dubey) comb.n.	Unknown
<u>Invrei opisinae</u>	<u>Opisina arenosella</u>
<u>Pareniaca trichophthalma</u> Masi	Unknown
<u>Peltochalcidea indica</u> Mani & Dubey	Unknown
<u>Sabatiella nepalensis</u> Mani & Dubey	Unknown
<u>Sabatiella naduganiensis</u> Mani & Dubey	Unknown

IV. B. HOST - PARASITE INDEX

Family	Host	Parasite
Lepidoptera		
Arctiidae	<u>Utetheisa pulchella</u> (Sunhamp Hairy Caterpillar)	<u>Brachymeria bengalensis pulchellae</u>
Danaidae	<u>Danais chrysippus</u> Linn. (Leaf caterpillar)	<u>Brachymeria hearseyi</u> Waterston
Cryptophasidae	<u>Nephantis serinopa</u> Meyr (Black headed caterpillar)	<u>Brachymeria nephantidis</u> Gahan
	<u>Dioryctria splendidella</u>	<u>Brachymeria hime</u> Habu
	<u>Evetria cristata</u>	<u>Brachymeria nosatoi</u> Habu
Eucosmidae	<u>Grapholitha molesta</u> Busck (Oriental fruit moth)	<u>Brachymeria hime</u> Habu
		<u>Brachymeria excarinata</u> Gahan
Gelechiidae	<u>Compolechia metagramma</u> Mey.	<u>Brachymeria excarinata</u> Gahan
Hesperiidae	<u>Parnara mathias</u>	<u>Brachymeria albotibialis</u> Ashmead
	<u>Pelopidas mathias</u> F. (Rice skipper)	<u>Brachymeria jayaraji</u> Joseph <u>et al.</u>
Lasiocampidae	<u>Lasiocampid</u> pupa Linn.	<u>Brachymeria secundaria</u> (Ruschka)
Lymantriidae	<u>Dasychira</u> sp.	<u>Brachymeria dunensis</u> Joseph <u>et al.</u>
	Hairy caterpillar	<u>Brachymeria hattoriae</u> Habu

	<u>Pontia daplidica</u> Linn.	<u>Brachymeria femorata</u> (Panzer)
Noctuidae	<u>Earias</u> sp. (Pest of cotton, Bindi)	<u>Brachymeria bengalensis</u> Cameron
	<u>Eublemma amabilis</u>	<u>Brachymeria amphissa</u> (Walker)
	<u>Simplica robustalis</u> G. (Sorghum stalk caterpillar)	<u>Brachymeria tachardiae</u> Cameron
		<u>Brachymeria nursei</u> Cameron
Nymphalidae	<u>Euploea Core</u> (Indian crow butterfly)	<u>Brachymeria hearseyi</u> Waterston
	<u>Melanitis ismene</u> G.	<u>Brachymeria jayaraji</u> Joseph et al.
Papilionidae	<u>Papilio aganemnon</u> Linn. (Swallow tailed butterfly)	<u>Brachymeria jambolana</u> Gahan
Pieridae	<u>Pieris brassicae</u> Linn.	<u>Brachymeria femorata</u> (Panzer) 1
	<u>Psara cynaralis</u>	<u>Brachymeria hearseyi</u> Waterston
	<u>Pontia daplidica</u> Linn.	<u>Brachymeria femorata</u> (Panzer)
	<u>Pieris rapae</u> Linn.	<u>Brachymeria femorata</u> (Panzer)
Psychidae	Psychid	<u>Brachymeria carinata</u> Joseph et al.
Pyralidae	<u>Cnaphalocrocis medinalis</u> G.	<u>Brachymeria excarinata</u> Gahan
	<u>Diaphania indica</u>	<u>Brachymeria margaroniae</u> Joseph
	<u>Hapalia machaeralis</u> Walker	<u>Brachymeria hime</u> Habu
	<u>Hypsiphyla robusta</u> Moore	<u>Antrocephalus destructor</u> Waterston
		<u>Antrocephalus renalis</u> Waterston
		<u>Brachymeria tachardiae</u> Cameron
	<u>Psara cynaralis</u>	<u>Brachymeria hearseyi</u> Kirby

Saturniidae	<u>Cricula</u> sp.	<u>Brachymeria</u> <u>criculae</u> (Kohl)
	<u>Homona</u> sp.	<u>Brachymeria</u> <u>excarinata</u> Gahan
Yponomeutidae	<u>Atteva</u> <u>fabriciella</u> Swdd.	<u>Brachymeria</u> <u>lugubris</u> Walker
		<u>Brachymeria</u> <u>hime</u> Habu
	<u>Plutella</u> <u>maculipennis</u> Curtis	<u>Brachymeria</u> <u>excarinata</u> Gahan
	Gipsy moth	<u>Brachymeria</u> <u>fiskei</u> (Crawford)
Zygaenidae	<u>Zygaena</u> <u>filipendulae</u>	<u>Brachymeria</u> <u>femorata</u> (Panzer)
Hymenoptera		
Braconidae	<u>Apanteles</u> <u>plutellae</u> Kurd.	<u>Brachymeria</u> <u>excarinata</u> Plutellae
	<u>Microplitis</u> <u>maculipennis</u>	<u>Brachymeria</u> <u>koduvalliensis</u> Jos. ^{et}
	<u>Rhogas</u> sp.	<u>Brachymeria</u> <u>secundaria</u> (Ruschka)
	<u>Meteorus</u> <u>rubens</u>	
Hemiptera		
Lacciferidae	Lac insect	<u>Brachymeria</u> <u>fulvitaris</u> Cameron
Diptera		
Dacus sp.	<u>Dacus</u> sp.	<u>Dirhinus</u> <u>giffardi</u> Silvestri
		<u>Dirhinus</u> <u>anthracia</u>
	Muscoid puparia	<u>Brachymeria</u> <u>fonscolombe</u>
		<u>Brachymeria</u> <u>minuta</u>
		<u>Brachymeria</u> <u>intermedia</u>

Tachinidae

Tachinid pupa

Brachymeria scutellocarinta

Brachymeria fiskei (Crawford)

Sarcophaga

Dirhinus anthracia Walker

Musca domestica

Dirhinus himalayanus Westwood

Dirhinus anthracia Walker

Dirhinus bakeri

Sarcophaga tuberosa

Dirhinus anthracia

Dirhinus himalayanus Westwood

Coleoptera

Chrysomelidae

Metriona circumdata H.
(Pest of sweet potato)

Brachymeria menoni

Brachymeria wiebesina

Aspidomorpha miliaris F.

Brachymeria burksi

v. Material and Methods

The developmental stages of various groups of insects pests, viz., lepidoptera, Diptera and Coleoptera etc. were collected along with their food and put in rearing jars (4" x 2"). The open ends of the jars were covered with paper held with rubber bands. A complete record indicating the reference number, locality, date of collection, and name of host insect was also maintained. The collections were examined daily. The emerged parasites preserved in 80% alcohol. The preserved specimens were separated upto specific level under the binocular with the help of fine needles. Collection were also made by sweeping the vegetation in the field.

The permanent slides were prepared to enable detail study of important structures of the insect. 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 canadabalsam and oriented to the required position. The slides were allowed to dry for some time. This was followed by adding requited quantity of canadabalsam to the slide, and cover-slip, were placed. The slide, were put in the 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 insect were made with the help of an ocular-micrometer.

V. FAMILY CHALCIDIDAE LATREILLE

Diagnosis : Body dark and robust; head and thorax coarsely punctate; antennae usually 13-segmented; mesothorax with distinct parapsidal furrows; wings fully developed; hind femora extraordinarily enlarged; hind tibia arched, apex obliquely truncate with one spur in Brachymeriinae; abdomen sessile in Brachymeriinae and Haltichellinae, with long petiole in chalcidinae; ovipositor usually hidden. Species parasitic chiefly on pupae of lepidoptera, coleoptera and diptera etc.

