

THE FAUNA OF INDIA
AND
THE ADJACENT COUNTRIES

CHALCIDOIDEA
(HYMENOPTERA)

Part II

Families

Signiphoridae, Aphelinidae, Elasmidae,
Euryischiidae, Elachertidae, Entedonidae,
Eulophidae, Tetrastichidae, Trichogrammatidae,
Mymaridae, Supplement, Host-parasite Index,
Bibliography and Index

By

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FAMILY SIGNIPHORIDAE

- 1894 *Signiphorinae*, Howard, *Ins. Life US Dept. Agr.*, 6 (3) : 234.
1897 *Signiphorinae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 248.
1904 *Signiphorinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 311.
1909 *Encyrtinae* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 191.
1909 *Mymarinae* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 488.
1912 *Aphelinidae* (partim), Mercet, *Trab. Mus. Cienc. Nat. Hist. Madrid*, 10 : 306.
1913 *Signiphorinae*, Girault, *Proc. US nat. Mus.*, 45 : 189, 191, 192.
1916 *Aphelinidae* (partim), Mercet, *Bol. Soc. Espan. Hist. Nat.*, 16 : 519-533.
1917 *Aphelinidae* (partim), Mercet, *Rev. Acad. Cien. Madrid*, 16 (4) : 160-170.
1924 *Signiphoridae*, Timberlake, *Calif. Univ. P ub. Ent.*, 3 (2) : 245.
1942 *Signiphoridae*, Ghesquiere, *Rev. Zool. Bot. Afr.*, 36 (3) : 319.
1950 *Signiphori*, Nikolskaya, *Doklady Akad. Nauk SSSR*, 75 (2) : 472.
1951 *Thysanidae*, Muesebeck, *Hymen N. America*, (1) (2) : 472.
1965 *Signiphoridae*, Rozanov, *Ent. Rev.*, 44 (4) : 508.
1968 *Signiphoridae*, De Santis, *Rev. Fac. Agr. La Plata*, 44 (1) : 7.
1970 *Signiphoridae*, Hayat, *Entomophaga*, 15 (4) : 387.
1974 *Signiphoridae*, Subba Rao, *Bull. ent. Res.*, 64 (4) : 525.
1979 *Signiphorinae*, Krombein *et al.*, *Hymen. N. America*, 1 : 910.

Antenna apparently with 3 segments but in reality with 6 segments, including 3-4 minute annelli; wings with a long marginal fringe; vein *m* long, equal to *sm*; vein *st* distinct but not long; *pm* absent; middle tibiae with lateral spurs or strong bristles; middle tibial spur large, apically lobed.

KEY TO SUBFAMILIES

1. Funicular segments in both sexes reduced to 3 annelli, rarely one; discal ciliation of the wing short in front, very rarely behind also *Signiphorinae* Howard
Funicular segments in both sexes reduced to 4 annelli, only rarely 3 in male; wing with accessory discal ciliation behind none in front *Thysaniae* Peck

SUBFAMILY SIGNIPHORINAE

- 1895 *Signiphorinae*, Howard, *Ins. Life US Dept. Agr.*, 6 : 234.
1909 *Signiphorini*, Schmiedeknecht, *Gen. Ins.*, 97 : 261.
1909 *Aphelininae* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 448.
1909 *Gonatocerina* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 489.
1942 *Signiphorini*, Ghesquiere, *Rev. Zool. Afr.*, 36 (3) : 320.
1968 *Signiphorinae*, De Santis, *Rev. Univ. Agr.*, 44 (1) : 9.
1979 *Signiphorini*, Krombein *et al.*, *Hymen. N. America*, 1 : 910.

Antennae apparently triarticulate, but actually with 6 segments, of which 3 minute annelli; scutellum very short, transversely linear; fore wing with long fringe; vein *m* long, equal to *sm*; *st* distinct; *pm* absent; middle tibia with lateral spines and with one long fore spur.

KEY TO GENERA

1. Frons very prominent above facial depression; one annellus; marginal fringe short; phallobase 5 times as long as wide *Kerrichiella* Rozanov
- Frons not prominent; 3 annelli; marginal fringe long; phallobase short, only 2 times as long as wide *Signiphora* Ashmead

Both the genera not so far recorded from india.

SUBFAMILY THYSANINAE

- 1904 *Aphelinini* (partim), Ashmead, *Mem. Carnege Mus.*, 1 (4) : 345
 1909 *Aphelinina* (partim), Schmiedeknecht, *Gen. Ins.*, 97 : 449.
 1951 *Thysaninae*, Peck, Hymen. N. America, (1st ed.) (2) : 472.
 1968 *Thysaninae*, De Santis, *Rev. Univ. Agr.*, 44 (1) : 11.
 1979 *Thysanini*, Krombein *et al.*, Hymen. N. America, 1 : 911.

Funicular segments in both sexes reduced to 4 annelli, only rarely 3 in male; wing with accessory discal ciliation behind, none in front.

KEY TO GENERA

1. Body much depressed ; head prognathous, without facial impressions; pronotum long, rectangular, 5 times as long as mesonotum; middle tibial spur short, simple *Clytina* Erdös
- Body not much depressed; head hypognathous, with facial impressions; pronotum short but a little longer than mesonotum; middle tibial spur long, spined on the inner side 2
2. Mandible tridentate; 4 annelli in both sexes; hind wing elongate, parallel-sided; middle tibial spur distinctly much shorter than metatarsus; phallobase with the basal process *Thysanus* Walker
- Mandible bidentate; 4 annelli in female and 3 in male; hind wing not linear; middle tibial spur subequal to or only very little shorter than metatarsus; phallobase without basal process *Chartocerus* Motschulsky

Clytina Erdös not recorded so far from India.

Thysanus Walker

- 1840 *Thysanus*, Walker, *Ann. Mag. Nat. Hist.*, 4 : 234.
 1856 *Triphasius*, Förster, *Hym. Stud.*, 2 : 83,84. (unnecessary new name)
 1856 *Plastocharis*, Förster, *Hym. Stud.*, 2 : 145. (unnecessary new name)

- 1898 *Thysanus*, Dalla Torre, *Cat. Hym.*, 5 : 223.
 1904 *Thysanus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 346.
 1909 *Thusanus*, Schmiedeknecht, *Gen. Ins.*, 97 : 454.
 1913 *Neosigniphora*, Rust, *Ent. News.*, 24 (4) : 164.
 1918 *Thysanus*, Silvestri, *Bol. Lab. Zool. Gen. Agr. Portici*, 12 : 266-271.
 1924 *Thysanus*, Timberlake, *Calif. Univ. Pub. Ent.*, 3 (2) : 24.
 1950 *Thysanus*, Nikolskaya, *Doklady Akad. Nauk. SSSR*, 75 (2) : 319-321.
 1953 *Thysanus*, Ferrière, *Mitt. Schweiz. ent. Ges.*, 26 (1) :
 1965 *Thysanus*, Yoshimoto, *Pacific Insects*, 7 (4) : 703-704.
 1965 *Thysanus*, Rozanov, *Ent. Rev.*, 44 (4) : 508-515.
 1968 *Thysanus*, De Santis, *Rev. Univ. Agr.*, 44 (1) : 11.
 1970 *Thysanus*, Hayat, *Entomophaga*, 15 (4) : 388.
 1973 *Thysanus*, Quezada *et al.*, *Hilgardia*, 41 (18) : 543-604.
 1974 *Thysanus*, Subba Rao, *Bull. ent. Res.*, 64 (4) : 525.
 1979 *Thysanus*, Krombein *et al.*, *Hymen. N. America*, 1 : 912.

Antennae in female with 6 segments : 1.1.3.1; in male with 4 segments with only one annellus; club longer than in female; wing totally hairless; fore wing in the apical 0.33 with a very long hairy line; hairs do not exceed the wing breadth; wings with either broad transverse bands or from the base to the tip of vein *m* infumate; hind wing both in front and behind with hairy line; ovipositor not exerted.

Type-species : *Thysanus ater* Walker. According to Krombein *Thysanus ater* Haliday.

***Thysanus ater* Haliday**

(Fig. 262)

- 1840 *Thysanus ater*, Haliday, *Ann. Mag. Nat. Hist.*, 4 : 234.
 1970 *Thysanus ater*, Hayat, *Entomophaga*, 15 (4) : 388.
 1979 *Thysanus ater*, Krombein *et al.*, *Hymen. N. America*, 1 : 912.

Female : Length 0.75 mm. Head brown, frontovertex yellow, eyes red; scape white; pedicel, funicle and basal 0.50 of club pale yellow, rest of club brown; thorax brown, somewhat shiny, pronotum white with front margin in the middle brown; basal 0.50 of fore wings infusate, distal 0.50 hyaline; hind wings hyaline; legs white, coxae brown; base of femora, hind trochanter and femora except tip fuscous; abdomen brown.

Head dorsum 2 times as wide as long; frontovertex more than 0.50 of head width, slightly wider than long; ocellar triangle obtuse; gena shorter than eye width; mandibles with 3 acute teeth; scape about 4.50 times longer than thick; pedicel a little over 4 times longer than thick, basal 3 funicular segments annelliform, fourth segment equal to the proceeding 3 segments combined; club elongate, slender, about 12 times longer than thick.

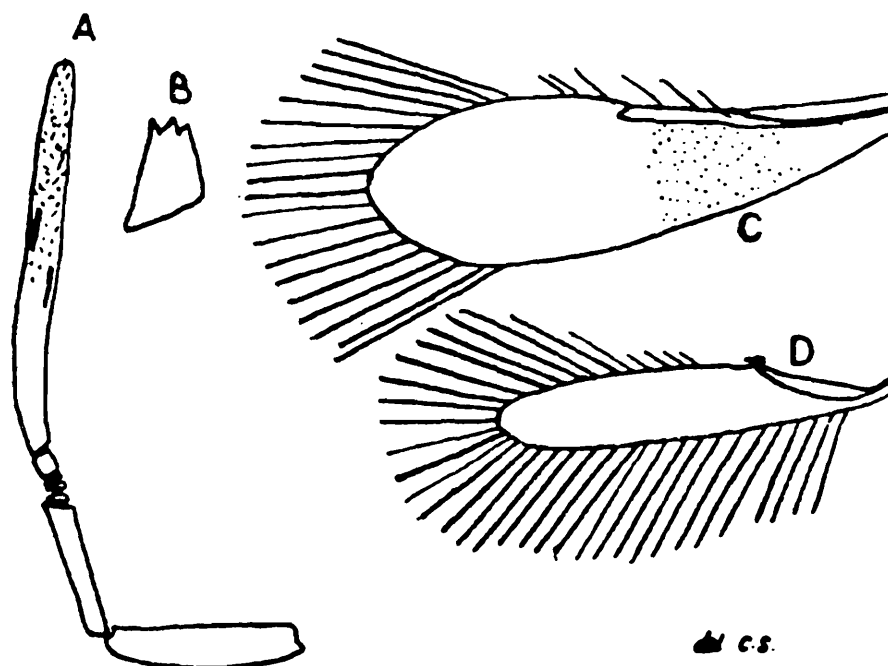


FIG. 262. *Thysanus ater* Haliday, female : A. Antenna; B. Mandible; C. Fore wing; D. Hind wing.

Pronotum as long as mesoscutum; scutellum and metanotum transverse; axillae not distinct; propodeum large, with the characteristic V-shaped impression; fore wings 3 times longer than wide; vein *sm* longer than *m* with one seta; vein *m* with 4 setae in front and one seta behind; vein *pm* absent; vein *st* short, pointed; marginal fringe longer than width; hind wings about 6.50 times longer than wide, parallel sided distad of venation; marginal fringe more than 2 times longer than width; middle metatarsus equal to tibia, spur shorter than metatarsus, with 5 spines on inner surface.

Abdomen longer than thorax; ovipositor concealed; subgenital plate with anterior margin concave, anterolateral lobes with apodemes, posterior margin with a notch and a small lobe in the middle.

Type locality : Europe

Distribution : Europe, India : U.P., Aligarh; N. America

Hosts : *Melanaspis obscura* (Comst.), *Pulvinaria maxima* Green on unidentified plant.

Chartocerus Motschulsky

1859 *Chartocerus*, Motschulsky, *Etud. Ent.*, 8 : 171.

1916 *Signiphora* subg. *Matritia*, Mercet, *Bol. Soc. Espan. Hist Nat.*, 16 : 523.

- 1916 *Xana*, Kurdjumov, *J. appl. Ent.*, 1 (1) : 80-81.
 1950 *Signiphorina*, Nikolskaya, *Doklady Akad. Nauk SSSR*, 75 (2) : 321.
 1968 *Chartocerus*, De Santis, *Rev. Fac. Agr. La Plata*, 44 (1) : 12.
 1970 *Chartocerus*, Hayat, *Entomophaga*, 15 (4) : 390.
 1979 *Chartocerus*, Krombein *et al.*, *Hymen. N. America*, 1 : 911.

Body metallic-green; antennae compressed, inserted in the middle of face; funicle with 4 segments; club distinct; terminal club segment very long, acuminate; head transverse; frons convex; thorax not wider than head; scutellum triangular; abdomen flattened.

Type-species : *Chartocerus musciformis* Motschulsky

KEY TO SPECIES

- | | |
|---|------------------------------|
| 1. Scape 7 times longer than thick | <i>C. ranae</i> (Subba Rao) |
| Scape less than 6 times longer than thick | 2 |
| 2. Scape 6 times longer than thick | <i>C. fimbriae</i> Hayat |
| Scape shorter than above | 3 |
| 3. Pedicel 2 times longer than thick | <i>C. kerrichi</i> (Agarwal) |
| Pedicel more than 2 times longer than thick | 4 |
| 4. Pedicel 2.50 times longer than thick | <i>C. hyalipennis</i> Hayat |
| Pedicel 3.50 times longer than thick | <i>C. walkeri</i> Hayat |

***Chartocerus ranae* (Subba Rao)**

(Fig. 263)

- 1957 *Thysanus ranae*, Subba Rao, *Proc. Indian Acad. Sci. Bangalore*, (B) 46 (6) : 388.
 1970 *Chartocerus ranae*, Hayat, *Entomophaga*, 15 (4) : 387, 391.

Female : Black, shining; wings fuscous; except tarsal segments which are testaceous, the rest dark brown.

Head crescentic, smooth, somewhat variable in proportion, acutely margined behind; eyes not quite reaching hind margin; ocellar triangle obtuse; interocellar space 2 times ocellocular space; head viewed in front with gena 0.77 of eye; scrobes shallow, wider than high, triangular; vertex shiny; mandibles bidentate; scape weakly rounded below, slightly dilated above, a little more than 7 times longer than thick; pedicel slightly less than 0.50 of scape, thick; funicle 0.50 of pedicel, with 4 segments, 3 times longer than pedicel, 5 times longer than thick.

Pronotum wide, mesonotum more than 1.50 times scutellum; axillae indistinctly separated; propodeum V-shaped, elongate over abdominal tergites; thorax shiny; veins *m* and *sm* almost equal, *m* slightly shorter than *sm*; marginal fringe more than 0.50 of wing width; hind wings spatulate, radius extending to the hooklets; fore legs short; middle femora strongly dilated below, maximum width

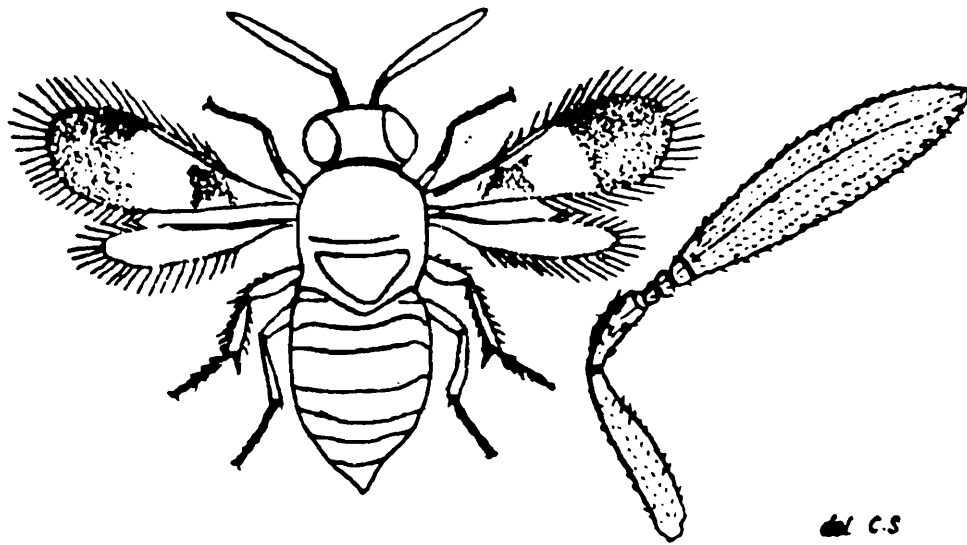


FIG. 263. *Chartocerus ranae* (Subba Rao), female : A. Body entire; B. Antenna. (Modified from Subba Rao).

a little less than 0.50 of length, with stout hairs; tibial spur strongly pectinate; slightly less than metatarsus.

Abdomen oblong, sides almost parallel; ovipositor not exerted.

Male : Like female but smaller.

Type locality : New Delhi

Host : *Saccharicoccus sacchari* (Ckll.) on *Saccharum officinarum*.

***Chartocerus fimbriae* Hayat**

(Fig. 264)

1970 *Chartocerus (Xana) fimbriae*, Hayat, *Entomophaga*, 15 (4) : 396.

Female : Length 0.98 mm. Head brown with a violet tinge; scape brown; pedicel black above dusky below; funicle dusky yellow; club yellowish-brown; wings hyaline; legs brown, trochanters dusky; tip of fore femora, tibiae except dorsally, tarsal segments 1-4 yellow, last tarsal segment dusky; middle tibiae yellow, tarsal segments 1-3 yellow, 4-5 dusky; hind tibiae except dorsally yellow, tarsal segments 1-4 yellow, fifth segment dusky; abdomen black.

Head 2 times wider than long; frontovertex more than 0.50 of head width and wider than long; ocellar triangle obtuse; ocellocular space a little less than ocellar diameter; ocelloccipital space a little more than 2 ocellar diameters; scape about 6 times longer than thick; pedicel over 3 times longer than thick; first funicular segment 0.50 of second segment; segments 2-3 subequal; fourth segment longer than the third; club 5.50 times longer than thick.

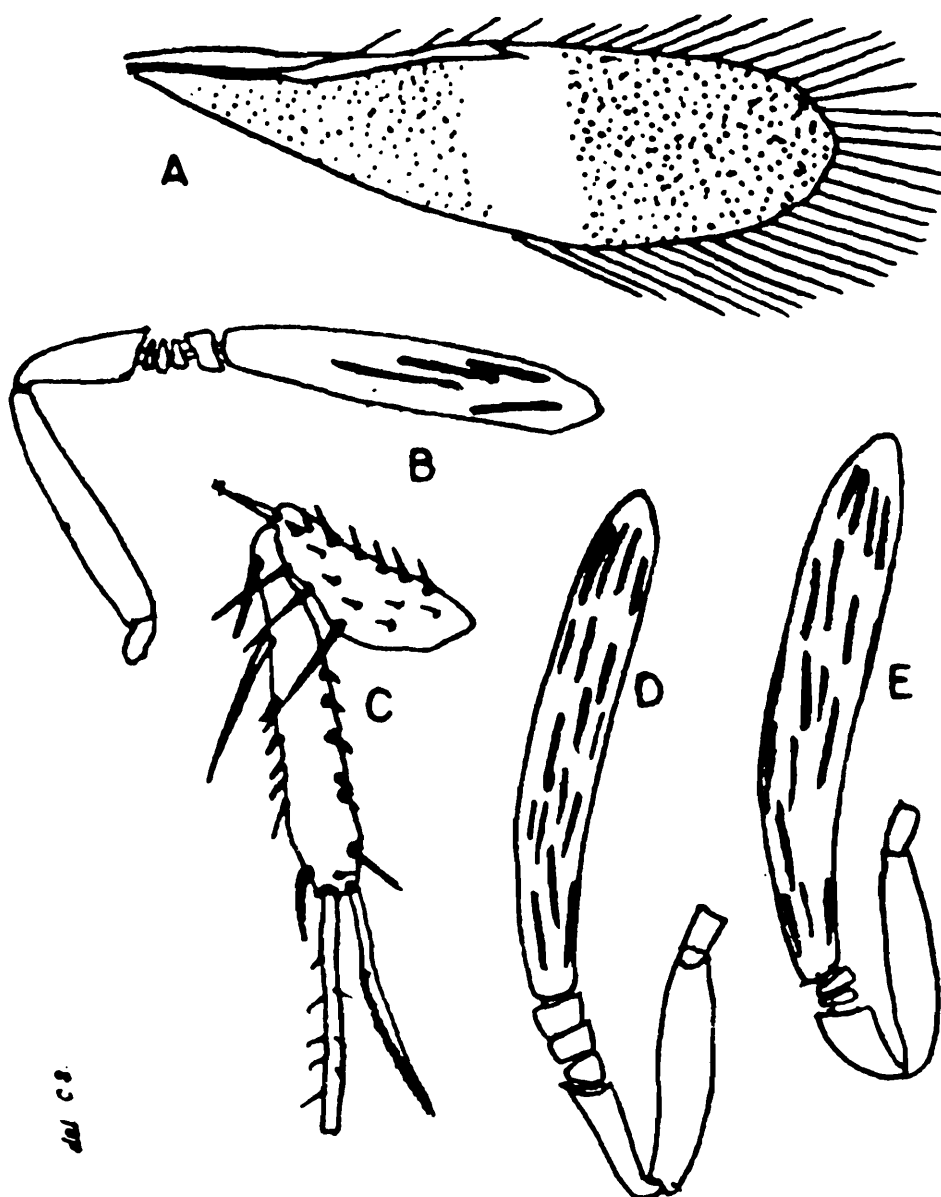


FIG. 264. *Chartocerus fimbriae* Hayat : A. Fore wing, female; B. Antenna, female; E. Antenna, male; *Chartocerus walkeri* Hayat, female : C. Middle leg; D. Antenna. (Modified from Hayat).

Mesopostphragma longer than scutellum, metanotum and propodeum combined, wings infuscate with a transverse hyaline area in the middle; 3.50 times width; marginal fringe a little less than wing width; hind wings with a small triangular infuscated patch distad of venation; marginal fringe subequal to width; middle tibial spur slightly shorter than metatarsus.

Abdomen longer than thorax.

Male : Differs from female as follows : Scape 4.50 times longer than thick; pedicel nearly 2 times longer than thick; funicle 3 segmented, first segment short, segments 2-3 subequal; club about 7 times longer than thick.

Type locality : Tenkasi

Hosts : *Nipaecoccus vastator* on *Acacia arabica*, *Hemigraphis* sp., *Achyranthes* sp. and *Ceroplastodes cajani* on *Acacia arabica*.

Chartocerus kerrichi (Agarwal)

(Fig. 265)

1963 *Maritia kerrichi*, Agarwal, *Z. Parasitenk.*, 22 : 389-393.

1965 *Chartocerus*, (*Xana*) *kerrichi*, Rozanov, *Ent. Rev.*, 44 : 508-510.

1970 *Chartocerus*, (*Xana*) *kerrichi*, Hayat, *Entomophaga*, 15 (4) : 394.

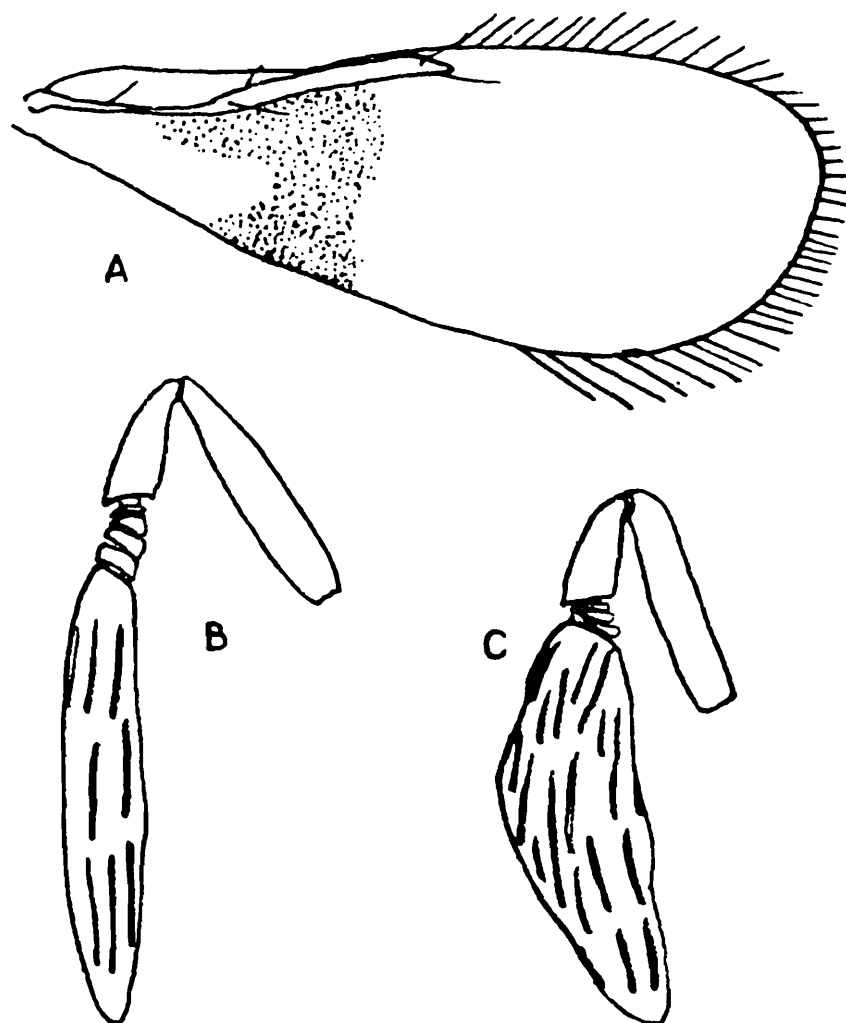


FIG. 265. *Chartocerus kerrichi* (Agarwal) : A. Force wing, female; B. Antenna, female; C. Antenna, male. (Modified from Agarwal).

Male : Scape cylindrical, about 4.50 times longer than thick; pedicel 2 times longer than thick; funicle 3 segmented, segments more or less triangular; club large, flattened, with numerous longitudinal sensoria.

Type locality : Aligarh

Distribution : Uttar Pradesh, Andhra Pradesh, Tamil Nadu, Kerala, Himachal Pradesh, Mysore

Hosts : *Eriococcus greeni* Newst., *Cerococcus* sp. on *Hibiscus rosasinensis*, *Citrus limonum*, *Nipaecoccus* sp. on *Casuarina equisetifolia*, *Saccharum officinarum*, *Nipaecoccus vastator* on *Acacia arabica*, *Zizyphus* sp., *Rastrococcus* sp. on *Acacia arabica* and *Zizyphus* sp., *Centrocooccus insolitus* on *Acacia* sp., *Zizyphus* sp.

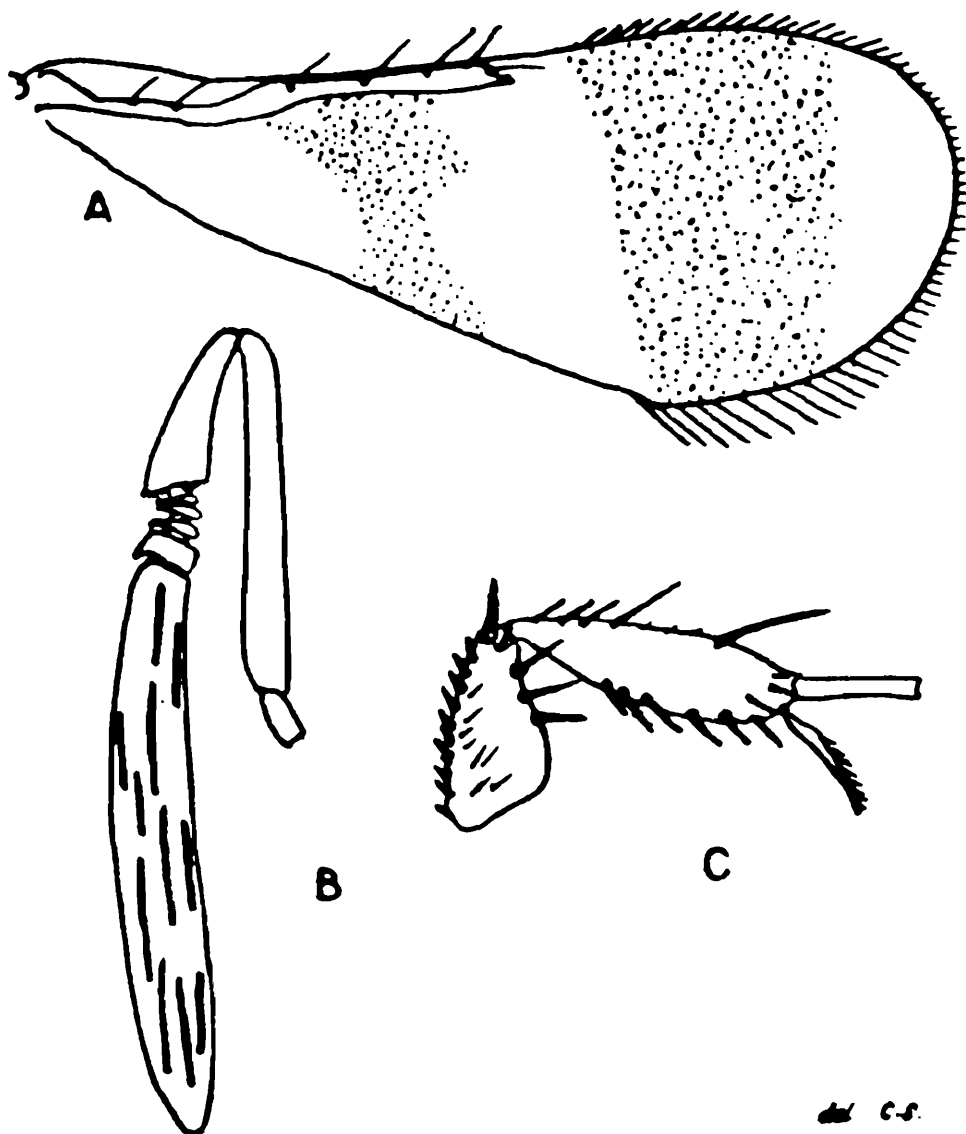


FIG. 266. *Chartocerus kurdjumovi* (Kurdjumov), female : A. Fore wing; B. Antenna; C. Middle leg.

Chartocerus kurdjumovi (Kurdjumov)

(Fig. 265)

- 1916 *Xana nigra*, Kurdjumov, *J. appl.*, 1 (1) : 80.
 1950 *Xana kurdjumovi*, Nikolskaya, *Doklady Akad. Nauk SSSR*, 75 (2) : 321
 (preoccupied in *Signiphora nigra* Ashmead, 1900)
 1965 *Chartocerus (Xana) kurdjumovi*, Rozanov, *Ent. Obozr. Moscow*, 44 : 866-884
 (Eng. *Ent. Rev.*, 44 : 508-516).
 1970 *Chartocerus (Xana) kurdjumovi*, Hayat, *Entomophaga*, 15 (4) : 394.

Hosts *Rastrococcus iceryoides* on *Capparis* sp., *Nipaecoccus* sp. on *Acacia* sp., *Hemigraphis* sp. and *Centroccoccus insolitus* on *Hemigraphis* sp.

Chartocerus hyalipennis Hayat

(Fig. 267)

- 1970 *Chartocerus (Xana) hyalipennis*, Hayat, *Entomophaga*, 15 (4) : 391.

Female : Length 1.09 mm. Head brownish-black with violet tinge; basal 0.50 of scape, pedicel and club brown, rest of scape and funicle dirty yellow; thorax black; wings hyaline; legs brown, tarsal segments 1-4 of fore legs and 1-2 of middle and hind legs white; abdomen blackish-brown.

Head dorsum 2 times wider than long; frontovertex 0.50 of head width, slightly longer than wide; ocellar triangle obtuse; ocellocular space equal to ocellar diameter, ocelloccipital space slightly less than ocellar diameter; toruli close to facial margin; scrobes deep, triangular; mandibles bidentate; maxillary palpi with 2 and labial palpi with one segment respectively; scape nearly 6 times longer than thick; pedicel 2.50 times longer than thick; funicular segments transverse; first shortest, second slightly longer than third, fourth as long as basal 2 segments combined; club solid about 7 times as long as thick.

Thorax with front margin deeply incised in the middle, hind margin straight; mesoscutum 2 times wider than long, parapsidal furrows faint anteriorly, with a few scattered setae; axilla with a single seta; metanotum transverse; propodeum broadly rounded at apex with the characteristic V-shaped impression; scutellum transverse, 4 times wider than long, hind margin with a row of short setae; mesopostphragma shorter than scutellum, metanotum and propodeum combined, broadly rounded apically; fore wings about 2.50 times longer than wide; vein *sm* with 2 long setae; vein *m* with 5 setae on outer margin and 2 setae on inner margin; vein *st* short with a stout seta; marginal fringe shorter than 0.25 of width; hind wings more than 3 times longer than wide; vein *m* with a small seta at base; marginal fringe shorter than 0.33 of width; middle metatarsus shorter than tibia, subequal to tibial spur, inner margin of spur with 9 spines.

Abdomen longer than thorax; ovipositor slightly exerted; subgenital plate with anterior margin concave, 2 lobes in the middle, posterior margin with a conical projection in the middle, lateral apodemes present, second valvifers with a ridge on its outer margin; outer plates of ovipositor with a marginal ridge extending upto 3 quarters of the plate.

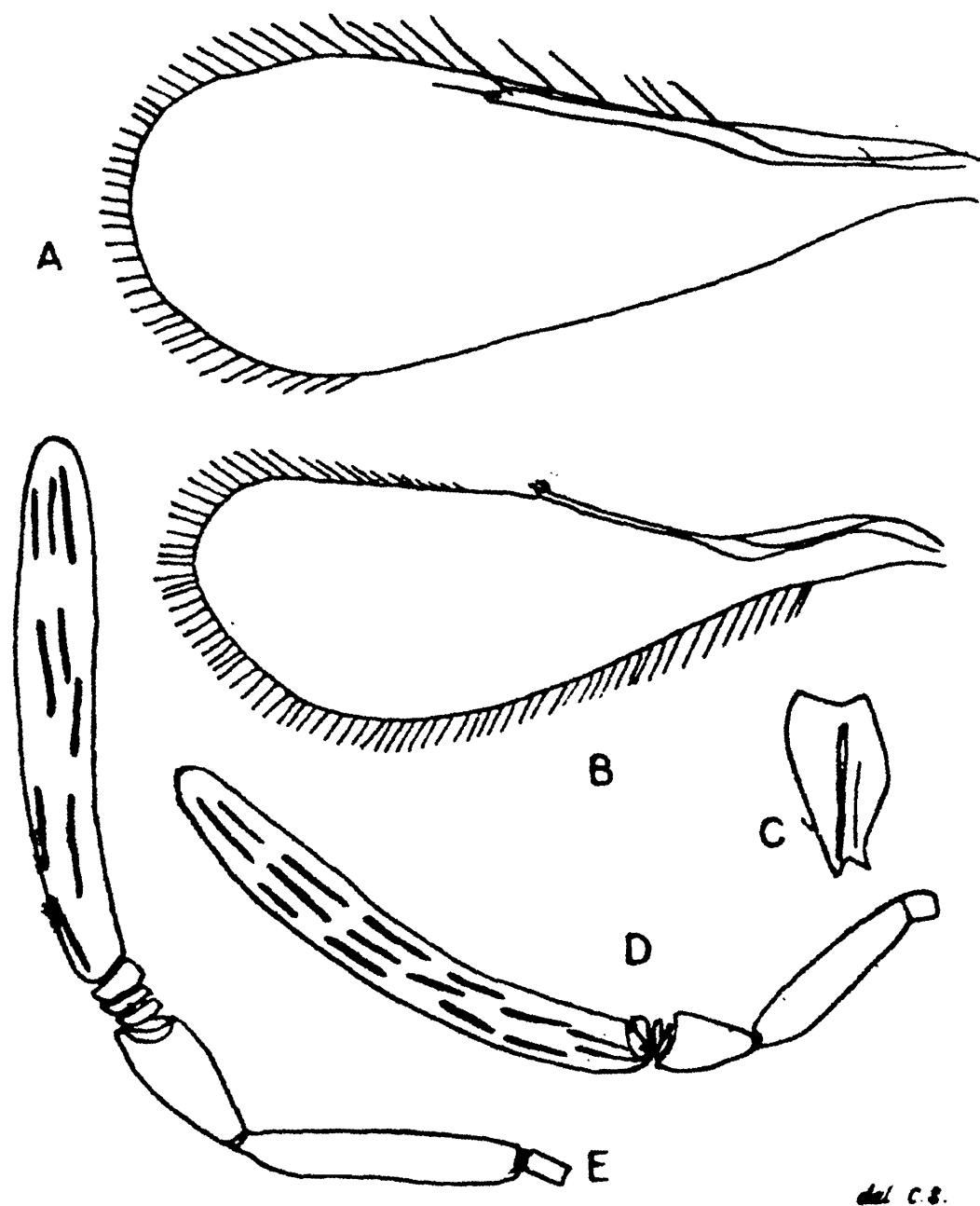


FIG. 267. *Chartocerus hyalipennis* Hayat : A. Fore wing, female; B. Hind wing, female; C. Mandible, female; D. Antenna, male; E. Antenna, female. (Modified from Hayat).

Male : Differs from female as follows : Scape a little more than 4 times longer than thick; pedicel slightly less than 2 times as long

as wide; funicular segments 3, annelliform; club large, with numerous sensoria.

Type locality : Shencottah

Distribution : Tamil Nadu; Kerala; Punjab

Hosts : *Nipaecoccus vastator* on *Tephrosia purpurea*, *Acacia* sp., *Zyziphus* sp., and *Centroccoccus insolitus* on *Leucas cephalotus*, *Hemigraphis*, *Withania somnifera* and *Achyranthes aspera*.

Chartocerus walkeri Hayat

(Fig. 264)

1970 *Chartocerus (Xana) walkeri*, Hayat, *Entomophaga*, 15 (4) : 393.

Female : Length 1.05 mm. Differs from *C. hyalipennis* as follows : Pedicel 3.50 times longer than thick; first funicular segment annelliform, second segment 3.50 times longer than first, segments 3-4 subequal; marginal fringe less than 0.20 of wing width; vein *m* distinctly shorter than *sm*, with 4 setae; hind wings fringe less than 0.25 of width; abdomen shorter than thorax.

Type locality : Aligarh

Distribution : Uttar Pradesh, Himachal Pradesh

Host : *Rastrococcus iceryoides* on *Capparis* sp. and *Zyzyphus* sp.

Chartocerus musciformis Motschulsky

1859 *Chartocerus musciformis*, Motschulsky, *Etud. Ent.*, 8 : 171.

Length 1.00 mm. "Pentamerus, elongato-ovatus, postice attenuatus, impunctatus, nitidus, niger, geniculis tarsisque basi albis; alis postice ciliatis, nervo costali pone ramulo stigmatalis non continuato; capite valde transverso, fronte convexo non impresso, oculis magnis, planiusculis; antennis longitudine capitis cum thorace conjunctis, aequales, medio frontis insertis, fractis, quadriarticulatis, articulis tribus primis tenuis, 1° elongato, subclavato 2° duplo brevior, subconico, 3° minuto, sed latitudine longiorum 4° longissimo, compresso, cultriformi, apice attenuato; thorace basi capite non latiore, transverso postice subdilatato, antice linea transversa impressum viridescens paulo resplendens; scutello triangulari; abdomine horizontali, latitudine vix longiore, apice acuminato."

"Ce petit insecte a la forme extremement voisine de quelque Diptères du genre *Chlorops*, mais beaucoup plus petit et plus ramassée. J'ai separé ce nouveau genres *Encyrtus* a cause des antennes

comprimees, composees de quatre articles distincts seulement, dont le dernier tres long, en forme de lame acuminee, qui meme au microscope ne presente aucune articulation. Obtenu egalement du *Pseudococcus* du cafier.”

“Du *Leucanium coffeae* M. Nietner a requ trois especes de Pteromalides qui m’ont servies a former deux genres nouveaux sous le nom de *Scutellista* et de *Cephaleta* : le premier extremement remarquables par le grand developpement de son ecusson, qui recouvre presque’entierement l’abdomen, comme chez les Pentatomides des Hemipteres; les antennes des femelles sont coudees et claviformes, chez les males lineaires et attenees vers l’extremite.”

FAMILY APHELINIDAE

- 1856 *Myinoidae*, Förster, *Hym. Stud.*, 2 : 18, 21, 30.
 1875 *Aphelinina*, Thompson *Hym. Skand.*, 4 : 12, 183.
 1886 *Aphelininae*, Howard, *Ent. Amer.*, 1 : 198.
 1897 *Aphelininae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 236.
 1904 *Aphelininae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 344.
 1909 *Aphelinini*, Schmiedeknecht, *Gen. Ins.*, 97 : 448.
 1938 *Aphelininae*, Mani, *Cat. Indian Ins.*, 23 : 118.
 1948 *Aphelinidae*, De Santis, *Rev. Museo La Plata (NS)* 5 (Zool.) : 1-280.
 1953 *Aphelinidae*, De Santis, *Rev. Fac. Agron. Argentina*, 29 ; 74-84.
 1960 *Aphelinidae*, De Santis, *Rev. Fac. Agron Argentina*, 36 : 93-100.
 1965 *Aphelinidae*, Ferrière, *Fauna de l’Europe Bassin Medit.*, 1 : 1-206.
 1966 *Aphelinidae*, Nikolskaya & Jashnosh, *Akad. Nauk. SSSR*, 91 : 1-294.
 1968 *Aphelininae*, Nikolskaya & Jashnosh, *Akad. Nauk. SSSR*, 52 : 3-42.
 1976 *Aphelinidae*, Kalina & Sary, *Stud. ent. forest. Univ. Agric. Praha*, 2 (9) : 143-170.
 1976 *Aphelinidae*, Kalina, *Stud. ent. forest Praha*, 2 (8) : 131.
 1979 *Aphelinidae*, Krombein *et al.*, *Hymen. N. America*, 1 : 890.
 1983 *Aphelinidae*, Hayat, *Syst. Ent.*, 8 : 63-102.
 1983 *Aphelinidae*, Jasnosh, *Rev. Ent.*, 62 : 157-171.

This family is closely related to Encyrtidae and Eupelmidae, but differs as follows : Head transverse, as wide as thorax; in front rounded or subtriangular; mesopleura divided; middle leg not saltatorial; middle metatarsus not exceptionally stout, antennae inserted close to the mouth, usually with no more than 8 segments; parapsidal furrows distinct; scape, lying within scrobe; maxillary and labial palpi uniarticulate; thorax short, vein *sm* and *m* usually subequal; *st* very short; *pm* absent; tarsi with 5 segments; abdomen sessile; first tergite large; axillae triangularly produced into scapula in advance of tegulae; pronotum short; abdomen subconical, sessile.

KEY TO SUBFAMILIES

1. Fore wing normal, with discal ciliation not in rows; antennae with short hairs; tarsi with 4 or 5 segments or heteromerous; abdominal segments distinct; labial palpi distinct 2

Fore wing lobulate; with 2-3 large longitudinal rows of setae; hind wing very elongate; antennal hairs long; tarsi with 4 segments; labial palpi rudimentary; abdominal segmentation not perceptible

Calesinae Mercet

2. Fore wing with oblique speculum from *st* to hind margin, incomplete or obliterated, rarely absent; antennae with 3-6 segments; rarely 8; tarsi with 5 segments, rarely 4

Aphelininae Howard

Fore wing without hairless speculum; antennae usually with 6-8 segments; rarely 7 or 9; tarsi with 5, 4 or heteromerous

Coccophaginae Förster

SUBFAMILY APHELININAE

- 1904 *Aphelinini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 345.
 1907 *Aphelinini*, Howard, *Bull. US. Agric. Ent. Tech.*, 12 : 71.
 1909 *Aphelinini*, Schmiedeknecht, *Gen. Ins.*, 97 : 449.
 1938 *Aphelinariae*, Mani, *Cat. Indian Ins.*, 23 : 119.
 1948 *Aphelininae*, De Santis, *Rev. Museo La Plata (NS)* 5 (Zool.) : 99.
 1979 *Aphelinini*, Krombein *et al.*, *Hymen. N. America*, 1 : 890.

Antennae with rarely 8 segments, often with annellus, clothed with short or moderately long setae; fore wing with discal ciliation and usually also with speculum oblique; rarely without speculum; marginal fringe short; hind wing broad; tarsi with 5 rarely 4 segments; abdominal tergites distinct.

KEY TO GENERA

1. Speculum in fore wing irregularly oblique or not distinctly defined, rarely absent; vein *m* short, not much longer than *st*; club stout; tarsi with 4, very rarely 5 segments 2
 Speculum in fore wing regularly oblique, more or less distinctly defined; vein *m* longer than *st*; club not enlarged; tarsi with 5 segments 3
2. Antennae with 3 segments; scape, pedicel and large club; with numerous longitudinal sensoria *Eretmocerus* Haldeman (Male)
 Antennae with 5 segments : scape, pedicel, 2 annelli, short club, sensoria *Eretmocerus* Haldeman (Female)
3. Body including legs and antennae spotted; annelli distinct or obscure; fore wings hyaline with black hairy spots 4
 Body, legs and antennae without spots, sometimes with only obscure markings on thorax; and abdomen; wings hyaline; faintly infumate or clouded 5
4. Antennae with 5 segments *Marietta* Motschulsky (Male)
 Antennae with 6 segments. *Marietta* Motschulsky (Female)

- | | |
|---|----------------------------------|
| 5. Antennae with 6 or more segments | 7 |
| Antennae with 4 segments | 6 |
| 6. Scape, pedicel, funicular segment and club
with numerous long sensoria | <i>Aphytis</i> Howard |
| Scape long, slender, pedicel swollen, funicular
segment minute, club stout and long | <i>Marlattiella</i> Howard |
| 7. Fore wings hyaline | 8 |
| Fore wings with transverse brown bands;
ovipositor well exerted, at least 0.20-0.33
of abdomen | <i>Centrodora</i> Förster |
| 8. Fore wing with vein <i>m</i> distinctly longer than
<i>sm</i> ; body yellow, with black or dark
markings especially on thorax and
abdomen; ovipositor long | 10 |
| Fore wing with vein <i>m</i> equal or subequal to
<i>sm</i> ; body dark coloured with red or yellow
markings; rarely completely yellow;
ovipositor usually short | 9 |
| 9. Antennae with 6 segments. | <i>Aphelinus</i> Dalman |
| Antennae with 7 segments. | <i>Mesidia</i> Förster |
| 10. Antennae with 6 segments | 11 |
| Antennae with 8 segments, club biarticulate;
vein <i>m</i> shorter than <i>sm</i> | <i>Eriaphytis</i> Hayat |
| 11. First annellus minute, distinctly smaller than
the second; ovipositor exerted | <i>Aphytis</i> Howard |
| Two annelli subequal; ovipositor not exerted | <i>Prosaphelinus</i> De Gregorio |

Aphelinus Dalman

- 1820 *Entedon* (partim), Dalman, *Svensk. Vet.-Akad. Handl.*, 41 : 181. Pl. 8, Fig. 55, 56.
- 1820 *Aphelinus*, Dalman, *Svenk. Vet.-Akad. Handl.*, 41 : 181.
- 1933 *Agonioneurus*, Westwood, *Ann. Mag. Nat. Hist.*, 6 : 122.
- 1834 *Myina*, Nees, *Hymen, Ichneum. Affin. Mon.*, 2 : 189.
- 1851 *Eriophilus*, Haldeman, *Pennsylv. Farm. J.*, 130.
- 1852 *Coccobius* (partim), Ratz., *Ichneum. Forstins*, 3 : 195.
- 1856 *Anozus*, Förster, *Hym. Stud.*, 2 : 84.
- 1860 *Eriophilus*, Haldeman, *Proc. Boston Soc. Nat. Hist.*, 6 : 402.
- 1870 *Misina*, Rondani, *Arch. Zool.*, 2 : 11.
- 1904 *Aphelinus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 346.
- 1909 *Aphelinus*, Schmiedeknecht, *Gen. Ins.*, 97 : 451.
- 1912 *Aphelinus*, Mercet, *Trab. Mus. Cien. Nat.*, 10 (1) : 1-306.
- 1913 *Aphelinus*, Kurdjumov, *Rev. Russe d' Ent.*, 13 (2) : 266-270.
- 1913 *Aphelinus*, Girault, *Mem. Queensland Mus.*, 2 : 183-184.
- 1915 *Aphelinus*, Girault, *Mem. Queensland Mus.*, 4 : 45-47.
- 1924 *Aphelinus*, Timberlake, *Proc. Hawaii. ent. Soc.*, 5 (3) : 405-411.
- 1924 *Aphelinus*, Gahan, *Proc. US. nat. Mus.*, 65 (4) : 7-12.
- 1932 *Aphelinus*, Mercet, *Eos*, 8 : 353-365.
- 1938 *Aphelinus*, Mani, *Cat. Indian Ins.*, 23 : 119.
- 1948 *Aphelinus*, De Santis, *Zool. (N.S.) La Plata Mus. Rev.*, 5 : 100.

- 1963 *Aphelinus*, Jasnosh, *Ent. Rev.*, 42 (1) : 178-185.
 1964 *Aphelinus*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 60 (5) : 331-332.
 1965 *Aphelinus*, Yoshimoto, *Pacific Insects*, 7 (4) : 690, 694, 695.
 1972 *Aphelinus*, Hayat, *Entomophaga*, 17 (1) : 49-58.
 1976 *Aphelinus*, Graham, *Syst. Ent.*, 1 (2) : 123-146.
 1979 *Aphelinus*, Krombein *et al.*, *Hymen. N. America*, 1 : 890.

Body robust; dull coloured; males red or orange spotted; eyes hairy; antennae inserted near mouth, with 6 segments; scape rather long and slender; pedicel slightly longer than thick; funicular segments 3, 2 minute and short annellus; following segments slightly thicker than pedicel; terminal segment (club) approximately elliptic, entire; fore wing with a speculum; marginal fringe short; vein *m* long, longer than *sm*, veins *st* and *pm* short; middle tibial spur stout; mandibles bidentate; maxillary palpi biarticulate; labial palpi uniarticulate; parapsidal furrows and axillae well developed; ovipositor rarely exerted and then only very little.

Type-species : *Aphelinus abdominalis* (Dalman)

KEY TO SPECIES

1. Body yellow, with dark spots or bands on thorax and abdomen; legs yellow or white; frontovertex wider than eye; mesopostphragma equal to scutellum, metanotum and propodeum combined; middle metatarsus shorter than the following 2 tarsal segments combined 2
 Body black, dark brown, with base of abdomen, sometimes face, gena, abdomen below pale brown or yellow; legs partly brown; frontovertex narrower than eye; mesopostphragma shorter than scutellum, metanotum and propodeum combined; middle metatarsus longer than the following 2 tarsal segments combined 2
 A. nikolskayae Jasnosh
2. Fore wing with speculum bounded mesially by less than 30 hairs 3
 Fore wing with speculum bounded mesially by more than 30 hairs 4
3. Scape and pedicel brown, funicle and club yellow; speculum bounded mesially 2-3 incomplete rows of hairs in female; third funicular segment longer than thick 5
 Scape and pedicel white or pale yellow; funicle and club somewhat infumate; speculum with a single row of hairs mesially; in male antennae nearly wholly brown, club yellow, third funicular segment as long as thick 5
 A. mali (Haldeman)
 A. kashmiriensis Hayat
4. Femora white; middle tibial spur equal to metatarsus; speculum mesially bounded by not more than 45 hairs in 1-2 complete and 2-5 incomplete rows. 5

- Femora not all white; middle femora brown; middle tibial spurs shorter than metatarsus; speculum bounded mesially by more than 60 hairs in several rows 4
5. Middle and hind coxae brown, otherwise legs white; frontovertex as long as wide; speculum bounded mesially by about 30 hairs; third funicular segment in male longer than thick *A. flavipes* (Förster)
- Middle and hind femora more or less and the whole of middle and hind tibiae brown; frontovertex a little longer than wide; speculum bounded mesially by 40 hairs; in male third funicular segment as long as thick *A. desantisi* Hayat
6. Scape pale brown; funicle whitish-yellow, club dusky-yellow; third funicular segment a little longer than thick; fore wing with vein with 5 setae; speculum bounded mesially by 80 hairs; in male third funicular segment about 2 times as long as thick *A. abdominalis* Dalman
- Scape and pedicel dark brown; funicle and club light brown; third funicular segment 1.66 times as long as thick; vein with 3 setae; speculum bounded mesially by 65 hairs; in male third funicular segment about 4 times as long as thick *A. asychis* Walker

***Aphelinus nikolskayae* Jasnosh**

- 1963 *Aphelinus nikolskayae*, Jasnosh, *Ent. Rev.*, 42 (1) : 178.
 1972 *Aphelinus nikolskayae*, Hayat, *Entomophaga*, 17 (1) : 49.

Body yellow, with dark spots on dorsum on thorax; and dark bands on abdomen; legs whitish pale yellow; frontovertex wider than dorsal eye length; mesopostphragma as long as scutellum, metanotum, propodeum combined; metatarsus shorter than following 2 tarsal segments; third valvulae shorter than middle tibial spur; ovipositor shorter than middle tibia; subgenital plate with conspicuously long hairs.

Type locality : Dalhousie (Himachal Pradesh)

Host : Ex *Pemphiugus* sp.

***Aphelinus mali* Haldeman**

(Fig. 268)

- 1851 *Eriophilus mali*, Haldeman, *Pennsyl. Farm. J.*, 1 : 130-131.
 1886 *Blastothrix rosae*, Ashmead, *Trans. American ent. Soc.*, 13 : 130.
 1895 *Aphelinus mali*, Howard, *Tech. Ser. US Dept. Agric. Div. Ent.*, 1 : 24-25.
 1909 *Aphelinus varicornis*, Girault, *Psyche*, 16 (2) : 29-31.
 1912 *Aphelinus mali*, Mercet, *Trab. Mus. Cienc. Nat. Madrid*, 10 : 56.

- 1921 *Aphelinus mali*, Marchal C. R. *Acad. Agr. France*, 7 (28) : 619-625.
 1940 *Aphelinus mali*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 26.
 1948 *Aphelinus mali*, De Santis, *La Plata Mus. Rev. Zool.*, 5 : 103.
 1964 *Aphelinus mali*, Man Mohan, *Proc. Indian Acad. Sci.*, 60 : 315-335.
 1965 *Aphelinus mali*, Ferrière, *Faune 1' Eur. Bassin Medit.*, 1 : 66-69.
 1976 *Aphelinus mali*, Graham, *Syst. Ent.*, 1 (2) : 124-127.
 1979 *Aphelinus mali*, Krombein *et al.*, *Hymen. North America*, 1 : 891.

Female : Body partly black; eyes very dark; ocelli red; flagellum, fore femoral tip, base of middle tibiae and tarsi, distal 0.66 of middle tibiae, fore tibiae in basal 0.33 infuscated; first four of fore tarsal segments, middle tarsi, coxae, trachanter, femora and 2-4 tarsal segments darker; base of abdomen, second tergite base and below; ovipositor yellow; distal 0.33 of tibiae darker; pedicel and wing veins blackish, wings hyaline, slightly infuscate near veins.

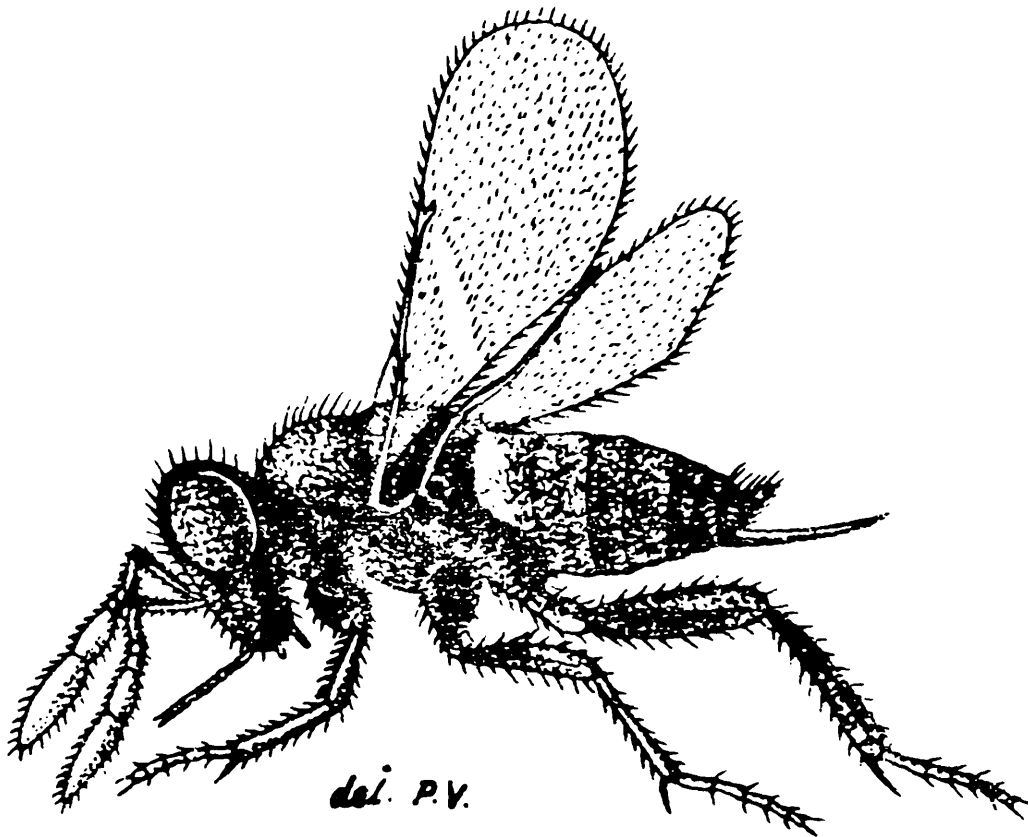


FIG. 268. *Aphelinus mali* (Haldeman), Female.

Head as wide as thorax; gena a little shorter than eye; eyes densely hairy; ocellular space a little less than ocellar diameter; mandibles bidentate; maxillary palpi biarticulate; labial palpi unarticulate; frons and vertex reticulate, densely clothed with black setae; antennae inserted close to the mouth with 6 segments; scape sub-cylindrical, curved; proportions of antennal segments 148 : 63 : 25 : 27 : 49 : 140; all segments densely hairy; club with shorter hairs; scutum with 2 pairs of long, stout sublateral and posterior setae;

scutellum with a pair of setae; parapsial furrows with 2 pairs of short and axillae with one stout setae; thorax generally reticulate; fore wing about 2.30 times as long as wide; veins *sm* and *m* subequal; *pm* indistinct, *st* very short; hind wing a little over 4 times as long as wide; abdomen as wide as thirax, with a row of setae on margins of tergites; middle tibial spur equal to metatarsus.

Male : Third funicular segment relatively large; club fusiform; basal 0.33 of fore wing in front clear

Type locality : USA

Distribution : Europe, America, Australia; India

Host : *Eriaphis lanigerum* on *Pyrus malus*

Aphelinus kashmiriensis Hayat

1972 *Aphelinus kashmiriensis*, Hayat, *Entomophaga*, 17 (1) : 50.

Female : Length 0.91 mm. Head dark brown; antennae pale yellow to slightly infumate, scape white with basal 0.33 pale yellow; thorax dark brown; fore wings hyaline; hind wings hyaline; fore coxae, torchanters and femora except distal ends brown; rest white; middle coxae, femora except bases and tibiae except distal 0.33 borwn; distal 0.33 of tibiae pale yellow; rest white; hind coxae brown, femora except basal ends brown, metatarsus light brown; rest white; abdomen light brown, with basal segment yellow.

Frontovortex narrower than dorsal eye length and slightly longer than wide; ocellar triangle obtuse; ocellocular space 0.50 of ocellar diameter and much nearer to occipital margin; eyes conspicuously hairy; antennal sockets near to facial margin; interscrobial area moderately elevated, scrobes deeply impressed; gena shorter than eye width; mandibles with one tooth and broad dorsal truncation; maxillary palpi with 2 and labial palpi with one segments respectively; scape 5.50 times as long as thick; first 2 funicular segment short, third segment about 2 times second segment; proportion of antennal segments scape 8.5; pedicel 3.5; first funicular segment one; second funicular segment one; third funicular segment 2; club 7.5.

Thorax composed of 2 triangular plates joined in the middle by a transparent membrane; parapsides, axillae and scutellum with 4+4, 1+1 and 4 setae respectively; scutellum wider than long, broadly rounded at apex; mesopostphragma from the apex of propodeum, shorter than scutellum, metanotum and propodeum combined; wings a little over 2 times as long as wide; vein *sm* longer than *m*, the former with 6 setae; speculum mesially bounded by a single row of cilia; marginal fringe short; tibiae shorter than ovipositor; tibial spur equal to metatarsus.

Abdomen slightly longer than thorax; ovipositor extends from third segment, slightly exerted.

Male : Length 0.90 mm. Essentially like female; scape, pedicel and funicle brown; club yellow to light brown; scape slightly thicker.

Type locality : Srinagar (Nishat Garden)

Distribution : Jammu and Kashmir

Host : *Aphis pomi* on *Pyrus malus*

***Aphelinus flavipes* (Förster)**

1841 *Myina flavipes*, Förster, *Beitr. Mon. Pteromal.*, 44.

1909 *Aphelinus flavipes*, Schmiedeknecht, *Gen. Ins.*, 97 : 452.

1965 *Aphelinus flavipes*, Ferrière, *Faune Eur. Bass. medit.*, 1 : 206.

1972 *Aphelinus flavipes*, Hayat, *Entomophaga*, 17 (1) : 52.

This species is not known to me.

Type locality : Germany

Distribution : Guntur; Jammu & Kashmir, Rajasthan, Udaipur

Hosts : *Aphis gossypii* Glover on *Coriandrum sativum* Ex. Aphids on *Cajanus indicus*, *Sesbania* sp. and *Vigna catjung*

***Aphelinus desantisi* Hayat**

1972 *Aphelinus desantisi*, Hayat, *Entomophaga*, 17 (1) : 52.

Female : Length 1.06 mm. Head dark brown; sometimes vertex, gena and face dusky-yellow; antennae pale dusky, also funicle and club yellow; hind wings hyaline; fore legs white; distal 0.50 of femora on dorsal surface, tibiae and tarsi pale yellow; middle legs white; a spot at base of coxae, distal third of femora on dorsal surface and tibiae brown tarsi pale yellow; sometimes coxae in major part brown with only the apex whitish; hind legs whitish, except distal 0.50 (in some specimens except only the distal ends), tibiae except base and metatarsus brown; tarsal segments 2-5 dusky or whitish; abdomen brown, basal third yellow in some specimens, the venter pale brown to dark yellow.

Frontovertex slightly longer than wide and narrower than dorsal eye length; ocellar triangle obtuse; ocellular and ocelloccipital space less than ocellar diameter; eyes hairy; antennal sockets near to facial margin; gena shorter than eye width; mandibles with a pointed ventral tooth, obtuse middle tooth with peg-like seta; scape 4.50 times longer than thick, as long as pedicel and funicle combined; first funicular segment as long as thick, with the ventral margin longer than dorsal margin; second segment thicker than long; third segment

as long as thick; club slightly less than 3 times as long as thick; proportions of antennal segments : scape 7.7; pedicel 3.5; first funicular segment 1.5; second funicular segment one; third funicular segment 2, club 7.

Thorax similar to *A. kashmiriensis*; fore wings hyaline with a faint infuscation below vein *st*; slightly more than 2 times as long as wide; vein *sm* longer than *m*, former with 7 setae; speculum mesially bounded by about 40 cilia in 1-2 complete and 3-4 incomplete rows; marginal fringe 0.10 width of disc; tibiae shorter than ovipositor; tibial spur equal to metatarsus and shorter than third valvula.

Abdomen longer than thorax.

Male : Length 1.06 mm. Essentially like female; scape and pedicel pale brown, funicle and club whitish; middle tibiae whitish; hind tibiae white or dusky.

Type locality : Punjab (Jassowal)

Host : *Longiunguis sacchari* on *Sorghum vulgare*

***Aphelinus abdominalis* (Dalman)**

1820 *Entedon abdominalis* (partim), Dalman, *Svensk. Vet.-Acad. Handl.*, 41 : 181.

1820 *Aphelinus abdominalis*, Dalman, *Svensk. Vet.-Acad. Handl.*, 41 : 191.

1972 *Aphelinus abdominalis*, Hayat, *Entomophaga*, 17 (1) : 56.

Body black to dark brown; abdomen basally, face sometimes, gena and venter of abdomen yellow to pale brown; legs largely brown; frontovertex narrower than eye; middle metatarsus longer than the following 2 tarsal segments combined; speculum mesially with more than 30 hairs; middle femora brown; middle tibial spur shorter than metatarsus.

Type locality : Europe

Distribution : Jammu & Kashmir, Wodura (Sopore); Europe

Host : Ex aphids on *Phaseolus radiatus*

***Aphelinus asychis* Walker**

1834 *Myina abdominalis*, Nees, *Hym. Ich. Aff. Monog.*, 2 : 190. (Misidentification)

1839 *Aphelinus asychis*, Walker, *Monog. Chalcid.*, 1 : 2.

1841 *Myia affinis*, Förster, *Beitr. Monog. Pteromalinen*, 44.

1876 *Aphelinus brevicar*, Thomson, *Hymen Scan.*, 4 : 185.

1913 *Aphelinus dubia*, Kurdjumov, *Rev. Russe d'Ent.*, 13 (2) : 268.

1913 *Aphelinus brachyptera*, Kurdjumov, *Rev. Russe d'Ent.*, 13 (2) : 268.

1917 *Aphelinus brevipennis*, Girault, *Descr. Stellarum Nov.*, 18.

1965 *Aphelinus asychis*, Ferrière, *Faune de l'Europe Bassin Medit.*, 1 : 75.

1969 *Aphelinus asychis*, Ramaseshiah & Dharmadhikari, *Tech. Bull. Comm. Inst. Biol. Contr.*, 11 : 157-163.

1972 *Aphelinus asychis*, Hayat, *Entomophaga*, 17 : 56.

- 1976 *Aphelinus asychis*, Graham, *Syst. Zool.*, 1 (2) : 124, 127, 128, 129.
 1979 *Aphelinus asychis*, Krombein *et al.*, *Hymen. N. America*, 1 : 890.
 1980 *Aphelinus asychis*, Hayat, *Orient. Ins.*, 14 (4) : 461.

One brachypterous female (from Katrain) and some females having somewhat shorter wings; the latter unlike the brachypterous forms agree with the macropterous forms in body colour but differ in having the wings extending only a little beyond apex of abdomen and fewer setae in the delta area; third funicular segment in male exceeding long.

Type locality : India (?)

Distribution : India: Kashmir: Woudra, Himachal Pradesh, Katrain, U. P., Dehra Dun

SPECIES INCERTAE SEDIS

***Aphelinus humilis* Mercet**

- 1932 *Aphelinus humilis*, Mercet, *Eos*, 8 :
 1969 *Aphelinus humilis*, Ramaseshiah & Dharmadhikari, *Tech. Bull. Comm. Inst. Biol. Contr.*, 11 : 157-164.

Type locality : India

Distribution : India : U.P. Dehra Dun (U.P.)

***Aphelinus mytilaspidis* Le Baron**

- 1870 *Aphelinus mytilaspidis*, Le Baron, *Amer. Ent.*, 2 : 360. fig. 220.
 1896 *Aphelinus mytilaspidis*, Howard, *Proc. US nat. Mus.*, 18 : 635.
 1909 *Aphelinus mytilaspidis*, Schmiedeknecht, *Gen. Ins.*, 97 : 452.
 1916 *Aphelinus mytilaspidis*, Imms, *Quart. J. micr. Sci.*, 41 : 215-274, pl. 19, 20.
 1925 *Aphelinus mytilaspidis*, Griswald, *Mem. Cornell Univ. Agric. Expt. Sta.*, 93 : 56-57.
 1932 *Aphelinus mytilaspidis*, Widiez, *Agric. Prat. Pays. Chaudas*, 24 : 415-445.
 1933 *Aphelinus mytilaspidis*, Suter, *Mitt. Schweiz. Ent. Ges.*, 15 (9) : 347-420. fig. 66. Graph 1.
 1933 *Aphelinus mytilaspidis*, Alden, *Bull. Georgia St. Board Ent.*, 73 : 32. Fig. 14.
 1938 *Aphelinus mytilaspidis*, Mani, *Cat. Indian Ins.*, 23 : 120.

Female : Length 0.57-0.85 mm. Head and thorax conspicuously punctate; eyes hairy; ocellar triangle obtuse; eyes parallel; occiput excavate, acutely margined; antennae remote at base; pedicel conical, about 1.50 times as long as thick; the following 2 segments small; fifth segment longest, subequal to pedicel; club indistinctly segmented, obliquely truncate; mandible tridentate; maxillary palpi biarticulate; labial palpi uniarticulate; scutellum about 0.57 of mesonotum; fore wing equal to body; vein *sm* 0.75 of *m*; *pm* absent; *st* very short; speculum well developed; discal ciliation basally of speculum coarse; middle tibial spur subequal to metatarsus, stout;

abdomen ovate, depressed; terminal tergite reduced, retracted under the preceding tergites; ovipositor exerted.

Type locality : Ceylon

Host : Different scale insects

Aphelinus theae Cameron

- 1891 *Aphelinus theae*, Cameron, *Mem. Proc. Manchester Lit. Philos. Soc.*, 4 : 183. pl. 1. fig. 5.
 1896 *Aphelinus theae*, Cotes, *Ind. Mus. Notes*, 3 : 24, 132.
 1909 *Aphelinus theae*, Schmiedeknecht, *Gen. Ins.*, 97 : 452.
 1940 *Aphelinus theae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 26.

Type locality : Ceylon

Host : *Aspidiotus theae*

Aphytis Howard

- 1900 *Aphytus*, Howard, *Canad. Ent.*, 32 (6) : 168.
 1914 *Prosaphelinus*, De Gregorio, *Ann. Agric. Sci.* 3 (4) : 406.
 1924 *Aphytis*, Timberlake, *Proc. Hawaii. ent. Soc.*, 5 (3) : 411.
 1932 *Aphytis*, Mercet, *Eos*, 8 (4) : 353-365.
 1948 *Aphytis*, De Santis, *La Plata Rev. Mus. Zool. (N.S.)* 5 : 113-138.
 1955 *Aphytis*, Compere, *Pub. ent. Calif. Univ.*, 10 (4) : 271-320.
 1964 *Aphytis*, Quednau, *J.S. Africa ent. Soc.*, 27 (1) : 86-116.
 1969 *Aphytis*, De Bach, *Israel J. Ent.*, 4 (1) : 11-28.
 1972 *Aphytis*, Jasnosh, *Ent. Rev.*, 51 (2) : 146-152.
 1973 *Aphytis*, Jasnosh, *Ent. Rev.*, 52 (4) : 478-485.
 1974 *Aphytis*, De Bach, *Biol. control Nat. Enem.*, 323.
 1974 *Aphytis*, Rosen & De Bach, *Bul. SROP*, 21-38.
 1976 *Aphytis*, Rosen & De Bach, *Mushi*, 46 (1) : 1-17.
 1976 *Aphytis*, Graham, *Syst. Ent.*, 1 (2) : 133-134.
 1976 *Aphytis*, De Bach & Rosen, *Ann. ent. Soc. America*, 69 (3) : 541-545.
 1979 *Aphytis*, Krombein *et al.*, *Hymen. N. America*, 1 : 893.

Female : Body yellow, with spots on thorax and abdomen; eyes large, hairy; mandibles wide apically; antennae inserted near mouth, with 6 segments; scape cylindrical or fusiform; pedicel subconical or pyriform; funicle with 3 segments, annelli 2 and third annellus subequal to pedicel; club entire, equal to preceding segments, reduced apically; fore wing hyaline, faintly infumate; speculum oblique, well defined; vein *m* distinctly longer than *sm*; *st* short; *pm* very short or absent; middle tibial spur equal to metatarsus; ovipositor concealed or exerted.

Male : Similar to female, genitalia different, colour different.

Type-species : *Aphytis chinensis* Howard

KEY TO SUBGENERA

1. Antennae with 6 segments, apparently 5 in female, first annellus smaller than second; ovipositor well exerted; antennae in male with 4 segments

Aphytis (Aphytis) Howard

- Antennae in female and male with 6 segments; second annellus equal to first; ovipositor concealed

Aphytis (Prosaphelinus)
De Gregorio

***Aphytis (Prosaphelinus) diaspidis* (Howard)**

(Fig. 269)

- 1880 *Aphelinus diaspidis*, Howard, in *Comstock, Rep. Ent. US Dept. Agric.*, 355.
 1909 *Aphelinus diaspidis*, Schmiedeknecht, *Gen. Ins.*, 97 : 452.
 1910 *Aphelinus diaspidis*, Quayle, *J. econ. Ent.*, 3 : 398-401.
 1928 *Aphelinus diaspidis*, Ogilvie, *Rep. Dept. Agric. Bermuda*, 1927 : 26-37.
 1938 *Aphelinus diaspidis*, Mani, *Cat. Indian Ins.*, 23 : 119.
 1940 *Aphelinus diaspidis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 36.
 1979 *Aphelinus diaspidis*, Krombein *et al.*, *Hymen. N. America*, 1 : 894.

Female : Length 0.75 mm. Body lemon-yellow; eyes green or black; ocelli red; antennae infumate; wings hyaline with faint infuscation.

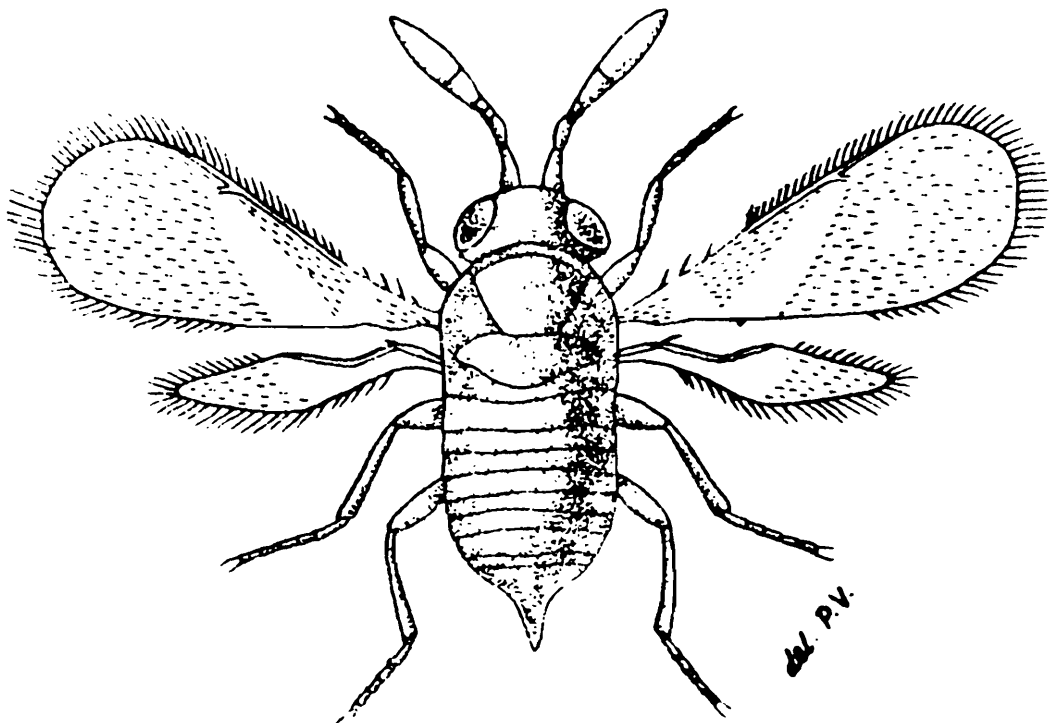


FIG. 269. *Aphytis (Prosaphelinus) diaspidis* (Howard), female.

Head and thorax irregularly reticulate; ocellar triangle obtuse; ocellocapital space less than ocellocular space; mandible tridentate;

antennae inserted close to the mouth; scape large, cylindrical; pedicel subconical; annelli short, moniliform; third segment short; club stout; antennal segments ratio 116 : 041 : 017 : 010 : 033 : 107; vertex with 2 long fine bristles and numerous setae; fore wing a little less than 3 times as long as wide; veins *sm* : *m* ratio 7.5 : 13; vein *sm* with 2 bristles; *m* with 9 bristles; hind wing length to width 52 : 9; middle tibial spur equal to metatarsus.

Male : Very similar to female.

Type locality : Ceylon

Distribution : Ceylon, India, Europe, USA, S. America

Host : Coccids *Chrysomphalus dictyospermi* Morg.

Aphytis (Prosaphelinus) proclia (Walker)

- 1839 *Aphelinus proclia*, Walker, *Mon. Chalc.*, 1 : 9.
 1880 *Aphelinus fuscipennis*, Howard, in Comstock, *Rep. ent. US Dept. Agric. Washington*, 356.
 1909 *Aphelinus fuscipennis*, Schmiedeknecht, *Gen. Ins.*, 97 : 452.
 1924 *Aphelinus fuscipennis*, Misra, *Rep. Proc. Fifth Ent. Meet. Pusa*, 130.
 1938 *Aphelinus fuscipennis*, Mani, *Cat. Indian Ins.*, 23 : 120.
 1948 *Aphytis proclia*, De Santis, *Rev. Museo La Plata (N.S.) 5 (Zool.)* : 133.
 1979 *Aphytis proclia*, Krombein *et al.*, *Hymen. N. America*, 1 : 896.

Female : Length 1.00 mm. Body dirty-yellow; eyes green or black; ocelli red; scape, legs, veins black; pedicel, funicle, occiput, spots dorsally and below on thorax and first 5 tergites black; wings hyaline, infumate in front.

Head and thorax distinctly reticulate; abdominal reticulation in black areas; head as wide as thorax; eyes large, hairy; ocellar triangle obtuse; ocellocipital space more than ocellocular space; antennal segments ratio 123 : 041 : 016 : 012 : 041 : 099; mesonotum length width ratio 45 : 65; fore wing length width ratio 70 : 24; veins *sm* : *m* 37 : 58; *sm* with 2 bristles, *m* with 12 bristles; hind wing length width ratio 58 : 12; abdomen as wide as thorax.

Male : Length 0.80 mm. Legs blacker than female; vein *m* with 6-7 bristles.

Distribution : Cosmopolitan

Hosts : *Aonidiella aurantii* (Mask.), *Aspidiotus destructor* Sign., *A. nerii* Bouche, *Aulacaspis rosae*, *Chrysomphalus aonidum* (L.) *C. dictyospermi* (Morg.) *Diaspidiotus uvae*, *Diaspidiotus bromeliae* (Kern.), *D. echinocacti* (Bouche), *Hemiberlesia rapax* (Comst.), *Lepidosaphes beckii* (Newm.), *L. gloveri* (Pack.), *L. ulmi* (L.), *Pinnaspis strachani* (Cooley), *Pseudaonidia duplex* (Ckll.), *Pseudaulacaspis pentagona*, *Quadraspidotus juglansregiae* (Comst.), *Unaspis euonymi* (Comst.)

Centrodora Förster

- 1878 *Centrodora*, Förster, *Verh. nat. Hist. Verein. Preuss. Rheinl.*, 35 : 66.
 1894 *Centrodora*, Howard, *Ins. Life*, 7 : 58.
 1904 *Centrodora*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 346.
 1906 *Paraphelinus*, Perkins, *Bull. Hawaii. Sugar. Plant Assoc.*, 1 : 264.
 1909 *Centrodora*, Schmiedeknecht, *Gen. Ins.*, 97 : 453.
 1917 *Proaphelinoides*, Girault, *Descr. Stell. Nov.*, 4 : 4.
 1918 *Centrodora*, Mercet, *Bol. Soc. Espan. Hist. Nat.*, 18 : 103-109.
 1930 *Centrodora*, Mercet, *Eos*, 6 (4) : 287-295.
 1941 *Microeupelmus*, Otten, *Arb. Morph. Taxon. Ent.*, 8 (4) : 259.
 1948 *Pechlaneria*, Soyka, *Ent. Nachr.*, 46.
 1965 *Centrodora*, Annecke, *J. S. Africa Agric. Sci.*, 8 : 1133-1138.
 1966 *Centrodora*, Valentine, *New Zeal. J. Sci.*, 9 : 331-335.
 1973 *Centrodora*, Hayat, *Entomophaga*, 18 (1) : 41-46.
 1974 *Centrodora*, Hayat, *Polsk. Pismo Ent.*, 44 : 287-298.
 1976 *Centrodora*, Graham, *Syst. Ent.*, 1 (2) : 135-136.
 1979 *Centrodora*, Krombein *et al.*, *Hymen. N. America*, 1 : 896.

Head as wide as thorax; antennae with 6 segments; scape in male broad; parapsidal furrows complete; scutellum large; fore wings finely hairy, narrow with transverse brown bands and speculum; vein *sm* and *m* very short; middle tibial spur long; fore tibia in male distinctly swollen; ovipositor about 0.33 of abdomen.

Type-species : *Centrodora amoena* Förster

KEY TO SPECIES

- | | |
|--|------------------------------------|
| 1. Small-sized species, less than 1.00 mm Long | 2 |
| Relatively large species | 4 |
| 2. Pedicel about 3 times as long as thick | 3 |
| Pedicel about 2 times as long as thick | <i>C. azizi</i> Hayat |
| 3. Third funicular segment 1.50 times as long as thick | <i>C. mumtazi</i> Hayat |
| Third funicular segment longer than segments one and 2 combined | <i>C. oophaga</i> (Girault) |
| 4. Scutellum 1.30 times as long as wide, projecting posteriorly upto third tergite; scape 7 times as long as thick | <i>C. chowdhurii</i> Kaul |
| Scutellum wider than long, with apex somewhat pointed in the middle | <i>C. elongatiformis</i> (Girault) |

Centrodora azizi Hayat

- 1973 *Centrodora azizi*, Hayat, *Entomophaga*, 18 : 41.
 1974 *Centrodora azizi*, Hayat, *Polsk. Pismo Ent.*, 44 : 28.

Female : Length 0.70-0.75 mm. Body yellow, abdomen pale yellow; tip of mandible reddish-brown; eyes green; ocelli dark red; antennae pale yellow, scape white; legs pallid.

Frontovertex nearly as long as broad at level of median ocellus, slightly more than 0.50 of head width; ocellar triangle obtuse; ocelloccipital and ocellocular spaces subequal to ocellar diameter; head in front wider than high; gena slightly over 0.50 of eye; sulcus distinct; sockets separated by their own diameter, about 1.50 times this distance from level of lower orbital border; mandibles with 3 acute teeth and a short dorsal tooth; maxillary palpi with 2 segments and labial palpi with one segment; head weakly reticulate; scape slender, 5 times as long as thick, pedicel 2 times as long as thick and equal to funicle; funicular segment one and 2 subequal, segment one as long as thick with ventral margin longer than dorsal margin; segment 2 transverse, slightly less than 2 times as thick as long; segment 3 large, fourth longer than thick, longer than segments 1-2 combined; club 2.50 times as long as thick pointed apex; antennae with fine short setae; funicular segment 3 with one and club with 5-6 rhinaria.

Pronotum consists of 2 triangular plates joined in the middle by a membrane, posterolateral angles with strong setae; mesoscutum wider than long, with 5 + 5 setae (occasionally with 6 on one, 5 on the other) each parapside with 2 and axilla with one seta; scutellum plainly wider than long with 2 + 2 setae; metanotum with a slight median salient; propodeum with 2 setae anterior to each spiracle; mesoscutum and scutellum cellulate-reticulate; propodeum with a triangular reticulate area in the middle; fore wings hyaline, about 3 times as long as wide, vein *sm* slightly longer than *m*, these veins with 4 and 7 setae; vein *pm* absent; stigmal to speculum with approximately 80 setae; speculum complete; longest marginal fringe about 0.16 width of disc; hind wings hyaline, 0.50 times as long as wide, marginal fringe a trifle shorter than width of disc; middle tibial spur subequal in length to metatarsus.

Abdomen slightly longer than thorax; ovipositor about 2 times the middle tibia; third valvulae 0.33 length of second valvifers and longer than spur of middle tibia; ovipositor slightly exerted.

Male : Length 0.67-0.71 mm. Like female except for sex characters and antennae; each digitus beset with 2 rather long denticles.

Type locality : Andhra Pradesh, Guntur

Host : *Otinotus* sp.

Centrodora mumtazi Hayat

1973 *Centrodora mumtazi*, Hayat, *Entomophaga*, 18 : 41.

1974 *Centrodora mumtazi*, Hayat, *Polisk. Pismo. Ent.*, 44 : 292.

Female : Length 0.80-0.85 mm. Width of frontovertex at narrowest (anterior to median ocellus) 0.33 of head width, distance between antennal sockets slightly more than diameter of a socket;

radicle 2.50 times as long as thick; pedicel somewhat less than 3 times as long as thick; third funicular segment 1.50 times as long as thick; club 3.50 times as long as thick; mesoscutum with 6 pairs of setae (occasionally 7 on one, 6 on the other); fore wings slightly more than 3 times as long as wide; approximately 100 setae behind vein *m* and basad to speculum; hind wings nearly 7.50 times as long as wide; middle tibial spur a little longer than metatarsus; third valvulae slightly more than 0.33 of second valvifers.

Male : Length 0.75 mm. Differs from female in the shorter antennal segments and the expanded scape.

Type locality : India

Distribution : India : U.P. Jammu & Kashmir

Host *Oxyrachis* sp.

Centrodora oophaga (Girault)

1917 *Tumidiscapus oophagus*, Girault, *Proc. US nat. Mus.*, 53 (2213) : 445.

1980 *Tumidiscapus oophagus*, Hayat, *Orient. Ins.*, 14 (4) : 462.

Female : Length 0.75 mm. Body honey-yellow; head yellow to slightly brownish-yellow; thorax yellowish with the metanotum and propodeum pale yellowish-brown; abdomen brown to dark reddish-brown, sides darker and base paler; ovipositor brown; antennae dark yellowish-brown; wings hyaline; legs pale yellow.

Mandible tridentate; ocellar triangle obtuse; ocellocular space subequal to ocellar diameter; gena subequal to narrowest part of frontovertex; antennal sockets very near facial margin; mandibles tridentate, with 3 acute teeth and with trace of fourth, slightly receded tooth; scape about 3.67 times as long as thick; pedicel 2-3 times as long as thick and a little longer than third funicular segment; first funicular segment subtriangular, dorsal margin about 0.25 of ventral margin; ventral length of second funicular segment nearly 2 times the ventral length of first funicular segment; third funicular segment with dorsal margin slightly longer than ventral margin, about 0.25 times longer than first and second funicular segment combined and slightly less than 0.50 of club; club as long as funicle and ventral 0.33 of pedicel combined and 3.00-3.50 times as long as thick.

Thoracic setae as follows : mesonotum 6-7 pairs; each axilla one; each parapsides 2; scutellum 4; fore wings about 3.33 times as long as wide; veins reaching nearly to middle of front margin; vein *sm* somewhat shorter than *m*, these veins with 3 and 8 setae; vein *pm* absent, apex of *m* truncate; vein *st* with anterior margin subparallel to anterior wing margin, apex truncate; costal cell with 2 setae distad; setae on vein *m* about as long as or slightly longer than the longest marginal fringe; speculum narrow, but distinct, proximally bordered

by about 6 rows of setae; disc in basal 0.25 behind vein *sm* bare except for 4-5 setae and a longer seta at junction of veins *sm* and *m*; length of marginal fringe about 0.14 times the width of disc.

Abdomen distinctly longer than thorax, elongate, pointed apically; last tergite long, about 1.50 times as long as its basal width and about 0.25 of abdomen; ovipositor distinctly exerted about 0.33 times the length of abdomen.

Male : Scape somewhat flattened, 2.50 times as long as wide, pedicel (dorsal length) 2 times as long as thick, funicular segments 1-2 transverse, annelli-like; second funicular segment slightly wider but shorter than first funicular segment; third funicular segment about 3.50 times as long as wide and only slightly shorter than club; club and third funicular segment with long setae that are mostly as long as the width of segments.

Type locality : Coimbatore

Distribution : India

Host : *Oxya velox*

Centrodora chowdhurii Kaul

(Fig. 270)

1974 *Centrodora chowdhurii*, Kaul, *Orient. Ins.*, 8 (2) : 185.

Female : Length including ovipositor 1.36 mm. Head light orange, eyes reddish-brown, thorax and abdomen pale yellow, antenna yellowish-brown, wings hyaline with faint infuscation behind vein *st* and near the base.

Head viewed from above about 2 times wider than long, orbital space 0.54 of head width, eyes bare, ocellocular space 1.60 times ocellar diameter, with stiff bristles; antennal segments 6 : 1.1.3.1; scape long and slender, 7 times as long as thick; pedicel 0.36 of space; first funicular segment 0.33 of pedicel, thickness about 2 times length; second segment 1.25 times as long as thick, distinctly thicker apically than basally; club long, equal to the pedicel and funicle combined, 3.30 times as long as thick.