Four subfamilies : Dirhininae, Chalcidinae, Brachymerinae and Haltichellinae are recognised under the family chalcididae and a key for their separation is given below :

Key to subfamilies of Chalcididae

1. Head with frons not jutting as unusual horns..... 2
 - Head with frons jutting anteriorly as two large horns, antennae attached deeply between them; hind femur ventrally with finely serrate comb.. DIRHININAE
2. Abdomen sessile or nearly so 3
 - Abdomen with elongate petiole..... CHALCIDINAE

- 3. Hind tibia at apex obliquely truncate with one spur, hind femur with line of coarse teeth; legs with patterns..... BRACHYMERIINAE

- Hind tibia apically truncate at right angle of near so, hind femur with ventral comb of small teeth on one to three broad lobes; with two spurs.....
..... HALTIIDINAE

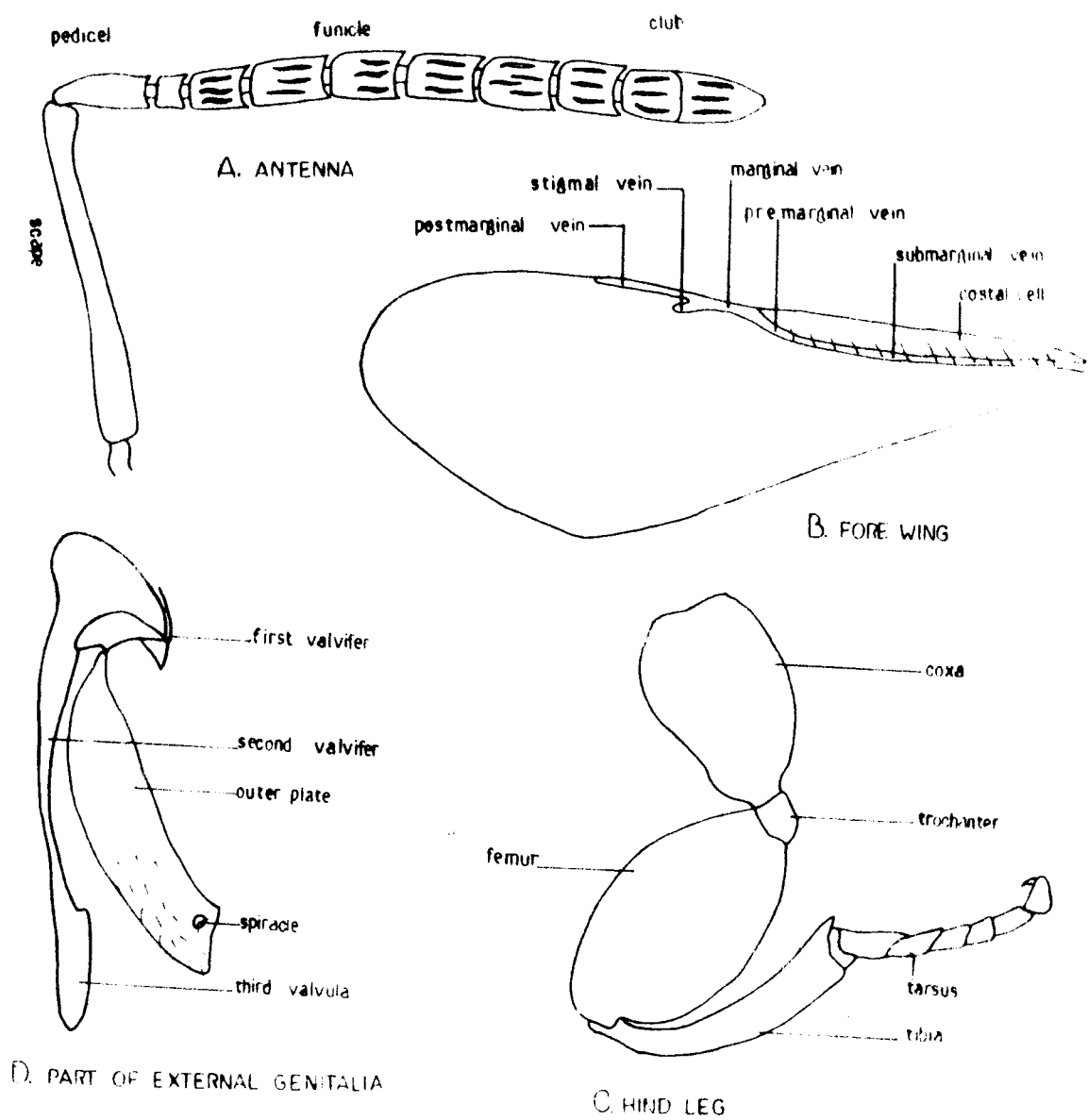


Fig. 1

A. SUBFAMILY DIRHININAE

Genus Dirhinus Dalman

Diagnosis : Head with deep frontal depression; eyes small, rounded; malar space long; antennae inserted at middle of frons, 13-segmented, ring segment distinct, funicle 7-segmented, club indistinctly 3-segmented; Pronotum long, slightly shorter than mesonotum; scutellum rounded apically; fore wings without postmarginal vein, radial vein undeveloped; abdomen with first tergite long, striated basally; hind femora with serration on outer margin, hind tibia produced apically as spine.

Comments : Generic synonymy is given in check-list of generic names. The genus is known to contain twelve species from India and a key for their separation is given below :

Revised Key to Indian species of Dirhinus Dalman

1. Head below apex of each horn without distinct additional tooth, facial edge of scrobes almost straight or sinuate 2
- Head on facial edge of each horn with distinct additional tooth 7

2. Each horn outside of apex with distinct notch; forewing pilosity usually distinct; hind tibia without distinct additional sulcus outside tarsal one or, if such sulcus present (in ♀), then clava strongly asymmetrical..... 3
- Apex of each horn in dorsal view more or less rounded without any notch; forewing ^ahyline, without distinct pilosity in ♀; hind tibia in distal half with another shallow groove outside tarsal sulcus, this groove delimited by additional external carina; ♀ clava symmetrical, with broadly conical apex
.....1. himalayanus Westwood
3. Thorax not depressed, scutellum at-least slightly convex and extensively punctate and if with smooth area in middle, then this area separated from apical margin by atleast two rows of puncts; mesosternal area with distinct cross carina bordering cavities for fore coxae..... 4
- Thorax dorsally unusually flattened and especially scutellum completely flat and with broad impunctate area separated by single row of puncts from hind margin; mesosternal area without distinct carina delimiting smoother part where fore coxae adhere....6
4. Apex of antenna symmetrical, not very broad, without distinct area of micropilosity; wing pubescence brownish; horns relatively narrower than in alternate, with apical notch more distinctly.....5
- Apex of short antenna very broad, clava obliquely depressed on one side owing to large area of micropilosity, preclaval segment about 2.5 times as broad as long; wings whitish, pilosity nearly absent (nearly as in himalayanus).....
..... 2. Claviger Boucek & Narendran

5. Each horn in dorsal view at level with anterior eye margins broader than scrobal gap; median areola of propodeum with convex sides, shortly oval; scutellum anteriorly with median impunctate strip; posterior margin of striate area on first tergum nearly straight, the area subquadrate or even broader than long; narrow space between eye and lower part of scrobes with preorbital carina separated from scrobes by fully two rows of puncts.....3. antiracia Walker
- Each horn in dorsal view at anterior ocular line slightly narrower than scrobal gap; scutellum without impunctate strip; median areola of propodeum more elongate than in alternate, with almost parallel sides; striate area on first tergum narrower than long, with fewer striae and its hind margin produced in middle; parascrobal space usually with less than two complete rows of puncts between preorbital carina and scrobal margin.....4. suratus Ashmead
6. Thorax in lateral view about 1.4 times as high (at scutellum) as length of metapleuron; second flagellar segment in ♀ distinctly transverse, pedicel dorsally about 1.5 times as long as broad, flagellum more clavate.....5. banksi Rohwer
- Thorax still more flattened, in lateral view only about 1.1 times as high as metapleuron long; second flagellar segment in ♀ as long as proximally broad, flagellum less clavate.....6. deplanatus
7. Tip of horn reaching much farther from eye than frontal tooth, latter much weaker and smaller; striae on first tergum weaker and shorter (sometimes very much so) than in alternate.....8

- Tip of horn, in lateral view, not or hardly jutting out farther away from eye margin than the strong frontal tooth, latter often nearer to horn tip than to eye margin; striae of first tergum strong, even posteriorly, and extending over more than one-third of tergite; body size over 4 mm.
.....7. madagascariensis Masi
- 8. Forewing with distinct hairline recurrent from stigma towards wing base; petiole in both sexes longer than in bakeri but striate area of first tergum usually shorter 9
- Forewing pubescence reduced, especially with no hairline recurrent from stigma or, if a hairline partly developed then petiole at least slightly transverse; in ♀ area of four carinae on petiole 1.5-2 times as broad as long; dense striae on first tergite forming broad area with convex hind margin and taking up more than a quarter of tergite length.....
.....8. bakeri Crawford
- 9. Antennae with at least first funicle segment longer than wide, club 2 to 3 segmented10
- Antennae with all the funicle segments transverse, club 1-segmented..... 9. laticornis sp.n.
- 10. Antennae with club 3-segmented11
- Antennae with club 2-segmented...10. longiscapus sp.n.
- 11. Pedicel longer than first funicle segment; funicle segments 2nd and 3rd as long as wide.....
.....11. aligarhensis Husain & Agarwal
- Pedicel longer than first funicle segment; funicle segments 2nd and 3rd distinctly wider than long
.....12. singularis sp.n.