Thorax as wide as head; pronotum and scutellum smooth, mesonotum finely shagreened with long bristles, pronotum : mesonotum : scutellum ratio 50 : 100 : 170, pronotum width about 3 times the length, mesonotum width 1.70 times the length, scutellum large, 1.30 times as long as wide, projecting posteriorly upto third tergite; fore wing length to width 100 : 34; veins *sm* : *m* : *st* ratio 50 : 100 : 12, stigma subsessile, *pm* absent, speculum complete, discal ciliation basal to speculum sparse but coarser and longer than beyond; 14 dorsal bristles on vein *m* and 2 on *sm*, fringe on hind wing equal

to the wing width; fore femur long and slender; tibia about 0.80 of femur; tarsus subequal to femur, middle femur about 1.20 times fore femur and 6 times as long as thick; tibia little longer than femur, tibial spur equal to metatarsus; tarsus subequal to femur, metatarsus 0.33 of the tarsus, second tarsal segment 0.70 of metatarsus, third 0.70 of the second, fourth a little shorter than the third, fifth subequal to the fourth; hind femur a little shorter than mid femur but stouter, 3.20 times as long as thick; tibia 1.25 times the femur; tarsus 0.80 of the tibia, metatarsus 0.36 of the tarsus, second about 0.60 of the first, third 0.63 of the second, fourth and fifth subequal to the third.

Abdomen including ovipositor 0.55 of the body, length to width 100 : 60, ovipositor slightly exserted, about 0.30 of abdomen.

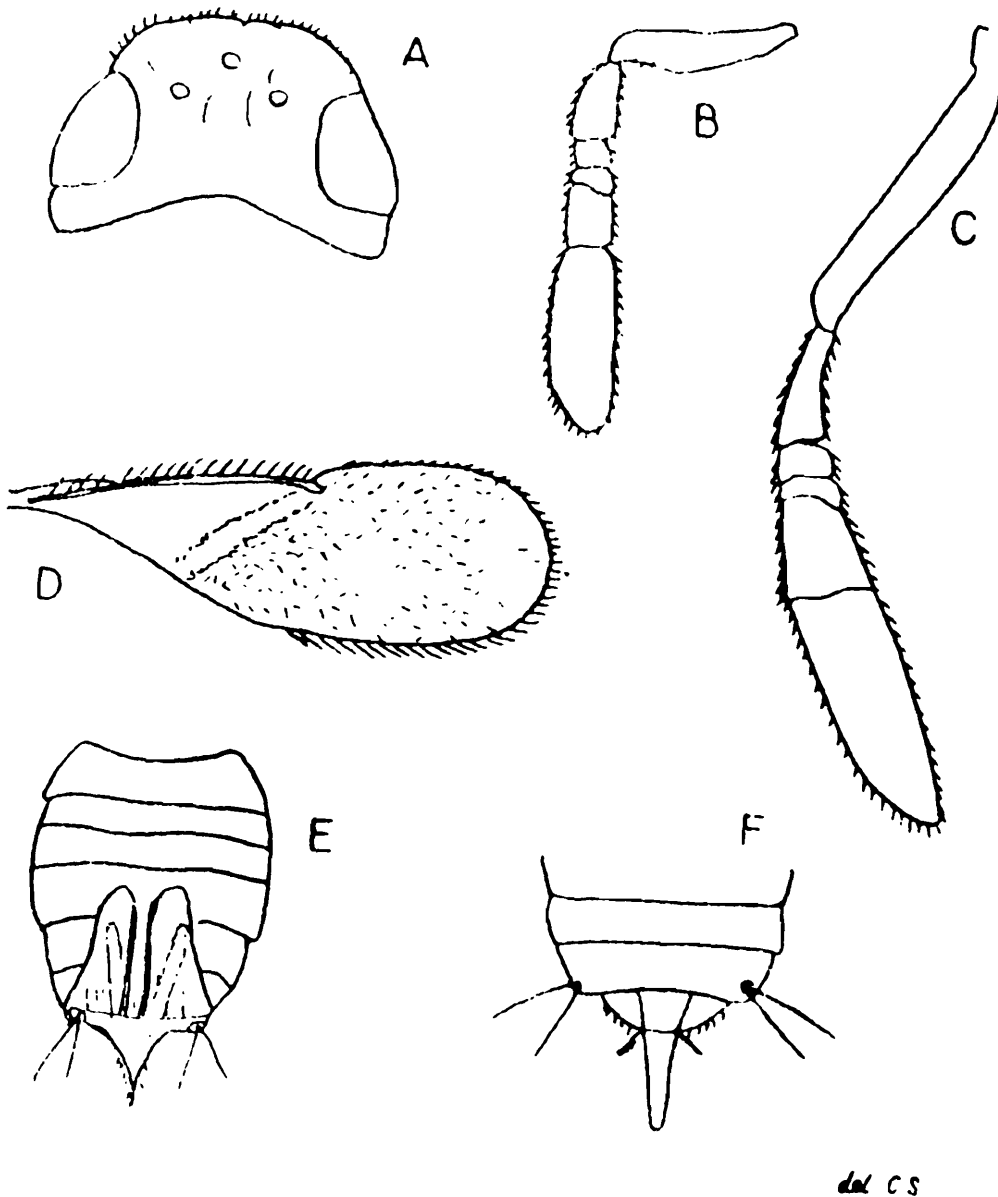


FIG. 270. *Centrodora chowdhurii* Kaul : A. Head, female; B. Antenna, male; C. Antenna, female; D. Fore wing, female; E. Abdomen, female; F. Genitalia, male.

Male : Length 1.00 mm. Body pale yellow, head pale yellow, eyes reddish-black, tibia and tarsi yellowish-brown.

Antenna with 6 segments : 1.1.3.1; scape long, slender, about 6 times as long as thick; pedicel about 0.40 of scape and 1.50 times as long as thick; first funicular segment 0.40 of pedicel, 1.30 times thicker than long, third subequal to the second, fourth 2 times the second, 1.20 times as long as thick; club equal to funicle and pedicel combined and about 1.60 times longer than thick; abdomen including genitalia 0.50 of the body, 1.70 times as long as wide; other characters as in female.

Type locality : Himachal Pradesh : Baldawan

Centrodora elongatiformis (Girault)

1917 *Proaphelinoides elongatiformis*, Girault, "Descriptions Stellarum Novarum" : 4

1980 *Proaphelinoides elongatiformis*, Hayat, *Orient. Ins.*, 14 (4) : 469.

Female : Body length 1.65 mm. Mesoscutum longer than scutellum; scutellum wider than long and with apex somewhat pointed in the middle; pronotum medially membranous, each postero-lateral angle with a long seta and collar with setae; each parapsides, each axillae and scutellum with 5 + 5, 2, 1 and 2 + 2 setae; hind wings broad as in *Coccophagus* with the disc densely setose and marginal fringe about 0.33 times the width of disc.

Type locality : Sri Lanka

SPECIES INCERTAE SEDIS

Centrodora mirus (Nikolskaya)

1963 *Bestiola mira*, Nikolskaya, *Ent. Obozr.*, 42 : 188.

1964 *Bestiola mira*, Tachikawa, *Trans. Shikoku ent. Soc.*, 8 : 46.

1980 *Proaphelinoides mirus*, Hayat, *Orient. Ins.*, 14 (4) : 470.

The species is rather very close to the type species, but differs in the colour of abdomen. Fresh material of *elongatiformis* may prove *mirus* conspecific with it.

Marietta Motschulsky

1863 *Marietta*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 51.

1895 *Perissopterus*, Howard, *US Dept. Agric. Div. Ent. (Tech.)* 1 : 20.

1904 *Marietta*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 346.

1909 *Marietta*, Schmiedeknecht, *Gen. Ins.*, 97 : 461.

1918 *Pseudaphelinus*, Bréthès, *An. Soc. Rural. Argentina*, 53 : 157.

1925 *Paraphytis*, Compere, *Trans. Amer. ent. Soc.*, 51 (871) : 129-130.

- 1935 *Marietta*, Ferrière, *Bull. ent. Res.*, 28 : 404.
 1936 *Marietta*, Compere, *Pub. ent. Calif. Univ.*, 6 (12) : 277-139.
 1938 *Marietta*, Mani, *Cat. Indian Ins.*, 23 : 126.
 1948 *Marietta*, De Santis, *Rev. Mus. La Plata*, (NS) 5 (Zool.) : 139.
 1966 *Marietta*, Nikolskaya & Jasnosh, *Opred. Fauna SSSR*, 91 : 162-166.
 1972 *Marietta*, Annecke & Insley, *J.S. Africa, ent. Soc.*, 35 (1) : 1-15.
 1979 *Marietta*, Krombein et al., *Hymen. N. America*, 1 : 897.

Wing with characteristic round, brown spots; face concave; maxillary palpi biarticulate; labial palpi uniarticulate; antennae with 6 segments and biarticulate club; eyes glabrous or hairy; antennae inserted close to mouth; scape short, slightly thickened apically; pedicel about 0.33 of scape; first 2 funicular segments minute; third segment subequal to the oval club; fore wing with speculum; vein *m* subequal to *sm*; *st* very short, stout; *pm* absent; fringe very short; middle tibial spur very stout; abdomen shortly oval, rounded behind; ovipositor 0.20 of abdomen; antennae in male with only 5 segments; 1.1.2.1.

Type-species : *Marietta leopardina* Mostchulsky

***Marietta cheriani* (Mani)**

(Figs. 271 & 272)

- 1939 *Perisopterus cheriani*, Mani, *Indian J. Ent.*, 1 (1) : 88-89.
 1957 *Marietta cheriani*, Subba Rao, *Proc. Indian Acad. Sci.*, (B) 46 (6) : 378.
 1975 *Marietta cheriani*, Saraswat & Mukerjee, *Mem. School Ent.*, 4 : 58.

Female : Length 0.80-1.40 mm. Body yellowish-brown; head reddish-brown; eyes brownish-red; ocelli red; thorax yellow-brown; antenna brownish-black, spotted; legs brownish-black, spotted; fore wings with brown markings; hind wings hyaline; abdomen concolorous with thorax.

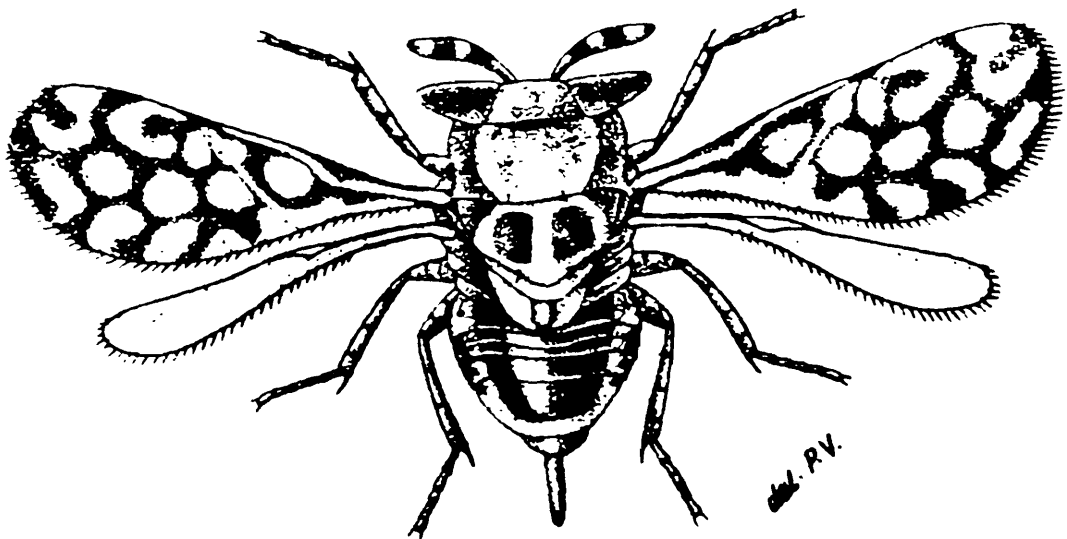


FIG. 271. *Marietta cheriani* (Mani), female.

Head smooth; viewed in front length to width 77 : 100; ocellular and front ocellar spaces equal to ocellar diameter, intercellar space 2 times ocellar diameter; mandibles bidentate; antennal segments 6 : 1.1.2.1.1; scape 3.75 times as long as thick; pedicel 2.33 times longer than thick; club solid, 2.25 times longer than thick, 1.50 times the funicular segment.

Mesonotum and metanotum with distinct reticulate microsculpture; scutellum smooth, subequal to mesonotum; mesonotum with 7 pairs of bristles and metanotum with 2 pairs of bristles, first in the middle and second near the posterior margin of metanotum; fore wing length to width 100 : 37; vein *sm* subequal to *m*, *st* fused with *m*; fore coxa 1.63 times longer than thick and 0.81 of femur; tarsus

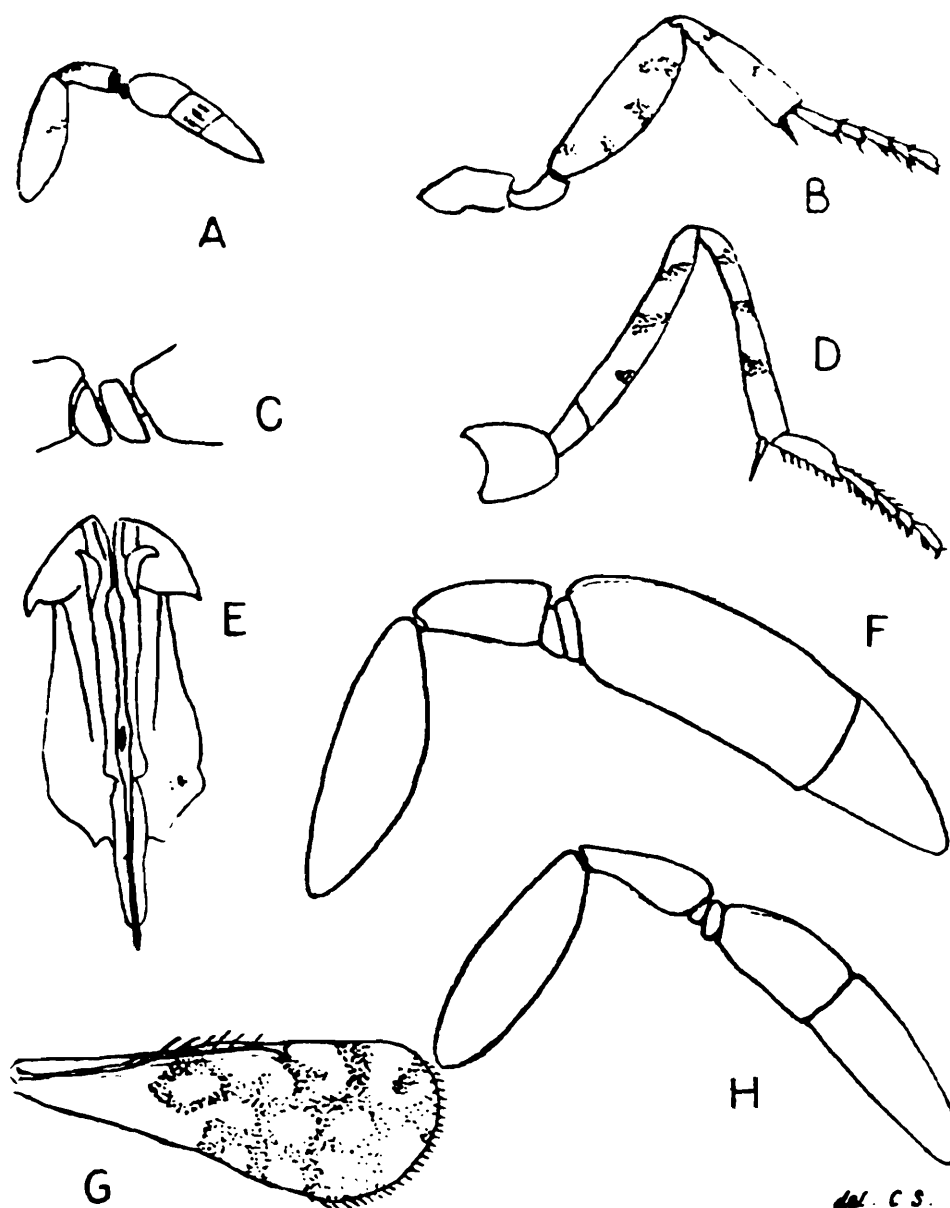


FIG. 272. A-E *Marietta cheriani* (Mani). female : A. Antenna; B. Fore leg; C. Annellus; D. Middle leg; E. Ovipositor; F-H. *Marietta leopardina* Motschulsky : F. Antenna, male; G. Fore wing; H. Antenna, female.

1.27 times tibia; middle coxa 1.11 times longer than thick; femur 6.50 times longer than thick; tibia equal to femur, 7.42 times longer than thick, tibial spur 0.23 of tibia and 0.66 of metatarsus; tarsus subequal to tibia, metatarsus 0.34 of tibia and 0.37 of tarsus, second segment 0.55 of metatarsus, third segment 0.60 of the second, fourth segment equal to the third, fifth segment 1.33 times the preceding segment; hind coxa 1.57 times as long as thick; femur 4 times longer than thick; tibia 7.75 times longer than thick; tarsus 0.76 of tibia, metatarsus 0.22 of tibia and 0.30 of tarsus.

Abdomen as long as thick; abdomen to body 37 : 100; ovipositor exerted; ovipositor to abdomen 56 : 100.

Male : Length 1.07 mm. Like female; reddish-brown spot on scutellum absent; 2 spines present on margins of scutum and scutellum; thorax more reticulate than female.

Type locality : Coimbatore

Distribution : Coimbatore, Kasaragode, Delhi

Hosts : *Pachyneuron leucospiscida* Mani parasitic on *Leucospis* predator on Coccid. Hyperparasites of *Aspidiotus glomeratus* Green on sugarcane

Marietta leopardina Motschulsky

(Fig. 272)

1863 *Marietta leopardina*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 52.

1907 *Perisopterus javensis*, Howard, *US Dept. Agric. Tech. Ser.*, 12 (4) : 88.

1909 *Marietta leopardina*, Schmiedeknecht, *Gen. Ins.*, 97 : 404.

1935 *Marietta javensis*, Ferrière, *Bull. ent. Res.*, 28 : 404.

1938 *Marietta leopardina*, Mani, *Cat. Indian. Ins.*, 23 : 126.

Length 1.80 mm. "Minuta, depressa, subelongata, fere parallela, postice paulo attenuata, albida, thorace rufotestaceo, abdomine supra nigro, nitido, excavato, antennis pedibusque nigroannulatis, alis cinereis, multissimo albido-maculatis, corpore superantibus; capite lato, valde angustato, fronte depresso, latissimo, semilunato, oculis magnis, suboblongis, vix convexis, cinereo-albidis."

The following is from Howard (1907)

"*Female* : Length 0.72 mm, expanse 2.20 mm, greatest width of fore wing 0.28 mm. Eyes naked. Pattern of fore wings of the reticulated type. Ovipositor well extruded, Mesonotum and mesoscutellum delicately hexagonally reticulate punctate. General colour orange, sides of thorax and abdomen marked with whitish; abdomen with more or less perfect cross-bands of brownish. Legs pallid; femora with two narrow bands of brown; tibiae with three broad brown bands, broader on middle than on hind tibia, and with a

narrow brown tip; first and fifth tarsal joints brownish, others pallid. Antennae with club brown, yellow at tip; third funicle joint brown, white at tip; first and second funicle joints (ring joints) brown; pedicel brown at base, white at tip.

Male : Smaller. Colour about as with female, but with small white thorax. Entire brown except somewhat lighter at tip; pedicel whitish at tip."

Type locality : Ceylon

Distribution : Ceylon, India, Malaya

Hosts : *Lecanium coffeae*, *Tachardia lobata*, *T lacca*, *Aspidiotus orientalis*

Marietta picta (André)

- 1877 *Agonioneurus pictus*, Förster, (MS) in André *Bull. Soc. ent. France*, 119.
 1877 *Coccophagus pantherinus*, Giraud (Nom. nud.). In Labouliene, *Ann. Soc. ent. France*, 419.
 1881 *Spilochalcis picta*, André, *Ann. Soc. ent. France*, 1 : 341.
 1898 *Aphelinus pictus*, Dalla Torre, *Cat. Hym.*, 5 : 222.
 1912 *Perisopterus zebra*, Mercet, *Bol. R. Soc. Esp.*, 14 : 400 ; 16 : 117 (1916).
 1936 *Perisopterus zebra*, Compere, *Univ. California Pub. Ent.*, 6 : 309.
 1950 *Marietta picta*, Ghesquiere, *Rev. France Ent.*, 17 (1) : 40.
 1965 *Marietta picta*, Ferrière, *Fauna de l' Europe Bassin Medit.*, 1 : 1.
 1966 *Marietta picta*, Nikolskaya, & Jasnosh, *Operd. fauna SSSR*, 91 : 296.
 1980 *Marietta picta*, Hayat, *Orient. Ins.*, 14 (4) : 469.

This species is unknown to me.

Type locality : Africa

Distribution : India, U.P., Aligarh, Europe, Africa

Host : *Cerapterocerus*, Chalcids especially parasitic on coccids

Eretmocerus Haldeman

- 1850 *Eretmocerus*, Haldeman, *Amer. J. Sci. Arts.*, (2) 9 : 111.
 1895 *Eretmocerus*, Howard, *US Dept. Agric. Div. Ent. (Tech.)*, 1 : 16.
 1904 *Eretmocera*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 347.
 1909 *Eretmocera*, Schmiedeknecht, *Gen. Ins.*, 97 : 470.
 1931 *Eretmocerus*, Mercet, *Eos*, 7 (4) : 395-399.
 1932 *Eretmocerus*, Dozier, *Proc. ent. Soc. Washington*, 34 (7) : 316-321.
 1936 *Eretmocerus*, Compere, *Pub. ent. Calif. Univ.*, 6 (12) : 316-321.
 1948 *Eretmocerus*, De Santis, *Rev. Museo La Plata (NS)* 5 (Zool.) : 149.
 1951 *Ricinusa*, Risbec, *Mem. Inst. Fr. Africa Noire*, 13 : 403.
 1962 *Eretmocerus*, Tachikawa, *Trans. Shikoku ent. Soc.*, 7 (3) : 73.
 1965 *Eretmocerus*, Yoshimoto, *Pacific Insects*, 7 (4) : 690-691.
 1969 *Eretmocerus*, Gerling, *Lab. ent. Agr. Portici Bol.*, 27 : 79-87.

- 1970 *Eretmocerus*, Gerling, *U.S. Africa ent. Soc.*, 33 (2) : 325-329.
 1972 *Eretmocerus*, Hayat, *Entomophaga*, 17 (1) : 99-106.
 1974 *Eretmocerus*, De Bach, *Biol. Control Nat. Enem.*, 140-143, 167, 202.
 1979 *Eretmocerus*, Krombein *et al.*, *Hymen. N. America*, 1 : 909.
 1980 *Eretmocerus*, Hayat, *Orient. Ins.*, 14 (4) : 468.

Head transverse; antennae in female with 5 and in male with 3 segments; scape not much longer than pedicel, which latter is slightly longer than thick; 2 funicular segments minute, annelliform; club very long, elliptic in male, pedicel not longer than thick, funicular segment absent; club extraordinarily elongate, cylindrical and curved; eyes glabrous or hairy; scutellum slightly wider than long; fore wings without hairs basally; fringe short; hind wing with long fringe; vein *m* much shorter than *sm* hardly longer than *st*; metatarsus longer than the rest of tarsus; abdomen shortly ovate; ovipositor concealed.

Type-species : *Eretmocerus corni* Haldeman

KEY TO SPECIES

- | | |
|--|-------------------------------|
| 1. Pedicel 3 or more times longer than thick | 2 |
| Pedicel less than 3 times longer than thick | 5 |
| 2. Vein <i>m</i> distinctly longer than <i>st</i> | 3 |
| Vein <i>m</i> subequal to <i>st</i> | <i>E. haldemani</i> Howard |
| 3. Vein <i>sm</i> with 3 setae; fringe length equal to 0.25-0.33 of wing width; speculum bordered by at least 2 rows of setae proximally | 4 |
| Vein <i>sm</i> with only 2 setae; fringe length 0.16 wing width; speculum bordered by a single row of setae proximally | <i>E. indicus</i> Hayat |
| 4. Pedicel a little more than 3 times as long as thick, shorter than 0.33 of club; fringe length 0.25 of wing width; middle tibial spur 0.50 of metatarsus | <i>E. mashhoodi</i> Hayat |
| 5. Club spatulate; first funicular segment triangular to subquadrate | 6 |
| Club cylindrical; first funicular segment much shorter than the second, annelliform | 8 |
| 6. First funicular segment triangular, with the ventral margin longer than dorsal, shorter than the segment | 7 |
| First funicular segment quadrate, second segment longer than thick; vein <i>st</i> shorter than <i>m</i> , vein <i>sm</i> with 3 setae; fringe length about 0.33 of wing width | <i>E. mundus</i> Mercet |
| 7. Club about 5 times as long as thick; mesoscutum with 2 pairs of setae | <i>E. rajasthanicus</i> Hayat |
| Club 6-7 times as long as thick; mesoscutum with 3 pairs of setae | <i>E. corni</i> Haldeman |

8. First funicular segment 2 times longer than thick; club 9 times longer than thick; speculum bordered proximally by 11 setae *E. gunturiensis* Hayat

Eretmocerus haldemani Howard

- 1908 *Eretmocerus haldemani*, Howard, *Proc. ent. Soc. Washington*, 10 : 65.
 1912 *Eretmocerus haldemani*, Mercet, *Trab. Mus. Cient. Nat. Madrid*, 10 : 362.
 1936 *Eretmocerus haldemani*, Compere, *Univ. Calif. Pub. Ent.*, 6 : 317.
 1972 *Eretmocerus haldemani*, Hayat, *Entomophaga*, 17 (1) : 100.
 1979 *Eretmocerus haldemani*, Krombein *et al.*, *Hymen. N. America*, 1 : 910.

Characterized by a long pedicel, vein *m* subequal to vein *st* and middle tibial spur 0.50 of metatarsus; mesoscutum with 3 pairs of setae.

Type locality : U.S.A

Distribution : America; India : Aligarh

Host : *Aleurolobus* sp. near *niloticus* on *Dalbergia sissoo*

Eretmocerus indicus Hayat

- 1972 *Eretmocerus indicus*, Hayat, *Entomophaga*, 17 (1) : 100.

Female : Length 0.73 mm. Frontovertex and occiput yellow, face paler; radicle whitish, scape and funicular segments paler, pedicel, club and thorax yellow; wings hyaline; legs yellowish-white; abdomen yellow, sides and venter paler; eyes black.

Frontovertex as long as wide; ocellar triangle obtuse; ocellular space equal to 3 ocellar diameters; eye hairy; gena slightly shorter than eye; antennal sockets near facial margin; interscrobial area with 7 + 7 setae; scrobes shallow, broadly meeting above; mandibles with 2 teeth and dorsal truncation; maxillary and labial palpi with one segment; radicle more than 0.50 of scape; scape 4 times as long as thick, longer than pedicel and funicle combined; pedicel more than 3 times as long as thick, 2 funicular segments subequal; club about 7 times as long as thick, with numerous rhinaria.

Pronotum narrow and membranous in the middle, expanded at the sides with 4 + 4 setae submarginal to the hind margin; mesoscutum, parapsides and scutellum with 4, 1 + 1 and 4 setae respectively; axillae small; metanotum transverse; propodeum narrow in the middle, expanded at the sides; mesopostphragma a broad plate reaching more than 0.50 length of abdomen its apex truncate; fore wings 2.50 times as long as wide; vein *sm* shorter than *m*, with 2 setae and 12 bullae; vein *m* almost 2 times as long as *st* with 4 setae; *pm* absent; speculum proximally bordered by a single row of long setae; length of marginal fringe about 0.16 width of disc; hind

wings 6.50 times longer than wide; marginal fringe almost as long as width of disc; middle tibial spur 0.50 of metatarsus.

Abdomen longer than head and thorax combined; ovipositor slightly exerted, outer plates of ovipositor with a submarginal ridge along its outer margin; first valvifers triangular; second valvifers with outer margin thickened; third valvulae movably articulated with second valvifers.

Male : Length 0.69 mm. Similar, except for the 3-segmented antenna.

Type locality : Aligarh

Host : *Aleurolobus* sp. on *Eugenia jambolina*

Eretmocerus mashhoodi Hayat

1972 *Eretmocerus mashhoodi*, Hayat, *Entomophaga*, 17 (1) : 102.

Female : Length 0.91 mm. Frontoververtex wider than long; ocellular space equal to 2 ocellar diameter; scape slightly less than 5 times as long as thick; first funicular segment shorter than second, its dorsal margin about 0.50 of the length of ventral margin; second segment quadrate; club spatulate, about 6 times as long as thick; mesonotum with 3 pairs of setae; fore wings comparatively narrower; vein *m* longer than *st*; vein *sm* longer than *m* and with 3 setae; speculum proximally bordered by 2 rows of setae; middle tibial spur about 0.50 of metatarsus.

Male : Similar to female except for the 3 segmented antenna.

Type locality : Aligarh

Host : *Aleyrodes* on grass

Eretmocerus mundus Mercet

1931 *Eretmocerus mundus*, Mercet, *Eos, Madrid*, 7 : 395.

1965 *Eretmocerus mundus*, Ferrière, *Faune Eur. Bass. medit.*, 1 : 171.

1966 *Eretmocerus mundus*, Nikolskaya, & Jasnosh, *Opred. Faune, SSSR*, 91 : 149.

1972 *Eretmocerus mundus*, Hayat, *Entomophaga*, 17 (1) : 104.

Funicular segments subequal, quadrate to slightly longer than thick; vein *m* longer than *st*; marginal fringe about 0.33 width of disc, and middle tibial spur about 0.33 of metatarsus.

Type locality : Aligarh

Host : *Aleyrodes* on grass

Eretmocerus rajasthanicus Hayat

(Fig. 273)

1976 *Eretmocerus rajasthanicus*, Hayat, *Entomophaga*, 21 (2) : 160.1980 *Eretmocerus rajasthanicus*, Hayat, *Orient. Ins.*, 14 (4) : 468.

Female : Length 0.51-0.61 mm. Body orange-yellow, face, abdomen below and above pale yellow; mandibular tips reddish-brown; antennae pale yellow; wings hyaline; legs pale.

Head viewed above about 2.66 times wider than long; fronto-vertex about 2 times wider than eye; ocelli in an obtuse-angled triangle; postocellar space equal to about 5 times the ocellular space; malar space with suture; antennae inserted on border of face;

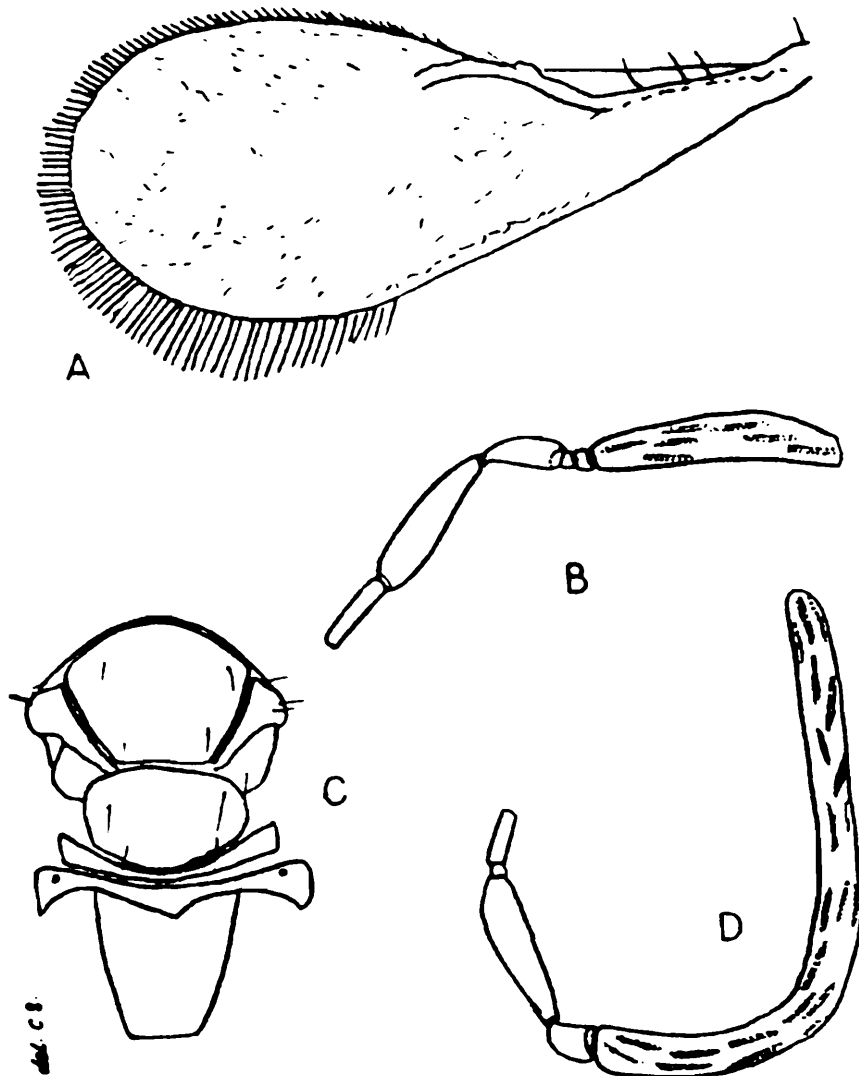


FIG. 273. *Eretmocerus rajasthanicus* Hayat : A. Fore wing, female; B. Antenna, female; C. Thoracic dorsum, female; D. Antenna, male.

scrobes short, shallowly impressed; pedicel less than 3 times as long as thick, club about 5 times as long as thick; mandible bidentate, with a truncation; scutum and scutellum with 2 pairs of setae each; fore wing about 2.33 times as long as wide, the longest fringe a little more than 0.25 of wing width; vein *st* equal to *m*; speculum bordered by 1-2 rows of setae; hind wings about 7 times as long as wide, with 2 rows of setae anteriorly; middle tibial spur a little shorter than 0.50 of metatarsus; abdomen about 0.20 times longer than thorax; ovipositor a little longer than middle tibia; gonostylus about 2 times longer than middle tibial spur.

Male : Length 0.50-0.62 mm. Like female except for reddish-brown body colour; thorax and abdomen dusky; antennae and sex characters.

Head orange-yellow; ocellar area faintly dusky; pronotal collar, scutum and scutellum dusky; axillae paler; metanotum laterally and propodeum except in the middle and at the sides brown; abdomen above dusky, with brown bands forming a triangular patch on tergites 2-5; antennae yellow; pedicel reddish-brown; club pale yellow; antennae as usual for the genus; genitalia with the phallus strongly exerted; digitis volsellaris with strongly curved denticle.

Type locality : Sardar Samand (Rajasthan)

Distribution : (Rajasthan) : Jodhpur

Host : *Acaudaleyrodes rhachipora* (Singh)

Remarks : This species is very close to *E. roseni* Gerling, but is separated as follows: Club in female at least 5 times as long as thick, funicular segment 2 distinctly thickened in the middle; club in male not thicker than pedicel, strongly curved, about 15 times as long as thick.

Eretmocerus corni Haldeman

- 1850 *Eretmocerus corni*, Haldeman, *American J. Sci.*, 9 : 111.
 1895 *Eretmocerus corni*, Howard, *US Dept. Agric. Bur. Ent. Tech. Ser.*, 1 : 16.
 1912 *Eretmocerus corni*, Mercet, *Trab. Mus. Cien. Nat. Madrid*, 10 : 258.
 1930 *Eretmocerus corni*, Mercet, *Rev. Biol. Limnol.*, 2 : 98.
 1932 *Eretmocerus corni*, Dozier, *Proc. ent. Soc. Washington*, 34 : 114.
 1948 *Eretmocerus corni*, De Santis, *Rev. Mus. La Plata, (Zool.)* 5 : 152.
 1972 *Eretmocerus corni*, Hayat, *Entomophaga*, 17 (1) : 104.
 1979 *Eretmocerus corni*, Krombein *et al.*, *Hymen. N. America*, 1 : 910.

Female : Length 0.90 mm. Body generally yellow; antennae more intensely yellow; eyes and ocelli red; wings hyaline; vein *sm* blackish; veins *m* and *st* nigrescent but largely hyaline.

Head subtriangular, eyes small, round, convex, hairy; interocellar space more than front ocellar space; mandible tridentate; antennae very much shorter than body; inserted below lower orbital

border; radicle cylindrical; scape subcylindrical, slightly expanded; pedicel subconical; annelli subcylindrical, first annellus much shorter, transverse, second flat; club spatulate, truncate apically, 5 times as long as thick at apical 0.33; ratios of antennal segments 14 : 62 : 10 : 12 : 227; vertex with strong setae; mesoscutum reticulate with large polygons in front, almost smooth behind; 2 short setae in front; 2 larger behind in the middle, 2 on parapsides and one on axillae; scutellum with 2 pairs sublaterally; wing length : width ratio 75 : 30; veins *sm* : *m* : *st* ratio 18 : 10 : 5; vein *m* with 4 setae; hind wing length : width ratio 62 : 9; tarsi tetramerous; appearing as pentamerous because of large empodium; middle metatarsus to middle tibial spur ratio 90 : 45.

Male : Length 0.84 mm. Mesoscutum in front, scutellum on hind margin nigrescent; mesoscutal reticulation strong; abdomen short; antennal segments ratio 115 : 41 : 48.

Type locality: America

Distribution : Europe, North and South America

Hosts : *Bemisia tabaci* (Gennadius); *Trialeurodes packardii* (Moor.)

Eretmocerus gunturiensis Hayat

1972 *Eretmocerus gunturiensis*, Hayat, *Entomophaga*, 17 (1) : 102.

Female : Length 0.88 mm. Frontoververtex as long as wide; ocellular space less than 2 ocellar diameters; mandibles tridentate; pedicel 2.50 times as long as thick; first funicular segment ring-like, about 2 times wider than long; second segment with ventral margin longer than dorsal margin; club cylindrical, about 9 times longer than thick; mesoscutum with 3 pairs of setae; vein *sm* with 2 setae; speculum proximally bordered by a row of 11 setae; marginal fringe very short.

Male : Like female, except for the 3-segmented antennae.

Type locality : Andhra Pradesh : Guntur

Host : *Aleyrodes* on *Murraya koenigii*

SPECIES INCERTAE SEDIS

Eretmocerus delhiensis Mani

1941 *Eretmocerus delhiensis*, Mani, *Indian J. Ent.*, 3 (1) : 35.

Male : Length 0.40-0.50 mm. Body reddish or brownish-orange; head somewhat reddish at vertex, paler in front, wider than thorax; viewed in front nearly as long as broad; gena about 1.50

times eye; antennae orange or yellowish-brown; all legs yellow with tarsi brown; veins brown.

Vein *m* about 6 times as long as thick; wing clear of pubescence behind the vein *sm*, also with an oblique hairless line subparallel to vein *m* running proximad from the stigma.

Type locality : New Delhi

Host : *Neomaskellia bergii*

Eriaphytis Hayat

1972 *Eriaphytis*, Hayat, *Polsk. Pismo Ent.*, 42 (1) : 152.

Antennae with 8 segments: 1.1.1.3.2; pronotum deeply incised in front; scutellum equal to mesonotum; hexagonal, as long as wide; wings hyaline, broad, with speculum, vein *sm* interrupted; vein *m* distinctly shorter than *sm*; veins *st* and *pm* short; abdomen with syntergum; ovipositor concealed; subgenital plate with a small semi-circular notch behind; outer plates of ovipositor with a short submarginal ridge upto the basal 0.25 of its length.

Type-species : *Eriaphytis orientalis* Hayat

This genus is separated from *Aphytis* by the antennae having 8 segments instead of only 6, with biarticulate club; vein *m* distinctly shorter than *sm*; scutellum as long as wide and by the characters of ovipositor.

Eriaphytis orientalis Hayat

1972 *Eriaphytis orientalis*, Hayat, *Polsk. Pismo Ent.*, 42 (1) : 153.

Female : Length 1.14 mm. Head blackish-brown, with occipital margin, ocular line, orbito-occipital line, medio-frontal and facial lines yellow; interscrobal area brownish-yellow; eyes with brown hairs; scape yellow, club brown; pedicel brown with pale yellow apex, funicular segments yellow; thorax black; wings hyaline; legs brownish-yellow with tips of coxae and femora yellow, tibiae yellow with brown dorsal margin, tarsi yellow; abdomen yellow with posterior 0.50 of fourth tergite and terga 5-7 brownish-black.

Frontovertex finely reticulate; interscrobal area smooth; frontovertex broad, slightly wider than long, ocellar triangle obtuse; ocellocular and ocelloccipital spaces more than ocellar diameter, gena equal to eye width, subocular suture distinct; mandibles with 2 teeth and a truncation, its outer margin with a peg-like seta and inner margin with a small fine seta; maxillary palpi with 2 and labial palpi with one segment; scape 5 times longer than thick; pedicel longer than first funicular segment, first funicular segment, shortest, second segment longest; club almost as long as funicle.

Thorax finely reticulate; pronotum with deeply incised front margin and slightly convex; hind margin with 16 long setae; mesoscutum wider than long, slightly shorter than scutellum; scutellum hexagonal, as long as wide, with apex broadly rounded; mesopostphragma with truncate apex reaching upto posterior margin of second abdominal segment; fore wings well developed; marginal fringe short; vein *sm* longer than *sm* with 5 long setae; vein *m* with 7 setae; vein *pm* short; *st* longer than *pm*; hind wings 5 times longer than wide; marginal fringe as long as 0.50 width of disc; middle tibial spur shorter than metatarsus.

Outer plates of ovipositor with a short submarginal ridge, extending hardly to 0.25 of anterior margin; subgenital plate with a small semi-circular notch in posterior margin, knobs on sides of the notch of posterior margin followed by laterally directed faint ridges.

Male : Like female, except for the longer funicular segments and more brown legs.

Type locality : Aligarh

Distribution : Tamil Nadu, Kerala, U. P.

Host : *Cerococcus* sp. on *Hibiscus rosasinesis*

Mesidia Förster

- 1856 *Mesidia*, Förster, *Hym. Stud.*, 2 : 30.
 1904 *Mesidia*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 346.
 1907 *Mesidia*, Howard, *US Dept. Agric. Bur. Ent. Tech. Bull.*(12) 4 : 73.
 1909 *Mesidia*, Schmiedeknecht, *Gen. Ins.*, 97 : 451.
 1928 *Mesidia*, Mercet, *Bol. Soc. Espan. Hist. Nat.*, 28 : 507-512.
 1929 *Mesidia*, Nowicki, *Neuer Beitr. Syst. Insektenk.* 4 (13-14) : 160.
 1961 *Mesidia*, Graham, *Ent. Monthly Mag.*, 97 (1164-1166) : 140-142.
 1962 *Mesidia*, Ferrière, *Mitt. Schweiz. ent. Ges.*, 35 (1-2) : 139-143.
 1965 *Mesidia*, Ferrière, *Fauna l'Europe Bassin Medit.* 1 : 52-56.
 1966 *Mesidia*, Nikolskaya & Jashnosh, *Opred. Fauna SSSR*, 91 : 153-156.
 1976 *Mesidia*, Graham, *Syst. Ent.*, 1 (2) : 143.
 1979 *Mesidia*, Krombein *et al.*, *Hymen. N. America*, 1 : 898.

This genus is transitional between *Coccophagus* and *Aphelinus*. It resembles *Aphelinus* in having speculum in fore wing and resembles *Coccophagus* in 2 subequal segments before club; antennae with 7 segments; scape rather short; pedicel hardly longer than thick; thicker than the first funicular segment; eyes shortly, closely hairy; *sm* subequal to *m*; *st* almost absent; abdomen shortly oval; ovipositor stout, about 0.33 of abdomen.

Type-species : *Mesidia mexicana* (Howard)

Mesidia argiope (Walker)

- 1839 *Aphelinus argiope*, Walker, *Mon. Chalcid.*, 1 : 9.
 1851 *Myina annulipes*, Walker, *Ann. Mag. nat. Hist.*, 7 : 211.
 1904 *Mesidia pumila*, Mayr, *Verh. zool.-bot. Ges. Wien*, 54 : 588.
 1928 *Mesidia annulipes*, Mercet, *Bol. Soc. Esp. Hist.*, 28 : 509.
 1962 *Mesidia annulipes*, Ferrière, *Mitt. Schweiz. ent. Ges.*, 35 : 140.
 1965 *Mesidia annulipes*, Ferrière, *Fauna de l'Europe Bassin Medit.* 207.
 1976 *Mesidia pumila*, Graham, *Syst. Ent.*, 1 : 143.
 1978 *Mesidia argiope*, Boucek & Graham, *Ent. Gaz.*, 29 : 225-235.
 1979 *Mesidia pumila*, Hayat, *J. Nat. Hist.*, 13 : 185.
 1980 *Mesidia argiope*, Hayat, *Orient. Ins.*, 14 (4) : 469.

This species was first reported from India by Hayat (1979) under the name of *M. pumila* (Mayr)

Hayat gave the following notes :

“This specimen agrees with the description of *M. pumila* (= *annulipes* of Ferrière) given by Ferrière (1962, 1965) except for the following differences: The antennae are wholly brownish, the legs freely suffused with dusky; all tarsal segments of fore legs and distal three segments of both middle and hind legs brownish; antennal pedicel only one third longer than F1 (nearly double the length of F1 illustrated by Ferrière 1965, fig. 19; But he states that ‘Ces dimensions varient peu suivant les individus, mais les articles du funicle peuvent etre un peu plus larges que sur la figuer’). These slight differences do not justify a separate specific status for our specimen.”

Female : Length 0.50-0.60 mm. Body yellow; frons orange; antennae and legs clear yellow; club brown; abdomen with transverse band on tergites.

Generally like *Aphelinus*, but antennae more elongate; the 3 funicular segments longer than thick; first segment shorter than pedicel; club equal to 3 times the preceding segment; scape 34; pedicel 13; funicular segments 7 : 12 : 13; club 33; eyes hairy; parapsidal furrows complete; scutellum with 4 long hairs; wings hyaline; vein *m* larger than *sm*; *st* very short; *pm* absent; fringe short; vein *m* with 7 setae; abdomen short, a little longer than thorax; ovipositor slightly exerted.

Male : Length 0.50-0.60 mm. Like female, but transverse bands on abdomen larger; middle tibia with one black spot at tip; scape short, enlarged; pedicel a little longer than thick; funicular segments subequal to scape; club a little longer than the preceding segment; proportions are scape 27; pedicel 8; funicular segments 21 : 20 : 20; club 35.

Distribution : India : Himachal Pradesh, Manali; U. P. Aligarh; Europe

Hosts : *Isiphya memoralis*, *Saltusaphis* sp.

SUBFAMILY COCCOPHAGINAE

- 1878 *Coccophagidae*, Förster, *Verh. Naturh. Verein. Preuss. Rheinland*, 35 : 65.
 1948 *Coccophaginae*, De Santis, *Rev. Museo La Plata*, (NS) 5 (Zool.) : 3.
 1979 *Coccophagini*, Krombein *et al.*, *Hymen. N. America*, 1 : 899.

Antennae with 7 or 8 segments, rarely 6 or 9; with annelli and short or moderately long setae; fore wing usually long with oblique speculum, fringe variable; tarsi with 4 or 5 segments, rarely heteromerous; middle tarsi with 4 or 5 segments, fore and hind tarsi with 5 segments.

KEY TO GENERA

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|--|------------------------------------|
| 1. Antennae with 7 segments | 2 |
| Antennae with 8 segments | 4 |
| 2. Club uniaarticulate, distinct or not clearly separated; often only the terminal funicular segment, in which case it may appear biarticulate; annellus present | 3 |
| Club distinctly biarticulate, well differentiated; one annellus distinct | <i>Physcus</i> Howard |
| 3. Fore wing with discal ciliation uniform; vein <i>st</i> enlarged; body stout | <i>Ablerus</i> Howard |
| Fore wing with a group of discal cilia thicker and longer than the rest; vein <i>st</i> short, body slender | <i>Azotus</i> Howard |
| 4. Vein <i>m</i> appearing as a prolongation of <i>sm</i> | 5 |
| Vein <i>m</i> appearing as a short oblique break of <i>sm</i> | 9 |
| 5. Scape and flagellum conspicuously compressed | 6 |
| Scape and flagellum slender | 7 |
| 6. Scape normal, flagellum compressed, vein <i>m</i> as long as <i>sm</i> or slightly longer; middle tibia with a row of stout spines basally | <i>Aneristus</i> Howard |
| Scape conspicuously expanded, flagellum normal, club biarticulate, vein <i>m</i> shorter than <i>sm</i> ; middle tibia without spines basally | <i>Prophyscus</i> De Santis (Male) |
| 7. Antennae pyriform without a distinct club | 8 |
| Antennae with a distinct club | <i>Coccophagus</i> Westwood |
| 8. Sensoria on pterostigma in double row | <i>Physcus</i> Howard (Male) |
| Sensoria on pterostigma in a single row | <i>Coccophagus</i> Westwood |
| 9. Fore wing elongate, with long marginal fringe | 10 |
| Fore wing broad, with short marginal fringe | 11 |
| 10. Fore wing with pterostigma; hind wing distinctly petiolate | <i>Aspidiotiphagus</i> Howard |
| Fore wing without pterostigma; hind wing not petiolate | <i>Prospaltella</i> Ashmead |

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|---|----|------------------------------------|
| 11. Fore wing without pterostigma; hind wing not petiolate | 12 | |
| Fore wing with pterostigma; hind wing distinctly pedunculate | | <i>Aspidiotiphagus</i> Howard |
| 12. Antennae clavate, flagellum distinctly wide | 13 | |
| Antennae pyriform | 14 | |
| 13. Vein <i>st</i> curved, apically elongate, hind tibial spur single, mesonotum with some hairs | | <i>Prospaltella</i> Ashmead |
| Vein <i>st</i> terminating in a rounded knob; hind tibial spur double, mesonotum densely hairy | | <i>Coccophagus</i> Westwood |
| 14. The terminal 2 segments of antennae well separated | 15 | |
| The terminal 2 segments of antennae soldered together with the suture faint | | <i>Prospaltella</i> Ashmead (Male) |
| 15. Funicular segments equally long and thick, club biarticulate | 16 | |
| Funicular segments much longer than thick, club triarticulate slightly thickened or not differentiated when it constitutes the terminal funicular segment | 17 | |
| 16. Vein <i>m</i> subequal to <i>sm</i> ; <i>st</i> curved; scape cylindrical or fusiform without sensory organ; middle metatarsus long | | <i>Encarsia</i> Förster (Female) |
| Vein <i>m</i> distinctly shorter than <i>sm</i> , <i>st</i> with globose tip and double row of sensoria, scape distinctly expanded, and with a sensory organ; middle metatarsus short | | <i>Prophycus</i> De Santis (Male) |
| 17. Vein <i>m</i> a little longer or equal to <i>sm</i> , pedicel much shorter than following segment, club merely the terminal segment of flagellum | 18 | |
| Vein <i>m</i> much shorter equal or more than <i>sm</i> ; pedicel pyriform, long, club biarticulate or triarticulate | 19 | |
| 18. Vein <i>m</i> a little more than <i>sm</i> ; <i>st</i> curved; funicular segments slightly thicker than long; annellus present, middle metatarsus long | | <i>Encarsia</i> Förster (Male) |
| Vein <i>m</i> very short, equal or slightly more than <i>sm</i> , <i>st</i> with a rounded tip; funicular segments gradually becoming longer, one annellus present, middle metatarsus short | | <i>Physcus</i> Howard |
| 19. All tarsi with 5 segments | | <i>Prospaltella</i> Ashmead |
| Tarsi heteromerous | | <i>Encarsia</i> Förster (Female) |

Aneristus Howard

- 1895 *Aneristus*, Howard, *Canad. Ent.*, 27 : 351.
 1904 *Aneristus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 345.
 1909 *Aneristus*, Schmiedeknecht, *Gen. Ins.*, 97 : 457.
 1932 *Aneristus*, Dozier, *J. Dept. Agric. Puerto Rico*, 16 (2) : 93-102.
 1936 *Aneristus*, Compere, *Pub. ent. Calif. Univ.*, 6 (2) : 285-288.
 1938 *Aneristus*, Mani, *Cat. Indian Ins.*, 23 : 123.
 1948 *Aneristus*, De Santis, *Rev. Museo La Plata (NS)* 5 (Zool.) : 184.

- 1949 *Aneristus*, Ghesquiere, *Bul. Ann. Soc. ent. Belg.*, 85 (5-6) : 156-167.
 1979 *Aneristus*, Krombein *et al.*, *Hymen. N. America*, 1 : 899.

This genus is recognised by pubescent eyes; maxillary palpi with 2 segments; scutum densely pubescent; antennae with 8 segments, including triarticulate club; scape short; funicle strongly compressed; wing without speculum; veins *sm* and *m* subequal; *pm* sometimes presents, short; hind tibia flat with a row of short bristles; spurs double; tarsi with 5 segments.

Type-species : *Aneristus ceroplastae* Howard

***Aneristus ceroplastae* Howard**

- 1895 *Aneristus ceroplastae*, Howard, *Canad. Ent.*, 27. : 351.
 1896 *Coccophagus orientalis*, Howard, *Proc. US nat. Mus.*, 18 : 683.
 1896 *Aneristus ceroplastae*, Howard, *Psyche*, 7 (Suppl.) : 18.
 1909 *Aneristus ceroplastae*, Schmiedeknecht, *Gen. Ins.*, 97 : 458.
 1909 *Coccophagus orientalis*, Schmiedeknecht, *Gen. Ins.*, 97 : 459.
 1915 *Aneristus fumosipennis*, Girault & Dodd, *Mem. Queensland Mus.*, 4 : 64.
 1917 *Aneristus ceroplastae*, Girault, *Bull. Brooklyn ent. Soc.*, 12 : 88.
 1918 *Prococcophagus orientalis*, Timberlake, *Proc. ent. Soc. Hawaii*, 3 : 401.
 1921 *Aneristus ceroplastae*, Gahan, *Proc. US nat. Mus.*, 65 : (4) : 13.
 1925 *Aneristus ceroplastae*, Dozier, *J. Dept. Agric. Puerto Rico*, 9 : 365.
 1925 *Aneristus ceroplastae*, Box, *J. Dept. Agric. Puerto Rico.*, 9 (4) : : 291-356. pl. 2. fig. 19.
 1926 *Coccophagus orientalis*, Compere & Smith, *Univ. California Pub. Ent.*, 4 : 53.
 1928 *Aneristus ceroplastae*, Smith & Compere, *Univ. California Pub. Ent.*, 4 : 246.
 1934 *Aneristus ceroplastae*, Shiraki, *J. Trop. Agric.*, 6 (1-2) : 29-36, 187-194.
 1938 *Aneristus ceroplastae*, Mani, *Cat. Indian Ins.*, 23 : 123.
 1979 *Aneristus ceroplastae*, Krombein *et al.*, *Hymen. N. America*, 1 : 899.

“*Female* : Length 8.00 mm, expanse 1.60 mm, greatest width of fore wing 0.27 mm. Mesonotum finely and closely shagreened, with sparse, rather long, dark pile; eyes hairy, body black, slightly shining, all coxae and femora black; wings with a very large discal infuscated patch, covering nearly half the wing area.”

Distribution : Ceylon, India, Hawaii, China, Formosa, USA, West Indies, South Africa.

Hosts : *Ceroplastes euphorbiae* Ckll., *C. actiniformis* Green on *Euphorbia hypericifolia*, *Coccus viridis* Green, *Saissetia hemisphaerica* Targ., *S. oleae* (Ber.), *Saissetia nigra*, *Aspidiotus acuminatus*, *Pseudococcus aonidum*, *Coccus rubens* Mask., *Coccus elongatus* Sign., *Coccus hesperidum* Lein, *Coccus pseudomagnoliarum* Kuw., *Protopulvinaria mangiferae*, *Pulvinaria iceryi* Guer. *Pulvinaria sp.*, *Pulvinaria polygonata*.

Aspidiotiphagus Howard

- 1891 *Coccophagus* (partim), Crawford, *Destruct, Ins.*, 28.
 1894 *Aspidiotiphagus*, Howard, *Ins. Life. Dept. Agr.*, 6 (3) : 230.
 1904 *Aspidiotiphagus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 245.
 1909 *Aspidiotiphagus*, Schmiedeknecht, *Gen. Ins.*, 97 : 457.
 1914 *Prospaltoides*, Bréthès, *Nunguam Otiosus, Buenos Aires*, 19.
 1926 *Aspidiotiphagus*, Paoli, *Bol. Soc. ent. Ital.*, 58 : 97-105.
 1927 *Aspidiotiphagus*, Dozier, *J. Puerto Rico Dept. Agr.*, 10 (3-4) : 247-277.
 1930 *Aspidiotiphagus*, Mercet, *Rev. Biol. Forest Limnologia*, 2 (B) : 294-295.
 1936 *Aspidiotiphagus*, Compere, *Pub. ent. Calif. Univ.*, 6 (12) : 294-295.
 1938 *Aspidiotiphagus*, Mani, *Cat. Indian Ins.*, 23 : 122.
 1948 *Aspidiotiphagus*, De Santis, *Rev. Museo La Plata, (NS) 5 (Zool)* : 223.
 1956 *Aspidiotiphagus*, Alam, *Roy. ent. Soc. London*, 108 (8) : 359-363.
 1979 *Aspidiotiphagus*, Krombein *et al.*, *Hymen. N. America*, 1 : 899.

Eyes pubescent, mandibles tridentate, maxillary palpi biarticulate; labial palpi uniaarticulate; antennae inserted near mouth; clavate with 8 segments; scape long and slender; pedicel a little longer than thick; funicular segments 1-3 becoming gradually thicker and subequal to pedicel; club elongate, distinctly triarticulate, pointed apically; scutellum broad; wings long, narrow, clavate with long fringe; vein *m* stout, longer than *sm*; *st* and *pm* absent; middle tibial spur slender, about 0.50 of metatarsus; abdomen short, rounded behind; ovipositor short.

Male : Rare; flagellum filiform, club not differentiated.

Type-species : *Aspidiotiphagus citrinus* (Crawford)

Aspidiotiphagus citrinus citrinus (Crawford)

(Fig. 274)

- 1891 *Coccophagus citrinus*, Crawford, *Destruct Ins.*, 28.
 1891 *Coccophagus citrinus*, Crawford, *Bul. Calif. State Bd. Hort.*, 57 : 5.
 1891 *Encarsia citrinus*, Riley, in Howard, *Ins. Life*, 4 : 168.
 1894 *Aspidiotiphagus citrinus*, Howard, *Ins. Life*, 6 (3) : 229.
 1896 *Aspidiotiphagus citrinus*, Howard, *Proc. US nat. Mus.*, 18 : 635.
 1904 *Aspidiotiphagus citrinus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 511.
 1909 *Aspidiotiphagus citrinus*, Schmiedeknecht, *Gen. Ins.*, 97 : 457.
 1914 *Prospaltoides howardi*, Bréthès, *Nunguam Otiosus Buenos Aires*, 13-14.
 1916 *Prospaltoides howardi*, Bréthès, *Ann. Mus. Buenos Aires*, 27 : 492.
 1917 *Aspidiotiphagus citrinus*, Malenoti, *Berlese Redia*, 12 : 15-18.
 1926 *Aspidiotiphagus citrinus*, Silverstri, *Nov. Ann. Agr.*, 6 : 97-101.
 1926 *Aspidiotiphagus citrinus*, Ferrière, *Act. Soc. helvet. Sc. Nat.*, 107 (2) : 223-224.
 1926 *Aspidiotiphagus citrinus*, Vandenberg, *Rep. Guam. Agric. Exxpt. Sta.*, 1925 : 17-20
 1927 *Aspidiotiphagus citrinus*, Tothill, *Fiji Legisr Coun. Paper No. 38, 1927*, pp. 4.
 1932 *Aspidiotiphagus citrinus*, Bouhelier & others, *Def. Cult. Dir. Gen. Agric. Comm. Colon. (Morocco)*, 6 : 1-60. fig. 10.

- 1933 *Aspidiotiphagus citrinus*, Alden, *Bull. Georgia St. Board Ent.*, 73 : 32, fig. 14.
 1938 *Aspidiotiphagus citrinus*, Mani, *Cat. Indian Ins.*, 23 : 122.
 1940 *Aspidiotiphagus citrinus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 27.
 1948 *Aspidiotiphagus citrinus*, De Santis, *Rev. Musco La Plata*, (NS) 5 (Zool.) : 225.
 1974 *Aspidiotiphagus citrinus*, Saraswat & Mukerjee, *Orient. Ins.*, 8 (2) : 189.
 1979 *Aspidiotiphagus citrinus citrinus*, Krombein *et al.*, *Hymen. N. America*, 1 : 900.

Female : Length 0.65 mm. Body brown, irregularly black, eyes red; ocelli pink; vertex, antennae, except laterally, anteriorly and posteriorly thorax; apical 0.33 of abdomen, yellow with black ovipositor, legs yellow; middle and hind coxae black wings hyaline with a broad transverse infumate band.

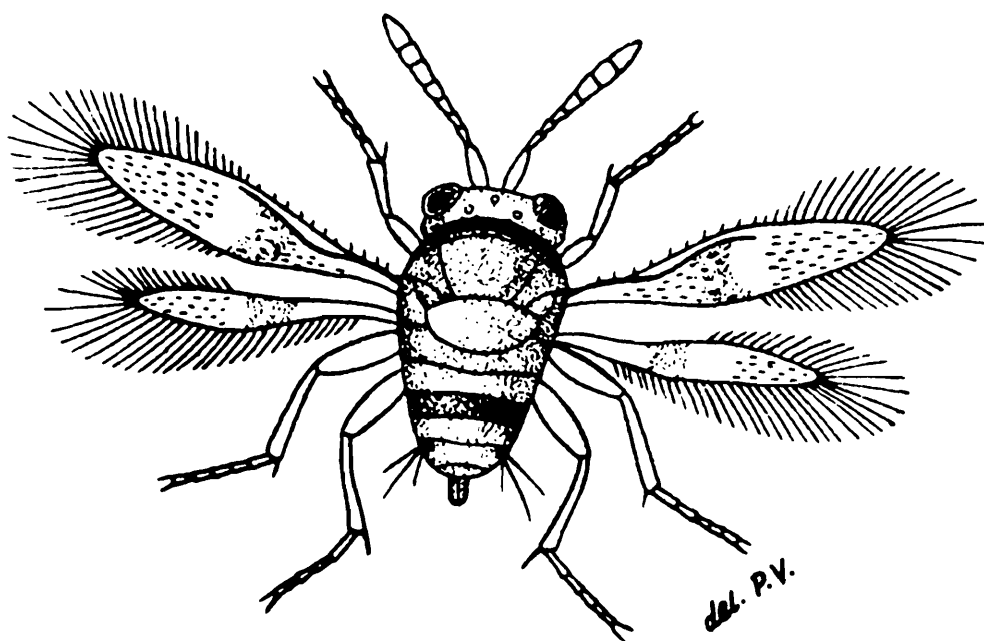


FIG. 274. *Aspidiotiphagus citrinus citrinus* (Crawford), female.

Head, abdominal base reticulate; mesonotum distinctly reticulate in pigmented areas; head as wide as thorax; eyes rarely hairy, ocellular space equal to interocellar space; antennal segments proportions 89 : 41 : 25 : 25 : 29 : 39 : 47 : 70; mesonotum length : width 36 : 43; with one seta in front near anterolateral angle on each side, pair of setae behind, scutellum with one pair of setae in front and another behind; fore wing length : width ratio 51 : 11; marginal fringe 15; veins *sm* : *m* ratio 35 : 38; hind wing length : width ratio 44 : 5; second and fifth urotergite with a pair of stout bristles; ovipositor concealed or slightly exerted.

Male : Rare.

The morphological form called *citrinus* may consist of sibling species.

Type locality : Ceylon

Distribution : Cosmopolitan.

Hosts : *Anoidiella aurantii* (Mask.), *A. citrina* (Coq.), *Aspidiotus destructor* Sign., *A. nerii* Bouché, *Carulaspis visci* (Schrank), *Chinaspis pinifoliae* (Fitch), *Chrysomphalus anoidum* (L.) *C. dictyospermi* (Morg.), *Coccus hesperidum* L., *Diaspidiotus ancyclus* (Putn.), *Dynaspidiotus britannicus* (Newst.), *Diaspis bromeliae* (Kern.), *D. echinocacti* (Bouche), *Kuwanaspis hikosani* (Kuw.), *Lepidosaphes beckii* (Newm.), *L. ulmi* (L.), *Melanspis tenebricosa* (Comst.), *Nuculaspis californica* (Col.), *Parlatoria oleae* (Colv.). *P. pergandii* Comst., *Pinnaspis aspidistrae* (Sign.), *P. strachani* (Cooley), *Pseudonidia duplex* (Ckll.), *Pseudaulacaspis pentagona* (Targ.-Tozz.).

Azotus Howard

- 1898 *Azotus*, Howard, *Proc. ent. Soc. Washington*, 4 (2) : 138.
 1907 *Azotus*, Howard, *US Dept. Agric. Bur. Ent. Tech. Bull.*, (12) 4 : 74.
 1909 *Azotus*, Schmiedeknecht, *Gen. Ins.*, 97 : 455.
 1914 *Dimacrocerus*, Bréthès, *Nunguam Otiosus*, Buenos Aires, 4.
 1923 *Azotus*, Mercet, *Bol. Soc. Espan. Hist. Nat.*, 23 (9) : 410-413.
 1926 *Azotus*, Nowicki, *Polsk Pismo Ent.*, 5 (1-2) : 104-113.
 1927 *Azotus*, Ferrière, *Rev. Suisse Zool.*, 34 (2) : 57-59.
 1948 *Azotus*, De Santis, *Rev. Museo La Plata (NS)* 5 (Zool.) : 212.
 1952 *Azotus*, Nikolskaya, *Chalcid. Fauna USSR*, 295.
 1956 *Azotus*, Alam, *Trans. R. ent. Soc. London*, 108 (8) : 358, 376-379.
 1964 *Azotus*, Agarwal, *Proc. Indian Acad. Sci.*, (B, 60 : 326-331.
 1970 *Azotus*, Annecke & Insley, *Bul. ent. Res.*, 60 (2) : 237-247.
 1974 *Azotus*, De Santis, *Rev. Chilena Ent.*, 8 (1) : 11-15.
 1979 *Azotus*, Krombein *et al.*, *Hymen. N. America*, 1 : 900.

Mandibles tridentate; maxillary palpi biarticulate, labial palpi uniarticulate; antennae inserted close to mouth, with 7 segments; scape slender cylindrical; pedicel a little shorter than first funicular segment; funicular segments 1, 2 and 4 subequal; third in female shortest and in male minute; club large, cylindrical in basal 0.33 and acute apically, entire or obscurely biarticulate; vein *m* slightly shorter than *sm*; *st* about 0.50 of *m* with a rounded knob; fringe long; middle tibial spur 0.50 of metatarsus; middle metatarsus not much shorter than others combined; abdomen elongate; ovipositor 0.50 of abdomen.

Type-species : *Azotus marchali* Howard

KEY TO SPECIES

1. Scape flattened and expanded beneath; fore wings with a pattern of infuscated and hyaline areas, not with cross-bands 3
- Scape slender, more or less cylindrical; fore wings with one or 2 infuscated cross-bands 2

2. Fore wings with a single cross-band extending from behind vein *m* to posterior margin of wing, apical margin of wing slightly infuscated; fringe more than 0.50 of width of disc; discal setae not arranged in definite group; second funicular segment shorter than first funicular segment

**Azotus aligarhensis*
Khan & Shafee

Fore wings with 2 cross-bands bearing dark, coarse setae, and a patch of variable dimensions extending obliquely outward on the disc from the junction of *sm* and *m* veins; second funicular segment subequal to or slightly longer than first funicular segment

**A. kashmirensis* Narayanan,
A. bimaculatus Khan & Shafee

3. Pedicel subequal to first or second funicular segment; third funicular segment usually slightly longer than thick and about 0.50 of second funicular segment; other characters disagreeing

4

Pedicel distinctly shorter than first funicular segment; first funicular segment wider and somewhat longer than second funicular segment; third funicular segment usually slightly wider than long and shorter than 0.50 of second funicular segment; mandibles with 2 teeth and a truncation; tuft behind vein *st* with 13-22 setae; 12-21 setae beneath the hyaline box; *m* slightly shorter than 0.50 of width of disc; pedicel as compared to *qadrii* very narrowly pale at apex; sometimes the paler portion impossible to detect or so pale the pedicel appears completely brown; hind tibiae with the distal 0.50 or so pale

A. delhiensis Lal

4. Pedicel entirely brown; tuft behind *st* composed of 7-8 setae; about 11 setae present beneath the hyaline box

**A. chionaspidis* Howard

Pedicel conspicuously paler at apex; tuft behind *st* composed of 9-20 setae; 7-14 setae beneath the hyaline box; mandibles tending to quadridentate; hind tibia with distal third or so pale

**A. qadrii* Agarwal

***Azotus delhiensis* Lal**

(Fig. 275)

1938 *Azotus delhiensis*, Lal, *Rec. Indian Mus.*, 40 : 2.

1939 *Azotus delhiensis*, Mani, *Indian J. Ent.*, 1 : 89.

Female : Length 0.76 mm. Body dark metallic-green; abdomen dark steel-blue; eyes bordered white laterally and internally; scape, pedicel, first funicular segment metallic-blue; third segment and club

* These species are not included below, because I have not seen either specimens or descriptions.

very dark brown, second and fourth segments white; except knees femora, except apical 0.50 of tibiae dark brown; rest of legs white.

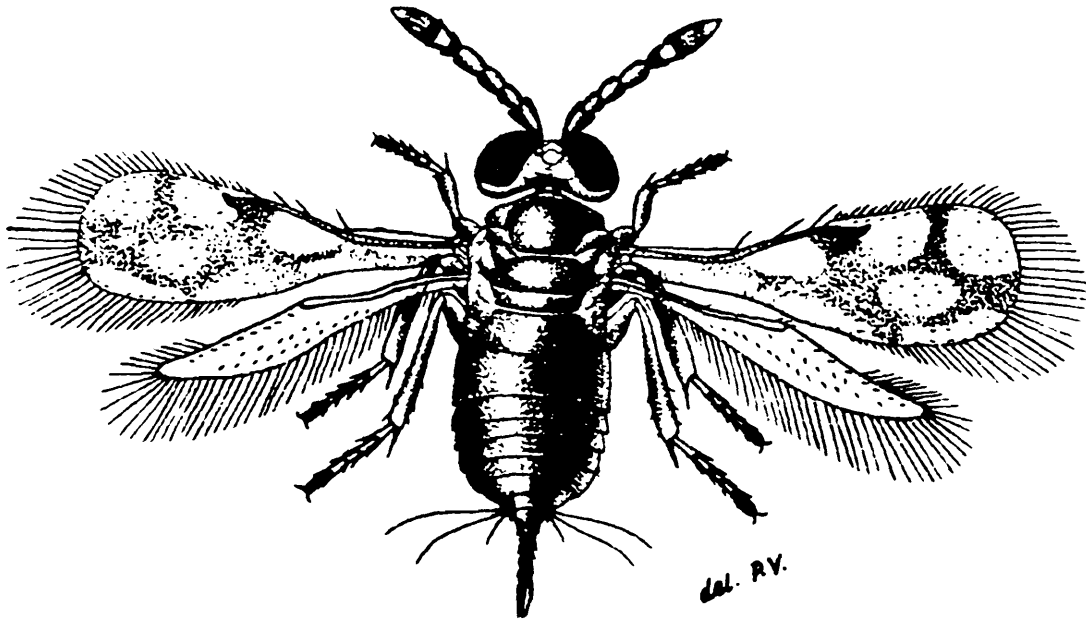


FIG. 275. *Azotus delhiensis* Lal, female.

Head slightly narrower than thorax; antennae with 8 segments; scape at least 2 times as long as thick, expanded apically; pedicel a little longer than thick; third funicular segment about 0.25 of fourth; club obscurely biarticulate; fore wings about 3 times as long as wide, vein *sm* a little longer than *m*, stigma large, globose; infuscate bands narrow, enclosing hyaline circular spots; middle tibial spur subequal to metatarsus; abdomen wider than thorax; ovipositor 0.50 of abdomen.

Male : Length 0.62 mm. Antennae uniformly brown; scape 3 times pedicel; funicular segments 1-2 a little longer than scape; third small.

Type locality : Karnal

Distribution : Karnal, Delhi

Hosts : *Aleurolobus barodensis* on *Saccharum officinarum*. Primary parasites of *Aspidiotus glomeratus* Green on *Saccharum officinarum*

SPECIES INCERTAE SEDIS

Azotus pulchriceps (Zehntner)

- 1899 *Ablerus pulchriceps*, Zehntner, *Meded. Proefst. West Java*, 38 : 10.
 1907 *Azotus pulchriceps*, Howard, *Tech. Ser. US Dept. Agric. Bur. Ent.*, 12 : 76.
 1912 *Azotus pulchriceps*, Mercet, *Trab. Mus. Cien. Nat. Hist. Madrid*, 10 : 145.
 1979 *Azotus pulchriceps*, Hayat, *J. Nat. Hist.*, 13 : 185-193.
 1980 *Azotus pulchriceps*, Hayat, *Orient. Ins.*, 14 (4) : 462.

This species is not known to me.

Type locality : Java

Distribution : India; Java

Host : *Aleyrodes longicornis*

Coccophagoides Girault

- 1915 *Coccophagoides*, Girault, *Mem. Queensland Mus.*, 4 : 58.
 1927 *Diaspiniphagus*, Silvestri, *Bol. Lab. Zool. Gen. Agr. Portici*, 20 : 35-36.
 1928 *Coccophagoides*, Mercet, *Bol. Soc. Espan Hist. Nat.*, 28 : 511-512.
 1929 *Coccophagoides*, Nowicki, *Neue Beitr. Syst. Insektenk.*, 4 (13-14) : 158.
 1936 *Coccophagoides*, Compere, *Pubs. Ent. Calif. Univ.*, 6 (12) : 292-293.
 1966 *Coccophagoides*, Doutt, *Hilgardia*, 37 (9) : 219-231.
 1979 *Coccophagoides*, Krombein *et al.*, *Hymen. N. America*, 1 : 901.

This genus differs from *Coccophagus* in having a markedly tapering flagellum, the first funicle segment abruptly shortened and the marginal vein distinctly shorter than the submarginal.

Type-species : *Coccophagoides (Coccophagus) abnormicornis* (Girault)

Coccophagoides orientalis (Agarwal)

- 1964 *Prospaltella orientalis*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 275.
 1964 *Coccophagoides orientalis*, Hayat, *J. nat. Hist.* 13 : 189.
 1980 *Coccophagoides orientalis*, Hayat, *Orient. Ins.*, 14 (4) : 464.

Male of this species differs from the males of *C. utilis* Doutt as follows :

Legs mostly whitish, except for the dark brown coxae and slightly infuscate hind femora and tibiae, pedicel (ventral length) and first funicular segment subequal; funicular segments progressively, though very slightly becoming shorter so that first funicular segment is about 1.50 times and third funicular segment about 1.33 times as long as thick, first segment of club slightly longer than any of the funicular segment individually.

Type locality : India

Coccophagus Westwood

- 1825 *Entedon* (partim), Dalman, *Svensk. Vet.-Akad. Handl.*, 46 : 365.
 1833 *Coccophagus*, Westwood, *Philos. Mag.*, 3 (3) : 344.
 1881 *Coccophagus*, Howard, *Rep. ent. US Dept. Agric.*, 1880 : 353-354.
 1885 *Coccophagus*, Howard, *Bull. Dept. Agric. Bur. Ent.*, 5 : 24-25.
 1895 *Coccophagus*, Howard, *Div. ent. US Dept. Agric. Tech. Ser.*, 1 : 10-11, 13-32.

- 1904 *Coccophagus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 345.
 1907 *Coccophagus*, Masi, *Boll. Lab. Zool. Portici*, 1 : 238-246.
 1909 *Coccophagus*, Schmiedeknecht, *Gen. Ins.*, 97 : 458.
 1912 *Coccophagus*, Mercet, *Trab. Mus. Cien. Nat.*, 10 : 219-220.
 1913 *Paracharitopus*, Bréthès, *Ann. Buenos Aires Mus. Nac. Hist. Nat.*, 24 : 105.
 1915 *Coccophagus*, Girault, *Mem. Queensland Mus.*, 4 : 55-57.
 1918 *Onophilus*, Bréthès, *Soc. Rural Argentina*, 53 : 155.
 1928 *Coccophagus*, Mercet, *Bol. Soc. Espan. de Hist. Nat.*, 28 : 509-510.
 1929 *Coccophagus*, Mercet, *Rev. Biol. Fors. Limnologia*, 87.
 1930 *Coccophagus*, Mercet, *Rev. Biol. Fors. Limnologia*, (Ser. B) 2 : 8791.
 1930 *Parencarsia*, Mercet, *Eos*, 6 (2) : 198.
 1931 *Coccophagus*, Compere, *Proc. US nat. Mus.*, 78 (7) : 1-132. pl. 14.
 1931 *Coccophagus*, Mercet, *Eos*, 7 (4) : 399-410.
 1936 *Coccophagus*, Flanders, *Science*, 83 (2160) : 499.
 1936 *Coccophagus*, Flanders, *J. econ. Ent.*, 29 (3) : 468.
 1936 *Coccophagus*, Flanders, *J. Ann. ent. Soc. Amer.*, 29 (2) : 251-255.
 1938 *Coccophagus*, Mani, *Cat. Indian Ins.*, 23 : 124.
 1940 *Coccophagus*, Compere, *Hilgardia*, 13 (7) : 395-405.
 1948 *Coccophagus*, De Santis, *Rev. Museo La Plata (NS)* 5 (Zool.) 160.
 1952 *Coccophagus*, Risbec, *Mem. Madagascar Inst. Sci.*, 2 (E) : 152.
 1953 *Coccophagus*, Flanders, *Ann. ent. Soc. America*, 47 (1) : 87.
 1956 *Coccophagus*, Alam, *Roy. ent. Soc. London*, 108 (8) : 363-367.
 1957 *Coccophagus*, Tachikawa, *Japanese J. appl. Ent. Zool.*, 1 (1) : 61-64.
 1960 *Coccophagus*, Sugonyayey & Chung-Yon, *Ent. Rev.*, 39 (3) : 503-507.
 1961 *Coccophagus*, Zinna, *Lab. ent. Agr. Portici*, 19 : 303-317.
 1964 *Coccophagus*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 267-274.
 1965 *Coccophagus*, Yoshimoto, *Pacific Insects*, 7 (4) : 699.
 1969 *Coccophagus*, Subba Rao, *J. nat. Hist.*, 3 : 381.
 1971 *Coccophagus*, Hayat, *Entomophaga*, 16 (3) : 291-297.
 1974 *Coccophagus*, Hayat, *J. nat. Hist.*, 8 : 179-186.
 1974 *Coccophagus*, Hayat, *Orient. Ins.*, 8 (3) : 291-297.
 1976 *Coccophagus*, Graham, *Syst. Ent.*, 1 (2) : 137-142.
 1979 *Coccophagus*, Krombein *et al.*, *Hymen. N. America*, 1 : 901.

Eyes hairy; maxillary palpi with 2 and labial palpi with one segments; antennae with 8 segments, with or without annellus; scape short and stout; pedicel 0.33 of scape and as long as thick; funicular segments 1-3 gradually shorter; club distinctly triarticulate; distinctly longer than the preceding 2 segments combined; scutellum as long as wide; rounded behind; fore wing without speculum; vein *m* equal to or longer than *sm*; short; middle tibial spur stout but shorter than metatarsus; abdomen oval; ovipositor not exerted or only slightly exerted. Body generally black with yellow in scutellum other parts of thorax.

Type-species: Coccophagus scutellaris (Dalman)

KEY TO SPECIES

- | | | |
|--|----|--------------------------------------|
| 1. Scutellum generally almost as densely setose as mesoscutum | 2 | |
| Scutellum with only one or 3 pairs of long setae | 3 | |
| 2. Body wholly black; pedicel shorter than the first funicular segment | | <i>C. orientalis</i> Howard |
| Body differentially coloured; abdomen wholly yellow; scutellum about 1.50 times wider than long | | <i>C. gilvus</i> Hayat |
| 3. Scutellum with one pair of long setae; body yellow; first funicular segment about 2 times pedicel | | <i>C. flavescens</i> Howard |
| Scutellum with 3 pairs of long setae | 4 | |
| 4. Axillae with 2 long setae | 5 | |
| Axillae almost as densely hairy as mesoscutum; first funicular segment about 4 times as long as thick; head, legs and most of thorax yellow; abdomen black | | <i>C. redini</i> Girault |
| 5. Pedicel distinctly longer than the first funicular segment | 23 | |
| Pedicel shorter than the first funicular segment | 6 | |
| 6. First funicular segment longer than the second | 7 | |
| First funicular segment shorter than the second | 20 | |
| 7. Body black or brownish-black | 8 | |
| Body partly or wholly yellow or purple | 13 | |
| 8. Fore wings hyaline .. | 9 | |
| Fore wings clouded | 11 | |
| 9. Legs largely yellow; hind tibiae more or less black; face and gena mostly yellow; tegulae and parapsides brown; scape yellow; flagellum dark brown | | <i>C. flavifrons</i> Howard |
| Legs largely black or dark brown; rarely knees yellow; face and gena brown to black | 10 | |
| 10. Face, gena and antennae brownish-yellow; hind tibial dorsal setae suberect; tergites 5-6 without markings at sides | | <i>C. anthracinus</i> Compere |
| Face, gena and antennae black; hind tibial dorsal setae not exceptionally long; knees not yellow, but pale; tergites 5-6 marked at sides | | <i>C. atratus</i> Compere |
| 11. Head black; pedicel distinctly longer than thick; vein <i>pm</i> shorter than <i>st</i> | 12 | |
| Head dark brown; pedicel a little longer than thick; vein <i>pm</i> only 0.33 of <i>st</i> ; body and antennae brown | | <i>C. diaspidis</i> Agarwal |
| 12. Vein <i>pm</i> vestigial; fringe about 0.05 of wing width; eyes black; abdomen black; vein <i>sm</i> with 20 bullae, 6 setae | | <i>C. delhiensis</i> Subba Rao & Rai |
| Vein <i>pm</i> a little shorter than <i>st</i> ; fringe about 0.10 of wing width; abdomen dark brown; vein <i>sm</i> with 24 bullae, 5 setae .. | | <i>C. citri</i> Agarwal |

13. Body black; scutellum partly or wholly yellow 14
Differently coloured 15
14. Scutellum nearly completely yellow; hind 14
tibiae brown, with tip white *C. bogoriensis* (Konigsb.)
Scutellum broadly black along front margin; *C. cowperi* Girault
hind tibiae yellow
15. First funicular segment 3 or more times longer 18
than thick
First funicular segment not 3 times as long as 16
thick
16. Vein *pm* distinctly longer than *st*; except 17
occiput and exposed part of pronotum,
head and thorax yellow; abdomen black *C. tschirchi* Mahdihassan
Vein *pm* shorter than or equal to *st*
17. Vein *pm* equal to *st*; eyes red or brown; 17
scutellum largely yellow *C. perhispidis* Girault
Vein *pm* about 0.25 of *st*; eyes black; body
orange-yellow; scutellum reddish-brown;
occiput black; abdomen orange-yellow *C. indicus* Agarwal
18. First funicular segment in the middle, the 18
whole of the second and the first 2 club
segments brown, rest of antennae yellow;
first funicular segment about 5 times longer
than thick *C. longicornis* Hayat
Flagellum uniformly coloured 19
19. Abdomen with 4 dusky bands on tergites 4-7; 19
frontovertex as long as wide; funicular
segments 1-3 ratio respectively 3.75 : 3 :
2.75; middle tibial spur shorter than
metatarsus *C. subflavescens* Hayat
Abdomen with 2 brown dots on sides of
second tergite, otherwise second and third
tergites yellow; rest of abdomen brown;
frontovertex longer than wide; third
funicular segment about 2.50 times longer
than thick; middle tibial spur shorter than
metatarsus *C. burksi* Hayat
20. Vein *sm* shorter than *m*; body yellow, suffused 21
with black
Vein *sm* longer than *m*; head, thorax and
abdomen orange-yellow; middle tibial spur
shorter than metatarsus *C. manii* Agarwal
21. Vein *pm* distinct; about 0.50 of *st* 22
Vein *pm* vestigial; middle tibial spur equal to
metatarsus; frontovertex black *C. coorgensis* Subba Rao & Rai
22. Middle tibial spur longer than metatarsus *C. zebratus* Howard
Middle tibial spur shorter than metatarsus *C. zebratulus* Subba Rao & Rai
23. Fore wings with a small cloud behind vein *st*;
ovipositor issuing from the middle of
abdomen *C. bivittatus* Compere
Fore wings without cloud; ovipositor issuing
from near base of abdomen *C. longifasciatus* Howard

Coccophagus orientalis Howard

1896 *Coccophagus orientalis*, Howard, *Porc. US nat. Mus.*, 18 (1092) : 633.

Female : Length 1.20 mm, wing expanse 2.50 mm. Body generally black, with strong purplish reflections; tarsi almost white; tips of front and middle tibiae white; middle tibial spur white; fore wings infuscate upto vein *st*, but otherwise nearly hyaline at extreme base, tip wholly hyaline.

Head and thorax with short and dense black hairs, surface rather faintly shagreened, but shiny; scape somewhat compressed, flat, with distinct bulla, strongly arched below, subequal to pedicel and first 2 funicular segments combined; pedicel a little longer than thick; first funicular segment longer than pedicel and also longer than second funicular segment; second and third funicular segments becoming gradually shorter, but nearly equally thick; club not thicker than funicle; hind femur somewhat thickened; middle tibial spur unusually long and slender

Type locality : Ceylon : Punduloya

Hosts : *Ceroplastes actiniformis*, *Lecanium viride*, *L. coffeae* and *Dactylopius aonidium*.

Coccophagus gilvus Hayat

1971 *Coccophagus gilvus*, Hayat, *Entomophaga*, 16 (4) : 421.

Female : Length 1.23 mm. Head and antennae pale yellow; rhinaria brown; thorax pale yellow with transparent setae; setae on parapsides (4 on each), lateral and posterior margins of mesoscutum, axillae (2 on each) and apical 2 longer setae of scutellum pale brown; wings hyaline; legs white; abdomen pale yellow with a brown spot in the middle of tergites 1-5; posterior third of second valvifers and third valvulae brown.

Frontovertex wider than long; ocellar triangle obtuse; antennal sockets removed from facial margin by more than the length of a socket; maxillary palpi with 2 and labial palpi with one segments; mandibles with a pointed tooth and broad dorsal truncation; scape slightly more than 4 times longer than thick; pedicel shorter than first funicular segment; funicular segments longer than thick; first segment the longest; club 3-segmented, shorter than funicle.

Scutellum about as densely setose as mesoscutum, wider than long, broadly rounded apically; mesopostphragma truncate apically; fore wings a little over 2 times as long as wide, vein *sm* shorter than *m*; with 7 and 13 setae respectively; vein *pm* slightly over 0.50 of *st*; marginal fringe short; hind wings about 4 times longer than wide; marginal fringe nearly 0.25 width of disc; middle tibial spur shorter than metatarsus.

Abdomen longer than thorax; ovipositor concealed.

Male : Length 1.14 mm. Differs from female : Head except 2 black patches on occiput, parapsides except a patch in centre, sides and venter of thorax testaceous hind tibiae brown; abdomen brown.

Type locality : Goa; Sanguem

Host : *Coccus hesperidum*

Coccophagus flavescens Howard

- 1896 *Coccophagus flavescens*, Howard, *Proc. US nat. Mus.*, 18 (1092) : 634.
 1909 *Coccophagus flavescens*, Schmiedeknecht, *Gen. Ins.*, 97 : 458.
 1912 *Coccophagus flavescens*, Mercet, *Trab. Mus. Sci. nat. Madrid*, 10 : 227-228.
 1931 *Coccophagus flavescens*, Compere, *Proc. US nat. Mus.*, 78 (7) : 31. pl. vii, fig. 22.
 1938 *Coccophagus flavescens*, Mani, *Cat. Indian Ins.*, 23 : 125.

Female : Length 1.20 mm, wing expanse 2.60 mm. Body generally honey-yellow; antennae brown; dorsum of abdomen dusky; fore wing slightly infuscated.

Eyes hairy; ocellar triangle right-angled; antennae long, scape reaching front ocellus; first funicular segment about 2 times pedicel and 3 times as long as thick; second funicular segment about 0.60 of the first, about 0.75 of the third and nearly equally thick; club not thicker than funicle, equal to the preceding 2 segments combined; thorax smooth, shiny, not apparently shagreened, with long brown setae; scutellum with 2 apical long bristles and white; body with long brown hairs.

Male : Body uniformly black, except the tarsi and tips of middle tibiae which are dirty-white.

Type locality : Ceylon : Punduloya

Hosts : *Lecanium coffeae*, *L. hemisphericum*, etc.

Coccophagus redini Girault

- 1924 *Coccophagus redini*, Girault, *Homo Perniciosus & New Hymenoptera* (Chalcidoidea : Braconidae) 4.
 1931 *Coccophagus redini*, Compere, *Proc. US nat. Mus.*, 78 : 21-22.
 1969 *Coccophagus redini*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 386.

Female : Length 0.92 mm. Pronotum comparatively narrow, with the sides light yellow and middle from the front to the hind margin black; a pair of long bristles on the sides anteriorly; constriction in the middle prominent, compared with other species; vein *m* clearly longer than *sm*; 2 prominent bristles on femur and tibia.

Type locality : India : Delhi

Distribution : India : Delhi

Coccophagus flavifrons Howard

- 1885 *Coccophagus flavifrons*, Howard, *Bull. Bur. ent. US Dep. Agric.*, 5 : 25.
 1885 *Coccophagus koebelei*, Howard, *Bull. Bur. ent. US Dep. Agric.*, 5 : 25.
 1895 *Coccophagus flavifrons*, Howard, *Ent. Tech. US Dept. Agric. Ser.*, 1 : 36.
 1909 *Coccophagus flavifrons*, Schmiedeknecht, *Gen. Ins.*, 97 : 458.
 1912 *Coccophagus flavifrons*, Mercet, *Trab. Mus. Cienc. Nat.*, 10 : 228.
 1931 *Coccophagus flavifrons*, Compere, *Proc. US nat. Mus.*, 78 : 2850, p.25.
 1969 *Coccophagus flavifrons*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 388.