1. Dirhinus himalayanus Westwood

Dirhinus himalayanus Westwood, in Royle, 1836: Pl.10

Dirhinus crythrocerus Cameron, 1906:93 (Boucek & Narendran,
1981 : 235).

Dirhinus luzonensis Rhower, 1923 : 347 (Boucek & Narendran,
1981 : 235).

Dirhinus luciliae Rhower, 1923 : 348-349 (Boucek & Narendran,
1981 : 235).

Dirhinus pachycerus Masi, 1927 : 42-45 (Boucek & Narendran,
1981 : 235).

Dirhinus valsev Nikol'skaya, 1952 : 86 (Boucek & Narendran,
1981 : 235).

Dirhinodes mathuri Mani & Dubey, 1972 : 401-404 (Boucek &
Narendran, 1981 : 235).

Distribution : INDIA : Calcutta, Dehra Dun

PAKISTAN : Peshawar, Quetta

PHILIPPINES : Manila

SAUDI ARABIA : Riyadh

IRAQ : Mosul

MALAYSIA : Kuala Lumpur

USSR : Turmanian

Host : Chrysomya megacephala (India)

Lucilia sp. (Philippines)

Musca domestica L. (Saudi Arabia, Pakistan, India,
Thailand, Japan)

Sarcophaga sp. (Malaysia)

Sarcophaga tuberosa Pendelle (India)

2. Dirhinus claviger Boucek & Narendran

Dirhinus claviger Boucek & Narendran, 1981 : 237.

Distribution : INDIA : Aligarh, Bangalore, Coimbatore,
North slam, Pechiiparai, Siruwan.
SRILANKA : Amparai, Lahugala, Hambantota

3. Dirhinus anthracia Walker

Dirhinus anthracia Walker, 1846 : 7,85.

Dirhinus ruficornis Cameron, 1905 : 208-209 (Boucek &
Narendran, 1981 : 239).

Eniacella ruficornis Girault, 1913d : 35 (Boucek &
Narendran, 1981 : 239).

Eniacella bicornuticeps Girault, 1915 : 353 (Boucek &
Narendran, 1981 : 239).

Dirhinus sarcephagae Froggatt, 1919 : 853-855. (Boucek &
Narendran, 1981 : 239).

Dirhinus frequens Masi, 1933 : 7-9 (Boucek & Narendran,
1981 : 239).

Dirhinus intermedius Mani & Dubey, 1972 : 404-407

(Boucek & Narendran 1981 : 239).

Dirhinus georgei Mani & Dubey, in Mani et al. 1974 : 31-33

(Boucek & Narendran, 1981 : 239).

Distribution : INDIA : Agra, Aligarh, Bangalore, Calcutta,
DehraDun, Delhi, Hyderabad, Hoshangabad,
Lucknow, Madras, Manpur, North Salem,
Poona, Punjab, Pusa, Tanjore,
Trivendram, Walayar.

SRILANKA : Amparai, Amuradhapur, Colombo, Kandy,
Mannar, Ratnapura, Trinkomali.

BURMA : Konbilis, Yanaungmyin.

Host : Brachartona catoxantha

Dacus cucurbitae

Musca domestica

Plectoptera reflexa

Pupa of various Lepidoptera

4. Dirhinus auratus Ashmead

Dirhinus auratus Ashmead, 1905, 402.

Dirhinus pambaeus Mani & Dubey, 1974, 33-36 (Boucek & Narendran,
1981 : 243.)

Distribution : INDIA : Aligarh, Anaikathi, Coimbatore, DeraDun,
Delhi, Nishambur, Madras.

SRILANKA : Trinkomali, Matale

THAILAND : Chiangmai, Doiput

LAOS : Ban-Van-eue

VIETNAM : Hung-Lam

PHILIPPINES : Luzon, Manila

5. Dirhinus banksi Rohwer

Dirhinus banksi Rohwer, 1923 : 347-348.

Distribution : INDIA : Kerala, Kadalundhi, Madras.

SRILANKA : Colombo

THAILAND : Saraburi

MALAYSIA : Island Penang

6. Dirhinus deplanatus Boucek & Narendran

Dirhinus deplanatus Boucek & Narendran, 1981 : 244.

Distribution : INDIA : Bihar, Dholi

7. Dirhinus bakeri Crawford

(Fig. 2 C - D)

Paraniaga bakeri Crawford, 1914b : 459.

Paraniaga trichophthalma Masi 1927 : 39 - 41 (Boucek & Narendran, 1981 : 245).

Female (Redescribed)

Head dark, punctate; as long as wide in facial view; horns longer than wide with narrow space between them; malar space as long as eye length; mandibles long. Antennae (fig. C) reddish brown; scape long, more than seven times as long as wide; pedicel about as long as following two

funicle segments together, funicle segments 2-8 gradually decreasing in length distad; club unsegmented.

Thorax dark, coarsely punctate mesonotum with parapsidal furrows incomplete; pronotum transverse. Forewings hyaline, less than three times as long as wide, disc with base naked; submarginal vein as long as marginal vein; postmarginal vein absent; stigmal vein rudimentary; marginal fringe absent.

Legs reddish brown except coxae of fore and middle legs, coxae, trochanter, femora and tibia of hind legs dark.

Abdomen dark, shining, about as large as thorax; first tergum large, longitudinal straight; ovipositor hidden, arising from basal one-fourth of abdominal venter.

Body length : 3.2 m.m.

Holotype ♀, INDIA : Uttar Pradesh, Agra, 10.v.1985, by sweeping vegetation, S.Dutt.

Distribution : INDIA : Agra, Bengal, Bangalore, Calcutta, Coromandal coast, Karnataka, Kerala, Madras, Mandapam, Manpur, Pratapgash.

8. Dirhinus pilifer Boucek & Narendran

Dirhinus pilifer Boucek & Narendran, 1981:246.

Distribution : INDIA : Bangalore, Kadhgodam, Karnataka, Nainital, North Bengal.

SRI LANKA : Amparai

Host : Unknown.

9. Dirhinus laticornis sp.n.

(Fig. 2 I-J)

Female: differs from D.singularis sp.n. except in the following characters :

Head with horns not much developed; antennae (Fig.I) with pedicel longer than basal two funicle segments together; funicle segments 1-8 much wider than long; club broad, 1-segmented; fore wings with stigmal vein undelimited; legs reddish brown except coxae of fore and middle legs; coxae, trochanter, femora and tibia of hind legs dark.

Body length : 2.85 m.m.

Holotype ♀, INDIA : Uttar Pradesh, Aligarh,
10.iv.1984, by sweeping grass, S.Dutt.

10. Dirhinus longiscapus sp.n.

(Fig. 2 G-H)

Female : Resembles D.singularis sp.n. except in the following characters :

Antennae with scape seven times as long as wide; pedicel slightly longer than first funicle segment; funicle segment first as long as wide, slightly longer than second; club 2-segmented, twice as long as wide. Fore wings less than three times as long as wide, distinct hairline arising from stigma to wing base. Fore and middle legs reddish brown, hind legs dark.

Body length :

Holotype ♀, INDIA : Utter Pradesh, Agra, 10.iii.1985, by sweeping vegetation, S.Dutt.

Comments : The new species is closely related to singularis sp.n. except in the characters as given above.

11. Dirhinus aligarhensis Husain & Agarwal

(Fig. 2 E-F)

Dirhinus aligarhensis Husain Agarwal, 1981:183.

Material examined 1 ♀, INDIA: Utter Pradesh, Aligarh, University campus, pupae of Diptera, 2.iv.1985, S.Dutt.

12. Dirhinus singularis sp.n.

(Fig. 2 A-B)

Female

Head dark, slightly longer than wide in facial view, facial edge of each horn with distinct acute tooth; antennae inserted just below lower level of eyes; mandibles long with one long and one small tooth. Antennae (Fig.A) dark brown except scape light brown; scape cylindrical, slightly more than five times as long as wide; pedicel slightly less than twice as long as wide, slightly longer than first funicle segment; funicle 7-segmented, last segment shorter than second, segment 2-7 gradually increasing in width and decreasing in length distad; club 3-segmented.

Thorax dark; pronotum quadrate; scutellum convex. Fore wings hyaline, slightly more than twice as long as wide; post-marginal vein absent, stigmal vein rudimentary, disc sparsely and indistinctly setose; marginal fringe absent. Hind wings hyaline, four times as long as wide, disc indistinctly setose; costal cell broad; marginal fringe short, one-eighth of wing width. Legs dark except trochanter, base of femur, apex of tibia and first tarsal segment reddish brown; hind femora much thickened lower margin with a row of teeth, apex of tibia arcuate.

Abdomen dark, without petiole; ovipositor with third valvulae one-third the length of second valvifers.

Body length : 3. 25 m.m.

Comments : The new species differs from all the known species of Dirhinus in having first funicle segment almost as long as wide, segment 2 to 7 gradually increasing in width and decreasing in length distad, club unsegmented, fore wings indistinctly setose, marginal fringe absent.

Holotype, ♀, INDIA: Utter Pradesh, Aligarh Muslim University Campus, 10.iv.1984, S.Dutt.

Fig. 2 A - B. Dirhinus singularis sp.n., ♀

A. Antenna

B. Fore Wing

Fig. 2 C - D. Dirhinus bakeri Crawford, ♀

C. Antenna

D. Fore Wing

Fig. 2 E - F. Dirhinus aligarhensis Husain & Aggarwal, ♀

E. Antenna

F. Fore Wing

Fig. 2 G - H. Dirhinus longiscapus sp.n., ♀

G. Antenna

H. Fore Wing

Fig. 2 I - J. Dirhinus laticornis sp.n., ♀

I. Antenna

J. Fore Wing

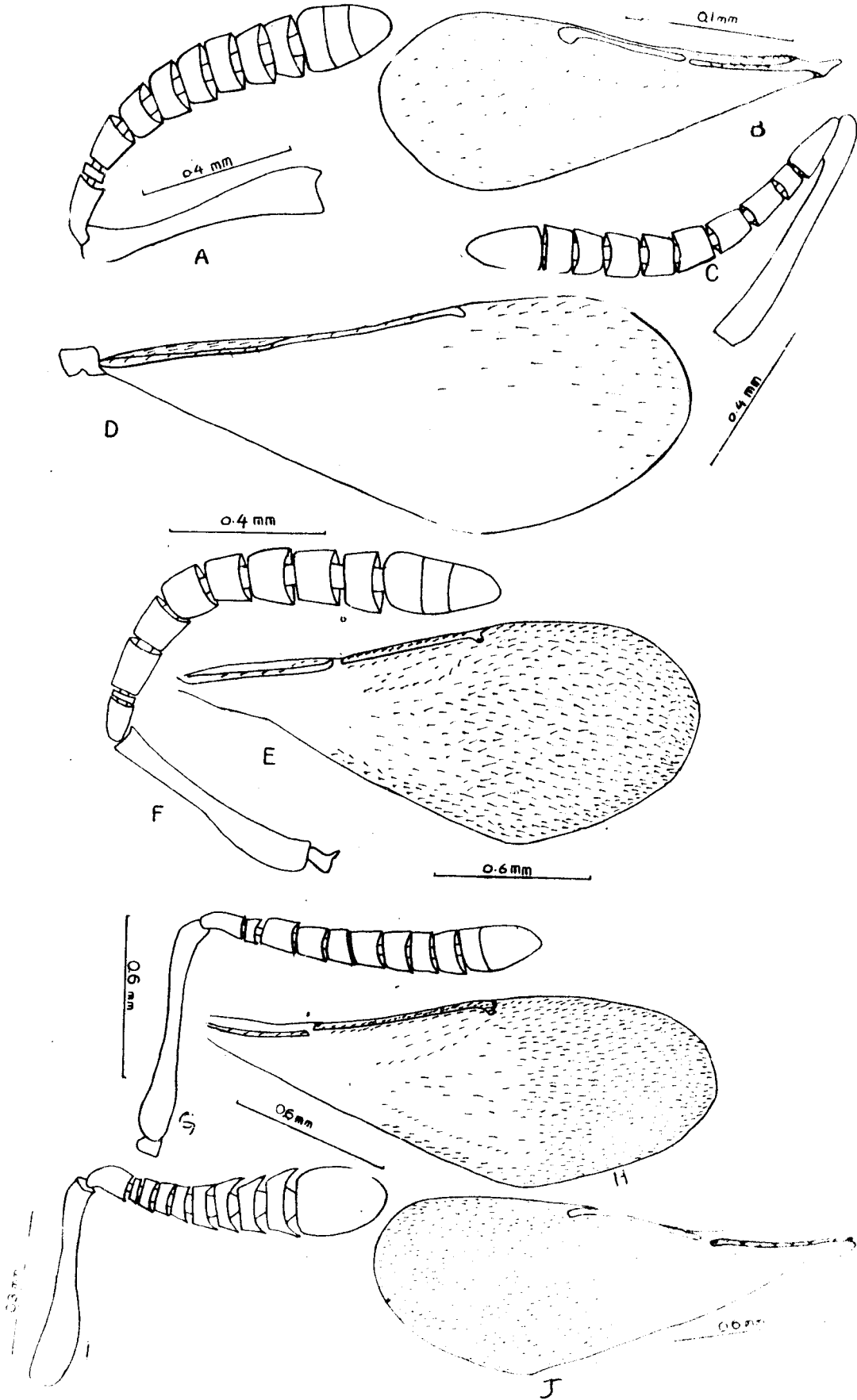


Fig. 2

B. SUBFAMILY CHALCIDINAE

Genus Epitranus Walker

Diagnosis : Body dark, punctate; antennae inserted near oral margin, funicle 7-segmented, club 2 to 3 segmented; forewings with marginal vein long, postmarginal and stigmal veins rudimentary; hind femora with small teeth on outer venteral margin, hind tibia at apex obliquely truncate.

Comments : Generic synonymy is given in check-list of generic names.

1. Epitranus dubeyi nom.n.

Arretocera malabarensis Mani & Dubey, 1974:28

Comments : Mani & Dubey (1974) proposed the species, Chalcitella malabarensis and Arretocera malabarensis. Later, Husain & Agarwal (1981) shifted the two species under the genus Epitranus Walker. Arretocera malabarensis Mani & Dubey becomes junior secondary homonymy of Chalcitella malabarensis Mani & Dubey, since the latter name has page precedence. This homonymy has not pointed out by Husain & Agarwal. Therefore, the present author proposed Epitranus dubeyi nom.n. for Arretocera malabarensis Mani & Dubey.

2. Epitranus singularis sp.n.

(Fig. 3 A - B)

Head dark, sparsely and shallowly punctate, wider than long in facial view; frontovertex slightly more than one and a half times as wide as long; ocelli yellowish brown, arranged in obtuse triangle, lateral ocellus separated by about twice its diameter from inner orbital margin. Antennae (fig. 3A) reddish brown, inserted near oral margin; scape cylindrical more than seven times as long as wide; pedicel shorter than first ^{funicle} segment; funicle 7-segmented, segments 1 - 7 gradually decreasing in length distad; club 2-segmented, about as long as preceding three funicle segments together.

Thorax dark with sparse shallow punctation; pronotum transverse; mesonotum with parapsidal depression distinct; scutoscutellar suture straight. Fore wings hyaline, slightly less than three times as long as wide; disc except base setose, an oblique row of hairs extending from the stigmal vein; costal cell broad; marginal vein shorter than costal cell; postmarginal vein absent, stigmal vein rudimentary; marginal fringe absent. Legs reddish brown except basal three-fourth of coxae and major portion of femora of hind

legs dark; hind femora much swollen; tibia obliquely curved.

Abdomen dark, laterally compressed, petiole slightly shorter than length of abdomen.

Body length : 3.4 m.m.

Holotype ♀, INDIA : Utter Pradesh, Agra,
10.iv.1984, by sweeping grass, S.Dutt.

Comments : Epitranus singularis sp.n. differs from the known species of Epitranus Walker in having 2-segmented club and funicle segments 1-7 gradually decreasing in length distad.