Female : Length 0.67 mm. Body black; eyes grey; frontovertex black; face, gena and scape yellow; flagellum dark brown; pedicel brown; mandible white at base and yellow at tip; thorax entirely black; fore wings hyaline; middle legs yellow; abdomen black.

Head wider than thorax; eyes prominent, round; scape about 4 times as long as thick, not expanded; pedicel longer than thick but shorter than first funicular segment; first funicular segment longest, following successively shorter; second and third funicular segments almost of uniform size; first club segment almost equal to the third funicular segment, second shorter than the first and the third smallest, broadly pointed; club longer than the last 2 funicular segments; mandible broadly tridentate, outer tooth prominent; maxillary palpi with 2 and labial palpi with one segment.

Scutellum with 3 pairs of bristles; mesoscutum uniformly covered with hairs; fore wings densely and uniformly hairy, marginal fringe short; vein *m* distinctly longer than *sm*; *pm* shortly produced; vein *st* short and broad, longer than *pm* middle tibial spur shorter metatarsus, which latter is shorter than the rest combined.

Abdomen with sides broadly rounded; ovipositor slightly protruding.

Type locality : USA : Florida

Distribution : America; India : Delhi

Host : *Planococcus* sp.

Coccophagus anthracinus Compere

- 1925 *Coccophagus anthracinus*, Compere, *Univ. Calif. Pub. Ent.*, 2, 3 : 309-311.
 1926 *Coccophagus anthracinus*, Compere, *Univ. Calif. Pub. Ent.*, 4, 1 : 11.
 1931 *Coccophagus anthracinus*, Compere, *Proc. US nat. Mus.*, 78, 2850 : 26-28.
 1969 *Coccophagus anthracinus*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 390.

Female : Length 0.75 mm. Body brownish-black to black, without yellow; vein *m* distinctly longer than *sm*. The base of the wing narrow compared to apex which is very broad; anterior margin of wing with a short bend; face, gena and antennae brownish-yellow; hind tibiae above with erect, somewhat long bristles; middle femoro-

tibial joint bristles stout; tergites 5-6 without markings laterally; legs largely dark brown to black; fore wings hyaline; first funicular segment longer than second; pedicel distinctly shorter than first funicular segment; axillae with 2 and scutellum with 3 pairs of setae.

Type locality : India : Delhi

Distribution : India : Delhi

Host : *Lecanium* sp.

***Coccophagus atratus* Compere**

1926 *Coccophagus atratus*, Compere, *Univ. Calif. Pub. Ent.*, 4 : 2-4.

1931 *Coccophagus atratus*, Compere, *Proc. US nat. Mus.*, 78 : 29-30.

1969 *Coccophagus atratus*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 386.

Female : Length 0.75 mm. Body yellow; tergites 5-6 with markings laterally; legs largely dark brown or black; bases and tips of femora and tibiae sometimes yellow; face and gena brown to black; wings hyaline; pedicel shorter than first funicular segment; axillae with 2 and scutellum with 3 pairs of setae.

Distribution : India : Delhi; South Africa : Cape Town

***Coccophagus diaspidis* Agarwal**

(Fig. 276)

1964 *Coccophagus diaspidis*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 270.

Female : Length 0.99 mm. Head dark brown with yellowish orbito-occipital, ocellar, medio-frontal and facial lines; postocciput, cheeks rusty; antennae dark brown with an almost white scape; thorax dark brown, black on scuto-scutellar suture; wings hyaline; middle coxae, femora excepting apex and base of tibiae brown; apex of femora and tibiae excepting base and tarsi whitish; hind coxae, femora and tibiae dark brown; tarsi light brown; abdomen dark brown with inter segmental areas yellow.

Head broader than long; frontovertex horizontal, about 2 times as wide as long; ocellar triangle acute-angled ocellular space more than 1.50 times ocellular space; eyes globular, about as wide as long; cheeks narrower than eye width; antennal sockets removed by about their longitudinal diameter from the facial margin; scrobes deep, convergent but not meeting above; scape very slightly compressed, about 3 times as long as thick; pedicel slightly longer than thick, slightly shorter than first funicular segment; first funicular about as thick as long, second slightly thicker than long, third clearly thicker than long; club 3-segmented, about 2.33 times longer than thick, shorter than funicle; consecutive segments of funicle-club with 6, 8, 8, 6, 8 and 4 sensoria respectively.

Pronotum broad, of uniform width, with anterior margin notched in the middle, posterior margin convex; scutum with 8 rows of setae; parapsides and axillae with 4 and 2 setae each; mesopostphragma narrowly rounded at apex; propodeum narrow in the middle; fore wings infuscated from vein *sm*; vein *st* almost sessile; marginal fringe about 0.15 of wing width; cilia spaced by a distance equal to 0.25 of their length; hind wings slightly less than 5 times longer than wide; marginal fringe less than 0.50 of wing width, spaced by a distance equal to 0.25 of length of hairs; femoral tip with a single seta on its inner face; middle tibial spur longer than metatarsus; hind coxae with 3 long setae on outer face.

Abdomen suboval, longer than thorax; ovipositor almost concealed; outer plates narrow at base, broad at apex with dorsal margin inflexed; second valvifer elongate; valvula oblong, immovably joined with second valvifer.

Type locality : Aligarh

Host : *Diaspis* sp. on sugarcane

C. diaspidis resembles *C. rusti* Compere but Agarwal separates them as follows :

<i>C. rusti</i> Compere	<i>C. diaspidis</i> Agarwal
1. Antennae black	Antennae brown
2. Pedicel 1.50 times longer than thick	Pedicel slightly longer than thick.
3. Pedicel 1.50 times as long as the first funicular segment	Pedicel shorter than the first funicular
4. First funicular slightly more than 2 times as long as thick	First funicular almost as long as thick
5. Third funicular slightly longer than thick	Third funicular clearly thicker than long
6. Infuscated patch on fore wings interrupted by a diagonal hyaline streak	Infuscated patch on fore wings not interrupted by hyaline streak
7. Hind coxae, trochanters and femora yellow	Hind coxae, trochanters and femora brown
8. Tarsi brownish	Tarsi whitish
9. Median part of metanotum and propodeum yellow	Metanotum and propodeum brownish

***Coccophagus delhiensis* Subba Rao & Rai**

1969 *Coccophagus delhiensis*, Subba Rao & Rai, *J. nat. Hist.* , 3 : 383.

Female : Length 0.68 mm. Body shiny black, uniform on thorax and abdomen; head black; frontovertex black; 2 yellow bristles on side; scape yellow; pedicel light brown and flagellum dark brown; scutum black, uniformly covered with hairs; pronotum concave anteriorly and with a black line with number of strong hairs; 2 constrictions laterally below the black line; coxa, femur and upper

end of middle tibia dark and segments light yellow; tarsus and apical 0.50 of tibia white.

First maxillary palpal segment small, apical segment long, with a prominent bristle at tip; labial palpus uniarticulate; mandible incisor-shaped, broadly tridentate with a middle ridge; scape slender, more than 4 times as long as thick; pedicel 1.50 times as long as thick; first funicular segment longest, second and third increasing in thickness but becoming shorter, first club segment longer and thicker than next 2, which is thinner and shorter, club as long as funicle; flagellum covered with thick hairs.

Thorax slightly wider than head; scutellum wider than long, with 3 pairs of bristles; constriction in the middle almost 0.50 of width; fore wings narrow, about 3 times as long as wide, with infuscations reaching hind margin behind vein *m*; longer than *sm*; *pm* vestigial; *st* short and widely expanded at apex, cilia uniform towards tip, at the base with some hyaline areas; tibial spur shorter, and last 4 tarsal segments together longer than metatarsus; 2 strong setae on the segment of tibia and 2 at apex of femur.

Abdomen broad and slightly tapering at apex, length about 1.50 times the breadth; ovipositor not exerted.

Type locality : Delhi

Host : *Lecanium* sp.

Coccophagus citri Agarwal

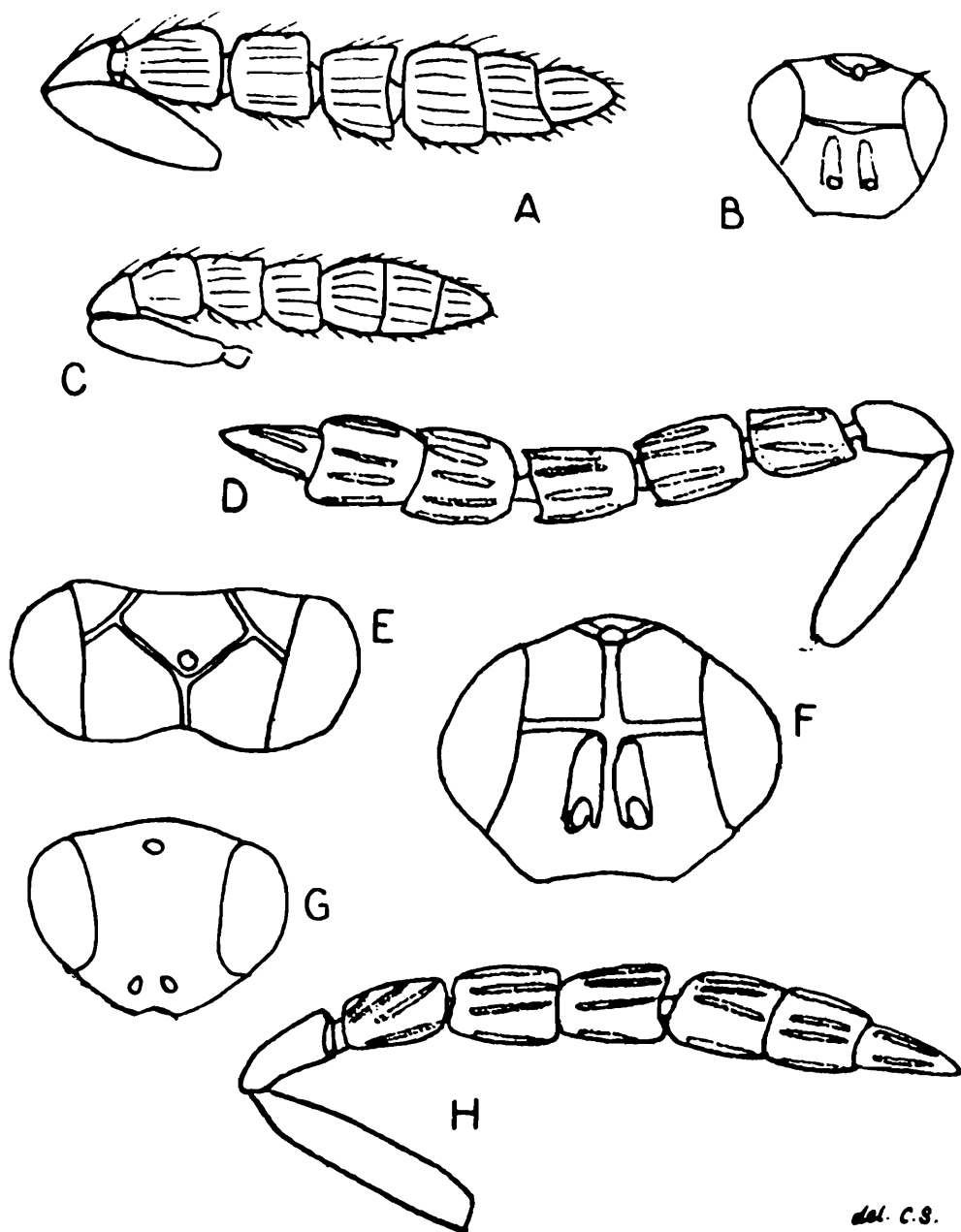
1964 *Coccophagus citri*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 273.

Resembles *C. diaspidis* Agarwal but differs in the following characters :

Female : Length 1.06 mm. Head black with bluish sheen over frons and face; medio-frontal line wanting; antennae black; thorax black with bluish sheen over dorsum and on sides; fore legs except for the tibiae and tarsi whitish; middle coxae, trochanters, femora and basal 0.50 of tibiae dark brown; apical 0.50 of tibiae and tarsal segments white; hind coxae, trochanters, femora and tibiae dark brown; tarsi white; abdomen dark brown.

Frontovertex less than 2 times as wide as long; hind ocelli very close to the occipital margin, more than 2 times this distance from eye rim; scape more than 3 times longer than thick; pedicel clearly longer than thick, much shorter than the following funicular segment; first funicular longer than thick, second as long as thick, third thicker than long; funicle and club with many sensoria.

Propodeum of uniform width; vein *sm* with 5 setae and 24 bullae; vein *pm* shorter than *st*; marginal fringe about 0.10 of wing



del. C.S.

FIG. 276. A. *Coccophagus diaspidis* Agarwal, female, antenna; B-D. *Coccophagus citri* Agarwal, female; B. Head; C. Antenna; D. Antenna; E-H. *Coccophagus manii* Agarwal : E. Head; F. Head in facial view; G. Head in ventral; H. Antenna.

width, hind wings less than 4 times longer than wide; marginal fringe less than 0.25 of wing width; middle tibial spur shorter than metatarsus.

Type locality : Aligarh

Host : *Saccharicoccus* on sugarcane

Coccophagus bogoriensis (Koningsberger)

- 1897 *Encyrtus bogoriensis*, Koningsberger, *Meded. Plant.*, 20 : 14-15.
 1916 *Coccophagus javae*, Girault, *Proc. US nat. Mus.*, 51 : 14-15.
 1931 *Coccophagus javae*, Compere, *Proc. US nat. Mus.*, 78 : 57-59.
 1971 *Coccophagus javae*, Hayat, *Entomophaga*, 16 (4) : 224.

This is closely related *C. cowperi* Girault, but differs in the almost entirely yellow scutellum, hind tibiae brownish-white apically; hind femoral dusky; coxae white.

Body generally black; first funicular segment longer than second; pedicel distinctly shorter than first funicular segment; axillae with 2 setae; scutellum with 3 pairs of setae; wings infuscate faintly; all funicular segments subequal; speculum present.

Type locality : Java

Distribution : Kerala : Calicut

Host : *Chloropulvinaria* sp. on *Lantana camara*

Coccophagus cowperi Girault

- 1907 *Coccophagus flavoscutellum* (partim), Masi, *Boll. Lab. Zool. Gen. Agric. Portici*, 1 : 239.(misidentification).
 1917 *Coccophagus cowperi*, Girault, *Descriptiones stellarum Novarum*, 1.
 1927 *Coccophagus lecanii*, Gahan, *Proc. US nat. Mus.*, 71 : 24-25.
 1928 *Coccophagus lecanii*, Smith & Compere, *Univ. Calif. Pub. Ent.*, 1 : 247-254.
 1931 *Coccophagus cowperi*, Compere, *Proc. US nat. Mus.*, 78 : 57.
 1953 *Coccophagus cowperi*, Flanders, *Ann. ent. Soc. London*, 108 (8) : 90-91.
 1956 *Coccophagus cowperi*, Alam, *Trans. ent. Soc. London*, 108 (8) : 363-364.
 1964 *Coccophagus cowperi*, Annecke, *Ent. Mem. Dept. agric. tech. serv. S. Africa*, 7 : 27-29.
 1971 *Coccophagus cowperi*, Hayat, *Entomophaga*, 16 (4) : 422.
 1979 *Coccophagus cowperi*, Krombein *et al.*, *Hymen. N. America*, 1 : 902.

This species is very closely related to *C. lycimnia* (Walker) from which it differs in having the hind tibiae entirely yellow in female and in male in the yellow fore and middle femora.

Female : Length 1.10 mm. Body shiny black; scutellum yellow, except the black anterior 0.25; post scutellum yellow; head above with brownish-yellow; scape black or brown; funicle and club brown; coxae mostly black; hind femora black, tips brownish-yellow; fore and middle femora yellow to pale brown; tibiae yellow; somewhat fore tarsi brownish-yellow; terminal segment dusky.

Head viewed above slightly more than 2 times as wide as long; frontovertex wider than long; ocellar triangle acute; ocellocular space 2 times ocellar diameter; ocelloccipital space a little more; first funicular segment distinctly longer than pedicel; all funicular segments subequal; gradually becoming slender; third funicular

segment 0.75 times as long as thick; club equal to the second and third funicular segments combined; scutum and scutellum subequal; scutellar width : length 13 : 11, with 3 pairs of stout setae; abdomen 1.25 times thorax; first tergite longest; tergites 2 and 3 with a transverse of 3- 4 setae; other tergites with a complete row of setae; middle tibial spur not equal to metatarsus, which latter is equal to the rest of tarsus; fore wings faintly infumate; speculum present; vein *m* longer than *sm*, ovipositor short.

Type locality : USA

Distribution : Tamil Nadu; Maharashtra : Manmad; Goa

Hosts : *Nipaecoccus vastator* on *Tephrosia purpurea*, *Ceroplastodes* sp. on *T. purpurea* and *Ceroplastodes* sp. on *Rhynchosia ruinima* and *Saissetia coffeae*

Coccophagus tschirchi Mahdihassan

- 1923 *Coccophagus tschirchi*, Mahdihassan, *J. Sci. Assoc. Maharaja's Coll. Vizianagram*, 1 : 82.
 1928 *Coccophagus tschirchi*, Ferrière, *Bull. ent. Res.*, 19 : 173. fig.2.
 1931 *Coccophagus tschirchi*, Compere, *Proc. US nat. Mus.*, 78 art. 7 : 41, pl.7, fig. 29.
 1935 *Coccophagus tschirchi*, Ferrière, *Bull. ent. Res.* 26 : 404.
 1938 *Coccophagus tschirchi*, Mani, *Cat. Indian Ins.*, 23 : 125.
 1971 *Coccophagus tschirchi*, Hayat, *Entomophaga*, 16 (4) : 424.

Female : Length 1.00-1.70 mm. Head yellow; eyes and ocelli black; antennae brown; thorax lemon-yellow; pronotum in the middle, and a circular part on mesonotum in front black; axillae, sides of parapsidal furrows and propodeum brown; legs pale yellow; abdomen black.

Head nearly as wide as thorax; vertex narrow; eyes hairy; ocellular space less than interocellar space; antennae with 8 segments, inserted close to the mouth; scape long, slender; pedicel 1.50 times as long as thick; first funicular segment about 2 times pedicel and about 3 times as long as thick; second funicular segment a little shorter, third subequal to second; club not much thicker than funicle, nearly equal to the preceding 2 segments combined, with 3 segments.

Thorax finely reticulate; scutellum smooth; parapsidal furrows well developed; propodeum without lateral sulci; spiracle minute, circular; thorax clothed with black hairs; wings hyaline; vein *m* much longer than *sm*; veins *st* and *pm* very short; middle tibial spur equal to metatarsus.

Abdomen rounded, subequal to thorax; first tergite longest; second tergite about 0.50 of the first; third tergite slightly longer; fourth transverse; ovipositor a little exerted.

Male : Length 1.20 mm. Darker than female, with mesonotum, except along the parapsidal furrows, axillae and scutellum, except on the sides, dark brown; abdomen brown; legs and antennae entirely yellow; antennae more elongate, pedicel rounded, third funicular segment similar to those of the female, but the club segments longer

Type locality : Khonde Bhavi (Kolar district)

Distribution Kolar, Bengal, Coimbatore, Jammu & Kashmir, Punjab

Hosts : Lac insect on *Butea frondosa*, *Ceroplastodes* sp. on *Cannabis sativa* and *Xanthium strumarium*; *Ceroplastodes cajani* Green on *Ficus glomarata*

This species differs from *C. scutatus* Howard in the scutellum being yellow and not black, in the lemon-yellow mesonotum with a circular black spot instead of a stripe and all legs yellow and not dark.

Coccophagus perhispidis Girault

1926 *Coccophagus perhispidis*, Girault, *New pests from Australia*, 3 Brisbane, Queensland.

1931 *Coccophagus perhispidis*, Compere, *Proc. US nat. Mus.*, 78 : 33.

1969 *Coccophagus perhispidis*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 386.

Female : Length 1.16 mm. Frontoververtex light yellow; eyes prominent, brown; mandibles broad, white at base and tip yellow; scape white; pedicel light black; funicle and club of black; thorax yellow on mesonotum and scutellar portion; sides black; middle black and rest white; fore wings hyaline; middle coxa black and other segments uniformly white; abdomen black.

Frontoververtex narrow and longer than wide; viewed from above, head as wide as thorax, with a constriction in the middle; mandibles tridentate, middle tooth prominent and the side ones truncate; maxillary palpi with 2 and labial palpi with one segments; scape slightly expanded towards tip, about 4 times as long as thick; pedicel short, thickened apically, about 1.50 times as long as thick; funicle and club with numerous sensoria extending almost the length of segments; first funicular segment longest, slightly less than scape and almost equal to the following 2 segments combined; third funicular segment and first club segment almost equal; second club segment shorter than first, last club segment comparatively small and with fewer sensoria.

Scutellum with 3 pairs of bristles, the last pair more prominent and longer; mesoscutum uniformly hairy; pronotum with front margin almost straight, with the constriction in the middle almost 0.50 of length; scutellum diamond-shaped, 4 sides almost equal; fore

wings long, more than 2 times as long as broad, uniformly hairy except at base with a longitudinal hairless area; marginal fringe of moderate length; vein *m* distinctly longer than *sm*; vein *st* short, broad at apex; vein *pm* as long as *st*; femora with 2 prominent bristles; tibial spur slightly shorter than metatarsus, slightly less than the remaining segments.

Abdomen shorter than thorax; sides almost parallel, about 0.67 times their length and with tip broadly pointed; wings reach beyond the tip of abdomen; ovipositor not exerted.

Type locality : America

Distribution : India : Delhi

Host : *Nipaecoccus* sp.

Coccophagus indicus Agarwal

1964 *Coccophagus indicus*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 270.

Female : Length 0.83 mm. This species is characterized by Agarwal as below :

“Resembles *C. manii* differs in the following points :

Head with post occiput black; scape 4.50 times longer than thick; pedicel shorter than the following segment, about 2 times longer than thick; first funicular segment subequal in length but narrower than the following segments; consecutive segments of funicle and club with 6, 6, 7, 7, 6 and 5 sensoria respectively.

Each parapside with 4 setae; scutellum narrow, narrowly rounded at apex, about as wide as long; mesopostphragma narrowly rounded at apex; vein *pm* very short, about 0.25 of vein *st*; apex of tibiae without pegs.”

Type locality : Aligarh

Host : *Pseudococcus citri* Risso on *Citrus medica* Linn.

Coccophagus longicornis Hayat

1971 *Coccophagus longicornis*, Hayat, *Entomophaga*, 16 (4) : 425.

Female : Length 1.17 mm. Head yellow, eyes and ocelli red, narrow band on postgena and a spot on either side of postocciput black; scape and pedicel yellow with a brown patch on dorsal surface, a patch on middle of first funicular segment, whole of second segment and basal 2 club segments brown, rest of antenna yellow; thorax yellow, pronotum in the middle brown, axillae and mesopleura dusky, sutures brown, axillae; parapsides and scutellum with 2 + 2, 4 + 4, and 6 setae respectively; sides of metanotum and a patch

on each side of propodeum mesad of spiracles brown; fore wings hyaline; legs white; abdomen basal 0.50 of venter white, rest of abdomen brown.

Frontovortex as long as wide; ocellar triangle equilateral; ocellocular space equal to ocellar diameter, ocelloccipital space equal to 2 ocellar diameters; scape 5 times longer than thick; pedicel 2 times longer than thick, about 0.50 of first funicular segment; first funicular segment 5 times longer than thick, second segment 4 times and third segment 2.66 times longer than thick; club slightly longer than preceding 2 segments combined.

Scutellum shorter than mesoscutum, hexagonal, apex truncate; mesopleura conspicuously bulged with transverse striae; fore wings 2.66 times longer than wide; vein *sm* shorter than *m*, with 8 and 16 setae respectively; veins *st* and *pm* a small hairless area behind proximal 0.50 of vein *m* separated by a single row of cilia from another hairless area which extends to the base of wing; middle tibial spur subequal to metatarsus.

Abdomen as long as thorax; dorsum with a V-shaped area from base to fifth segment; ovipositor exerted to 0.16 of abdomen; third valvulae conspicuously long (length of third valvulae : length of second valvifers = 175 : 238.)

Type locality : Punjab : Phillaur

Host : *Ceroplastodes cajani* Green on *Ficus glomerata*

Coccophagus subflavescens Hayat

1971 *Coccophagus subflavescens*, Hayat, *Bull. ent.*, 12 (2) : 120.

Female : Length 1.40 mm. Head yellow, occiput pale brown; scape and pedicel yellow, funicular segments and club dusky; thorax yellow with mesopleurae and sides of propodeum dusky; fore wings hyaline; legs pale yellow with hind tibia dusky in the middle; abdomen pale yellow.

Frontovortex nearly as long as wide; ocellar triangle obtuse; ocellocular and ocelloccipital spaces one and 1.50 ocellar diameters respectively; gena shorter than eye; scape slender, 6 times longer than thick; pedicel about 2 times longer than thick and distinctly shorter than first funicular segment; funicular segments one and 3 respectively 3.75, 3; about 2.75 times as long as thick; club shorter than funicle.

Scutum wider than long; parapsides and axillae each with 2 setae; scutellum wider than long, with 3 pairs of setae; mesopleurae conspicuously bulged and transversely striate; fore wings length : width 0.98 : 0.38,; with a faint cloud distad of middle; vein

m longer than *sm*; *pm* well developed; *st* with a slender neck and widely expanded apex; discal cilia sparse; fringe very short; middle tibial spur shorter than metatarsus.

Abdomen with 4 transverse dusky bands on tergites 4-7; ovipositor slightly protruding.

Type locality : Aligarh

Coccophagus burksi Hayat

1971 *Coccophagus burksi*, Hayat, *Entomophaga*, 16 (4) : 426.

Female : Length 1.19 mm. Head yellow, 2 small dots on occipital margin, 2 transverse lines starting from sides of foramen and reaching to gena dusky; scape and pedicel white, with ventral surface yellow; first funicular segment pale brown, segment 2-3 and club brown; thorax orange-yellow, a patch on middle of pronotum and front margin of mesoscutum black; sides of metanotum and propodeum mesad of spiracles dusky; setae brown; wings hyaline; legs white; a brown spot on either side of second tergite, rest of second and whole of third tergite yellow remaining terga dark brown.

Frontovertex longer than wide, with short hairs; ocellar triangle obtuse; ocellocular space less than ocellar diameter; ocelloccipital space more than ocellar diameter; mandibles with one short tooth and a broad dorsal truncation; scape about 6 times longer than thick; pedicel shorter than first funicular segment, latter 3 times longer than thick, third segment 2.50 times longer than thick; club shorter than funicle.

Scutellum shorter than mesoscutum, hexagonal; mesopleura conspicuously bulged, transversely striate-reticulate; each parapside with 5, axillae with 2 and scutellum with 6 setae; fore wings 2.33 times longer than wide; vein *sm* shorter than *m*, these veins with 9 and 16 setae respectively; hind wings 5 times longer than wide, fringe about 0.50 width of disc; middle tibial spur shorter than metatarsus.

Abdomen slightly longer than thorax; ovipositor concealed; length of third valvulae : length of second valvifers = 0.12 : 0.27 mm.

Male : Length 0.89 mm. Differs from female as below : Head deep testaceous-yellow; scape white on basal 0.50, rest of antennal segments dusky; pronotum black in the middle; front margin of mesoscutum broadly, a spot on each parapside, scutoscutellar suture, axillae except posterior margin, apex of scutellum, metanotum, propodeum, abdomen except basal 2 terga, sides and venter brownish-black.

Type locality : Pondicherry : Netaji Nagar

Host : *Coccid*

Coccophagus manii Agarwal

(Fig.276)

1964 *Coccophagus manii*, Agarwal, *Proc. Indian Acad.Sci.*, 59 : 268.1969 *Coccophagus manii*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 392.

Vein *sm* longer than *m*; head, thorax and abdomen orange-yellow; middle tibial spur shorter than metatarsus; first funicular segment shorter than second; pedicel distinctly shorter than first funicular segment; axillae with 2 setae; scutellum with 3 pairs of setae.

Agarwal describes this species as below :

Female : Length 0.71 mm. Head orange-yellow; eyes and ocelli blackish; antennae orange with brown sensoria; thorax orange yellow, slightly brownish on the anterior margin of mesocutum; scutum along the boundaries, axillae, metanotum and propodeum reddish-brown; wings hyaline; fore legs light orange-yellow; abdomen orange-yellow with 5 brownish-black cross bands on distal 0.67

Frontovertex wide, 2.50 times wider than long; eyes globular, slightly longer than wide; ocelli in obtuse-angled triangle, ocell-occipital space about 1.50 times the ocellocular; cheeks short, much narrower than eye width; antennal sockets close to oral margin; scape cylindrical, about 5.50 times longer than thick, slightly shorter than first funicular segment; first funicular shorter than the second and third funiculars individually; second and third segments equal, about 1.50 times longer than thick; club long, 3-segmented, more than 3 times longer than thick, slightly shorter than the funicle; consecutive segments of funicle-club region with 4, 7, 7, 8, 7 and 4 sensoria respectively.

Pronotum small, of uniform width, with anterior margin deeply and acutely notched in the middle, posterior margin convex; each of the parapsides and axillae with 3 and 2 setae respectively; scutellum broadly rounded at apex; propodeum narrow in the middle, expanded on sides; mesopostphragma notched at apex; fore wings more than 2 times as long as wide; vein *sm* long, slightly longer than *m*, with 12 setae and 16 bullae; vein *m* very long; vein *pm* very short, about 0.07 of vein *m*; vein *st* about 2 times as long as *pm*; fringe short, spaced by a distance equal to 0.20 of their length; hind wing 7 times longer than wide; cilia of fringe long, equal to 0.75 of wing width and spaced by a distance equal to 0.20 of their length; outer face of coxae with 2 long setae; apex of femora with a single long seta; metatarsus slightly shorter than the following 2 segments combined; metatarsus shorter than the following 3 segments combined.

Abdomen longer than thorax; ovipositor concealed; outer plates of ovipositor narrow at base, broad at apex, dorsal margin with a

very broad marginal inflexion; second valvifer long; third element-valvulae oblong, immovably continued with the second valvifer

Type locality : Aligarh

Host : *Pseudococcus citri* Risso on *Citrus medica* Linn.

Coccophagus coorgensis Subba Rao & Rai

1969 *Coccophagus coorgensis*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 392.

Female : Length 0.71 mm. Frontovortex and eyes black; scape white; mesoscutum and scutellum yellow; mesonotum black; fore wings hyaline; legs white; anterior 0.33 abdomen yellow and posterior 0.67 black.

Size minute compared to other species of *Coccophagus*. Head narrower than thorax; eyes oval and prominent; scape about 4 times longer than thick and subequal to club; pedicel fusiform, rounded at apex and shorter than first funicular segment, first funicular segment shorter than second, third slightly shorter than the second but slightly longer than thick; club almost equal to funicular segments, first segment thicker and longer than the second; third short and narrow, with tip subacute; mandible 3 times longer than wide, tridentate, middle tooth longest; maxillary palpi stout, with 2 and labial palpi with one segment.

Thorax with scutellum wider than long, with 3 pairs of bristles, last pair being longer; wings reaching beyond the tip of abdomen; speculum absent; front margin almost straight upto the end of vein *sm*; vein *m* longer than *sm*; tip of wing broadly rounded, vein *st* short, expanded at tip; vein *pm* not well developed; hairless patch behind vein *m*; tibial spur equal to metatarsus, hind coxa and femur swollen.

Abdomen short, slightly longer than wide, broadly rounded at apex, about 0.50 of thorax; ovipositor exerted.

Type locality : Coorg District : Gonikoppa.

Host : *Planococcus* sp.

This species is close to *Coccophagus manii* Agarwal, from which it differs mainly in the following characters : Vein *sm* shorter than *m*; head black, upper 0.33 of abdomen yellow, rest black, tibial spur as long as metatarsus.

Coccophagus zebratus Howard

1907 *Coccophagus zebratus*, Howard, *Bull. US. Dept. Agric. Div. Ent. Tech. Ser.*, 12 : 81.

1909 *Coccophagus zebratus*, Schmiedeknecht. *Gen. Ins.*, 97 : 459.

1938 *Coccophagus zebratus*, Mani, *Cat. Indian Ins.*, 23 : 125.

Female : Length 1.34 mm. Body smooth, impunctate, below antennae faintly longitudinally striate, hind coxae and femora swollen; club dark brown; scape, pedicel, funicular segments 1-2 light brown, funicular segment 3 white; vertex, occiput, pronotum, mesonotum lemon-yellow; face and rest of thorax white; all coxae and femora and fore tibiae white; middle and hind tibiae basally brown; middle and hind metatarsus brown; abdomen white, with broad transverse brown band on each tergite.

Type locality : Ceylon : Punduloya

Host : *Aclerda distorta* Green

***Coccophagus zebratulus* Subba Rao & Rai**

1969 *Coccophagus zebratulus*, Subba Rao & Rai, *J. nat. Hist.*, 3 : 389.

Female : Length 0.50 mm. Body generally yellow and black; frontovertex, mesoscutum and scutellum yellow; scape white; pedicel darker than scape; flagellum light yellow; mandible white at base, brown at tip; pronotum black; fore wings hyaline; legs uniformly white with yellow tinge; abdomen black, upper 0.33 or so yellow, yellow at base and black towards tip; intersegmental areas yellow.

Scape narrow, more than 4 times as long as thick; pedicel short, longer than thick, thicker at apex; funicular segment slightly longer than thick, subequal, second segment longest, first and third almost equal; club slightly longer than last 2 funicular segments combined, first segment equal to last funicular segment, second and third decreasing in length; maxillary palpi with 2 and labial palpi with one segment; mandible almost 2 times as long as thick, of uniform width, broadly tridentate.

Scutellum with 3 pairs of bristles, slightly depressed, triangular; fore wings with vein *sm* shorter than *m*; *pm* shorter than *st*; a hairless streak along hind margin extending from base to middle; middle tibial spur shorter than metatarsus; hind coxae and femora slightly more swollen than normal.

Abdomen broad, slightly longer than wide; ovipositor not exerted.

Type locality : Delhi : Ridge Road.

Host : *Ferrisiana virgata* Cockerell

This species resembles *Coccophagus zebratus* Howard in antennal, wing, abdominal characters; but *C. zebratus* differs in the sharply tridentate mandible, tibial spur longer than metatarsus and proportions of veins *st* and *pm*.

Coccophagus bivittatus Compere

- 1931 *Coccophagus bivittatus*, Compere, *Proc. US nat. Mus.*, 78 : 73-74.
 1940 *Coccophagus bivittatus*, Compere, *Hilgardia*, 12 : 397.
 1948 *Coccophagus bivittatus*, De Santis, *Rev. Mus. La Plata*, (Zool.) 5 : 168-171.
 1971 *Coccophagus bivittatus*, Hayat, *Entomophaga*, 16 (4) : 428.

It differs from the closely allied species *C. longifasciatus* Howard in the presence of an infuscated cloud behind vein *st* and in ovipositor issuing from about the middle of abdomen.

Female : Length 0.90 mm. Body lemon-yellow; eyes and ocelli red; transverse median band on occiput; clypeal margin, pronotum, anterior margin of scutellum, 2 wide bands dorsal, sublateral from parapsides to hind margin of fourth tergite; pedicel and flagellum; terminal tarsal segments of all legs, veins clouded; face pale; legs yellow; wings wholly hyaline or with infumation near *st*.

Thorax reticulately squamate; head as wide as thorax; eyes shortly and finely pubescent; ocellar triangle acute; interocellar and ocellocular spaces nearly equal to ocellar diameter; mandibles indistinctly tridentate; antennae inserted below level of lower orbital borders close to the mouth; scape cylindrical, asymmetrically expanded into a tubercle; club stout, compact, apically subacute; antennal segments ratio of lengths 128 : 41 : 37 : 45 : 49 : 47 : 41 : 49; mesonotum length : width ratio 11 : 14; with linear rows of fine short setae; scutellum with 3 pairs of stout setae; parapsides with 3 and axillae with 2 setae; fore wing length; width 60 : 26; veins *sm* : *m* ratio 10 : 14; *st* short; *pm* almost absent; hind wing length : width 46 : 9.7; middle tibial spur distinctly longer than metatarsus; abdomen a little larger but narrower than thorax, ovipositor slightly exerted.

Male : Length 0.80 mm. Very distinct from female; pronotum axillae, propodeum, abdomen brown; rest black antennae, legs and wings as in female; thoracic reticulation more marked than in female; scape and pedicel short; flagellum filiform, segments becoming gradually more and more slender apically; club not differentiated; antennal segments ratios 103 : 23 : 49 : 49 : 49 : 49.

Type locality : USA

Distribution : America, South America, Hawaii, Europe, India

Hosts : *Chloropulvinaria* on *Dalbergia sissoo* in India, *Akermes*, *Saissetia oleae*, etc. elsewhere, ex coccid on *Morus indica*.

Coccophagus longifasciatus Howard

(Fig. 277)

- 1907 *Coccophagus longifasciatus*, Howard, *Bull. US Dept. Agric. Div. ent. Tech. Ser.*, 12 : 80. Fig. 17.

- 1909 *Coccophagus longifasciatus*, Schmiedeknecht, *Gen. Ins.*, 97 : 458.
 1912 *Coccophagus longifasciatus*, Mercet, *Trab. Mus. Cienc. Nat.*, 10 : 238.
 1928 *Coccophagus longifasciatus*, Compere & Smith, *Univ. Calif. Pub. Ent.*, 4 : 254.
 1931 *Coccophagus longifasciatus*, Mercet, *Eos*, 7 (4) : 400.
 1931 *Coccophagus longifasciatus*, Compere, *Proc. US nat. Mus.*, 78 : art. 7 : 74.
 pl. 8, fig. 50.
 1938 *Coccophagus longifasciatus*, Mani, *Cat. Indian Ins.*, 23 : 125.
 1979 *Coccophagus longifasciatus*, Krombein *et al.*, *Hymen. N. America*, 1 : 903.

Female : Length 0.78 mm. Antennae moderately calvate; body impunctate; generally light lemon-yellow; eyes and ocelli bright red, legs pale yellow; antennae and wings dusky; a broad lateral brown band on either side from pronotum to tip of abdomen.

Male : Brown band not complete, but pronotum, front margin of scutellum, front axillae, propodeum, sides and tip of abdomen brown.

Type locality : Ceylon : Mannar

Host : *Lecanium nigrum*

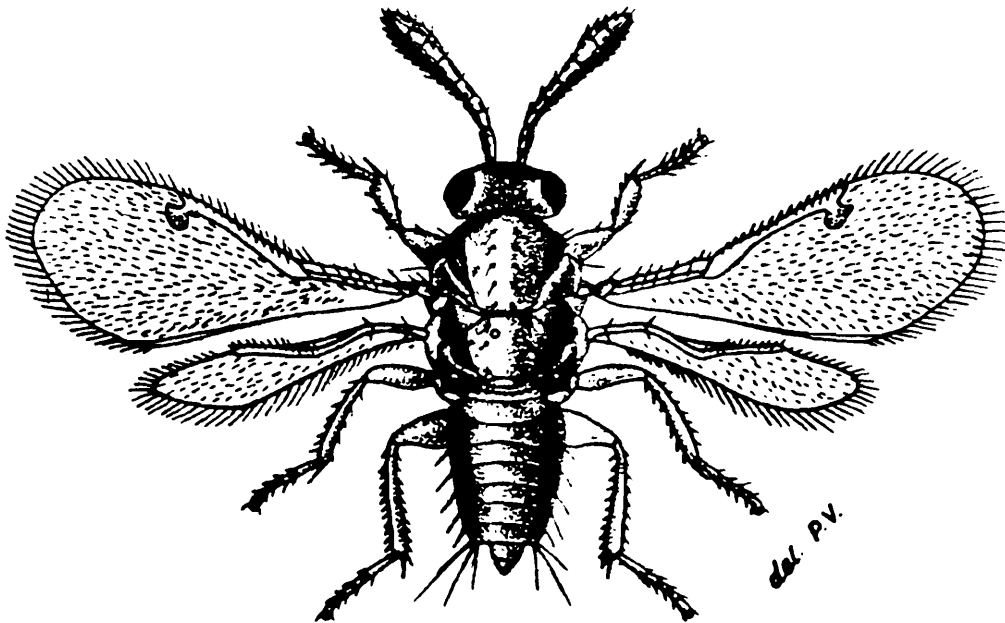


FIG. 277. *Coccophagus longifasciatus*, Howard, female.

Encarsia Förster

- 1878 *Encarsia*, Förster, *Jahrg. Verh. Nat. Ver. Preuss. Rheinl.*, 35 : 65-66.
 1904 *Encarsia*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 345.
 1907 *Encarsia*, Howard, *US D.A. B.E. Tech. Ser.*, 12 : 76-79.
 1909 *Encarsia*, Schmiedeknecht, *Gen. Ins.*, 97 : 456.
 1912 *Encarsia*, Mercet, *Trab. Mus. cien. Nat. Madrid*, 10 : 294-295
 1929 *Encarsia*, Nowicki, *Neue Beitr. Syst. Insektenk.*, 4 : 158-160.
 1930 *Encarsia*, Mercet, *Eos.*, 6 (2) : 191- 193.

- 1930 *Trichaporus*, Nowicki, *New Beitr. Syst. Insektenk.*, 4 (13-14) : 157.
 1930 *Encarsia*, Mercet, *Rev. Biol. Forest Limnologia*, 2 (B) : 77-80.
 1938 *Encarsia*, Mani, *Cat. Indian Ins.*, 23 : 121,
 1948 *Encarsia*, De Santis, *Rev. Museo La Plata*, (NS) 5 (Zool.) 252.
 1949 *Encarsia*, Steuben, *Biol. Zentbl.*, 68 : 413-429.
 1953 *Encarsia*, Flanders, *Ann. ent. Soc. Amer.*, 46 (1) : 92.
 1964 *Encarsia*, Agarwal, *Proc. Indian Acad. Sci.*, 49 : 282-285.
 1966 *Encarsia*, Gerling, *Ann. ent. Soc. America*, 59 (1) : 142-143.
 1966 *Encarsia*, Gerling, *Canad. ent.*, 98 (7) : 707-724.
 1967 *Encarsia*, Gerling, *Ann. ent. Soc. America*, 60 (6) : 1310.
 1973 *Encarsia*, Jasnosh, *Ent. Rev.*, 52 (2) : 578-585.
 1976 *Encarsia*, Graham, *Syst. ent.*, 1 (2) : 142-143.
 1979 *Encarsia*, Krombein *et. al.*, *Hymen. N. America*, 1 : 905.
 1979 *Encarsia*, Viggiani & Mazzone, *Boll. Lab. ent. agr. Portici*, 36 : 42-50.

Mandibles with one or 2 acute teeth and a truncature; both palpi uniarticulate; head not as wide as thorax; eyes hairy; ocellular space equal to interocellar; antennae inserted near mouth with 8 segments; funicular segments equally long, elongate-cylindrical; club biarticulate or triarticulate; parapsidal furrows complete; scutellum well developed, hemispherical and broad; wings densely hairy without speculum; vein *m* shorter than *sm*; *st* very short; *pm* absent, hind wing with long marginal fringe; abdomen broadly oval, slightly pointed apically, equal to but not as wide as thorax; tarsi with 5 segments, rarely 4 in the middle leg.

Male : Rare; antennae with 7 segments, filiform, club not differentiated.

The genus is very close to *Prospaltella* Howard, but differs in the biarticulate club; according to De Santis, the heteronomous tarsi in the male separate *Encarsia* from *Prospaltella*, in which the tarsi are pentamerous. Agarwal refers to other characters as follows :

1. The subgenital plate almost circular with the anterior margin convex and the posterior almost straight; with a wide notch in the middle and 2. outer plates of the ovipositor slightly expanded and obliquely truncated at apex with an oblique ridge running in the middle are suggested at the generic level for its separation from other related genera.

Type-species : *Encarsia tricolor* Förster

KEY TO SPECIES

- | | |
|---|---------------------------|
| 1. First funicular segment longer than pedicel | 2 |
| First funicular segment not longer than pedicel | 4 |
| 2. First funicular segment 2 times pedicel | <i>E. aonidiae</i> Howard |
| First funicular segment not 2 times pedicel | 3 |

- | | |
|--|--------------------------------|
| 3. First funicular segment 1.50 times pedicel;
scape longer than funicular segments 1-2
combined | <i>E. muliyali</i> Mani |
| First funicular segment 1.33 times pedicel | <i>E. planchoniae</i> Howard |
| 4. First funicular segment subequal to pedicel | <i>E. isaaci</i> Mani |
| First funicular segment shorter than pedicel | 5 |
| 5. First funicular segment annelliform | <i>E. narayani</i> Agarwal |
| First funicular segment not annelliform | <i>E. acaudaleyrodis</i> Hayat |

Encarsia aonidiae Howard

- 1896 *Encarsia aonidiae*, Howard, *Proc. US nat. Mus.*, 18 (1092) : 636.
 1909 *Encarsia aonidiae*, Schmiedeknecht, *Gen. Ins.*, 97 : 456.
 1938 *Encarsia aonidiae*, Mani, *Cat. Indian Ins.*, 23 : 121.
 1940 *Encarsia aonidiae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 26.
 1980 *Encarsia aonidiae*, Hayat, *Orient. Ins.*, 14 (4) : 464.

Female : Length 0.51 mm, wing expanse 1.14 mm. Body generally golden-yellow or orange-yellow; abdomen darker brown.

First funicular segment much longer than pedicel; other funicular segments subequal; funicle and club clothed with sparse, short suberect bristles; scutellum in front not convex; vein *m* with 9 long bristles.

Male : Frontovertex orange-yellow, with brown bands behind lateral ocelli; face and occiput pale above, on sides almost to temples brown; pronotum brown; mesoscutum dusky-brown; axillae, propodeum and mesopleura brown; abdomen mostly brown with apex from about cercal plates pale abrown; antennae pale dusky-yellow; wings hyaline; veins and discal setae brown; legs pale except basal 0.67 or so of hind coxae and middle of hind femora, brown.

Scape 0.33 times longer than first funicular segment; pedicel subtriangular, about 0.50 of first funicular segment; funicular segments (the apical 2 segments may be regarded as club) about 2.67 times as long as thick; last segment somewhat shorter than first segment; mesoscutum strongly convex and only a little less than 2 times scutellum; mesoscutum, parapside, axilla and scutellum with 8, 2, 1 and 4 setae respectively sometimes left axilla with 2 setae; fore wings about 2.50 times as long as wide; vein *sm* with 2 and vein *m* with 9-10 setae; disc, except behind vein *sm* densely setose; longest fringe about the width of wing; hind wings 7.50 times as long as wide, disc with a row of setae along front margin distad of venation and another row along hind margin and a few setae scattered on the disc; fringe about 1.33 times as long as width of disc.

Type locality : Ceylon : Pudyloya

Host *Aonidia corniger*

Encarsia muliyali Mani

1941 *Encarsia muliyali*, Mani, *Indian J. Ent.*, 3 (1) : 35.

Female Length 0.70 mm. Eyes very finely hairy; head yellowish-brown, rest of body yellow, except the yellowish-brown pronotum, mandibles indistinctly tridentate; antennae yellow, relatively slender, scape longer than first 2 funicular segments combined; pedicel about 0.33 of scape, first funicular segment about 1.50 times the pedicel, second funicular segment shorter, third and fourth subequal and each also distinctly longer than the second, club not flattened, its segments equal to the last funicular segment; hind tarsal segments relatively long, with slender bristles; distal part of vein *sm* relatively short.

Type locality : New Delhi

Host *Aleurolobus barodensis*

This species is readily distinguished from *E. isaaci* by the general colour of body, cylindrical club, slender antennae and hind tarsal segments.

Encarsia planchoniae Howard

1895 *Encarsia planchoniae*, Howard, *Proc. US nat. Mus.*, 18 (1092) : 635.

1909 *Encarsia planchoniae*, Schmiedeknecht, *Gen. Ins.*, 97 : 456.

1938 *Encarsia planchoniae*, Mani, *Cat. Indian Ins.*, 23 : 121.

1980 *Encarsia planchoniae*, Hayat, *Orient. Ins.*, 14 (4) : 467.

Female : Length 0.56 mm, wing expanse 1.16 mm. Body golden-yellow; eyes black; ocelli, abdomen more or less suffused brown; antennae and legs somewhat lighter than rest of body.

First funicular segment nearly as long as pedicel; second segment much longer than the first; segments 3-5 subequal; 2 terminal segments not completely fused; terminal segment short, subconical, acutely pointed; vein *st* short, nearly parallel to vein *m*, vein *m* with 5 long bristles.

Male : Frontovortex golden-yellow; occiput brown above; pronotum, mesoscutum in anterior 0.50 or so, axillae, mesopleura and sides of propodeum brown; abdomen with 5 transverse brown bands in the basal 0.67 over a dusky yellow surface, the distal 0.33 yellow; antennae pale with brownish rhinaria; wings hyaline; legs mostly pale white.

Head in front about 0.25 as wide as high, with the frontovortex; 1.50 times as wide as eye; gena slightly shorter than eye; antennal socket separated from facial margin by a distance about equal to the major diameter of a socket; latter with their upper margins above lower orbital borders; antennae with 8 segments as in *aonidia*;

pedicel subtriangular; first funicular segment 0.33 times longer than pedicel; second 1.50 times first and 2 times pedicel; following segments not less than 2.50 times as long as thick.

Mesoscutum with 6 pairs of setae, axilla with one and scutellum with 2 pairs of setae; fore wings 3.50 times as long as wide; vein *sm* with 2 setae, shorter than those on vein *m*; latter with 6 setae; longest marginal fringe about 0.80 of wing width, fringe distad of venation longer than those on vein *m*; discal ciliation sparse, no bare area around vein *st*; behind vein *sm* a row of setae extending obliquely inwards from the junction of vein *sm-m*; hind wings pedunculate, 9 times as long as wide with a row of setae along anterior margin distad of venation, otherwise with a few scattered setae on the disc; fringe about 2 times wing width; middle tibial spur about 0.50 of metatarsus.

Type locality : Ceylon : Punduloya

Host : *Planchonia delicata*

***Encarsia isaaci* Mani**

1941 *Encarsia isaaci*, Mani, *Indian J. Ent.*, 3 (1) : 34.

Female : Length 0.90 mm. Eyes hairy; head mostly yellowish-brown; antennae mostly yellow, with scape and pedicel above and the terminal club segment infuscate-brown; second segment brown; pronotum black; mesonotum anteriorly in the middle dark brown, yellow otherwise; axillae dark brown, but somewhat lighter posteriorly than anteriorly; scutellum bright yellow; metanotum brown; propodeum dark brown at sides; all legs yellow, last tarsal segment slightly brown, hind tarsal segment short and with stiff bristles; veins brown; abdomen black with a yellowish-brown oblique patch laterally from the spiracles, terminal portion yellow.

Scape equal to first 2 funicular segments combined, pedicel and first funicular segment subequal, second funicular segment very slightly longer, segments 3-4 equal to the second, first club segment nearly equal to the last funicular segment, flattened, second segment somewhat shorter, flattened, both the club segments longer than thick; mandibles weakly tridentate.

Fore wings slightly infuscated between the vein *m* and margin; distal part of vein *m* (the portion beyond the abrupt break) relatively long; vein *pm* obsolete.

Type locality : New Delhi

Host : *Aleurolobus barodensis*

This species very closely resembles *Encarsia flaviclava* Howard, but differs in yellow scape, dark second club segment, different

proportions of funicular segments, shorter ovipositor and absence of a dark patch at lateral angles of abdomen.

Encarsia narayani Agarwal

(Fig. 278)

1964 *Encarsia narayani*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 283.

Female : Length 0.70 mm. Head orange-yellow with ocelli and eyes black, postocciput dark brown, a broad transverse obscure band across the face touching eyes on either sides and scrobes below; antennae orange with upper and lower margins of scape brownish, last club segment slightly fumate; thorax orange-yellow with pronotum greyish, sutures, outer margins of axillae and expanded portions of propodeum brownish; fore wings well developed hyaline; abdomen light orange and fuscous on basal 0.50, brown on sides and apical 0.50.

Head wider than long; occipital margin rounded; frontovertex wide, about 1.25 times as wide as long; ocelli in an isocetes triangle, lateral ocelli close to occipital margin, 1.50 times ocellocular space, cheeks slightly shorter than length of eye; mandibles tridentate; maxillary palpi with 2 and labial palpi one segment; antennae inserted close to oral margin; scape about 5 times longer than thick; pedicel thicker than funicle, as long as club, about 1.50 times longer than thick; first funicular segment annellus, second shortest, third, fourth and fifth segments of equal length and width; club biarticulate, 4 times as long as thick, almost equal to the preceding 2 segments combined; consecutive segments from the second funicular to last club segment possessing, 0, 2, 3, 3, 3 and 2 sensoria respectively.

Pronotum very narrow in the middle, much expanded on the sides, anterior margin deeply and acutely notched in the middle, posterior margin concave; mesonotum with 14 setae, each parapside with 5 setae; metanotum narrow, band-like; propodeum much expanded on sides; fore wings more than 2.50 times as long as wide; very slightly infumate in the middle from vein *m* down to the *pm*; vein *sm* slightly longer than *m* with 16 bullae and 3 setae; vein *pm* very short; vein *st* sessile, rounded at apex; fringe long, spaced by a distance equal to 0.14 of hair length; hind wings more than 7 times longer than wide; cilia of marginal fringe longer than the wing width, interspace between cilia equal to 0.14 of their length; fore legs uniformly whitish; coxae with 2 setae on outer face; middle tibial spur shorter than metatarsus; apical rim of tibiae with a row of 5 pegs, metatarsus with 3 pegs, fourth tarsal segment with a single peg; hind coxae with 2 setae on outer face; apical rim of tibiae with 6 stout setae.

Abdomen : genitalia slightly exerted; subgenital plate almost semi-circular with anterior margin convex and posterior margin

almost straight with a wide notch in the middle; outer plates of ovipositor slightly expanded and obliquely truncated at apex with an oblique ridge running in the middle of the plate; first valvifer subtriangular with articular knobs little prominent; second valvifer of almost uniform width with dorsal margin thickened throughout, the valvula long, rounded at apex and immovably continuous with the second valvifer

Type locality : Aligarh

Host : *Phenacoccus icervoides* Green on *Hibiscus rosasinensis*

E. narayani runs to *E. elegans* Masi in Mercet's (1912) key, but differs in the pedicel much longer and wider than the first funicular segment and of a ring segment situated between the pedicel and the funicle.

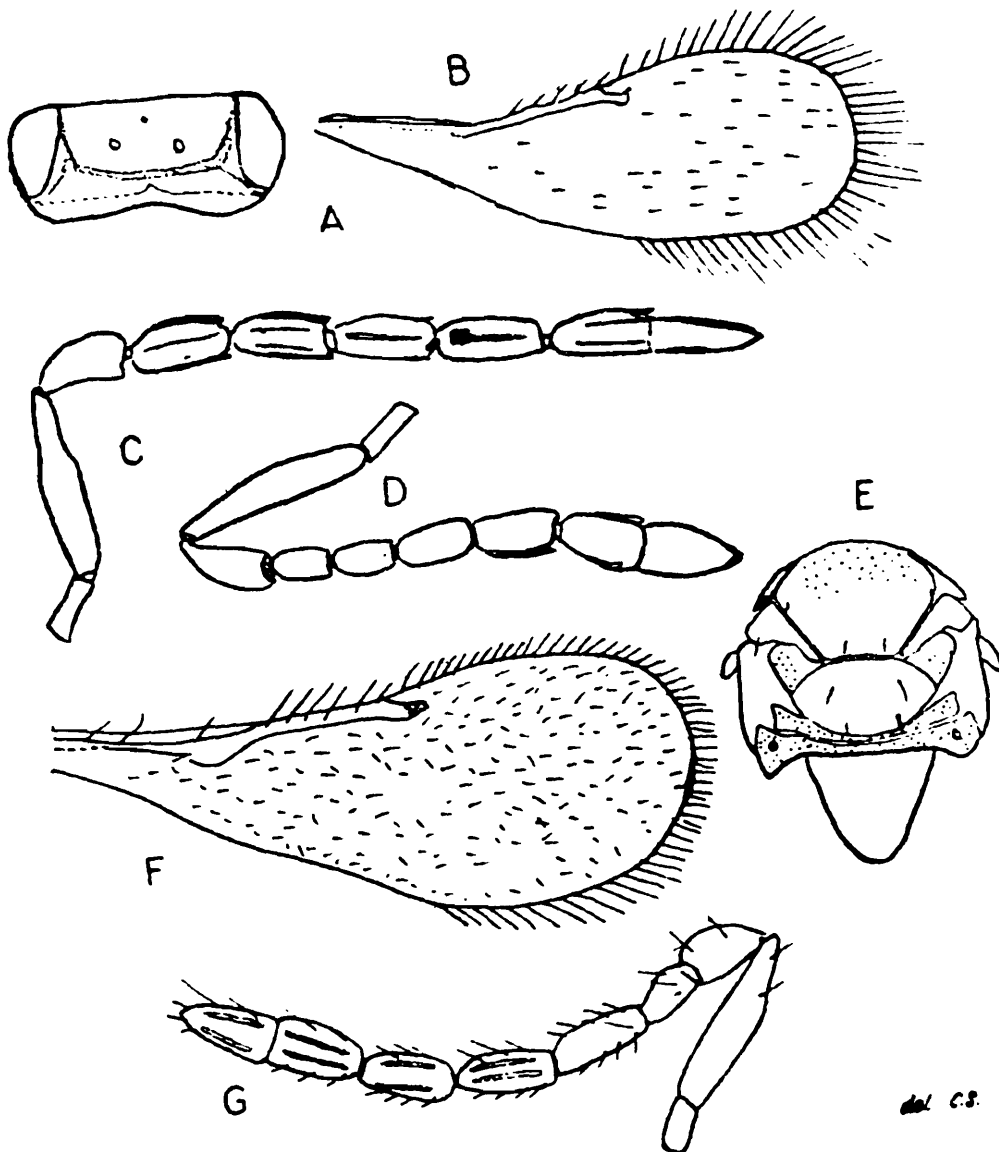


FIG. 278. A-E. *Encarsia acaudaleyrodis* Hayat, female : A. Head in dorsal B. Fore wing; C. Male; D. Antennae; E. Thoracic dorsum; F-G. *Encarsia narayani* Agarwal, female : F. Fore wing; G. Antenna.

Encarsia acaudaleyrodis Hayat

(Fig. 278)

1976 *Encarsia acaudaleyrodis* Hayat, *Entomophaga*, 21 (2) : 158.

Female : Length 0.47-0.63 mm. Body yellow; head yellow, with the face and gena pale; labrum reddish-brown; with 2 brown bands behind lateral ocelli; a faint brown spot either side of the occipital foramen; thorax yellow, with the sides paler, pronotal collar except in the middle, axillae for most part, sides of metanotum, propodeum except for the middle and sides of spiracles, brown; scutum yellow to dusky, faintly shiny; abdomen yellow above and paler below; first abdominal tergite brown, other tergites obscurely dusky; mandibular tips brown; antennae pale yellow, often suffused dusky; legs pale yellow; wings hyaline.

Head above with frontovertex nearly 3 times as wide as eye; ocelli in obtuse-angled triangle, interocellar space 2 times the front ocellar space; postocellar space subequal to the ocellocular space; malar space about 0.66 of eye with a distinct suture; head viewed in front about 0.33 times wider than high; mandibles bidentate, with a dorsal truncation; frons finely reticulate and sparsely setose; eyes bare; antennae inserted close to facial margin; scape 4 times as long as thick, in the male and female; pedicel distinctly longer than the first funicular segment, which latter is subequal to 3 but distinctly shorter than 3; terminal club segment longer than the first club segment.

Scutum with 2 pairs of setae; thorax finely reticulate; fore wing about 2.50 times as long as wide, fringe long, longest fringe slightly less than 0.50 than wing width; costal cell with a row of short setae; discal ciliation sparse; basal 0.33 and near vein *st* bare; hind wing with fringe longer than width of wing; middle tibial spur less than 0.50 no metatarsus.

Male : Length 0.45-0.52 mm. Like female but for the different body colour, antennal and sex characters. Body largely darker brown than in female; spots on the sides of occipital foramen large; pronotum wholly and scutum except behind dark brown; abdomen dark brown; tenth tergite and sometimes also the eighth testaceous-yellow; funicular segments elongate, pedicel slightly shorter than the first funicular segment; club with 2 segments; digiti and phallus strongly exerted.

Type locality : Sardar Samand (Rajasthan)

Host : *Acaudaleyrodes rhachipora* (Singh)

SPECIES INCERTAE SEDIS

Encarsia flavoscutellum Zehntner1900 *Encarsia flavoscutellum*, Zehntner, *Arch. Java Suikarindustrie*, 15 : 1024.1980 *Encarsia flavoscutellum*, Hayat, *Orient. Ins.*, 14 (4) : 465.

This species is reported to be very close to *E. berlesei* (Howard), but I have not seen specimens and the original description is also not available to me.

Type locality : Java

Distribution : Java; India

***Encarsia inaron* (Walker)**

1839 *Aphelinus inaron*, Walker, *Chalc. Mon.*, 1 : 10.

1976 *Encarsia inaron*, Graham, *M.W.R. Dev. Syst. Ent.*, 1 : 123-146.

1980 *Encarsia inaron*, Hayat, *Orient. Ins.*, 14 (4) : 465.

Type locality : Europe : Britain

***Encarsia lahorensis* (Howard)**

1911 *Prospaltella lahorensis*, Howard, *J. econ. Ent.*, 4 : 132.

1924 *Prospaltella lahorensis*, Misra, *Rep. Proc. fifth ent. Meet. Pusa*, 129-135.

1938 *Prospaltella lahorensis*, Mani, *Cat. Indian Ins.*, 23 : 123.

1980 *Encarsia lahorensis*, Hayat, *Orient. Ins.*, 13 (4) : 466.

Female : First segment of club slightly shorter than second segment; first funicular segment 3 times as long as thick; fore wings broader, slightly less than 2.50 times as long as wide with the longest marginal fringe about 0.33 times the width of disc; distinctive features are the presence of a narrow 0.50 crescentic bare area in the posterior apical margin of fore wing and the minute first pair of scutellar setae.

Type locality : Lahore

***Encarsia lutea* (Masi)**

1909 *Prospaltella lutea*, Masi, *Boll. Lab. Zool. Gen. Agr. Portici*, 3 (a) : 25.

1965 *Prospaltella lutea*, Ferrière, *Fauna Europe Bas. Medit.*, 1.

1966 *Prospaltella lutea*, Nikolskaya & Jasnash, *Oprod. Fauna SSSR*, 91 : 296.

1973 *Prospaltella lutea*, Shafee, *Entomophaga*, 18 : 255.

1980 *Prospaltella lutea*, Hayat, *Orient. Ins.*, 14 (4) : 466.

Distribution : India

Host : Aleyrodids on *Saccharum spontaneum*

***Encarsia perniciosi* (Tower)**

1913 *Prosaltella perniciosi*, Tower, *Ann. ent. Soc. Amer.*, 6 : 125.

1980 *Encarsia perniciosi*, Hayat, *Orient. Ins.*, 14 : 466.

Host : *Quadraspidotus perniciosus*

Encarsia tristis (Zehntner)

- 1896 *Prospalta tristis*, Zehntner, *Medded. Proefs. Oest. Java* (N S) 29 : 11.
 1904 *Aspidiotiphagus aleyrodis*, Ashmead, *Proc. US nat. Mus.*, 28 : 139.
 1932 *Aspidiotiphagus aleyrodis*, Gahan, *Ann. ent. Soc. America*, 28 : 139.
 1955 *Encarsia neomaskelliae*, Prasad, *Indian J. Ent.*, 17 : 40.
 1973 *Prospaltella breviclavata*, Shafee, *Entomophaga*, 18 : 252.
 1980 *Encarsia tristis*, Hayat, *Orient. Ins.*, 14 (4) : 468.

Type locality : Java

Distribution : Philippines; Java; India : Aligarh, Bareilly, Jassowal

Hosts : *Neomaskellia bergii*, *Aleyrodes* sp. *Neomaskellia andropoginis*.

Physcus Howard

- 1880 *Coccophagus* (partim), Howard : In Comstock, *Rep. Ent. US Dept. Agric.*, 360.
 1895 *Physcus*, Howard, *Bull. US Dept. Agric. Div. ent. Tech. Ser.*, 1 : 43.
 1904 *Physcus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 346.
 1909 *Physcus*, Schmiedeknecht, *Gen. Ins.*, 97 : 454.
 1914 *Physcus*, Howard, *Proc. ent. Soc. Washington*, 16 (2) : 82-84.
 1930 *Physcus*, Mercet, *Rev. Biol. Forest Limnologia*, 2 (B) : 61-63.
 1938 *Physcus*, Mani, *Cat. Indian Ins.*, 23 : 120.
 1940 *Physcus*, De Santis, *Fac. Agr. Rev. Laplata Univ. Nac.*, 24 (3) : 2944.
 1948 *Encyrtophyscus*, De Santis, *Zool. (NS) La Plata Mus. Rev.*, 5 : 192-193.
 1958 *Physcus*, Erdös, *Folia Ent. Hungarica*, 11 (5) : 85.
 1961 *Physcus*, Compere & Annecke, *J. S. Africa ent. Soc.*, 24 (1) : 20-26.
 1961 *Physcus*, Fisher, *J. Econ. Ent.*, 54 (3) : 444.
 1964 *Physcus*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 60 : 320-324.
 1968 *Physcus*, Jasnosh, *Ent. Rev.*, 47 (1) : 117-124.
 1971 *Physcus*, Williams, *Bull. ent. Res.*, 61 (3) : 463-484.
 1973 *Physcus*, Jasnosh, *Ent. Rev.*, 52 (4) : 578-585.
 1976 *Physcus*, Graham, *Syst. Ent.*, 1 (2) : 144.
 1979 *Physcus*, Krombein *et al.*, *Hymen. N. America*, 1 : 906.

Antennae inserted close to clypeus with 7 segments, scape slender; pedicel equal to first funicular segment; second and third funicular segments subequal, longer than the first; club elongate-oval, biarticulate; terminal segment pointed; eyes hairy; vein *m* equal to *sm*; *st* short; ovipositor short.

The genus *Physcus* Howard can be distinguished from other genera of Coccophaginae by the 3-segmented funicle and 2-segmented club. Two new generic characters are suggested : outer plates of ovipositor narrow at base gradually widening behind, with a submarginal ridge and subgenital plate with anterior margin straight and posterior margin with a notch in the middle; notch followed by laterally directed ridges.

Type-species : *Physcus varicornis* (Howard)

KEY TO SPECIES

- | | |
|---|---|
| 1. Body in major part black or brown | 2 |
| Body yellow; funicular segments one and 2 dark, segment 3 white | <i>P. flaviceps</i> Girault & Dodd |
| 2. First funicular segment brown, segments 2 and 3 yellowish | 3 |
| First funicular segment brown, segment 2 light brown, segment 3 yellowish-white | <i>P. albipodus</i> Agarwal |
| 3. Funicular segment 2 times as long as wide; mesoscutum with faint hexagonal reticulations; vein <i>pm</i> absent; legs yellow | <i>P. comperei</i> Howard |
| Funicular segments less than 2 times as long as wide; mesoscutum with longitudinal reticulations; vein <i>pm</i> | <i>P. reticulatus</i> Compere & Annecke |

Physcus comperei Hayat

1971 *Physcus comperei*, Hayat, *Bull. Ent.*, 12 (2) : 118.

Female : Length 0.90 mm. Head dusky-brown on frontovertex, except yellow frontal and ocular lines; occiput, gena and facial margin black; teeth black; scape, pedicel and funicular segments 2-3 yellow, first funicular segment and club brown; pronotum black, sides below testaceous; mesonotum brown with a longitudinal testaceous band in the middle; parapsides brown in front; rest of thorax yellow; legs yellow; abdomen pale yellow, sides of dorsum and venter with brown spots reaching upto cercal plates.

Frontovertex slightly wider than long more than 0.50 of head width; ocellar triangle obtuse; ocellocular space equal to ocellar diameter; ocelloccipital space equal to 2 ocellar diameters; mandibles with 2 teeth and a truncation; maxillary palpi with 2 and labial palpi with one segment; funicular segments about 2 times as long as thick; club shorter than funicle.

Mesonotum faintly reticulate; scutellum with still fainter longitudinal reticulations and with 3 pairs of setae; fore wings length : width 658 : 240; vein *m* subequal to *sm*; vein *pm* absent; marginal fringe about 0.14 width of disc; hind wings length : width 0.54 : 09, fringe shorter than width of disc; middle tibial spur shorter than metatarsus.

Type locality : Kerala, Kottayam

Physcus flaviceps Girault & Dodd

1971 *Physcus flaviceps*, Hayat, *Bull. Ent.*, 12 (2) : 118.

This species differs from *P. fulvus* Compere and Annecke in the completely yellow coloured abdomen. This species is not known to me and the original reference is also unknown.

Host : *Pinnaspis strachani* on *Citrus*

Physcus reticulatus Compere & Annecke

- 1961 *Physcus reticulatus*, Compere & Annecke, *J. ent. Soc. S. Africa*, 24 : 17-71.
 1971 *Physcus reticulatus*, Hayat, *Bull. Ent.*, 12 (2) : 118.

Distribution : Hardoi

Host : *Aonidiella orientalis* on *Dalbergia sissoo*

Physcus varicornis Howard

- 1880 *Coccophagus varicornis*, Howard in Comstock : *Ann. Rep. ent. US Dept. Agric.*, 1880 : 360.
 1895 *Physcus varicornis*, Howard, *US Dept. Agric. Div. ent. Tech. Ser.*, 1 : 43.
 1896 *Physcus varicornis*, Howard, *Proc. US nat. Mus.*, 18 : 635.
 1898 *Physcus varicornis*, Dalla Torre, *Cat. Hym.*, 5 : 226.
 1909 *Physcus varicornis*, Schmiedeknecht, *Gen. Ins.*, 97 : 455.
 1911 *Physcus varicornis*, Girault, *J.N.Y. ent. Soc.* 19 (3) : 183.
 1933 *Physcus varicornis*, Baker, *Cir. US Dept. Agric.*, 295 : 89.
 1938 *Physcus varicornis*, Mani, *Cat. Indian Ins.*, 23 : 121.
 1979 *Physcus varicornis*, Krombein *et al.*, *Hymen. N. America*, 1 : 907.

Type locality : Ceylon

Physcus fulvus (Comp. & Ann.)

- 1961 *Aphycus fulvus*, Compere & Annecke, *J. ent. Soc. S. Africa*, 24 : 21.
 1968 *Physcus albipodus*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 60 : 321.
 1971 *Physcus albipodus*, Hayat, *Bull. Ent.*, 12 (2) : 118.
 1986 *Aphycus fulvus*, Hayat, *Orient. Ins.*, 20 : 153.

Prospaltella Ashmead

- 1874 *Prospalta*, Howard, *Ins. Life US Dept. Agric.* 7 (1) : 6. (preoccupied by Walker, 1857)
 1904 *Prospalta*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 345.
 1904 *Prospaltella*, Ashmead, *Proc. ent. Soc. Washington*, 6 : 126.
 1908 *Prospalta*, Masi, *Boll. Lab. Zool. Portici*, 3 : 142.
 1909 *Prospalta*, Schmiedeknecht, *Gen. Ins.*, 97 : 457.
 1917 *Prospaltella*, Malenotti, *Redia*, 12 : 195-196.
 1921 *Prospaltella*, Mercet, *Real. Soc. Espan. Hist. Nat.* 50 : 300, 304.
 1930 *Prospaltella*, Silvestri, *Lab. Zool. Gen. Agr. Portici*, 25 : 49-68.
 1930 *Prospaltella*, Mercet, *Rev. Biol. Forest Y. Limnologia* 2 (B) : 72-77.
 1931 *Prospaltella*, Mercet, *Bol. Soc. Espan. Hist. Nat.*, 31 (9) : 659-669.
 1938 *Prospaltella*, Mani, *Cat. Indian Ins.*, 23 : 123.
 1948 *Prospaltella*, De Santis, *Rev. Museo La Plata*, (NS) 5 (Zool.) : 233.
 1956 *Prospaltella*, Alam, *Trans. Roy. ent. Soc. London*, 108 (8) : 357-384.
 1961 *Prospaltella*, Ferrière, *Mitt. schweiz. ent. Ges.*, 34 (3) : 253-269.
 1964 *Prospaltella*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 274-282.
 1965 *Prospaltella*, Yoshimoto, *Pacific Insects*, 7 (4) : 274-282.
 1973 *Prospaltella*, Shafee, *Entomophaga*, 18 (3) : 251-258.
 1979 *Prospaltella*, Krombein *et al.*, *Hymen. N. America*, 1 : 907.

Head transverse, equal to or a little wider than thorax, eyes nearly glabrous, or sparsely pubescent; mandibles tridentate, maxillary palpi biarticulate, labial palpi uniarticulate; antennae inserted below level of lower orbital borders, with 8 segments; scape slender, subfusiform; pedicel pyriform; funicle with 3 segments, gradually thickened apically, club triarticulate; scutellum large; fore wings broad; *pm* absent; marginal fringe long; tarsi with 5 segments; middle metatarsus short; hind tibial spur single; ovipositor slightly exerted.

Male : Rare. Flagellum filiform; terminal 2 segments of club confluent.

Type-species : *Prospaltella murtfeldtii* (Howard)

KEY TO SPECIES

- | | | |
|--|---|--|
| 1. Fore wing with traces of rudimentary vein <i>pm</i> | 2 | |
| Fore wing without trace of even rudiments of vein <i>pm</i> | 3 | |
| 2. Body yellow; pedicel 2 times longer than thick; club distinctly shorter than funicle and pedicel combined | | <i>Prospaltella pseudococci</i>
Agarwal |
| 3. Fore wing hyaline; vein <i>m</i> only a little shorter than <i>sm</i> | | <i>Prospaltella citri</i> Agarwal |
| Fore wing with some infuscation; vein <i>m</i> much shorter than <i>sm</i> | | <i>Prospaltella orientalis</i>
Agarwal |

***Prospaltella pseudococci* Agarwal**

(Fig. 279)

1964 *Prospaltella pseudococci*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 279.

Female : Length 0.65 mm. Head uniformly dirty-brown, ocelli and eyes black; scape white, rest of flagellum yellow; thorax uniformly rusty; fore wings hyaline; fore legs uniformly light brown; middle legs like fore legs; hind legs same as fore legs; abdomen brown basally, apex and on sides, white in the middle.

Head wider than long; frontovertex 3 times wider than long; ocellocular space greater than ocelloccipital space; scape fusiform, a little over 4 times longer than thick; pedicel 2 times longer than thick, about 2 times the first funicular segment; first funicular segment shortest, third longest, second and third segments more than 2 times as long as thick; club 3-segmented, about 7 times longer than thick, shorter than pedicel and funicle combined; segments of funicle to club with 0,1,2,3,2 and 1 sensoria respectively.

Pronotum broad along the sides, narrow in the middle; mesoscutum with 2 rows of 2 setae each, parapsides with a single

seta; propodeum of almost uniform width; mesopostphragma narrowly rounded at apex; fore wings slightly less than 3 times as long as wide; vein *sm* slightly shorter than vein *m* with 13 bullae and 3 setae; vein *pm* very short, about 0.20 of vein *st*; vein *st* developed, curved and narrowly rounded at apex; fringe long, spaced by a distance equal to 0.14 of hair length; hind wings more than 7 times longer than wide, fringe long, clearly longer than wing width, spaced by a distance equal to 0.14 of hair length; metatarsus more than 1.50 times longer than middle tibial spur; hind coxae with 2 setae on outer face.

Abdomen suboval, pointed at apex, longer than thorax; genitalia concealed; cercal plates at the apical 0.25; outer plates of the ovipositor long, narrow at base, broad at apex; second valvifer elongated.

Male : Length 0.62 mm. Resembles the female except for the following differences : Pedicel short, about 1.33 times longer than thick; clearly shorter than any of the following segments; funicular segments longer than thick, first longest, 2 times longer than thick, consecutive segments from the first funicular to the third club with 6, 6, 6, 5, 5 and 2 sensoria respectively; vein *pm* absent; abdomen with 6 fuscous bands, under surface orange at base and apex; cercal plates at apex.

Type locality : Aligarh

Host : *Phenacoccus iceryoides* Green on *Rhynchosia mimososa* L.

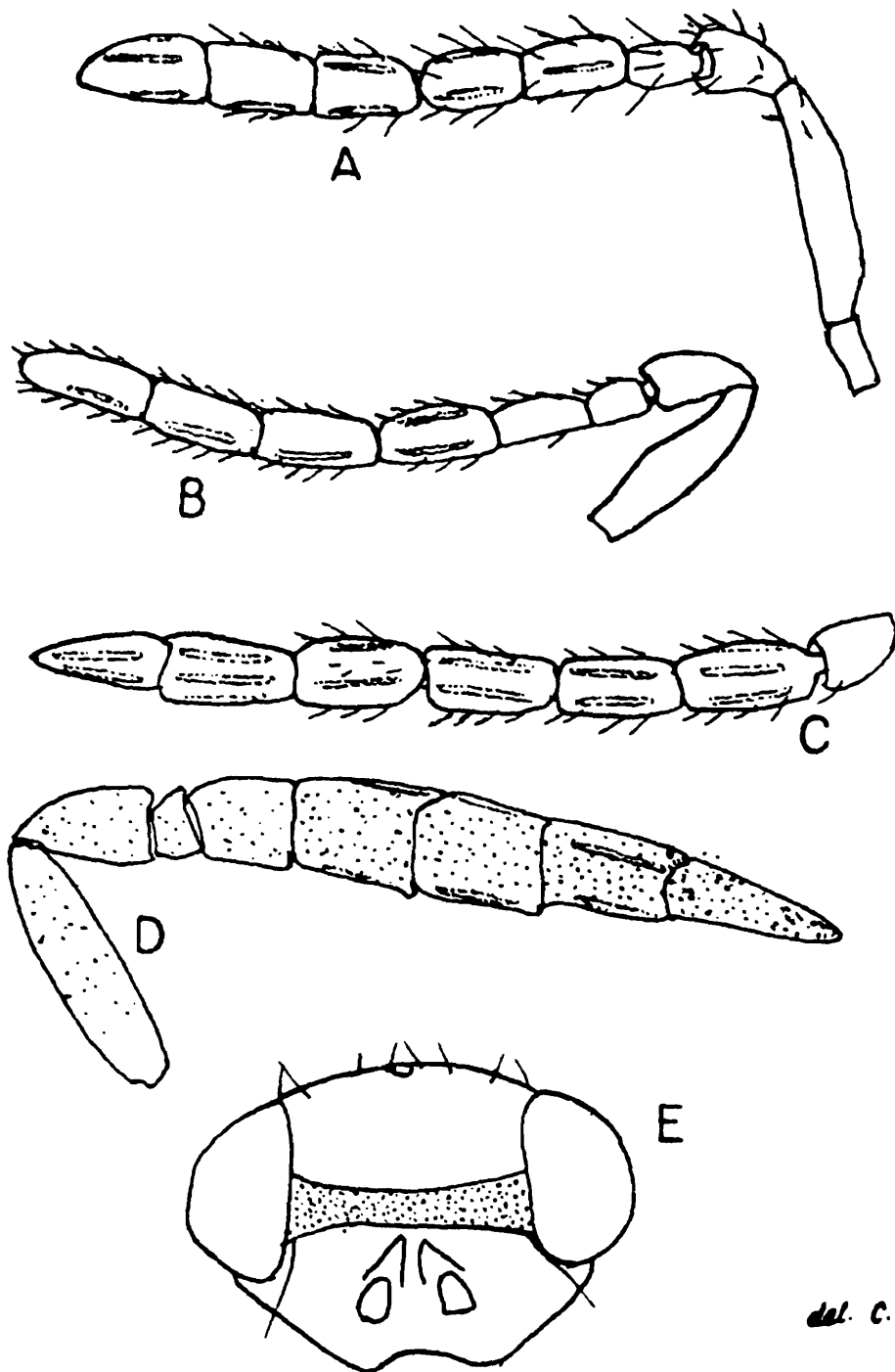
***Prospaltella citri* Agarwal**

(Fig. 279)

1964 *Prospaltella citri*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 276.

Female : Length 0.66 mm. Head yellowish-orange; eyes black; antennae uniformly orange; thorax uniformly yellowish-orange; wings hyaline; fore legs uniformly light yellow; middle legs and hind legs coloration same as on fore legs; abdomen yellowish-orange, with black patches on sides of second tergite and a median black patch on the apical tergite.

Head wider than long; frontovertex broad, about 2 times as wide as long; eyes bare, slightly wider than long; ocelli dark, ocellular space greater than ocelloccipital space; gena short, almost as broad as the transverse diameter of eye; gena suture distinct and complete; antennae inserted by a length equal to the longitudinal diameter of the antennal socket; scrobes narrow, convergent; mandibles with 2 teeth and a truncation; maxillary palpi with 2 and labial palpi with 1 segment; scape nearly 5 times longer than thick; pedicel short, slightly longer than thick, longer than first funicular segment; first



del. C.S.

FIG. 279. A. *Prospaltella citri* Agarwal, female : Antenna; B. *Prospaltella pseudococci* Agarwal, female : Antenna; C. *Prospaltella pseudococci* Agarwal, male : Antenna; D-E. *Prospaltella orientalis* Agarwal, female : D. Antenna; E. Head.

funicular segment shortest, slightly longer than thick; second and third segments subequal; club 3 segmented, much longer than funicle, more than 5 times longer than thick; second funicular to the third club segments with 2, 2, 3, 3 and 3 sensoria respectively.

Mesoscutum with 8 setae; parapside and axilla with 3 and 2 setae respectively; mesopostphragma narrowly truncated at apex; fore wings 2.50 times longer than wide; vein *sm* a little longer than vein *m*, with 10 bullae and 4 long setae; vein *m* very long, thick, with 7 setae; vein *pm* wanting; vein *st* short; fringe very long, about 0.25 of wing width and spaced by a distance equal to 0.14 of hair length; hind wing fringe longer than wing width and spaced by a distance equal to 0.14 of hair length; outer face of coxae with 2 setae near apex; apex of tibiae with 3 short pegs; middle tibial spur shorter than metatarsus; apex of tibiae with 3 stout setae.

Abdomen longer than thorax; genitalia concealed; outer plates of ovipositor narrow at base, expanded at apex with dorsal margin thickened; first valvifer subtriangular with articular knobs slightly prominent; second valvifer elongated; third element-valvula long, rounded at apex and immovably articulated with second valvifer

Type locality : Aligarh

Host : *Pseudococcus citri* Risso on *Citrus medica* Linn

Prospaltella orientalis Agarwal

(Fig. 279)

1964 *Prospaltella orientalis*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 59 : 280.

Female : Length 0.75 mm. Head sculptured; vertex and frons orange; gena black; ocelli and eyes dark brown, occiput black, oral margin black; scape excepting apex, pedicel, second and third funicular segments and the first 2 club segments fuscous; apex of scape, first funicular and third club segments brown; thorax orange with some irregular brown patches, pronotum, scutum on greater part excepting the anterior margin, base of parapsides, axillae, scutellum on apex, sides and middle brown; metanotum orange in the middle, dark brown on sides; propodeum orange; mesopleura brown; metapleura orange; sterna orange; wings hyaline; fore legs uniformly light orange; middle legs same as fore legs; hind legs distal 0.50 of coxae dark brown; abdomen basal 0.25 orange, remaining portion dark brown.

Head wider than long; occipital margin acute; frons depressed; frontovertex much wider than long; eyes slightly longer than wide; ocellar triangle acute-angled, ocellocular space more than 2 times ocelloccipital space; gena shorter than eye; antennae inserted close to the oral margin; scrobes deep; mandibles bidentate with acute teeth; maxillary palpi with 2 and labial palpi 1 segments; scape long, slightly fusiform, more than 3 times longer than thick; pedicel about 1.75 times longer than thick, as long as first and second funicular segments combined; first funicular segment 1.50 times thicker than

long, second and third funicular segments much longer than thick; club 3 segmented, 4 times as long as thick, as long as funicle and pedicel combined; second funicular to third club segments with 1, 2, 2, 4 and 2 sensoria respectively.

Pronotum reticulate, anterior margin with a deep notch in the middle, posterior margin almost straight with cup-shaped depressions on sides; metanotum sculptured; axillae subtriangular; propodeum of uniform width; mesopostphragma very broad, truncated at apex; fore wings infuscation extending from the veins *m* and *st* upto the *pm* of wing; costal cell broad; vein *sm* very long, more than 2 times as long as vein *m*, with 18 bullae and 2 setae; vein *m* with 8 setae; vein *pm* absent; vein *st* developed, about 0.33 of the vein *m*; fringe long, spaced by a distance equal to 0.14 of hair length; hind wings almost 5 times longer than wide; vein with 13 bullae; fringe very long, less than wing width; spaced by a distance equal to 0.14 of hair length; fore coxae with 3 setae near apex on its outer face; apex of tibiae with 2 pegs; middle tibial spur slightly longer than metatarsus; proximal 0.50 of coxae and the remaining part of the leg same as on fore and middle legs; each tarsal segment with a peg near its apex.

Abdomen long, narrow at apex; subgenital plate subtriangular, anterior margin straight, posterior gradually reduced with a notch in the middle; anterolateral apodemes very prominent; 2 oblique submarginal ridges extending from the notch; outer plates of ovipositor narrow at base, truncated at apex with a narrow inflexion along the dorsal margin extending up to the basal 0.75 of plate; first valvifer triangular with concave base, articular knobs not very prominent; second valvifer elongated with the valvulae immovably articulated at its apex.

Type locality : Aligarh

Host : *Aonidiella orientalis* Newst. on *Eugenia jambolana* Linn.

FAMILY ELASMIDAE

- 1840 *Eulophides* (partim), Westwood, *Intro. Mod. Class. Ins.*, 2 : 73.
- 1846 *Eulophidae* (partim), Walker, *List. Chalc. Brit. Mus.*, 1 : 61.
- 1856 *Elasmoidae*, Förster, *Hymen. Stud.*, 2 : 19, 25, 71.
- 1878 *Elasmina*, Thomson, *Hymen. Skandin.*, 5 : 180.
- 1886 *Elasminae*, Howard, *Ent. America*, 1 : 198.
- 1897 *Elasmidae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 236.
- 1904 *Elasmidae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 335.
- 1909 *Elasminae*, Schmiedeknecht, *Gen. Ins.*, 97 : 388.
- 1912 *Elasmidae*, Girault, *Mem. Queensland Mus.*, 1 : 176-189.
- 1916 *Elasmidae*, Girault, *Mem. Queensland Mus.*, 5 : 205.
- 1938 *Elasmidae*, Mani, *Cat. Indian Ins.*, 23 : 107.
- 1947 *Elasmidae*, Ferrière, *Mitt. Schweiz. ent. Ges.*, 20 : 567.

- 1947 *Elasmidae*, Compere, *Bull. ent. Res.*, 38 : 381.
 1955 *Elasmidae*, Ghesquiere, *Mem. Soc. R. ent. Belgique*, 27 : 217.
 1965 *Elasmidae*, Ferrière, *Faun. Eur. Bass. Medit.*, 1 : 1-208.
 1965 *Elasmidae*, Burks, *Proc. biol. Soc. Washington*, 78 : 201.
 1975 *Euryischidae*, Shafee, *Rec. zool. Surv. India*, 68 : 21-31.
 1979 *Elasmidae*, Burks in Krombein, *Cat. Hymen. N. America*, 1 : 1020.

Ashmead included only 2 genera *Elasmus* Westwood and *Euryischia* Riley in this family. In 1913 Girault erroneously considered *Euryischomya* in the Elasmidae and in 1916 the same author believed Ashmead's *Myiocnema* to be a synonym of *Euryischia*, which he ascribed again erroneously to Koebele instead of Riley. In 1947 Compere believed *Euryischia* to be related more to the family Aphelinidae than Elasmidae. In 1955 Ghesquiere placed *Euryischia* in his subfamily Eriaporinae of the Aphelinidae, along with *Myiocnema* Ashmead, *Eriaporus* Waterston and *Eunotiscus* Compere. This was followed by Ferrière in 1965, Burks in 1965 and others. Recently Shafee erected a separate family Euryischidae for *Euryischia* Riley, *Myiocnema* Ashmead and *Euryischomyia* Girault and subdivided into subfamilies Euryischinae and Myiocneminae. He considers Euryischidae to be intermediate between Aphelinidae and Elasmidae. Burks in Krombein treats the groups as a subfamily of Eulophidae. We agree with Ashmead that Elasmidae are a distinct natural family, which may not be confused either Aphelinidae or Eulophidae.

The family is characterized as follows :

Hind coxae dilated, flattened, subcircular and disc-like; hind femora flattened, compressed; tarsi greatly enlarged; mesopleura not impressed but entire; vein *m* in fore wing generally very long; vein *st* generally short; axillae triangularly produced forwards into scapula, with the anterior margin in advance of a line drawn from tegula to tegula; parapsidal furrows generally absent, but sometimes also present; abdomen generally elongate-conical.

Elasmus Westwood

- 1832 *Eulophus* (partim), Fonscol., *Ann. Soc. Nat.*, 26 : 298.
 1833 *Elasmus*, Westwood, *Philos. Mag.*, 3 : 343.
 1834 *Aneura*, Nees, *Hymen. Ichneum Afr. Mon.*, 5 (2) : 194.
 1904 *Elasmus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 336.
 1909 *Elasmus*, Schmiedeknecht, *Gen. Ins.*, 97 : 338.
 1913 *Cyclopleura*, Cameron, *Indian forest Rec.*, 4 : 96.
 1929 *Elasmus*, Ferrière, *Bull. ent. Res.*, 20 : 411-423.
 1938 *Elasmus*, Mani, *Cat. Indian Ins.*, 23 : 107.
 1947 *Elasmus*, Ferrière, *Mitt. schweiz. ent. Gesellsch.*, 20 (6) : 565.
 1965 *Elasmus*, Burks, *Proc. biol. Soc. Washington*, 78 : 201.
 1967 *Austelasmus*, Rick, *Austr. J. Zool.*, 15 : 148.
 1979 *Elasmus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1020.