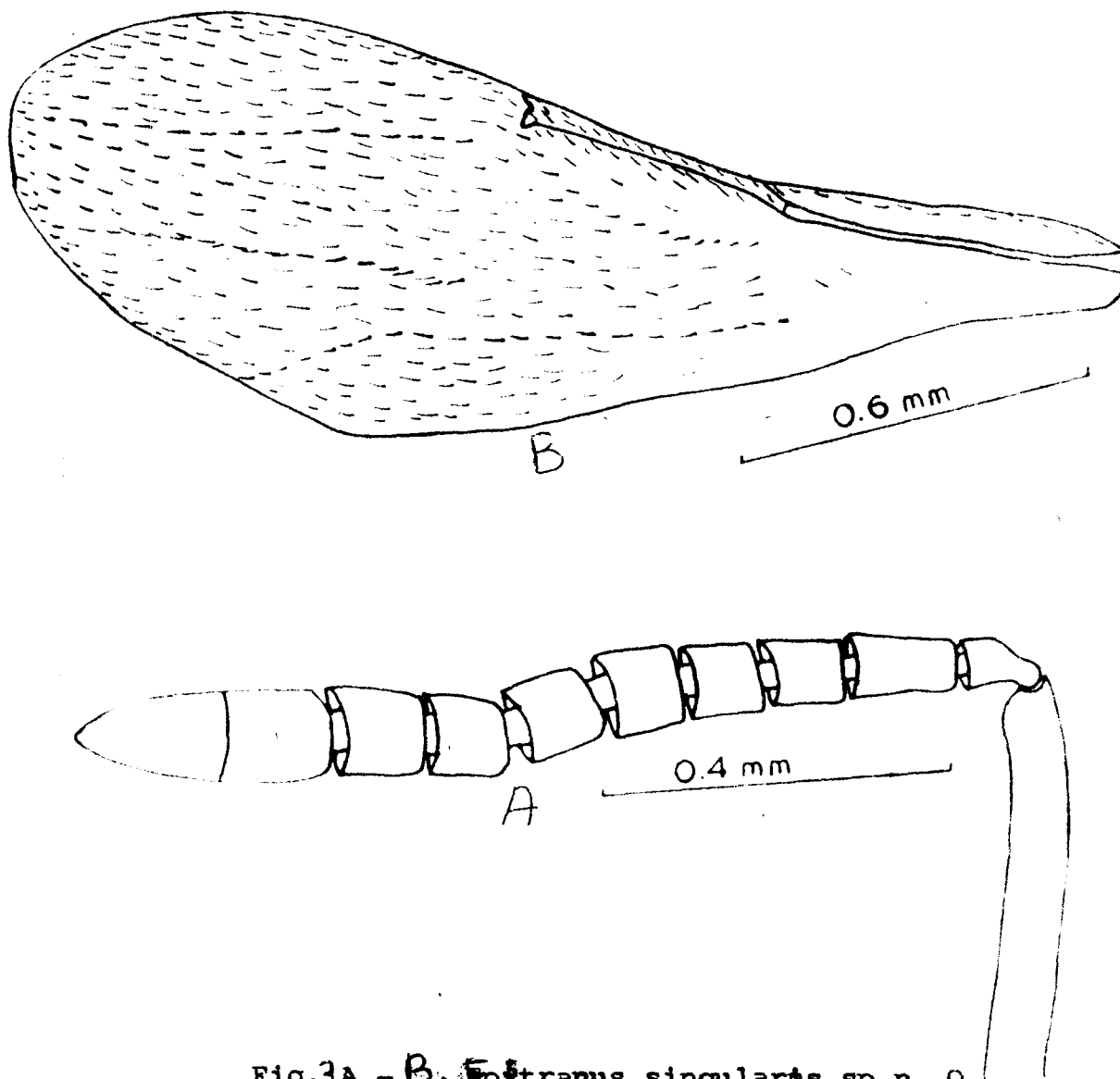


Fig.3A - B. Epitranus singularis sp.n., ♀

A. Antenna

B. Fore Wing

Neopitranus gen. n.

Diagnosis : Head dark, punctate, wider than long in facial view; face convex; mandibles long, sickle-shaped; antennae (fig. 4A) inserted on chalicerae-like projections of the head, funicle 8-segmented, club indistinctly 2-segmented; thorax dark, punctate; fore wings with post-marginal vein absent, stigmal vein rudimentary, marginal fringe absent; hind tibia with dents on base of outer venter^{al} margin; abdominal petiole long.

Type-species : Neopitranus afrimbiatus sp.n.

Comments : The new genus differs from all the known genera of chalcididae in having antennae inserted on chalicerae-like projections of the head (fig. 4A), base of outer margin of hind tibia (fig. 4D) dentate.

1. Neopitranus afrimbiatus sp.n.

(Fig. 4 A - D)

Female

Head reddish brown with shallow punctations; triangular in facial view, slightly opisthognathous; face convex; ocelli brownish, arranged in obtuse triangle; malar space about as long as eye length; mandibles (Fig. 4A) well developed, sickle-shaped, overlapping each other. Antennae (Fig. 4B) reddish brown, inserted on bases of chelicerae-like projections of head; scape long, cylindrical, more than five times as long as wide; pedicel about as long as first funicle segment; funicle segments 1-7 subequal in length; club indistinctly 2-segmented, longer than preceding two funicle segments together.

Thorax dark, shallowly punctate; pronotum well developed, transverse; mesoscutum with parapsidal furrows indicated by depressions; scuto-scutellar suture straight; scutellum rounded apically. Fore wings (Fig. 4C) hyaline, disc indistinctly setose beyond venation; marginal vein more than one-half the length of costal cell, postmarginal vein absent, stigmal vein rudimentary; marginal fringe absent.

Hind wings hyaline, costal cell narrow; marginal fringe much short. Legs reddish brown except coxae and basal three-fourth of hind femora dark, hind femora much swollen and dentate; hind tibia curved with basal one-third of outer margin dentate.

Abdomen dark, laterally compressed; abdominal petiole long; ovipositor hidden, arising from base of abdominal venter.

Body length : 6 m.m.

Holotype ♀, INDIA : Utter Pradesh, Aligarh
Muslim University Campus, 10.x.1985, S.Dutt.