Mainly the characters of the family : Antennae in male with 3 branches; fore wing with vein *m* very long, much longer than *sm*; vein *st* very short; hind tibiae in female unarmed, without long bristles.

Type-species : *Elasmus flabellatus* (Fonscol.)

KEY TO SPECIES

- | | |
|--|--|
| 1. Body wholly or largely black | 2 |
| Body not black; yellow or brown | 20 |
| 2. Body wholly black | 3 |
| Body partly black and partly yellow | 11 |
| 3. Fore wing infumate | 4 |
| Fore wing hyaline or nearly so | 6 |
| 4. Fore wing in female 4 times as long as wide, the infumation extending obliquely basad almost to the hind margin; club not stouter than funicle; female 2.25 mm long, male 1.75 mm | <i>E. dalhousieanus</i>
Mani & Saraswat |
| Fore wing in female with only an obscure cloud behind vein <i>st</i> , 3 times as long as wide; club distinctly thicker than funicle; female 1.75 mm | 5 |
| 5. Funicular segments subequal | <i>E. indicoides</i>
Mani & Saraswat |
| Funicular segments unequal | <i>E. claripennis</i> (Cameron) |
| 6. Mesonotum with a white spot below tegula and base of metanotum white | <i>E. albomaculatus</i> Gahan |
| Mesonotum and metanotum not as described above | 7 |
| 7. Funicular segments equal or nearly so | <i>E. valparaianus</i>
Mani & Saraswat |
| Funicular segments unequal | 8 |
| 8. Hind tibia with 3 lozenge-shaped marks; third funicular segment in male longest | <i>E. deccanus</i>
Mani & Saraswat |
| Hind tibia with 4 lozenge-shaped marks | 9 |
| 9. Scape relatively long, almost equal to the first 2 funicular segments combined | <i>E. johnstoni</i> Ferrière |
| Scape shorter, about 1.50 times the first 2 funicular segments combined | 10 |
| 10. Abdomen with pale band | <i>E. indicus</i> Rohwer |
| Abdomen without pale band | <i>E. nephantidis</i> Rohwer |
| 11. Antennae conspicuously short, the funicular segments not longer than thick | <i>E. brevicornis</i> Gahan |
| Antennae not particularly short, funicular segments distinctly longer than thick | 12 |
| 12. Large species, 2.50 mm or more | 13 |
| Small species, 2.50 mm or less | 18 |

- | | |
|--|--|
| 13. First funicular segment longest | 14 |
| First funicular segment not longer than others;
all funicular segments subequal | 17 |
| 14. Fore wing hyaline; legs largely yellow | 15 |
| Fore wing infumate; legs largely black | <i>E. anamalaianus</i>
Mani & Saraswat |
| 15. Annellus single | <i>E. mahabaleswarensis</i>
Mani & Saraswat |
| Anelli two | 16 |
| 16. Scutellum without a transverse yellow band | <i>E. zehntneri</i> Ferrière |
| Scutellum with a transverse yellow band | <i>E. ceylonicus</i> Ferrière |
| 17. Legs largely black; fore wing 3 times as long
as wide | <i>E. krishnagiriensis</i>
Mani & Saraswat |
| Legs largely yellow; fore wing 4 times as long
as wide .. | <i>E. kollimalaianus</i>
Mani & Saraswat |
| 18. Vein <i>pm</i> less than 0.50 of vein <i>sm</i> | 19 |
| Vein <i>pm</i> 0.50 of vein <i>sm</i> | <i>E. kodaianus</i>
Mani & Saraswat |
| 19. Fore wing in male 4 times as long as wide; first
club segment shorter or almost shorter than
the second and third combined | <i>E. mahabalii</i>
Mani & Saraswat |
| Fore wing in male less than 4 times as long
as wide; first club segment in male longer
than second and third combined; in female
wing less than 4 times as long as wide | <i>E. mahabalii</i>
Mani & Saraswat |
| Fore wing in female 4 times as long as wide;
first funicular segment longest | <i>E. munnarus</i>
Mani & Saraswat |
| 20. Large species, 2.50 mm or more | 21 |
| Small species 2.00 mm or less; second funi-
cular segment longer | <i>E. punensis</i>
Mani & Saraswat |
| 21. Mesonotum with a transverse light brown
band; legs including coxae light brown | <i>E. khandalus</i>
Mani & Saraswat |
| Scutellum and axillae with a characteristic
transverse binocellate brownish-black band | <i>E. binocellatus</i>
Mani & Saraswat |

Several Indian species cannot be placed in the preceding key but may be traced in the following key by Ferrière :

- | | |
|--|----------------------------|
| 1. The rows of hairs on hind tibiae arranged in
waved, more or less parallel lines | 2 |
| The rows of hairs on hind tibiae arranged in
diamond-shaped lozenges | 3 |
| 2. Body elongated; abdomen longer than head
and thorax together, black with a reddish
spot under the first segments; middle and
hind femora black-greenish, the base of the
hind femora yellow | <i>E. hutsoni</i> Ferrière |

- Body shorter and broader; abdomen not longer than head and thorax, reddish below with base and last segments black; femora yellow, the hind femora with a black line above and a brown spot after the middle
- E. bellus* Masi
3. Antennae with the funicle segments short, not or little longer than broad 4
 Funicle segments elongate, the first distinctly longer than the pedicel, or at least longer than broad, generally twice or more as long as broad 5
4. Hind coxae quite black; length 1.50-2.00 mm *E. brevicornis* Gahan
 Hind coxae black with a yellow tip; length 1.00-1.30 mm *E. philippinensis* Ashmead
5. Thorax black with metallic shine, only post-scutellum and sometimes two spots near the tegulae yellow or white 6
 Thorax partly yellow, at least mesonotum or scutellum with a yellow band 17
6. Hind coxae black or only the extreme tip clear 7
 Hind coxae yellow or at least the lower third clear 13
7. Abdomen quite black 8
 Abdomen more or less yellow or reddish, at least at base below 11
8. Two white spots on sides of mesonotum near tegulae *E. albomaculatus* Gahan
 No white spots near tegulae 9
9. All tibiae clear yellow; length 1.50-1.80 mm *E. hyblaeae* Ferrière
 Hind tibiae more or less darkened 10
10. Hind tibiae and tarsi clear yellow with a large brown ring near end of tibiae *E. johnstoni* Ferrière
 Hind tibiae and tarsi dark or reddish, with only tibial spurs yellow *E. masii* Ferrière
11. Hind femora quite black; length 1.50 mm *E. indicus* Rohwer
 Hind femora more or less clear at base; length 2.00-2.50 mm 12
12. Two white spots on mesonotum near tegulae *E. nephantidis* Rohwer
 No white spots near tegulae *E. homonae* Ferrière
13. Abdomen quite black *E. anticles* Walker
 Abdomen partly reddish, at least below 14
14. Hind femora yellow on basal half 15
 Hind femora quite clear or with a line or a spot on upper margin 16
15. Abdomen reddish at base, above and below; mesonotum quite black; wings slightly dusky; front coxae whitish; length 2.50 mm *E. elegans* Crawford
 Abdomen reddish only below at base; mesonotum with 2 white spots near tegulae; wings almost blackish at terminal half; front coxae whitish, black at base; length 3.50 mm *E. cameroni* (Cameron)

16. Abdomen reddish-yellow with the tip and spots on sides of segments black *E. zehntneri* Ferrière
 Abdomen black with transverse reddish stripes more or less marked on first segments *E. claripennis* (Cameron)
17. Mesonotum black or with only a yellow stripe or spots 18
 Mesonotum yellow, or with black spots or lines 21
18. Mesonotum without transverse stripe 19
 Mesonotum with a yellow transverse stripe along hind margin 20
19. Scutellum black with a yellow tip; mesonotum dark; hind coxae black *E. ceylonicus* Ferrière
 Scutellum reddish-yellow; mesonotum with two clear spots near sides of pronotum, which are also clear; hind coxae yellow on basal half *E. eximius* Masi
20. Scutellum black; hind coxae dark with a yellow tip *E. africanus* Ferrière
 Scutellum with a yellow stripe along side and hind margin; hind coxae yellow with base black *E. syleptae* Ferrière
21. Abdomen black above, yellow below; three spots on the mesonotum, axillae, middle of scutellum and propodeum black *E. lamborni* Ferrière
 Abdomen yellow with black spots or only dark at base 22
22. Scutellum yellow; on thorax only the axillae and two spots on sides of propodeum black *E. lutens* Crawford
 Scutellum more or less dark 23
23. Mesonotum with a black median longitudinal stripe; middle of pronotum, the scutellum, propodeum and base of abdomen also dark *E. ashmeadi* Crawford
 Mesonotum quite yellow; only axillae, base and middle of scutellum and spots on propodeum on the mesopleurae and on each side of first abdominal segment, black *E. albopictus* Crawford

***Elasmus dalhousieanus* Mani & Saraswat**

(Figs 280 & 281)

1972 *Elasmus dalhousieanus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 465.

Male : Length. 1.75 mm. Body black; antennae brownish-black, scape black; legs black except as follows; fore leg beyond apical 0.33 of femur, basal 0.25 of middle tibia and tarsus pale brown; fore wings hyaline in basal 0.50 and apically, obliquely from stigma dark brown; all setae and bristles black.

Head with coarse, scattered, setigerous punctae; antennae with 9 segments : 1.1.1.3.3; scape almost 3 times as long as thick; pedicel short, stout, as long as thick; annellus minute; funicular segments

equal, with branches of the first and second segments equal to club and that of the third segment 2 times the second and third club segments combined and 0.88 of club, second segment equal to third, latter with an acute, short, conical process apically.

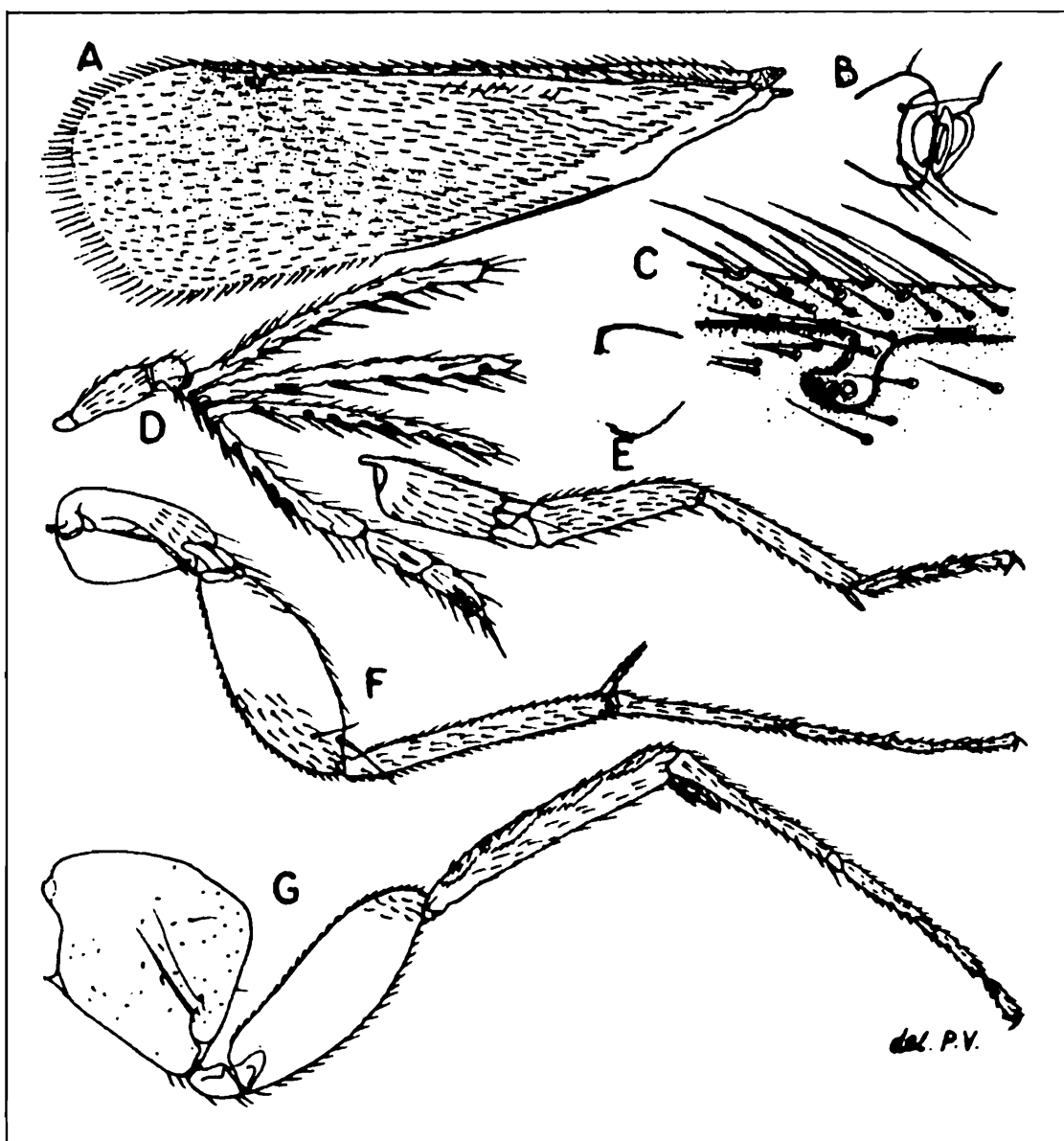


FIG. 280. *Elasmus dalhousieanus* Mani & Saraswat, male : A. Fore wing; B. Annellus; C. Stigmal venation; D. Antenna; E. Fore leg; F. Middle leg; G. Hind leg.

Pronotum with carina, sculptured like mesonotum; mesonotum with close, coarse, setigerous punctae and scaly microsculpture; scutellum with reticulately scaly microsculpture; propodeum smooth; metanotum hyaline; middle and hind coxae, femora finely long striated; fore wing 3 times as long as wide; veins $sm : m : pm$ ratio 60 : 100 : 20, m with 9 erect setae directed behind; fore coxa almost 3 times as long as thick, with 3 long bristles apically; femur slightly longer and over 3 times as long as thick; tibia slightly longer; tarsus equal to femur, metatarsus equal to 4 tarsal segments, second slightly longer than third which is the shortest; middle coxae 1.33 times as

long as thick, with one long and 2 short bristles; femur 1.60 times the coxa and 2.50 times as long as thick, with one long spine apically below; tibia 1.16 times the femur spur 0.25 of tibia and a little less than 0.50 of metatarsus; tarsus 1.40 times tibia, metatarsus slightly less than 0.50 of tarsus, second segment 0.50 of metatarsus, third 0.75 of second and fourth 0.66 of third; hind coxa 1.20 times as long as thick; femur slightly longer and 2.75 times as long as thick; tibia slightly longer, longer spur a little less than 0.50 of metatarsus and shorter spur 0.50 of longer, with 4 lozenges; tarsus 1.30 times tibia, metatarsus a little less than 0.50 of tarsus, second segment 0.50 of metatarsus, third 0.75 of second and fourth 0.66 of the third.

Abdomen short, ovate, with transverse rows of long setae posteriorly on all tergites.

Female : Length 2.25 mm. Colour and sculpture like male; antennae slender, long, black, with 9 segments : 1.1.1.3.3; scape

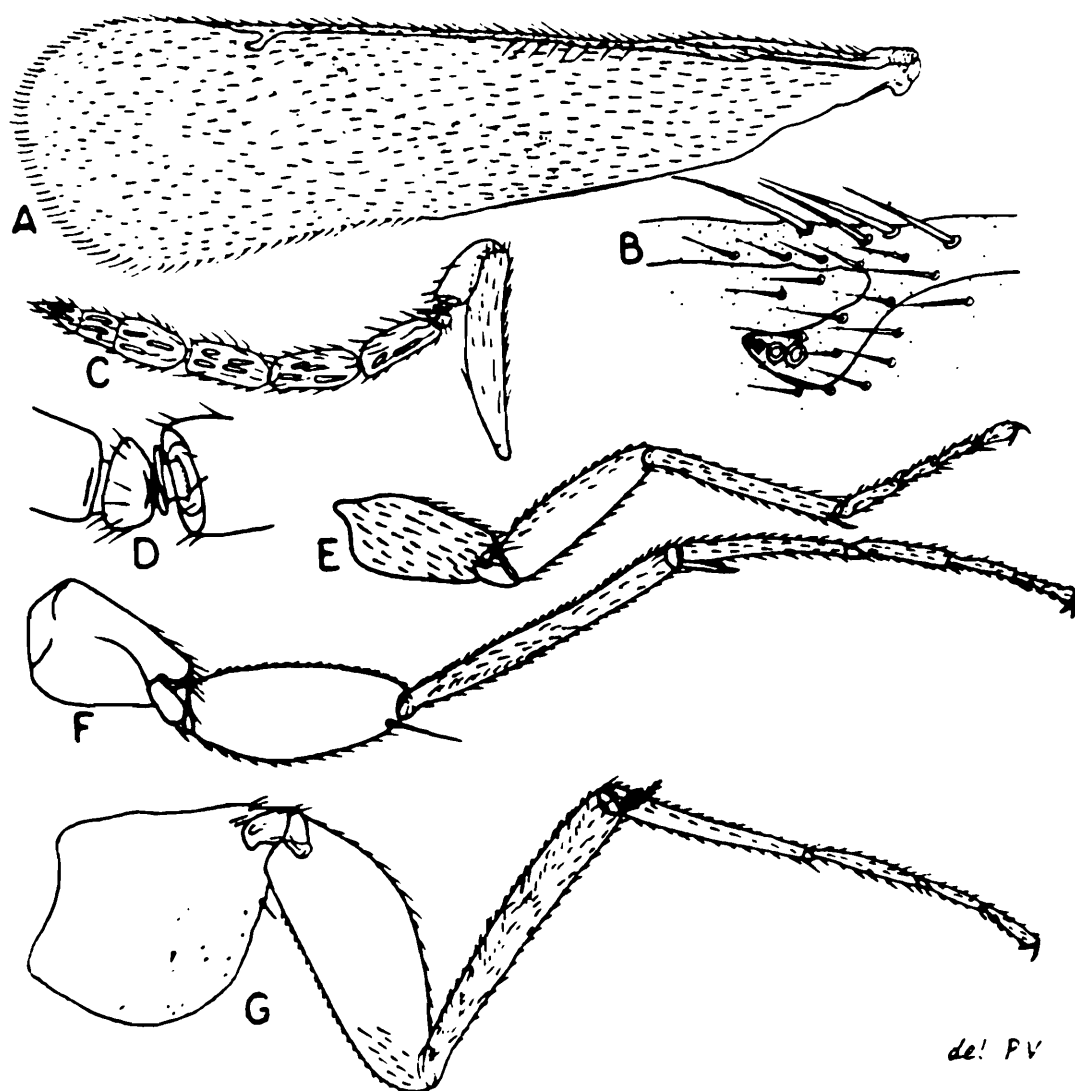


FIG. 281. *Elasmus dalhousieanus* Mani & Saraswat, female; A. Fore wing; B. Stigmal vein; C. Antenna; D. Anelli; E. Fore leg; F. Middle leg; G. Hind leg.

scape 5 times as long as thick; pedicel a little over 0.50 of scape and 2.50 times as long as thick; annellus large, oblique, almost as thick as pedicel; funicular segments subequal, about 0.16 times longer than pedicel and almost 2.50 times as long as thick; club a little less than preceding 2 segments combined, equally thick; first segment 0.83 of the funicular segment and a little less than 0.50 of the club, second and third segments subequal, third conical, terminating in a short, obtuse process.

Fore wing 4 times as long as wide; veins *sm* : *m* : *pm* ratio 45 : 100 : 15, *m* with 9 erect setae; fore coxa 2 times as long as wide; with one long and 2 short bristles apically; femur slightly longer, a little less than 3.50 times as long as thick, with one moderately long spine apically below; tibia a little longer than femur; tarsus slightly shorter and almost equal to femur, metatarsus about 0.33 of tarsus, other segments subequal; middle coxa about 1.50 times as long as thick, with 2 long and one short bristle apically; femur a little over 2 times as long as thick and almost 1.33 times the coxa, with one long spine apically below; tibia a little less than 1.50 times the femur, spur 0.33 of metatarsus; tarsus slightly less than 1.25 times tibia, metatarsus 0.50 of tarsus, second tarsal segment 0.50 of metatarsus, third segment 0.75 of the second and fourth segment 0.66 of the third; hind coxa a little less than 1.25 times as long as thick; femur almost equal to coxa and a little less than 2.50 times as long as thick; tibia 1.25 times the femur, with 4 lozenges, longer spur 0.25 of metatarsus, shorter 0.50 of the longer; tarsus a little over 1.25 times the tibia, metatarsus almost 0.50 of tarsus, second segment slightly over than 0.50 of metatarsus, third 0.75 of the second, fourth segment 0.66 of the third.

Type locality : Northwest Himalaya : Dalhousie

This species is readily recognized by the dense infumation of fore wing. Its relation to other species is shown in the key.

***Elasmus indicoides* Mani & Saraswat**

(Fig. 282)

1972 *Elasmus indicoides*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 468.

Female : Length 1.75 mm. Body black, with metallic-blue reflections, especially on head and pronotum; basal 0.50 of abdomen blackish-brown, apical 0.50 black; fore coxa basal 0.75; fore femur basal 0.33, middle and hind coxae and femora black, rest of leg pale brown; scape reddish-brown, flagellum black; wings hyaline, with a brown cloud behind stigma; ovipositor brownish-black.

Head with a few scattered, shallow, setigerous punctae on frons and vertex; antenna with 9 segments : 1.1.1.3.3; scape slender, about 4 times as long as thick; pedicel about 0.50 of scape, slender, about

2.50 times as long as thick; annellus nearly as thick as base of funicle; funicular segments subequal, slender, long, each 2.50 times as long as thick; club slightly shorter than the preceding 2 funicular segments combined and slightly stouter, obtusely pointed at tip.

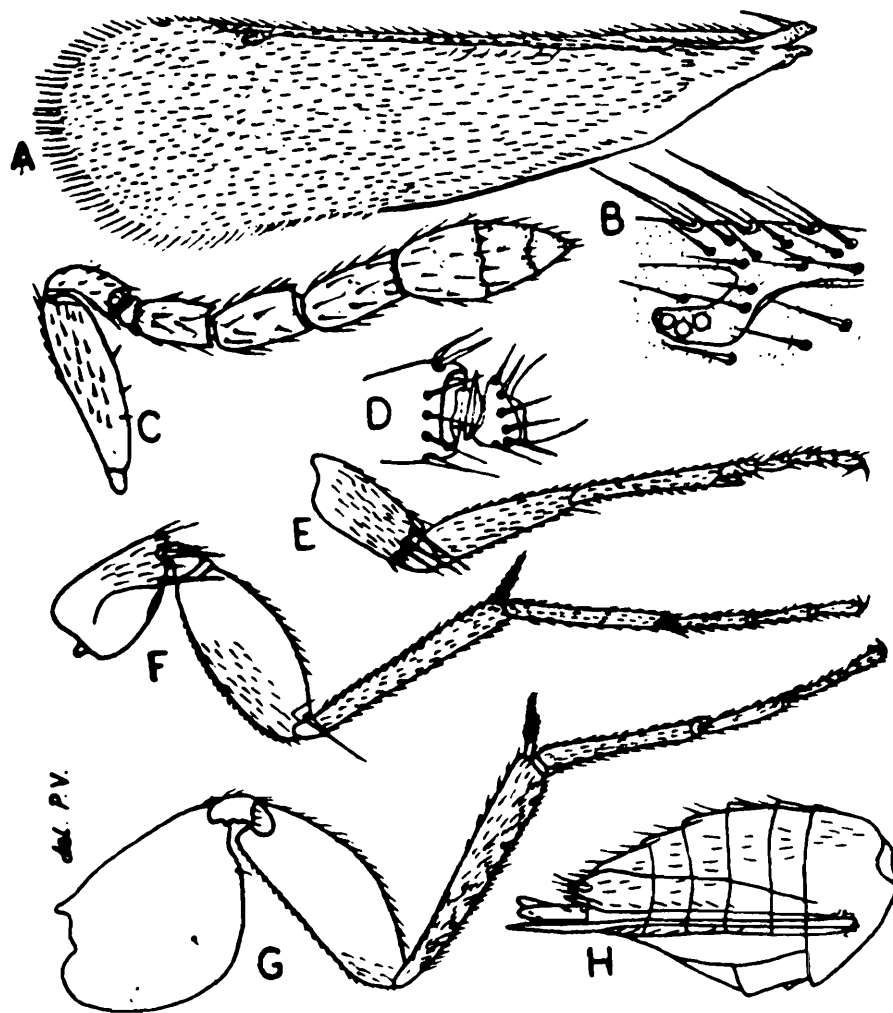


FIG. 282. *Elasmus indicoides* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Antenna; D. Anelli; E. Fore leg; F. Middle leg; G. Hind leg; H. Abdomen.

Pronotum and mesonotum with close, setigerous punctae, besides scaly microsculpture; scutellum and propodeum with scaly microsculpture; fore wing 3 times as long as wide; veins $sm : m : pm$ ratio 33 : 100 : 16, m with 7 erect setae directed backwards; fore coxa 2 times as long as thick, with 2 long and one short bristle apically; femur 2 times coxa and 4 times as long as thick, with one long spine apically; tibia subequal to femur; tarsus equal to tibia; middle coxa

1.50 times as long as thick, with 2 long bristles apically; femur 1.60 times coxa and 2.50 times as long as thick, with one long spine apically below; tibia almost 1.50 times femur, spur a little over 0.25 of metatarsus; tarsus 1.25 times tibia, metatarsus 0.50 of tarsus, second segment 0.50 of metatarsus, third segment 0.75 of the second, fourth segment 0.75 of the third; hind coxa 1.20 times as long as thick; femur slightly longer than coxa and about 2.50 times as long as thick; tibia 1.16 times longer, with 4 lozenges, longer spur about 0.40 of metatarsus, shorter spur a little shorter; tarsus 1.50 times tibia, metatarsus a little less than 0.50 of tarsus, second tarsal segment about 0.66 of metatarsus, third segment 0.75 of the second, fourth segment 0.75 of the third.

Abdomen slender, basal 3 tergites with lateral row of setae, others with transverse rows of setae on hind margin; ovipositor well exerted.

Type locality : Anamalai Hills : Munnar-Kodaikanal

This species differs mainly from *E. indicus* Rohwer (*loc. cit.*) in the subequal funicular segments, the smaller size of body, in the scaly microsculpture of scutellum and propodeum and in the colour of fore leg.

Elasmus claripennis (Cameron)

- 1913 *Cyclopleura claripennis*, Cameron, *Indian forest Rec.*, 4 : 97.
 1923 *Elasmus colemani*, Mahdihassan, *J. Maharaja's Coll. Vizianagaram Sci. Assoc.*, 1 : 69.
 1928 *Elasmus claripennis*, Ferrière, *Bull. ent. Res.*, 19 : 171.
 1929 *Elasmus claripennis*, Ferrière, *Bull. ent. Res.*, 20 : 418.
 1933 *Elasmus claripennis*, Miller, *Sc. Ser. Dept. Agric. S.S.F.M.S.*, 11 : 1-24.
 1935 *Elasmus claripennis*, Ferrière, *Bull. ent. Res.*, 26 : 405.
 1938 *Elasmus claripennis*, Mani, *Cat. Indian Ins.*, 23 : 107.
 1940 *Elasmus claripennis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 21.

Female : Length 2.50-3.00 mm. Body black to dark blue; head dark purple; antennae black; thorax dark blue; abdomen black; first tergite narrowly blue at base, second and third tergites apically and second in the middle and at the sides rugotestaceous; legs pale yellow; femora above and tibia above and below narrow black; tarsi darker; fore wing with an obscure subtriangular cloud at vein *st*.

Mesonotum closely reticulately punctate; vertex and face finely punctate; ocellular space 3 times ocellar diameter; funicular segments about 3 times as long as thick, second only a little longer than first and third; club 3 segmented, a little longer than the second funicular segment.

Pronotum without transverse carina; mesonotum finely punctate; scutellum and propodeum rugulose; propodeum without carina; abdomen 2 times thorax.

Male : Length 1.70-2.20 mm. Antennae with 3 long branches; abdomen equal to or shorter than thorax.

Type locality : Ranchi

Distribution : India : Mysore, Ranchi; Malaya

Host : *Eublemma amabilis*, predator on lac insects breeding on *Zizyphus jujuba* Lamarck.

Elasmus albomaculatus Gahan

(Fig. 283)

- 1920 *Elasmus albomaculatus*, Gahan, *Philip. J. Sci.*, 17 : 347.
 1929 *Elasmus albomaculatus*, Ferrière, *Bull. ent. Res.*, 20 : 414.
 1938 *Elasmus albomaculatus*, Mani, *Cat. Indian Ins.*, 23 : 107.
 1940 *Elasmus albomaculatus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 21.
 1972 *Elasmus albomaculatus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 460.

Female : Length 2.30 mm. Head and mesoscutum dull blue-green; scape pale yellow, flagellum brown; scutellum black, faintly metallic, narrow line at base of tegula, a small marginal spot on mesoscutum just above tegula and the triangular metanotum yellowish-white, latter with a hyaline border; propodeum dull bronze; rest of thorax, abdomen, coxae, femora, except anterior pair at tip, shiny black; tips of fore femur and all tibiae white; tarsi mostly dark, hairs on legs black; wings hyaline, in one female obscurely and very faintly infumated behind vein *st*.

Head nearly as wide as thorax; ocellular space equal to interocellar; vertex and frons with large scattered punctae; scape slender, pedicel shorter than first funicular segment, funicular segments subequal, cylindrical, first segment very slightly longest, third segment about 2 times as long as thick; club about as long as the second and third funicular segments combined.

Pronotum and mesoscutum strongly scaly punctate, scutellum obscurely reticulately sculptured; metanotum triangularly projecting over propodeum; propodeum finely sculptured like scutellum, without carina; pleura and hind coxae finely striate laterally; middle femora with a single long stiff bristle on the inner side at apex; hind tibia posteriorly with 4 lozenge shaped series of setae; setae on the basal segment of middle and hind tarsi arranged in distinct rows; wing long and narrow, length to width 3.30 : 1.00; extending to the tip of abdomen; veins *sm* : *m* : *pm* ratio 50 : 100 : 20.

Abdomen slightly longer than head and thorax combined, first apparent tergite largest; tergites 2-5 subequal, transverse; sixth tergite slightly longer than fifth.

Type locality : Philippines : Luzon

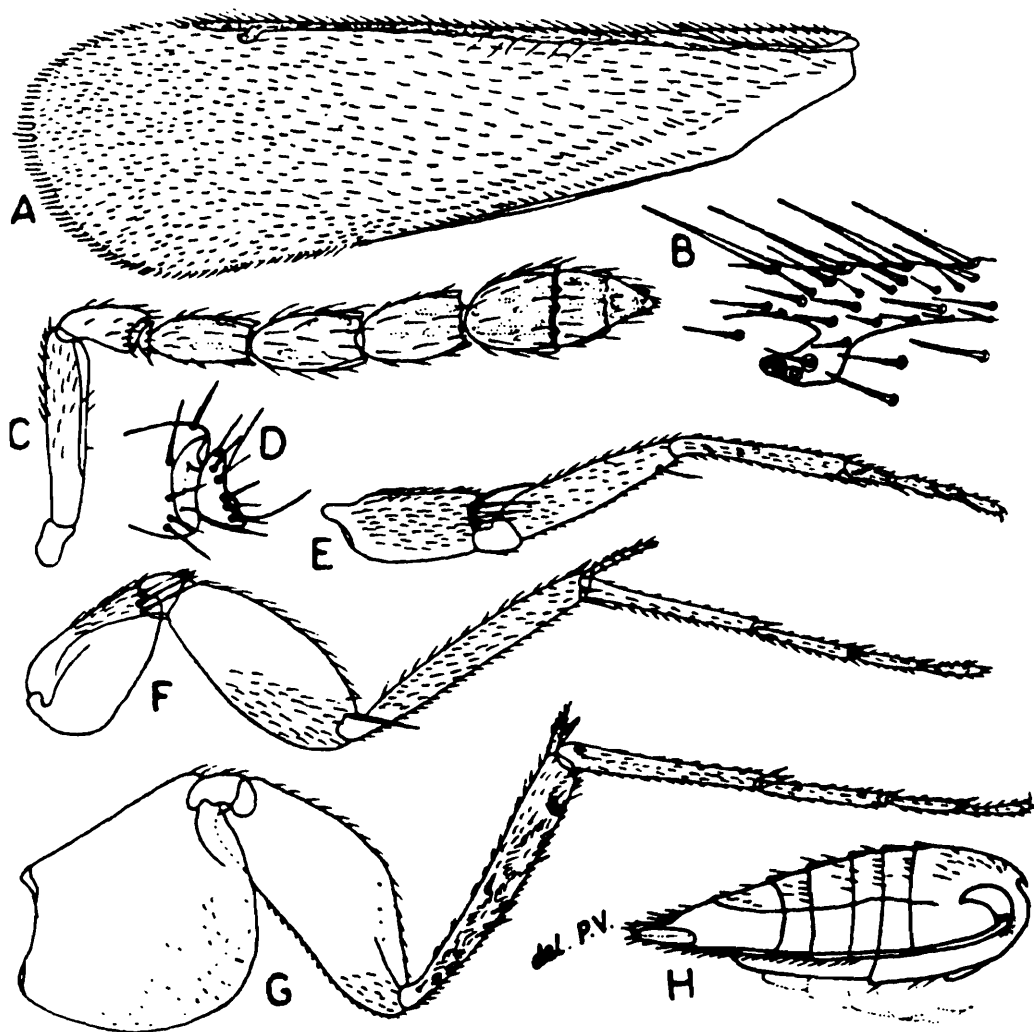


FIG. 283. *Elasmus albomaculatus* Gahan, female : A. Fore wing; B. Stigmal venation; C. Antenna; D. Anellus; E. Fore leg; F. Middle leg; G. Hind leg; H. Abdomen.

Distribution : India, Burma, Philippines

Hosts : *Apanteles malevolus* parasitic on larva of *Hyblaea puera* defoliating *Tectona grandis* and *Vitex* spp., *Acrocercops* sp. on *Caesalpinia pulcherima* (Linn.)

***Elasmus valparaianus* Mani & Saraswat**

1972 *Elasmus valparaianus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 471.

Female : Length 2.00 mm. Body black, with metallic-green reflections on head and thorax; scape pale brown; flagellum dark brown; fore femur at tip, tibia and tarsus pale brown; wings hyaline, setae and bristles black.

Frons with sparse, scattered, shallow, setigerous punctae; ocellocular space less than ocellar diameter; antennae slender, with

9 segments : 1.1.1.3.3; scape 5 times as long as thick; pedicel 0.33 of scape and about 1.25 times as long as thick; funicular segments subequal, 1.50 times pedicel; club equal to the preceding 2 funicular segments combined, first club segment slightly shorter than first funicular segment, third segment conical, shortest.

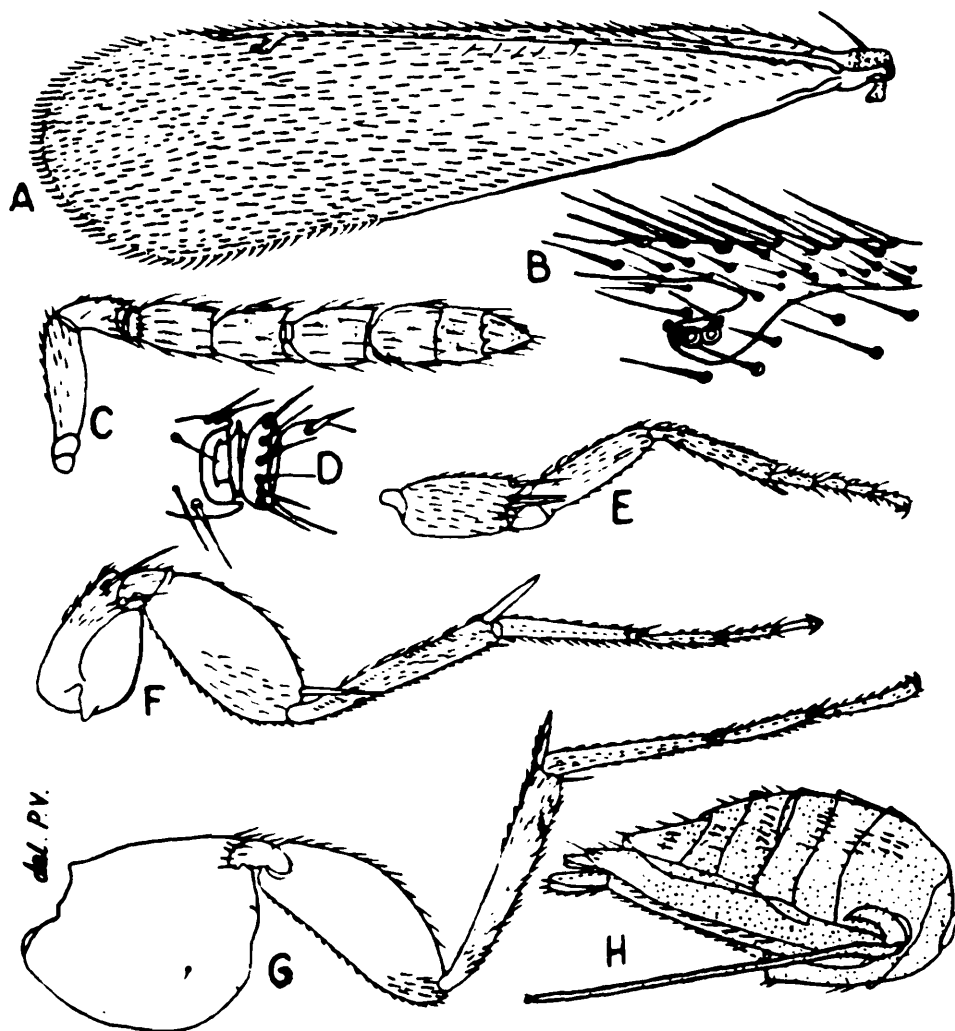


FIG. 284. *Elasmus valparaianus* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Antenna; D. Anelli; E. Fore leg; F. Middle leg; G. Hind leg; H. Abdomen.

Pronotum and mesonotum with close, setigerous punctae and scaly microsculpture; scutellum with reticulate scaly microsculpture; propodeum smooth; fore wing 4 times as long as wide; veins $sm : m : pm$: ratio 57 : 100 : 17; m with 5 erect setae; fore coxa 2 times as long as thick, with 2 long and 2 short bristles apically; femur equal to coxa and 3 times as long as thick; tibia equal to femur; tarsus equal to tibia, metatarsus 0.40 of tarsus, tarsal segments 2-4 subequal, 0.50 of metatarsus; middle coxa 1.50 times as long as thick

with 2 long bristles apically; femur 1.25 times coxa and 2 times as long as thick, with one long spine apically below; tibia a little longer, spur 0.50 of metatarsus; tarsus about 1.33 times tibia, metatarsus 0.50 of tarsus, second segment 0.50 of metatarsus, third 0.66 of the second and fourth 0.75 of the third; hind coxa 1.20 times as long as thick; femur slightly shorter than coxa and 2.25 times as long as thick; tibia equal to coxa and slightly longer than femur, with 4 lozenges, longer spur 0.33 of metatarsus, shorter 0.75 of the longer; tarsus 1.60 times tibia, metatarsus slightly less than 0.50 of tarsus, second segment a little over 0.50 of tarsus, third segment 3.25 times the second, fourth segment 0.50 of the third.

Abdomen shortly conical, 0.50 of body, with lateral patches of setae on tergites 1-3, others with transverse rows of setae posteriorly; ovipositor well exerted.

Type locality : Anamalai Hills : Valparai

This species is readily recognized by the equal funicular segments; its relationship to the other species is shown in the key.

Elasmus deccanus Mani & Saraswat

(Fig. 285)

1972 *Elasmus deccanus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 467.

1975 *Elasmus deccanus*, Saraswat, *Mem. School Ent.*, 4 : 56.

Male : Length 1.25 mm. Body black, with some metallic reflections on head and pronotum; antennae blackish-brown; fore leg pale yellow, except for an obscure darkening at base in front on femur; fore coxa white, trochanters, tip of middle coxa, tibia and tarsus, base of hind femur, hind tibia and tarsus pale brown, otherwise legs black; seta on antennae and mesothorax white; bristles black; wings hyaline, veins brown.

Frons with scattered shallow, setigerous punctae; scape almost 2 times as long as thick; pedicel about 0.50 of scape and almost as long as thick; annellus minute; first 2 funicular segments subequal, third segment about 1.50 times the second; branches of the first and second segments subequal and also equal to club, branch of the third segment to club 7 : 8; first segment of club about 0.62 of the club, second segment a little less than 0.33 of the first, third segment 0.66 of the second and ending in a short, truncated, nipple-like prolongation.

Pronotum without carina, mesonotum and scutellum with close, fine, setigerous punctae and scaly microsculpture; propodeum smooth; fore wing 3.50 times as long as wide; veins *sm* : *m* : *pm* ratio 33 : 100 : 16, *m* with 4-6 erect backwardly directed setae; fore coxa 2.50 times as long as thick, with one long and 2 shorter bristles apically; femur 1.20 times longer than tibia, with an apical spine below; tibia equal to coxa and 0.82 of the femur; tarsus equal to

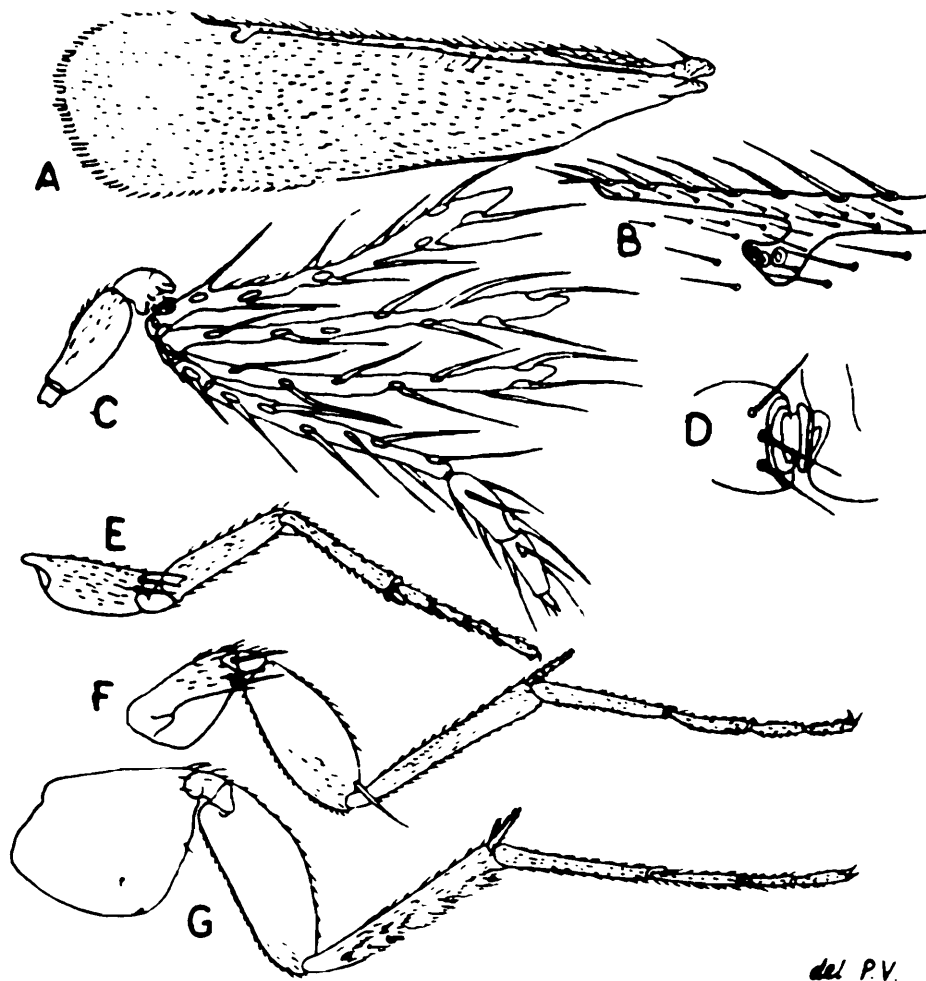


FIG. 285. *Elasmus deccanus* Mani & Saraswat, male : A. Fore wing; B. Stigmal and postmarginal venation; C. Antenna; D. Annellus; E. Fore leg; F. Middle leg; G. Hind leg.

femur, metatarsus and fourth tarsal segment equal, tarsal segments 2-3 subequal and 0.66 of metatarsus; middle coxa a little over 3 times as long as thick, with 2 long bristles apically; femur 1.40 times coxa and a little over 2 times as long as thick, with a long spine apically below; tibia about 1.30 times femur, spur about 0.33 of metatarsus; tarsus almost 2 times femur and 1.40 times tibia, metatarsus slightly less than 0.50 of tarsus, second segment 0.50 of metatarsus, about 0.66 of the second; hind coxa 1.25 times as long as thick; femur equal to coxa and 2 times as long as thick; tibia slightly longer, with 3 lozenges, the longer spur 0.33 of metatarsus and the shorter spur 0.50 of the longer; tarsus 1.60 times tibia, metatarsus slightly less than 0.50 of tarsus; second segment 0.50 of metatarsus; third and fourth subequal and 0.66 of the second.

Abdomen short, ovate; all tergites with transverse rows of setae on hind margin.

Type locality : Poona : Sinhgarh Fort

Distribution : Western Ghats, down south upto Pechiparai

This species is readily recognized by the third funicular segment being longest. Its position in relation to other species is shown in the key.

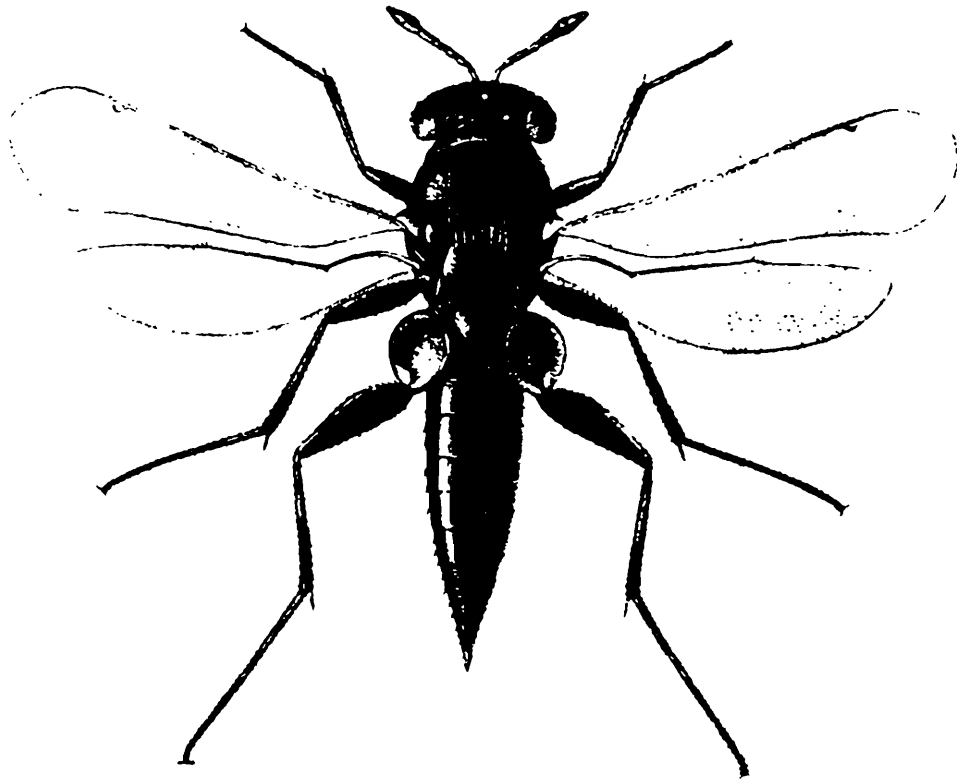


FIG. 286. *Elasmus johnstoni* Ferrière, female.

***Elasmus johnstoni* Ferrière**

(Figs. 286, 287 & 288)

- 1929 *Elasmus johnstoni*, Ferrière, *Bull. ent. Res.*, 20 : 258, 414.
 1938 *Elasmus johnstoni*, Mani, *Cat. Indian Ins.*, 23 : 109.
 1940 *Elasmus johnstoni*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 22.
 1972 *Elasmus johnstoni*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 470.

Female : Length 2.00-2.50 mm. Body black, with greenish shine, sometimes partly bluish; abdomen aeneous, shiny green at base; antennae brown, sometimes reddish; scape clearer; legs dark, trochanter, tip of fore femur, fore tibia, base and tip of middle and hind tibiae and tarsi clear yellow.

Head in female as wide as thorax, frons with strong punctations; scape equal to following 2 segments combined; pedicel elongate, a little shorter than second funicular segment; first funicular segment 2 times as long as thick, segments 2-3 shorter, about 1.50 times as long as thick; club a little thicker and equal to preceding 2 segments combined.

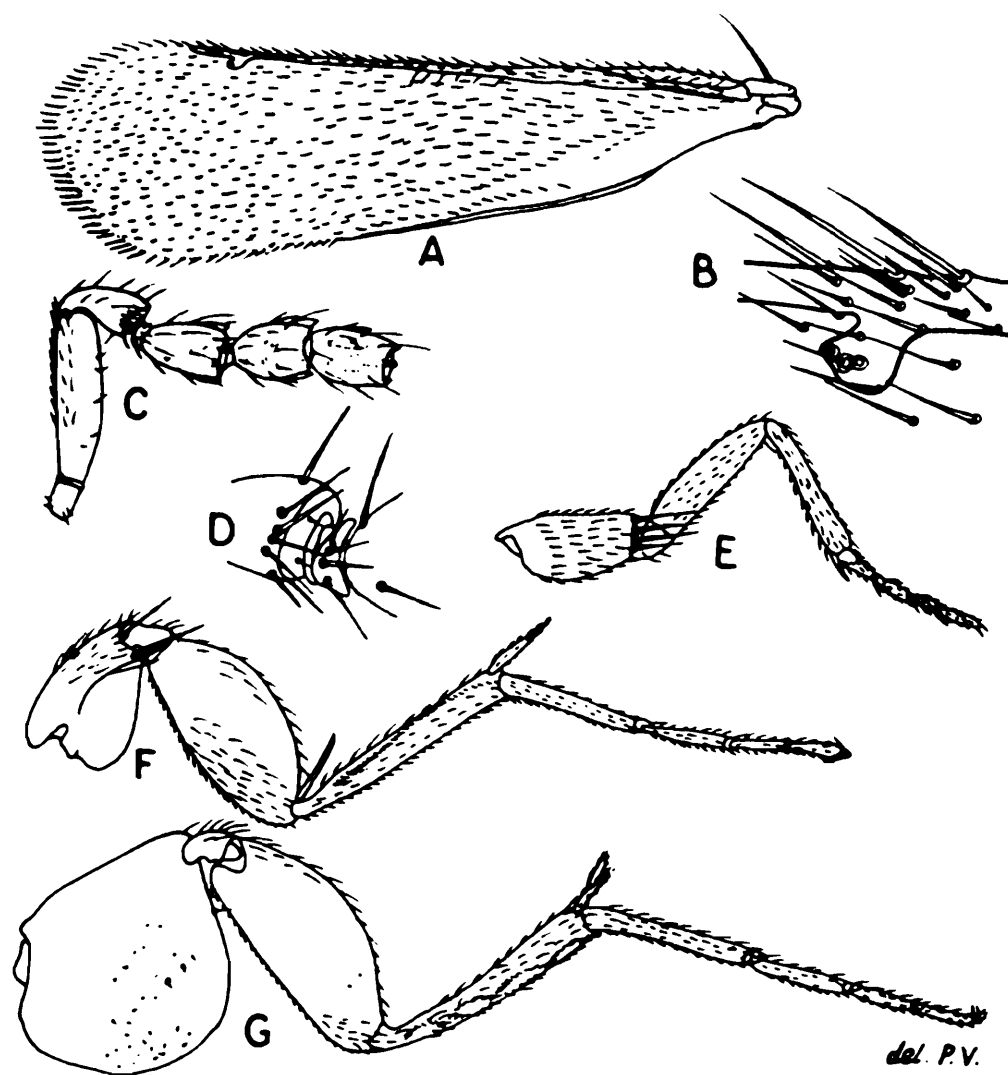


FIG. 287. *Elasmus johnstoni* Ferrière, female : A. Fore wing; B. Stigmal Venation; C. Antenna; D. Annellus; E. Fore leg; F. Middle leg; G. Hind leg.

Mesonotum broader than long, with dark setae; scutellum finely shagreened; postcutellum triangular with translucent border and projecting over propodeum; propodeum smooth, shiny; wings hyaline, 3 times as long as thick, ciliated from the base, with a hairless spot near the posterior margin; veins *sm* : *m* : *pm* ratio 40 : 100 : 4; hind femur and coxae finely striate; hind tibia with 4 diamond marks; fore and middle coxae with 4 spines; middle femur with one spine.

Abdomen elongate, longer than head and thorax combined, tergites transverse, except the first and sixth which are slightly longer than wide.

Male : Length 1.50 mm. Abdomen shorter than thorax; scape short; pedicel as long as thick; first 3 funicular segments short, each bearing a slender branch, fourth segment much longer; club 0.75 of the fourth segment; rest as in female.

Type locality : Wad Madani (Sudan : Africa)

Distribution : Africa; India : Dehra Dun, Bombay, Punjab

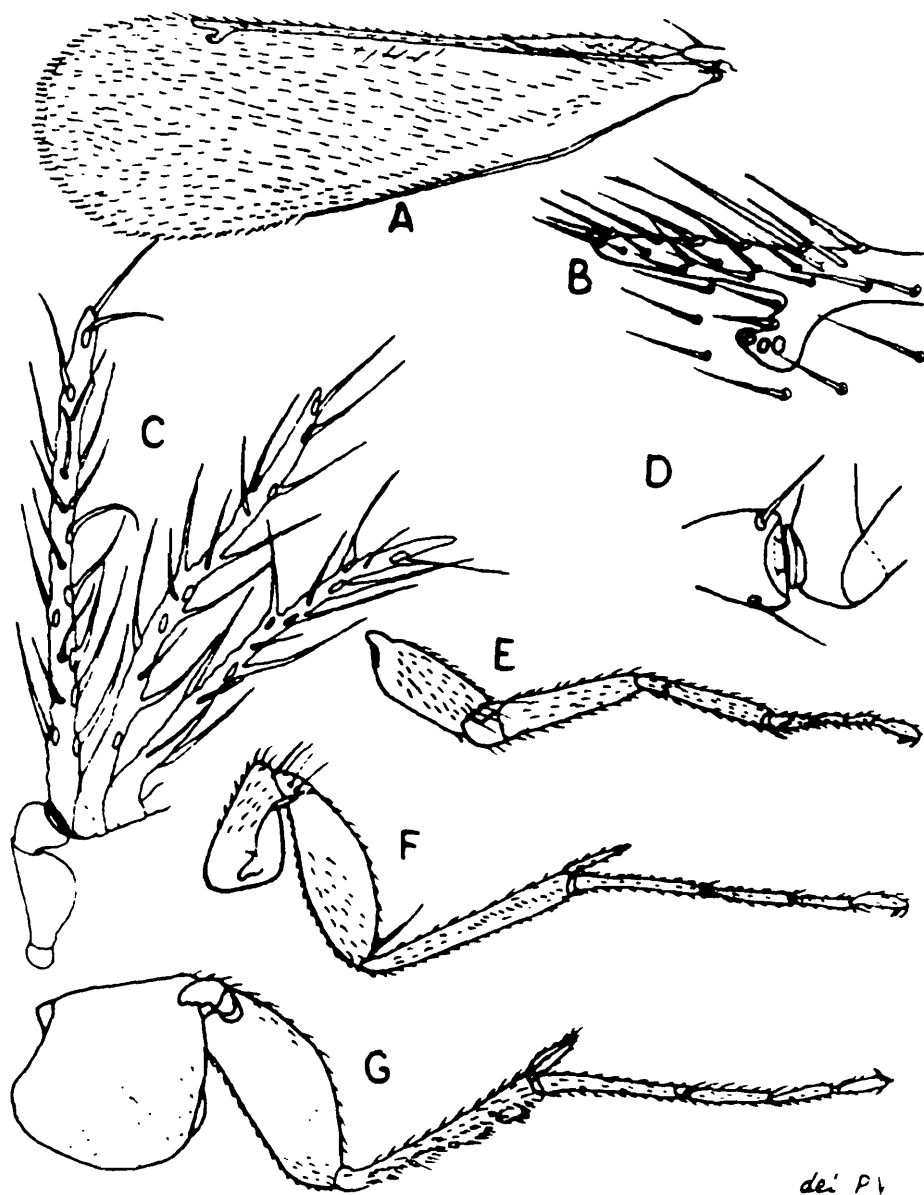


FIG. 288. *Elasmus johnstoni* Ferrière, male : A. Fore wing; B. Stigmal venation and postmarginal venation; C. Antenna; D. Annellus; E. Fore leg; F. Middle leg; G. Hind leg.

Hosts *Apanteles malevolus* Wilk., parasitic on *Hyblaea puera* defoliating *Vitex negundo*; *Platyedra gossypiella* and *Earias* spp. on cotton.

This species may be distinguished by the dark colour of body and legs, by hind tibia being clear with the brown ring below middle and by the shape of abdomen and antenna. This species is also known from Sudan (Africa).

Elasmus indicus Rohwer

(Fig. 289)

- 1921 *Elasmus indicus*, Rohwer, *Ann. Mag. Nat. Hist.*, 7 : 124.
 1929 *Elasmus indicus*, Ferrière, *Bull. ent. Res.*, 20 : 415.
 1938 *Elasmus indicus*, Mani, *Cat. Indian Ins.*, 23 : 109.
 1940 *Elasmus indicus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 22.
 1972 *Elasmus indicus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 469.

Female : Length 2.00 mm. Body aeneous; antennae brown; scutellum with a faint purplish tinge; base of first tergite of abdomen green, apical part of first and base of second tergites with a pale ferruginous band, apical tergites faintly purple; legs black, except fore leg beyond the middle of coxa, middle leg beyond femur; hind tibia and hind tarsi yellowish-brown, with very conspicuous black bristles; wings subhyaline; setae black.

Vertex and occiput granular and with shallow, obscure punctae; face and part of frons finely granulated; ocellular space 2 times ocellar diameter; scape 3 times as long as thick; funicular segments, unequal, first segment about 1.50 times the second, third funicular segment subequal to the second; club equal to the preceding 2 funicular segments combined, first segment of club equal to first funicular segment.

Pronotum with an indistinct transverse carina; mesoscutum with close, setigerous punctae; scutellum dull, very finely reticulately punctate; propodeum shiny, more finely reticulate than scutellum; fore coxa 2 times as long as wide; with 2 long and 2 shorter bristles apically; femur 1.50 times coxa and a little over 4 times as long as thick; tibia slightly longer than femur; tarsus almost equal to tibia; middle coxa 1.50 times as long as thick, with 2 long and 2 short bristles apically; femur 1.14 times coxa and 1.75 times as long as thick, with one long apical spine below; tibia slightly longer, tibial spur 0.50 of metatarsus; tarsus a little over 1.75 times tibia, metatarsus a little over 0.33 of tarsus, second tarsal segment 0.66 of metatarsus, third segment more than 0.50 of second; fourth segment 0.50 of third; hind coxa as long as thick; femur 2 times as long as thick; tibia slightly longer, spur 0.33 of metatarsus, metatarsus slightly over 0.33 of tarsus, second tarsal segment to metatarsus 5 : 7, third segment 0.60 of the second, fourth segment 0.40 of the third.

Abdomen polished, with long black bristles at the sides of tergites.

Male : Length 1.50 mm. Scape 2 times as long as thick; funicular segments nearly equal, much shorter than club; funicular branches ratio 12 : 11 : 9; first segment of club equal to the second and third club segments combined, second and third club segments slightly thicker than funicular and first club segment.

Mesoscutum more scaly than in female; fore wing 3.30 times as long as wide; veins *sm* : *m* : *pm* ratio 53 : 100 : 11; fore coxa 2.50 times as long as thick, with 3 long bristles; femur 1.40 times the coxa and almost 3 times as long as thick; tibia nearly equal to femur; tarsus slightly shorter, metatarsus 0.33 of tarsus, second tarsal segment a little over 0.50 of metatarsus, third segment slightly shorter, fourth segment almost equal to the first; middle coxa 1.30 times as long as thick, with 2 long and 3 short bristles; femur 2 times as long as thick, 1.60 times the coxa and with one long spine apically below; tibia 1.25 times the femur; hind tibial spur 0.50 of metatarsus, with 3 lozenges; tarsus over 1.50 times tibia, metatarsus 0.38 of tarsus, second tarsal segment 0.66 of metatarsus, third segment almost 0.75 of the second and fourth segment slightly shorter.

Type locality : Coimbatore

Distribution : Bombay, Nasik, Dehra Dun, Coimbatore

Hosts : *Anomalococcus*; parasitic on Coccids on Acacia; larva of *Diaphania (Margaronia) indica*, *Sylepta derogata*; it may be parasitic upon predeceous larvae of *Eublemma*.

***Elasmus nephantidis* Rohwer**

(Fig. 289)

1921 *Elasmus nephantidis*, Rohwer, *Ann. Mag. Nat. Hist.*, 7 : 123.

1929 *Elasmus nephantidis*, Ferrière, *Bull. Ent. Res.*, 20 : 415.

1938 *Elasmus nephantidis*, Mani, *Cat. Indian Ins.*, 23 : 109.

1940 *Elasmus nephantidis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 22.

Closely related to *E. indicus* Rohwer, but lacks the pale band on abdomen, has white bristles on mesonotum, and different punctuations on head.

Female : Length 2.50 mm. Body aeneous; head, spot near tegulae, propodeum and base of the first tergite greenish or with a greenish tinge; apical 0.33 of first tergite faintly brownish; scape yellowish; flagellum brownish; legs yellowish, with conspicuous black hairs; 4 posterior coxae and femora (except basally) blackish; wings subhyaline; hairs of mesoscutum whitish; abdomen shining, lateral bristles black.

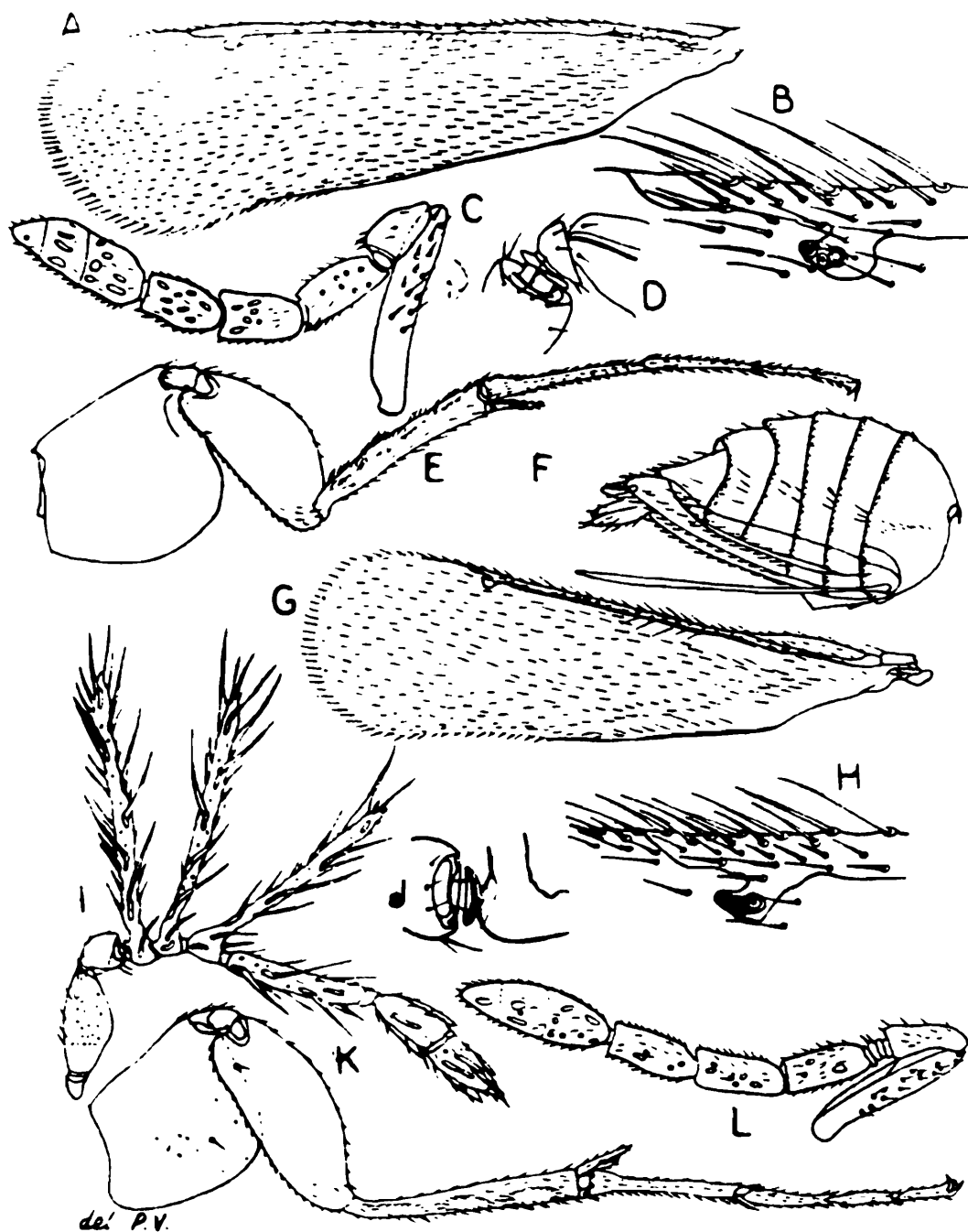


FIG. 289. A-K. *Elasmus indicus* Rohwer, A-F. female : A. Fore wing; B. Stigmal and postmarginal venation; C. Antenna; D. Anelli; E. Hind leg; F. Abdomen; G-K. male : G. Fore wing; H. Stigmal and postmarginal venation ; I. Antenna; J. Anellus; K. Hind leg; L. *Elasmus nephantidis* Rohwer, female : Antenna.

Face finely reticulate; upper part of front, vertex and occiput shiny, finely reticulate, and in addition with scattered shallow punctae; ocellar line 2 times diameter of the lateral ocellus; ocelloccipital line subequal to the diameter of lateral ocellus.

Pronotum without a transverse ridge, sculptured like mesonotum; mesoscutum with close setigerous punctae giving each a scaly appearance; scutellum finely reticulate; propodeum polished.

Type locality : Coimbatore

Distribution South India; Malaya

Host : *Nephantis serinopa* on *Cocos nucifera*

It can be distinguished from other species by its coloration and by the yellow spots on the mesonotum near tegulae. The only species with which it could be confused is *E. albomaculatus* Gahan, which has also the same yellow spots. From that species it differs specially by the reddish coloration at the base of abdomen below; but as this coloration is often slight in extent and may be hidden by the hind coxae, the species may be easily confused.

Elasmus brevicornis Gahan

(Fig. 290)

1922 *Elasmus brevicornis*, Gahan, *Treubia*, 3 : 50.

1929 *Elasmus brevicornis*, Ferrière, *Bull. ent. Res.*, 20 : 413.

1940 *Elasmus brevicornis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 21.

1972 *Elasmus brevicornis*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 463.

Female : Length 1.60 mm. Body generally black, with metallic green reflections; postscutellum white at base; translucent at tip; tegula white basally, brown apically; flagellum pale brown; scape and pedicel pale yellow; fore legs except base of coxa, middle and hind trochanters, tibia and tarsi greyish-white; hind coxa black with faint metallic lustre; abdomen black with the venter, except at tip; apex of first dorsal segment and more or less second dorsal segment yellow.

Scape slender; pedicel obconic and little less than 2 times as long as thick; annellus minute; first funicular segment and annellus together equal to pedicel; first funicular segment 0.33 times longer than thick, segments 2-3 subquadrate; club slightly thicker than funicle; 3 segmented, segments equal, first and second club segments thicker than long, apical segment cone-shaped; vertex and frons with large round punctae.

Pronotum and mesonotum weakly shagreened and covered with long recumbent hairs; scutellum and axillae faintly reticulate; postscutellum triangular; propodeum smooth; pleura finely striate except mesepimeron; hind coxa and femur distinctly lineate; fore coxa ventrally near apex with 3 spines; middle femur ventrally near apex with 2 spines (equally long); vein *pm* equal to *st*; veins *sm* : *m* : *pm* ratio 35 : 100 : 4; fore wing nearly 4 times as long as wide.

Abdomen smooth and little longer than head and thorax.

Male : Fore wing 3.40 times as long as wide.

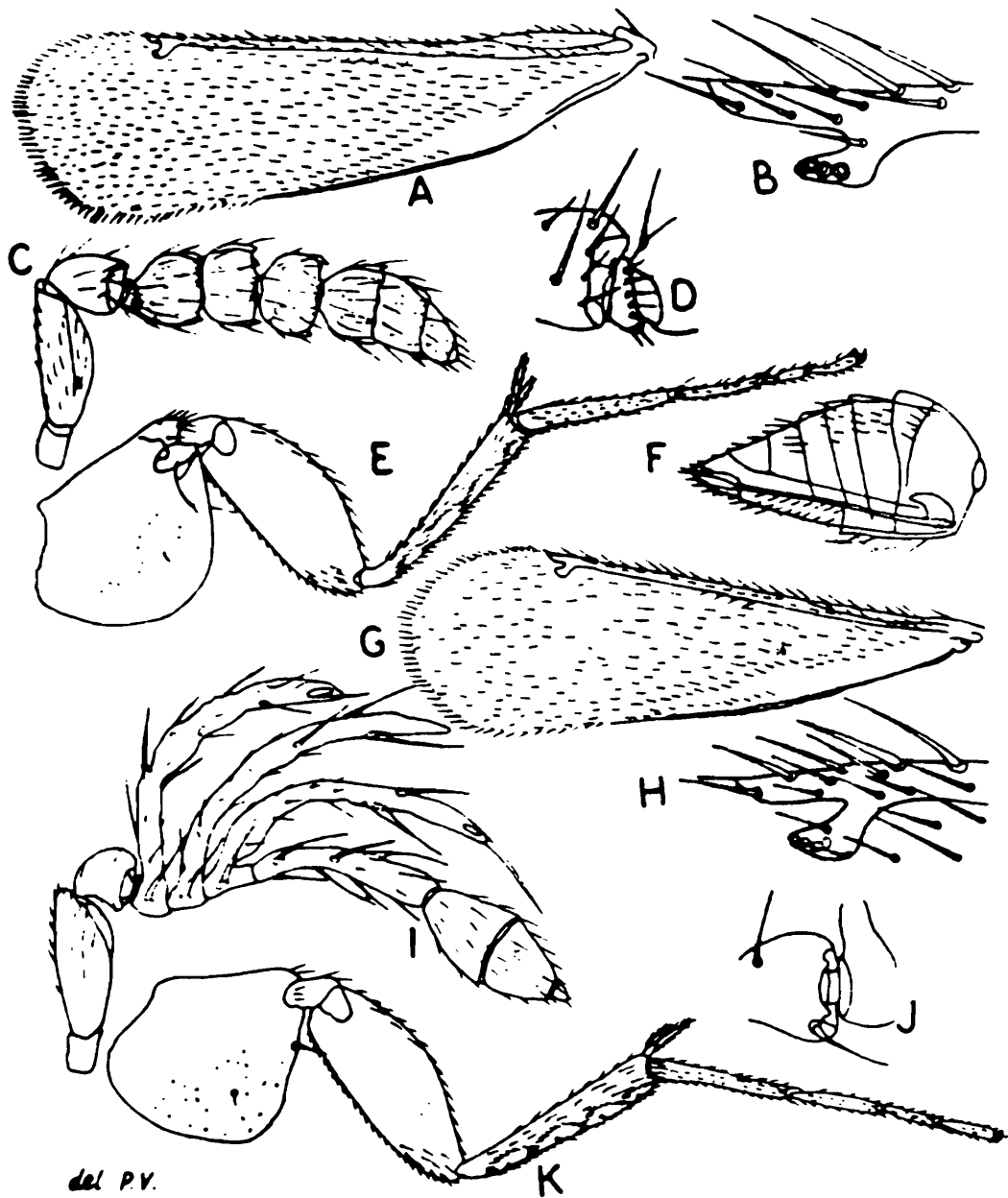


FIG 290. *Elasmus brevicornis* Gahan : A-F. female : A. Fore wing; B. Stigmal and postmarginal venation; C. Antennae; D. Anelli; E. Hind leg; F. Abdomen; G-K. male : G. Fore wing; H. Stigmal and postmarginal venation; I. Antenna; J. Anellus; K. Hind leg.

Type locality : Java

Distribution : Western Ghats (from Manpur to Nilambur) Dehra Dun; Java; Malaya.

Hosts : *Apanteles* sp. parasitic on *Lygropia quaternalis* defoliating *Helicteres isora*, *Erionota thrax*, *Apanteles* on *Hapalia machaeralis* on *Tectona grandis*; *Psara stultalis* on *Pogostemon patchouli*.

***Elasmus anamalaianus* Mani & Saraswat**

1972 *Elasmus anamalaianus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 461.

Female : Length 3.00 mm, fore wing 2.00 mm, abdomen 1.50 mm. Body black, with metallic-green reflections; scape yellowish-brown; flagellum black; fore coxae black at base, rest of fore leg pale brown; middle and hind coxae and femora black, rest of legs pale brown; wings hyaline, with a large oblique dark brown infumated band behind stigma; abdomen yellowish-brown ventrally; tergites and last segments black.

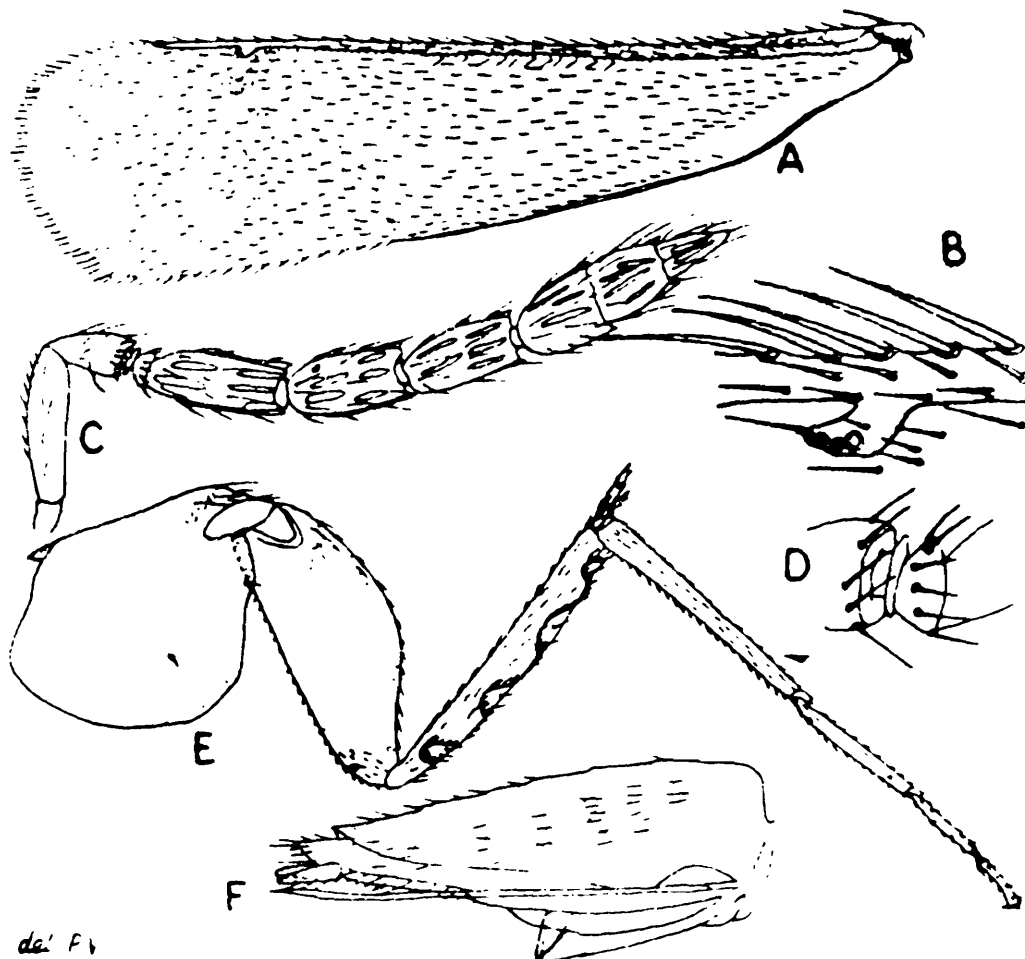


FIG. 291. *Elasmus anamalaianus* Mani & Saraswat : A. Fore wing; B. Stigmal venation; C. Antenna; D. Anelli; E. Hind leg; F. Abdomen.

Head with fine, setigerous punctae separated by their own diameters; antennae long, slender, with 9 segments; 1.1.1.3.3; scape slender, nearly 4 times as long as thick; pedicel about 0.50 of scape and 1.50 times as long as thick; first funicular segment equal to scape and longest, second and third funicular segments subequal, about 0.80 of first funicular segment; club slender, as thick as funicle; equal to the second and third funicular segments combined; first club segment about 0.33 of club, about 0.66 of the third funicular segment.

Pronotum without transverse carina; pronotum and mesonotum with close minute setigerous punctae; scutellum faintly reticulate; propodeum smooth, shiny; fore wing about 3.75 times as long as wide; veins $sm : m : pm$ ratio 32 : 100 : 21, m with 11 long setae; fore coxa nearly 3 times as long as thick, with 2 long and short bristles apically; femur about 4 times as long as thick, about 1.12 times coxa; tibia equal to femur; tarsus equal to tibia, metatarsus about 0.37 of tarsus, other tarsal segments subequal and distinctly shorter; middle coxa about 1.33 times as long as thick with 3 long bristles apically; femur nearly 2 times as long as thick, about 1.40 times coxa, with one long spine subapically below; tibia about 1.30 times the femur, spur a little less than 0.33 of metatarsus; mid tarsus 1.60 times tibia, metatarsus almost 0.50 of tarsus, second segment 0.50 of metatarsus, third and fourth shorter, subequal; hind coxa about 1.30 times as long as thick; femur equal to coxa and about 2.40 times as long as thick; tibia about 1.16 times femur; longer spur 0.25 of metatarsus, shorter spur about 0.66 of longer; with 4 lozenges; hind tarsus about 2 times femur and 1.70 times hind tibia; metatarsus 0.50 of tarsus and 0.85 of tibia; second tarsal segment 0.50 of metatarsus; third segment a little over 0.50 of the second; fourth segment shortest.

Abdomen slender, elongate-conical, basal 2 tergites with lateral patches of setae, rest of tergites with a series of bristles on hind margins; ovipositor exerted.

Type locality : Anamalai Hills : Valparai

This species differs from *E. albomaculatus* Gahan in body being not wholly black, infumated fore wings, veins $sm : m : pm$ ratio, larger body size and absence of pretegular spots. It differs from *E. mahabaleswarensis* Mani & Saraswat in the infumated fore wings.

***Elasmus mahabaleswarensis* Mani & Saraswat**

(Fig. 292)

1972 *Elasmus mahabaleswarensis*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 475.

Female : Length 3.00 mm. Head, thorax and hind coxa obliquely dorsally at basal 0.50, hind tibia narrowly above subapically, black with metallic bluish-green reflections, rest of middle and hind legs pale yellow; fore leg including coxa white; abdomen honey-yellow, first tergite at base and obscurely transversely subapically and each tergite laterally with transverse, oblong, short, black bands which become larger on the fifth tergite; tip of abdomen black (last 2 tergites) with greenish-blue reflections; antennae dark brown; bristles and setae black; veins dark brown; wings hyaline.

Vertex and frons with scattered fine punctae; ocellular space 2 times ocellar diameter; antenna with 9 segments : 1.1.1.3.3; scape moderately slender, about 2.50 times as long as thick; pedicel about

0.80 of scape and 2 times as long as thick; annellus narrower than funicle; first funicular segment 3 times as long as thick, 1.50 times the pedicel and 0.20 times longer than scape, funicular segments 2-3 subequal to scape; club distinctly thicker than funicle, 1.25 times the first funicular segment and equal to 1.50 times preceding 2 funicular segments combined, first club segment about 0.50 of club.

Pronotum without transverse carina; mesonotum with close, minute setigerous punctae; scutellum smooth; metanotum hyaline, triangularly projecting behind on propodeum; propodeum smooth, shiny; mesonotal and scutellar bristles black, well developed; wings hyaline; fore wing nearly 4 times as long as wide; veins *sm* : *m* : *pm* ratio 25 : 100 : 16; *pm* distinctly longer than *st*; stigma not sessile, distinct, *m* with 9 long setae; fore coxa apically in front with 2 long and stout and 2 long more slender bristles; femur 5 times as long as wide, about 1.20 times coxa, with a row of 13 spines and one long bristle subapically below; tibia equal to femur; tarsus as long as tibia, metatarsus distinctly longer than other segments which are subequal; middle coxa 1.50 times as long as wide, with 3 long, stout bristles apically below; femur a little over 2 times as long as wide and slightly less than 2 times coxa, with 13 long spines ventrally in the basal 0.50 and one long bristle subapically below, apically above with a patch of numerous short spines; tibia a little longer than femur, spur about 0.50 of metatarsus; tarsus 1.50 times tibia, metatarsus almost 0.50 of tibia, second segment about 0.50 of metatarsus, third and fourth subequal, about 0.66 of second segment; hind coxa 1.25 times as long as thick, with short, stout spinous bristles apically; femur nearly 3 times as long as thick, with 13 long spines ventrally in basal 0.50 and a series of shorter setae apically; apical dorsal patch of bristles small; tibia 1.25 times femur, with 4 lozenges, longer spur about 0.28 of metatarsus, shorter spur about 0.75 of the longer; tarsus a little less than 2 times tibia, metatarsus slightly less than 0.50 of tarsus, second segment slightly over 0.50 of metatarsus, third segment slightly over 0.50 of second, fourth segment a little shorter.

Basal 3 tergites with a short patch of setae laterally in the darker area; fourth tergite onwards with setae in a complete transverse row in the middle; ovipositor shortly exerted, dark brown.

Male : Length. 1.50 mm. Like female in general colour and sculpture of head and thorax, basal 0.50 of abdomen yellowish-brown, apical 0.50 of black with bluish-green reflections; antennae dark brown, with 9 segments : 1.1.1.3.3; scape 3 times as long as thick; pedicel about 0.33 of scape; funicular segments with branches, each of which is equal to club; first segment of club 0.50 of club; second segment equal to the third, a little less than 0.50 of the first, terminally with a conical nipple-like prolongation; rest as in female; vein *m* with 7 long setae.

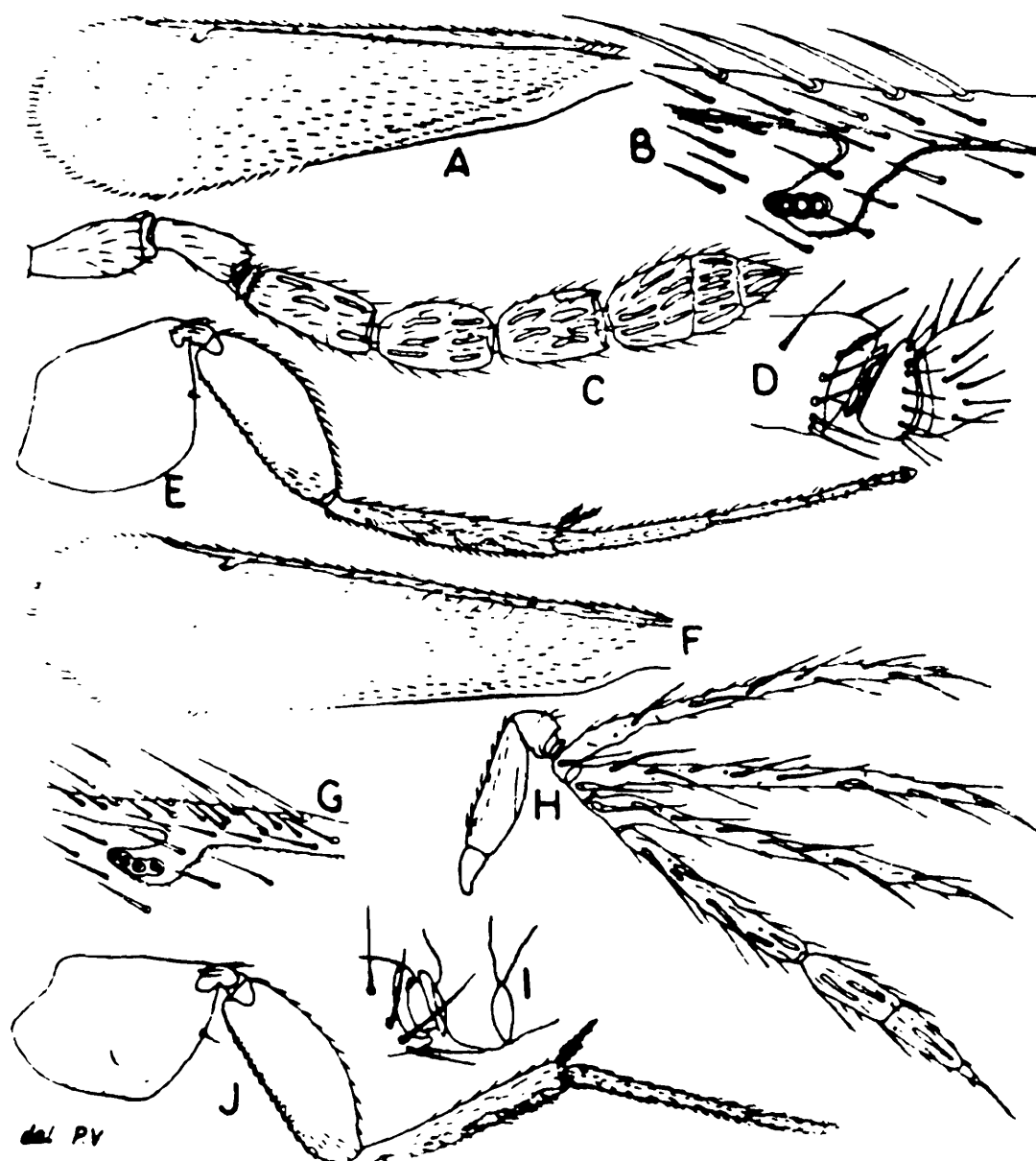


FIG. 292. A-J. *Elasmus mahabaleswarensis* Mani & Saraswat, A-E. Female : A. Fore wing; B. Stigmal venation; C. Antennae; D. Anelli; E. Hind leg; F-J. male; F. Fore wing; G. Stigmal venation; H. Antenna; I. Anellus; J. Hind leg.

Type locality : Western Ghats: Mahabaleswar

Distribution : Siwalik Himalaya (Garhwal) and the Western Ghats

This species is readily recognized by the relatively long first funicular segment and largely yellow legs; its relation to the other species is shown in the key.

***Elasmus zehntneri* Ferrière**

(Fig. 293)

1929 *Elasmus zehntneri*, Ferrière, *Bull. ent. Res.*, 20 : 417.

1940 *Elasmus zehntneri*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 22.

Female : Length 2.80-3.00 mm. Body black, with green reflections; abdomen orange; last 2 tergites and the second and third tergite margins black; sides of fourth and fifth tergites with triangular black spots; antennae yellow; pedicel black, legs generally pale yellow; middle and hind coxae and femora black above.