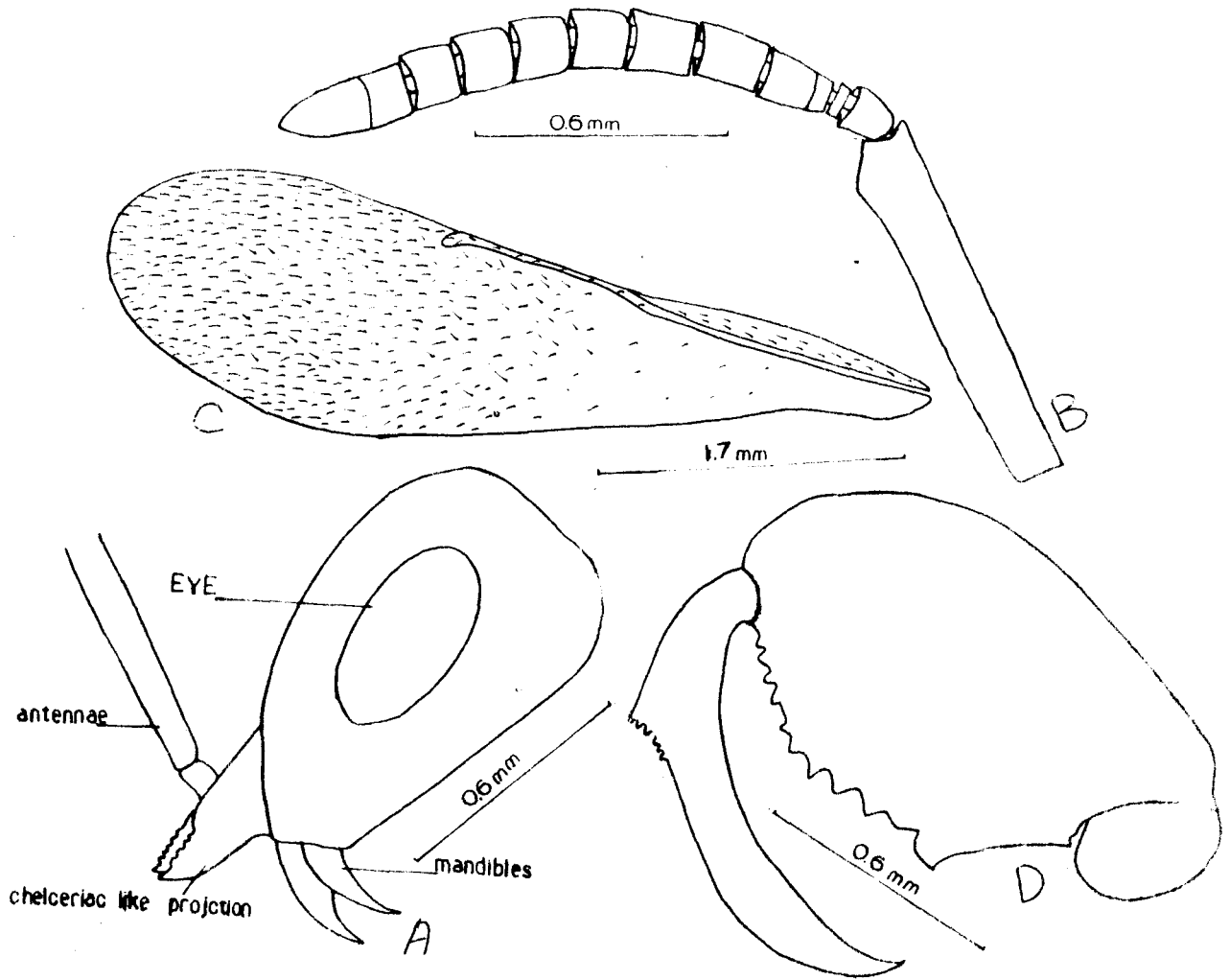


Fig. 4 A - D. Neospitranus afrimbiatus sp. n. ♀

- A. Head, lateral view
- B. Antenna
- C. Fore wing
- D. Part of hind leg

C. SUBFAMILY HALTICHELLINAE

Genus Hockeria Walker

Diagnosis : Head punctate, inter-antennal space with median carina; antennae with funicle 8-segmented, mesonotum with faint parapsidal depressions; apex of scutellum usually with two dents; hind tibia apically truncate.

Comments : The genus Lasiochalcidia was proposed by Masi (1927) for a species (Euchalcis rubripes Kieffer) which is said to differ from Hockeria Walker in lacking the postmarginal vein a character of dubious value in chalcididae. Therefore, I have synonymised the genus Lasiochalcidia Masi with Hockeria Keiffer. The genus is known to contain six species from India and a key for their separation is given below :

Key to Indian species of Hockeria Keiffer, based on females

1. Fore wings without postmarginal vein..... 2
- Fore wings with a well developed postmarginal vein..4
2. Antennae with funicle segment first distinctly longer than wide; fore wings except base uniformly setose.....3
- Antennae with funicle segment first distinctly wider than long; fore wings except base with coarse and hyaline setae.....1. aligarhensis sp.n.

3. Hind femur with two bulges beyond tooth; apex of scutellum with two dents.....2 . trisulia (Mani & dubey) comb.n.
- Hind femur without bulges beyond tooth; apex of scutellum without dents.....3. mysorensis (Mani& Dubey) comb.n.
4. Fore wings with postmarginal vein shorter than marginal vein.....5
- Fore wings with postmarginal vein as long as or longer than marginal vein.....6
5. Fore wings with transverse hyline patch beyond venation; funicle segment second about three times as long as wide..... 4. nilgiriensis Mani & Dubey
- Fore wings with circular hyline patch beneath stigmal vein; funicle segment second more than three times as long as wide5.longicornis sp.n.
6. Postmarginal vein as long as marginal vein; antennal club unsegmented..6.keralensis Mani & Dubey
- Postmarginal vein longer than marginal vein; antennal club 2-segmented.....7 .binanesis sp.n.

1. Hockeria aligarhensis sp.n.

Female

(Fig. 5 C - D)

Head dark, uniformly punctate with pubescence; wider than long in facial view, frontovertex much wider than long with transverse carina; eyes silvery white; antennae inserted below lower level of eyes, interantennal space short with

slightly elevated median carina; labial palpi 2-segmented; mandibles tridentate. Antennae (Fig. C) dark; scape long and slender, slightly more than six times as long as wide; pedicel longer than first funicle segment; funicle 8-segmented, segment first slightly wider than long, 2-6 slightly longer than wide, 7 and 8 subquadrate; club entire, slightly longer than preceding two segments together.

Thorax dark, dorsum uniformly punctate with white pubescence; pronotum transverse; mesonotum with faint parapsidal depressions anteriorly; scuto-scutellar suture straight; apex of scutellum with two short dents; mesopleura impunctate. Fore wings with coarse and hyaline setae, two and a half times as long as wide; costal cell well developed, marginal vein less than one-third the length of submarginal vein, postmarginal vein absent, stigmal vein short; marginal fringe short. Legs dark with metallic reflections except apices of tibiae and tarsi of mid and hind legs which are yellowish brown; hind femur with one tooth and a bulge both with fine comb; hind tibia slightly curved.

Abdomen dark with metallic reflections, longer than thorax, acuminate apically; ovipositor arising from basal one-fourth of abdominal venter.

Body length : 3.2 m.m.

Holotype ♀, INDIA : Utter Pradesh, Aligarh, University campus, 10.ix.1985, by sweeping in cotton field, S.Dutt.

Comments : The new species is separated from other species on the basis of the characters as are given in the key.

2. Hockeria trisulia (Mani & Dubey) Comb.n.
(fig. 5 A-B)

Lasiochalcidia trisulia Mani & Dubey in Mani et al.
1974 : 13.

Material examined : ♀ INDIA : Utter Pradesh, Aligarh University fort, 10.x.1984, by sweeping grass, S.Dutt.

3. Hockeria mysorensis (Mani & Dubey) Comb.n.

Lasiochalcidia mysorensis Mani & Dubey in Mani et al.
1974 : 15.

4. Hockeria nilgiriensis Mani & Dubey

Hockeria nilgiriensis Mani & Dubey in Mani et.al. 1974:11

5. Hockeria longicornis sp.n.

(Fig. 5 E-F)

Female : Resembles H. aligarhensis sp.n. except in the following characters :

Antennae (Fig. 5E) with scape eight times as long as wide, pedicel much shorter than following two funicle segments together; funicle segments 2-8 gradually decreasing in length distad, each distinctly longer than wide; club indistinctly 2-segmented. Fore wings infumate with one patch of coarse setae beneath marginal and another patch of coarse setae anterior to venation present, a circular hyaline patch present beneath the stigmal vein.

Body length : 5.00 m.m.

Holotype ♀, INDIA : Uttar Pradesh, Aligarh University campus, 15.ix.1985, by sweeping cotton field, S.Dutt.

Comments : The new species differs from other species on the basis of the characters as given in the key.

Fig. 5 A - B. Hockeria trisulia (Mani & Dubey) comb.n. ♀

A. Antenna

B. Fore Wing

Fig. 5 C - D Hockeria aligarhensis sp.n. ♀

C. Antenna

D. Fore Wing

Fig. 5 E - F. Hockeria longicornis sp.n. ♀

E. Antenna

F. Fore Wing

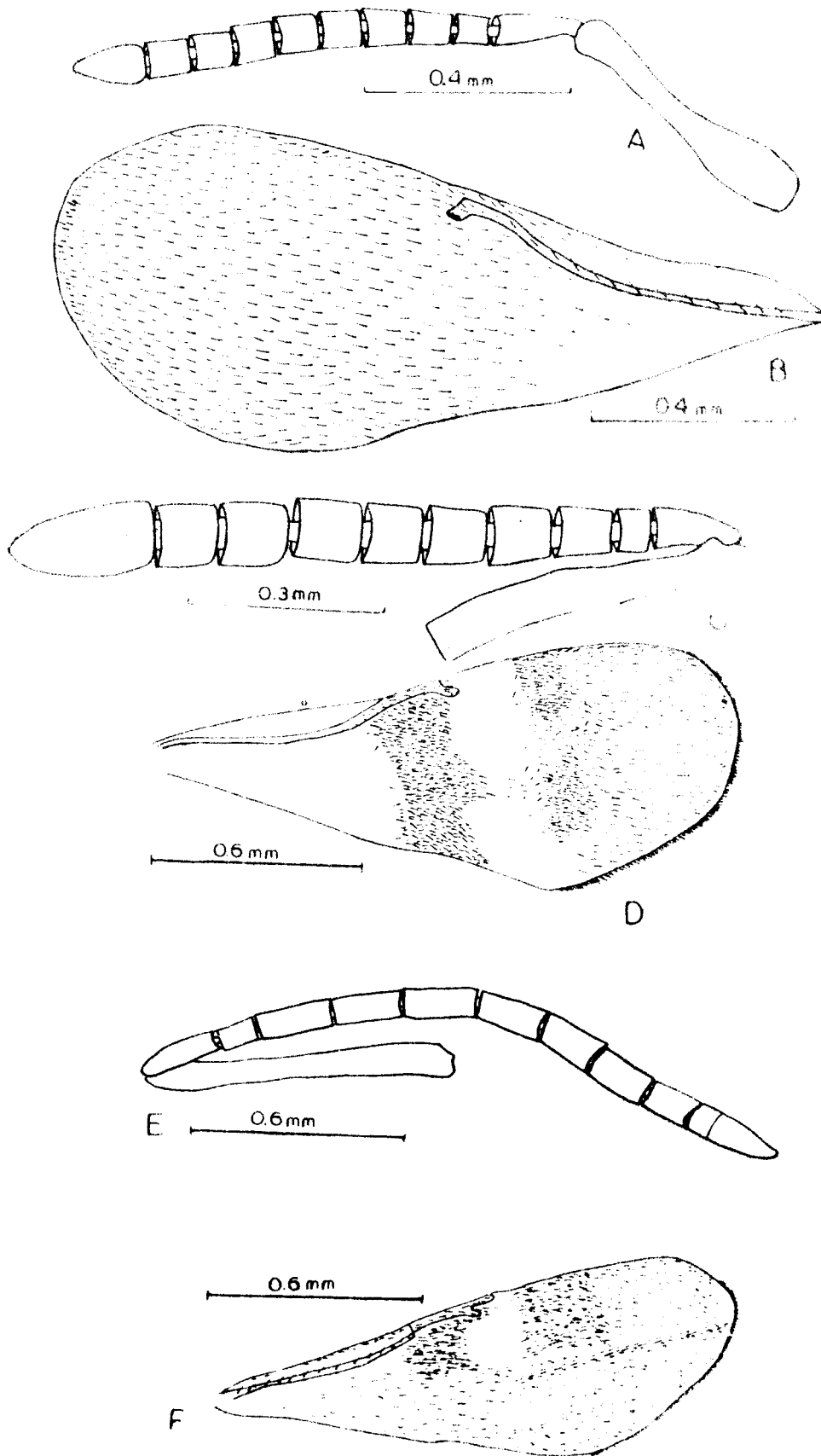


Fig. 5

6. Hockeria keralensis Mani & Dubey

(Fig. 6 C-D)

Hockeria keralensis Mani & Dubey in Mani et al. 1974:8.

Material examined : ♂, INDIA : Madhya Pradesh,
Sagar, Bina, 10.ix.1984, by sweeping vegetation, S.Dutt.

7. Hockeria binaensis sp.n.

(Fig. 6 A-B)

Female

Head dark, wider than long in facial view; face depressed between eyes; malar space about as long as eye length; mandibles tridante; maxillar and labial palpi 4 and 3-segmented respectively. Antennae (fig.6A) brownish except scape, pedicel and first two funicle segments yellow, inserted near oral margin; scape long and slender, about nine times as long as wide; pedicel about as long as following two funicle segments together; funicle 8-segmented, segment first shortest, slightly wider than long, segments 2-8 each longer than wide; club 2-segmented, about as long as preceding two funicle segments together,

Thorax dark, shallowly punctate; pronotum transverse; mesonotum with shallow parapsidal furrows; scuto-scutellar suture more or less straight; scutellum slightly wider than long with two dents apically. Fore wings infuscated with

circular hyaline patch beneath stigmal vein; disc densely setose; costal cell well developed; marginal vein much shorter than submarginal vein, postmarginal vein longer than marginal, stigmal vein short; marginal fringe short. Legs yellowish brown except outer margins of fore and mid coxae, hind coxae completely, and major portion of hind femora dark; hind femora with outer margin finely serrate.

Abdomen dark, ovipositor long.

Body length : 3.7 m.m.

Holotype ♀, INDIA : Madhya Pradesh, Sagar, Bina, 10.ix.1984, by sweeping vegetation, S.Dutt.

Fig. 6 A - B. Hockeria binaensis sp.n., ♀

A. Antenna

B. Fore Wing

Fig. 6 C - D. Hockeria keralensis Mani & Dubey, ♂

C. Antenna

D. Fore Wing

Fig. 6 E - F. Hockeria sp., ♂

E. Antenna

F. Fore Wing

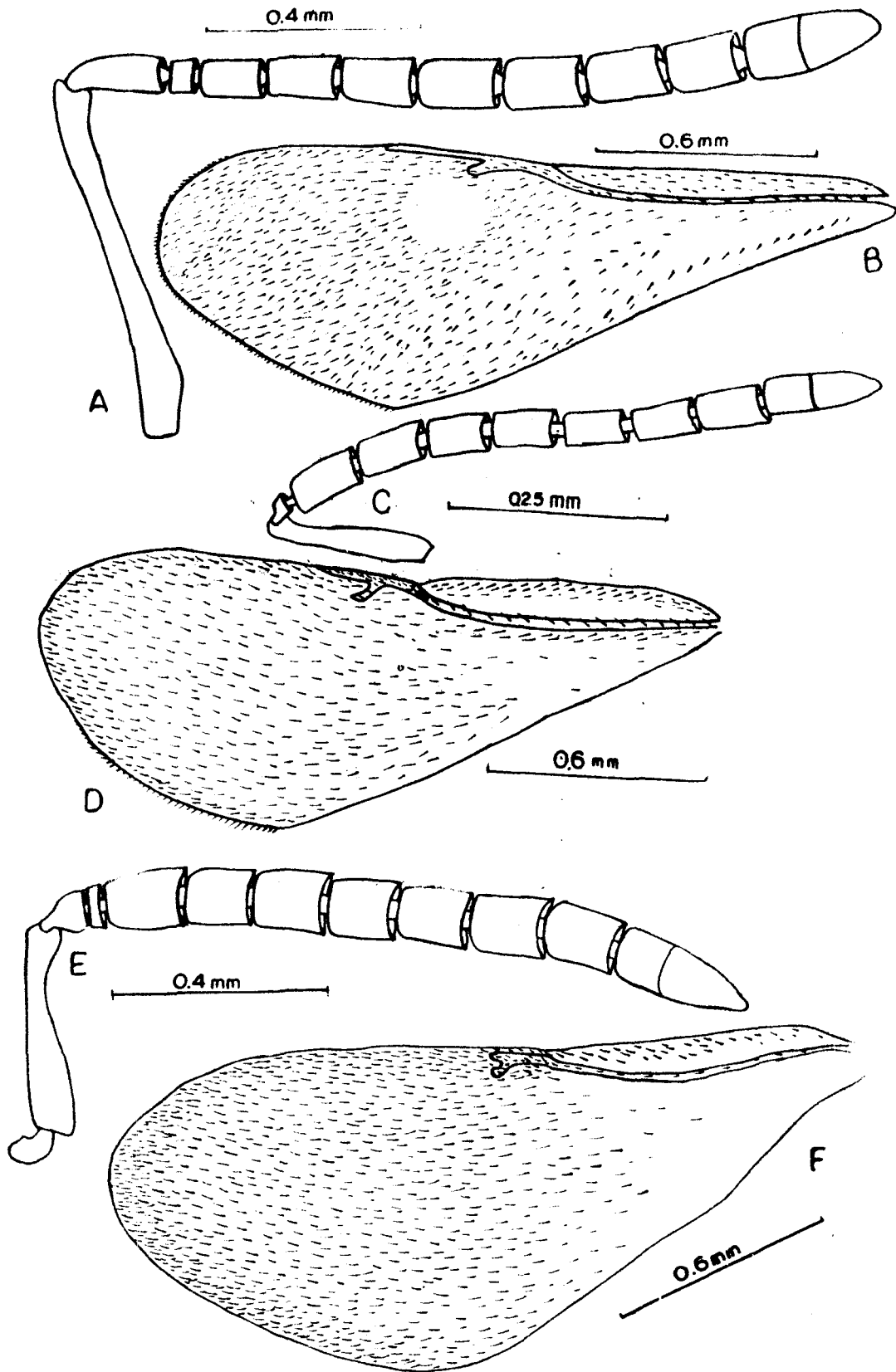


Fig. 6

Fig. 7 A - C Brachymeria sp.