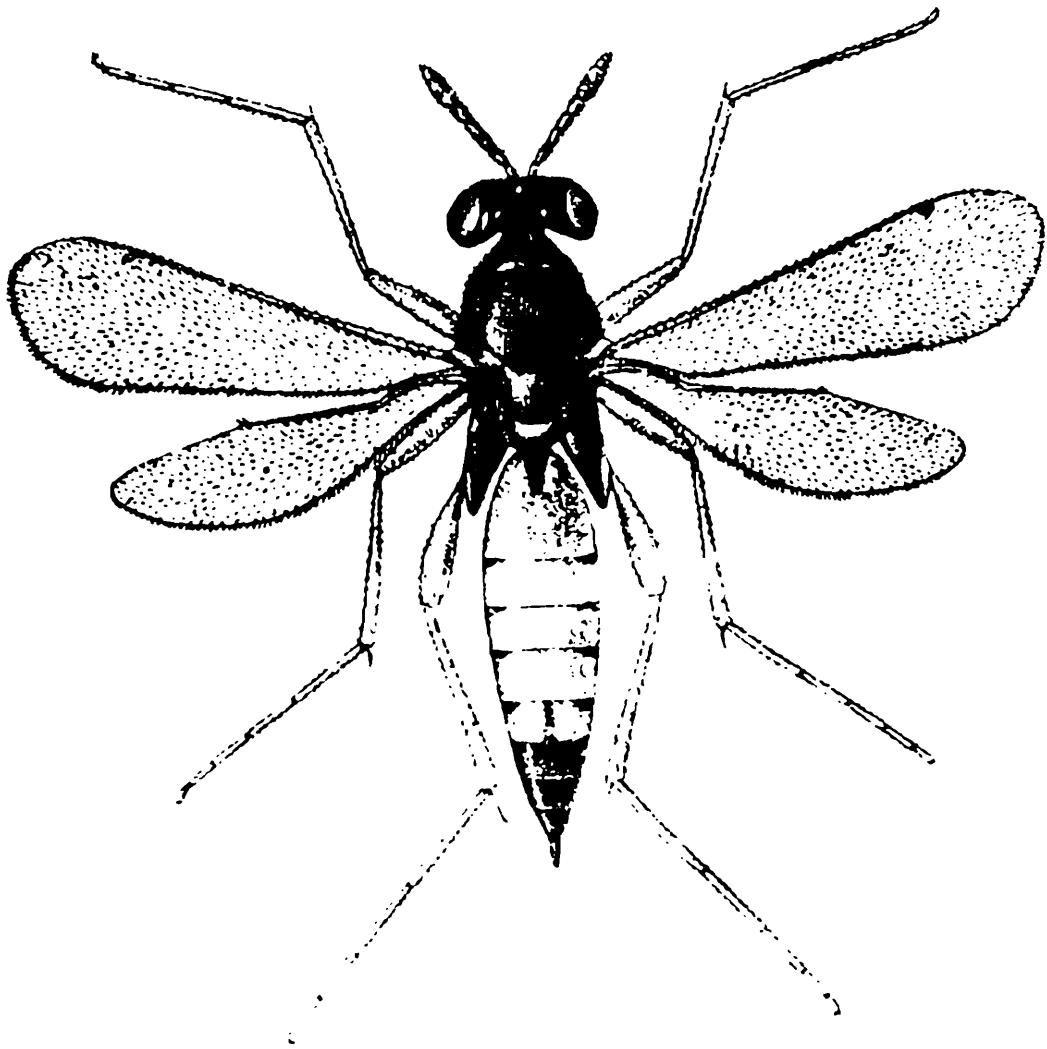


FIG. 293. *Elasmus zehntneri* Ferrière, female.

Head narrower than thorax, scutellum longer than wide; abdomen elongate; scape flattened; first annellus short, second annellus a little longer than first; first funicular segment 3 times as long as thick, funicular segments 2-3 shorter and thicker; hind tibiae with lozenges.

Male : Length 2.00-2.25 mm. Smaller than female; abdomen paler yellow and the triangular black spots on the sides 2-5 segments wider; fifth segment spots join above so that only the hind border remains yellow; antennae with long ramelli on 4-6 segments; segment 7 long, as long as 0.67 of third ramellus; club narrow.

Type locality : West Java

Distribution : Formosa; India : Coimbatore

Host : *Scripophaga nivella*

Elasmus ceylonicus Ferrière

1929 *Elasmus ceylonicus*, Ferrière, *Bull. ent. Res.*, 20 : 418.

1938 *Elasmus ceylonicus*, Mani, *Cat. Indian Ins.*, 23 : 108.

1940 *Elasmus ceylonicus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 21.

Female : Length 2.00 mm. Body black with green shine; antennae yellow; scape paler; scutellum with a transversal yellow band along hind margin; postscutellum yellow with base black; abdomen reddish, base of first segment, last segments from end of fifth and spots on sides of the median tergites, black; legs pale yellow with dark coxae and femora; tip of front coxae and of all femora, as well as the base of hind femora yellow.

Head as broad as thorax, strongly punctate; antennae short; scape a little shorter than the 2 following segments together; pedicel elongate, almost as long as the funicular segments; latter all about the same length, 1.50 times as long as the preceding 2 segments combined.

Mesonotum somewhat broader than long, covered with dark ciliae; scutellum shagreened; postscutellum forming an elongate triangle, translucent part projecting over the propodeum; propodeum smooth and shining; wings elongate, entirely ciliate from the base, at rest over reaching tip of abdomen; sides of coxae and femora very finely striate; hind tibiae with ciliae forming well marked lozenges.

Abdomen smooth, first segment broadest, sides converging from there to the tip; tergites 2-5 transverse; ovipositor projecting a little beyond the tip of abdomen.

Type locality : Ceylon : Pelmadulla

Host : From cases of *Psyche albipes*, tea bagworm

This species resembles somewhat *E. zehntneri* but differs in having a transverse yellow band on scutellum and almost black hind coxae and femora.

Elasmus krishnagiriensis Mani & Saraswat

(Fig. 294)

1972 *Elasmus krishnagiriensis*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 474.

Female Length 2.50 mm. Body black, with metallic-green reflections; head metallic-green; fore wing with an obscure and faint infuscation behind stigma; fore coxa at basal 0.33 fore femur

obscurely near base, middle coxa except at tip, middle femur, 0.75 of hind coxa, hind femur except narrowly at base, black, legs otherwise pale brown; abdomen dorsally and apical 0.33 black, otherwise yellowish-brown; scape yellowish-brown, rest of antenna dark brown.

Head with close, fine, setigerous punctae; ocellocular space slightly more than ocellar diameter; antenna slender, long with 9 segments; 1.1.1.3.3; scape about 3 times as long as thick; pedicel about 0.50 of scape; funicular segments subequal, about 1.25 times pedicel and 0.66 of scape and about 2 times as long as thick; club equal to the preceding 2 funicular segments combined, first club segment about 0.27 of club.

Pronotum with a faint transverse carina; mesonotum with close, fine, setigerous punctae; scutellum almost smooth or finely scaly; metanotum hyaline; propodeum smooth; fore wing 3 times as long as wide, largely hyaline except for a faint brown clouding near stigma; veins *sm* : *m* : *pm* ratio 38 : 100 : 13, *m* with 8 long setae; fore coxa 2 times as long as thick, with one long, one median and one short bristles apically; femur equal to coxa, 3 times as long as thick; tibia equal to femur; fore tarsus equal to tibia; metatarsus longer than other tarsal segments; middle coxa about 1.33 times as long as thick, with 3 long bristles apically; femur 1.50 times coxa and a little over 2 times as long as thick, with one long spine subapically; tibia slightly longer than femur, spur about 0.33 of metatarsus; metatarsus a little less than 0.50 of tarsus, second segment about 0.57 of metatarsus, third segment slightly shorter, fourth segment shortest; hind coxa about 1.20 times as long as thick; femur equal to coxa; tibia 1.16 times femur, longer spur 0.25 of metatarsus, shorter spur 0.75 of longer; tarsus 1.50 times tibia, metatarsus 0.44 of tarsus, second segment 0.50 of metatarsus, third segment 0.75 of the second, fourth segment 0.75 of the third.

Abdomen moderately long, shortly conical; all tergites with marginal rows of setae behind, ovipositor exerted.

Type locality : Bomaby : Borivili National Park

This species is distinguished from the other related species by the combination of characters given in the key.

***Elasmus kollimalaianus*. Mani & Saraswat**

(Fig. 294)

1972 *Elasmus kollimalaianus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 473.

1975 *Elasmus kollimalaianus*, Saraswat, *Mém. School Ent.*, 4 : 56.

Female : Length 2.50 mm. Body black, with metallic-blue to green reflections; scape pale yellow, flagellum dark brown; fore wing

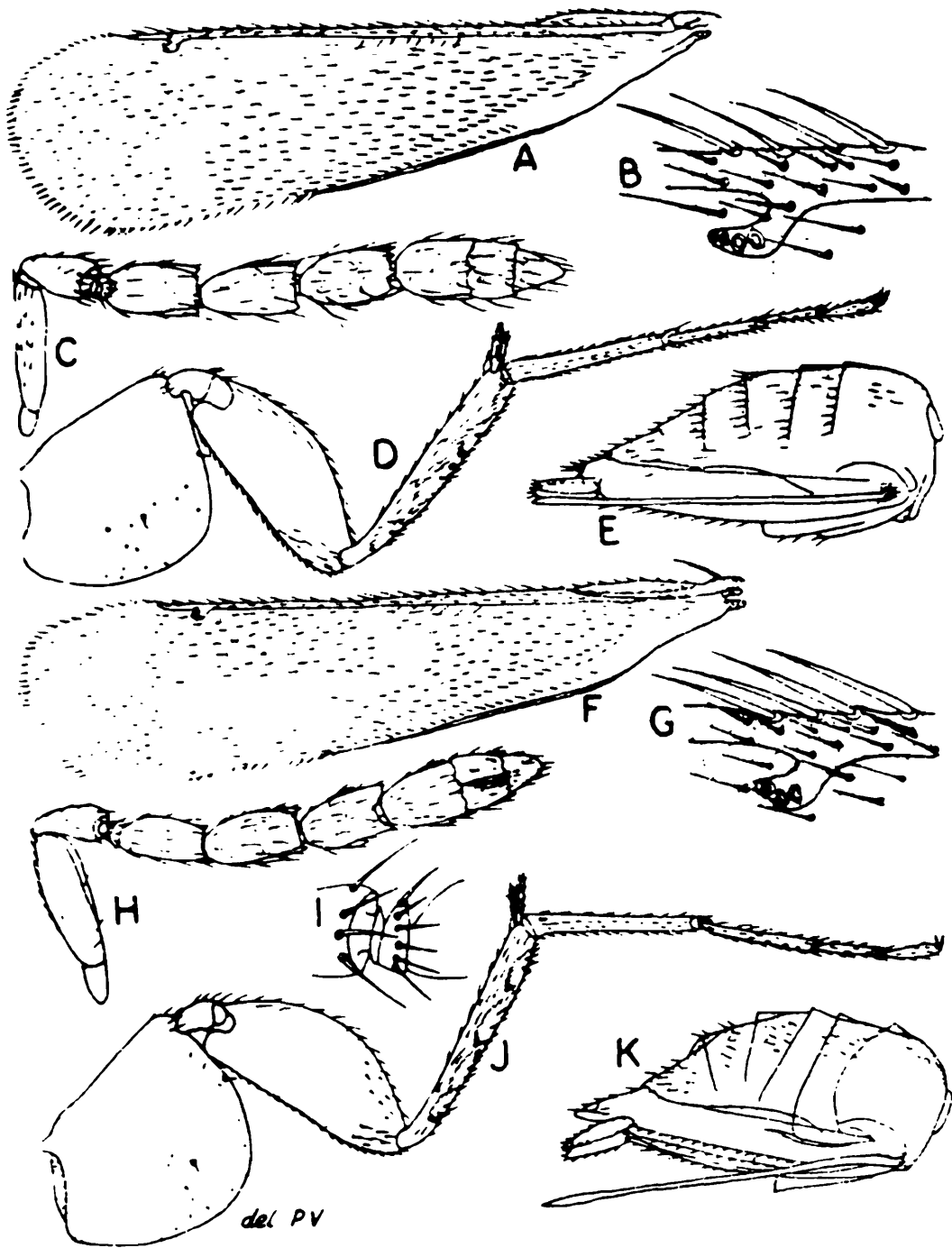


FIG. 294. A-E. *Elasmus krishnagiriensis* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Antennae; D. Hind leg; E. Abdomen; F-K. *Elasmus kollimalaianus* Mani & Saraswat : F. Fore wing; G. Stigmal venation; H. Antenna; I. Anelli; J. Hind leg; K. Abdomen.

subhyaline, with an obscure and faint brown cloud behind stigma; fore leg including coxa pale yellow; other legs yellow, except for the basal 0.50 of middle femur very dark brown to black; abdomen blackish-brown, with base of tergites 2-4 yellowish-brown; ovipositor black.

Vertex and frons with scattered, shallow, setigerous punctae, otherwise with reticulate-striate microsculpture; ocellular space almost equal to ocellar diameter; antenna with 9 segments : 1.1.1.3.3; scape 3 times as long as thick; pedicel 0.50 of scape and 2 times as long as thick; annellus moderately large; funicular segments equal, 2 times as long as thick; club equal to preceding 2 funicular segments combined, not stouter than funicle.

Pronotum without transverse carina; mesonotum closely punctate and also with reticulate microsculpture; scutellum and propodeum with a reticulate microsculpture; wings 4 times as long as wide; veins *sm* : *m* : *pm* ratio 38 : 100 : 13, *m* with 6 erect backwardly directed setae; fore coxa a little over 2 times as long as thick, with 2 long bristles apically; femur slightly longer than coxa and about 4 times as long as thick; tibia equal to coxa; tarsus equal to tibia, metatarsus 0.33 of tarsus, second and third segments equal to the fourth; middle coxa 2 times as long as thick, with 2 long and 2 short bristles apically; femur 1.40 times coxa and 2.50 times as long as thick, with one long spine apically below; tibia slightly longer; longer spur 0.43 of metatarsus; tarsus a little over 1.50 times tibia, metatarsus a little less than 0.50 of tarsus, second segment 0.57 of metatarsus, third segment 0.75 of second; fourth 0.66 of third; hind coxa as long as thick, femur equal to coxa, a little over 2 times as long as thick; tibia slightly longer, longer spur 0.25 of metatarsus, shorter spur 0.75 of the longer; tarsus a little less than 2 times tibia, metatarsus a little less than 0.50 of tarsus, second segment 0.62 of metatarsus, and 0.60 of the third, fourth segment 0.66 of the third.

Abdomen short, stout, with lateral spines only on first tergite; others with complete transverse rows of setae on hind margin; ovipositor well exerted.

Type locality : Kollimalai Hills

Distribution : Neyyar Forest (Kerala); Eastern and Western Ghats

This species is recognized by the narrow fore wing and largely yellow legs; its relationship to the other species is shown in the key.

***Elasmus kodaianus* Mani & Saraswat**

(Fig. 295)

1972 *Elasmus kodaianus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 472.

Male : Length 1.25 mm. Body largely black, with metallic-blue reflections; scape yellowish-brown; flagellum dark brown; wings hyaline, venation dark brown; middle coxa narrowly at base, hind coxa narrowly above, base of first abdominal tergite obscurely, apical 0.66 of abdomen, dorsum and last 2 abdominal tergites dark brown to black, rest of abdomen and legs yellowish-brown (except for a narrow, obscure browning on hind femur above).

Head with fine, close, setigerous punctae; antennae with 9 segments : 1.1.1.3.3; scape slender, almost 5 times as long as thick; pedicel about 0.40 of scape; annellus extremely short, narrower than funicle; funicular segments equal, with long branches, each branch about 2.60 times scape but shorter than club; first segment of club long, slender, about 0.44 of club and 0.80 of the second and third segments combined, terminal segment with a conspicuous nipple-like process at tip.

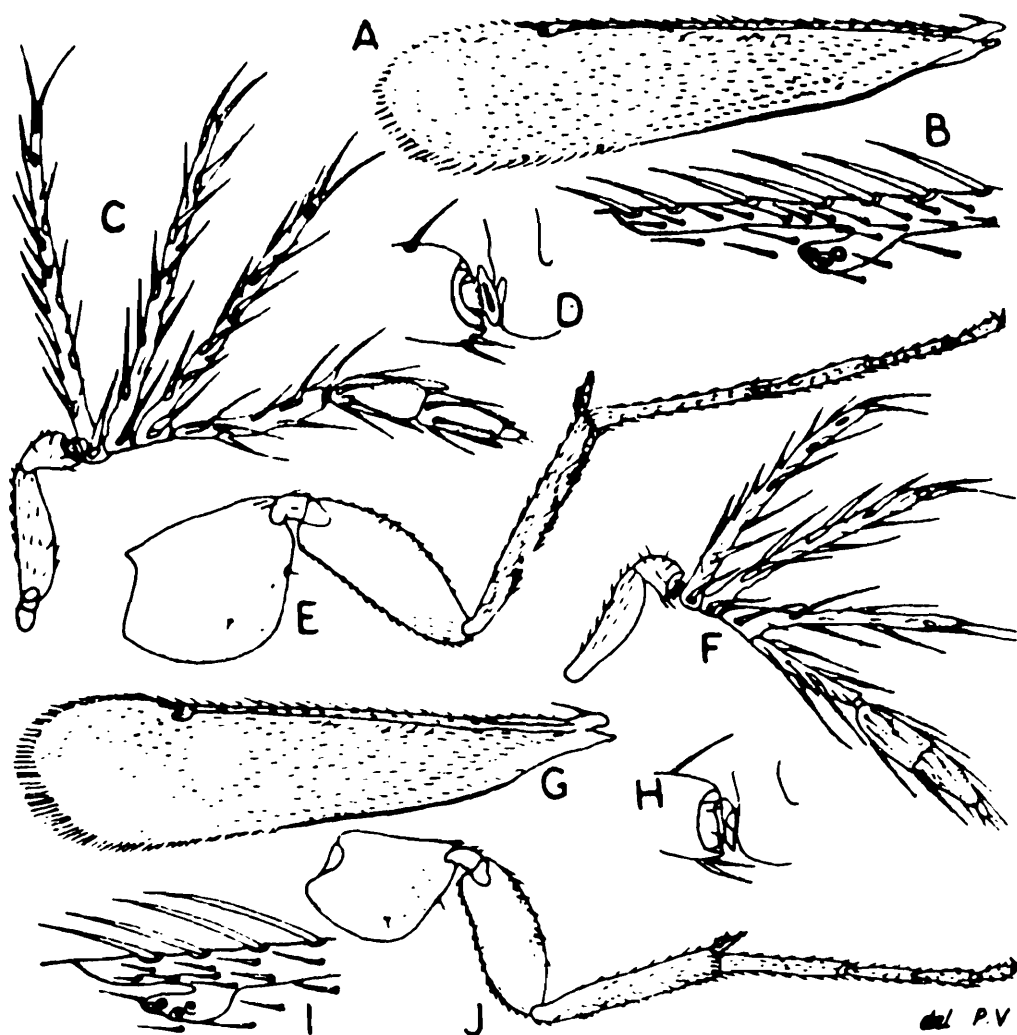


FIG 295. A-E. *Elasmus kodaianus* Mani & Saraswat, male : A. Fore wing; B. Stigmal venation; C. Antenna; D. Annellus; E. Hind leg; F-J. *Elasmus cyanomontanus* Mani & Saraswat, male : F. Antenna; G. Fore wing; H. Annellus; I. Stigmal and postmarginal venation; J. Hind leg.

Pronotum with a distinct transverse carina; mesonotum with close, fine setigerous punctae; scutellum and propodeum smooth; fore wing 4 times as long as thick; veins $sm : m : pm$ ratio 20 : 100 : 10, m , with 6 long erect setae; fore coxa slightly less than 2 times as long as thick, with 2 long bristles apically; femur 5 times as long as thick, about 1.75 times coxa; tibia equal to femur; tarsus 0.12

times longer, metatarsus about 0.33 of tibia and almost 0.25 of tarsus, second tarsal segment slightly shorter, third segment shortest, fourth segment subequal to second; middle coxa about 1.30 times as long as thick, with 3 long bristles apically; femur 1.40 times coxa and 2.30 times as long as thick, with a row of 5 spines and a long apical spine below; tibia 2 times coxa, about 1.40 times femur, spur 0.20 of tibia and less than 0.33 of metatarsus; tarsus 1.60 times tibia, metatarsus equal to femur and slightly less than 0.50 of tarsus, second segment slightly over 0.50 of metatarsus, third segment 0.75 of second, fourth segment 0.75 of the third; hind coxa 1.12 times as long as thick; tibia 1.25 times femur, with 4 lozenges, the longer spur 0.20 of metatarsus, shorter 0.75 of the longer; tarsus 1.70 times the tibia, metatarsus distinctly shorter than 0.50 of tarsus, second segment nearly 0.66 of metatarsus, third segment nearly 0.75 of the second, fourth segment 0.75 of the third.

Abdomen 2 times as long as thick, with short lateral patch of setae on tergites 1-2 and others with transverse row posteriorly.

Type locality : Anamalai Hills : Kodaikanal

This species is recognized by the relatively short vein *sm*; its relation to the other known species is shown in the key.

***Elasmus cyanomontanus* Mani & Saraswat**

1972 *Elasmus cyanomontanus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 464.

Male : Length 1.00 mm. Body black; scape pale brown, flagellum dark brown; an obscure patch on basal 0.50 of fore femur dark brown; middle coxa basal 0.50, hind coxa narrowly above, hind femur narrowly below in the middle, narrow basal band on first abdominal tergite and apical 0.50 of abdomen black; legs otherwise and basal 0.50 of abdomen yellow; setae and bristles black; wings hyaline, veins dark brown.

Head with close, minute, setigerous punctae; antennae with 9 segments : 1.1.1.3.3; scape about 3 times as long as thick; pedicel 1.33 times as long as thick; annellus minute; funicular segments with long branches, each branch about 0.66 of club, first and second segments equal, third distinctly longer; first segment of club slender, second and third slightly thicker, length of the first, second and third segments 7 : 4 : 6, third segment ending in a distinct obtusely pointed elongate process.

Mesonotum with close, setigerous punctae; scutellum finely reticulately scaly; propodeum smooth; fore wing nearly 4 times as long as wide; veins *sm* : *m* : *pm* ratio 26 : 100 : 10, *m* with 2 long spines apically; femur 5 times as long as thick, about 2 times coxa; tibia 1.50 times femur; tarsus equal to tibia; metatarsus 0.33 of tarsus, second segment a little shorter, segments 3-4 equal to the second;

middle coxa 1.60 times as long as thick; femur almost 4 times as long as thick, with one long apical spine below; tibia 1.25 times femur, spur 0.20 of metatarsus; tarsus 1.50 times the tibia, metatarsus 0.50 of tarsus, second segment 0.50 of metatarsus, third segment equal to fourth and 0.75 of the second; hind coxa 1.25 times as long as thick; femur 1.25 times coxa and a little over 3 times as long as thick; tibia equal to femur, with 4 lozenges, longer spur 0.28 of metatarsus, shorter spur 0.50 of the longer; tarsus almost 1.50 times tibia, metatarsus a little less than 0.50 of tarsus, second segment 0.50 of metatarsus, third segment equal to fourth and a little shorter than second.

Abdomen short, with lateral rows of setae on basal tergites, rest of tergites with transverse rows of setae posteriorly.

Type locality : Nilgiri Hills : Kallar

This species is readily distinguished from other related species by the narrow fore wing, first club segment shorter than the second and third combined and vein *pm* being shorter than 0.50 of *sm*.

Elasmus mahabalii Mani & Saraswat

(Fig. 296)

1972 *Elasmus mahabalii*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 477.

Female : Length 1.75-2.00 mm. Body black with metallic-blue reflections on thorax; scape pale brown, flagellum dark brown; head black with blue reflections; basal 0.50 of fore coxa and femur rather obscurely at basal 0.50; whole of middle and hind coxae and femora black, rest of legs pale brown; abdomen dorsally and apically brownish-black to black, posterior borders of tergite and venter brown, setae and bristles black; wings hyaline.

Vertex and frons with scattered, shallow, setigerous punctae; occiput reticulate; antennae moderately short, with 9 segments : 1.1.1.3.3; scape 3.50 times as long as thick; pedicel about 0.50 of scape and 2 times as long as thick; funicular segments subequal and as long as pedicel; club not thicker than funicular, 2 times as long as thick and slightly more than preceding 2 funicular segments combined, first club segment equal to first funicular segment; annellus distinctly 2, of which the basal rudimentary, extremely minute (not included in counting of antennal segments) and the second much longer.

Pronotum without transverse carina; pronotum and mesonotum with close, large setigerous punctae and squamous microsculpture; scutellum finely reticulately squamous; propodeum shiny and smooth; metanotal triangle hyaline; fore wing length 3.40 times width; veins *sm* : *m* *pm* ratio 46 : 100 : 11, *m* with 3-5 long erect

setae; fore coxa 2 times as long as thick, with 3 long bristles apically; femur 1.25 times coxa and a little over 3 times as long as thick; tibia slightly shorter than femur; tarsus equal to femur, metatarsus a little less than 0.33 of tarsus, second segment 0.75 of metatarsus, third segment shortest, fourth segment equal to metatarsus; middle coxa 1.25 times as long as thick with 2 long and one short bristles apically; femur 1.25 times coxa, 2 times as long as thick, with one long spine apically below; tibia 1.25 times femur, spur 0.25 of tibia and 0.40

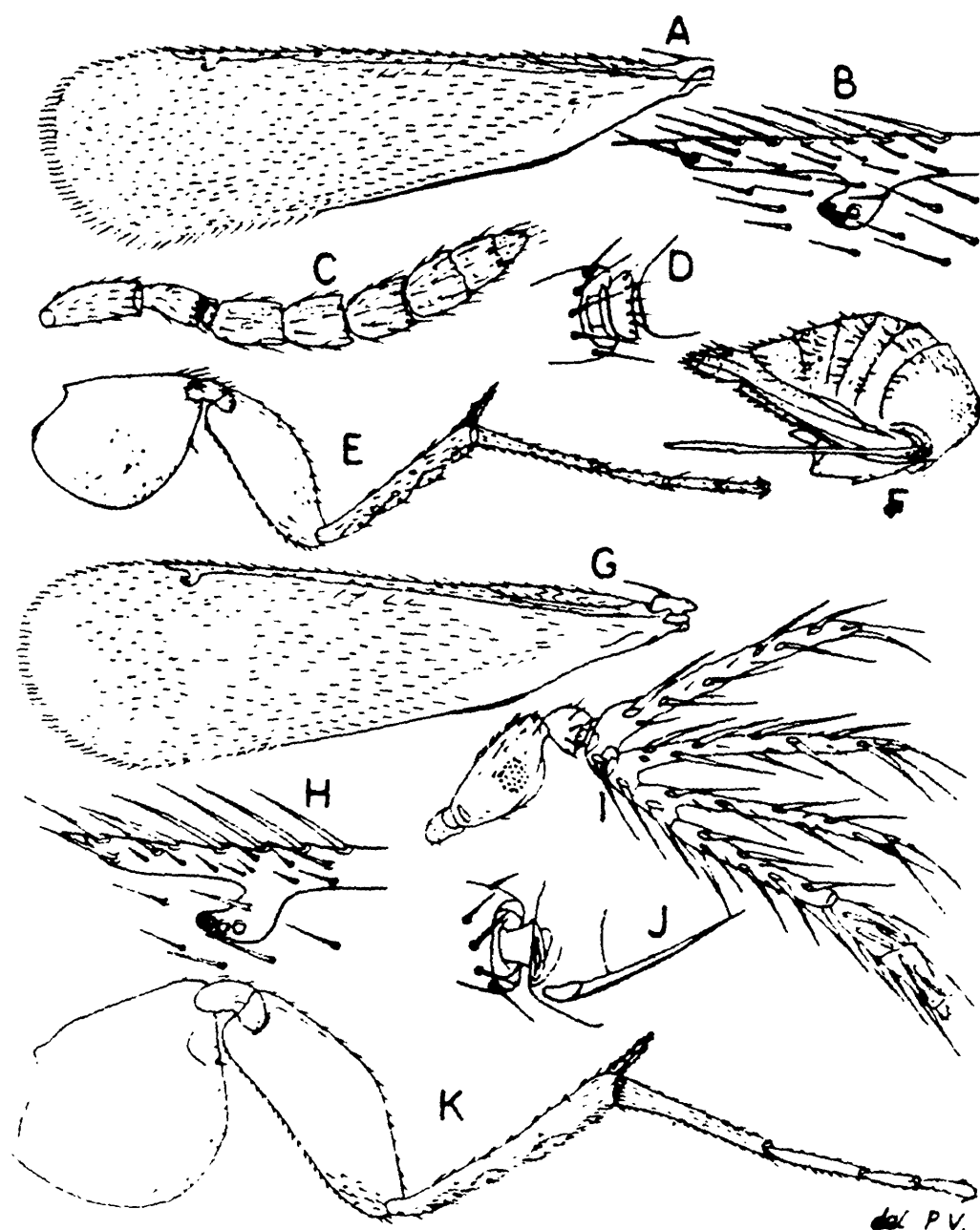


FIG. 296. *Elasmus mahabalii* Mani & Saraswat, A-F. female : A. Fore wing; B. Stigmal and postmarginal venation; C. Antenna; D. Anelli; E. Hind leg; F. Abdomen; G-K. male : G. Fore wing; H. Stigmal and postmarginal venation; I. Antenna; J. Anellus; K. Hind leg.

of metatarsus; tarsus almost 1.40 times tibia, metatarsus a little less than 0.50 of tarsus; second segment 0.50 of metatarsus; third segment slightly shorter, fourth segment 0.75 of second and a little shorter than third; hind coxa 0.25 of longer than thick; tibia a little longer than femur, with 4 lozenges, longer spur 0.33 of metatarsus, shorter spur 0.50 of the longer; tarsus 1.60 times tibia, metatarsus a little less than 0.50 of tarsus, second segment 0.50 of metatarsus, third segment 0.66 of the second, fourth segment equal to third.

Abdomen short, ovate; basal 3 tergites with lateral patches of setae, other tergites with posterior transverse rows of setae; ovipositor exerted.

Male : Length 1.50 mm. Body black; head with metallic-blue reflections; antennae brown; apical 0.50 of fore femur, all tibiae and tarsi pale brown; wings hyaline; veins brown.

Scape conspicuously expanded before tip, 2 times as long as thick; pedicel 0.33 of scape, as long as thick; annellus minute; funicular segments with long branches, funicular segments 1-2 subequal, with equally long branches, about 0.80 of club, third funicular segment 1.25 times second, its branch about 0.66 of club and only 0.83 of branches of second and third; first club segment a little over 0.50 of club and thus distinctly longer than the second and third combined, second segment 0.50 of first, third 0.75 of second; fore wing 3 times as long as wide; veins *sm* : *m* : *pm* ratio 58 : 100 : 8; *m* with 5 long erect setae directed backward; fore coxa 2 times as long as thick; femur a little longer than coxa, a little over 3 times as long as thick, with a long apical spine below; tibia slightly shorter than femur; tarsus equal to tibia, metatarsus 0.25 of tarsus, second and third segments subequal, fourth longer; middle coxa almost 2 times as long as thick, with one long spine apically below; femur 1.60 times coxa and 2.50 times as long as thick; tibia equal to coxa, spur 0.50 of metatarsus; tarsus 1.40 times tibia, metatarsus slightly less than 0.50 of tarsus, second segment 0.66 of metatarsus; segments 3-4 subequal and 0.50 of the second; hind coxa 1.20 times as long as thick; tibia slightly longer, with 4 lozenges, longer spur 0.33 of metatarsus, tarsus 1.60 times tibia, metatarsus slightly over 0.50 of metatarsus, third equal to fourth, about 0.33 of metatarsus; rest as in female.

Type locality : Madras : Mahabalipuram

This species is readily distinguished from the other related ones by the combination of characters given in the key.

***Elasmus munnarus* Mani & Saraswat**

(Fig. 297)

1972 *Elasmus munnarus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 478.

Female : Length 2.00 mm. Vertex, face and thorax black, with metallic reflections; wings hyaline; legs pale yellow, except for a narrow obscure dark brown patch at base and above on hind coxa and a similar but smaller area on middle coxa; antenna brown; abdomen yellowish-brown, except basal 0.75 of first tergite black, paired lateral obscure dark-brown oval patches on 2-5 tergites, sixth tergite completely brownish-black and the tip of abdomen brownish-black, ovipositor black; setae and bristles black; head below the lower orbital border brownish-yellow otherwise black.

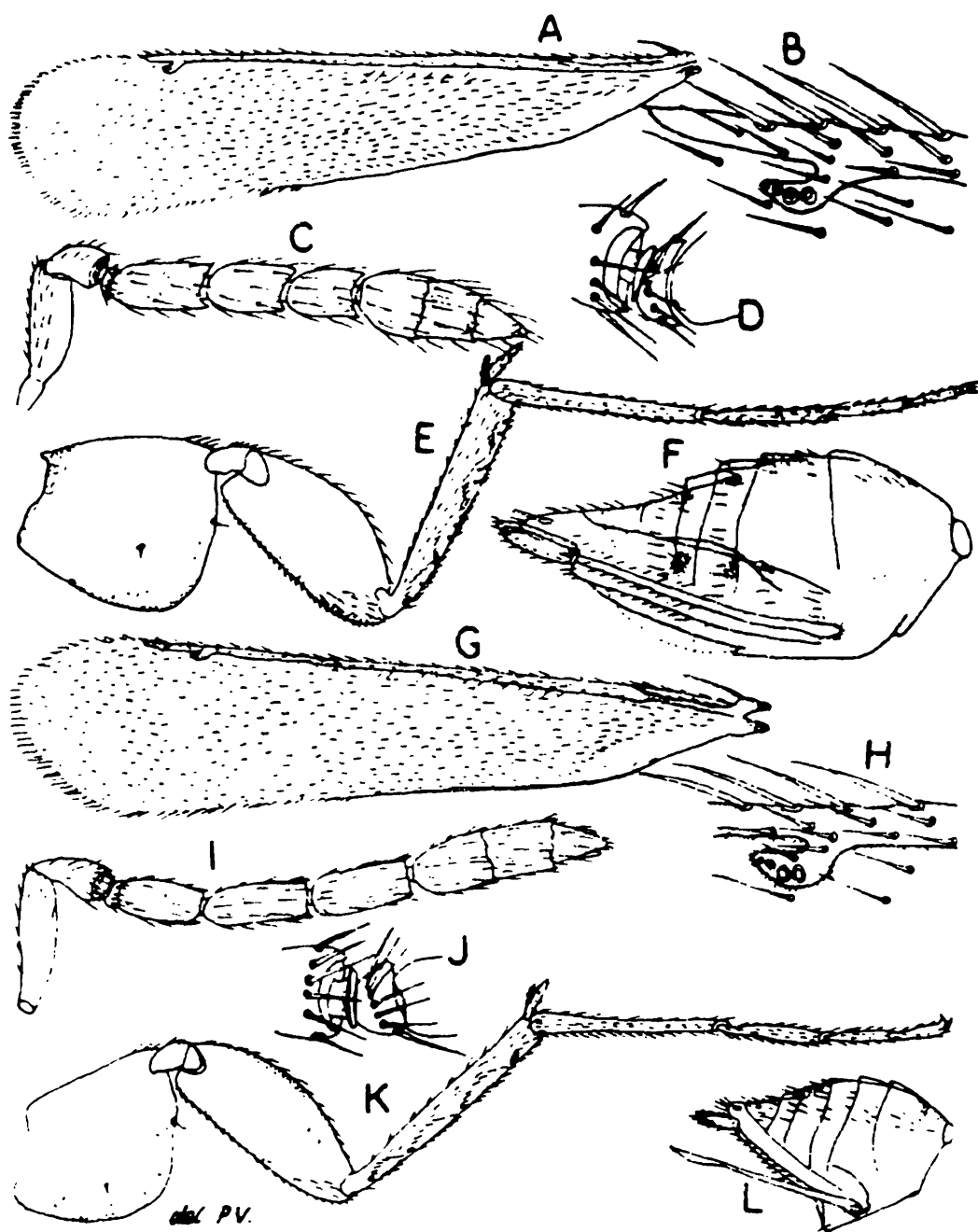


FIG. 297. *Elasmus munnarus* Mani & Saraswat, female : A. Fore wing; B. Stigmal and postmarginal venation; C. Antenna; D. Anelli; E. Hind leg; F. Abdomen; G-L. *Elasmus punensis* Mani & Saraswat, female : G. Fore wing; H. Stigmal venation; I. Antenna; J. Anelli; K. Hind leg; L. Abdomen.

Vertex and frons with scattered, shallow, setigerous punctae; antennae slender, with 9 segments : 1.1.1.3.3; scape nearly 4 times as long as thick; pedicel about 1.50 times as long as thick; annellus a little narrower than funicle; funicular segments ratio 7 : 5 : 5; club almost equal to funicular segments 2-3 combined, not much thicker, terminal segment short and obtusely conical.

Pronotum with carina; mesonotum with close, shallow, setigerous punctae; scutellum with reticulate microsculpture; propodeum smooth; fore wing 4.50 times as long as thick; veins *sm* : *m* : *pm* ratio 20 : 100 : 10, *m* with 7 erect setae directed backwards; fore coxa 3 times as long as thick, with 2 long and one short bristles apically; femur 4 times as long as thick, 1.25 times coxa, with a long apical spine below; tibia almost equal to femur; tarsus equal to tibia, metatarsus 0.25 of tarsus, segments 2-4 slightly shorter than metatarsus, subequal; middle coxa 1.50 times as long as thick, with 2 long and 2 short bristles apically; femur 4 times as long as thick, with one long spine apically below; tibia 1.25 times femur; spur 0.25 of metatarsus; tarsus 1.60 times tibia, metatarsus almost 0.50 of tarsus, second 0.60 of metatarsus, third segment 0.66 of the second; fourth segment about 0.50 of the third; hind coxa almost as long as thick; femur 1.50 times coxa and about 2 times as long as thick; tibia slightly longer than femur, with 4 lozenges, longer spur 0.25 of metatarsus, shorter spur 0.50 of the longer; tarsus 2 times tibia, metatarsus almost 0.50 of tarsus; second segment about 0.50 of metatarsus, third segment 0.66 of the second, fourth segment about 0.50 of the third.

Abdomen fusiform, with lateral rows of setae on 1-3 tergites and transverse rows posteriorly on other tergites; ovipositor short.

Type locality : Kerala : Munnar (1500 m above mean sea level)

This species is recognised by the relatively narrow wing and longer first funicular segment; its relationship to other species is shown in the key.

Elasmus punensis Mani & Saraswat

1972 *Elasmus punensis*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 479.

Female : Length 1.50 mm. Body yellowish-brown; scape deep yellowish-brown below and dark brown above, flagellum dark brown; head with ocellar triangle, a conspicuous narrow transverse band on posterior margin of mesonotum, propodeum, basal 0.33 of middle coxa, a spot on base of first abdominal tergite, an obscure evanescent area on fifth tergite, ovipositor sheath brownish-black or very dark reddish-brown; fore wing subhyaline; setae and bristles dark reddish-brown to black; fore femur in basal 0.50 of above obscurely brown.

Head with fine setigerous punctae, separated by a distance greater than their own diameter; antenna long, slender, with 9 segments : 1.1.1.3.3; scape slender, elongate, 5 times as long as thick; pedicel 0.50 of scape, slender a little over 2 times as long as thick; annellus large, quadrate, as thick as funicle; first funicular segment 1.25 times pedicel, nearly 3 times as long as thick, second funicular segment distinctly longer than first, third funicular segment equal to first; club elongate, not thicker than funicle, very slightly longer than funicular segments 2-3 combined, first club segment distinctly more than 0.33 of club, terminal segment with an obtuse short process.

Pronotum without transverse carina; mesonotum with close, fine, setigerous punctae; scutellum very finely reticulate; metanotal triangle hyaline; propodeum smooth, shiny; fore wing 4 times as long as thick; veins *sm* : *m* : *pm* ratio 20 : 100 : 12, *m* with 11-14 long setae; fore coxa about 2 times as long as thick, with 2 long bristles apically; fore femur about 3.50 times as long as thick; tibia about 1.16 times femur; tarsus 1.50 times femur and 1.14 times tibia, second segment 0.75 of metatarsus, segments 3-4 nearly equal to the second; middle coxa 2 times as long as thick, with 2 long spines apically; femur about 2.30 times as long as thick, with one long apical spine below and an obscure small brown discoloration basally below; tibia about 1.40 times femur, spur almost 0.25 of metatarsus; tarsus about 1.70 times tibia, metatarsus equal to femur and slightly less than 0.50 of tarsus, second segment 0.59 of metatarsus, segments 3-4 subequal and 0.75 of the second; hind coxa 1.33 times as long as thick; femur equal to coxa and 3 times as long as thick; tibia 1.20 times femur, longer spur 0.20 of metatarsus, shorter spur 0.50 of the longer; tarsus 2 times femur and 1.60 times tibia, metatarsus, third 0.60 of the second, fourth 0.66 of the third.

Abdomen short, conical with lateral patch of setae on basal 2 tergites and transverse row of setae on other tergites; ovipositor exerted.

Type locality : Maharashtra : Poona : Khadakwasla-Sinharh Fort

This species is recognised by the relatively short second segment of funicle; its relationship to the other species is shown in the key.

***Elasmus khandalus* Mani & Saraswat**

1972 *Elasmus khandalus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 471.

Female : Length 2.50 mm. Body yellowish-brown; scape yellowish-brown; flagellum dark brown; legs including coxae light brown; a transverse band on mesonotum behind, propodeum, hind coxa narrowly above, base dorsally of first abdominal tergite and

the last 0.25 (tip) of abdomen black; bristles and setae black; venation dark brown.

Head with close, minute, shallow, setigerous punctae; antennae long, slender, with 9 segments : 1.1.1.3.3; scape 5 times as long as thick; pedicel 2 times as long as thick, 0.50 of scape; annellus as thick as funicle, funicular segments subequal, slender, elongate, nearly 4 times as long as thick and 0.20 times shorter than scape; club slender, not thicker than funicle; about 0.87 of the preceding 2 funicular segments combined; first club segment about 0.75 of the third funicular segment and a little less than 0.50 of the club, terminal segment short.

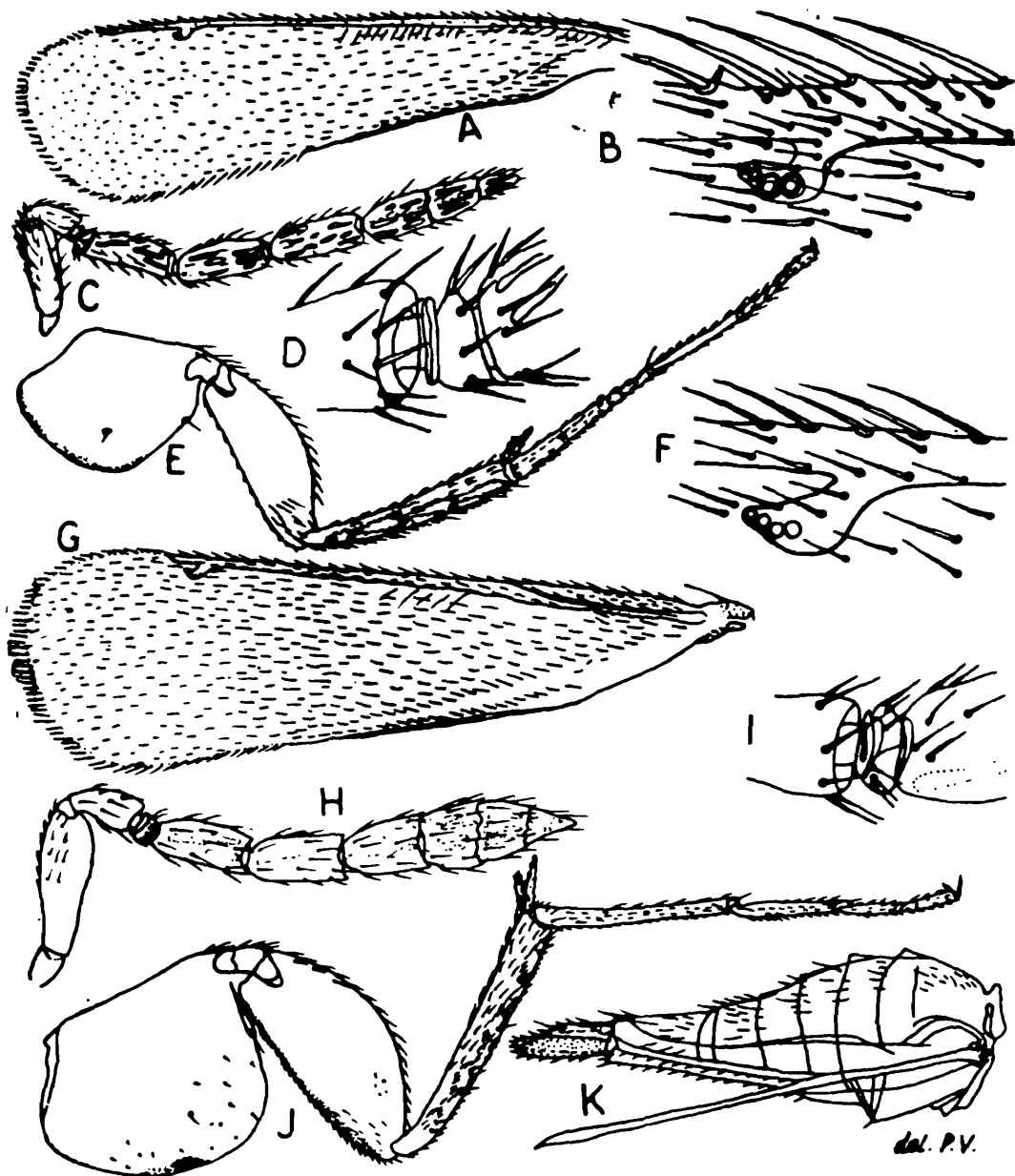


FIG. 298. A-E. *Elasmus khandalus* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Antenna; D. Anelli; E. Hind leg; F-K. *Elasmus binocellatus* Mani & Saraswat, female : F. Stigmal venation; G. Fore wing; H. Antenna; I. Anelli; J. Hind leg; K. Abdomen.

Mesonotum with setigerous sculpture; scutellum and propodeum smooth; fore wing 4 times as long as wide; veins *sm* : *m* : *pm* ratio 35 : 100 : 25, *m* with 13 setae; fore coxa slender, 2.50 times as long as thick, with 3 stout and long and one very short bristles apically; fore femur about 1.70 times coxa, 7 times as long as thick; tibia 1.40 times femur; tarsus slightly longer than tibia, metatarsus 0.50 of tarsus, tarsal segments 2-4 subequal; middle coxa almost 1.60 times as long as thick, with 4 long bristles apically; femur a little over 2 times as long as thick, with 13 spines ventrally in basal 0.75 and one long and one short bristle subapically below; tibia about 1.30 times femur, spur about 0.33 of metatarsus; tarsus about 2 times femur, a little over 1.50 times tibia; metatarsus 0.50 of tarsus, second tarsal segment 0.66 of metatarsus second tarsal segment 0.66 of metatarsus and equal to segments 3-4 combined; hind coxa 1.25 times as long as thick; femur equal to coxa and 2.60 times as long as thick; tibia longer than femur, longer spur 0.25 of metatarsus, shorter spur 0.75 of the longer; tarsus 1.60 times tibia, metatarsus 0.50 of tarsus, second segment 0.50 of metatarsus and equal to segments 3-4 combined.

Abdomen with short patches of setae laterally on the basal 3 tergites and transverse rows of setae on the rest; ovipositor black, slightly exerted.

Type locality : Khandala

This species is readily recognized by the characteristic transverse band on mesonotum; its relation to other species is shown in the key.

***Elasmus binocellatus* Mani & Saraswat**

1972 *Elasmus binocellatus*, Mani & Saraswat, *Orient. Ins.*, 6 (4) : 462.

Female : Length 2.25 mm, fore wing 1.75 mm, abdomen 1.25 mm. Body yellowish-brown; vertex, front ocellar area, axillae, scutellum, a triangular area on scutellum, small circular spots at roots of hind wings, small oval spots behind and outside of spiracle on propodeum, 2 oval spots laterally at base of abdomen, hind coxa narrowly and faintly above in the middle third, narrowly on hind femur above brownish-black; scape yellowish-brown, flagellum dark brown; wings hyaline; legs pale yellowish-brown; bristles and setae dark brown to black; venation dark brown.

Head with scattered, fine, setigerous punctae; vertex prominent; ocellular space over 2 times ocellar diameter; antenna slender, long; scape slender, elongate, 7 times as long as thick; pedicel about 0.57 of scape; first funicular segment 1.25 times scape, segments 2-3 subequal, about 0.75 of first; club equal to the preceding 2 funicular segments combined, slender, not much thicker than funicular; annellus as thick as funicle.

Pronotum without transverse carina; mesonotum and scutellum faintly scaly; propodeum smooth; fore wing length to width 3.3 : 1; veins *sm* : *m* : *pm* ratio 40 : 100 : 10; *m* with 5 long setae; fore coxa 3 times as long as thick, with 2 long and 2 short apical bristles; femur 1.25 times coxa; tibia a little longer than femur; tarsus almost equal to tibia; middle coxa 1.25 times as long as thick, with 3 long bristles apically; femur 1.75 times coxa, 2.50 times as long as thick, with spines below reaching up to apical 0.25, with one long spine subapically below; tibia 1.25 times femur, spur slightly less than 0.50 of metatarsus; tarsus 1.75 times tibia, metatarsus almost 0.50 of tarsus, second segment nearly 0.66 of metatarsus, segments 3-4 subequal and 0.50 of the second; hind coxa 1.50 times as long as thick; femur nearly as long as coxa and about 2 times as long as thick; tibia 1.25 times the femur, longer spur almost 0.25 of metatarsus, shorter about 0.50 of the longer, with 4 lozenges; tarsus 1.60 times tibia, metatarsus a little less than 0.50 of tarsus, second tarsal segment 0.50 of metatarsus; third segment 0.75 of the second and fourth 0.75 of third.

Abdomen conical, basal 3 tergite with lateral rows setae, rest with transverse rows of setae posteriorly; ovipositor slightly exerted.

Type locality : Nilgiri Hills

Distribution : Nilgiri and Anamalai Hills

Host : Unknown

This species differs from all the known species from India in the characteristic colour pattern on thorax, proportions of antennal segments and veins *sm* : *m* : *pm* ratio.

Elasmus hutsoni Ferrière

1929 *Elasmus hutsoni*, Ferrière, *Bull. ent. Res.*, 20 : 412.

1938 *Elasmus hutsoni*, Mani, *Cat. Indian Ins.*, 23 : 109.

1940 *Elasmus hutsoni*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 22.

Female : Length 3.10 mm. Body black with bluish-green shine on head and thorax; scutellum bronze, propodeum shining blue-green; postscutellum quite white; abdomen aeneous, shining violet at the basis, reddish-yellow below the first 4 segments, reddish-yellow reaching to the sides of the third and fourth segments; seen from above the abdomen seems black with 2 yellow spots on the sides of the fourth tergite; antennae brown, scape yellow; legs pale yellow; inferior 0.50 of the middle and hind coxae, middle femora except at the base, and the apical 0.67 of the hind femora blackish with green shine.

Head small, narrower than thorax, with a strong frontal punctation; antennae rather long, funicular segments almost 3 times

longer than thick; first a little longer than the scape; pedicel only a little longer than wide.

Thorax narrow, mesonotum longer than broad, covered with small clear ciliae; scutellum slightly shagreened, with 4 ciliae long and strong, posterior ones reaching the basis of the abdomen; wings hyaline, with a small cloud under stigma; long, narrow not reaching tip of abdomen; vein *pm* 2 times as long as *st*; base of wing with only one longitudinal row of hairs, ciliation on the disc beginning only under the base of vein *m*; femora and the hind coxae finely striate; ciliae on the hind tibiae arranged in 3 waved lines more or less parallel from the base to the tip of the tibiae; on the middle tibiae and on the tarsi they form straight longitudinal rows.

Abdomen elongate, about 1.50 times as long as head and thorax together; first tergite large, narrowed behind, following tergites compressed from the sides very narrow seen from above; second and third tergites short, transverse, fourth as long as broad, 5-7 much longer than broad; ovipositor little protruding.

Type locality : Ceylon : Pelamadulla

Distribution : Ceylon

Host : *Psyche albipes*

Elasmus hyblaeae Ferrière

1929 *Elasmus hyblaeae*, Ferrière, *Bull. ent. Res.*, 20 : 414.

1938 *Elasmus hyblaeae*, Mani, *Cat. Indian Ins.*, 23 : 109.

1940 *Elasmus hyblaeae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 22.

Female : Length 1.70 mm. Body black with greenish shine, more bluish on head, on scutellum and on the propodeum and base of abdomen; rest of abdomen aeneous; postscutellum quite white; antennae brown, scape yellow; legs with dark coxae and femora; tip of anterior femora, tibiae and tarsi pale yellow; hind coxae above with bluish shine.

Head with frontal punctation well marked, but small; antennae not very elongate, funicular segments 2 times as long as thick; pedicel shorter than first funicular segment; but almost as long as the second; club somewhat shorter than the 2 preceding segments combined.

Mesonotum and scutellum finely shagreened; mesonotum a little broader behind than its median length, covered with brownish hairs; scutellum broader than long, with 4 ciliae moderately long; postscutellum short; propodeum smooth and shining; wings hyaline, entirely ciliate, except for a hairless line near hind border, overreaching tip of abdomen; hind femora oval, relatively short, about 2 times as long as broad; ciliae on hind tibiae black, arranged in regular lozenges; hind coxae and femora very finely striate.

Abdomen little longer than head and thorax together, tergites transverse except the first and the sixth; ovipositor a little protruding.

Type locality : Nilambur : Aravallica

Host : Larva of *Hyblaea puera*

This species is related to other dark species, in particular to *E. johnstoni*, but may be distinguished by its small size, quite clear tibiae and tarsi, and longer segments of antennae.

Elasmus homonae Ferrière

1929 *Elasmus homonae*, Ferrière, *Bull. ent. Res.*, 20 : 415.

1933 *Elasmus homonae*, King, *Bull. Tea Res. Inst. Ceylon*, 10 : 27-33.

1938 *Elasmus homonae*, Mani, *Cat. Indian Ins.*, 23 : 109.

1940 *Elasmus homonae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 21.

Female : Length 2.20 mm. Dark green on head and thorax, more shining on propodeum and base of abdomen; postscutellum quite white in female, black at the base in male; antennae dark brown, scape and pedicel below pale yellow; front legs pale yellow except base of femora; middle legs with black coxae and femora; except base and end of the latter; hind legs with coxae quite black and only the terminal 0.67 of femora dark; in male legs almost white with hind and middle coxae and femora dark, except a white spot at the tip of the middle femora, and the basal fourth of hind femora white; abdomen dark aeneous above with a reddish transversal band at the end of the first tergite and sometimes also, less conspicuous on the third tergite; below almost quite red with a black tip; abdomen of male quite black.

Head almost as broad as thorax, with punctation strong but apart; antennae inserted below middle of face; scape shorter than the 2 following segments combined; pedicel almost as long as second funicular segment; funicular segments strong, about 2 times as long as thick, first a little longer than the 2 others; club somewhat shorter than the preceding 2 segments combined.

Thorax finely shagreened; mesonotum as broad as long, ciliae close together and greyish; scutellum almost smooth; postscutellum large, triangular, projecting posteriorly further than the middle of propodeum; propodeum smooth; wings hyaline, almost entirely ciliate, hairless line near hind border short and narrow; middle and hind coxae and femora finely striate; hind tibiae with hairs arranged in diamond-shaped lozenges.

Abdomen oval, elongate, little longer than head and thorax united, narrower than thorax, tergites transverse, except first and sixth.

Male : Length 1.30-1.80 mm. Very similar to the female, but smaller; abdomen as long as thorax; it differs specially in the coloration of body and the form of antennae, 3 branches reach the base of the club.

Type locality : Ceylon : Pelamadulla

Distribution : Ceylon

Hosts : *Homona coffearia*, *Cydia leucostoma*

This species is related to *E. nephantidis* Rohwer, from which it differs, apart from the absence of white spots near the tegulae, in the following characters : abdomen is almost quite red below, except at the tip; in *nephantidis* it is only red at the base below, near hind coxae; hind femora are white at the basal third; in *nephantidis* they are only more or less at the extreme base; second and third funicle segments are shorter than the first; in *nephantidis* they are all of about the same length. *E. indicus* Rohwer, is clearly smaller and has quite black hind femora.

SPECIES INCERTAE SEDIS

Elasmus anticles Walker

- 1846 *Elasmus anticles*, Walker, *Ann. Mag. nat. Hist.*, 17 : 181.
 1928 *Elasmus anticles*, Ferrière, *Bull. ent. Res.*, 19 : 172.
 1929 *Elasmus anticles*, Ferrière, *Bull. ent. Res.*, 20 : 416.
 1938 *Elasmus anticles*, Mani, *Cat. Indian. Ins.*, 23 : 108.

Female : Length 2.00 mm. "Body green; head very short; antennae piceous, shorter than the thorax; thorax convex, coarsely punctured; podoon not apparent; abdomen lanceolate, twice the length of the thorax, depressed above, keeled beneath, decreasing in breadth from the base to the tip; oviduct subexserted; legs piceous, long, slender; wings limpid; radius fuscous; ulna twice the length of humerus; radius short; cubitus not more than half the length of the radius; stigma very small."

Type locality : Bombay

Host : *Tinea* sp. attacked by an unknown Ichneumonidae

Elasmus fumipennis (Cameron)

- 1913 *Cylopleura fumipennis*, Cameron, *Indian forest Rec.*, 4 : 97.
 1929 *Elasmus fumipennis*, Ferrière, *Bull. ent. Res.*, 20 : 416.
 1933 *Elasmus fumipennis*, Ferrière, *Stylops*, 2 (4-5) : 86-96, 97-108.
 1938 *Elasmus fumipennis*, Mani, *Cat. Indian Ins.*, 23 : 108.
 1940 *Elasmus fumipennis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 21.

Ferrière has characterized this species as follows :

Female : Length 3.50 mm. Head black with greenish shine, abdomen more aeneous; postscutellum and 2 spots on sides of mesonotum near tegulae white; abdomen red below at base; antennae dark, scape and pedicel yellow; mandibles red; middle coxae black, anterior and hind coxae black only at base, yellow on the inferior 0.50; all trochanters yellow; anterior femora yellow with a black stripe above; middle femora quite black; hind femora with a large yellow spot at base; tibiae and tarsi yellow with black hairs; wings hyaline at base, strongly infumate, almost black, on the terminal 0.50.

Head small, but as broad as thorax; punctation not deep and scattered; antennae rather long, pedicel short, little longer than thick; 3 funicular segments subequal, about 2.50 times as long as thick; club shorter than the preceding 2 segments combined.

Mesonotum dull, covered with small cilia, a little longer than broad; scutellum finely shagreened, almost smooth; postscutellum triangular, projecting over the propodeum; propodeum finely shagreened, but more shining than scutellum; wings elongated, not reaching to tip of abdomen; entirely ciliate, with a hairless line near hind margin at base; coxae and femora finely striate; cilia on hind tibiae in regular lozenges.

Abdomen narrow, elongated, pointed at apex, longer than head and thorax combined; tergites transverse, except the first, fifth, sixth and seventh, longer than broad; ovipositor slightly projecting over end of abdomen.

Type locality : Kuching

Distribution : Java : India

Host : *Tirathaba* sp.

FAMILY EURYISCHIIDAE *

1904 *Elasmidae* (partim), Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 335.

1975 *Euryischidae*, Shafee, *Rec. Zool. Surv. India*, 68 : 21.

Mandibles with 3 teeth; antennae with 8 segments and annelli; costal cell well developed; hind coxae enlarged, compressed, disc like; hind femora compressed; hind tibial spurs double; tarsi with 5 segments; parapsidal furrows present; vein *m* shorter than *sm*, *st* well developed.

* Some authors (Verma & Hayat and Hayat in Subba Rao *et al.* 1985 : 234), place the *Euryischia*-group of genera under the Aphelinidae : Eriaporinae : Euryischiini. There is much uncertainty about the affinities of these and related genera and *Euryischia*-group may be placed in a separate family, at least for the present.

KEY TO SUBFAMILIES

- | | |
|--------------------------|----------------------|
| 1. Hind coxae disc like | <i>Euryischiinae</i> |
| Hind coxae not disc like | <i>Myocneminae</i> |

SUBFAMILY EURYISCHIINAE

1975 *Euryischinae*, Shafee, *Rec. Zool. Surv. India*, 68 : 24.

Hind coxae much compressed, disc-like; hind femora and tibiae compressed; propodeum much dilated in middle; hind tibiae with 2 long and thick spurs.

Euryischia Howard

- 1889 *Euryischia*, Howard, *Rep. US Dept. Agric.*, 92.
 1904 *Euryischia*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 336.
 1909 *Euryischia*, Schmiedeknecht, *Gen. Ins.*, 97 : 338.
 1953 *Euryischia*, Mani & Kurian, *Indian J. Ent.*, 15 : 15.
 1955 *Euryischia*, Ghesquiere, *Mem. Soc. R. ent. Belg.*, 27 : 217-238.
 1975 *Euryischia*, Shafee, *Rec. Zool. Surv. India*, 68 : 24.

Mandible uni- or bidentate and with a truncation; maxillary palpi triarticulate; labial palpi biarticulate; antennae in female with 8 segments and one annellus; in male not branched; pronotal hind margin straight; parapsidal furrows present; axillae widely separated; scutellum with 4 long bristles; propodeum enlarged medially; fore wings with costal cell and veins *sm*, *m*, *pm* and *st*; middle tibial spur subequal to metatarsus; hind coxa expanded, discoid; hind femora and tibiae compressed, flattened and with a row of stout bristles externally; tarsi with 5 segments; abdomen flattened dorsally and keeled ventrally, elongate.

Type-species : *Euryischia lestophoni* Howard

Euryischia indica Mani & Kurian

- 1953 *Euryischia indica*, Mani & Kurian, *Indian J. Ent.*, 68 : 15.
 1975 *Euryischia indica*, Shafee, *Rec. Zool. Surv. India*, 68 : 25.

Female : Length 1.10-1.77 mm. Body black; antennae brown; wings with slight infuscation behind veins *m*-*pm*; otherwise hyaline; fore legs brownish-black; other legs mostly dark reddish-brown except for the yellowish-brown tibial spurs and the 3 basal tarsal segments; middle legs brown, middle tibial spur white; hind legs brownish-black, tibial spur white; abdomen black.

Head in front wider than long, nearly circular, smooth and shiny with dense bristles; head viewed above rectangular, with the vertex about 3.50 times wider than long; face convex, smooth, but rugoso-striate from face, convex; ocelli in an obtuse angled triangle;

ocellocular space somewhat more than the lateral ocellar diameter, about 0.33 times the interocellar space and slightly more than the front ocellar space; postocellar space a little shorter than ocellar diameter and narrow; mandibles with a single tooth; inner orbital border slightly sinuate; antennae inserted below the lower orbital border; scape about 1.50 times as long as thick and about 2 times as long as pedicel and slightly more than the first 2 funicular segments combined, swollen subapically, distinctly compressed; pedicel about 1.50 times as long as thick; annellus well developed; funicular segments gradually becoming thicker and cup shaped; first funicular segment slightly longer than thick; segments 2-3 somewhat shorter, thicker than long, subequal, club with 3 segments, about 2 times as long as thick, somewhat shorter than funicle; first club segment longest; terminal club segment broadly triangularly rounded apically.

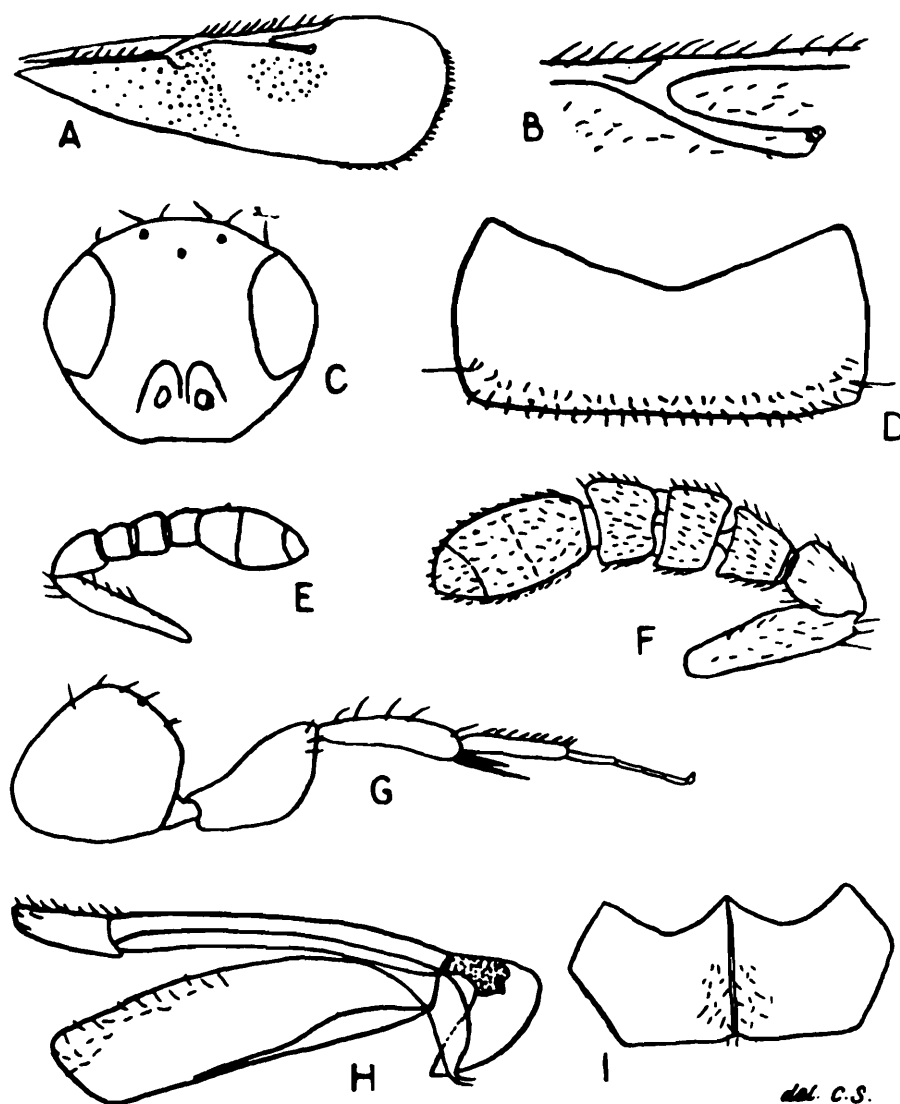


FIG. 299. *Eurylschia indica* Mani & Kurian : A. Fore wing, female; B. Stigmal venation; female; C. Head in facial view, female; D. Pronotum, female; E. Antenna, female; F. Antenna, male; G. Hind leg, female; H. Genitalia, female; I. Genitalia, male.

Thorax with stiff bristles; hind margin of pronotum with a row of 12 bristles; mesonotum densely clothed with stiff bristles; scutellum with 2 pairs of long bristles; fore wings about 3 times as long as wide, with a clouded spot behind vein *st*; veins *sm*, *m* and *pm* respectively with 8, 7 and 5 stiff spines; base of wing with discal ciliation; veins *sm* : *m* : *pm* : *st* ratio 150 : 100 : 60 : 50; coxa greatly enlarged, flattened, circular; femora large, flattened, finely longitudinally striate; tibiae equal to femora, but more slender basally than apically and armed with stiff bristles; longer tibial spur about 0.66 and the shorter spur a little over 0.50 of metatarsus; metatarsus armed with short, stiff bristles especially densely distally; second tarsal segment about 2 times the third; claw simple.

Abdomen slightly shorter than thorax, conical, with the first tergite longest and subequal to the following 3 tergites combined; smooth, shiny; ovipositor short.

Male : Length 0.90 mm. Body black; generally like female; vertex setose; ocellular space about 0.66 of interocellar space and 1.50 times the front ocellar space; scape about 2 times pedicel and a little shorter than the 3 funicular segments combined; club triarticulate and somewhat longer than funicle; terminal club segment shortly conical; veins *sm*, *m* and *pm* respectively with 7, 5 and 3 spines; abdomen sessile, first tergite much shorter than the rest.

Distribution : South India; Bihar

Hosts : *Icerya purchasi*, *I. pilosa* and *I. seychellarum* feeding on different plants.

SUBFAMILY MYIOCNEMINAE

1975 *Myiocneminæ*, Shafee, *Rec. Zool. Surv. India*, 68 : 27.

Hind coxae normal, not compressed, not disc-like; hind femora and tibiae normal; propodeum uniformly broad; hind tibiae with 1-2 short and weak spurs.

Euryischomyia Girault

1914 *Euryischomyia*, Girault, *Canad. Ent.*, 46 : 285.

1975 *Euryischomyia*, Shafee, *Rec. Zool. Surv. India*, 68 : 27.

Female : Body black, clothed with stiff bristles and setae; head viewed in front wider than long; mandibles with long acute tooth and a short truncation; maxillary and labial palpi with 2 segments; antennae with 8 segments including 2 annelli; pronotum not sinuate behind; parapsidal furrows well developed; axillae widely separated; fore wing bare in the basal 0.33, with a broad transverse infuscate band behind veins *m-pm*; vein *sm* long, *pm* and *st* well developed;

hind coxae and femora enlarged, flattened; hind tibial spur single; hind tibia armed with a row of stiff spines outside; abdomen subequal to the rest of body; ovipositor exerted; third valvulae distinct.

This genus is separated from *Euryischia* by the single hind tibial spur.

Type-species : *Euryischomyia washingtoni* Girault

Euryischomyia alami Shafee

(Fig. 300)

1975 *Euryischomyia alami*, Shafee, *Rec. Zool. Surv. India*, 68 : 27.

Female : Length 1.48 mm. Body generally black; antennae dark brown; fore wings hyaline, with an oblique transverse infuscated band stretching between veins *m-pm* and hind margin; coxae, femora and metatarsus dark brown; tibia and 4 tarsal segments yellowish-brown; abdomen black with some metallic lusture.

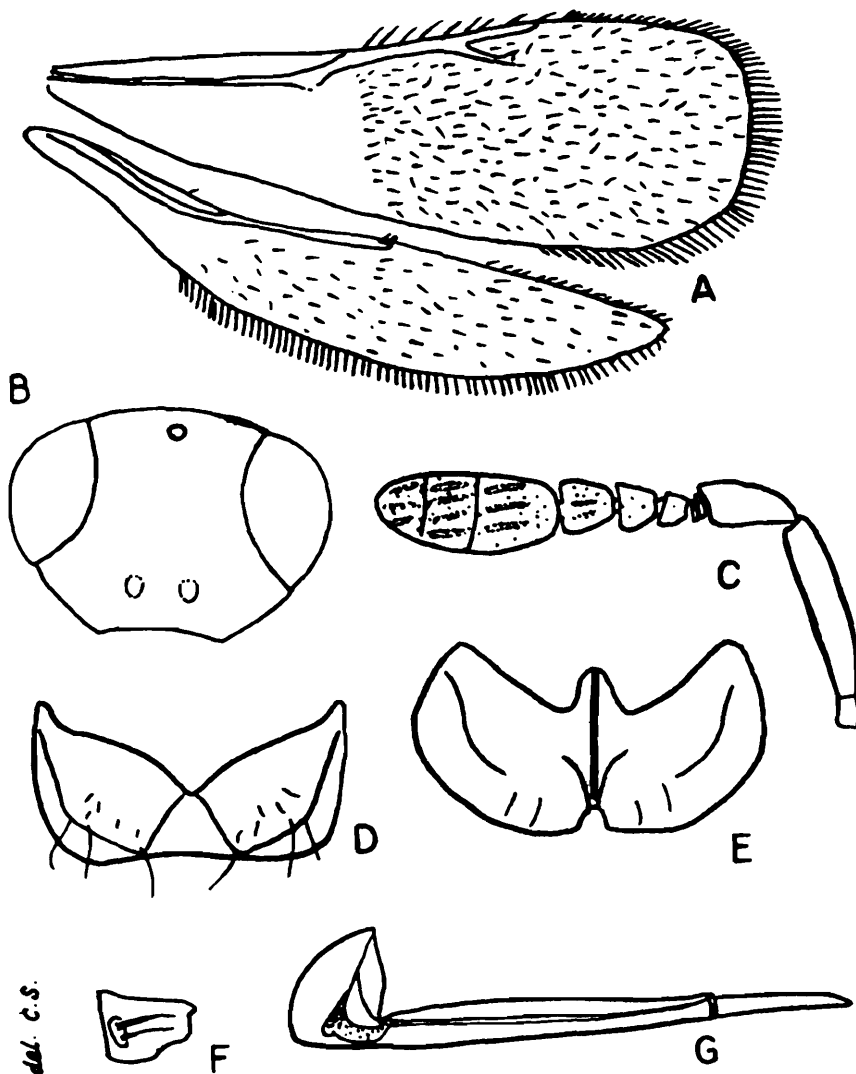


FIG 300. *Euryischomyia alami* Shafee, female : A. Fore and hind wings; B. Head in front; C. Antenna; D. Pronotum; E. Subgenital plate; F. Mandible; G. Genitalia:

Head densely setose; viewed in front wider than long; vertex wider than long; ocellocular space about 2 times ocellar diameter; scape cylindrical, about 4.50 times longer than thick; pedicel more than 2 times longer than thick and subequal to annelli and the first and second funicular segments combined; annelli 2; first funicular segment short, slightly thicker apically than long; second and third segments subequal; club stout, over 2 times as long as thick and distinctly longer than funicle.

Pronotum with a row of 6 bristles along hind margin; scutum with a row of 7 pairs of bristles; axillae with 4 bristles; parapsides with 2 bristles; scutellum with 3 pairs of bristles; fore wings not quite 3 times as long as wide; basal 0.33 without discal cilia; vein *m* about 0.50 of vein *sm* and *pm* about 0.60 of *m*; hind wing about 5 times longer than wide; abdomen about 0.50 of body.

Type locality : Channapatna (Bangalore)

Distribution : South India

Host : *Nipaecoccus vastator* (Maskell) on *Mangifera indica*

Note : Shafee's figure of this species does not show the parapsidal furrows.

FAMILY ELACHERTIDAE

- 1856 *Elachistoidae* (partim), Förster, *Hym. Stud.*, 2 : 19, 26, 72.
 1878 *Elachistina* (partim), Tomson, *Hym. Scandin.*, 5 : 180
 1886 *Elachistinae*, Howard, *Ent. Amer.*, 1 : 198.
 1897 *Eulophinae* (partim), Ashmead, *Proc. ent. Soc. Washington*, 4 : 249.
 1904 *Elachertinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 337.
 1909 *Elachertini*, Schmiedeknecht, *Gen. Ins.*, 23 : 110.
 1938 *Elachertinae*, Mani, *Cat. Indian Ins.*, 23 : 110.
 1979 *Elachertini*, Krombein *et al.*, *Hymen. N. America*, 1 : 978.

This family is based on the genus *Elachertus* Spinola; the name changed by Walker to *Elachestus* and Förster changed it as *Elachistus*. The family is recognized by the complete parapsidal furrows; vein *sm* not interrupted and by the mostly petiolate abdomen. Most species are apparently parasitic in pupae of butterflies.

KEY TO SUBFAMILIES

- | | |
|---|---------------------|
| 1. Hind tibial spur single; rarely long | <i>Elachertinae</i> |
| Hind tibial spur double | 2 |
| 2. Hind tibial spur not exceptionally long;
pronotum acutely margined in front | <i>Euplectrinae</i> |
| Hind tibial spur exceptionally long; pronotum
rounded in front, without acute margin | <i>Ophelininae</i> |

SUBFAMILY ELACCHERTINAE

- 1904 *Elachertini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 351, 354.
 1909 *Elachertina*, Schmiedeknecht, *Gen. Ins.*, 97 : 391.
 1938 *Elachertinae*, Mani, *Cat. Indian Ins.*, 23 : 110.
 1957 *Elachertini*, Boucek in Kratochvil, *Klic. Zvirency CSR*, 2 : 270.
 1979 *Elachertini*, Krombein *et al.*, *Hymen. N. America*, 1 : 978.

This subfamily is recognized by only the single hind tibial spur. The members of this subfamily are often likely to be confused with those of Ophelininae.

KEY TO GENERA

- | | | |
|---|----|--------------------------------|
| 1. Females | 2 | |
| Males | 15 | |
| 2. Abdomen distinctly petiolate; scutellum with a pair of longitudinal grooves | 3 | |
| Abdomen sessile or subsessile | 4 | |
| 3. Body metallic to black coloured, without yellow or red spots; antennae with 9-10 segments, funicular segments 4. | | <i>Elachertus</i> Spinola |
| Body black, with red or yellow spots | | <i>Stenomesus</i> Westwood |
| 4. Scutellum with 2 grooved longitudinal lines | 5 | |
| Scutellum without grooved lines | 9 | |
| 5. Body flat; vertex bulging; antennae short, stout; head not narrowed below | | <i>Zagrammosoma</i> Ashmead |
| Body not exceptionally flat; vertex not bulging | 6 | |
| 6. Head in front longer than wide; body with black bands or stripes | | <i>Zagrammosoma</i> Ashmead |
| Head in front not longer than wide; body without conspicuous markings | 7 | |
| 7. Thorax not yellow marked; body dull to blackish coloured | | <i>Elachertus</i> Spinola |
| Thorax yellow marked; body mostly metallic green | 8 | |
| 8. Antennae with 9 segments; pedicel longer than thick; funicle with 4 segments | | <i>Cirrospilus</i> Westwood |
| Antennae with 10 segments; pedicel hardly shorter than thick; funicular segments 3 | | <i>Cirrospiloideus</i> Ashmead |
| 9. Antennae at the most with only 8 segments; body mostly metallic coloured | 10 | |
| Antennae with 10 rarely with only 9 segments; body partly yellow | 13 | |
| 10. Funicle with 2 shortly petioled segments; club with 3 segments; propodeum very short | | <i>Scotolinx</i> Ashmead |
| Funicle and club each with 3 segments | 11 | |
| 11. Mesonotum slightly wider than long; abdomen oval | | <i>Parolinx</i> Ashmead |
| Mesonotum distinctly longer than wide | 12 | |

12. Abdomen conic-ovate; funicle not compressed, segments hardly or not longer than thick
Olynx Förster
 Abdomen ovate; funicle not compressed, segments hardly or not longer than thick
Neolynx Ashmead
13. Abdomen broadly rounded, slightly shorter than thorax, yellow; mesonotum not longer than scutellum
Rhichnopelte Förster
 Abdomen ovate or conic-ovate
 14
14. Antennae with 9 segments; body as a rule metallic coloured
Cirrospilus Westwood
15. Abdomen petiolate
 16
 Abdomen sessile
 18
16. Body metallic to black, without yellow; scutellum with 2 grooved lines
Elachertus Spinola
 Body black, with red or yellow markings
 17
17. Head black, abdomen red, with the tip black, scape white
Stenomesus Westwood
 Head and thorax with yellow markings
Cirrospiloideus Ashmead
18. Scutellum with 2 grooved lines
 19
 Scutellum without grooved lines
 23
19. Body flat; vertex swollen; body richly yellow marked; antennae short, stout
Zagrammosoma Ashmead
 Not as described above
 20
20. Head in front much longer than wide; body marked or striped black
Zagrammosoma Ashmead
 Head wider than long; body mostly banded or striped
 21
21. Body not yellow spotted, dull or black
Elachertus Spinola
 Body not wholly metallic; head and thorax with yellow markings
 22
22. Antennae with 9 segments; pedicel long
Cirrospilus Westwood
 Antennae with 10 segments, pedicel short
Cirrospiloideus Ashmead
23. Antennae at the most with only 8 segments; body wholly metallic
 24
 Antennae with 10, rarely 9 segments; body partly yellow
 26
 Antennae with 11 segments
Eugeniana Nar. et al.
24. Funicle with 2 segments; propodeum short
Scytolinx Ashmead
 Funicle with 3 segments
 25
25. Mesonotum slightly wider than long
Parolynx Ashmead
 Mesonotum longer than wide
Olynx Först. & *Neolynx* Ashmead
26. Antennae with 9 segments; body green and yellow
Cirrospilus Westwood
 Antennae with 10 segments; body not green
 27
27. Mesonotum not longer than scutellum
Rhichnoplete Förster

Eugeniana Narayanan, Subba Rao and Patel

1957 *Eugeniana*, Narayanan *et al.*, *Indian J. Ent.*, 19 (3) : 200.

1978 *Eugeniana*, Boucek, Subba Rao, & Farooqi, *Orient. Ins.*, 12 (4) : 461.

Female Head viewed from in front as wide as high, almost oval; clypeus narrow, clypeal fovea shallow; scrobes moderately well impressed, extending to front ocellus; margined; eyes about 0.50 of head; head viewed from above slightly longer than wide, frons broad; ocellocular space 2 times ocellar diameter; occiput not concave, emarginate; antennae with 11 segments : scape subcylindrical, about 6 times as long as thick; pedicel a little less than 0.50 of scape, slightly longer than apical thickness; no true annelli; club not differentiated; funicular segments 1-6 gradually becoming thicker, apical segment almost conical.

Pronotum not narrowed anteriorly, rounded at anterior angles, lower than mesoscutum but not covered by it, strongly declivous forward, punctate, bare; mesoscutum wider than long; parapsidal furrows deep, complete and widely separated posteriorly; parapsides and scutum bare, finely reticulately striate; axillae narrow, separated from scutellum by deep grooves; scutellum moderately convex, rounded apically, not projecting over metathorax, without frenum; propodeum about 0.25 times scutellum, shining, depressed medially on each side of a median longitudinal carina; lateral folds and spiracular furrows present; spiracle oval and about its own diameter from anterior margin; prepectus triangular, not large; femoral furrow broad, shallow; hind tibia with only one spur; fore tibial spur originating about its own length before the apex of tibia; fore wings extending beyond the apex of abdomen; length width ratio 13 : 5; vein *sm* about 10 times as long as *m*; *m* thick, as long as *st*, vein *st* forming nearly a right angle with *m*; *pm* represented by a very short stub; median and basal veins entirely absent.

Abdomen distinctly longer than thorax, ovate, sessile, not compressed, first tergite incised apically; ovipositor not exerted.

Male : Like female, except that antennae more slender, apical portion of fore wing somewhat fuscous.

Type-species : *Eugeniana kerrichi* Narayanan *et al.*

Eugeniana kerrichi Narayanan, Subba Rao and Patel

(Fig. 301)

1957 *Eugeniana kerrichi*, Narayanan *et al.*, *Indian J. Ent.*, 19 (3) : 202.

1978 *Eugeniana kerrichi*, Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 461.

Female : Length 2.00 mm. Head dark brown; mandibles and clypeus testaceous; clypeal border with a row of silvery-white pubescence; eyes bare, grey; prothorax and mesothorax concolorous

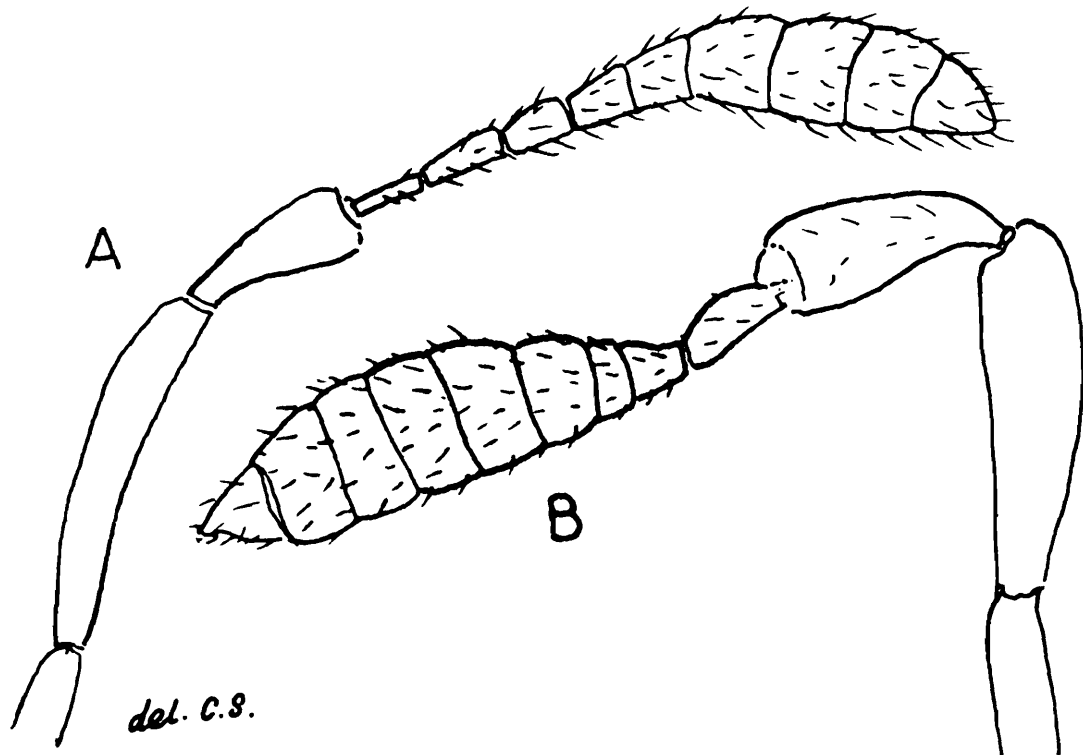


FIG. 301. *Eugeniana kerrichi* Narayana, Subba Rao & Patel : A. Antenna, male; B. Antenna, female.

with head; metathorax and propodeum testaceous; coxae, femora, tibiae and tarsi yellowish-brown, but coxae a shade darker than the rest; wings hyaline throughout; veins brown; abdomen dark brown and shining.

Head more distinctly sculptured than thorax; vertex finely regulosely punctate; frons rugulosely punctate but shining; ocellular space 2 times ocellar diameter; antennae strongly clavate, flagellar segments much swollen; scape, pedicel and flagellum ratio 20 : 9 : 25; apical segment conical.

Pronotum reticulately punctate in the middle, finely rugulosely striate anteriorly and laterally; mesonotum, axillae and scutellum shiny, reticulately striate; propodeum shiny, smooth, pleurae rather smooth, shiny; fore wing laterally bare, marginal fringe almost absent in front, but short behind; veins $m : sm : st$ ratio 1 : 7 : 1.

Abdomen shiny; ovipositor not exerted.

Male : Length 1.50 mm. Antennal segments slender; fore wings densely ciliated on the apical 0.50; marginal fringe present throughout; veins $m : sm : st$ ratio 1 : 5 : 1.

Type locality : Poona

Scotolinx Ashmead

1904 *Scotolinx*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 354.

1909 *Scotolinx*, Schmiedeknecht, *Gen. Ins.*, 97 : 400.

Antennae with 8 or fewer segments, funicle with 2 subpedunculate segments, club with 3 segments, ovate; mesoscutum longer than wide; propodeum short; posterolateral angle subacute; abdomen sessile, oblong-ovate, depressed; scutellum without longitudinal grooves.

Type-species : *Scotolinx gallicola* Ashmead

Scotolinx quadristriatus Subba Rao & Ramamani

1965 *Scotolinx quadristriatus*, Subba Rao & Ramamani, *Indian J. Ent.*, 27 : 412.

Female : Length 1.74 mm. Body generally yellow to brownish-yellow; head pale yellow proximally and darker distally; antennae brownish-yellow; thorax almost yellow; abdomen yellow with 4 brown transverse complete bands and a fifth incomplete band; wings hyaline; legs pale yellow; eyes red.

Head in front almost as long as wide; with minute bristles on vertex; ocellar triangle broad; interocellar space more than ocellular space; antennae inserted just below the level of lower orbital borders, with 8 segments : 1.1.1.2.3; club ending in a spine; scape nearly 2 times pedicel; first funicular segment longer than second.

Scutum with 6 long setae along with few short ones; scutellum with 2 pairs of long equal setae; one pair towards the upper end and the other pair at the extreme distal margin; wings hyaline; vein *m* longer than *sm*; *pm* nearly equal to *st*; vein *st* about 0.25 of *m*; 4 circular hollow spots in a row touching each other appearing like a projection from vein *st*.

Abdomen petiolate, depressed; slightly shorter than thorax; ovipositor exerted.

Male : Length 1.14 mm. Almost identical with female.

Type locality : Delhi

Host : *Phyllocnistis citrella* (Staint.)

Zagrammosoma Ashmead

1888 *Hippocephalus*, Ashmead, *Bull. Kans. agric. Expt. Sta.* 3 App. 7 (preoccupied by Swainson, 1839).

1904 *Zagrammosoma*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 354.

1906 *Zagrammosoma*, Schultz, *Spolia Hym.*, 142.

1907 *Atoposoma*, Masi, *Bol. Lab. Zool. Gen. Agric. Portici*, 1 : 276.

- 1909 *Zagrammosoma*, Schmiedeknecht, *Gen. Ins.*, 97 : 397.
 1959 *Zagrammosoma*, Boucek, *Acta Ent. Mus. Nat. Pragae*, 33 : 172-173.
 1979 *Zagrammosoma*, Krombein *et al.*, *Hymen. N. America*, 1 : 984.

Body conspicuously flat, largely yellow coloured; head viewed in front strongly elongate; eyes hairy; mandibles with 6 minute teeth; antennae in female with 9 segments, annellus very minute; in male with 9 segments, including one annellus; pedicel not much longer than thick; funicle somewhat compressed; club with 3 segments; parapsidal furrows complete; scutellum with 2 grooves; fore wings spotted; body with black stripes; vein *m* 2 times *st*; *st* a little longer than *pm*; tarsi with 4 segments; hind tibial spur single petiole short, transverse.