- A. Antenna
- B. Fore wing
- C. Part of leg

Fig. 7 D - E Brachymeria sp.

- D. Antenna
- E. Fore wing
- F. Hind leg

Fig. 7 G - H Brachymeria sp.

- G. Antenna
- H. Fore wing
- I. Hind leg

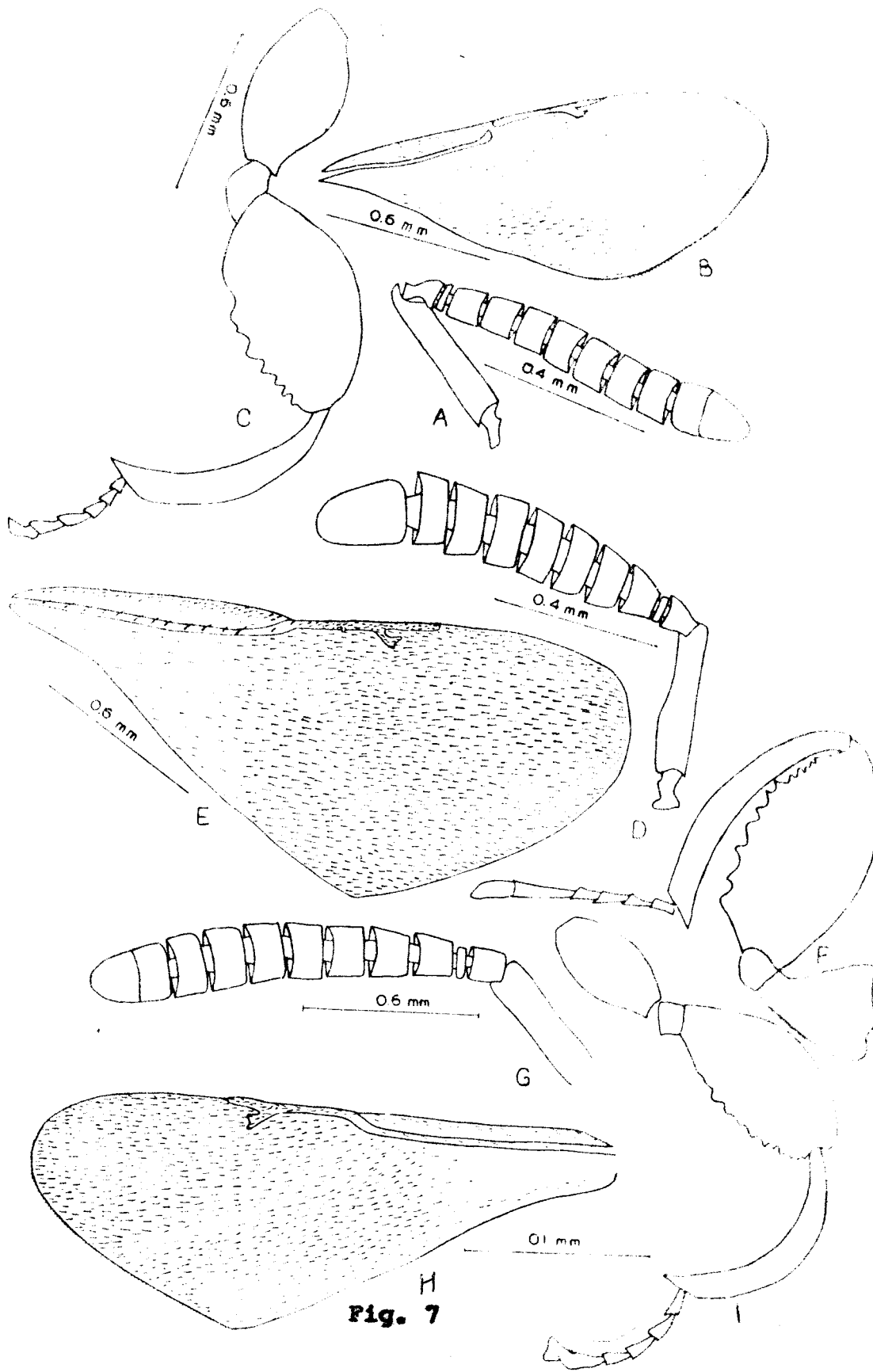


Fig. 7

Brachymeria sp.

Fig. 8 Brachyneria sp.

- A. Antenna
- B. Hind leg
- C. Fore wing

Fig. 8B - F Brachyneria sp.

- A. Antenna
- B. Hind leg
- C. Fore wing

Fig. 8 C - I Brachyneria sp.

- A. Antenna
- B. Hind leg
- C. Fore wing

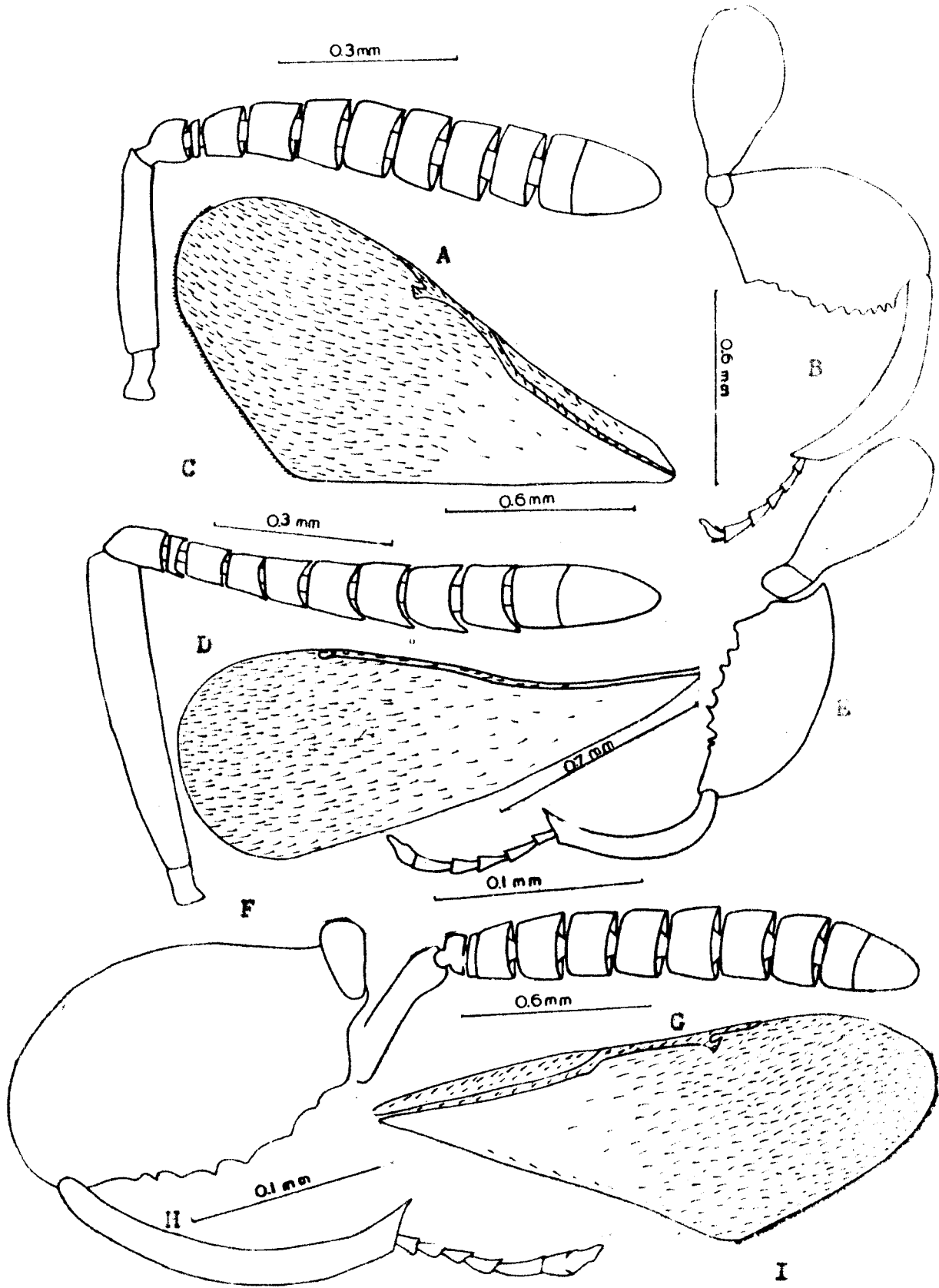


Fig. 8

Brachymeria sp.

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