Type-species : *Zagrammosoma multilineatus* (Ashmead)

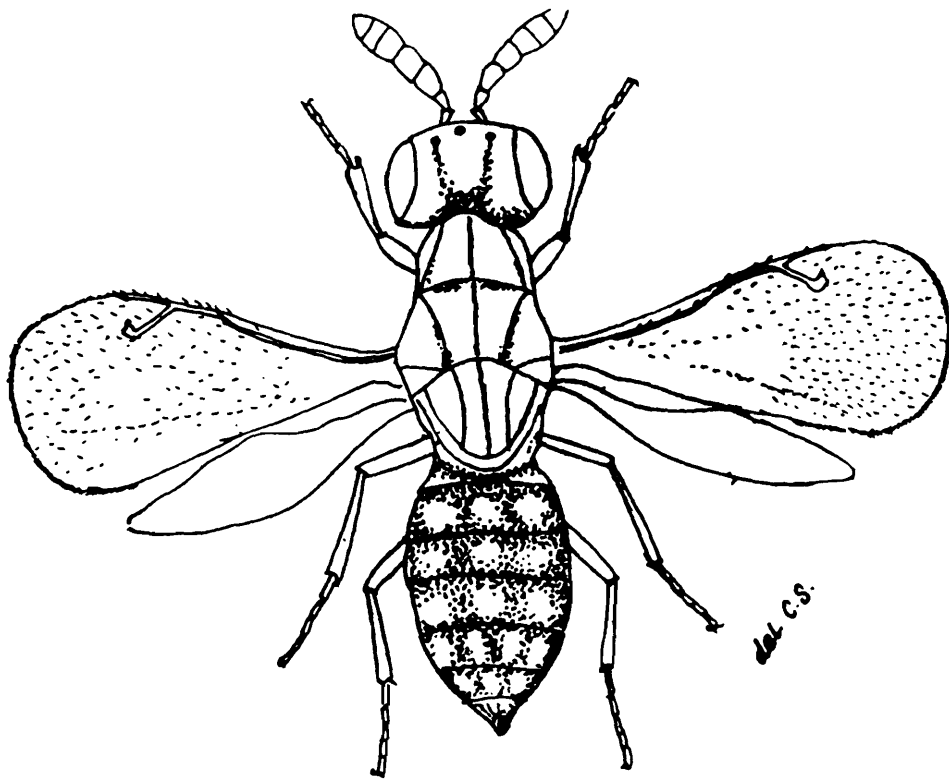


FIG. 302 *Zagrammosoma variegatum* (Masi)

***Zagrammosoma variegatum* (Masi)**

(Fig. 302)

- 1907 *Atoposoma variegatum*, Masi, *Bool. Lab. Zool. Gen. Agric. Portici*, 1 : 276.
 1952 *Zagrammosoma variegatum*, Ferrière, *Mitt. Schweiz. ent. Gesl.*, 25 (1) : 32.
 1978 *Zagrammosoma variegatum*, Saraswat, *Mem. School Ent.*, 5 : 106

Length 0.90-1.57 mm. Head yellowish-brown; striped and spotted brown; eyes pinkish; ocelli coral coloured; one spot between eyes; antennae yellowish-brown, with the exception of part of scutum and scutellum thorax generally yellowish-green; abdomen pale greenish; legs yellowish; fore wings with pair of small spots one from vein *sm* and another behind *st* to hind margin; abdomen above with complex design of markings.

Head as wide as thorax; viewed in front with the space between clypeal margin and front ocellus about 0.66 of that from eye; upper part of head elevated; genal sulcus about 0.66 of eye; head viewed laterally rounded above; antennae inserted in the middle of face, scrobe deep; scape projecting above front ocellus; pedicel 0.33 of scape; annelli 2, subconfluent; funicle with 2 and club with 3 segments; first funicular segment as long as thick; second segment about 1.50 times longer than thick; apical club segment with a minute point apically; pronotum about 0.25 of thorax; scutellum convex in front margin; propodeum without transverse carina, spiracular sulci oblique, with 4-5 bristles; fore wings with wide costal cell; vein *st* about 0.50 of *m*; *pm* about 0.66 of *st*; hind tibial spur single; a little shorter than metatarsus; thoracic sculpture faintly reticulate; abdomen about 0.66 as wide as long.

Male : Like female, but with somewhat short abdomen.

Type locality : Italy

Distribution : Europe; India : Nilgiri Hills, Kasargode

Host : Parasitic on larva of Lepidoptera *Oecophyllambius neglectus* in Italy.

Euryscotolinx Girault

1913 *Euryscotolinx*, Girault, *Mem. Queensland Mus.*, 2 : 265.

1938 *Euryscotolinx*, Mani, *Cast. Indian Ins.*, 23 : 111.

Female : Body non-metallic, head in front triangular; antennae inserted near middle of face; antennal segments 10 : 1.1.2.4.2; terminating in a short nipple; parapsidal furrows complete; pronotum large, scutellum with 2 longitudinal grooves; propodeum with the mesial portion elevated and with an X-shaped median carina and a short neck behind; petiole short, second tergite longest, about 0.25 of dorsum; vein *pm* 2 times *st*; mandibles about 5 dentate; scutellar grooves connected to apex.

Type-species : *Euryscotolinx guttativertex* Girault

Euryscotolinx coimbatorensis Rohwer

1921 *Euryscotolinx coimbatorensis*, Rohwer, *Ann. Mag. Nat. Hist.*, 7 : 134.

1938 *Euryscotolinx coimbatorensis*, Mani, *Cat. Indian Ins.*, 23 : 111.

1940 *Euryscotolinx coimbatorensis*, Pruthi & Mani, *ICAR Misc. Bull.* 30 : 23.

Female : Length 2.00 mm. Body orange-yellow; flagellum, around ocelli, propodeum, apex of scutellum, base and side of tergites narrowly brown; wings hyaline; veins yellow.

Head shiny, without sculpture, except the finely reticulate intra-ocellar; ocellar triangle nearly equilateral; postocellar space slightly shorter than ocellocular space; scape subequal to first 2 funicular segments; funicular segments subequal; pronotum long, finely reticulate; scutum and scutellum shiny, very finely reticulate; propodeum polished; abdomen subequal to thorax.

Type locality : Coimbatore

Host : Parasitic on leaf-miner larva on *Dolichos lablab*

Cirrospilus Westwood

- 1832 *Cirrospilus*, Westwood, *Philos Mag.*, (3) 1 : 128.
 1904 *Cirrospilus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 354, 355.
 1909 *Cirrospilus*, Schmiedeknecht, *Gen. Ins.*, 97 : 397.
 1910 *Atoposomoidea*, Howard, *Tech. Bul. Bur. Ent. US Dept. Agr.*, 19 : 9.
 1913 *Pseudoglyphomyia*, Girault, *Mem. Queensland Mus.*, 2 : 267.
 1938 *Cirrospilus*, Mani, *Cat. Indian Ins.*, 23 : 110.
 1953 *Plesiospilus*, Delucchi, *Entomophaga*, 3 : 253.
 1959 *Cirrospilus*, Boucek, *Acta Ent. Mus. Natl. Pragae*, 33 : 172.
 1979 *Cirrospilus*, Krombein *et al.*, *Hymen. N. America*, 1 : 983.

Head transverse; vertex not wide; eyes sparsely hairy; antennae inserted below middle of face; funicle with 2 and club with 3 segments; gena rather long; clypeus not dentate; thorax flat; collar not differentiated; mesonotum densely, finely punctate; parapsidal furrows deep; scutellum with 2 deep longitudinal grooved lines converging behind, propodeum long, with distinct median carina; veins *m* and *st* long, *pm* subequal to or a little longer than *st*; abdomen subsessile, ovate, flat or weakly impressed above, convex below; body mostly green, with yellow spots.

Type-species : *Cirrospilus elegantissimus* Westwood

Cirrospilus coccivorus Motschulsky

- 1863 *Cirrospilus coccivorus*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 68.
 1909 *Cirrospilus coccivorus*, Schmiedeknecht, *Gen. Ins.*, 97 : 398.
 1938 *Cirrospilus coccivorus*, Mani, *Cat. Indian Ins.*, 23 : 110.
 1940 *Cirrospilus coccivorus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 23.

Length 1.25 mm. "Subelongatus, subconvexus, nitidus, nigro-aeueus, viridi iridescens, antennis pedibusque subfusco-testaceis, capite oculisque viridi-metallicis, antennis thoracis longitudine, subgracilis, pilosis; thorace capite fere latiore, antice ovato, postice truncato, pronoto utrinque impresso, mesonoto arcuatim triangulare,

subconvexo, nitidissimo, metallico-subcupreo; abdomine thorace paulo angustiore, depresso, cordiforme, apice lange acuminato, alis subalbido translucidis.”

Type locality : Ceylon : Colombo

Distribution : Ceylon

Host : *Lecanium coffeae*

Cirrospilus viridifrons Motschulsky

1863 *Cirrospilus viridifrons*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 68.

1909 *Cirrospilus viridifrons*, Schmiedeknecht, *Gen. Ins.*, 97 : 399.

1938 *Cirrospilus viridifrons*, Mani, *Cat. Indian Ins.*, 23 : 111.

Length 1.80 mm. “Subelongatus, subconvexus, nitidus, niger, subaeneo iridescens, fronte coeruleo-viride, abdomine nigro aeneo, basi viride, tarsi albidis, apice nigris; capite subrotundato, depresso, postice truncato, ocellis minutis, nigris, triangulariter positus, oculis magnis, ovalis, convexis, nigris, antennis gracilis, thorace paulo brevioribus, articuli 4 ultimis vix incrassatis, elongatis, apice acuminatis; thorace capite paulo angustiore, subgibboso, subovato, prouto transverso, antice angulato, punctulato, postice truncato, mesonoto subovato, convexo vix distincto punctulato; abdomine thorace vix angustiore, sed fere dimidio brevior, subcordiforme, glabrato, sessile, antice impresso, segmento 2-do latissimo.”

Type locality : Ceylon : Summit of Mt. Patannas

SUBFAMILY EUPLECTRINAE

1904 *Euplectrini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 351.

1909 *Euplectrina*, Schmiedeknecht, *Gen. Ins.*, 97 : 401.

1938 *Euplectrinae*, Mani, *Cat. Indian Ins.*, 23 : 111.

1941 *Euplectrini*, Ferrière, *Bull. ent. Res.*, 32 (1) : 17-48.

1957 *Euplectrini*, Boucek in Kratochvil, *Klic. Zvireny CSR*, 2 : 270.

1963 *Euplectrini*, Lin, *Quart. J. Taiwan Mus.*, 16 : 102.

1979 *Euplectrini*, Krombein *et al.*, *Hymen. N. America*, 1 : 977.

Recognized by the expanded long hind tibial spurs; inner spur subequal to metatarsus; larva external parasites of caterpillars of butterflies, when mature often spinning silken cocoons like Braconids.

KEY TO GENERA

1. Propodeum with 2 longitudinal carinae, enclosing a median area; pronotum carinate; eyes strongly ciliate, body generally yellow..... *Neoplectrus* Ferrière
- Propodeum with only one median carina... 2

2. Spurs of hind tibiae not longer than metatarsus; pronotum almost rectangular, distinctly carinate; pronotum almost rectangular, distinctly carinate; propodeum with median carina and distinct lateral carinae; body yellow;..... *Metaplectrus* Ferrière
- Spurs of hind tibiae generally as long as, or slightly longer or shorter than the first 2 tarsal segments combined; pronotum narrowed or rounded in front, if carinate then propodeum flat or with only one longitudinal carina..... 3
3. Thorax almost flat above, mesonotum, scutellum, metanotum and propodeum about on the same horizontal level; body more or less yellow..... *Platyplectrus* Ferrière
- Thorax not flat above; propodeum distinctly oblique..... 4
4. Scutellum with 2 longitudinal furrows; body black or with yellow markings..... *Euplectromorpha* Girault
- Scutellum without lateral furrows; body black, abdomen more or less yellow at base, legs generally entirely yellow..... *Euplectrus* Westwood

Metaplectrus Ferrière

- 1941 *Metaplectrus*, Ferrière, *Bull. ent. Res.*, 32 : 19.
 1945 *Metaplectrus*, Gadd, *Bull. ent. Res.*, 36 (3) : 331-332.

Body short, yellow, very similar in general aspect to *Neoplectrus*. Eyes hairy; pronotum distinctly margined in front, almost rectangular; mesonotum short; scutellum broad, with thin longitudinal furrows; propodeum short, with distinct median and lateral carinae; hind tibial spur short, not or scarcely longer than metatarsus; abdomen short, more or less rounded, shorter than thorax.

Type-species : *Metaplectrus thoseae* Ferrière

Metaplectrus solitarius Gadd

- 1945 *Metaplectrus solitarius*, Gadd, *Bull. ent. Res.*, 36 : 333.

Female : Length 2.00-2.30 mm. Body yellow, with the following black : 2 black lines on face covered by scape; 2 or more small spots close to ocelli; large part of occiput; anterior surface of pronotum, including the transverse carina; a line along the anterior margin of scutellum; large spots under tegulae, on sides of metanotum and near spiracles of propodeum, the last mentioned often form a cross band; on sides of abdomen extending over posterior 0.50 of dorsal surface but not reaching the tip; a small spot at tip of abdomen; the following brownish : anterior part of mesonotum, median area of scutellum

and anterior part of abdomen; legs light yellow; antenna brown, scape and pedicel yellow.

Head transverse, vertex with sparse black hairs; ocelli in a low triangle; front ocellar space less than ocellocular space; eyes round, hairy; gena converging strongly towards the mouth; antennae inserted at level of lower orbital border; scape not reaching front ocellus, 4 times as long as thick; pedicel nearly 2 times as thick and less than 0.50 of scape; annelli 2 very small; first funicular segment longer and thicker than pedicel; the following segments slightly shorter, 1.50 times as long as thick; club 1.50 times as long as the preceding segment.

Pronotum strongly carinate in front, almost rectangular and as long as mesonotum, finely rugulose, with fine hairs and with a row of longer bristles behind; mesonotum finely rugulose; more densely hairy in front and with a row of long bristles along hind margin; parapsidal furrows deep; scutellum reticulose with 4 long bristles, black at base; longitudinal furrows distinct; propodeum oblique, smooth, shiny, with median and lateral carina, the latter converging behind to form 2 enclosed areas almost flat, median carina thickened vertically at its base, basal tip absent; wings long, ciliate; veins *m* and *sm* equal; vein *st* about 0.33 of *m*; vein *pm* 1.50-2.00 times *st*; hind legs with one tibial spur only about equal to metatarsus.

Abdomen smooth, shiny, slightly shorter than thorax, broadest near the base and tapering gradually to the tip; ovipositor protruding.

Male : Like female except for the shorter abdomen only 0.50 of thorax, truncate, almost square, terminating in a short point; posterior 0.50 black.

Type locality : Ceylon : Passara

Host : *Thosea cervina* and *Narosa conspersa*

Metaplectrus thoseae Ferrière

1941 *Metaplectrus thoseae*, Ferrière, *Bull. ent. Res.*, 32 : 19.

1945 *Metaplectrus thoseae*, Gadd, *Bull. ent. Res.*, 36 (3) : 333.

Female : Length 1.50-1.80 mm. Body orange-yellow; the following black : a small spot on occiput, a transverse carina of pronotum, a spot under tegulae and tip of abdomen; antennae brown, scape and pedicel yellow; examples from Ceylon and Sumatra somewhat darker, and following also black : a large part of occiput, pronotum in front a line at base of scutellum, spots on sides of mesonotum and near spiracles on propodeum.

Head transverse, vertex with long sparse black hairs; ocelli in a low triangle, front ocellar space less than ocellocular space; eyes rounded, densely hairy; gena converging strongly below; antennae

inserted slightly below the level of lower orbital border; scape slender, not quite reaching to the front ocellus; pedicel about 2 times as long as thick; first funicular segment 2 times pedicel, the following segments shorter, about 1.50 times as long as thick; club a little longer than the preceding funicular segments.

Pronotum as long as mesonotum, strongly transversely carinate in front, finely rugulose and dull, with short pubescence and a row of longer bristles behind; mesonotum transverse, slightly rugulose; parapsidal furrows rather deep; suctellum finely reticulate in the middle, almost smooth on sides; with distinct longitudinal furrows; propodeum smooth, shiny, with median carinae which converge behind, forming 2 enclosed areas; wings large, vein *m* about as long as *sm*; vein *st* 0.33 of *m*; *pm* 1.50 times *st*.

Abdomen short, rounded, pointed behind, about 0.50 of thorax; second tergite smooth, covering the greater part of the abdomen; ovipositor not exerted.

Male : Unknown

Type locality : Ceylon : Passara

Distribution : India, Ceylon, Sumatra

Hosts : Larvae of *Thosea cervina*, *Natada nararia*, larvae of unidentified Limacodidae on *Uncaria gambir*

Platyplectrus Ferrière

1941 *Platyplectrus*, Ferrière, *Bull. ent. Res.*, 32 : 20

1945 *Platyplectrus*, Gadd, *Bull. ent. Res.*, 36 (3) : 331-332.

Thorax flat, mesonotum, scutellum, metanotum and propodeum being almost on the same level; eyes not or only shortly hairy; pronotum large, margined or rounded in front; scutellum with narrow longitudinal furrows; propodeum with a strong median carina, elevated at base, where it forms often a translucent protuberance; abdomen narrow, elongate, subequal to thorax; petiole very short, transverse; hind tibial spurs about equal to first 2 tarsal segments combined; body yellow or black and yellow.

Type-species : *Platyplectrus natadae* Ferrière

KEY TO SPECIES

- | | |
|---|-----------------------------------|
| 1. Pronotum margined in front..... | 2 |
| Pronotum rounded in front, without transverse carina | 3 |
| 2. Body entirely orange-yellow; suctellum shagreened..... | <i>P. orthocraspedae</i> Ferrière |
| Body with black markings on head, thorax and abdomen; scutellum smooth, longer..... | <i>P. natadae</i> Ferrière |

3. Abdomen with a black transverse band behind middle; propodeum black in middle and black median stripes on mesonotum and scutellum; hind tarsi, at least the metatarsus, yellow *P. ornatus* Ferrière
- Abdomen orange-yellow, only the sides slightly black; propodeum yellow along the middle; median stripes on mesonotum and only base of scutellum; hind tarsi black *P. capensis* Ferrière

Platyplectrus natadae Ferrière

1941 *Platyplectrus natadae*, Ferrière, *Bull. ent. Res.*, 32 : 21.

1945 *Platyplectrus natadae*, Gadd, *Bull. ent. Res.*, 36 (3) : 332

Male/Female : Length female 2.40-2.80 mm, male 1.80-2.20 mm. Body yellow, with the following black : stemmaticum, margins of frontal furrows, spot on occiput, pronotum in front and back, spots on parapsides and axillae, median stripe on scutellum, more or less distinct, sides of axillae and metanotum, spots on basal sides of abdomen and about posterior 0.50 of abdomen, spot on mesosternum and more or less distinct lines on hind coxae and femora; some of these black parts sometimes wholly or at least bordered by reddish-brown; in male the black portions often larger, entire frons, pronotum and mesonotum; antennae brown, scape yellowish-below.

Head very transverse; ocelli small; front ocellar space less than ocellocular space; eyes oval, densely hairy; vertex with not very long hairs; antennae inserted below the middle of face; scape slender, not reaching front ocellus; pedicel short, scarcely longer than thick; first funicular segment elongate, almost 3 times pedicel and distinctly longer than the following segments, about 1.50 times as long as thick; club short oval.

Pronotum large, as long as mesonotum, margined in front, with irregular transverse striation, short white hairs, with 6 bristles along hind margin; mesonotum finely rugulose, dull; parapsidal furrows deep; scutellum smooth, shiny, flat, broadening and truncate behind, with longitudinal furrows; propodeum horizontal, smooth, narrowed behind, with a strong median carina, surrounded at base by a translucent, tongue-like protuberance; lateral carinae distinct; spiracles large, oval; wings large; vein *m* longer than *sm*; *pm* 2 times *st*; hind legs strong; hind tibial spur equal to first 2 tarsal segments combined.

Abdomen elongate, pointed behind, narrower and shorter than thorax; petiole short, subquadrate; ovipositor slightly exerted.

Male : Similar but smaller; abdomen slender, but becoming thicker apically and truncate or shortly rounded apically.

Type locality : Ceylon : Talawakelle

Host : *Natadae nararia* Moore

Autoplectrus Gadd

1945 *Autoplectrus*, Gadd, *Bull. ent. Res.*, 36 : 336.

Body mainly yellow; eyes not or only sparsely ciliate; pronotum rounded in front; scutellum with narrow longitudinal furrows; propodeum short, oblique, with strong median and lateral carinae which converge behind, forming 2 enclosed areas; abdomen almost as long as thorax; petiole short, longer spur of hind tibiae subequal to the first 2 tarsal segments combined.

Type-species : *Autoplectrus taprobanes* Gadd

Differs from *Metaplectrus* in having long tibial spurs and a rounded pronotum, and from *Platyplectrus* in having a rounded pronotum and a markedly oblique propodeum, with lateral carinae converging before reaching the posterior margin.

Autoplectrus taprobanes Gadd

1945 *Autoplectrus taprobanes*, Gadd, *Bull. ent. Res.*, 36 : 336.

Female : Length 2.50-3.00 mm. Body orange-yellow, except for small black spots under the tegulae and at the tip of abdomen, and brownish bars at the sides of abdomen; antennae brown, with small black spots between the segments; scape and pedicel yellow; legs light yellow.

Head transverse, sparsely ciliate; vertex smooth, without distinct margin; ocelli in a low triangle bordering an elevated area, front ocellar space less than ocellular space; eyes rounded, frequently mottled with brown areas and with a few short ciliae; cheeks converging strongly towards mouth; antennae inserted at lower orbital border; scape narrow, not reaching front ocellus; pedicel about 2 times as long as thick; the following segments slightly shorter, about 1.50 times as long as thick; club about the same size as the preceding segment.

Prothorax rounded in front, as long as mesonotum, finely rugulose, covered with short dark ciliae and with a row of longer ciliae behind; mesonotum transverse, with a median longitudinal carina, minutely punctate, sparsely hairy with a row of 6 or 8 longer bristles behind; scutellum broad, finely reticulate in the middle, almost smooth at the sides, with distinct longitudinal furrows; propodeum oblique, smooth and shining, with median carina surmounted at base by a very small translucent tongue-like protuberance, lateral carinae converging behind; area bounded by basal and lateral carinae convex; petiole short, thicker than long; vein *m* slightly longer than *sm*; *st* 0.25 of *m* and about 0.50 of *pm*; longer tibial spur of hind leg 2 times metatarsus and about as long as the first 2 tarsal segments together; shorter spur rather more than 0.50 of the longer

Abdomen elongate, narrower and shorter than thorax, tapering to a point behind; ovipositor not protruding.

Male : Length 1.40-1.70 mm. Colour on abdomen absent or less distinct than in female and the dot at tip of abdomen absent; antennae entirely yellow, except for black dots between the segments, club a little longer than preceding segment.

Type locality : Ceylon : Passara

Hosts : Larva of *Spatulifimbria castaneiceps* and *Thosea cervina*

Euplectrus Westwood

- 1832 *Euplectrus*, Westwood, *Philos. Mag.*, (3) 1 : 128
 1857 *Diplectron*, Dahlbom, *Forh. ofvers. Svenska Vetensk. Akad.*, 14 : 292
 1897 *Pachyscapa*, Howard, *J. Zool. Linn. Soc. London*, 26 : 159
 1898 *Diplectron*, Dahlbom, *Cat. Hym.*, 5 : 74
 1904 *Euplectrus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 351
 1904 *Pachyscapa*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 383
 1909 *Euplectrus*, Schmiedeknecht, *Gen. Ins.*, 97 : 402
 1935 *Euplectrus*, Mani, *Rec. Indian. Mus.*, 37 : 256
 1938 *Euplectrus*, Mani, *Cat. Indian Ins.*, 23 : 112
 1979 *Euplectrus*, Krombein et al., *Hymen. N. America*, 1 : 977

Body black or yellow and black with metallic lustre; head and thorax coarsely leathery, with rough setae; head triangular, narrower than thorax, vertex acutely margined in the middle; antennae inserted in middle of face; scape long, in male expanded; funicle 4, eyes glabrous; ocelli large, pronotum large, narrower than mesonotum, collar distinct, acutely margined; parapsidal furrows distinct; scutellum with longitudinal furrows; propodeum with acute median carina; vein *m* almost 3 times *st*, *st* a little shorter than *pm*, legs stout, hind tibial spur very large; inner longer spur longer than metatarsus; abdomen petiole, rounded; second tergite almost 0.50 of dorsum.

Type-species : *Euplectrus maculiventris* Westwood

KEY TO SPECIES

1. All legs, including coxae uniformly yellow or white..... 2
 Legs differently coloured; black, brown, reddish-brown, light brown or a combination of these..... 9
2. Scutellum finely shagreened, almost smooth..... 3
 Scutellum finely reticulate..... 7
3. Petiole much longer, 3 times as long as thick *E. petiolatus* Ferrière
 Petiole shorter or only a little longer than thick 4

4. Pedicel with pairs of long and strong bristles..... 5
 Pedicel without or with only a single bristle towards apex..... 6
5. Pedicel armed with 2 pairs of bristles both basally and apically..... *E. ceylonensis* Howard
 Pedicel with 2 spines, only apically..... *E. plecopterae* Mani
6. Front ocellar space equal to ocellocular space; pedicel with a single bristle towards apex..... *E. maternus* Bhatnagar
 Front ocellar space less than ocellocular space..... *E. indicus* Ferrière
7. Funicular segments subequal; legs entirely whitish..... 8
 First funicular segment longer than the remaining segments..... *E. coimbatorensis* Ferrière
8. Scutellum finely punctate, lateral ocelli placed near eyes; pubescence whitish..... *E. leucostomus* Rohwer
 Scutellum finely umbilicately punctate in the middle; lateral ocelli at a distance from eyes; pubescence brownish..... *E. euplexiae* Rohwer
9. Pedicel shorter than the first funicular segment..... 10
 Pedicel as long as or longer than the first funicular segment..... 13
10. First funicular segment distinctly longer than the following segments..... 11
 First funicular segment subequal to the following segments..... 12
11. Scutellum coarsely sculptured; hind coxa uniformly coloured black..... *E. bussyi* Crawford
 Scutellum smooth; hind coxa brown basally, light brown apically..... *E. mathuri* Bhatnagar
12. Antennae with 8 segments including one annellus; first funicular segment 2 times the pedicel; scape brown; abdomen black basally..... *E. himalayaensis* Mani
 Antennae with 9 segments including 2 annelli; first funicular segment 1.16 times the pedicel; scape black with basoventral white area..... *E. ornatus* Mukerjee
13. Pedicel as long as the first funicular segment..... 14
 Pedicel longer than the first funicular segment..... *E. spodopterae* Bhatnagar
14. Mesonotum reticulately rugose..... 15
 Mesonotum rugulose in the middle, almost smooth and shiny except for shallow and sparse punctae laterally..... *E. utetheisae* Mani & Kurian
15. Scutellum indistinctly reticulate in front; abdomen with a large brown spot near base..... *E. nyctemerae* Crawford
 Scutellum finely reticulo-lineate in front and polished behind; abdomen without basal abdominal spot..... *E. gopimohani* Mani

Euplectrus petiolatus Ferrière

1941 *Euplectrus petiolatus*, Ferrière, *Bull. ent. Res.*, 32 : 34.

Female/Male : Length female 1.70-2.00 mm, male 1.40 mm. Body black; clypeus and a rounded spot on the abdomen yellow; antennae brown, scape and pedicel yellow; leg yellow.

Female : Head transverse; eyes short oval; ocelli rather large, front ocellar space subequal to ocellular space; vertex smooth; scape slender, elongate, not reaching front ocellus; pedicel slender, about 2 times as long as thick; funicular segments thicker and longer than pedicel, first segment a little longer than others.

Pronotum short, narrowed in front, with a thin transverse carina; mesonotum finely reticulate, without median carina; scutellum smooth; propodeum smooth, median carina narrow; wings large, vein *m* a little longer than *sm* and about 4 times as long as *st*; hind legs strong, coxae large, the longest hind tibial spur not quite equal to first 2 tarsal segments combined.

Abdomen broadening behind, triangular, shorter than thorax; petiole smooth, elongate, almost 3 times as long as thick.

Male : Like female but scape slightly thickened; abdomen much smaller, but 2 times petiole.

Type locality : India; Dehra Dun

Host : Lymantriid larva on *Tectona grandis*

Euplectrus ceylonensis Howard

1896 *Euplectrus ceylonensis*, Howard, *Proc. US nat. Mus.*, 18 (1092) : 641.

1909 *Euplectrus ceylonensis*, Schmiedeknecht, *Gen. Ins.*, 97 : 402.

1911 *Euplectrus insulanus*, Crawford, *Proc. US nat. Mus.*, 37 : 281.

1935 *Euplectrus ceylonensis*, Mani, *Rec. Indian Mus.*, 37 : 257.

1938 *Euplectrus ceylonensis*, Mani, *Cat. Indian Ins.*, 23 : 112.

1940 *Euplectrus ceylonensis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 23.

Female : Length 2.80 mm. Body black; scape and pedicel honey-yellow, flagellum brown; tegulae, mouthparts and legs, including coxae honey-yellow; a large honey-yellow spot on venter of abdomen; indications of a corresponding dorsal spot, which is fainter in some specimens than in others; wings hyaline; all thoracic bristles whitish, pair next to tegulae black.

Antennae stout, shining, bristly; pedicel with a pair of long, stout bristles at base, and another longer and stouter pair at tip; mesonotum strongly shagreened, with 2 strong elongate longitudinal depressions in front of scutellum; articulation axillae with strong and very broad depressions at articulation with scutellum; scutellum nearly smooth, very faintly articulate.

Male : Like female.

Type locality Ceylon : Punduloya

Distribution : India, Ceylon

Host : Larva of *Euproctis fraterna*

This species differs from *E. furrnius* mainly in the more pronounced sculpturing of mesonotum, in the greater size and depth of the notal impressions, and in the greater length and strength of the bristles.

Euplectrus plecopterae Mani

1941 *Euplectrus plecopterae*, Mani, *Indian J. Ent.*, 3 (1) : 31.

1941 *Euplectrus parvulus*, Ferrière, *Bull. ent. Res.*, 32 : 33.

1986 *Euplectrus plecopterae*, Husain & Khan, *Orient. Ins.*, 20 : 223.

Male/Female : Length 1.10-1.60 mm. Body black; clypeus and tegulae yellow; abdomen yellow with a transverse strip before the end, lines on the sides of second tergite and petiole brown; in male almost the entire tip of abdomen brownish; antennae yellow, slightly brownish apically; scape white; legs entirely whitish.

Female : Vertex almost smooth, hairs scattered; front ocellar space equal to ocellocular space; eyes oval; antennae with scape rather short, not reaching to the front ocellus; pedicel slightly longer than thick; funicle thicker, the 4 segments subequal, a little longer than the pedicel.

Pronotum short, finely margined; mesonotum rugulose punctate, more strongly in the middle than on the parapsides, without median carina, but with deep parapsidal furrows; scutellum finely shagreened, almost smooth; propodeum smooth, with distinct, median carina; wings with vein *m* as long as *sm* and only about 2 times as long as *st*; tibial spur equal to the first 2 tarsal segments combined.

Abdomen narrower and generally shorter than thorax; petiole slightly broader than long or subquadrate, almost smooth above.

Male : Similar; antennal segments more elongate than in female; scape slightly thickened in the middle.

Type locality : India : Punjab, Khanewal Pln.

Distribution : India : Punjab, Khanewal Pln. Chichawatni, Daphar, Dehra Dun, Allahabad; Burma : Zigon, Thitcho Reserve Forest.

Hosts : Larvae of *Plecoptera reflexa* on *Dalbergia sissoo*; Pyralid defoliating *Stephegyne diversifolia*

Euplectrus maternus Bhatnagar

(Fig. 303)

1951 *Euplectrus maternus*, Bhatnagar, *Indian J. agric. Sci.*, 21 (2) : 173

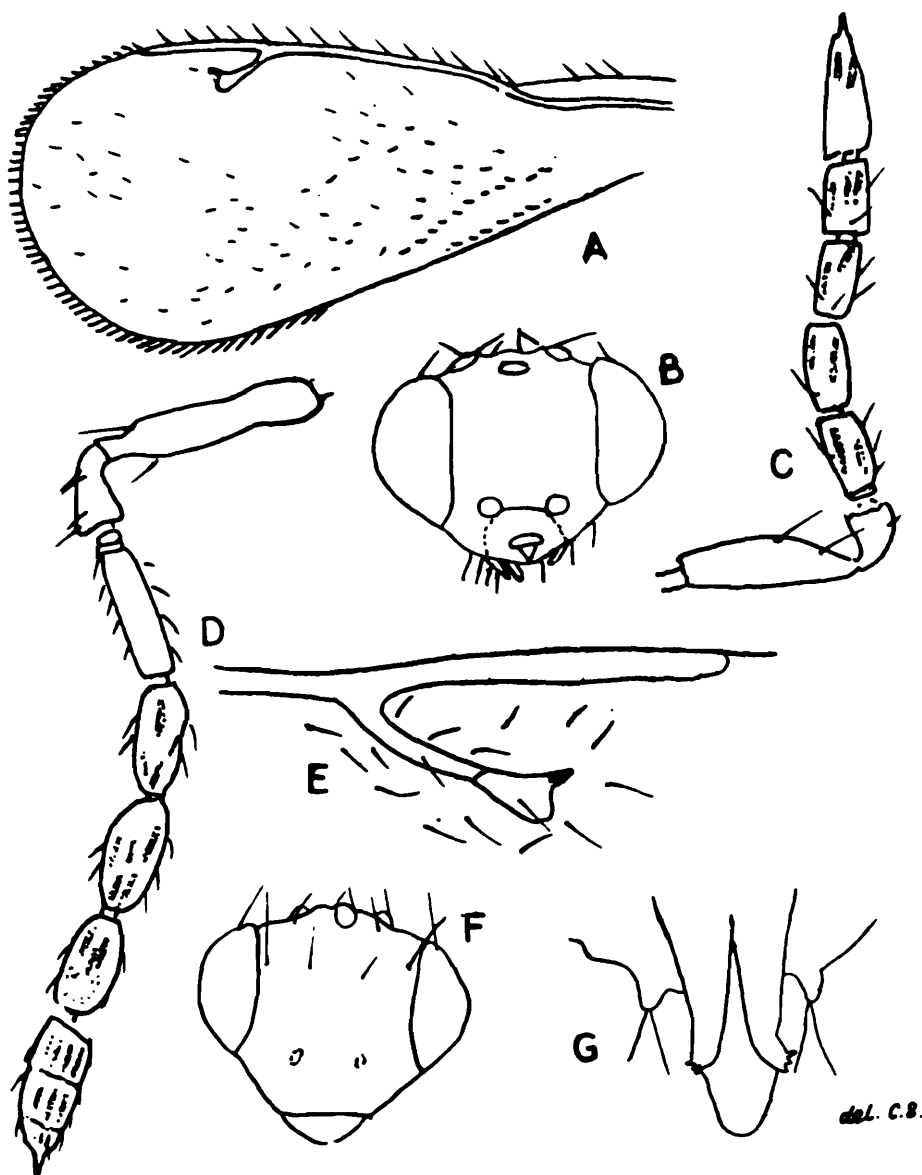


FIG. 303. A-C. *Euplectrus maternus* Bhatnagar, female : A. Fore wing; B. Head in front view; C. Antennae; D-F. *Euplectrus mathuri* Bhatnagar, female : D. Antenna; E. Stigmal venation; F. Head in front view; G. *Euplectrus maternus* Bhatnagar, male : Genitalia.

Female : Length 2.00 mm. Head dark brown; scape pale white, rest of antenna light brown; face below antennae light brown; thorax black; legs including coxae white; abdomen mostly white, except for a discontinuous centrally interrupted pale brown band apically; laterally and at the extreme base brown; petiole dark brown.

Head viewed from above 2.50 times as wide as long; interocular space 2 times interocellar; ocellocular space 0.50 of the interocellar and equal to the front ocellar space; vertex shallowly and closely

punctate; occiput slightly concave; inner orbital border straight; antennae inserted slightly above the level of lower orbital borders; genal space 0.33 of eye; face very finely and obscurely punctate and sparsely setose; segments 8 : 1.1.1.4.1; scape 3 times as long as thick, longer than club and more than 2 times as long as thick, and more than 2 times pedicel; pedicel shorter than the first funicular segment, with a single stout bristle apically; annellus very narrow; funicular segments subequal, about 2 times as long as thick, linear sensoria not biserial; club only obscurely biarticulate, slightly more than 2 times the preceding segment and ending in a nipple-like projection.

Prothorax hardly visible from above, narrower than head; mesothorax strongly rugulose punctate anteriorly, punctae not very well defined, shagreened; parapsidal furrows complete; scutellum and axillae smooth and shiny but under high magnification minutely and shallowly punctate; axillae large and contiguous; propodeum except for the strongly marked median longitudinal carina smooth and shiny; thorax with pretegular, prescutellar and lateral bristles; mesopleurae sparsely punctate with the femoral impression well marked; wings hyaline, *sm* entire, *pm* 2 times as long as *st*; hind coxae smooth; hind tibial spurs double, unequal, longer spur less than 2 times metatarsus and the shorter spur less than the 2 basal segments.

Abdomen about 0.25 of the hind coxa; ovipositor concealed.

Male : Length 1.20 mm. Very similar to female.

Type locality : Kanpur

Distribution : India

Hosts : *Othreis materna* and *O. fullonica*

Euplectrus indicus Ferrière

1941 *Euplectrus indicus*, Ferrière, *Bull. ent. Res.*, 32 : 33.

Male/Female : Length 1.80-2.00 mm. Body black; clypeus and mandibles yellowish; abdomen with a rounded yellow spot on second tergite; antennae yellow, last segment brown; legs yellow.

Female : Vertex and thorax with some scattered long white hairs; ocelli small, front ocellar space less than ocellular space; eyes oval, not hairy; scape slender reaching to front ocellus; pedicel 2 times as long as thick; first funicular segment longer than pedicel following segments subequal, a little smaller than the first funicular segment.

Pronotum short, with a transverse carina, mesonotum transversely smooth, with thin longitudinal striae; propodeum smooth, with median carina strong, spiracles distinctly oval; much

longer than *sm*; vein *st* narrow; the longest tibial spur equal to the first 2 tarsal segments combined.

Abdomen very short, triangular, truncate behind; petiole short; subquadrate, slightly rugulose.

Male : Similar to female; scape whitish, thickened in the middle, funicular segments slender; abdomen small, triangular, narrower than thorax; petiole a little longer than thick.

Type locality : India : United Provinces, Dehra Dun

Hosts : Geometrid larvae feeding on *Brassica*; ex cocoon on leaf of *Tectona grandis*, *Apanteles obliqua* var. *niger* Wilk.

Euplectrus coimbatorensis Ferrière

1914. *Euplectrus coimbatorensis*, Ferrière, *Bull. ent. Res.*, 32 : 33.

Female : Length 1.60-1.70 mm. Body black, head below insertion of antennae yellow; abdomen yellow above, orange-yellow apically, only 2 lines on the sides at base and petiole black, antennae orange-yellow, brown towards tip, scape light yellow; legs orange-yellow.

Head very transverse; eyes rounded; ocelli small, front ocellar space less than ocellocular space; scape slender; pedicel about 2 times as long as thick; first funicular segment a little thicker but not much longer than pedicel, the following segments slightly shorter than first.

Pronotum very short; mesonotum with irregular transverse striae; scutellum finely reticulate; propodeum smooth, with median carina thin, higher in front; vein *m* a little longer than *sm* and about 3 times as long as *st*; hind tibial spur not quite as long the first 2 tarsal segments combined.

Abdomen rounded, as broad as but shorter than thorax; petiole subquadrate, finely shagreened, almost smooth above.

Type locality : Coimbatore

Host : Caterpillar feeding on leaves of *Solanum melongena*

Euplectrus leucostomus Rohwer

1921 *Euplectrus leucostomus*, Rohwer, *Ann. Mag. Nat. Hist.*, 7 : 134.

1935 *Euplectrus leucostomus*, Mani, *Rec. Indian Mus.* 37 : 256.

1938 *Euplectrus leucostomus*, Mani, *Cat. Indian Ins.*, 23 : 112.

1940 *Euplectrus ceylonensis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 23.

1941 *Euplectrus ceylonensis*, Ferrière, *Bull. ent. Res.*, 32 : 32.

Male : Length 1.75 mm. Body black; head below antennae, front along eye margins to near top of eye; antennae, large oval spot covering most of tergites (except apical ones) and all of sternites

yellowish-white; legs entirely white; body bristles white; wings hyaline, with white venation.

Head except for a small finely reticulate area in front of ocelli, smooth and polished; ocellular space somewhat less than ocellar diameter; antennae long, slender; scape shorter than first 2 funicular segments; funicular segments subequal; pronotum smooth behind the transverse carina; mesoscutum reticulate, with a distinct, impressed, longitudinal line medially; axillae polished; scutellum, except the extreme sides punctato-lineate; propodeum polished, median furrow complete, broad; propodeal spiracle more than its width from lateral sulcus; longer spur of hind tibiae equal to first 2 tarsal segments; petiole granular, nearly as long as broad; abdomen shining, glabrous.

Type locality : Coimbatore

Host : Parasitic on larva feeding on *Ricinus communis*

Euplectrus euplexiae Rohwer

1921 *Euplectrus euplexiae*, Rohwer, *Ann. Mag. Nat. Hist.*, 7 : 135.

1935 *Euplectrus euplexiae*, Mani, *Rec. Indian Mus.*, 37 : 257.

1938 *Euplectrus euplexiae*, Mani, *Cat. Indian Ins.*, 23 : 112.

1940 *Euplectrus euplexiae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 23.

1941 *Euplectrus euplexiae*, Ferrière, *Bull. ent. Res.*, 32 : 47.

Male : Length 1.50 mm. Body black; head below antennae, frons along eye margins to near top of eye; antennae large spot on tergite occupying most of basal part and most of sternites yellowish-white; legs entirely whitish; wings hyaline, with whitish venation; body bristles pale brown.

Head polished, with a few fine articulations on front; ocelli small, widely separated from eye; ocellar line longer than interocellar line and 0.67 of postocellar line; antennae short; scape as long as the first 2 funicular segments combined; funicular segments subequal; transverse carinae on pronotum not sharply defined, pronotum smooth behind; mesoscutum without a median line, irregularly reticulate; axillae smooth; scutellum finely reticulate medianly, reticulato-lineate laterally; propodeum shining, median furrow distinct, complete; propodeal spiracle close to lateral sulcus; petiole granular, slightly longer than wide; abdomen polished; longer spur of hind tibiae subequal, with 2 basal tarsal segments.

Female : Length 2.00 mm. Like male, except for absence of marks on frons, presence of distinct yellowish tinge on legs basally, in tergites yellow dorsally, except for a transverse brownish band before apex.

Type locality : Coimbatore

Distribution : South India

Host : Parasitic on *Euplexia conducta*

This species is closely related to *E. leucostomus* Rohwer, but antennae shorter, ocelli smaller and much further from eye and sculpture of mesoscutum somewhat different.

Euplectrus bussyi Crawford

- 1911 *Euplectrus bussyi*, Crawford, *Proc. US nat. Mus.*, 41 : 279.
 1935 *Euplectrus bussyi*, Mani, *Rec. Indian Mus.*, 37 : 257.
 1938 *Euplectrus bussyi*, Mani, *Cat. Indian Ins.*, 23 : 112.
 1940 *Euplectrus bussyi*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 23.

Female : Length about 2.25 mm. Body black, abdomen with a large basal whitish spot; scape white, rest of antennae light brown; hind coxae black, front and middle coxae deep brown; hind femora largely black, rest of legs reddish-testaceous.

First funicular segment distinctly longer than second segment or pedicel; segments 2-4 almost subquadrate, second subequal to pedicel; face above insertion of antennae very finely lineolated; dorsum of pronotum smooth, polished, anterior truncation finely lineolated; scutum coarsely rugose, lateral lobes finely reticulated; axillae smooth; scutellum more coarsely rugose than mesoscutum, propodeum 2 times as long as metanotum, with a median carina dividing anteriorly to from the usual medial lip; hind metatarsus about 2 times second; longer hind tibial spur reaching slightly beyond apex of second tarsal segment.

Male : Length about 1.75 mm. Similar to female, the sculpture of face a little stronger.

Type locality : Sumatra : Medan, Deli

The coarse sculpture of the scutellum distinguishes this species from any other known from the Oriental Region.

Euplectrus mathuri Bhatnagar

(Fig. 303)

- 1951 *Euplectrus mathuri*, Bhatnagar, *Indian agric. J. Sci.*, 21 (2) : 171.

Female : Length 2.85 mm. Head black, below antennae light brown; eyes dark brown; pubescence white; antennae except for yellowish-white scape light brown; club entire, slightly darker than the rest of antenna and reduced to a pointed apex, apparently triarticulate; tegulae light reddish-brown; legs including coxae honey-brown; apices of terminal tarsal segments dark brown; abdomen apically black, towards base with a light brown patch in the middle; ventrally mostly brown with some darkening towards margins.

Head viewed from above 4 times as wide as long; vertex very finely, closely punctate, margined behind with a transverse row of 4 fine setae; occiput dull and nearly flat; interocular space slightly more than 0.50 of head width; ocellocular space more than the front ocellar space and 0.50 of the interocellar; in front broader than high; interorbital space slightly less below than above; antennae inserted on level of lower orbital borders; sockets nearer to the margin of eyes than to each other; face very finely punctate and sparsely setose; face in the middle impressed; genal space shorter than eye; antenna with 9 segments : 1.1.2.4.1; scape cylindrical, slightly less than 6 times as long as thick, with a pair of bristles towards the apical 0.25; a little less than 2 times the first segment of funicle; pedicel 0.50 of the first funicular segment with a pair of long, stout bristles both apically and basally; annelli narrow, the first approximately 0.50 of the second; the first funicular segment slightly longer than the rest and equal to the club, rest of the segments nearly equal, less than 0.50 times as thick as long; the last segment 0.75 of club.

Prothorax matt, narrower than head, declivous in front with 6 long slender bristles on the anterior margin; mesothorax finely rugosely striate with a few scattered deep punctae especially in the region of scapulae, with a distinct median longitudinal carina; parapsidal furrows complete; scutellum finely longitudinally striate, dull; propodeum except for a prominent median longitudinal carina broadened behind, mostly smooth and shiny; mesopleura dull, smooth and with the femoral impression faint; wings hyaline; vein *sm* entire, shorter than *m* with 6 long setae distributed along its surface; *st* slender and shorter than *pm*; hind tibial spurs unequal, longer reaching tip of second tarsal segment and the shorter equal to hind metatarsus.

Abdomen from above depressed, as long as broad; ovipositor concealed.

Male : Length 2.30 mm. Resembles female except for the legs being of lighter shade and the abdomen being slightly longer than broad with the ventral side black towards the apex.

Type locality : Dehra Dun

Host : Larva of an unknown Agaristid defoliating *Dioscorea belophylla*

This species runs closest to *E. bussyi* Crawford but it is readily distinguishable from it by the subequal segments of the funicle being subequal and the hind coxa brown.

***Euplectrus himalayaensis* Mani**

1935 *Euplectrus himalayaensis*, Mani, *Rec. Indian Mus.*, 37 : 257.

1938 *Euplectrus himalayaensis*, Mani, *Cat. Indian Ins.*, 23 : 112.

1941 *Euplectrus himalayaensis*, Ferrière, *Bull. ent. Res.*, 32 : 47.

Female : Length 2.50 mm. Body black; antennae dark brown; scape brown; club a little darker than other segments; fore coxa reddish-brown, other parts of fore legs brown; middle legs uniformly brown, tibiae densely and shortly setose; hind coxa black basally, reddish-brown apically; rest of hind legs brown; abdomen black basally, ventrally brown.

Head smooth, with a width about 0.40 of height, sparsely covered with long, slender, stiff, hairs; antennae with 8 segments, inserted low down below the level of lower orbital border, about 0.60 of body; scape slender, subcylindrical, about 0.33 of funicle; pedicel subcylindrical apically, narrowed basally, about 0.25 of scape; funicle with 4 segments; first segment 2 times pedicel; segments 2-4 subequal, and each about 0.50 shorter than the first segment; club ovate-lanceolate, stouter and 0.50 times greater than the preceding funicular segments, reduced to a pointed apex, apparently biarticulate.

Thorax about 0.50 of rest of body, finely minutely striate, sparsely covered with long hairs; scutellum subacutely produced forwards; parapsidal furrows complete, well developed; propodeum with a median longitudinal carina; fore wing 2 times as long as wide; vein *sm* about 0.33 of *m*; vein *pm* about 2 times as long as *st* and subequal to *sm*; middle tibial spur moderately and shortly setose on outside, 0.50 of metatarsus; metatarsus with rather long setae.

Abdomen depressed, a little longer than wide.

Type locality : India : E. Himalaya, Darjiling

Euplectrus ornatus Mukerjee

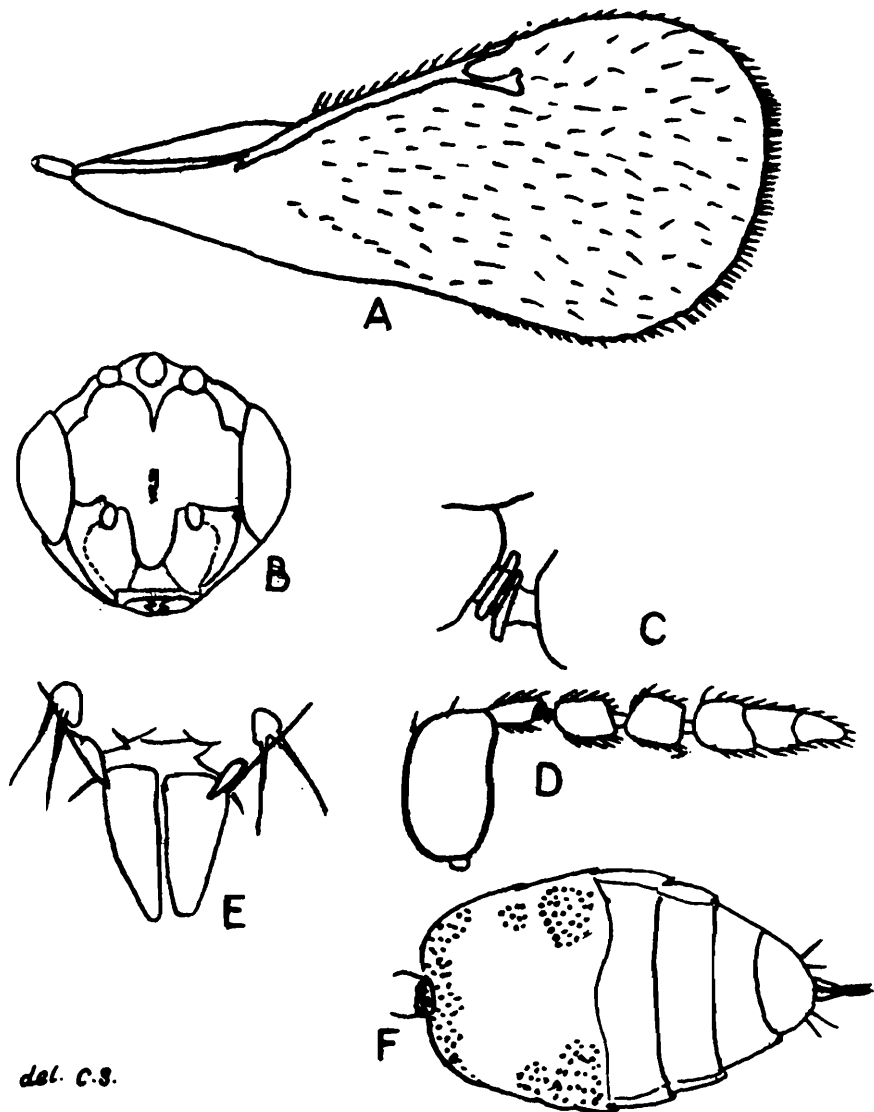
(Fig. 304)

1975 *Euplectrus (Pachyscapa) ornatus*, Mukerjee, *Mem. School Ent.*, 4 : 60.

Male : Length 1.32 mm. Body black; head with white markings; eyes red; antenna black except the white basoventrally on scape; thorax with metallic-green reflections; fore and middle legs white; hind leg white except for the black basal 0.75 of femur; abdomen white basally; terminal 4 tergites black.

Head in front length to width 80 : 100; vertex and face finely reticulate; ocellocular space 1.70 times ocellar diameter; front ocellar space 0.50 of ocellar diameter; interocellar space 2 times ocellar diameter; mandibles bidentate; antennal sockets a little above the lower orbital border; antenna with 9 segments : 1.1.2.2.3, cylindrical; scape 1.40 times as long as thick; pedicel 1.50 times as long as thick and 0.45 of scape; first funicular segment 1.40 times as long as thick, 1.16 times the pedicel; second funicular segment as long as thick, about 0.90 of the first funicular segment; club subequal to the

preceding funicular segment and pedicel combined, first 2 club segments as long as thick, third segment 1.25 times as long as thick.



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FIG. 304. *Euplectrus ornatus* Mukerjee, male : A. Fore wing; B. Head in front view; C. Annellus; D. Antenna; E. Tip of abdomen; F. Abdomen.

Mesonotum, scutellum, pleura and propodeum finely reticulate; scutellum about 0.62 of mesonotum; propodeum 0.68 of scutellum; fore wing length to width 100 : 47; veins *sm* : *m* : *pm* : *st* ratio 154 : 100 : 45 : 45; *sm* with 4 setae directed forwards, *m* with 11 setae directed forwards, *pm* with 6 setae; hind wing length to width 100 : 18; marginal fringe 0.43 of wing width; fore coxa 2 times longer than thick; femur 6 times longer than thick; and 1.50 times the coxa; tibia subequal to femur, 6.11 times longer than thick; tarsus equal

to tibia, metatarsus 0.23 of tibia and tarsus, second segment 1.20 times the metatarsus, third about 0.83 of the second and subequal to metatarsus, fourth 1.20 times the preceding tarsal segment and equal to the second tarsal segment; middle coxa 1.25 times longer than thick; femur 3.66 times longer than thick, 2.20 times the coxa; tibia 8 times longer than thick, 1.10 times the femur, tibial spur 0.17 of tibia and 0.50 of metatarsus; tarsus 1.25 times tibia, metatarsus 0.33 of tibia and 0.27 of tarsus, second segment equal to metatarsus, third 0.75 of the second segment, fourth 1.33 times the preceding tarsal segment and equal to metatarsus; hind coxa 1.75 times longer than thick; femur 3.66 times longer than thick, 1.36 times femur, tibial spur 0.13 of tibia and 0.66 of metatarsus; tarsus a little shorter than tibia, metatarsus 0.20 of tibia and 0.23 of tarsus, second segment 1.16 times metatarsus, third 0.85 of the second and equal to metatarsus, fourth 1.33 times the preceding tarsal segment.

Abdomen smooth; length 0.46 mm, about 0.35 of the body; viewed dorsally, length to width 100 : 61.

Type locality : Van-Vihar (Dholpur)

This species is readily distinguished from all the other species known from India by the white markings on head and scape of antenna and by the proportions of wing veins.

***Euplectrus spodopterae* Bhatnagar**

(Fig. 305)

1951 *Euplectrus spodopterae*, Bhatnagar, *Indian J. Agric. Sci.*, 21 (2) : 169.

Female : Length 1.80 mm. In most of the specimens head black but below the insertion of the antennae reddish-brown; in one specimen head entirely black and in a few specimens completely reddish-brown; ocelli dark reddish-brown; scape light reddish-brown; pedicel and annellus reddish-brown; first funicular segment brown and rest of antennae dark brown; thorax black; tegulae reddish-brown; legs light reddish-brown except hind coxa which has a slight darkening at base; abdomen reddish-brown in the middle; petiole sides and apex black.

Head wider than prothorax and slightly less than distance between tegulae; viewed above 3 times as wide as long; vertex glossy and smooth; ocellular space equal to the interocellar; front ocellar space 0.50 of interocellar; antennae inserted on lower orbital borders; genal space slightly more than the innerorbital border; face smooth, but sparsely punctate on high magnification with a few bristles; antennal segments 8 : 1.1.1.4.1; scape about 4 times pedicel; pedicel longer than first funicular segment, with a pair of bristles both at apex and at the base; annellus fused to the base of the first funicular segment; funicular segments subequal; club equal to the preceding 1.50 segments combined, with a short nipple-like process apically.

Pronotum highly declivous in front; viewed above it appears to be very narrow; finely transversely striate on the lateral margins, in the middle shallowly and reticulately punctate with 5 long bristles on the posterior margin; finely pubescent; mesonotum shallowly and closely punctate; parapsidal furrows complete; mesopleurae mostly smooth and shiny with a short but deep femoral impression; scutellum slightly convex, finely and shallowly punctate; propodeum smooth with a well marked median longitudinal carina; wings hyaline, slightly less than 3 times as long as broad; vein *sm* entire,

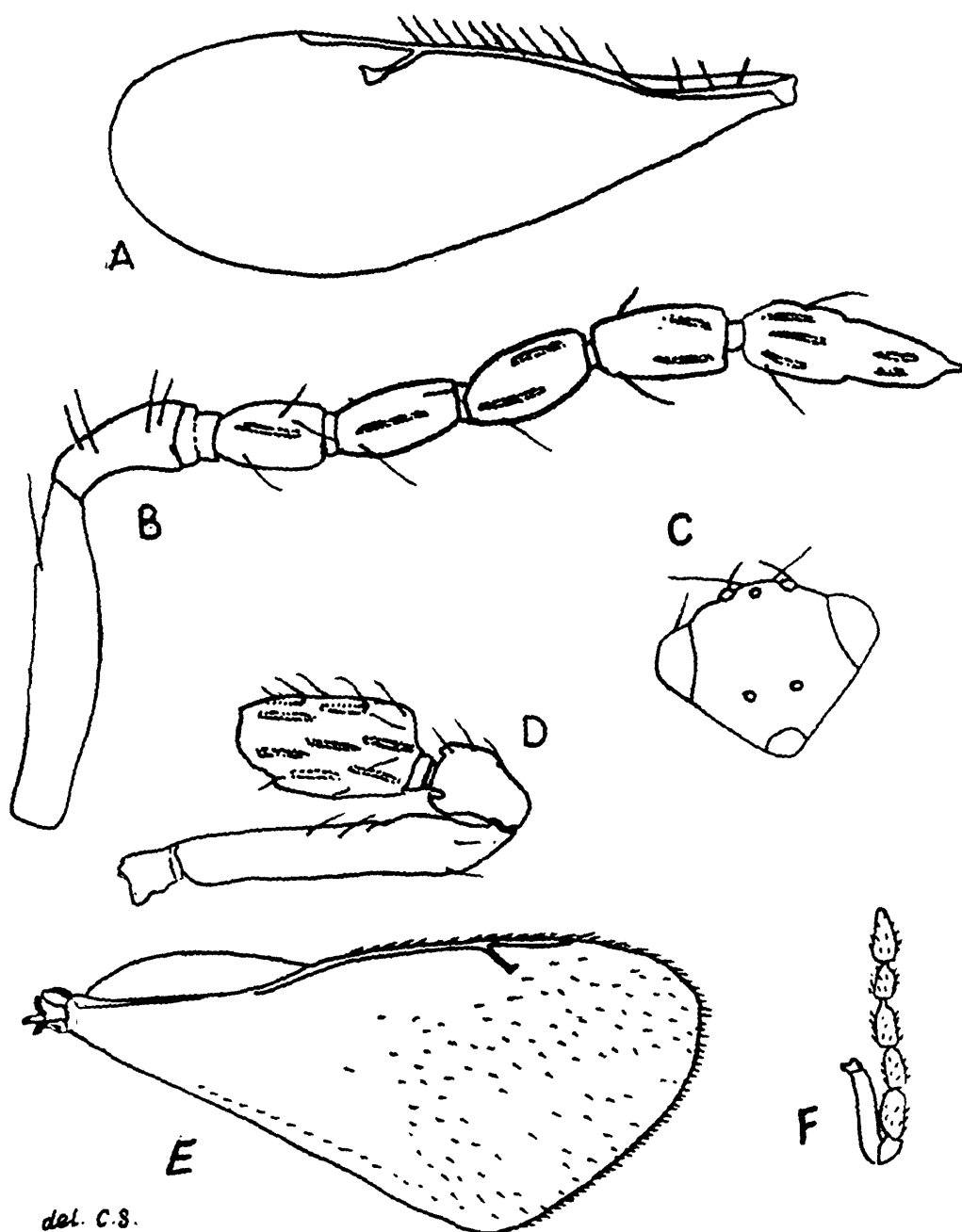


FIG. 305. A-C. *Euplectrus spodopterae* Bhatnagar, female : A. Fore wing; B. Antenna; C. Head in front view; D-F. *Euplectromorpha natadae* Kurian, male : D. Basal segment of antenna; E. Fore wing; F. Antenna.

with 4-5 long setae distributed along the margin, equal to *m*, vein *m* with 10 long bristles; *st* slender, shorter than *pm* hind tibial spurs unequal, shorter equal to and the longer spur longer than the metatarsus.

Abdomen as long as broad; ovipositor concealed.

Type locality : Pallam (Travancore)

Distribution : South India

Hosts : Parasitic on *Spodoptera mauritia* Boisd.

This species due to the pedicel longer than the first segment of the funicle differs from all Indian species of *Euplectrus*.

***Euplectrus utetheisae* Mani & Kurian**

1953 *Euplectrus utetheisae*, Mani & Kurian, *Indian J. Ent.*, 15 (1) : 17, 20.

Female : Length 1.80 mm. Body black; head black except for a dark reddish-brown patch below toruli.

Head viewed above about 2 times as wide as long, wider than pronotum; vertex smooth, shiny, narrow, emarginate behind; occiput excavate, striate; ocellular space slightly less than interocellar space, but somewhat more than front ocellar space; head from front triangular; antennae inserted on level of lower orbital borders; frons and face smooth, shiny, excavate, with a conspicuous interscrobal carina; eyes bare; inner orbital border parallel; clypeus convex; genal space subequal to eye; temples narrow; antennae with 9 segments : 1.1.2.4.1; scape about 4.50 times as long as thick and thickest in the middle, reaching front ocellus, about 2.75 times pedicel; pedicel subequal to first funicular segment, with bristles apically and basally; first annellus transverse, second annellus about 2 times the first; funicular segments becoming gradually longer, the fourth segment somewhat shorter than the third; club equal to about 1.50 preceding segment, with a short nipple-like process apically, bearing a pair of fine stiff setae.

Pronotum abruptly declivous in front; transverse and finely transversely striate, with an obscure carina bearing 6 long bristles along the posterior margin; sparsely and finely pubescent; mesonotum rugulose in the middle, almost smooth and shiny except for shallow and sparse punctae laterally; parapsidal impression deep; scutellum convex, faintly longitudinally striate; axillae triangular, contiguous; propodeum smooth, with a distinct median longitudinal carina; fore wing about 2.50 times as long as wide; vein *sm* interrupted distally, distinctly shorter than vein *m* and with 4-5 long setae; vein *m* with 15-20 long setae; vein *st* about 0.30 of vein *m* and 0.60 of *pm*; hind tibial spurs unequal, shorter spur a little more than 0.50 of metatarsus, longer spur reaching to about 0.50 of the second tarsal segment.

Abdomen including the petiole about 1.50 times as long as broad; petiole slightly longer than thick; first 3 tergites distinct; first tergite largest and occupies nearly 0.60 of the dorsum; ovipositor well exerted.

Male : Length 1.40 mm. Body black; head black except for the dark reddish-brown area below toruli; except for the brown scapel; antennae yellowish-brown.

Head from above about 3 times as wide as long and about 1.50 times wider than prothorax but nearly as wide as mesothorax, narrow, smooth, shiny and emarginate; interocellar space about 1.25 times ocellocular space; ocellocular space about 1.33 times the front ocellar space; eyes large, bare; head from front triangular antennae inserted below level of lower orbital borders; frons and face smooth, shiny, slightly excavate; frons with a median longitudinal carina between scrobes; inner orbital borders parallel; clypeus convex; genal space nearly equal to eye; temples narrow; antennal segments 8 : 1.1.1.4.1; scape about 2.60 times as long as thick and about 2.75 times pedicel; annellus transverse; first funicular segment equal to scape; other funicular segments becoming gradually longer; club somewhat less than 1.50 times the preceding segment and with a short nipple-like process terminally; pronotum as in female; mesonotum with a fine leathery sculpture in the middle, but smooth and with some obscure punctae at the sides; parapsidal furrows complete; mesopleura smooth, shiny; scutellum distinctly convex, faintly longitudinally striate; axillae nearly contiguous; propodeum and wings as in female; hind tibial spurs unequal; shorter spur a little more than 0.50 of metatarsus and the longer spur reaching to almost 0.50 of the second tarsal segment; abdomen including petiole about 1.50 times as long as wide; truncate apically, with only 3 tergites distinct; the first tergite largest.

Type locality : Bangalore

Host : *Utetheisa pulchella* larvae feeding on leaves of *Crotalaria juncea*

This species is separated from *Euplectrus turneri* Ferrière by the obscure pronotal carinula; petiole being distinctly thicker than long; front ocellar space being only about 0.50 of the ocellocular space. The species is also separated from *Euplectrus spodopterae* Bhatnagar by the pedicel being equal to the first funicular segment. It differs from *Euplectrus gopimohani* Mani in the differently sculptured scutellum.

***Euplectrus nyctemerae* Crawford**

1912 *Euplectrus nyctemerae*, Crawford, *Proc. US nat. Mus.*, 42 : 9.

1935 *Euplectrus nyctemerae*, Mani, *Rec. Indian Mus.*, 37 : 257.

- 1938 *Euplectrus nyctemerae*, Mani, *Cat. Indian Ins.*, 23 : 113.
 1940 *Euplectrus nyctemerae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 24.
 1941 *Euplectrus nyctemerae*, Ferrière, *Bull. ent. Res.*, 32 : 46.

Female : Length 1.75 mm. Body black; scape, pedicel and legs testaceous; rest of antenna light brown.

Pedicel subequal to first funicular segment; first 2 funicular segments subequal; third and fourth segments almost equal to second; mesonotum reticulately rugose; scutellum indistinctly reticulate in front; hind metatarsus 2 times the second tarsal segment; hind tibial spur not reaching the tip of second tarsal segment; abdomen with a large brown spot near base.

Type locality : Mysore

Host : *Nyctemera lactinia*

***Euplectrus gopimohani* Mani**

- 1941 *Euplectrus gopimohani*, Mani, *Indian J. Ent.*, 3 (1) : 33.

Female : Length 1.75 mm. Head mostly black, below toruli yellowish-brown; scape, pedicel and annellus honey-yellow, rest dark brown; thorax black; pretegular seta black; others white; venation white; legs including coxae honey-brown, only hind coxae of a deeper tone, terminal tarsal segments slightly darker; abdomen honey-brown ventrally and pale yellow dorsally with brown lateral patches and a faint transverse band before apex.

Head somewhat wider than thorax; gena subequal to eye, with a few scattered punctae; vertex smooth; interocellar space subequal to ocellocular space; antennae inserted below lower orbital borders; pedicel equal to the first funicular segment.

Mesoscutum coarsely reticulate medioposteriorly, finely and lineately shagreened latero-anteriorly, without a median line or furrow; scutum finely shagreened; scutellum finely reticulo-lineate in front and polished behind; propodeum with the usual carina; hind tibial spur long, not quite reaching the apex of the second tarsal segment.

Petiole about 0.50 of hind coxae.

Male : Head black, below toruli reddish; thorax black; mesoscutum coarsely reticulo-lineate, reticulations look like prominent longitudinal carinae at extreme apex; scutellum as in female; antennae dark brown, except the reddish-brown scape, pedicel and annellus; legs reddish-brown, hind coxae deeply so; abdomen black at lateral margins, darkened apically and for the rest dark brown; otherwise as in female.

Type locality : Bangla Desh : Tejgaon, Dacca

Host : Parasitic on indigo caterpillar *Laphygma exigua*

This species approaches *E. nyctemerae* Crawford and *E. parvulus* Ferrière very closely but differs in the sculpture of scutellum, absence of basal abdominal spot and in antennal colouration.

Cotterellia Waterston

1925 *Cotterellia*, Waterston, *Bull. ent. Res.*, 15 : 388.

1974 *Cotterellia*, Kerrich, *Bull. ent. Res.*, 63 : 629-639.

1976 *Cotterellia*, Boucek, *Bull. ent. Res.*, 65 : 675.

Female/Male : Head large, transverse, just wider than thorax; occiput carinate; eyes large, densely pubescent; extending from the occipital margin nearly to the mouth; malar space very short; orbits divergent above, subparallel and straight on upper and gently concave on lower frons; face inflexed at about 0.33 from the front ocellus to the clypeal edge, the inflexion forming a distinct ridge across the middle 0.66 of frons; labrum simple, transverse, with numerous, long fringing bristles; mandibles similar, apically bidentate; maxillary and labial palpi each with one segment; antenna with 8 (10) segments, 1.1.3.3.2; apical segment awl-like.

Pronotum transversely ridged; parapsidal furrows deeply percurrent, each expanding into a triangular hollow in the parapside before the suture; between these lateral hollows is a depression of the scutum reaching forward to about 0.50 from the scure; scutellum large, subequal to scutum, with a strong ridge on each side before margin; posterior margin crenulate, prepectus depression at their median fusion; propodeum with a strong median keel; from above 2 blunt postero-lateral angles on each side of median keel a pentagonal area enclosed by keel; hind edge of metathorax, lateral keel (or fold) and hind edge, strongly raised; spiracles small, oval, remote from lateral keels and placed forward almost on edge.

Abdomen shortly petiolate wider than long in female or just longer than wide in male, oval in female, elongate oval in male, with characteristic punctation.

Type-species : *Cotterellia podagrica* Waterston

Cotterellia lankensis Kerrich

1974 *Cotterellia lankensis*, Kerrich, *Bull. ent. Res.*, 63 : 634-635.

1976 *Cotterellia lankensis*, Boucek, *Bull. ent. Res.*, 65 : 678.

Head dull green, with extensive bluish reflection, interscrobal prominence, lower face and malar region brassy-green; thorax, sternum and propodeum green, with brassy to bronzy reflections and red-violet; pleura much duller; abdomen blue-green with red-violet reflections, and bronzy to blackish-bronzy; scape in female white in more than basal 0.50; rest with pedicel and flagellum dull metallic

coloured; male scape green, only narrowly pale at base; coxae, trochanters and femora green or with some red-violet; otherwise mainly white; fore tibiae dull metallic in greater part and middle tibiae dusky near base, but hind tibiae wholly white and apical tarsal segments hardly darkened except at extreme tip.

Head from above, strongly narrowed behind eyes, broadly and shallowly emarginate behind; frontovertex across front ocellus nearly 2 times the dorsal width of eye, ocellar triangle obtuse, with a sharp, narrow median furrow from front ocellus dull, finely reticulate, but behind and a little further along orbits shining, with reticulation very much finer; sides of upper face finely, transversely reticulate, interscrobal prominence, lower face, clypeus and genae shining; antennae as in *C. podagrica* Waterston.

Pronotal collar sides very strongly broadened, then rounded and slightly narrowed to hind margin; with row of coarse setigerous punctae and some smaller ones interspersed before them; behind elevated fore margin, forming a reticulation and rather broad shining hinder part with some much smaller punctae; scutum moderately transversely reticulate, with a pair of strong bristles on mid lobe, rather more finely so on parapsides, with very irregular median row of punctae, extending almost whole length of scutum, hinder ones sometimes coalesced into short furrow; scutellum weakly convex, with a pair of sublateral rows of moderate punctae, bend outward and join row of coarse punctae just before smooth hind margin, which is moderately rounded; scutellum moderately reticulate, sometimes semidiagonally striate anteriorly; its apex as in *C. podagrica* Waterston, well raised above metascutellum; mesopleura almost smooth, mesonotum finely reticulate punctate; metascutellum narrow, not quite smooth, its apex slightly raised above propodeum; propodeum with strong and stout median keel contained in furrow with punctate; otherwise shining and almost smooth above, spiracles short to medium oval, more than their longer diameter from margin of metanotum; fore wing strongly infusate to apex of vein *st*, then weakly, with small pre and post basal specula; costal cell rather strongly hairy, hairs not all in a row; vein *m* more than 2 times *st*; hind femur about 2.50 times as long as thick, not toothed beneath.

Petiole with subapical transverse carina, its length much less than its apical width; first tergite about 0.33 of abdomen; sinuate apically, following tergites very broadly emarginate at apex, first 2 large tergites almost smooth in greater part above, though with setigerous punctae laterally, third and following having rather broad apical margins almost smooth, but at base rather coarsely piliferous-punctate, punctae mostly separated by about their own diameter, except on the sixth, which is much less densely punctate than in *C. podagrica*.

Type locality : Sri Lanka

Host : Larva or pupa of *Promecotheca cumingii* Baly

Tichospilus Ferrière

1930 *Trichospilus*, Ferrière, *Bull. ent. Res.*, 21 : 358.

1938 *Trichospilus*, Mani, *Cat. Indian Ins.*, 23 : 111.

Frontovertex convex, mainly smooth sparsely hairy, more conspicuously hairy in males; occipital margin not acute; scrobes distinct, ending far before ocelli; bottom smooth, horseshoe like, transversely striolate; eyes oval, hairy; clypeus in female moderately produced, incised in the middle; in male indistinct; toruli wide apart, especially in males, slightly below lower orbital border; antennae very short; scape slender in female, moderately expanded in male; pedicel elongate with 2 funicular and 3 club segments.

Thorax with long bristles, 4 in a row on pronotum (submedian and lateral bristles), 2 pairs on mesoscutum, 2 pairs on scutellum; also veins *sm* and *m* with long bristles; pronotum well developed; axillae smooth, propodeum strongly declivous; propodeal median carina from the anterior margin with a groove on either side to a small nucha; submedian area smooth; indicated posteriorly, usually defecting from a curved carina mesad of spiracle, towards posterolateral corner of propodeum, supracoxal flange conspicuous; callus with several bristles; tibial spurs short, hind tibial spur single; tarsi short; veins *m* long; *pm* and *st* short.

Abdomen short, subsessile, dorsally flat; tergites subequal; epipygium vertical or nearly so; ovipositor always confined to ventral side.

Type-species : *Trichospilus pupivora* Ferrière

KEY TO SPECIES

1. Fore wing with 2 tufts of erect black hairs, one behind base of stigma and another behind base of vein *m*; pronotal collar margined..... 2
 Fore wing without tufts, with only infumate spots with loose dark hairs; pronotal collar not margined..... 4
2. Distal hair tuft with dense pubescence reaching in the middle to the base of proximal hair tuft; scutellar smooth area not or hardly reaching front margin..... *T. vorax* Ferrière
 Fore wing largely bare between the distal tuft and vein *st* and between the 2 tufts; scutellar smooth area broadly reaching front margin..... 3
3. Mesoscutum shiny, weakly sculptured in front; ocelloccipital space subequal to ocellar diameter..... *T. pupivora* Ferrière
 Mesoscutum dull, finely deeply reticulate; ocelloccipital space 1.50 times occipital diameter..... *T. ferrierei* Boucek

4. Abdomen with anterolateral spots, infuscate at sides; infuscation of wing reaching front margin beyond vein *st*; eyes hairy..... *T. boops* Boucek
- Abdomen with wide middle infuscation, sides mostly testaceous; wing infuscation at vein *st* not reaching front margin; eyes less hairy above only on alternate facette rows..... *T. diatraeae* Cherian & Margabandhu

Trichospilus pupivora Ferrière

- 1930 *Trichospilus pupivora*, Ferrière, *Bull. ent. Res.*, 21 : 358.
 1934 *Trichospilus pupivora*, Ananthanarayanan, *Bull. ent. Res.*, 25 : 55-61.
 1938 *Trichospilus pupivora*, Mani, *Cat. Indian Ins.*, 23 : 111.
 1940 *Trichospilus pupivora*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 23.
 1975 *Trichospilus pupivora*, Boucek; *Bull. ent. Res.*, 65 : 673.

Male/Female : Body orange-yellow, frons sometimes with a faint violaceous shine; cheeks with a brown stripe extending from eye to mouth; antennae yellow, pedicel and funicle more or less brownish; legs yellow; abdomen brownish-black, petiole yellow, middle of the second tergite more or less yellow; in male body entirely yellow, only the end of abdomen brown; wings hyaline, more or less smoky-brown in the middle.

Female : Length 1.00-1.20 mm. Head quite smooth and shining; ocelli close together, lateral ocelli nearer to the anterior ocellus than to the eye margins; gena 0.50 of eye; antennae short, scape slender, not reaching front ocellus; pedicel elongate, about 3 times as long as thick; 2 annelli short and transverse; the 2 funicular segments subquadrate, the first a little longer than the second; club elongate, pointed at apex, longer than funicle.

Thorax smooth, finely reticulate on mesonotum, with a few scattered long setae; pronotum elongated into a neck with parapsidal furrows strong; scutellum truncated at apex, with a straight transverse furrow before the postscutellum, smooth in the middle, longitudinally densely striate on the sides; postscutellum broad in the middle, rounded behind; propodeum elongate, with a median carina and small lateral spiracular sulci, spiracles small and rounded; wings large, hairs forming tufts, much thicker than the other discal ciliation, which begins only below the second tuft; there are about 8 long hairs on the vein *m*, beyond which the marginal cilia small and weak; vein *sm* not broken; vein *st* small with a strong club; *pm* almost absent; hind coxae large, strongly reticulated on the outer side; hind femora only slightly broadened; 4 tarsal segments elongate; middle tibial spur longer than metatarsus.

Abdomen rounded, broader but much shorter than thorax, smooth, very finely reticulated from the end of second tergite; petiole quadrate or a little longer than broad, shorter than hind coxae;

second tergite the largest, reaching middle of abdomen, following tergites transverse; ovipositor not visible from the above.

Male : Length 0.90-1.00 mm. Smaller than the female; antennae shorter, scape and petiole broader, first annellus very small, second not longer but much broader, almost as thick as the funicular segments; second funicular segment quadrate; club not much longer than the pedicel; legs shorter and somewhat thicker, especially the femora, tarsi very short; third segment as long as broad.

Type locality : Coimbatore

Distribution : South India; Ceylon; Malay Peninsula, Java, New Britain, New Guinea

Hosts : *Nephantis serinopa*, puparia of a Tachinid on *Nacoleia annubilata*, *Thosea cervina*, *Spodoptera mauritia*, *Tirathaba rufivena*

Trichospilus diatraeae Cherian & Margabandhu

1942 *Trichospilus diatraeae*, Cherian & Margabandhu, *Indian J. Ent.*, 4 : 101.

1976 *Trichospilus diatraeae*, Boucek, *Bull. ent. Res.*, 65 : 674.

Female : Length 1.86 mm. Body yellowish-brown, eyes dark red, with 2 brown lines extending to mouth; scape and pedicel yellowish-brown; legs generally yellowish-brown; fore wing clouded in apical 0.50; abdomen yellowish to dark brown.

Eye 0.66 of head; antennae with 9 segments : 1.1.2.2.3; scape 5.50 times as long as thick; pedicel 2.30 times as long as thick; second funicular segment slightly shorter than thick; club 1.50 times funicle; pronotum transversely reticulate; mesonotum densely reticulate; scutellum finely densely longitudinally striated; propodeum with a median carinae, fore wing 2.60 times as long as wide, with 2 tufts of setae, one behind vein *sm* and other behind base of *m*, vein *m* with 10 long bristles, *sm* with 5 long bristles, *pm* distinct; abdomen a little less than 0.50 of rest of body; petiole short.

Distribution : India, Ceylon, Burma, China, Mauritius, Reunion

Hosts : *Chilo venosatus*, *Hypsipyla robusta*, *Sesamia inferens*, *Sylepta derogata*, *Hapalia machaeralis*

Separated from *T pupivora* by the sculpture, tufts of spines and differences of body size.

Euplectromorpha Girault

1913 *Euplectromorpha*, Girault, *Mem. Queensland Mus.*, 2 : 276.

1941 *Euplectromorpha*, Ferrière, *Bull. ent. Res.*, 32 : 23.

1979 *Euplectromorpha*, Krombein *et al.*, *Hymen. N. America*, 1 : 978.

Like *Euplectrus* but abdomen less depressed, ovipositor longer, vein *sm* not interrupted, club solid; antennae with 9 segments, 2 annelli; first very short; scutellum with a lateral groove as in many Elachertine genera, without cross furrow, but in type species the caudal margin is identified; wings as in *Euplectrus*; propodeum with a median carina. The species are more inclined to yellow than to black.

Type-species : *Euplectromorpha unifasciata* Girault

***Euplectromorpha natadae* Kurian**

(Fig. 305)

1954 *Euplectromorpha natadae*, Kurian, *Agra Univ. J. Res.*, 3 (1) : 122.

Male : Length 1.80 mm. Body black, with very faint metallic lustre on abdomen; head black; vertex smooth, shiny, with a few scattered silvery-white setae; ocelli prominent, dark reddish-brown to black; frons and face smooth and shiny, with a very few short, silvery-white setae, mostly arranged along the orbital border, mandibles black; antenna brown, except reddish-brown scape, lighter than the rest of antenna, covered over by a somewhat thick growth of short, silvery-white pubescence; thorax black; pronotum short, narrow, margined in front, irregularly transversely rugosely striate, with few, short, scattered, silvery-white pubescence and 2 long, silvery-white setae, one on either side; legs reddish-brown, coxae concolorous with body; abdomen black with a faint metallic-red lustre in certain angles.

Head from above transverse, slightly less than 0.33 times width; interorbital distance 0.44 times the width of head; postorbital distance obsolete; interocellar space 2 times ocellular, 1.50 times the front ocellar; in front length nearly 0.83 of width; interorbital distance 0.55 of the width of the head; eye slightly over 2 times gena and 7 times the postorbital length; clypeus slightly convex, smooth and shiny; scrobes deep, broad, up to nearly the front ocellus; antenna inserted just above level of lower orbital borders with 8 segments : 1.1.1.4.1; scape 3.75 times pedicel; annellus 0.20 of pedicel; first funicular 0.57 of scape and slightly over 2 times the pedicel; second funicular slightly over 2 times the pedicel; second funicular slightly over 0.75 times the first; third and fourth subequal to second and 0.50 of scape; club very slightly less than 0.67 of scape and 0.67 of the last 2 funicular segments combined.

Thorax length slightly over 1.33 times the width; mesonotum nearly 2 times pronotum, rugoso-reticulate, with few shallow, broad punctae, pubescence as in pronotum, but setae longer posteriorly; parapsidal furrows somewhat distinct and complete; scutellum as long as mesonotum, densely rugosely punctate, almost flat, lateral furrows distinct, and crenulated, transverse furrow distinct, broad,

somewhat arched; metanotum 0.25 times the scutellum, faintly irregularly sculptured; propodeum 0.75 of scutellum, together with metathorax equal to scutellum, oblique, very faintly sculptured, nearly smooth and shiny, with a median longitudinal carina running up to the posterior end; propodeal spiracles large, elongate oval; hind coxa 2 times trochanter; femur somewhat longer than coxa and trochanter combined; tibia very slightly longer than femur; tibial spurs very long, longer nearly 0.67 of tibia and equal to metatarsus and second tarsal segment combined; smaller very slightly over 1.50 times the latter and slightly less than the metatarsus; fore wing nearly 2.25 times as long as wide; vein *sm* 1.42 times *m*; *pm* nearly 0.67 of *m*; *st* very slightly more than 0.33 times *pm*.

Abdomen 0.67 of thorax, depressed, apically nearly truncate; petiole short, broader than long or subquadrate; 5 tergites visible; first largest; tergites smooth and shiny, except for few scattered setae mostly arranged on the sides and apex.

Type locality : Tatipaka

Distribution : India

Host : *Natada nararia*

This species runs close to *Euplectromorpha malayensis* Ferrière, from which it differs in having the lateral furrows of scutellum crenulated.

SUBFAMILY OPHELININAE

1904 *Ophelinini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 351, 352.

1904 *Ophelinina*, Schmiedeknecht, *Gen. Ins.*, 97 : 403.

Hind tibial spur short.

Genera included *Elachertomorpha* Ashmead, *Sympiesiomorpha* Ashmead, *Miotropis* Thomson, *Ophelinus* Haliday, etc.

Miotropis Thomson

1878 *Miotropis*, Thomson, *Hymen. Scan.*, 5 : 187, 197.

1904 *Miotropis*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 352, 353.

1904 *Stenomiesioderus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 355, 389.

1906 *Miotropis*, Schultz, *Spol. Hym.*, 143.

1909 *Miotropis*, Schmiedeknecht, *Gen. Ins.*, 97 : 403.

1909 *Stenomiesioderus*, Schmiedeknecht, *Gen. Ins.*, 97 : 403.

1916 *Stenomiesioidea*, Girault, *Proc. US nat. Mus.*, 51 : 43.

1979 *Miotropis*, Krombein *et al.*, *Hymen. N. America*, 1 : 979.

Antennae with 9 segments, including 2 annelli, pedicel long; scutellum without grooved lines; pronotum campanulate; abdomen petiolate.

Type-species : *Miotropis sulcicristata* Thomson

Miotropis ashmeadi (Subba Rao & Sharma)

1966 *Stenomosiodeus ashmeadi*, Subba Rao & Sharma, *Indian J. Ent.*, 28 : 299.

Female : Length 1.20-1.35 mm. Body yellow, antennae black, eyes grey, some brown patches on scutellum and abdominal tergites; legs pale yellow; ovipositor brownish-black.

Head above distinctly wider than mesoscutum; occiput smooth, shiny; eyes very finely pubescent, large; ocellar triangle equilateral; interocellar space almost equal to ocellocular space; face from front triangular; mandibles deeply sclerotized, hexadentate, 2 outer teeth well developed and long and 4 inner ones short and saw-like; genae well developed; antennae inserted in the middle of face with 11 segments : 1.1.2.4.3; scape reaching beyond vertex; pedicel short; first funicular segment longer than pedicel; other funicular segments subequal; club short, slightly thicker than funicle, sutures indistinct; scape : pedicel : funicle : club ratio 20 : 6 : 50 : 12.

Thorax convex, slender, long; pronotum long, clearly visible from above, laterally rounded, parapsidal furrows well developed; scutellum flat, carinate distally, mesoscutum with 6 and scutellum with 4 long bristles; propodeum strongly carinate, fore wings hyaline, narrow, long; veins *sm* : *m* : *pm* : *st* ratio 30 : 45 : 23 : 10; hind tibial spur very short.

Abdomen long, ovoidal, petiole very short, slightly longer than head and thorax combined; ovipositor slightly exerted.

Male : Generally like female, but for the sexual characters and smaller size (1.00-1.22 mm).

Type locality : Anantapur

Distribution : Mysore, Coimbatore, Mahabubnagar, Anantapur

Host : *Stomopteryx nerteria*

FAMILY ENTEDONIDAE

1897 *Entedoninae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 236.

1904 *Entedoninae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 337.

1909 *Entedonini*, Schmiedeknecht, *Gen. Ins.*, 97 : 421.

1912 *Entedoninae*, Crawford, *Proc. US nat. Mus.*, 43 : 173.

1938 *Entedoninae*, Mani, *Cat. Indian Ins.*, 23 : 115.

Vein *sm* short, interrupted before meeting front margin of wing, vein *m* very long; *st* mostly short; abdomen as a rule distinctly petiolate; axillae triangularly produced into scapula in advance of tegulae; antennae with few segments; scutellum usually with paired bristles.

KEY TO SUBFAMILIES

1. Tarsi in female with 5 segments, rarely heteromorous; in male with 4 segments; flagellum with 6 segments. *Tetracampinae*
- Tarsi in both sexes with 4 segments; antennae with 10 or fewer segments; flagellum at the most with 5 segments..... 2
2. Parapsidal furrows incomplete, at the most indicated only in front..... *Pediobiinae*
- Parapsidal furrows complete, distinct..... 3
3. Abdomen sessile or subsessile, not distinctly petiolate..... *Omphalina*
- Abdomen distinctly petiolate..... *Entedoninae*

SUBFAMILY TETRACAMPINAE

- 1856 *Tetracampoidae*, Förster, *Hym. Stud.*, 2 : 79.
 1878 *Tetracampoidae*, Thomson, *Hym. Scand.*, 5 : 181.
 1904 *Tetracampini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 337.
 1909 *Tetracampina*, Schmiedeknecht, *Gen. Ins.*, 97 : 421.
 1932 *Tetracampoidae*, Kryger, *Notul. Ent.*, 11 : 150-152.
 1938 *Tetracampariae*, Mani, *Cat. Indian Ins.*, 23 : 115.

Body slender, mostly green; head in front narrow; antennae with 11 or more segments, funicle with 6, club with 3 segments; thorax elongate; pronotum not transverse, collar not separate; parapsidal furrows distinct, complete; scutellum without deep longitudinal lines; wings narrow; vein *m* long, *st* short; *pm* long; legs slender, coxae long, hind tibial spur single, tarsi in female with 5 segments, rarely heteromorous; in male mostly with 4 segments; abdomen in female usually longer than head and thorax combined.

KEY TO GENERA

1. Female tarsi with 5 segments, rarely heteromorous..... 2
- Male tarsi mostly with 4 segments..... 5
2. Antennae with 6 segments, no annellus, solid club..... *Cassidocida* Crawford
- Antennae with 11 segments, without annellus; pedicel equal to the first 2 funicular segments combined; propodeum without median carina..... *Forsterella* Dalla Torre
- Antennae with 12 or 13 segments, with one or 2 annelli..... 3
3. Antennae with 13 segments, with 2 annelli; parapsidal furrows faint; mesopleura divided..... *Platynocheilus* Westwood
- Antennae with 12 segments; parapsidal furrows distinct..... 4

- | | |
|---|--------------------------------|
| 4. Scape stout; flagellum setaceous; knob of <i>st</i> very minute..... | <i>Tetracampe</i> Förster |
| Scape slender; flagellum distinctly swollen apically; <i>st</i> with large rounded knob..... | <i>Plutothrix</i> Förster |
| 5. Vein <i>m</i> exceptionally stout, black; antennae with 13 segments; tarsi with 5 segments. | <i>Platynocheilus</i> Westwood |
| Vein <i>m</i> normal; antennae with 11 or 12 segments; tarsi with 4 segments..... | 6 |
| 6. Antennae with 11 segments; scape exceedingly expanded; pedicel long; funicle normal; vein <i>st</i> short..... | <i>Forsterella</i> Dalla Torre |
| Antennae with 12 segments; scape not exceptionally expanded..... | 7 |
| 7. Funicle without verticillate hairs or only weakly so; vein <i>st</i> with minute knob..... | <i>Tetracampe</i> Förster |
| Funicle with strongly verticillate hairs; <i>st</i> with rather large knob..... | <i>Plutothrix</i> Förster |

Cassidocida Crawford

1913 *Cassidocida*, Crawford, *Proc. US nat. Mus.*, 45 (1979) : 253.

1938 *Cassidocida*, Mani, *Cat. Indian Ins.*, 23 : 115.

Antennae similar in both sexes; but scape not swollen in male; funicle with 6 segments, without annellus, club solid; eyes hairy; hind tibial spurs double; vein *m* slender, about 4 times *pm*; *st* subsessile; parapsidal furrows distinct; propodeum narrow, without carina; spiracles circular; ovipositor equal to abdomen.

Type-species : *Cassidocida aspidomorphae* Crawford.

Cassidocida aspidomorphae Crawford

1913 *Cassidocida aspidomorphae*, Crawford, *Proc. US nat. Mus.*, 45 (1979) : 253.

1938 *Cassidocida aspidomorphae*, Mani, *Cat. Indian Ins.*, 23 : 116.

1940 *Cassidocida aspidomorphae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 24.

Female : Length 1.75 mm. Body bluish-green with purple reflections; head and thorax finely lineolate and with setigerous punctae; scape and pedicel yellow; rest of antennae brown; first funicular segment subequal to pedicel; remaining funicular segments slightly shorter, subequal, and a little longer than thick; scutellum apically and propodeum smooth; prepectus large, smooth; pleura smooth; wings hyaline; legs yellow; abdomen smooth shiny; ovipositor shorter than 0.50 of body.

Male Length 1.50 mm. Antennae paler than in female; sculpture as in female.

Type locality : Bangalore

Host : *Aspidomorpha miliaris*

Tetracampe Förster

- 1841 *Tetracampe*, Förster, *Beitr. Mon. Pteromal.*, 33.
 1847 *Epiclerus*, Haliday, *Trans. ent. Soc.*, 3 : 297.
 1904 *Tetracampe*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 338.
 1909 *Tetracampe*, Schmiedeknecht, *Gen. Ins.*, 97 : 423.

Body metallic-green; head somewhat wider than thorax; vertex broad; antennae inserted somewhat below middle of face, with 12 segments; stout, in male somewhat expanded; funicle with 6 segments; first funicular segment cylindrical, sixth segment transverse; club with 3 segments; thorax long; pronotum weakly conical; parapsidal furrows deep; scutellum polished; propodeum without carina; mesopleura polished, without suture; wings long, narrow; veins *m* nearly 3 times *st* which latter is very short; legs stout; tarsi in female with 5 segments, in male with 4 segments; abdomen sub-petiolate, in female conically cylindrical, in male ovate; second tergite bulging; third tergite longest.

Type-species : *Tetracampe flavipes* Förster.

Tetracampe indica Mani

(Fig. 306)

- 1971 *Tetracampe indica*, Mani, *J. nat. Hist.*, 5 : 593.

Female : Length 0.90 mm. Body shiny black; vertex, occiput, gena and frons black, closely reticulate; antennae dark brown, inserted a little below the middle of face, with 12 segments, including one annellus; thorax black, shiny, collar distinct; wings hyaline, veins brown; coxae black, except tibiae and tarsi rest of leg dark brown; tibiae and tarsi pale white; abdomen shiny black.

Head distinctly wider than thorax; viewed in front slightly wider than long, width to length 23 : 15, transverse oval; scrobe smooth, moderately excavate; vertex emarginate, broadly rounded, with a series of short, stiff cruciate bristles; ocellocular space a little more than interocellar space; eyes finely pubescent; funicular segments conspicuously laterally expanded, the apical segments being transverse; scape stout, expanded moderately; pedicel about 0.50 of scape; both the scape and pedicel darker than rest of antennae; first funicular segment about 0.33 of pedicel and 1.25 times as thick as long; the remaining funicular segments nearly equal to the first segment, but gradually becoming thicker towards apically; sixth funicular segment 2 times as thick as long, club triarticulate, nearly equal to the preceding 3.50 funicular segments combined, the first club segment longest and slightly longer than the last funicular segment, terminal club segment shortest, nipple short, slender and a little less than 0.50 of the terminal club segment.

Pronotum conically narrowed in front; mesonotum and scutellum somewhat flattened, closely umbilicately punctate;

parapsidal furrows complete, deep; metanotum concolorous with sculpture like scutellum; propodeum with median carina; fore wing slightly more than 2 times as long as wide; veins *m* and *sm* subequal; vein *pm* more than 5 times *st* and about 0.50 of *m*; stigma rounded with 4 cells in a line; vein *sm* with 3 long bristles apically, vein *m* with numerous long stiff bristles in about 3 rows of the whole of its length; hind metatarsus about 0.80 of tarsal segments 2-4 combined, each of which latter are of equal length; fifth tarsal segment slightly longer than the fourth; hind tibial spur about equal to metatarsus.

Abdomen shortly oval, smooth; petiole about 0.25 of hind coxae; first tergite over 0.50 of the dorsum of abdomen.

Type locality : Agra

Host : Agromyzid larva

This species differs from other known species, particularly *T panyas* (Walker) in the different proportions of the antennal segments, in the colour and proportions of tarsal segments and in the presence of median propodeal carina.

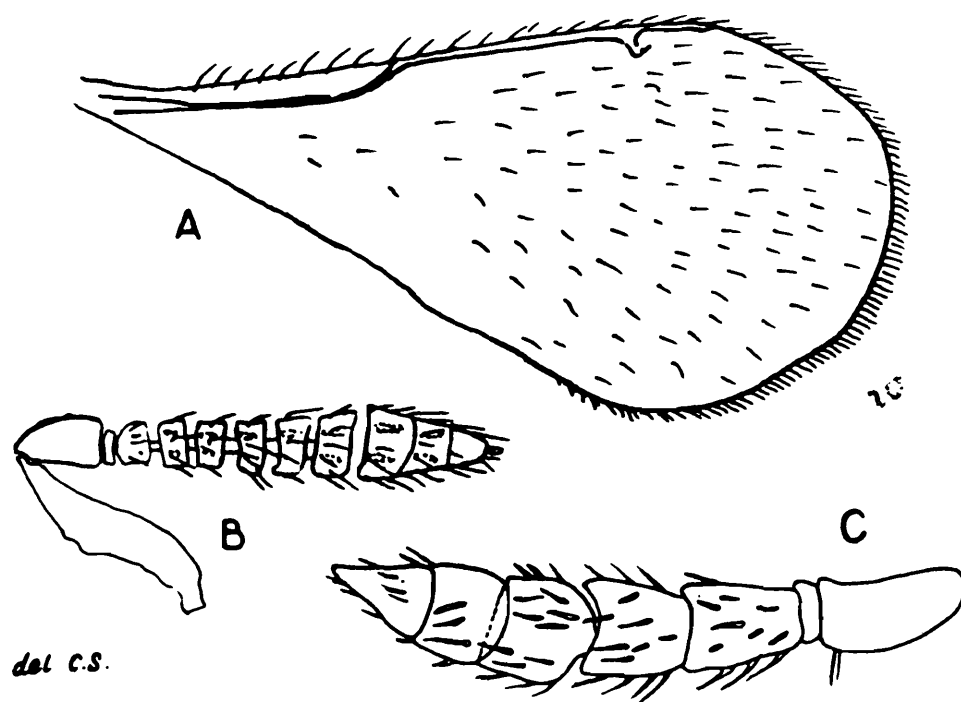


Fig. 306 A-B. *Tertracampe indica* Mani, female : A. Fore wing; B. Antenna; C. *Pediobopsis locustivora* Rohwer, female; Antenna.

SUBFAMILY PEDIABIINAE

- 1904 *Pediobiini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 343.
 1909 *Pediobiina*, Schmiedeknecht, *Gen. Ins.*, 97 : 445.
 1938 *Pediobiariae*, Mani, *Cat. Indian Ins.* 23 : 117.

Mostly minute chalcids, without parapsidal furrows, which may occasionally be indicated only by traces; species mostly hyperparasities.

KEY TO GENERA

- | | |
|---|-------------------------------|
| 1. Females..... | 2 |
| Males..... | 8 |
| 2. Abdomen distinctly petiolate; head convex,
wider than thorax; abdomen conically
pointed..... | <i>Paracrias</i> Ashmead |
| Abdomen sessile or subsessile..... | 3 |
| 3. Ovipositor exerted, as long as abdomen; fore
wings with long fringe..... | <i>Uroderostenus</i> Ashmead |
| Ovipositor not exerted..... | 4 |
| 4. Wings with long marginal fringe; vein <i>m</i>
very long..... | 5 |
| Wings with short marginal fringe..... | 6 |
| 5. Vein <i>st</i> long; antennae with 8 or 9 segments;
funicle with 3 segments, longer than thick | <i>Chrysonotomyia</i> Ashmead |
| Vein <i>st</i> short; antennae with 9 segments;
funicle filiform, with scattered long hairs;
abdomen long, conical ovate..... | <i>Ametallon</i> Ashmead |
| 6. Head large, much wider than thorax; antennae
with 8 or 9 segments; fore wings with one
or 2 dark bands..... | <i>Acrias</i> Walker |
| Head not much wider than thorax, vein <i>st</i>
short..... | 7 |
| 7. Thorax and scutellum smooth, not punctate;
antennae with 8 segments; funicular
segments moniliform..... | <i>Pediobius</i> Walker |
| Thorax and scutellum punctate; antennae with
9 segments; funicle not moniliform | <i>Nesomyia</i> Ashmead |
| 8. Abdomen petiolate; antennae with 9
segments | <i>Paracrias</i> Ashmead |
| Abdomen sessile or subsessile | 9 |
| 9. Wings with long marginal fringe; vein <i>m</i>
very long | 10 |
| Wings with short marginal fringe | 12 |
| 10. Vein <i>st</i> long; body metallic | <i>Chrysonotomyia</i> Ashmead |
| Vein <i>st</i> short. | 11 |
| 11. Body metallic | <i>Uroderosternus</i> Ashmead |
| Body not metallic | <i>Ametallon</i> Ashmead |
| 12. Head large, much wider than thorax; antennae
with 8 or 9 segments, with one annellus | <i>Acrias</i> Walker |
| Head not wider than thorax; antennae with
7 or 8 segments, with one annellus | <i>Pediobius</i> Walker |

Pediobius Walker

1846 *Pediobius*, Walker, *Ann. Mag. nat. Hist.*, (1) 17 : 184.

1856 *Rhopalotus*, Förster, *Hym. Stud.*, 2 : 78.

- 1856 *Pleurotropis*, Förster, *Hym. Stud.*, 2 : 72, 82.
 1861 *Pleurotropis*, Förster, *Prog. Realsch. Aachen*, 37 : 58.
 1904 *Pediobius*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 344.
 1904 *Pleurotropis*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 341, 342.
 1904 *Rhopalotus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 342, 343.
 1909 *Pleurotropis*, Schmiedeknecht, *Gen. Ins.*, 97 : 435.
 1909 *Pediobius*, Schmiedeknecht, *Gen. Ins.*, 97 : 448.
 1912 *Cluthaira*, Cameron, *Proc. Linn. Soc. New South Wales*, 37 : 211.
 1913 *Pediobius*, Girault, *Arch. Naturgesch.*, 79 A (6) : 104.
 1915 *Mestocharomyia*, Girault, *Mem. Queensland Mus.*, 3 : 188.
 1915 *Pediobius*, Waterston, *Bull. ent. Res.*, 5 : 343-346.
 1917 *Pseudacriasoides*, Girault, *Descr. Stellarum Nov.*, 9.
 1917 *Epipleurotropis*, Girault, *Descr. Hym. Chalcidoid variorum cum observ.*, 3 : 7.
 1953 *Pleurotropis*, Ferrière, *Bol. Univ. Bologna, Ist. di Ent.*, 19 : 400.
 1959 *Pediobius*, Graham, *Trans. Soc. Brit. Ent.*, 13 : 186.
 1965 *Pediobius*, Boucek, *Acta Ent. Mus. Nat. Pragae*, 36 : 7-10.
 1968 *Pediobius*, Boucek & Askew, *Index Palaearctic Eulophidae le Francois*, 88.
 1979 *Pediobius*, Krombein *et al.*, *Hymen. N. America*, 1 : 1015.

Antennae with 8 segments; funicular segments somewhat moniliform; mesonotum and scutellum smooth, not punctate; fore wings with short marginal fringe; vein *st* very short, its knob subsessile.

Type-species : *Pediobius imbreus* (Walker)

***Pediobius detrimentosus* (Gahan)**

- 1930 *Pleurotropis detrimentosus*, Gahan, *Proc. US nat. Mus.*, 77 (2831) : 9.
 1938 *Pleurotropis detrimentosus*, Mani, *Cat. Indian Ins.*, 23 : 117.

Very similar to *P. nawaii* Ashmead, but differs in frontovertex much smoother and scutellum with a broader, well defined, polished area down the middle.

Female : Length 1.60 mm. Body black with a tinge of bronze; antennal flagellum metallic-green; scape black; frontovertex slightly tinged green; propodeum and smooth portion of second tergite bright metallic-green; wings hyaline; legs greenish, all tarsi white.

Head slightly wider than thorax; ocellar triangle distinctly rugulose; vertex laterad of lateral ocelli smooth; frontovertex faintly reticulate, nearly smooth; frons on each side of scrobe and below the transverse groove finely punctate; face and cheeks smooth; occiput closely punctate; flagellum with all segments thicker than pedicel; funicle with 3 subquadrate and well separated segments, first segment a little longer than pedicel; club ovate, a little shorter than the preceding 2 segments combined, with 3 segments, apical segment terminating in a short spine.

Prothorax short, slightly narrower than mesothorax; declivous anterior aspect of pronotum sculptured, separated from the dorsal

aspect by a delicate transverse carina, dorsal portion perfectly smooth and shining; mesoscutum shining but distinctly reticulate, inclosed areas along inner margin of scapulae and on posterior 0.50 of prescutum elongate and giving appearance of delicate striations; parapsidal furrows indicated posteriorly by broad shallow depressions, obsolete anteriorly; scutellum with a smooth area medially extending from base to apex and occupying approximately 0.33 of dorsal surface, lateral portions of scutellum distinctly reticulate striate like the mesoscutum; propodeum polished, with 3 carinae medially, a delicate median one and the usual 2 diverging ones; vein *m* distinctly longer than *sm*, *st* and *pm* short, subequal; *sm* with 2 long bristles; hind tibial spur long, slender, equal to metatarsus and 0.66 of the second tarsal segment combined.

Abdomen conic-ovate, subequal to head and thorax combined; petiole stout, slightly longer than propodeum, very finely granular; opaque above; second tergite equal to the following tergites combined, smooth basally, apical 0.50 very finely but distinctly reticulate except a narrow smooth band at apex, other tergites weakly reticulated; ovipositor not exerted.

Male : Unknown

Type locality : Palur, India

Host : *Perisierola* parasitic on *Nephantis serinopa* Meyerick

***Pediobius epilachnae* (Rohwer)**

1921 *Pleurotropis epilachnae*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 126.

1938 *Pleurotropis epilachnae*, Mani, *Cat. Indian Ins.*, 23 : 117.

1940 *Pleurotropis epilachnae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 25.

Female : Length 1.50 mm. Body, antennae and legs dark metallic-green, tarsi, except the dusky apical segment, white; wings hyaline, venation yellow.

Face shiny, laterally finely transversely lineate; clypeus polished; front and vertex reticulate; first funicular segment distinctly longer than the following segments, segments 2-3 subequal; club shortly truncate apically; ocelloccipital space less than ocellar diameter.

Pronotum polished, anterior margin distinctly carinate; scutum coarsely reticulate, anterolaterally with curved raised lines; axillae finely reticulate; scutellum with rather coarse raised irregular lines which curve and unite towards apex, giving the appearance of U-shaped striae, medianly with umbilicate punctae; propodeum polished, with 2 distinct carinae, diverging posteriorly.

Abdomen polished, petiole short, granular.

Type locality : Coimbatore

Host Parasitic on pupa of *Epilachna*

Close to *Pediobius foveolatus* (= *Pleurotropis foveolatus* Crawford), which is parasitic on *Epilachna vigintioctopunctata*, but the sculpture of scutum is somewhat coarser, colour is green, and the bristle-like hairs white.

***Pediobius foveolatus* (Crawford)**

- 1912 *Pleurotropis foveolatus*, Crawford, *Proc. US nat. Mus.*, 42 (1880) : 7.
 1938 *Pleurotropis foveolatus*, Mani, *Cat. Indian Ins.*, 23 : 117.
 1940 *Pleurotropis foveolatus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 25.
 1976 *Pediobius foveolatus*, Bhatkar & Subba Rao, *Ent. Germ. (Z. ges. wiss. Ent.)* 3 (3) : 242-247.

Female : Length 1.25 mm. Body deep purple-aeneous, with propodeum and base of abdomen green; antennae brown with metallic reflections; legs metallic, partly brown; tarsi white.

Face above toruli and mesonotum reticulately rugose; lateral lobe of scutum less distinctly rugose and smooth behind, middle longitudinally rugose with 2 large fovea; scutellum with basal 0.50 longitudinally rugose, reticulate apically; propodeum polished; with well separated median carinae and distinct lateral carinae.

Male : Length 1.00 mm. Head green; face purple; sculpture finer than in female.

Type locality : Bangalore

Hosts : *Epilachna vigintioctopunctata*, *Menochiles sexmaculata* (Fabricius), *Coccinella septempunctata* Linn., *Henosepilachna sparsa* (Herbst.)

***Pediobius thakeri* (Subba Rao)**

- 1957 *Rhopalotus thakeri*, Subba Rao, *Indian J. Ent.*, 19 (1) : 51.

Female : Length 1.25 mm. Brilliant metallic-green; ocelli reddish-brown; eyes scarlet-red, thickly pubescent; antennae pale brown; scape yellowish-white; thorax brilliant metallic-green, legs yellowish-white, except for the coxae pale brown.

Head viewed above subquadrate, nearly dumb-bell-shaped, slightly longer than wide; vertex narrow, rugosopunctate; interocellar space slightly longer than ocellular space; interorbital space more than 0.50 of width of head; antennae inserted just above the clypeus, strongly clavate; scrobes reaching nearly front ocellus; antennae with 7 segments; scape slightly longer than pedicel and 2 funicular segments put together; club 3 segmented, terminal segment with a short nipple-like process.

Parapsidal furrows complete, scutellum convex, with the posterior end forming a triangular piece; metathorax narrow; propodeum distinctly rugosopunctate; hind coxae slightly longer than

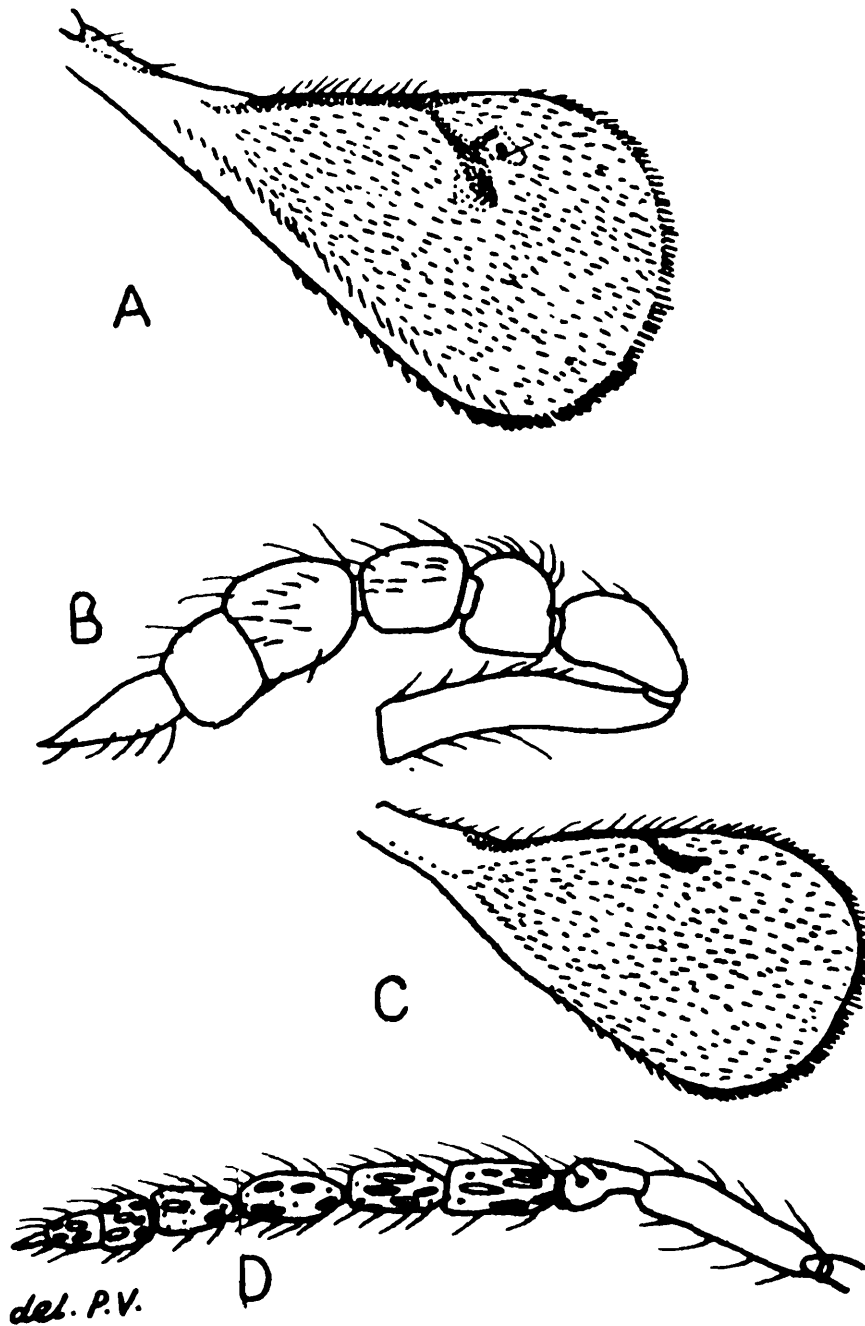


FIG. 307. A-B. *Pediobius thakeri* (Subba Rao), female : A. Fore wing; B. Antenna; C-D. *Chrysocharis johnsoni* Subba Rao, female : C. Fore wing; D. Antenna.

mid and fore coxae, 3 times longer than hind trochanter, 0.25 of femur; femur a little shorter than tibia; fore wing 2 times as long as wide; vein *m* nearly 2 times *sm*; *pm* extremely short; vein *st* well developed.

Abdomen petiolate, conic-ovate, dorsoventrally depressed, rugose, ventrally shagreened; ovipositor concealed.

Male : Like female but slightly smaller; antenna short, strongly clavate, hairy.

Type locality : New Delhi

Host : Endoparasitic on *Phytomyza atricornis* (Meigen).

Pediobopsis Girault

1913 *Pediobopsis*, Girault, *Mem. Queensland Mus.*, 2 : 155.

1938 *Pediobopsis*, Mani, *Cat. Indian Ins.*, 23 : 118.

Vertex large, acutely margined behind; eyes very large, bordered internally, pubescent; antennae inserted in the middle of face; scape a little enlarged in male; funicle with 3 segments, rarely 4; club with 2 segments; thorax reticulately rugose, parapsidal furrows incomplete; propodeum with a median carina; vein *m* longer than *sm*, *st* and *pm* very short.

This differs from *Pediobius* Walker in the reticulate thorax.

Type species : *Pediobopsis spenceri* Girault

Pediobopsis locustivora Rohwer

1921 *Pediobopsis locustivora*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 125.

1938 *Pediobopsis locustivora*, Mani, *Cat. Indian Ins.*, 23 : 118.

Female : Length 1.25 mm. Vertex finely reticulate; scape slender, more than 0.50 of antenna; mesoscutum subopaque, finely reticulate; axillae and scutellum shiny, very finely reticulate (much finer than scutum), medianly scutellum almost without sculpture; dark green; vertex and mesoscutum bright green; axillae and scutellum with a bronzy-green lustre; antennae brownish-yellow; coxae except legs white; wings hyaline; venation yellow.

Type locality : Coimbatore

Differs in colour from *Pediobopsis spenceri* Girault

SUBFAMILY OMPHALINAE

1904 *Omphalini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 338.

1909 *Omphalina*, Schmiedeknecht, *Gen. Ins.*, 97 : 424.

1938 *Omphalariae*, Mani, *Cat. Indian Ins.*, 23 : 116.

Antennae with not more than 9 segments, including one annellus; funicle at the most with 5 segments, often only 2, 3 or 4 segments; tarsi in both sexes with 4 segments; abdomen sessile or nearly sessile; in female usually conically produced; species approach Tetracampinines, but are readily separated by the antennae and 4 segmented tarsi. Parasitic in fly larvae.

KEY TO GENERA

- | | |
|--|--------------------------------|
| 1. Antennae with 10 segments : 1.1.1.4.3. | 2 |
| Antennae with 9 or fewer segments. | 8 |
| 2. Wings with a peculiar 8-shaped marking; antennae very long; in male funicular segments dentate, with verticillate hairs; abdomen in female conically produced | <i>Astichus</i> Förster |
| Wings hyaline, without marking | 3 |
| 3. Propodeum long, with 3 distinct longitudinal carinae; antennae in female strongly thickened apically, in male setaceous | <i>Setitrichus</i> Rondani |
| Propodeum short, at the most with only trace of a single median carina | 4 |
| 4. Propodeum with distinct sculpture, rugosely punctate; wings with long fringe; radial cell indicated by a hairy line; vein <i>sm</i> short, with large knob | <i>Secodes</i> Förster |
| Propodeum smooth, not punctate | 5 |
| 5. Thorax closely punctate; vein <i>pm</i> long | 6 |
| Thorax more or less smooth; vein <i>pm</i> short like <i>st</i> | 7 |
| 6. Eyes not large; gena distinct; scape metallic coloured; abdomen longer than head and thorax | <i>Euderus</i> Haliday |
| Abdomen shorter than head and thorax | <i>Pareuderus</i> Ferrière |
| Eyes very large, hairy, almost touching the mandible; scape very slender, white | <i>Euophthalmomyia</i> Ashmead |
| 7. Head normal, not wider than thorax; vein <i>st</i> very short; knob almost sessile; parapsidal furrows complete; abdomen long, conically pointed | <i>Omphale</i> Haliday |
| Head convex, wider than thorax; vein <i>st</i> rather long; <i>pm</i> absent; prapsidal furrows evanescent in front; abdomen shortly oval | <i>Hubbardiella</i> Ashmead |
| 8. Wings with dark transverse band; antennae with 8 segments; funicle short, compressed, fusiform; segments except the last wider than long; vein <i>pm</i> short | <i>Closterocerus</i> Westwood |
| Wings without marking, most rarely with indication of a single band; antennae with 9 segments; abdomen not or slightly longer than head and thorax combined; vein <i>pm</i> long | 9 |
| 9. Eyes not reaching base of mandible; gena present | <i>Chrysocharis</i> Förster |
| Eyes large, reaching base of mandible; gena absent | <i>Zaommomyia</i> Ashmead |

Chrysocharis Förster1856 *Chrysocharis*, Förster, *Hymen. Stud.*, 2 : 79, 82.1904 *Chrysocharis*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 340.

- 1909 *Chrysocharis*, Schmiedeknecht, *Gen. Ins.*, 97 : 429.
 1917 *Omphalchrysocharis*, Girault, *Descr. Hym. Chalcidoid Variorum cum observ.*, 5 : 3.
 1943 *Kratochviliana*, Malac, *Ent. Listy Brno*, 6 : 1.
 1954 *Epilampsis*, Delucchi, *Neue Arten Subfam. Entedontinae*, : 3.
 1961 *Chrysocharis*, Boucek, *Trudy Min. Sel. Kruzy. Moldav. SSR*, 7 : 28.
 1963 *Chrysocharis*, Graham, *Trans. Soc. Brit. Ent.*, 15 : 205.
 1979 *Chrysocharis*, Krombein *et al.*, *Hymen. N. America*, 1 : 1008.

Antennae with 9 segments, including one annellus, funicle and club each with 3 segments; gena long; propodeum without carinae; wings unspotted, rarely with a cloud at *st*; petiole rudimentary; abdomen short; body blue or green.

Type-species : *Chrysocharis femoralis* Förster

KEY TO SPECIES

- | | |
|---|---|
| 1. Antennae without a distinct annellus | <i>Chrysocharis ajugus</i> Dubey |
| Antennae with one annellus | 2 |
| 2. Scape 7 times longer than thick; funicular segments subequal | <i>Chrysocharis johnsoni</i>
Subba Rao |
| Scape 7 times longer than thick, funicular segments subequal | <i>Chrysocharis melaenis</i>
(Walker) |

***Chrysocharis ajugus* Dubey**

(Fig. 308)

- 1974 *Chrysocharis ajugus*, Dubey, *Orient. Ins.*, 8 (4) : 417.

Female : Length 1.50 mm. Body dark metallic-green; head metallic-green, eyes and antennae dark brown; legs except the dark brown coxa, pale brown; wings hyaline with some infumation behind *st*; veins dark brown; vein *st* darker brown than other veins.

Head viewed above as wide as thorax, viewed from front somewhat broadly rounded, height to width 70 : 100, frons, vertex, scrobe and clypeus closely and finely reticulate, ocellocular space 2.50 times ocellar diameter, interocellar space nearly 1.40 times ocellocular space; occiput deeply concave; gena about 0.30 times eye; eyes finely pubescent; antennae short, segments 8 : 1.1.3.3; scape moderately stout, about 0.38 times antenna, about 5 times as long as thick, pedicel about 0.35 times scape, funicular segments 1-2 subequal, third slightly shorter and narrower than the second; club subequal to the preceding 2 segments combined, first club segment equal to the last funicular segment, but cylindrical and more slender, second club segment about 0.80 times the first, subconical and also about 2 times as long as thick, terminal segment reduced to a long slender style about 0.70 of the second club segment.

Thorax finely closely reticulate; pronotum transverse, about 9 times as wide as long; mesonotum and scutellum somewhat depressed, parapsidal furrows complete, mesonotum with a row of 3 setae close to parapsidal furrows; scutellum with one seta posterolaterally on each side, spiracular sulci present; fore wing conspicuously broadened apically, length to width 100 : 51; marginal fringe short, veins *sm* : *m* ratio 55 : 100, *pm* slightly shorter than *st*; vein *st* subsessile with 4 cells in a line, vein *m* with about 14 long, equally spaced conspicuous bristles in front and about 15 shorter and fine bristles behind; fore coxa about 1.80 times as long as thick; tibia slender, subequal to femur, tibial spur about 0.60 of metatarsus; tarsus about 0.90 of tibia, 4 segmented; metatarsus shortest, second segment 1.40 times metatarsus, third slightly shorter than the second, fourth about 1.70 times third; middle leg longest, coxa almost as

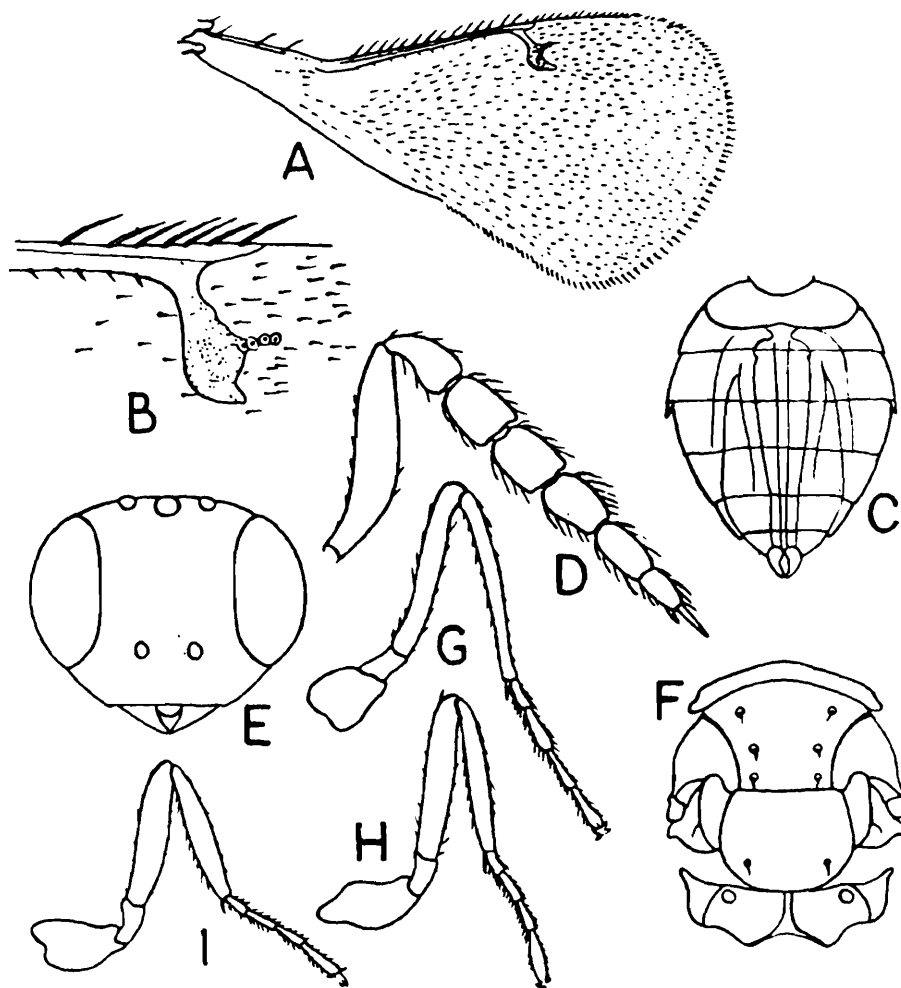


FIG. 308. *Chrysocharis ajugus* Dubey, female : A. Fore wing; B. Stigmal venation; C. Abdomen; D. Antenna; E. Head in front view; F. Thorax; G. Middle leg; H. Hind leg; I. Fore leg.

long as wide, femur slender about 1.20 times longer than fore femur; tibia cylindrical, almost 1.14 times femur, tibial spur about 0.65 of metatarsus, metatarsus shortest, second segment 1.70 times metatarsus, third and fourth segments subequal; hind coxa 2 times as long as wide, femur moderately stout, subequal to tibia, tarsus about 0.83 of tibia, tibial spur about 0.60 of metatarsus, second segment about 1.40 times metatarsus, third segment subequal to second, fourth almost 2 times third.

Abdomen 1.16 times thorax, suboval in outline, viewed from above length 100 : 72; longitudinally reticulate except the last segment which is shagreened; ovipositor slightly exerted.

Type locality : India : Rajasthan : Bharatpur

Distribution : India : Kerala : Thekkadi, Rajasthan

Host : Unknown insect on *Ajuga bracteosa*

This species differs from *Chrysocharis melaenis* (Walker) in the presence of the median carina on propodeum, absence of annellus and in the proportion of antennal and hind tarsal segments.

Chrysocharis johnsoni Subba Rao

(Fig. 307)

1957 *Chrysocharis johnsoni*, Subba Rao, *Indian J. Ent.*, 19 (1) : 52.

Female : Length 2.00 mm. Head and thorax dark dull green; eyes yellowish-brown with sparse pubescence; scape and pedicel pale yellow, rest dark brown; thorax dark green; coxae dark brown; tibiae and tarsi pale yellow; abdomen metallic-green; regular rows of white hair on tergite margins.

Head from front slightly wider than long; wider than thorax; eyes small, narrow; interorbital space nearly 0.75 of the width of head; inner orbital borders parallel; vertex narrow with setigerous umbilicate punctae; antennae with 9 segments; scape more than 2 times as long as the breadth at apex; pedicel longer than thick; 3 funicular segments longer than thick, equal, club 3 segmented.

Parapsidal furrows well defined; fore wings 2.50 times as long as wide; vein *m* 1.50 times longer than *sm*; vein *st* 0.50 of *sm*, vein *pm* present but very weak and short; hind coxa 3 times longer than trochanter; tibia longer than femur.

Abdomen conic-ovate, with a dorsal depression, narrower than thorax; ovipositor exerted.

Male : Dark brown. Smaller than female; antennae with 9 segments; club segments with deep grooves giving a false appearance of individual segments; antennal segments with whorls of sensory hairs.

Type locality : Trivandrum

Chrysocharis melaenis (Walker)

- 1839 *Entedon melaensis*, Walker, *Mon. Chalc.*, 1 : 47.
 1952 *Derostenus appendigaster*, Masi, *Boll. Ist. Ent. Bologna*, 19 : 146.
 1954 *Chrysocharis punctiscapus*, Delucchi, *Mitt. Schweiz. ent. Ges.*, 27 : 292.
 1954 *Chrysocharis viridicoxis*, Delucchi, *Mitt. Schweiz. ent. Ges.*, 27 : 292.
 1970 *Chrysocharis melaenis*, Boucek, *Mem. Soc. Ent. Ital.*, 49 : 96.
 1971 *Chrysocharis horticola*, Mani, *J. nat. Hist.*, 5 : 596.

Female : Length 1.25 mm. Body bright metallic-bluish-green; antennae dark brown; basal 0.50 pale, apical 0.50 darker; thorax metallic-green; veins dark brown; vein *st* darker brown than others; fore femora and tibia almost completely and fore tarsi wholly white; middle femora and the basal 0.50 of middle tibia white, apical 0.50 of middle tibia and the entire middle tarsi brown; hind femora, except near the tip, and the 3 basal hind tarsal segments brown; abdomen dark metallic-green.

Head finely, closely reticulate; nearly as wide as thorax; in front somewhat broadly rounded; vertex, frons, scrobes and clypeus closely, finely reticulate; interocellar space subequal to ocellular; occiput deeply concave; gena about 0.50 of eye; eye finely pubescent; antennae short, compressed and flattened; with 9 segments, of which one annellus; funicle triarticulate; club triarticulate; scape slender, length to thickness 7 : 1, pedicel 1.50 times as long as thick; annellus very narrow, minute; first funicular segment about 0.75 of pedicel, but more slender; second and third funicular segments equal to pedicel; first club segment equal to pedicel, but cylindrical and more slender; second club segment 0.75 of the first, subconical and also about 2 times as long as thick; terminal club segment reduced to a long, slender process equal to pedicel in length.

Thorax finely closely reticulate; mesonotum and scutellum somewhat depressed; parapsidal furrows complete; scutellum with characteristic paired discal bristles; propodeum concolorous with scutellum, but smooth and lacking median longitudinal carina, spiracular sulci present; fore wings a little over 2 times as long as wide, conspicuously broadened apically, hyaline except for a conspicuous and short brown infumation from the stigma backwards across the width for a short distance and gradually disappearing before the middle of wing; discal cilia fine, close and brown; marginal fringe short; veins *m* : *sm* ratio 13 : 9; *st* spatulate, with 4 cells in a line, vein *m* with about 14 long equally spaced conspicuous bristles in front and about the same number of shorter and finer bristles behind; hind tarsal segments length ratio 3 : 4 : 3 : 5; hind tibial spur about 0.50 of hind metatarsus.

Abdomen slightly longer than thorax, oval when viewed above, finely and obscurely reticulately sculptured or more or less shagreened above.

Type locality Europe

Distribution : Europe, India

Hosts : Parasitic on larva of *Phytomyza horticola* Gourreau, mining leaf of *Pisum sativum* Linn., *P. atricornis* and other species of Agromyzids.

This species differs from the other known species in the infumation of wing behind stigma and in the proportions of the antennal and hind tarsal segments. It differs also from *C. liriomyzae* Delucchi in the less punctate face and distinctly segmented club.

Achrysocharis Girault

- 1913 *Achrysocharis*, Girault, *Arch. Naturgesch.*, 79 (A) (6) : 104.
 1913 *Achrysocharis*, Girault, *Soc. Ent.*, 28 : 100.
 1913 *Achrysocharis*, Girault, *Mem. Queensland Mus.*, 2 : 163.
 1979 *Achrysocharis*, Krombein *et al.*, *Hymen. N. America*; 1 : 1012.

Antennae with 8 segments, including one annellus; funicle with 2 segments, club with 3 segments; scape a little dilated apically; vein *pm* a little shorter than *st*, mandible tridentate; wings hyaline.

Type-species : *Achrysocharis bifasciatus* Girault

Achrysocharis appannai Kurian

(Fig. 309)

- 1953 *Achrysocharis appannai*, Kurian, *Agra Univ. J. Res.*, (1) 2 : 114.

Female : Length 0.70 mm. Body reddish-brown to black; ocelli reddish-brown; clypeus yellowish-brown; mandibles same colour as clypeus; antenna brown; scape and pedicel yellowish-brown, rest of antenna brown; legs yellowish-brown; abdomen brown to dark reddish-brown; first and second tergites light brown; rest of abdomen darker.

Head above transverse, length 0.28 of width; interocellar space 1.33 times ocellular, which latter is 3 times the front ocellar; scape reaches front ocellus; vertex narrow, smooth and shiny; in front length slightly more than width, which latter is 2.80 times interorbital; eye nearly 2 times gena and slightly more than 2 times postorbital; clypeus smooth and shiny; mandibles 3 dentate, first 2 teeth acute, last blunt; antenna inserted somewhat above level of lower orbital borders; 9 segments : 1.1.1.3.3; scape 2 times pedicel, slightly longer than the first funicular and equal to annellus and first funicular combined; second funicular longer than the first and very slightly longer than the pedicel; third funicular longer than second and 0.57 of the scape; first 2 club segments equal; third 0.67 of the previous ones; club segments together slightly longer than scape.

Thorax length 1.25 times width at tegulae; pronotum short; mesonotum slightly less than 0.50 of the whole length of thorax, finely longitudinally coriaceously striate; parapsidal furrows deep and complete; scutellum 0.85 of mesonotum, convex, sculpture same as that of mesonotum; metanotum 0.33 of scutellum; propodeum 0.67 of scutellum, irregularly coriaceously sculptured, with a median longitudinal carina which bifurcates posteriorly enclosing a triangular area; hind coxa 2 times trochanter; femur 3.50 times trochanter; tibia 1.20 times femur; metatarsus 0.16 of tibia and 1.25 times tibial spur; rest of tarsi combined slightly more than 0.50 of tibia and nearly 3.50 times metatarsus; fore wing 2.25 times as long as wide; *sm* slightly more than 0.67 of *m*, 3.50 times *st*; apical pubescence somewhat long.

Abdomen very slightly longer than thorax; 8 tergites visible; first and second tergites longer than the rest.

Male : Length 0.70 mm. Body reddish-brown to black; ocelli brick red; eyes brown; frons and face brown; clypeus yellowish-brown; antenna brown; scape light brown; legs yellowish-brown.

Head above transverse, length slightly less than 0.40 width; interocellar space 1.50 times the ocellocular, 2 times the front ocellar; vertex narrow, sculpture not very clear; eyes bare, inner border of eye margined; frons and face faintly and very irregularly sculptured or nearly smooth and shiny; viewed in front, length very slightly more than width; eye nearly 3 times gena and 2.50 times postorbital distance; mandibles concolourous with clypeus, 3 dentate, first 2 teeth acute, last blunt; antenna inserted somewhat above an imaginary line joining the lower orbital borders; 9 segments : 1.1.4.3; scape 2 times pedicel; pedicel slightly more than 1.33 times the first funicular; second funicular slightly more than 1.50 times the first; third and fourth equal to the second; first 2 club segments equal, third 0.67 of the second; the 3 club segments together 0.85 of the scape and 0.75 of the third and fourth funicular segments combined.

Thorax length 1.25 times width; pronotum very short; mesonotum 3.50 times pronotum, very faintly smooth and shiny; parapsidal furrows complete and distinct; scutellum slightly shorter than mesonotum, longitudinally coriaceously striate; metanotum 0.25 of scutellum; propodeum 0.67 of the scutellum; hind coxa nearly 2.50 times trochanter; femur 1.66 times coxa; tibia 1.50 femur; tibial spur 0.14 of tibia and very slightly longer than metatarsus; rest of tarsi combined equal to 0.50 of tibia and 5 times metatarsus; fore wing length 2.25 times width; *sm*; 0.83 of *m*, 3.50 times *st*; *pm* absent; apical marginal pubescence somewhat long.

Abdomen very slightly shorter than thorax, somewhat dorsally flattened; 8 tergites visible.

Type locality : Bangalore

Host : *Epilachna* sp.

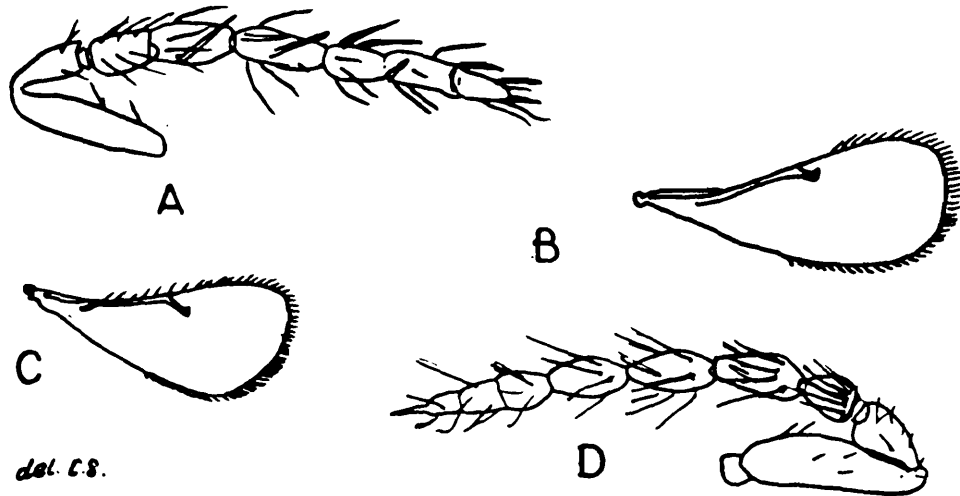


FIG. 309. A-D. *Achyrsocharis appannai* Kurian, A-B. female : A. Antenna; B. Fore wing; C-D. male : C. Fore wing; D. Antenna.

Euderus Haliday

- 1839 *Entedon* (partim), Walker, *Mon. Chalc.*, 1 : 106.
 1844 *Euderus*, Haliday, *Trans. ent. Soc. London*, 3 : 298.
 1904 *Euderus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 339, 340.
 1909 *Euderus*, Schmiedeknecht, *Gen. Ins.*, 97 : 426.
 1913 *Secodella*, Girault, *Arch. Naturgesch.*, 79 A (6) : 48.
 1913 *Omphalomorpha*, Girault, *Arch. Naturgesch.*, 79 A (6) : 103.
 1914 *Allomphale*, Silvestri, *Bol. Lab. Zool. Gen. Agric. Portici*, 9 : 217.
 1917 *Secodelloidea*, Girault, *Speciosissima Genera Nova, Eulophidorum*, 2.
 1924 *Euderus*, Girault, *Insec. Inscit. Menstr.*, 12 : 94.
 1931 *Euderus*, Ferrière, *Bull. ent. Res.*, 22 : 134.
 1938 *Euderus*, Mani, *Cat. Indian Ins.*, 23 : 151.
 1963 *Euderus*, Peck, *Canad. Ent.*, 30 : 197.
 1971 *Euderus*, Yoshimoto, *Canad. Ent.*, 103 : 541-578.
 1971 *Euderus*, Subg. *Euderoides*, Yoshimoto, *Canad. Ent.*, 103 : 550.
 1971 *Euderus*, Subg. *Neoeuderus*, Yoshimoto, *Canad. Ent.*, 103 : 552.
 1971 *Euderus*, Subg. *Leipocrossus*, Yoshimoto, *Canad. Ent.*, 103 : 555.
 1979 *Euderus*, Krombein *et al.*, *Hymen. N. America*, 1 : 985.

Head with rather broad vertex; antennae with 10 segments, inserted a little below middle of face; scape metallic coloured; thorax closely punctate; pronotum large, parapsidal furrows deep; propodeum short, smooth; wings scantily hairy; naked basally; with hairy lines from knob of *st*, vein *pm* longer than *st*, legs stout, knee and tarsi mostly white; abdomen elongate, subtriangular, conically pointed.

Type-species : *Entedon amphis* (Walker)

Euderus carpomyiae Bhatnagar

1950 *Euderus carpomyiae*, Bhatnagar, *J. Zool. Soc. India*, 2 (1 & 2) : 135.

Female : Length 2.50 mm. Body metallic-blue with obscure green reflections; antennae black; scape with more than 0.75 of the basal portion yellowish-brown and dark brown above; pedicel black; tegulae black; legs metallic-blue with exception of the middle and hind tarsi and apical 0.50 of fore metatarsus white.

Head wider than thorax; vertex extremely narrow, ocelli very much nearer to eyes than to each other; front ocellar space 0.50 interocellar space; occiput slightly concave, finely shagreened; before the front ocellus transverse carina extending from one eye to other; vertex minutely, closely shagreened; viewed in front wider than high; interorbital space less above than below; face minutely, shallowly punctate; genal space about 0.25 of eye; antennae inserted a little above lower orbital border, with 10 segments : 1.1.1.4.3; scape cylindrical, 5 times as long as thick, equal to 3 basal funicular segments combined; pedicel 1.50 times as long as thick, with a pair of stout bristles apically; funicular segments unequal, first longer than thick equal to pedicel and slightly shorter than second, second 1.50 times as long as thick; third and fourth segments shorter than second but as long as thick; club longer than preceding 2 segments of the funicle combined, with a blunt, nipple-like projection at tip.

Thorax between tegulae as wide as head; pronotum declivous in front; mostly smooth, except at apex transversely striated and with a few bristles; mesonotum dull, closely, shallowly punctate; parapsidal furrows deep, complete; axillae triangularly produced in the region of scapulae; scutellum as strongly punctate as mesonotum; hind margin broadly rounded and projecting over postscutellum and partly over propodeum; propodeum narrow, mostly smooth with one median longitudinal carina; mesopleurae minutely punctate with a distinct femoral impression; wings large broadly rounded at tip; hyaline, more than 2 times as long as broad; vein *m* longer than *sm*, *sm* abruptly slender just before curving up to *m*; *pm* longer than *st*; *st* short, club shaped; basal 0.50 of wing with sparse discal ciliation; in apical 0.50 arranged more or less in definite parallel lines; 3 lines coming from *st*; forming narrow radial cell; second curved and reaching the apex of wing, and third directed towards base of wing, between these lines lie a few scattered ciliae and 4 long hairs below the middle of *m*; hind coxae basally minutely punctate above; hind tibial spur single, slightly more than 0.25 of metatarsus.

Abdomen narrower than almost 2 times as long as thorax; concave dorsally, tergites elongate, last longer than wide; ovipositor slightly protruding.

Type locality : Agra

Host : *Carpomyia vesuviana* Costa in fruit of *Zizyphus jujuba*

Euderus gossypii Ferrière

- 1931 *Euderus gossypii*, Ferrière, *Bull. ent. Res.*, 22 : 132.
 1938 *Euderus gossypii*, Mani, *Cat. Indian Ins.*, 23 : 152.
 1940 *Euderus gossypii*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 24.

(Fig. 310)

Female : Length 1.70 -2.30 mm. Body very dark green to black; scape and pedicel dark green, rest of antennae brown; legs dark green; tibiae brown; tips of femora, tibiae and tarsi white.

Head transverse; ocelli almost in a line; ocellocular space less than ocellar diameter; in front rounded; antennae inserted a little below level of lower orbital border; scape stout; pedicel 0.33 of scape; annelli narrow, minute; first funicular segment shorter than pedicel; segment 2 as long as thick, segments 3-4 thicker than long; club with 3 segments, equal to the preceding 2 segments combined; terminal segment with short spine.

Thorax shagreened; parapsidal furrows complete; propodeal carina present; vein *m* subequal to *sm*; *st* very short; *pm* little longer.

Abdomen longer than rest of body; tergites subequal; ovipositor 0.33 of abdomen.

Male : Length 1.60-1.80 mm. Scape stout, a little less than 2.50 times as long as thick and subequal to pedicel and 4 funicular segments combined; funicular segments transverse; club not much longer than the preceding 2 segments combined.

Type locality : Sudan

Distribution : Sudan, Pakistan (Lyallpur)

Host : *Sphenoptera gossypii*

Euderus lividus (Ashmead)

- 1886 *Oxyomorpha lividus*, Ashmead, *Trans. Amer. ent. Soc.*, 13 : 135.
 1894 *Chrysocharis lividus*, Riley, Ashmead & Howard, *J. Linn. Soc. London*, 25 : 175.
 1909 *Chrysocharis livida*, Schmiedeknecht, *Gen. Ins.*, 97 : 429.
 1924 *Euderus lividus*, Girault, *Insec. Inscit. Menstr.*, 12 : 94.
 1939 *Euderus lividus*, Mani, *Indian J. Ent.*, 1 (2) : 69-99.
 1940 *Euderus lividus*; Ahmad, *Indian J. Ent.*, 2 (1) : 59-63.

Male/Female : Length 0.85-1.00 mm. Body bluish-black; impunctate; tarsi and tibial spurs subwhite; wings hyaline; abdomen in female sessile, ovate, subequal to thorax; in male oblong, with a white spot basally above; antennae with white hairs; first funicular segment longest.

Type locality : St. Vincent

Distribution : India

Host : Curculionid tunnelling in *Amaranthus* stem.

Euderus malayensis Ferrière

1930 *Euderus malayensis*, Ferrière, *Bull. ent. Res.*, 21 : 353-360.

Female : Length 2.25 mm. Body black; with dark greenish or aeneous and partly bluish shine; antennae brown, scape and pedicel below yellow in female; legs black, coxae, especially hind coxae with bluish shine; in female with tip of fore and middle and hind tibiae almost entirely yellowish-brown; tarsi white; legs in male almost entirely black, only tarsi whitish; wings hyaline.

Head shagreened, dull; face only a little shining; seen from above, head short, transverse; eyes large, lateral ocelli near eye, before front ocellus a transverse carina extends from eye to eye; antennae with 10 segments; 1.1.1.4.3; scape slender, scarcely reaching ocellus; pedicel about 2 times as long as thick; annellus very small; first funicular segment thick, longer than pedicel; second shorter than first; 2 last a little shorter but still longer than thick, club about as long as the preceding 2 segments combined.

Thorax short, punctulate, punctation smaller on scutellum than on mesonotum; parapsidal furrows deep; hind margin of large scutellum extends over postscutellum and partly over propodeum; this latter very short, transverse, smooth, with a median carina; spiracles relatively large, rounded; wings large and broadly rounded at tip; vein *m* longer than *sm*, slightly thickened at base, then gradually narrower to the end; vein *st* short, thin, knob small, *pm* longer than *st*; basal 0.50 of wing without discal ciliae; in apical 0.50 mostly arranged in regular lines; 3 lines come from *st*; first forming a narrow radial cell; second curved, reaching to the tip of the wing, third directed to base of wing; other lines short, more or less parallel to each other and reach end of wing; between these lines a few scattered ciliae and 3-4 longer hairs below the middle of vein *m*; legs relatively short, hind coxae longer and stronger than others.

Abdomen much narrower, about 2 times thorax, concave dorsally, segments elongate, the last longer than broad; ovipositor as long as last segment.

Male : Length 1.00-1.50 mm. Similar to female; but funicular segments shorter and covered with rather long ciliae; abdomen short, not much longer than thorax.

Type locality : Kuala Lumpur, Malay Peninsula

Host : Larva of *Prays endocorpa*

Euderus pempheriphila Ramakrishna & Mani

(Fig. 310)

1937 *Euderus pempheriphila*, Ramakrishna & Mani, *Rec. Indian Mus.*, 39 : 127.

1940 *Euderus pempheriphila*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 25.

Female : Length 2.00 mm. Body green to black, with metallic green or blue reflections; head almost black; vertex dark purple.

Vertex transverse, sparsely punctate; antennae inserted on level of lower orbital border; first funicular segment equal to pedicel, a little longer than thick, following 3 segments subequal to the first; club 1.50 times the preceding 2 funicular segments combined, but much thicker; third segment conically produced, with a small nipple-like spine apically; thorax shagreened; propodeum short, with median carina; spiracles rounded; vein *m* slightly longer than *sm*; *pm* distinctly longer than *st*.

Type locality : Coimbatore

Distribution : Coimbatore

Host : *Pempheres affinis* (Fab.)

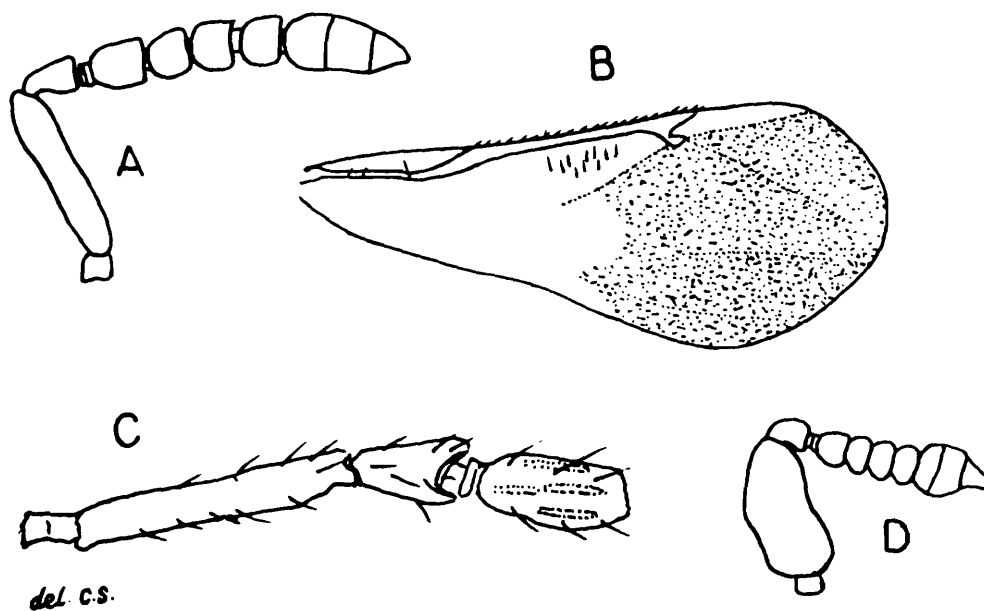


FIG. 310. *Euderus gossypii* Ferrière : A. Antenna, female; B. Fore wing, male; C. *Euderus natadae* Kurian, female : Basal segments of antenna; D. *Euderus pempheriphila* Antenna, female.

***Euderus natadae* Kurian**

(Fig. 310)

1954 *Euderus natadae*, Kurian, *Agra Univ. J. Res. (Sci.)* 3 : 126.

Female : Length 1.50 mm. Body reddish-brown; ocelli dark reddish-brown; eyes dark reddish-brown with short, spiny, silvery-white hairs; mandibles yellowish-brown; palpi light brown; antenna brown, except for lighter scape and pedicel; thorax reddish-brown; pronotum with 6 brownish-black setae posteriorly placed, 3 on either

side; in the area bounded by the parapsidal furrows 6 setae, 4 medium sized, brown, placed anteriorly and 2 long black setae posteriorly disposed; lateral to parapsidal furrows posteriorly arranged 4 long black setae, 2 on either side; scutellum with 4 long black setae; legs brown; abdomen reddish-brown, darker than the thorax more so at sides.

Head above length 0.33 times width; ocelli arranged in a broad triangle in a raised area on the vertex; interocellar space 1.25 times the ocellocular, which latter 2 times the front ocellar; vertex faintly coriaceously striate or nearly smooth and shiny, with few, scattered, long setae; viewed in front length 0.67 of width; length of eye 1.50 times that of gena; clypeus slightly convex, apically smooth and rounded; antenna inserted on level of lower orbital borders, with 10 segments : 1.1.1.4.3 ; scape slightly less than 2.50 times pedicel; annellus 0.20 times pedicel; first funicular segment very slightly longer than, or as long as pedicel; second subequal to the first; rest of the funicular segments gradually becoming shorter, until the last funicular slightly more than 0.33 of scape and a little less than pedicel; club segments together 0.67 of scape and somewhat less than the last 2 funicular segments combined.

Thorax length slightly less than 1.50 times width; pronotum as long as mesonotum; anteriorly somewhat transversely carinate, faintly irregularly coriaceously sculptured; mesonotum rugosely coriaceously sculptured; parapsidal furrows distinct, complete; scutellum larger than mesonotum, coriaceously sculptured, with 2 bristles anteriorly and 2 posteriorly; metathorax slightly less than 0.33 of scutellum, nearly smooth and shiny; propodeum somewhat longer than metathorax, with 2 longitudinal carinae meeting the transverse basal carina, enclosing a small rectangular area; propodeal spiracles small and round; hind coxa 2.50 times trochanter, which latter is 0.33 of femur, tibia equal to femur; tibial spurs long, longer spur 0.60 of tibia somewhat less than metatarsus and second segment combined; smaller 0.50 of the larger; metatarsus 0.40 of tibia and slightly less than 0.67 of the rest of tarsi combined; fore wing 2.33 times as long as wide; vein *sm* very slightly more than 0.80 of *m*; *pm* somewhat less than 0.50 of *m* and slightly less than 2 times *st*.

Abdomen 0.75 of thorax; dorsoventrally somewhat flattened, broadly oval, apically somewhat conical; petiole short, broader than long, quadrate; 5 tergites visible, smooth and shiny, except for few setae mostly disposed laterally; first and second tergites much longer than the rest and cover nearly 0.67 of the whole of abdomen.

Type locality : Tatipaka

Host : *Natada nararia*

This species approaches *Euderus lividus* (Ashmead), but is readily distinguished by reddish-brown colour; knee white; funicular

segments much longer than thick; *st* being only slightly more than 0.50 of *pm* and ovipositor not much exerted.

Secodes Förster

1856 *Secodes*, Förster, *Hym. Stud.*, 2 : 78.

1904 *Secodes*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 339, 340.

1909 *Secodes*, Schmiedeknecht, *Gen. Ins.*, 97 : 426.

Antennae with 10 segments; scape slender, long; thorax nearly smooth; propodeum with distinct sculpture; wings hyaline; radial cell indicated by hair lines in some species; *st* very short, with large knob; abdomen short.

Type-species : *Secodes coactus* Förster or *Secodes fagi* Förster

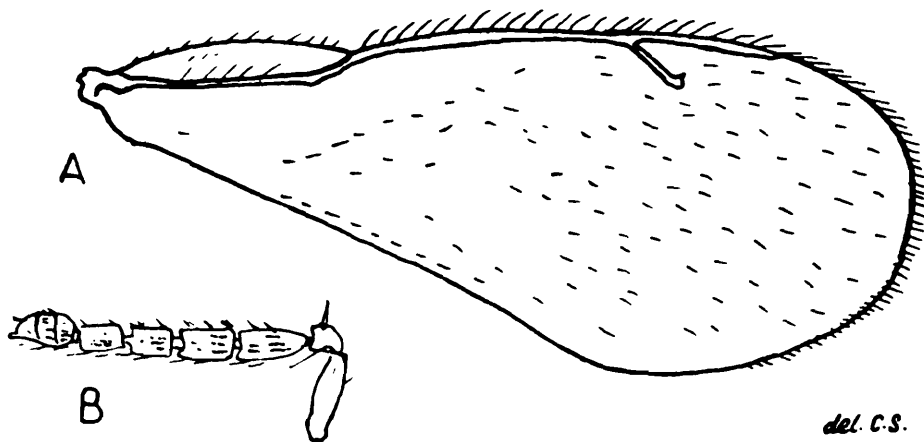


FIG. 311. *Secodes narariae* Kurian, female : A. Fore wing; B. Antenna.

Secodes narariae Kurian

(Fig. 311)

1954 *Secodes narariae*, Kurian, *Agra Univ. J. Res.*, (Sci.), 3 : 123.

Female : Length 2.80 mm. Body yellowish-brown to reddish-brown; head yellowish-brown; vertex yellowish-brown, with sparse brown setae; ocelli red; eyes brownish-black; clypeus slightly browner than cheeks, which latter has the same colour as face; mandibles and palpi yellowish-brown; cheek concolourous with face; antenna brown; thorax yellowish-brown; with 2 long silvery-brown setae, posterior-laterally one on either side; mesonotum with silvery-brown setae; propodeum reddish-brown; legs light yellowish-brown; abdomen reddish-brown, apically darker.

Head viewed from above length slightly less than 0.50 of the width; vertex emarginate, smooth, shiny; ocellar area raised;

interocellar distance 1.50 times the ocellocular, which latter is 1.50 times the front ocellar; viewed in front length somewhat less than 0.75 of width; postorbital nearly obsolete; length of eye nearly 2 times that of gena; scrobes indistinct; antenna inserted on or slightly above level of lower orbital borders, with 10 segments : 1.1.1.4.3; scape 3 times pedicel, with 4 long setae somewhat apically arranged; pedicel with 5 long setae, anterior dorsal one largest; annellus 0.25 of pedicel; first funicular slightly less than 2 times pedicel and annellus combined; second funicular 0.85 of first; third and fourth segments gradually become shorter; first club segment 0.40 of the last funicular; second equal to first; third very slightly longer than the preceding; all club segments together nearly 0.75 of scape and 0.60 of the last 2 funicular segments combined.

Thorax 1.67 times as long as wide at tegulae; pronotum much narrower than mesonotum, rounded in front, transversely rugosostriate; mesonotum slightly less than 2 times pronotum, irregularly rugosocoriaceously sculptured, with bristles 8 of which 4 large medially, 2 on either side, one behind the other, 4 posteriorly, 2 on either side; parapsidal furrows distinct and complete; scutellum very slightly longer than mesonotum, sculpture same as latter; axillae well defined, nearly meeting in the middle, but not confluent, with 4 long setae; metathorax faintly irregularly sculptured, nearly smooth and shiny; propodeum shiny, with a median longitudinal carina, which joins the basal carina posteriorly, anteriorly bifurcates, extends sideways and joins the lateral carina enclosing 2 spaces on either side of the median longitudinal carina; propodeal spiracles large, lanceolate oval; hind femur 1.14 times coxa and trochanter combined; tibia slightly smaller than femur; longer tibial spur 0.67 of tibia, 2 times metatarsus and somewhat longer than metatarsus and second segment combined; shorter spur nearly 0.67 of longer; metatarsus 0.33 of tibia and slightly longer than 0.50 of the rest of tarsi combined; metatarsus and the rest of tarsi combined being slightly longer than tibia; fore wing 2.40 times as long as wide; vein *sm* 0.87 times *m*, which latter is slightly less than 2 times *pm*; *st* 0.50 of *pm*.

Abdomen lanceolate-oval, posterior somewhat pointed, depressed, concavity beginning after the basal 0.25; 7 tergites distinctly visible; tergites smooth and shiny, with few setae; first, second and sixth tergites longer than the rest; ovipositor not much exerted; ovipositor sheath ventrally given off from the base of the last tergite.

Type locality : Appanapalli

Host : *Natada nararia* larvae

Euderomorphale Girault

1916 *Euderomorphale*, Girault, *Canad. Ent.*, 48 : 410.

1929 *Aleurodiphagus*, Nowicki, *Neue Beitr. Syst. Insektenk.*, 4 : 154.

1932 *Euderomorphale*, Dozier, *Proc. ent. Soc. Washington*, 34 : 120.

1979 *Euderomorphale*, Krombein *et al.*, *Hymen. N. America*, 1 : 1006.

Female : Generally appearing like *Chrysocharis*. Head rounded; antennae inserted at clypeus, clavate, with 8 segments : 1.1.2.1.3; pedicel longer than funicle and annelli combined; parapsidal furrows complete, much curved, parapsides ovate; scutellum simple, much wider than long, shortly hemispherical; propodeum short, non-carinate, spiracle minute, round; vein *m* subequal to *sm*, *pm* absent, *st* rather long, linear; fringe of moderate (a fifth of the greatest wing width); mandible acutely equally bidentate.

Type-species : *Euderomorphale fuscipennis* Girault

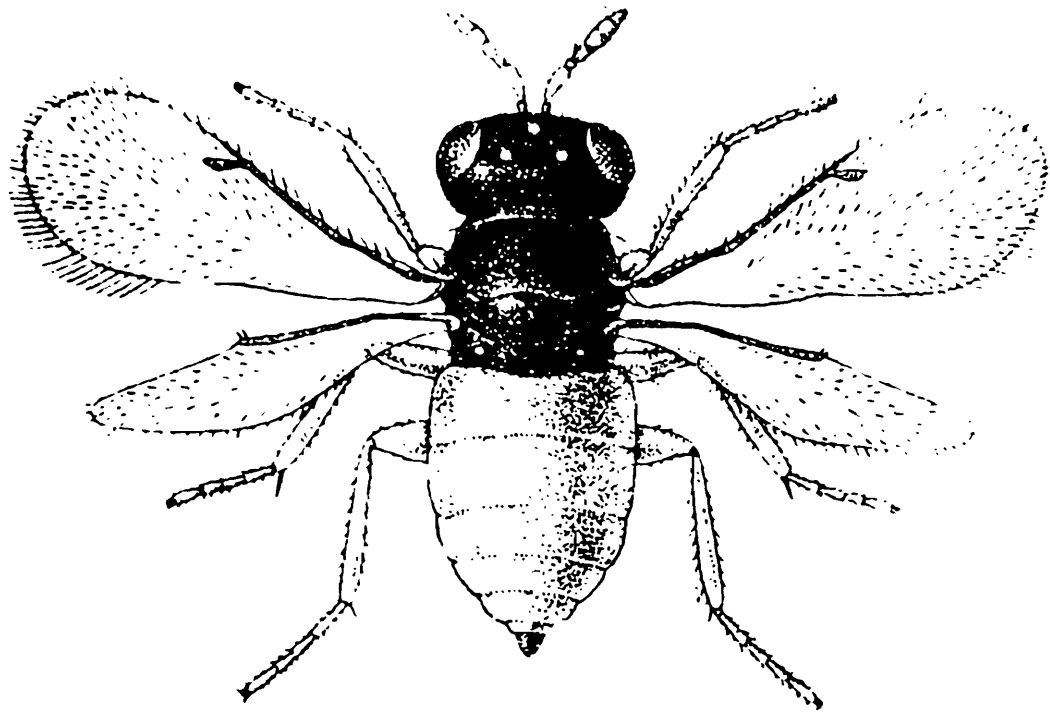


FIG 312. *Euderomorphale secunda* (Mani), female

***Euderomorphale secunda* (Mani)**

1939 *Cardiogaster secundus*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 9.

1978 *Euderomorphale secunda*, Boucek, Subba Rao & Farooqi, *Orient. Ins.*, 12 (4) : 460.

Female : Length 0.75 mm. Head and thorax black; antennae dark brown; thorax finely shagreened; coxae concolorous with thorax; femora basally dark olive brown, rest of legs brownish except a narrow band of reddish-brown apically on tibiae; abdomen basally light brown, apically dark reddish brown.

Head much wider than thorax; interocellar space greater than ocellular; eyes pubescent; antenna clavate, inserted on level of lower orbital borders; pedicel longer than funicular; club 1.50 times

the pedicel, terminal club segment pointed; fore wings narrow and long; vein *m* long; vein *pm* shorter than *st*.

Type locality : Delhi

Distribution : India

Host : *Aleurolobus barodensis*

Closterocerus Westwood

- 1833 *Closterocerus*, Westwood, *Ann. Mag. Nat. Hist.*, 6 : 419.
 1904 *Closterocerus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 340.
 1909 *Closterocerus*, Schmiedeknecht, *Gen. Ins.*, '97 : 428.
 1938 *Closterocerus*, Mani, *Cat. Indian Ins.*, 23 : 116.
 1979 *Closterocerus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1007.

Body mostly metallic-blue or bluish-green; antennae with 8 segments; funicle short, compressed, fusiform; segments except the last thicker than long; eyes margined, hairy; gena short; wings broadly rounded apically, with dark transverse bands, at least with one band beyond the middle; radial cell indicated; abdomen almost sessile, shortly oval, not much convex below.

Type-species : *Closterocerus trifasciatus* Westwood

KEY TO SPECIES

- | | |
|--|---|
| 1. Scape 2 times pedicel..... | <i>C. agromyzae</i> Narayanan <i>et al.</i> |
| Scape much longer than pedicel..... | 2 |
| 2. Scape subequal to pedicel and the first 3
funicular segments combined..... | <i>C. insignis</i> Waterston |
| Scape equal to rest of antennae..... | <i>C. phytomyzae</i> Mani |

***Closterocerus agromyzae* Narayanan, Subba Rao & Ramachandra Rao**

(Fig. 313)

- 1962 *Closterocerus agromyzae*, Narayanan *et al.*, *Proc. Nat. Inst. Sci. India*, 26, B (4) : 169.

Female : Length 2.00-2.10 mm. Head transverse, occiput minutely reticulate; vertex closely punctate-reticulate, with 2 bristles in front of lateral ocelli; interocellar space 2 times ocellular space; face deeply excavate, antennae inserted slightly above lower orbital borders; scrobe minutely punctate-reticulate with green reflections; antenna apparently 8 segmented, highly flattened and leaf-like, with short spinose bristles and sensoria and with one annellus hidden in a cavity in pedicel; scape slender basally; pedicel 0.50 of scape; first 3 funicular segments more or less subequal but the third segment

a little thinner than preceding; fourth segment very slightly shorter but distinctly thinner than the preceding; club solid, bulb-like basally, tapering into a long terminal style apically.

Pronotum narrow, closely punctate-reticulate with 2 lateral bristles on pleurae; mesonotum broad, with symmetrically arranged reticulations on scutum and scutellum; axillae widely separated; mesopleura with one prominent stout bristle on either side and another small bristle on each tegula; metanotum and propodeum minutely punctate with bronzy reflections in the middle; propodeum without a median carina; wings smoky, vein *m* of fore wing more than 2 times longer than *sm* and bearing 13 long bristles of equal size dorsally; vein *pm* short, *st* thick and spatulate with a chain of 4 cells in the middle; 3 fuscous transverse bands, one at the apex of wing border, second just behind vein *st*, third almost behind the middle of *m*; fuscous bands intervened by hyaline space; middle tibiae and tarsi light yellowish and the rest fuscous; median tibia with a prominent stout spine as in the case of most of the encyrtids.

Abdomen slightly longer than thorax, ovate; first tergite conspicuously longer than the rest; ovipositor slightly extending beyond the tip of abdomen.

Type locality : Delhi

Host : *Agromyza* sp.

***Closterocerus insignis* Waterston**

(Fig. 313)

1914 *Closterocerus insignis*, Waterston, *Bull. ent. Res.*, 5 : 330.

1938 *Closterocerus insignis*, Mani, *Cat. Indian Ins.*, 23 : 116.

1940 *Closterocerus insignis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 24.

1971 *Closterocerus insignis*, Mani, *J. nat. Hist.*, 5 : 594.

Female : Length 1.25 mm. Body generally dark blue to brilliant metallic-bluish-green, with some violet reflections; fore wing with 3 black bands, otherwise hyaline; legs black.

Head wide and narrow at vertex; eyes glabrous; vertex, occiput and frons reticulate; mandible bidentate, inner tooth large, antennae compressed, with 8 segments, including one annellus; scape triangularly expanded, about 2.50 times as long as wide, subequal to pedicel and first 3 funicular segments combined; pedicel as long as thick; club indefinite.

Thorax depressed, densely reticulate, with a pair of bristles on scutellum; propodeum narrow, deeply incised behind; fore wing 2 times as long as wide, with vein *m* longer than *sm*; *pm* and *st* subequal; legs coloured like body; hind tibial spur stout, with 7 short spines inside. Abdomen oval; tergites subequal.

Type locality : Ceylon

Distribution : Ceylon

Host : On *Oscinis theae* on *Thea chinensis*

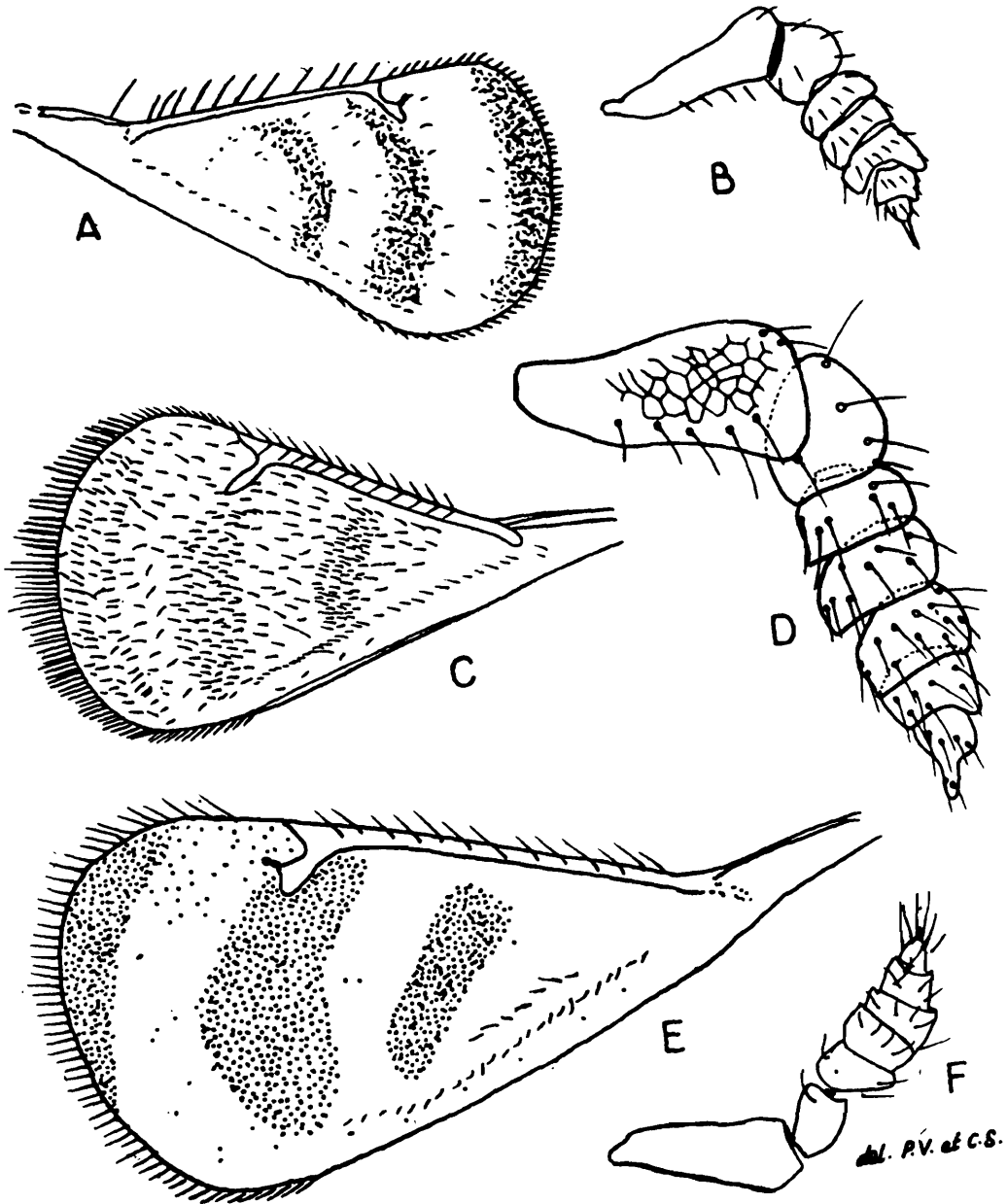


FIG. 313. A-B. *Closterocerus agromyzae* Narayanan, Subba Rao & Ramachandra Rao, female : A. Fore wing; B. Antenna; (Modified from Subba Rao) ; C-D. *Closterocerus insignis* Waterston, female : C. Fore wing; D. Antenna (modified from Waterston); E-F. *Closterocerus phytomyzae* Mani, female : E. Fore wing; F. Antenna.

Closterocerus phytomyzae Mani

(Fig. 313)

1971 *Closterocerus phytomyzae*, Mani, *J. nat. Hist.*, 5 : 595-596.

1974 *Closterocerus phytomyzae*, Dubey, *Orient. Ins.*, 8 (4) : 418.

1975 *Closterocerus phytomyzae*, Saraswat & Mukerjee, *Mem. School Ent.*, 4 : 56.

Female : Length 1.00-1.78 mm. Body generally bright metallic-green; head metallic-green; antennae shiny black, metallic-green in places on scape and pedicel; thorax bright metallic-green; middle band of wing darkest behind vein *st*; proximal band faint, apical band nearly black, intervening areas of wing with fine nearly colourless pubescence; veins brown; fore and middle coxae and femora black, with slight metallic sheen at certain angles; fore tibia largely pale brown, but for slight infumation basally; middle tibia infumate basally and pale in apical 0.50; hind coxae, femora, tibiae and metatarsus black, with metallic sheen; all tarsi pale brown; abdomen black with metallic sheen.

Head somewhat wider than thorax, finely, closely reticulate; viewed in front head width to height 14 : 11, somewhat broadly rounded; vertex narrow, transverse; interocellar space equal to ocellular; occiput closely finely reticulate, with 2 short outwardly directed and curved bristles in the lateral ocellar space and another behind front ocellus; a longer inwardly directed bristle in the middle of ocellular space; frons finely reticulate; clypeus smooth, with sometimes a faint violet tinge in certain angles; gena about 1.50 times eye, with a row of 6 bristles; antennae inserted above the level of lower orbital borders, with 8 segments including a very minute annellus concealed in the shallow, flattened pedicel; scape long, nearly equal to the rest of antenna, stouter apically than basally, its length to maximum thickness in the ratio 8 : 3, but somewhat flattened especially apically, ventrally with a row of 5 nearly equally spaced fine bristles, dorsally with a pair of stout apical bristles; pedicel thickly oval, about 0.37 of scape, somewhat thickened apically; basally with a long stout, slightly curved bristle above; first funicular segment about 0.50 of pedicel and slightly thicker; second funicular segment largest and also thickest, about 0.75 of pedicel; third funicular segment a little over 0.50 of second and slightly shorter than first, nearly equally thick as the second funicular segment; fourth funicular segment subequal to third, but slightly thinner; terminal antennal segment short, thickness 0.67 of its length, but nearly equal to the fourth funicular segment, with the sides parallel basally and narrowed conspicuously beyond the middle and terminating in an elongate slender nipple-like prolongation, which latter is nearly as long as the segment, with long stiff bristles.

Thorax characteristically depressed, closely finely reticulate; parapsidal furrows complete, deep; scutellum about 0.80 of mesonotum and sculptured like it, with frenum faint and with the characteristic pair of bristles submarginally a little beyond the basal 0.50; metanotum, with posterolateral angles acute and spine-like, finely reticulately sculptured at the sides and only slightly incised in the middle behind for the reception of abdomen; wings with 3 transverse bands, much widened apically, length to width ratio 7 : 3; vein *sm* about 0.67 of *m*; vein *pm* very short; vein *st* short,

nearly equal to *pm*, stigma oval; vein *m* with 10-12 stiff long bristles anteriorly; apical band of wing wider in the middle and wider but also fainter than the middle band; proximal band shorter and evanescent both anteriorly and posteriorly; apical band with 3-6 rows of moderately short bristles, middle band with stouter and somewhat curved elongate fusiform black bristles in 6-7 rows, bristles proximal of stigma distinctly stouter than the rest and in rows of 3 each from vein *m* backwards to the tip of vein *st*; hind wing nearly equal to fore wing but about 0.33 of its width; hind tibial spur subequal to metatarsus; tarsal segments ratio 10 : 7 : 7 : 15.

Abdomen oval, slightly shorter than thorax.

Type locality Ooty, Kodaikanal, (T.N.); Periyar (Churakulam) Kerala; Agra, Bihar

Host : *Melanagromyza coffeae* on *Coffea arabica*

This species differs from *C. trifasciatus* Westwood and from *C. insignis* Waterston in its much smaller size (the latter species is 1.24 mm long and the present species is only 1.00 mm. long). It resembles *C. trifasciatus* in metanotum being concolorous with scutellum and in the antennae, but differs in the shape and proportions of pedicel and terminal segment. It differs also in lacking the bluish tinge on head and parapsides and in having posterolateral spine-like process on propodeum and in the proportions of the tarsal segments.

Pareuderus Ferrière

1931 *Pareuderus*, Ferrière, *Bull. ent. Res.*, 22 : 287.

1938 *Pareuderus*, Mani, *Cat. Indian Ins.*, 23 : 152.

Head transverse, narrow; antennae with 10 segments: 1.1.1.4.3; propodeum very short; parapsidal furrows strong; scutellum convex, protruding over the post scutellum; propodeum short, oblique, with a median carina; wings with vein *m* long and veins *pm* and *st* short, *pm* a little longer than *st*; discal ciliation weak, arranged in regular rows and with a few longer hairs below, middle of vein *m*; abdomen short, oval, with a long ovipositor, subequal to abdomen.

Type-species : *Pareuderus torymoides* Ferrière

This genus is very similar to *Euderus* Haliday, in the form of antennae and of the wings, but differs greatly, in the form of abdomen; in *Euderus* it is much elongate and pointed, longer than head and thorax combined and with the ovipositor not or a little exserting; in *Pareuderus* it is short, oval, not longer than thorax and with a long ovipositor

Pareuderus torymoides Ferrière

- 1931 *Pareuderus torymoides*, Ferrière, *Bull. ent. Res.*, 22 : 287.
1938 *Pareuderus torymoides*, Mani, *Cat. Indian Ins.*, 23 : 152.
1939 *Pareuderus torymoides*, Ahmed, *Indian J. Agric. Sci.*, 9 (4) : 618, 620.
1940 *Pareuderus torymoides*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 25.

Female/Male Length female 1.50-1.60 mm. (without ovipositor) and male 1.20-1.40 mm. Head and thorax black, with some bluish reflections, or sometimes green on thorax of males; abdomen dark green-blue, violet on the sides; antennae dark brown, pedicel with bluish shine, underside of scape yellow; legs with bluish coxae and femora, tibiae brown, slightly bluish in the middle, tip of tibiae and tarsi white, except the last tarsal segment brown; ovipositor sheaths brown.

Female Head narrow, very transverse, vertex thin; ocelli almost on a line, ocellocular space less than ocellar diameter, below the front ocellus a transverse furrow stretches almost from eye to eye, separating the vertex from frons; face shagreened, slightly convex, scrobe not deep, without marginal carinae; between toruli and mouth 2 narrow furrows; clypeus small, not distinctly delimited; gena 0.33 of eye; mandibles with 3 teeth; antennae inserted in the middle of face; scape slender, reaching front ocellus; pedicel not thicker than and as long as 0.33 of scape; annellus very small, transverse; funicular segments subequal, as long as pedicel, the first a little shorter than second, fourth a little longer than the others, all slightly longer than thick; club longer than the preceding 2 segments combined, pointed at tip.

Thorax entirely punctate, dull, scutellum and pleurae more finely punctate than mesonotum; median lobe of mesonotum convex; parapsidal furrows deep; scutellum not higher than mesonotum, but strongly convex on the sides and behind; postscutellum hidden under the tip of scutellum; propodeum short, punctate, with a median carina and short sulci; wings large, reaching to middle of ovipositor, hyaline, very transparent; vein *m* longer than *sm*, gradually and slightly narrowed towards the apex; vein *pm* thin, 0.25 of *m*; vein *st* shorter than *pm*, shortly petiolate; marginal fringe very short; discal ciliae small, arranged in about 10 more or less regular lines, which extend only beyond the vein *st*; the rest of wing without ciliation except 2 or 3 longer ciliae under vein *m*; legs rather short; hind coxae irregularly and shortly denticulate along and upper margin; femora and tibiae covered with some scattered white hairs, forming a regular row along the posterior margin of hind tibiae.

Abdomen smooth, as long as thorax, a little compressed laterally, not petiolate, tergites subequal; ovipositor with sheaths slightly ciliate, about as long as 0.67 of abdomen.

Male : Similar, but antennae shorter and narrower; thorax a little narrower, with scutellum more convex at the sides and behind;

abdomen oval, narrow, also a little compressed laterally and as long as thorax.

Type locality : Java : Buitenzorg

Distribution : Java, India

Host : Eggs of *Alcides leeuweni* Hllr., attacking *Ceiba pentandra*, cocoa, kapok etc.

SUBFAMILY ENTEDONINAE

- 1904 *Entedonini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 340.
 1909 *Entedonina*, Schmiedeknecht, *Gen. Ins.*, 97 : 430.
 1938 *Entedoninae*, Mani, *Cat. Indian Ins.*, 23 : 116.

This subfamily is separated from others by the distinctly petiolate abdomen and complete parapsidal furrows.

Entedon Dalman

- 1820 *Entedon*, Dalman, *Svenk. Vet. Akad. Handl.*, 41 : 136.
 1904 *Entedon*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 342. 343.
 1909 *Entedon*, Schmiedeknecht, *Gen. Ins.*, 97 : 432.
 1907 *Eriglyptus*, Crawford, *J.N.Y. ent. Soc.*, 15 : 179.
 1913 *Entedonella*, Girault, *Mem. Queensland Mus.*, 2 : 154.
 1917 *Entedon*, Girault, *Insec. Inscit. Menst.*, 4 : 110.
 1938 *Entedon*, Mani, *Cat. Indian Ins.*, 23 : 117.
 1963 *Entedon*, Hedqvist, *Stud. Forest. Suecica*, 11 : 144.
 1979 *Entedon*, Krombein *et al.*, *Hymen. N. America.*, 1 : 1019.

Head hardened, mandibles 2-3 dentate, vertex acutely margined; eyes oval, hairy, not margined; scrobe narrow, reduced to a mere shiny narrow line, rarely forking above; antennae inserted on level of lower orbital border; scape metallic, not reaching front ocellus; annellus minute, funicle with 3 and club with 2 segments; antennae in male with more close and longer hairs; thorax wide, closely squamously punctate; collar acutely margined; parapsidal furrows indistinct in the middle; propodeum smooth, with a median, but no lateral carina; vein *sm* not seldom thickened; vein *m* longer than *sm*, stigma almost sessile; *pm* very short; legs short and stout, metallic; abdomen with short petiole, ovate, not convex; body generally green or blue green.

Type-species : *Entedon cyanellus* Dalman

Entedon imbreus Walker

- 1846 *Entedon imbreus*, Walker, *Ann. Mag. Nat. Hist.*, 17 : 184.
 1909 *Entedon imbreus*, Schmiedeknecht, *Gen. Ins.*, 97 : 439.
 1938 *Entedon imbreus*, Mani, *Cat. Indian Ins.*, 23 : 117.

Body convex, black shining here and there with blue or green; head and thorax finely squamous; head transverse as wide as thorax; front convex, not disposed in a triangle; antennae clavate, black, shorter than thorax; thorax oval; prothorax transverse, short, narrowed in front; scutum transverse; parapsidal furrows distinct; scutellum obconic; propodeum short, declining, abdomen elliptical, smooth, shining, a little narrower but not longer than thorax; metapodeum longer; segments short; legs bluish-green; tarsi white, tips piceous; wings limpid; veins fulvous; vein *sm* not more than 0.33 of wing; *m* equal to *sm*; radius short; stigma very small.

Type locality : Bombay

FAMILY EULOPHIDAE

- 1856 *Eulophidae* (partim), Förster, *Hym. Stud.*, 2 : 19, 26, 74.
 1878 *Eulophina*, Thomson, *Hym. Scandin.*, 5 : 180.
 1886 *Eulophinae* (partim), Howard, *Ent. America*, 2 : 94.
 1886 *Eulophinae* (partim), Howard, *Ent. America*, 2 : 198.
 1904 *Eulophinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 355.
 1909 *Eulophini*, Schmiedeknecht, *Gen. Ins.*, 97 : 408.
 1938 *Eulophidae*, Mani, *Cat. Indian Ins.*, 23 : 113.
 1957 *Eulophidae*, Boucek, *Klic Zvireny Kratovhvil CRS*, 2 : 269-278.
 1959 *Eulophidae*, Graham, *Trans. Soc. Brit. Ent.*, 13 : 169-204.
 1959 *Eulophidae*, Boucek, *Acta Ent. Mus. Nat. Pragae*, 33 : 117-194.
 1963 *Eulophidae*, Boucek, *Beitr. Ent.*, 13 : 257-281.
 1965 *Eulophidae*, Boucek, *Acta Ent. Mus. Nat. Pragae*, 36 : 5-90.
 1968 *Eulophidae*, Boucek & Askew, *Index of Entomophagous Insects, Eulophidae le Francois*, 254.
 1979 *Eulophidae*, Krombein *et al.*, *Hymen. N. America*, 1 : 967.

Mesonotum without parapsidal furrows, if however furrows present then incomplete and at the most only slightly indicated anteriorly; vein *sm* entire, not distinctly broken, or abruptly interrupted before uniting with vein *m*; usually distinctly longer than *m*; vein *st* long, distinct, rarely very short.

KEY TO SUBFAMILIES

- | | |
|----------------------------|------------------------|
| 1. Hind tibial spur double | <i>Eulophinae</i> |
| Hind tibial spur single | <i>Hemiptarseninae</i> |

SUBFAMILY EULOPHINAE

- 1904 *Eulophini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 356.
 1909 *Eulophina*, Schmiedeknecht, *Gen. Ins.*, 97 : 409.
 1938 *Eulophariae*, Mani, *Cat. Indian Ins.*, 23 : :113.
 1959 *Eulophini*, Graham, *Trans. Soc. Brit. Ent.*, 13 : 173-185.
 1959 *Eulophini*, Boucek, *Acta Ent. Mus. Natl. Pragae*, 33 : 117-120.

- 1965 *Eulophini*, Boucek, *Mem. ent. Soc. Canada*, 34 : 91-96.
 1965 *Eulophini*, Yoshimoto, *Pacific Ins.*, 7 : 670.
 1970 *Eulophini*, Miller, *Mem. ent. Soc. Canada*, 68 : 5-10.
 1979 *Eulophini*, Krombein *et al.*, *Hymen. N. America*, 1 : 967.

This subfamily is recognized by the presence of double hind tibial spurs and absence of parapsidal furrows.

Included genera *Diaulus* Ashmead, *Diaulomorpha* Ashmead, *Eulophus* Geoffroy, *Di cladocerus* Westwood and *Pentacladia* Westwood.

Sympiesis Förster

- 1834 *Eulophus* (partim), Nees, *Hym. Affin. Mon.*, 2 : 168.
 1856 *Sympiesis*, Förster, *Hymen. Stud.*, 2 : 74.
 1856 *Teleogmus*, Förster, *Hym. Stud.*, 2 : 72, 74.
 1878 *Sympiesis*, Thomson, *Hym. Scand.*, 5 : 208.
 1904 *Sympiesis*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 357.
 1904 *Teleogmus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 353.
 1909 *Sympiesis*, Schmiedeknecht, *Gen. Ins.*, 97 : 411.
 1913 *Pseudopheliminus*, Girault, *Mem. Queensland Mus.*, 2 : 286.
 1913 *Notanisomorphella*, Girault, *Mem. Queensland Mus.*, 2 : 287.
 1954 *Moroceras*, Erdös, *Ann. Hist. Nat. Mus. Nat. Hung.*, 5 : 323.
 1959 *Sympiesis*, Subg. *Cladosympiesis*, Graham, *Trans. Soc. Brit. Ent.*, 13 : 182.
 1962 *Sympiesis*, Delucchi, *Awamia*, 5 : 60.
 1963 *Sympiesis*, Graham, *Trans. Soc. Brit. Ent.*, 15 : 187.
 1979 *Sympiesis*, Krombein *et al.*, *Hymen. N. America*, 1 : 969.

Body elongate, green or bluish-green; head as wide as thorax; vertex narrow; eyes large, glabrous; face closely punctate; antennae long and stout, inserted below the middle of face; scape somewhat expanded; funicle long, slightly compressed; in female with 4 and in male 5 segments; thorax broad, flat; scutellum without lateral furrows; propodeum smooth with distinct median carina; wings hyaline; vein *m* at least 3 times *st*; legs stout, first 2 tarsal segments elongate; third and fourth short; abdomen long pointed behind; in male antennae without branches.

Type-species : *Sympiesis sericeicornis* (Nees)

Sympiesis purpureus Waterston

(Fig. 314)

- 1914 *Sympiesis purpureus*, Waterston, *Bull. ent. Res.*, 5 : 333.
 1938 *Sympiesis purpureus*, Mani, *Cat. Indian Ins.*, 23 : 113.
 1940 *Sympiesis purpureus*, Pruthi & Mani, *ICAR Misc. Bull.* 30 : 24.

Female : Length 1.50 mm. Body generally dark purple; legs black.

Head wider than long; eyes glabrous, shiny; occiput reticulate; antennae with 10 segments : 1.1.2.4.2; scape long, slender; pedicel transverse, about 0.20 of scape; first funicular segment about 2 times pedicel; funicular segments subequal, 3 and 4 slightly shorter

Thorax closely reticulate, except in the middle; parapsidal furrows indicated only in front; scutellum with 2 bristles; propodeum smooth with distinct median keel; veins *sm* : *m* : *st* : *pm* ratio 5 : 10 : 1 : 2.

Abdominal tergites subequal, but tergites 2 and 3 slightly shorter, generally smooth; tergite 8 with dense bristles.

Type locality : Ceylon

Host : *Acrocercops ordinatella* Meyerick, mining leaf of camphor plant

Asympiesiella Girault

1913 *Asympiesiella*, Girault, *Arch. Naturg.*, 79 : (6) : 78.

1938 *Asympiesiella*, Mani, *Cat. Indian Ins.*, 23 : 113.

I have not seen specimens of this genus and the original description is not also available to me.

Type-species : *Asympiesiella nelsonensis* Girault

Asympiesiella india Girault

1916 *Asympiesiella india*, Girault, *Canad. Ent.*, 48 : 341.

1921 *Asympiesiella india*, Dutt, *Rep. Proc. Fourth ent. Meet. Pusa*, 288.

1938 *Asympiesiella india*, Mani, *Cat. Indian Ins.*, 23 : 114.

“*Female* : Agrees with the description of the type-species except that only the caudal coxa metallic at its proximal 0.50, scape is brownish-black except along the ventral margin, the propodeum is scaly, funicle one is only a third longer than 4, which is twice longer than wide, the mandibles are 7 dentate, and the male differs in having the caudal femur and the same of the caudal tibia, black; its scape is pale except at apex, the white on the abdomen is confined to the meson, and funicle 4 is not quite twice the length of the club, the latter subequal to funicles 3 and 5, rami on funicles 1-3, from the base of each same side.

Head and thorax in both sexes scaly punctate.”

Type locality : Pusa Bihar

Host : *Gracilaria soyella* attacking leaf of *Cajanus cajan*

Eulophus Oliver

1758 *Ichneumon* (partim), Lin., *Syst. Nat.*, 1 : 568.

1762 *Eulophus*, Geoffroy, *Hist. Abr. Ins.*, 2 : 312. (Not available, test. opinion 228, *Internatl. Comm. Zool. Nomencl.*, 1954).

- 1781 *Ichneumon* (partim), Fabricius, *Spec. Ins.* 441.
 1791 *Eulophus*, Oliver, *Encycl. Meth.*, 6 : 454.
 1802 *Comedo*, Schrank, *Fauna Boica*, 2 : 308.
 1878 *Cratotechus*, Thomson, *Hymen. Scand.*, 5 : 208, 219.
 1898 *Cratotrechus*, Dalla Torre, *Cat. Hym.*, 5 : 55.
 1904 *Cratotrechus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 357, 371
 1904 *Eulophus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 357.
 1909 *Eulophus*, Schmiedeknecht, *Gen. Ins.*, 97 : 413
 1938 *Eulophus*, Mani, *Cat. Indian Ins.*, 23 : 114.
 1959 *Comedo*, subg. *Onychocomedo*, Graham, *Trans. Soc. Brit. Ent.*, 13 : 183.
 1959 *Eulophus*, Boucek, *Acta. Ent. Mus. Natl. Pragae*, 33 : 160
 1964 *Eulophus*, Gijswijt, *Ent. Berl.*, 24 : 31.
 1979 *Eulophus*, Krombein *et al.*, *Hymen. N. America*, 1 : 974.

Head narrow, in front; vertex narrow; eyes glabrous or hairy; ocelli in a flat curve; antennae long, inserted below the middle of face; scape not reaching front ocellus; funicle with 4 segments, not compressed or fusiform; club with 2 segments; funicle in male with 3 long feathery-haired branches; clypeus not incised in front; thorax slender; scutellum without lateral furrows; propodeum with median longitudinal carina and sometimes also with transverse carinae; wings usually hyaline, rarely with dark spots; vein *pm* distinctly longer than *st*; abdomen sessile, mostly elongate and pointed at tip.

Type-species : *Eulophus ruficornis* (Fabricius)

***Eulophus fraternus*, Motschulsky**

- 1859 *Eulophus fraternus*, Motschulsky, *Etud. Ent.*, 8 : 118.
 1909 *Eulophus fraternus*, Schmiedeknecht, *Gen. Ins.*, 97 : 415.
 1938 *Eulophus fraternus*, Mani, *Cat. Indian Ins.*, 23 : 114.

“Taille et forme l’*E. mantiechthrus*, mais abdomen plus allonge, plus étroit et plus acuminé. La couleur générale est noire et peu luisante, à l’exception du métathorax et de l’abdomen qui sont d’un vert bronze métallique, et du front qui est noir, varie de cuivre. Les bouts des jambes et les tarses sont blanches, l’extrémité des derniers obscure.”

Type locality : Ceylon : near Colombo.

***Eulophus mantiechthrus* Motschulsky**

- 1859 *Eulophus mantiechthrus*, Motschulsky, *Etud. Ent.* 7 : 117.
 1863 *Eulophus mantiechthrus*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou.* 36 (3) : 65.
 1909 *Eulophus mantiechthrus*, Schmiedeknecht, *Gen. Ins.*, 97 : 416.
 1938 *Eulophus mantiechthrus*, Mani, *Cat. Indian Ins.*, 23 : 114.

Female : Length 0.75 mm. Body blackish-blue; frons, propodeum, abdomen coeruleous-metallic; fore legs, middle and hind femora and tibial tips and base of tarsi whitish-brown, shiny.

Head transverse, punctate, slightly longitudinally excavate in between eyes; antennae with 6 segments; scape elongate; segments 2-5 small, subglobose; sixth segment a little larger than the fifth; ovate, apically acuminate.

Thorax punctate, subopaque; scutellum sublunar, somewhat transverse, convex, punctate; slightly also depressed.

Type locality : Ceylon

Distribution : Ceylon

Host : Praying mantis

***Eulophus tardescens* Motschulsky**

1863 *Eulophus tardescens*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 65.

1909 *Eulophus tradescens*, Schmiedeknecht, *Gen. Ins.*, 97 : 418.

1938 *Eulophus tradescens*, Mani, *Cat. Indian Ins.*, 23 : 115.

Female : Length 1.50 mm. "Minutus, elongatus, attenuatus, subnitidus, subviridi-aeneus, femoribus apice, tibiis tarsique plus minusce subalbis, antennarum basi, femoribus apice, tibiis trasiq ue plus minusce subalbis, antennarum basi, femoribus medio, trasiq ue apice infuscatis, vena costalis fusca, valde distincta, oculis ovatis, vix convexis, rufescentibus, capite thoracique impunctatis, mesonoto subconvexo, subcupreo; abdomine capitis latitudine, elongato-subovato, depresso, canescente-viridi, apice acuminato.

Male : Elongatus, angustus, postice conico-attenuatus, cyanescente-viridis; antennis fusco-testaceis, basi dilutioribus."

Type locality : Ceylon : Mt. Nuwara ELLIYA.

***Eulophus (?) ventricosus* Motschulsky**

1863 *Eulophus ventricosus*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 63.

1909 *Eulophus ventricosus*, Schmiedeknecht, *Gen. Ins.*, 97 : 418.

1938 *Eulophus ventricosus*, Mani, *Cat. Indian Ins.*, 23:115.

Male: Length 3.50 mm. "Elongatus, angustatus, subconvexus postice attenuatus, nitidus, antice rugulosopunctatus, niger, antennarum scapo, pronotis angulis anticis, femoribus apice tibiis tarsique rufo-testaceis, tibiis mediis et postices plus minusve infuscatis; capite subrotundata rugoso-punctata, ocellis nigris, oculis ovalis, subconvexis rufescente-fuscis; thorace capite paulo angustiere, subcylindrico, elongato, rugulosopunctato, subnitido; pronoto medio transversim nitido-marginato, utrinque oblique impresso, segmentis subelongatis, convexis, prominulis, lateraliter posotis, mesonoto ovato, convexo, metanoto exserto, postice arcuatim-subangustato lato truncato, inaequaliter rugoso et carinulato; abdomine subsessili,

glabro, convexo, antice rotundato, postice elongato-conico, longitue dimidio corporis; alarum venis testaceis.”

Type locality Ceylon : Summit of Mt. Patannas

SPECIES INCERTAE SEDIS

Dasyscapus thripsivorus Narayanan, Subba Rao & Ramachandra Rao

1962 *Dasyscapus thripsivorus*, Narayana et al., *Proc. Nat. Ins. Sci. India.*, 26 B (4) : 168

Female : Length 0.50-0.60 mm. Head and thorax darkish brown; antennae, abdomen and legs pale yellow.

Head transverse, as wide as long; eyes strongly converging above, vertex and frons smooth, frontoclypeal suture straight between eyes; antennae inserted above lower orbital borders on 2 lateral protruberances, separated by triangular labrum, with 8 segments; scape long, thicker basally, reduced apically; pedicel more than 0.50 of scape; annellus very narrow and not very distinct, funicular segments a little longer than thick; club 4 segmented, subequal to scape, distinctly thicker than pedicel, segments subequal, apical segment slightly longer than others, terminating in a prominent spine, with several long bristles.

Thorax smooth; parapsidal furrows distinct; scutellar base with one long spine on either side; wings hyaline, narrow at base; vein *m* slightly longer than *sm*; *st* very short; fringe at apical margin more than 2 times as long as the maximum width of the wing.

Abdomen a little shorter than head and thorax combined, subpetiolate, more or less ovate and pointed at apex; ovipositor prominent but not protruding beyond tip of abdomen.

Male Length 0.50-0.60 mm. Scape abnormally swollen and dark brownish; apical 0.33 of abdomen slightly black; otherwise essentially like female.

Type locality : Ratnagiri Bombay

Host : A species of thrips feeding on *Arachis hypogea*

SUBFAMILY HEMIPTARSENINAE

1904 *Hemiptarsenini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 358.

1909 *Hemiptarsenina*, Schmiedeknecht, *Gen. Ins.*, 97 : 419.

This subfamily is separated from Eulophine only by the single hind tibial spur. Genera included here *Solenotus* Förster, *Hemiptarsenus* Westwood and *Necremnus* Thomson.

Solenotus Förster

1856 *Solenotus*, Förster, *Hymn. Stud.*, 2 : 74.

1904 *Diglyphus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 358.

1909 *Solenotus*, Schiedeknecht, *Gen. Ins.*, 97 : 419.

Head as wide as thorax; vertex narrow; antennae short, clavate; scape slender, not reaching front ocellus; pedicel long; annellus minute; funicle in female with 2 and club with 3 segments; funicle in male not branched; thorax flat, pronotum conical, scutellum with 2 deep lateral lines; propodeum without carinae; vein *m* 2 times *st*, which latter a little shorter than *pm*; abdomen oval.

Type-species Solenotus viridis Förster

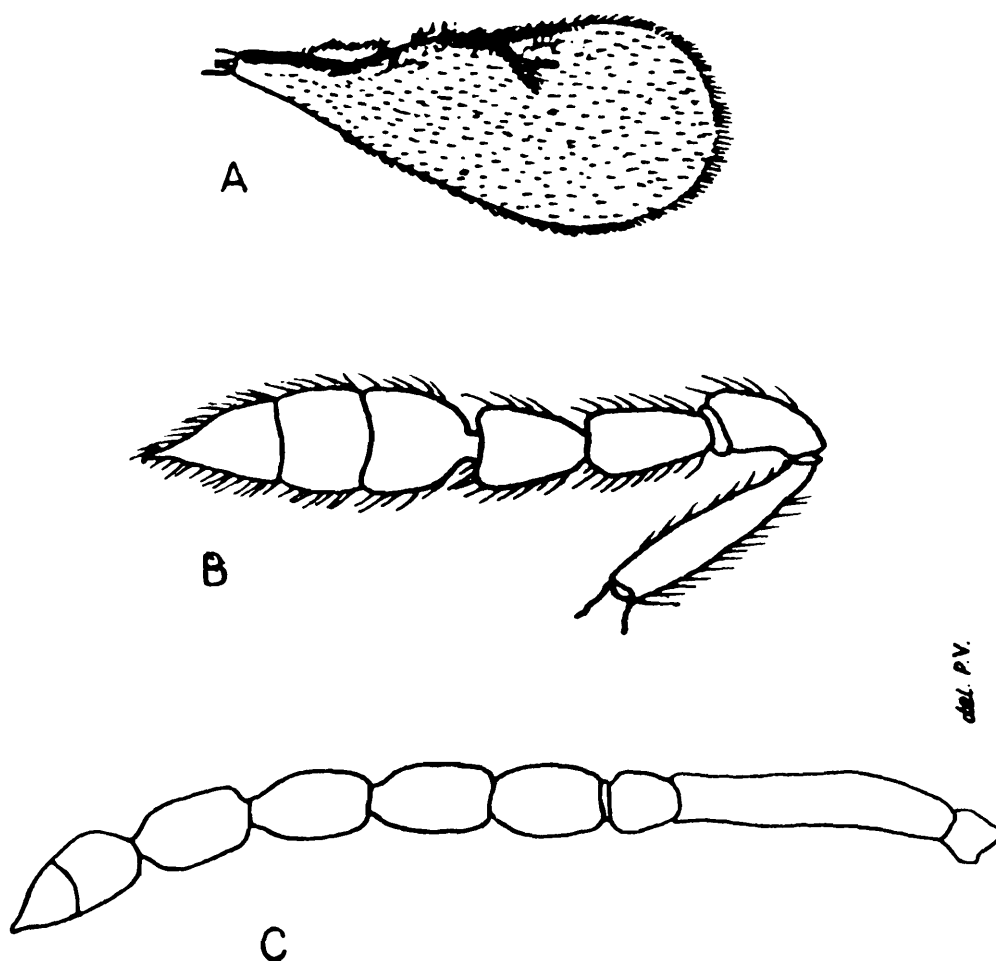


FIG 314. A-B. *Solenotus guptai* Subba Rao, female : A. Fore wing; B. Antennae (Modified from Subba Rao) ; C. *Sympiesis purpureus* Waterston, female : Antenna (modified from Waterston).

Solenotus guptai Subba Rao

(Fig. 314)

1957 *Solenotus guptai*, Subba Rao, *Indian J. Ent. Sci.*, 19 (1) : 50.

Female : Length 1.60 mm. Body metallic-blue and green, with red iridescence; eyes bare, brick-red; scape dark brown; thorax blue-green; with red iridescence; propodeum shiny; coxae dark brown; trochanter brownish-black with tip unpigmented; abdomen metallic green with red iridescence.

Head viewed above, slightly wider than long; vertex narrowed, slightly punctate; ocelli in a broad triangle, interocellar space slightly more than ocellocular space; interorbital space slightly more than 0.50 of width of head; clypeus short; face moderately convex; genae not prominent; inner orbital border not parallel; antennae inserted just above level of lower orbital borders with 8 segments : 1.1.1.2.3; scape long, slightly shorter than pedicel, annellus and the funicular segments combined; pedicel small than the first funicular segment; first funicular segment 0.50 of scape and slightly longer than the second; terminal segment ending in a spine-like structure.

Parapsidal furrows present only in the anterior region as slight depressions; scutellum convex with 2 longitudinal grooves; metathorax very short, trochanter longer than coxae; hind tibia 1.25 times longer than femur; second tarsal segment longer than the other tarsal segments; fore wing 2.50 times as long as wide; vein *m* shorter than *sm*; *pm* present.

Abdomen petiolate, slightly shorter than thorax, conic-ovate, dorsoventrally depressed; ovipositor not exerted.

Male : Length 1.20 mm. Antennae same as in female except for the numerous sensory hairs; metallic-green; legs paler than in females.

Type locality : New Delhi

FAMILY TETRASTICHIDAE

- 1856 *Tetrastichoidae*, Förster, *Hym. Stud.*, 2 : 26, 83.
 1878 *Tetrastichina*, Thomson, *Hym. Skand.*, 5 : 180.
 1886 *Tetrastichinae*, Howard, *Amer. Ent.*, 1 : 199.
 1886 *Tetrastichinae*, Howard, *Amer. Ent.*, 2 : 98.
 1897 *Tetrastichinae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 249.
 1904 *Tetrastichinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 337.
 1909 *Tetrastichini*, Schmiedeknecht, *Gen. Ins.*, 97 : 463.

Vein *sm* abruptly broken before reaching margin, *st* generally long; *pm* disappearing beyond *st*; scutellum usually with furrowed longitudinal lines; mesopleura deeply impressed; tarsal segments 4.

KEY TO SUBFAMILIES

1. Abdomen distinctly petiolate; vein *m* in hind wing strongly thickened. *Ceratoneurinae*
- Abdomen sessile; vein *m* in hind wing thin. *Tetrastichinae*

SUBFAMILY CERATONEURINAE

- 1904 *Ceratoneurini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 347.
 1909 *Ceratoneurina*, Schmiedeknecht, *Gen. Ins.*, 97 : 463.

Readily recognized by the petiolate abdomen and thickened vein *m* of hind wing. Single genus *Ceratoneura* Ashmead.

Ceratoneura Ashmead

- 1894 *Ceratoneura*, Ashmead, *J. Linn. Soc. London*, (Zool.), 25 : 178.
 1904 *Ceratoneura*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 347.
 1909 *Ceratoneura*, Schmiedeknecht, *Gen. Ins.*, 97 : 463.
 1917 *Ceratotetrastichodes*, Girault, *Speciosissima Genera Nova Eulophidorum*, 2.
 1938 *Ceratoneura*, Mani, *Cat. Indian Ins.*, 23 : 126.
 1979 *Ceratoneura*, Krombein *et al.*, *Hymen. N. America*, 1 : 988.

Antennae with 10 segments, annelli 2; face with striae converging outwards towards mouth; abdomen distinctly petiolate; hind wing with a long clavate vein *m*.

Type-species : *Ceratoneura petiolata* Ashmead

Ceratoneura indi Girault

- 1917 *Ceratoneura indi*, Girault, *Descr. Hymen. Chalc. observ.*, 5 : 10.
 1938 *Ceratoneura indi*, Mani, *Cat. Indian Ins.*, 23 : 127.

I have not seen specimens of this species and the original description is not also available to me.

Type locality : Coimbatore

Ceratoneura indica Rohwer

(Fig. 315)

- 1921 *Ceratoneura indica*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 127.
 1938 *Ceratoneura indica*, Mani, *Cat. Indian Ins.*, 23 : 127.

Female : Length 1.50 mm. Body black; antennae and legs below coxae pale brown, tibiae and tarsi somewhat yellow; wings hyaline; venation very pale brown.

Head with the striae on face of uniform strength; frons and vertex subshining, granulato-lineate; interocellar space less than ocellocular space; a more or less distinct depression behind lateral ocelli.

Pronotum transversely lineato-granular; scutum without impressed median line, finely transversely lineate; scutellum with the impressed line very feeble and difficult to see, but certainly without a median one, granular; propodeum shiny, without distinct sculpture,

median groove distinct, wider anteriorly, lateral and posterior sulci distinct; petiole wider posteriorly, subequal with caudal width; vein *st* a little more than 0.25 of vein *m*; veins *m* and *sm* subequal.

Abdomen shining, acuminate from the basal 0.33.

Type locality : Coimbatore

Host : From gall midge

Closely related to *C. petiolata*, but differs in antennal characters and to some extent in sculpture.

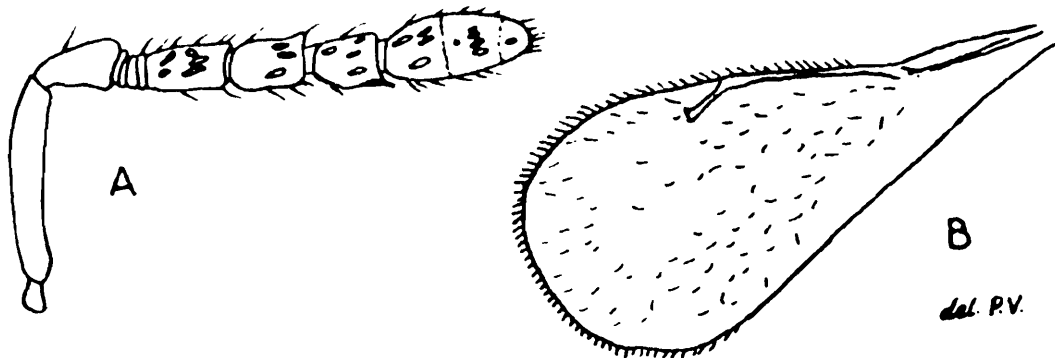


FIG. 315 A. *Ceratoneura indica* Rohwer, female, antenna (modified from Rohwer); B. *Aprostocetus epilachnae* Kurian, female, Fore wing.

SUBFAMILY TETRASTICHINAE

1904 *Tetrastichini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 347.

1909 *Tetrastichina*, Schmiedeknecht, *Gen. Ins.*, 97 : 464.

Abdomen sessile; vein *m* in hind wing not thickened; scutellum as a rule with one or two pairs of longitudinal furrows. Species parasitic nearly on every group of insect, but most usually gall insects; some are hyperparasites.

KEY TO GENERA

- | | |
|---|--|
| 1. Females | 2 |
| Males | 14 |
| 2. Mesonotum without median longitudinal impressed line | 3 |
| Mesonotum with impressed median longitudinal line. | 9 |
| 3. Pronotum elongate conical; antennae inserted close to the mouth border, with 9 segments; abdomen longer than head and thorax combined, somewhat compressed, the last sternite projecting | <i>Melittobia</i> Westwood and
<i>Tachinobia</i> Boucek |
| Pronotum short; transverse and truncate in front | 4 |

4. Antennae with 10 segments, including 2 annelli or apparently without (*Hyperteles*). 5
 Antennae with 8-9 segments, including only a single annellus. 7
5. Abdomen 2-3 times longer than head and thorax combined, conically produced apically; propodeum short, smooth, true annellus absent, body black and yellow spotted *Hyperteles* Förster
 Abdomen shorter; true annelli present. 6
6. Abdomen flat, shiny, tergite unequal. *Tetrastichodes* Ashmead
 Abdomen convex, never shiny and smooth but always sculptured; propodeum punctate. *Trichaporus* Förster
7. Fore wing with long fringe on outer margin; hind wing acutely pointed *Gyrolasia* Förster
 Fore wing without long fringe; hind wing not acutely pointed. 8
8. Head and thorax smooth, at the most with some scattered obscure punctae; abdomen globose, shorter but thicker than thorax *Syntomospyrum* Förster
 Head and thorax punctate like abdomen or leathery; abdomen elongate *Trichaporus* Förster
9. Scape abnormally enlarged; antennal segments 9: 1.1.1.4.2. 10
 Scape normal 11
10. Fore wing with long fringe apically; funicle short, moniliform. *Ceranisus* Walker
 Marginal fringe short; funicular segments longer than thick *Baryscapus* Förster
11. Fore legs strongly swollen, tibiae short and stout; pronotum large, transversely quadrate; abdomen elongate; ovipositor distinctly exerted. *Crataepus* Förster
 Fore legs normal; pronotum not exceptionally large 12
12. Antennae very short, clavate; outer fringe fore wing long; antennae with 8 segments; abdomen short, ovipositor not exerted. *Pentastichus* Ashmead
 Antennae filiform or only slightly thickened apically, with 9 or 10 segments. 13
13. Antennal segments 10 : 1.1.2.3.3; abdomen short or long. . . *Tetrastichus* Haliday
 Antennae with 9 segments, including one annellus, funicular segments longer than thick; abdomen long, compressed; ovipositor generally exerted *Aprostocetus* Westwood
 Antennae with 9 segments; abdomen not compressed. *Neparaprostocetus* Mani
14. Mesonotum without impressed lines. . 15
 Mesonotum with impressed lines. 20

15. Wings rudimentary or absent; eyes represented only by pigmented area; antennae inserted close to the mouth border, scape long, swollen apically; pronotum elongate conical. *Melittobia* Westwood
Wings normally developed 16
16. Fore wing with long fringe on outer margin; abdomen acutely pointed *Gyrolasia* Förster
Fore wing without exceptionally long fringe. 17
17. Abdomen oval or globose, shorter than thorax; small black dull coloured species .. *Syntomosphyrum* Förster
Abdomen more or less elongate 18
18. Propodeum short, punctate; abdomen cylindrical, distinctly sculptured; head and thorax punctate or leathery *Trichaporus* Förster
Propodeum not short; abdomen neither cylindrical nor sculptured; head and thorax not punctate 19
19. Abdomen conically produced, longer than thorax; propodeum short, with acute carina *Hyperteles* Förster
Abdomen not longer than thorax; propodeum very short, with longitudinal or transverse carinae sometimes *Tetrastichodes* Ashmead
20. Scape expanded 21
Scape normal 22
21. Apical fringe long; funicle slender, filiform, with short pubescence *Ceranisus* Walker
Apical fringe not long *Baryscapus* Förster
22. Fore leg swollen, tibiae short; abdomen short oval *Crataepus* Förster
Fore legs normal 23
23. Flagellum clavate, hairy; funicle with 2 segments transverse; abdomen not longer than thorax, oval *Pentastichus* Ashmead
Antennae filiform, with 9 segments 24
24. Flagellum long with scattered long hairs..... *Tetrastichus* Haliday
Flagellum not specially long, without scattered hairs *Aprostocetus* Westwood

Melittobia Westwood

- 1847 *Melittobia*, Westwood, *Trans. ent. Soc. London*, 5 : 18, 55.
1849 *Anthophorabia*, Newport, *Gard. Chron.*, 183.
1904 *Melittobia*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 348.
1908 *Philopison*, Cameron, *Deut. Ent. Ztschr.*, 559.
1910 *Sphecophilus*, Bréthès, *An. Buenos Aires Mus. Nac. de Hist. Nat.*, 20 : 208.
1910 *Sphecophilus*, Bréthès, *An. Buenos Aires Mus. Nac. de Hist. Nat.*, 20 : 310.
1917 *Acerotoneuromyia*, Girault, *Insec. Inscit. Menst.*, 5 : 151.

- 1949 *Melittobia*, De Santis, *Mus. La Plata Univ. Nac.*, 14 : 276.
 1951 *Melittobia*, Risbec, *Inst. Franç. d'Afr. Noire*, 13 : 90.
 1952 *Melittobia*, Risbec, *Mem. Inst. Sci. Madagascar*, 2 : 253.
 1960 *Melittobia*, Ferrière, *Acta Hym.*, 1 : 106.
 1965 *Melittobia*, Domenichini, *Bol. Zool. agric. edi. Bach.*, (2) 6 : 63-64.
 1979 *Melittobia*, Krombein *et al.*, *Hymen. N. America*, 1 : 1005.

Antennae with 9 segments, inserted near the mouth border; in male scape long, broadly dilated toward apex, pedicel and first funicular segment dilated; funicular segments 2-4 small, transverse; club ovate, with 3 segments; pronotum long, conical; mesonotum without a median grooved line; wings reduced; abdomen in female longer than head and thorax combined, subcompressed, ventral valve prominent.

Type-species : *Melittobia audouinii* Westwood

***Melittobia indica* (Silvestri)**

- 1910 *Syntomosphyrum indicum*, Silvestri, *Boll. Lab. Zool. Portici*, 4 : 228.
 1914 *Syntomosphyrum indicum*, Waterston, *Bull. ent. Res.*, 5 : 339.
 1920 *Syntomosphyrum indicum*, Fullaway, *Rep. Proc. Third Ent. Meet. Pusa*, 2 : 628.
 1938 *Syntomosphyrum indicum*, Mani, *Cat. Indian Ins.*, 23 : 128.
 1940 *Melittobia indicum*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Antennae inserted below level of lower orbital border, with 0.60 of scrobe; frons with 8-10 conspicuous bristles; antennae brown; pedicel less than 0.50 of scape; third funicular segment thicker than long; propodeal carina continued in front to metathorax; second tergite longer than the third; second hind tarsal segment longer than the subequal segments 1 and 3.

Type locality : Bangalore

Host : Maggots of a fruit-fly (*Dacus* sp.)

***Tachinobia* Boucek**

- 1977 *Tachinobia*, Boucek, *Bull. ent. Res.*, 67 : 26.

Head rounded behind; lateral ocelli close to occiput; interocellar space subequal to front ocellar space; postocellar space greater than ocellular; ocellar area not delimited by groove; scrobe deep; eyes oval, pubescent; genal sulcus not present; clypeus subbidentate below; antennae inserted slightly below level of lower orbital border; short with 9 segments : 1.1.1.3.3; scape not reaching upper orbital level; pedicel subpyriform; flagellum short, subclavate; annellus minute; funicular segments transverse; club stout, apically produced into a mucronate spine; thorax moderately depressed, finely sculptured; pronotum shortly campanulate, with the corners

prominent; parapsidal furrows sinuate, shallow behind; axillae fairly advanced; scutellum transverse, without submarginal groove, sublateral grooves obscure; with an anterior pair of bristles before middle; propodeum not coarsely sculptured, with faint median carina, without lateral and sublateral carinae; spiracles oval; wings with parastigma basally, vein *m* moderately thickened; *pm* absent; legs strong; abdomen smooth; first tergite slightly longer than the rest, hypopygium hardly reaching 0.75 of abdomen, emarginate apically; ovipositor exerted.

Male : Head swollen, with stout, curved bristles; ocelli indistinct; eyes reduced with about 30 facettes; gena swollen; scape swollen, with a membranous area; funicle shorter than in female, segments transverse; club without apical spine; wing almost absent; legs short, femora swollen, tibiae strongly clavate.

Type-species : *Tachinobia repanda* Boucek

This genus comes very close to *Melittobia* Westwood, but is readily separated from it by the middle lobes of mesoscutum in winged examples with fewer setae, often also confined to the region of the parapsidal furrows, if the setae are scattered, then scutellum without submedian grooves; fore wing present with vein *m* not thickened; male with inflated scapes, and swollen legs.

***Tachinobia repanda* Boucek**

1977 *Tachinobia repanda*, Boucek, *Bull. ent. Res.*, 67 : 27.

Female : Length 0.70-1.40 mm. Body black, with metallic-green or bronzy reflections; scape, trochanter, tibiae, tarsi pale brown; rest of antennae darker brown; femora infusate, submetallic, tibiae often slightly infusate subbasally; wings hyaline.

Head in front 1.10 times as wide as high; shiny, sparsely and widely reticulate, with setigerous punctae; eyes less than 1.5 : 1; antennae inserted hardly below the lower orbital borders.

Thorax with bristles long on mesonotum, with a median longitudinal line bare; scutellum about 1.50 times as wide as long, longitudinally finely striate; fore wings 2.20-2.30 times as long as wide.

Abdomen oval, longer than thorax, bare; one cercal bristle long.

Male : Length 1.15-1.30 mm. Body black, with faint metallic tinge; abdomen more brown than in female; antennae, tibiae and tarsi pale brown.

Type locality : Pupua (New Guinea)

Distribution : New Guinea; Thailand; India : Coimbatore; Malaysia; Indonesia; Solomon Islands; USA; Cuba

Hosts : Tachnid parasites of larvae of Lepidoptera; also *Besa remota*, *Sarcophaga banksi*

Ceraninus Walker

- 1840 *Ceraninus*, Walker, *Entomologist*, 1 : 6.
 1904 *Ceraninus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 349.
 1909 *Ceraninus*, Schmiedeknecht, *Gen. Ins.*, 97 : 469.
 1911 *Thripoctenus*, Crawford, *Proc. ent. Soc. Washington*, 13 : 233.
 1917 *Cryptomphale*, Girault, *Speciosissima Genera Nova Eulophidorum*, 2.
 1938 *Ceraninus*, Mani, *Cat. Indian Ins.*, 23 : 128.
 1943 *Ceraninus*, Burks, *Proc. US nat. Mus.*, 93 : 509.
 1957 *Ceraninus*, Bakkendorf, *Ent. Meddel.*, 28 : 1.
 1959 *Ceraninus*, Graham, *Trans. Soc. Brit. Ent.*, 13 : 203.
 1961 *Ceraninus*, De Santis, *Notas Mus. La Plata (Zool.)* 187 : 11.
 1979 *Ceraninus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1006.

Antennae in female with 9 segments including one annellus; scape abnormal, enormously enlarged or dilated; funicle in female with 4 segments, short, moniliform; in male slender, filiform, with short pubescence; mesonotum with a median grooved line; fore wings with long marginal fringe.

Type-species : *Ceraninus pacuvius* Walker

Ceraninus nigricornis Motschulsky

- 1863 *Ceraninus* (?) *nigricornis*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 67.
 1909 *Ceraninus* (?) *nigricornis*, Schmiedeknecht, *Gen. Ins.*, 97 : 470.
 1938 *Ceraninus* (?) *nigricornis*, Mani, *Cat. Indian Ins.*, 23 : 128.

Length 1.87 mm. "Elongatus, angustatus, subgibbosus, nitidus, rufo-testaceus, antennis nigris, his basi, abdomine oculisque fusco-testaceis; capite depresso, postice subexcavototruncato, ocellis approximatis, prominulis, antennis dimidio corporis longitudine, articulis quinque ultimis elongatis, 7-o ovato, subcuminato; thorace capitis latitudine, antice posticeque angustato, subinaequale, vix nitido, non punctato, pronoto antice subconico, subgibboso, medio coarctato, postice dilatato, medio subsulcato, segmentis clavato-convexis, mesonoto subrotundata, nitido; petiolo brevissimo, cylindrico; abdomine thorace angustiore et brevior, elongato-ovato, compresso-cupero iridescens, apice attenuato, mucronato; alis ut in priori."

Type locality : Ceylon : Mt. Patannas

Ceraninus semicetaceus Motschulsky

- 1863 *Ceraninus* (?) *semicetaceus*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 67.
 1909 *Ceraninus* (?) *subconicus*, Schmiedeknecht, *Gen. Ins.*, 23 : 129.
 1938 *Ceraninus* (?) *semicetaceus*, Mani, *Cat. Indian Ins.*, 23 : 128.

Length 1.75 mm. "Elongatus, angustatus, vix convexus, subnitidus, niger, antennis, abdominis dimidio antice pedibusque subalbido-pallidis; capite depresso, oculis rufoscentibus; thorace elongato-ovato, postice attenuato, truncato, impunctato, subopaco; petiolo brevissimo, distincto, subconico, fusco-testaceo; abdominis elongato-ovato, postice attenuato-acuminato, supra excavato-depresso, glabro; ramo radali apice dilatato, nigro, vena costalis fusco-testacea."

Type locality : Ceylon : Mt. Nuwara ELLIYA

Distribution : Ceylon

Host : Unknown

Ceraninus subconicus Motschulsky

1863 *Ceraninus* (?) *subconicus*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 66.

1909 *Ceraninus* (?) *subconicus*, Schmiedeknecht, *Gen. Ins.*, 97 : 470.

1938 *Ceraninus* (?) *subconicus*, Mani, *Cat. Indian Ins.*, 23 : 129.

Length 2.10 mm. "Subelongatus, gibbus, antice punctatus, postice nitidissimus, nigro-aeneus, antennis nigris, his scapo basi, abdominis macula lata antice pedibusque dilute rufo-testaceis, vena costalis tarsique apice infuscatis, capite depresso, fronte subexcavato, ocellis approximatis, oculis subrotundatis, paulo longioribus, filiformis, subdepressis, articulis quinque ultimis elongatus, subaequalibus, apice acuminatis; thorace capitis fere latitudine, antice posticeque subconico-attenuato, crebre punctato, pronoto medio transversim nitido-marginato, postice dilatato, utrinque arcuatim truncato, segmentis postice minutis, transversis, impunctatis, metallico nitidis, mesonoto oblongo-ovato, punctatissimo, metanoto subtriangulare, inaequale, medio postice subelevato, nitido; petiole brevissimo, vix distincto, subtestaceo; abdomine thorace paulo angustiore et brevior, elongato-ovato, apice acuminato, supra depresso-excavato, glabro; alis hyalinis, brevissime ciliatis, vena costalis lateralis integra, ramo radiali distincto, vix dilatato."

Type locality : Ceylon : Mt. Nuwara ELLIA

Distribution : Ceylon

Ceraninus maculatus (Waterston)

1930 *Thripoctenus maculatus*, Waterston, *Ann. Mag. nat. Hist.*, 5 : 243.

1938 *Thripoctenus maculatus*, Mani, *Cat. Indian Ins.*, 23 : 133.

1940 *Thripoctenus maculatus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 31.

Female : Length 0.80-0.90 mm. Head and thorax shiny black; head with coppery and thorax with deep metallic-blue reflections; fore coxae black; abdomen nearly white, with black spots laterally

behind basal 0.50 on tergites 5 and 6; head wider than thorax, scape a little longer than pedicel, with bulla; annellus and 2 funicular segments; second segment of club indistinct.

Male : Length 0.70-0.75 mm. Abdomen with black spots on sides of tergites 4-6; scape a little wider and shorter than in female.

Type locality : Lyallpur : Punjab.

Host : Internal parasite of the wine thrips *Rhipiphorothrips cruentatus*

Hyperteles Förster

- 1841 *Eulophus*, Förster, *Beitr. Mon. Pteromal.*, 41.
 1856 *Hyperteles*, Förster, *Hymen. Stud.*, 2 : 84.
 1856 *Oxymorpha*, Förster, *Hymen. Stud.*, 2 : 145.
 1904 *Hyperteles*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 348.
 1909 *Hyperteles*, Schmiedeknecht, *Gen. Ins.*, 9 : 467.
 1938 *Hyperteles*, Mani, *Cat. Indian Ins.*, 23 : 127.

Head and thorax smooth, not strongly sculptured or closely punctate in male; antennae in female with 10 segments, annellus 2; in male with 9 segments, annellus one; mesonotum without a median grooved line; pronotum in female transverse, not conical, or subquadrate or rounded anteriorly; propodeum usually short, with a v-shaped median carina; in female each fork diverging towards the lateral hind angle, more rarely with a straight median carina; in male not punctate; fore wings with a short marginal fringe, hind wings not acutely pointed at apex; abdomen conical, very long; in female 2 or more times longer than head and thorax combined; tergites not subequal.

Type-species : *Hyperteles elongatus* (Förster)

Hyperteles longicauda Kieffer

- 1905 *Hyperteles longicauda*, Kieffer, *Ann. Soc. Sc. Bruxelles*, 29 : 195.
 1938 *Hyperteles longicauda*, Mani, *Cat. Indian Ins.*, 23 : 127.
 1940 *Hyperteles longicauda*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 28.

Female : Length 3.00 mm. Body black; mandibles red; scape and legs yellow; mandibles large, tridentate; maxillary palpi uniarticulate; the segment 5 times longer than thick; labial palpi uniarticulate, segment 2 times as long as thick; parapsidal furrows deep, complete; scutellum with paired longitudinal furrows; vein *sm* reaching to 0.50 of wing; antennae with 10 segments; mesoscutum with a median longitudinal groove; terminal antennal segments a little longer than thick; fourth antennal segment a little longer than pedicel; fifth slightly longer than fourth; scape equal to the following 3 segments combined.

Type locality : Bengal : Kurseong

Host : Cecidomyiid of *Artemisia* galls

Syntomosphyrum Förster

- 1878 *Syntomosphyrum*, Förster, *Jahrg. Verh. naturh. Ver. preuss. Rheinland*, 35 : 60.
 1904 *Syntomosphyrum*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 349, 350.
 1909 *Syntomosphyrum*, Schmiedeknecht, *Gen. Ins.*, 97 : 469.
 1915 *Syntomosphyrum*, Waterston, *Bul. ent. Res.*, 5 : 364.
 1916 *Tetrastichopsis*, Girault, *Proc. US nat. Mus.*, 51 : 132.
 1916 *Tetrastichomyia*, Girault, *Proc. US nat. Mus.*, 51 : 48.
 1938 *Syntomosphyrum*, Mani, *Cat. Indian Ins.*, 23 : 127.
 1979 *Syntomosphyrum*, Krombein *et al.*, *Hymen. N. America*, 1 : 1004.

Body generally black; head and thorax smooth or nearly so, at the most only sparsely punctate; antennae with 9 segments, and one annellus; in male usually with 9 segments with one annellus; sometimes with 8 segments and without annellus; pronotum transverse, not conical or rounded in front; mesonotum without median longitudinal sulcus; propodeum smooth, with a delicate median longitudinal carina; abdomen in female globose or broadly ovate, shorter than rest of body, never conically pointed.

Type-species : *Syntomosphyrum fulvipes* Förster

Syntomosphyrum israeli Kurian

(Fig. 316)

- 1954 *Syntomosphyrum israeli*, Kurian, *Agra Univ. J. Res.*, (Sci.) 3 : 131.
 1964 *Syntomosphyrum israeli*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 333.

Female : Length 1.50 mm. Body dark reddish-brown to black with a metallic-green or blue hue; head black with a metallic-blue lustre; vertex indistinctly shagreened, emarginate, with few scattered silvery-white pubescence; ocelli prominent, reddish-brown; eyes reddish-brown, bare; clypeus brown; mandibles reddish-brown, tridentate; scape brown; tegulae yellow; legs yellowish-brown; hind coxa dorsally black.

Head from above transverse, 3 times as wide as long; interorbital distance very slightly over 0.67 of the width of head; interocellar distance 1.50 times ocellular, which latter is 1.33 times the front ocellar; viewed in front nearly round; interorbital distance very slightly less than 0.67 of the of head; gena slightly more than 0.50 times eyes; face slightly convex, smooth and shiny; antennae inserted slightly above the middle of face; scrobes distinct, separate, not reaching front ocellus; segments 9 : 1.1.1.3.3; scape nearly reaching front ocellus, slightly less than 4 times as long as thick, slightly over

2.50 times pedicel; annellus 0.12 of pedicel; first funicular segment nearly 2 times pedicel; second and third funicular segments subequal to the first; first segment of club 0.75 of the last funicular; second nearly 0.83 of the first club segment; terminal segment very slightly over 0.50 of the second, with a nipple-like process apically; club 0.87 of scape, pedicel and annellus combined.

Pronotum short, narrow, finely indistinctly shagreened; mesonotum longitudinally coriaceously sculptured, much broader than pronotum, with very distinct and deep parapsidal furrows and faint median furrow somewhat distinct posteriorly; scutellum sculpture same as mesonotum, divided by 2 parallel grooves into 3 areas; propodeum short, rugose, with a median longitudinal carina, which bifurcates posteriorly and extends as basal carina; mesopleura impressed, divided by a longitudinal carina, upper area being indistinctly transversely striate; hind femur nearly 2.50 times coxa, tibia 1.25 times femur; tarsi 4 segmented, all tarsal segments together slightly over 0.75 of tibia, claw simple; fore wing slightly less than 2.50 times as long as wide; vein *sm* slightly more than *m*; *m* with 12 strong setae; *st* 0.25 of *m*; *pm* absent.

Abdomen 1.50 times thorax, laterally somewhat compressed; 7 tergites visible, first tergite largest, rest gradually become shorter, last small and conical; ovipositor long, exerted from ventrally far ahead of the abdominal tip.

Male : Length 1.20 mm. Body reddish-brown with metallic green, blue, red or golden lustre; head reddish-brown to black, with metallic-green lustre and with golden and reddish hues in certain angles; eyes reddish-brown; ocelli reddish-brown; antenna brown, covered with brown, medium sized hairs; thorax metallic-green with a golden tinge in certain angles; legs yellowish-brown except dark reddish-brown base of coxa.

Head from above length slightly over 0.25 of width; interocellar space nearly 3 times the front ocellar, nearly 0.67 of the ocellular; viewed in front length nearly 0.80 of the width; gena more than 0.50 of eye; antenna inserted just above the lower orbital border, with 10 segments : 1.1.1.4.3; scape 3 times pedicel, which latter is very slightly longer than the first funicular segment; second funicular slightly less than 2 times the first and more than 0.50 of scape; third and fourth being subequal to the second; club segments gradually become shorter, altogether slightly longer than the scape; tip of antenna with a nipple-like process.

Thorax 1.33 times longer than wide; pronotum 0.16 of thorax; finely longitudinally coriaceously striate; parapsidal furrows deep and complete; scutellum as long as mesonotum, sculpture same as on mesonotum, 2 lateral longitudinal grooves divide it into 3 areas 1 median and 2 lateral; metathorax 0.20 of scutellum; propodeum 0.50 of scutellum, rugose; median longitudinal carina which

bifurcates posteriorly and continues as basal carina; propodeal spiracles nearly round; hind femur equal to coxa and trochanter combined; tibia 1.33 times femur; tibial spur 0.16 of tibia and equal to metatarsus, rest of tarsi combined being equal to 3 times metatarsus; fore wing 2.25 times as long as wide; vein *sm* slightly longer than *m* which latter is 3 times vein *pm* absent.

Abdomen very slightly longer than thorax; tergites smooth and shiny with very few scattered setae; 5 tergites visible, first tergite largest, second, third and fourth tergites subequal, fifth smallest; male genitalia well exerted, with the sheath nearly 0.67 of the abdomen.

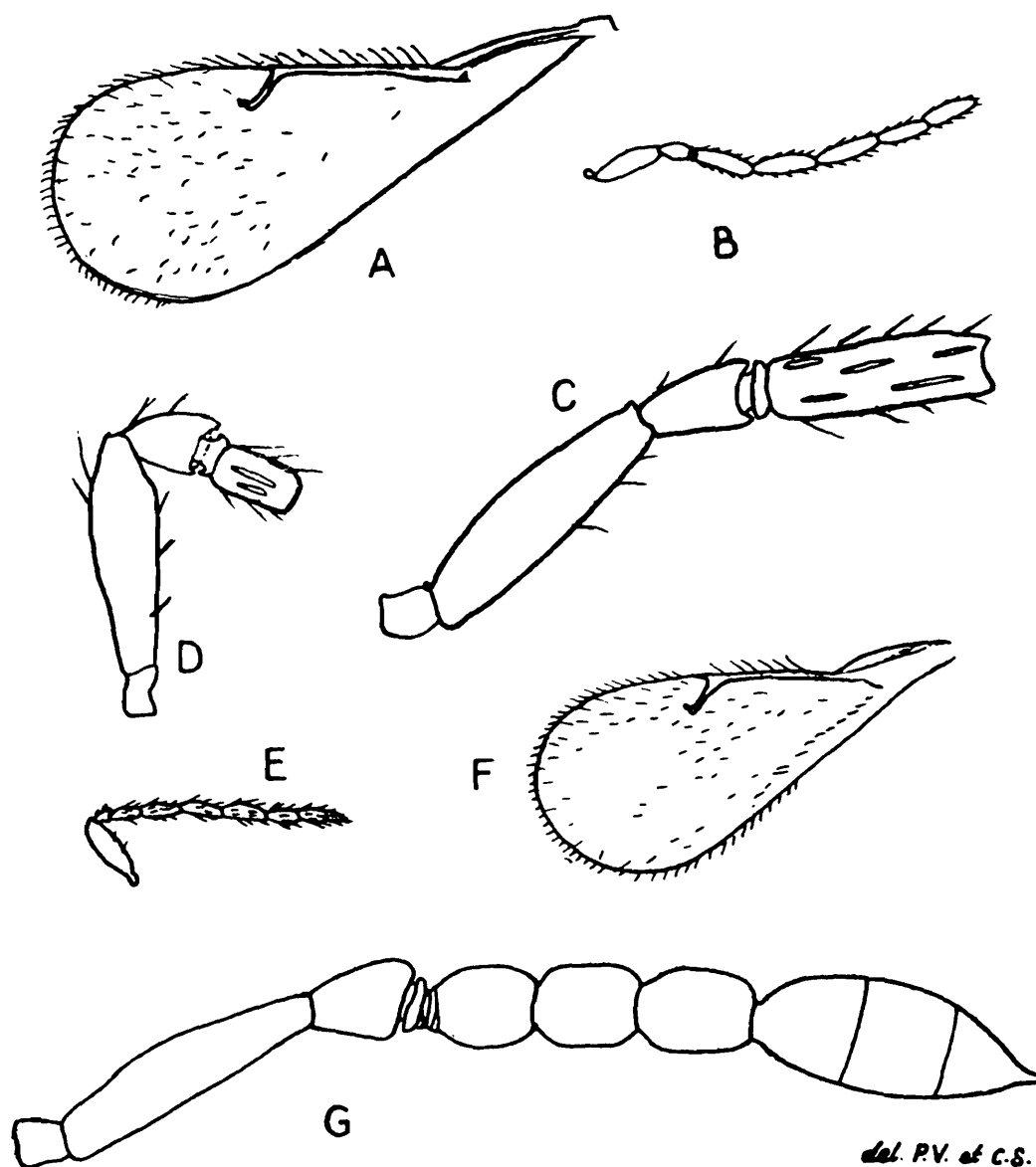


FIG. 316. *Syntomosphyrum israeli* Kurian, A-C. female : A. Fore wing; B. Antenna; C. Basal segment of antenna enlarged; D-F. male : D. Basal segment; E. Antenna; F. Fore wing; G. *Syntomosphyrum taprobanes* Waterston, female, antenna (Modified from Waterston)

Type locality : Cuttack

Host : Eggs of *Schoenobius*

This species runs close to *Syntomosphyrum taprobanes* Waterston, from which it differs in having antenna brown; pedicel very slightly over 0.33 of scape; second tergite shorter than third; apical 0.25 of ovipositor serrate; hind metatarsus slightly longer than second segment.

***Syntomosphyrum taprobanes* Waterston**

1914 *Syntomosphyrum taprobanes*, Waterston, *Bull. ent. Res.*, 5 : 337.

1938 *Syntomosphyrum taprobanes*, Mani, *Cat. Indian Ins.*, 23 : 128.

1940 *Syntomosphyrum taprobanes*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female : Length 1.50 mm. Body black; antennae brownish-black; abdomen black.

Head wider than long, finely reticulate; frons with 24 bristles; clypeus bilobed in the middle; vertex not margined; antennae inserted a little above the lower orbital border, with 10 segments : 1.1.2.3.3; scape 4 times as long as thick; pedicel 0.33 of scape; first anellus stout; funicular segments ratio 8 : 9 : 10; never thicker than long; but becoming gradually cylindrical; club segments subequal.

Parapsidal furrows straight; mesonotum finely reticulate; hind metatarsus shorter than second segment; propodeum with a short median carina, not continued in front to metanotum, reticulate behind; fore wing a little more than 2 times as long as wide; vein *sm* with 2 bristles, *m* with about 12 bristles; veins *sm* : *m* : *st* ratio 10 : 15 : 4; hind tarsal segments ratio 2.5 : 3.8 : 3.5 : 4.5.

Abdominal tergites faintly reticulate, tergites 2-3 subequal.

Type locality : Ceylon

Host : *Scymnus*

Tetrastichus Haliday

1834 *Eulophus* (partim), Nees, *Hymen. Ichneum. Affin. Mon.*, 2 : 175.

1842 *Tetrastichus*, Walker, *Ann. Mag. nat. Hist.*, (1) 10 : 116. (supressed)

1844 *Tetrastichus*, Haliday, *Trans. ent. Soc. London*, 3 : 297.

1844 *Trichoceras*, Ratzeburg, *Ichneum. Forstins.*, 1 : 171.

1848 *Geniocerus*, Ratzeburg, *Ichneum. Forstins.*, 1 : 175.

1852 *Lonchentedon*, Ratzeburg, *Ichneum. Forstins.*, 3 : 215.

1856 *Baryscapus*, Förster, *Hymen. Stud.*, 2 : 84.

1863 *Solenoderus*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 : 71.

1870 *Oomyzus*, Rondani, *Comm. Agrar. Parma*, 3 : 114.

1877 *Myiomisa*, Rondani, *Bol. Soc. ent. Ital.*, 9 : 189.

1878 *Syntomosphyrum*, Förster, *Verh. naturh. Ver. Rheinl.*, 35 : 60.

1887 *Tetrastichodes*, Ashmead, *Trans. Amer. ent. Soc.*, 14 : 203.

- 1894 *Pentastichus*, Ashmead, *J. Linn. Soc. London (Zool.)*, 25 : 187.
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 1904 *Baryscapus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 349, 350.
 1904 *Solenoderus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 326.
 1904 *Tetrastichodes*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 348.
 1904 *Tetrastichus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 349.
 1906 *Ootctrestichus*, Perkins, *Bull. Haw. Sug. Plant. Assoc.*, (1) : 263.
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 1909 *Tetrastichus*, Schmiedeknecht, *Gen. Ins.*, 97 : 471.
 1912 *Neotetrastichus*, Perkins, *Hawaii Sugar Planters' Assoc. Exptl. Sta. Ent. Bull.*, 10 : 14.
 1913 *Epitetrastichus*, Girault, *Mem. Queensland Mus.*, 2 : 205.
 1913 *Neomphaloidella*, Girault, *Trans. R.S. Aust.*, 37 : 69.
 1913 *Epomphaloides*, Girault, *Arch. Naturg.*, 79 (A) (6) : 49.
 1913 *Neotetrastichodes*, Girault, *Mem. Queensland Mus.*, 2 : 228.
 1913 *Aprostocerotoides*, Girault, *Mem. Queensland Mus.*, 2 : 243.
 1913 *Hadrothrix*, Cameron, *Indian forest Res.*, 4 : 104.
 1914 *Tetrastichus*, Gahan, *Proc. US nat. Mus.*, 48 : 168.
 1914 *Tetrastichodes*, Gahan, *Proc. US nat. Mus.*, 48 : 168.
 1917 *Neomphaloidomyia*, Girault, *Bull. Brooklyn. ent. Soc.*, 12 : 118.
 1917 *Blattotetrastichus*, Girault, *Ent. News*, 28 : 257.
 1917 *Paromphaloidomyia*, Girault, *New Chalcidflies* : (Separate) : 1.
 1921 *Tetrastichus*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 128.
 1924 *Tamarixia*, Mercet, *Boll. R. Soc. Espan. Hist. Nat.*, 24 : 57.
 1933 *Anellaria*, Bakkendorf, *Ent. Meddel.*, 19 : 8.
 1938 *Tetrastichus*, Mani, *Cat. Indian Ins.*, 23 : 129.
 1953 *Tetrastichus*, Bakkendorf, *Ent. Meddel.*, 26 : 564.
 1954 *Pachyscapus*, Erdös, *Ann. Hist. Nat. Mus. Nat. Hungarici*, 5 : 364.
 1954 *Gyrolachnus*, Erdös, *Ann. Hist. Nat. Mus. Hung.*, (N.S.) *Zool.*, 5 : 365.
 1955 *Burksia*, Fullaway, *Proc. Hawai. ent. Soc.*, 15 : 409.
 1961 *Tetrastichus*, Boucek, *Acta Ent. Mus. Nat. Pragae*, 34 : 475.
 1961 *Peltephorus*, Erdös, *Ann. Hist. Nat. Mus. Hung.*, (N.S.) *Zool.*, 53 : 483.
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 1962 *Tetrastichus*, Bruks, *Bul. Zool. Nomencl.*, 19 : 306.
 1963 *Tetrastichus*, Peck, *Canad. Ent.*, 30 : 120-156.
 1964 *Tetrastichus*, Domenichini, *Entomophaga*, 9 : 33-38.
 1965 *Tetrastichus*, Domenichini, *Boll. Zool. agric. edi. Bach.* (2) 6 : 65-194.
 1966 *Tetrastichus*, Domenichini, *Palaeartic Tetrastichinae*, *La Francois*, 15-54.
 1967 *Tetrastichus*, Domenichini, *Boll. Zool. agric. edi.* (2) 8 : 75-110.
 1979 *Tetrastichus*, Krombein *et al.*, *Hymen. N. America*, 1 : 990.

Antennae in female with 10 segments : 1.1.2.3.3; scape normal, sometimes dilated; in male with 9 segments with one annellus, flagellum with long hairs; scape sometimes folded or dilated; mesonotum with a median grooved line; abdomen ovate or conic-ovate, sometimes elongate and conically produced; in male abdomen oval or elongate or conically produced; propodeum short, usually without median carina.

Type-species : *Cirrospilus lycidas* Walker

KEY TO SPECIES

- | | |
|--|---|
| 1. Females . | 2 |
| Males | 26 |
| 2. Vein <i>pm</i> distinctly evident, though extremely short | <i>T. postmarginaloides</i>
Saraswat |
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| 3. Anelli 4 | 23 |
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| 4. Anellus single | 5 |
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| 5. Antennae with 10 segments; funicle with 4 segments | 6 |
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| 6. Club indistinctly triarticulate; funicular segments become longer; propodeum with only median and lateral carinae | <i>T. ayyari</i> Rohwer |
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| 8. Propodeum shallowly punctate | <i>T. colemani</i> Crawford |
| Propodeum not shallowly punctate | 9 |
| 9. Propodeum with fine granulation | <i>T. isaaci</i> Rohwer |
| Propodeum rugosopunctate | <i>T. plecopterae</i> Kurian |
| 10. Ocellocular space a little less than ocellar diameter; first funicular segment longer than the second segment | <i>T. inferens</i> Yoshimoto |
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| Mesonotal median sulcus obscure, faint or incomplete | 17 |
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| 17. Thorax sometimes very finely shagreened | 18 |
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- | | |
|---|------------------------------------|
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| 20. Propodeal median carina faint | <i>T. asthenogmus</i> (Waterston) |
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| 23. Middle tibial spur longer than metatarsus; hind tibial spur equal to metatarsus; . . | 24 |
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30. Antennae with only one annellus well developed, others vestigial or also totally absent; median longitudinal groove on mesonotum complete; mesoscutal bristles 3 *T. uniarticulata* Saraswat
- Antennae with 2 distinct annelli; median longitudinal groove on mesonotum indicated only behind; mesoscutal bristles 4 + 1 *T. nilambrensis* Saraswat

***Tetrastichus postmarginaloides* Saraswat**

1975 *Tetrastichus postmarginaloides*, Saraswat, *Mem. School Ent.*, 4 : 19.

Female : Length 2.00-2.34 mm. Body yellow, except for dorso-median metallic coppery-green and green patch on mesonotum and scutellum respectively; ovipositor sheath and 3 dorsals, transverse bands on tergites 3-4, 4-5 and 5-6 non-metallic, brownish-black; otherwise body non-metallic; head reddish-brown, eyes dark red, mandibles brown, punctae on vertex black, with black stiff bristles, antennae dark brown, scape yellowish-brown; legs pale yellow; wings hyaline, veins brown.

Head in front length to width 77-82 : 100, smooth; clypeus in the middle with paired minute tooth-like projections; ocellular space about 0.50 of ocellar diameter, front ocellar space about 0.50 of ocellar diameter, interocellar space about 1.60-2.00 times ocellar diameter; eyes pubescent; antennal segments 9 : 1.1.1.3.3.; toruli a little above the level of lower of orbital borders; scape moderately long, cylindrical, about 6.60 times longer than thick; pedicel about 2.23 times longer than thick, 0.37 of scape; annellus minute, without hairs, about equal to the thickness of scape at extreme tip; first funicular segment about 1.40 times longer than thick, 0.75 of pedicel; second segment longest, 1.20 times longer than the first and 0.90 of pedicel, almost 2 times as long as thick; third segment subequal to the first, about 1.70 times longer than thick; club slightly narrower than funicle, excluding terminal style 3.57 times longer than thick; equal to about 1.57 times preceding funicular segments combined; first segment about 1.80 times longer than thick, second and third segments more or less fused together, terminal segment with a pointed style, about 0.70 of the preceding 2 segments combined.

Pronotum very finely reticulate, scutellum with larger reticulations and mesonotum strongly reticulate, sculpture very prominent in darker areas; propodeum smooth, median and paraspiracular carinae absent, spiracle touching the lateral margin and separated from the anterior margin by a space 0.50 of its own diameter, a pair of anterior (shorter) and posterior (longer) bristles present; scutellum with a pair of longer bristles on posterior margin, an oblique row of 6 equally long hair-like setae on each side; scutellar grooves obscure; axillae with a pair of very much shorter bristles; metanotum also with a pair of very short bristles; mesonotum with

a pair of median bristles, median longitudinal groove absent; fore wing short, broad, length width ratio 100 : 48, fringe very short; veins *sm*, *m* and *pm* with 4 (3 long and one or 2 short) 12-13 medium and 5 or 4 (2 long and 3 short) setae respectively, one row of 8 setae attached to vein *m* posteriorly; veins *sm* : *m* : *pm* : *st* ratio 64 : 100 : 24 : 20; hind wing to fore wing length 89-90 : 100; fore coxa 2 times as long as thick; femur 4.50-4.80 times longer than thick, about 1.70 times coxa, with a single long seta apically; tibia subequal to femur, about 8 times longer than thick; tarsus a little shorter than tibia, tarsus to tibia 7 : 8; metatarsus 0.16-0.19 of tibia and 0.20 of tarsus, second segment very slightly longer than metatarsus, third subequal to the second, fourth 2 times metatarsus; middle coxa 1.33 times as long as thick; femur long, slender, about 8 times longer than thick, about 2.60 times coxa, with a single long seta apically below; tibia long, slender, slightly broader apically, about 11-12 times longer than thick, 1.15 times femur, tibial spur 0.76 of metatarsus, 0.21 of tibia; tarsus slightly shorter than femur, about 0.75 of tibia, metatarsus nearly 0.33 of tarsus and 0.25 of tibia, second segment 0.58 of metatarsus, third about 0.50 of metatarsus, only very slightly shorter than the second, fourth almost equal to metatarsus; hind coxa 1.65 times as long as thick; femur 3.35 times longer than thick, 1.35 times coxa, with a single long seta apically below; tibia long, moderately thickened apically, only very slightly shorter than middle tibia, 8.50 times longer than thick, 1.22 times femur, tibial spur short, stout, 0.16 of tibia and equal to metatarsus; tarsus a little shorter than middle tarsus, 0.80 of tibia, metatarsus 0.16 of tibia and almost 0.20 of tarsus, second segment slightly longer than metatarsus, fourth more or less 2 times the third.

Abdomen smooth, only very slightly longer than 0.50 of body; ovipositor a little projecting beyond the tip of abdomen.

Type locality : Shencotah Gap, Mallapuram, Malabar

This species is very much different from *T. bicolor* Saraswat in the presence of a single annellus, shape and size of the body, thoracic and abdominal markings shape of wings, *sm* : *m* : *pm* : *st* ratio, number of setae on them and in the shape and ratio of antennal segments.

***Tetrastichus ayyari* Rohwer**

(Fig. 320)

- 1921 *Tetrastichus ayyari*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 128.
 1921 *Tetrastichus ayyari*, Ballard, *Rep. Proc. Fourth Ent. Meet. Pusa*, 22.
 1938 *Tetrastichus ayyari*, Mani, *Cat. Indian Ins.*, 23 : 129.
 1940 *Tetrastichus ayyari*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.
 1964 *Tetrastichus ayyari*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 333.

Female : Length 1.75 mm. Body uniformly black, with greenish reflections on head and thorax; scape yellowish-brown; legs, except

the brownish fore coxae and femora yellowish-white; wings hyaline; venation yellowish.

Head not shrunken, shining, very finely lineate, without ridges or depression around ocelli; club sharply acuminate and indistinctly divided into 3, apex with a slender spine like projection.

Mesonotum finely lineate, with a distinct, median, longitudinal sulcus on the posterior 0.67; scutellum more coarsely lineate than scutum, median sulci nearly parallel; propodeum dull, finely coriaceous, with 3 feeble, median longitudinal carinae, and basally with 2 faint transverse, raised lines; veins *m* and *sm* subequal.

Abdomen shining, short, subequal to thorax, subglobose.

Type locality : Coimbatore

Hosts : Pupa of *Chilo simplex*, feeding on *Sorghum vulgare*; *Chilo zonellus*, *C. auricilia*, *C. infuscatellus*, *C. suppressalis*.

Tetrastichus coimbatorensis Rohwer

(Fig. 320)

- 1921 *Tetrastichus coimbatorensis*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 133.
 1921 *Tetrastichus coimbatorensis*, Ballard, *Rep. Proc. Fourth Ent. Meet. Pusa*, 22.
 1938 *Tetrastichus coimbatorensis*, Mani, *Cat. Indian Ins.*, 23 : 130.
 1940 *Tetrastichus coimbatorensis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female : Length 1.30 mm. Body black with blue reflections; antennae dark brown, scape yellow beneath; front of head below top of eyes, lower part of posterior orbits, lateral margins of pronotum, sides of scutum narrowly (broadening into a transverse spot posteriorly), posterior part of scutellum, metanotum, sides of pronotum, posterior margin of tegulae, and dorsal margins of mesepimeron lemon-yellow; legs yellowish-white, with tarsi dusky; wings hyaline, venation pale brown.

Head without distinct sculpture; mesoscutum shining, without a median longitudinal sulcus, faintly aciculate; median longitudinal grooves of scutellum slightly converging behind; propodeum short, shining, without distinct sculpture, median carina feeble.

Abdomen subequal to head and thorax, acuminate beyond middle.

Type locality : Coimbatore

Host : Gallfly of *Sorghum vulgare*

Tetrastichus colemani Crawford

- 1912 *Tetrastichus colemani*, Crawford, *Proc. US nat. Mus.*, 42 : 8.
 1938 *Tetrastichus colemani*, Mani, *Cat. Indian Ins.*, 23 : 130.
 1940 *Tetrastichus colemani*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female : Length 1.80 mm. Body green; abdomen brown at tip; scape and legs testaceous to light brown; mesopleura with a large testaceous spot beneath wing.

First funicular segment only a little longer than pedicel; funicular segments 2 and 3 subequal to first; club equal to segments 1-3 combined; face finely obscurely striolate, smooth in the middle and below; reticulate below eyes; with some scattered punctae along the inner orbital border; mesonotum and scutellum finely longitudinally striolate, with distinct furrows; propodeum with the median and lateral carinae strong, shallow close punctae; prepectus and metapleura umbilicately punctate; abdomen equal to the rest of body.

Male : Length 1.50 mm. First funicular segment subequal to pedicel, second a little longer than the first; third and fourth to first; club a little longer than funicular segments 3 and 4 combined.

Type locality Bangalore

Host : *Aspidomorpha miliaris*

Tetrastichus isaaci Rohwer

(Fig. 320)

1921 *Tetrastichus isaaci*, Rohwer, *Ann. Mag. Nat. Hist.*, 7 : 130.

1938 *Tetrastichus isaaci*, Mani, *Cat. Indian Ins.*, 23 : 130.

1940 *Tetrastichus isaaci*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female : Length 2.25 mm. Body yellow; antennae dark brown; occiput, most of scutum, axillae and basal margins of second and following tergites yellowish-ferruginous; legs yellow, with coxae darker; wings hyaline, veins yellow, bristles on thorax dark brown.

Head with dorsal part of frons with a few widely scattered setigerous puncti; a transverse ridge immediately behind front ocellus and another immediately behind lateral ocelli; posterior ridge projects ventrally along the posterior margin of eye.

Pronotum with a row of well separated bristles along hind margin; mesoscutum finely irregularly aciculate, with a longitudinal median sulcus posteriorly; scutellum large, with irregular aciculations, laterally with a longitudinal grooved line, along which a few widely scattered bristles; propodeum short, with fine granulations, median carina distinct, furcate behind.

Abdomen longer than rest of body, gradually narrowing to an acute apex.

Male : Length 1.50 mm. Agrees with female, except that the apex and sides (nearly to the base) of abdomen blackish; antenna slender, clothed with long hairs.

Type locality : Coimbatore

Host : Galls on *Maerua arenaria*

Tetrastichus plecopterae Kurian

1952 *Tetrastichus plecopterae*, Kurian, *Agra Univ. J. Res.*, (Sci.) 1 : 55.

Male : Length 1.75 mm. Body black, with metallic-green iridescence; ocelli reddish-brown; mandibles dark reddish-brown; antennae light brown except for the black club; mesonotum with a dull metallic-blue lustre; legs light brown except for the darker coxae.

Head viewed from above transverse, nearly dumb-bell-shaped, distinctly wider than thorax, about 4 times as wide as long; vertex very narrow; interocellar space slightly less than 2 times ocellular space; ocellular space somewhat less than the front ocellar space; postocellar space very narrow; head in front nearly triangular, length about 0.75 of width; gena slightly less than 0.66 of bare eyes; antennae clavate, inserted on lower orbital borders; segments 10 : 1.1.1.4.3, scape nearly reaching front ocellus, somewhat thickened in the middle and about 2.60 times pedicel; pedicel slightly longer than the first funicular segment, but equal to annellus and first funicular segment combined; funicular segments gradually becoming shorter and thicker, last segment being subglobose; club much thicker than the rest of antenna, slightly shorter than last 2 funicular segments combined; second club segment longest and about 1.50 times the first, third club segment about 0.60 of the second, conical and apically with a nipple-like process.

Pronotum short, faintly transversely striate and shagreened anteriorly and indistinctly narrowing into a neck in front; mesonotum wider than pronotum, with a dull, metallic-blue-green lustre and with the median longitudinal fovea well developed; parapsidal furrows deep, complete; scutellum as long as mesonotum; convex, with 2 distinct longitudinal furrows, with median area broader than lateral; propodeum large, distinctly marked off in front from metanotum by a carina, with median basal and lateral longitudinal carinae and shallowly rugosopunctate; mesopleural impression with an obscure carina separating it into 2 and transversely striate; metapleura smooth and shiny; hind coxa long, nearly 3 times trochanter; femur about 2 times coxa; tibia about 1.33 times femur; metatarsus about 0.17 of tibia and about 0.33 of the rest of tarsus; tibial spur 0.80 of metatarsus; fore wings about 1.33 times as long as wide; veins *sm* : *m* : *st* : *pm* ratio 110 : 100 : 21 : 0; vein *m* with 8 long bristles.

Abdomen broad, dorsoventrally flattened; first 3 tergites large, others narrow, last conical, genitalia exerted.

Type locality : Dehra Dun

Host : *Plecoptera reflexa* larvae defoliating *Dalbergia sissoo*

This species differs from *T. ayyari* Rohwer by the distinctly 3 segmented club, funicular segments increasing in size; shallowly rugosopunctate, propodeum with median and lateral carina.

Tetrastichus inferens Yoshimoto

1970 *Tetrastichus inferens*, Yoshimoto, *Canad. Ent.*, 102 : 1608.

Female : Length 1.70-3.00 mm. Body dark brown to black, with metallic-bluish-green reflections; scape, coxae, femoral tips, tibiae and first 3 tarsal segments yellow.

Head transverse, slightly wider than thorax; fronto-occiput depressed; vertex about 0.66 of head width; minutely reticulate; postocciput, vertex and face with scattered short, black hairs; ocellular space a little shorter than ocellar diameter; scape slender, slightly curved in the middle, reaching front ocellus; pedicel long, slightly longer than first funicular segment; annellus minute; funicle with 3 segments, first segment longer than second, segments 2-3 subequal; club with 3 subequal segments and terminal style.

Thorax finely striate-reticulate, with 3 pairs of bristles near parapsides; scutellum with 2 pairs of bristles; propodeum about 2 times as wide as long as long, median carina strong, paired paraspicular carinae and with a series of obscure carinae extending anterolaterally and posterolaterally; spiracles circular, remote by 3 times diameter from margin; vein *sm* a little less than 2 times *m*, with 2 setae, *st* about 0.20 of *m*.

Abdomen elongate oval, longer than thorax, petiole short, with 2 longitudinal carinae diverging laterally backward; tergites smooth in the middle, coriaceous laterally; ovipositor slightly exerted.

Male : Length 1.40-1.70 mm. Scape short, with lamella; funicle with 4 segments; first segment shorter than second; 0.50 of pedicel; propodeum with fewer carinae than in female.

Type locality : Formosa

Distribution : Formosa; India

Host : *Sesama inferens* Walker

Tetrastichus krishnaiahi Saraswat

(Fig. 317 & 318)

1975 *Tetrastichus krishnaiahi*, Saraswat, *Orient. Ins.*, 8 (2) : 189.

Female : Length 1.70-2.00 mm, mean length 1.87 mm. Body black, except dark brown, abdomen with metallic-bluish-green reflections; head concolorous with body, eyes red, antennae brown, scape pale brown; basal 0.75 of hind coxae concolorous with thorax; legs otherwise pale yellow; wings hyaline, veins brown.

Head in front length to width 83-87 : 100, finely reticulate, with sparse scattered shallow punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellular space

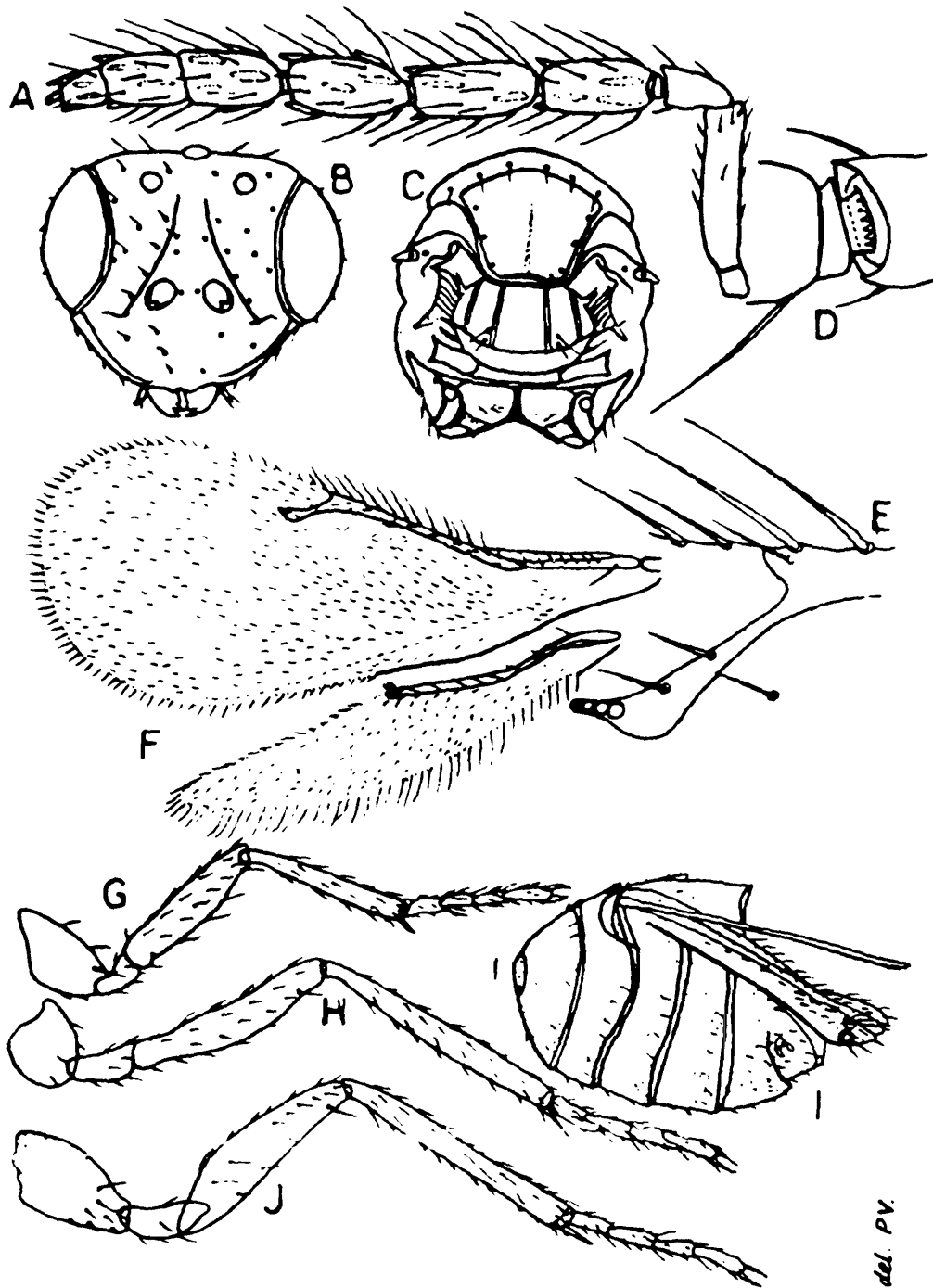


FIG. 317. *Tetrastichus krishnaihi* Saraswat, female : A. Antenna; B. Head in front view; C. Thorax dorsal; D. Annellus; E. Stigmal venation; F. Fore and hind wing; G. Fore leg; H. Middle leg; I. Abdomen; J. Hind leg.

about 1.50-2.00 times ocellar diameter, front ocellar space slightly more than ocellar diameter, interocellar space 3 times ocellar diameter; eyes very sparsely pubescent, eye length to head length 55 : 100; mandibles tridentate; antennal segments 9 : 1.1.1.3.3; toruli slightly above lower orbital border; scape cylindrical, 4.50-4.60 times

longer than thick, pedicel 1.60 times longer than thick and 0.40 of scape; annellus single, much narrower than funicle; first funicular segment shortest, 2.00-2.40 times longer than thick, 1.50-1.60 times pedicel; second segment longest, 2.25-2.33 times longer than thick, about 1.15 times the first, third segment almost equal to the second and very slightly longer than the first, about 0.93-0.95 of the second, 2.00-2.16 times longer than thick; club not stouter than funicle, excluding terminal style 4 times longer than thick, about equal to preceding 1.75 funicular segments combined; first segment of club 1.83 times longer than thick, about 0.84 of the preceding funicular segment, second segment 1.50 times longer than thick and about 0.77 of the first, third segment with a short obtusely pointed style, about 0.60 of the third, excluding style 1.25-1.40 times longer than thick and about 0.60 of the preceding club segment.

Pronotum and propodeum reticulate, mesonotum and the space between the outer and the inner longitudinal grooves on scutellum finely longitudinally reticulate, middle portion of scutellum in between 2 inner longitudinal grooves more finely longitudinally reticulately striate; pronotum with few sparsely scattered punctae; mesonotum with the median longitudinal groove, distinct and complete, 3 bristles along the lateral margin on each side and a pair along the posterior margin; scutellum with 2 pairs of prominent longitudinal grooves, 2-3 pairs of bristles on either side of the inner grooves behind; propodeum with median, 2 short indistinct transverse carinae near median carina and one short indistinct carina near hind margin on each side; paraspircular carinae strongly developed, 2 strongly developed carinae posterolaterally on each side of propodeum reaching upto paraspircular carinae, of which the first one with 5 small branches, spiracles touching lateral margin and separated from anterior margin by its own diameter; fore wing length to width 100 : 43-45; marginal fringe long; veins *sm*, *m* with 8-10 (6 long and 4 short) 8-11 (long) and 1-2 (short) setae respectively; veins *sm* : *m* : *st* ratio 100 : 100 : 32; hind wing to fore wing length about 80 : 100; fore coxa 1.77 times longer than thick; with obscure reticulations; femur about 4 times longer than thick, 1.50-1.60 times coxa with a single long seta apically below; tibia only very slightly longer than femur, slightly more than 7 times longer than thick; tarsus 0.85 of tibia, metatarsus 0.14-0.16 of tibia and 0.16-0.20 of tarsus, second segment only very slightly longer than metatarsus, third subequal to the second, fourth 1.50 times the third; middle coxa 1.25 times longer than thick, with obscure reticulations; femur 5 times longer than thick, about 2.50 times coxa, with a single long seta apically below; tibia long, slender slightly thickened apically, about 10 times longer than thick, 1.25-1.30 times femur, tibial spur 0.16 times tibia and subequal to metatarsus; tarsus to tibia 2 : 3, metatarsus 0.20 of tarsus and 0.13 of tibia, second segment 1.25 times metatarsus; third equal to metatarsus, fourth 1.50 times metatarsus or the third; hind coxa slightly less than 2 times as long as thick,

with prominent reticulations above; femur 4.00-4.50 times longer than thick, 1.63 times coxa, with a single long seta apically below; tibia long, slender, slightly thickened apically, almost equal to mid tibia, about 10 times longer than thick, tibia to femur 6 : 5, tibial spur subequal to metatarsus, about 0.12 of tibia; tarsus to tibia 2 : 3, equal to mid tarsus and its segments also more or less in the same proportions.

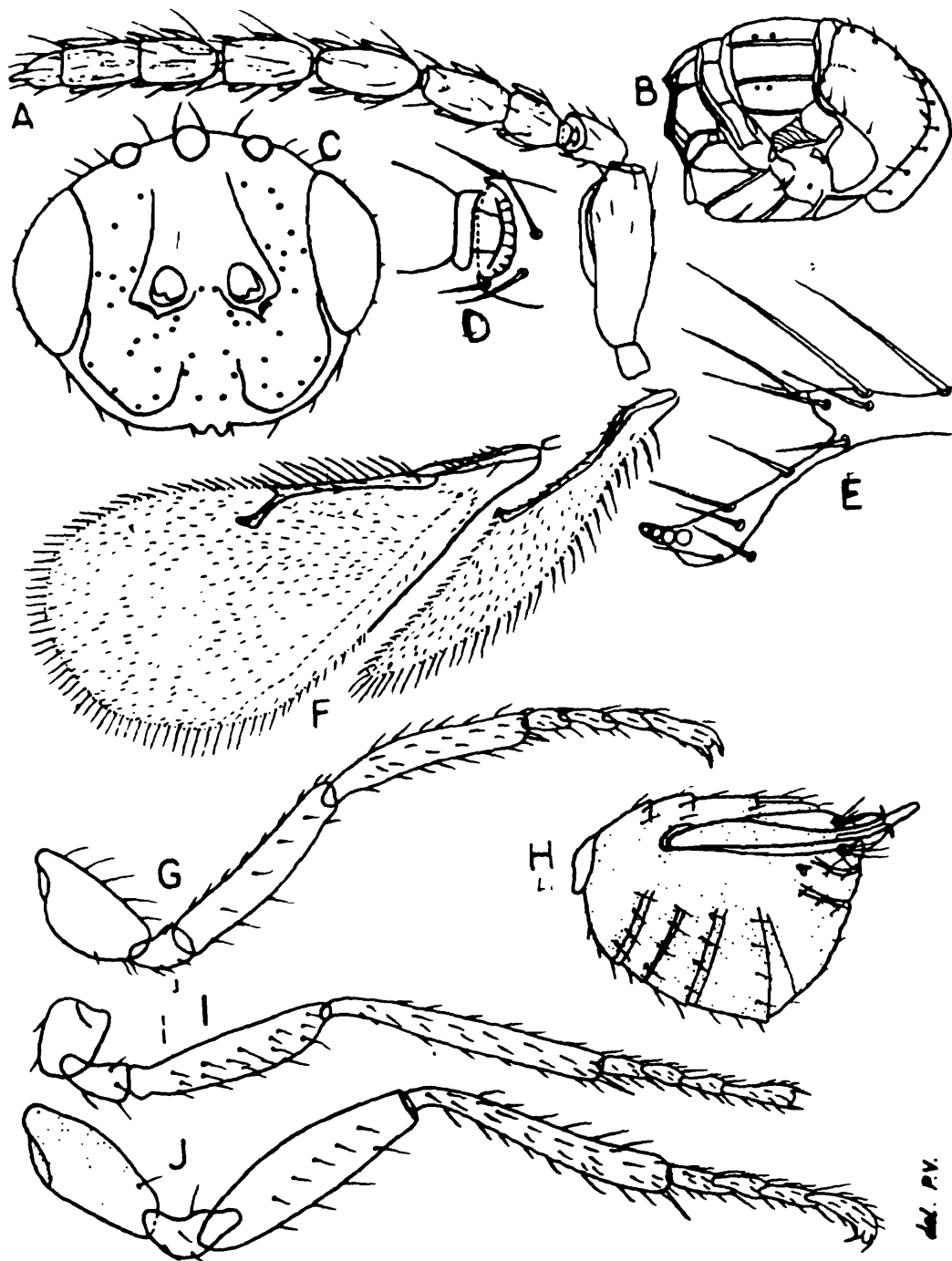


FIG. 318. *Tetrastichus krishnaihi* Saraswat, male : A. Antenna; B. Thorax lateral; C. Head in front view; D. Annellus; E. Stigmal venation; F. Fore and hind wing; G. Fore leg; H. Abdomen; I. Middle leg; J. Hind leg.

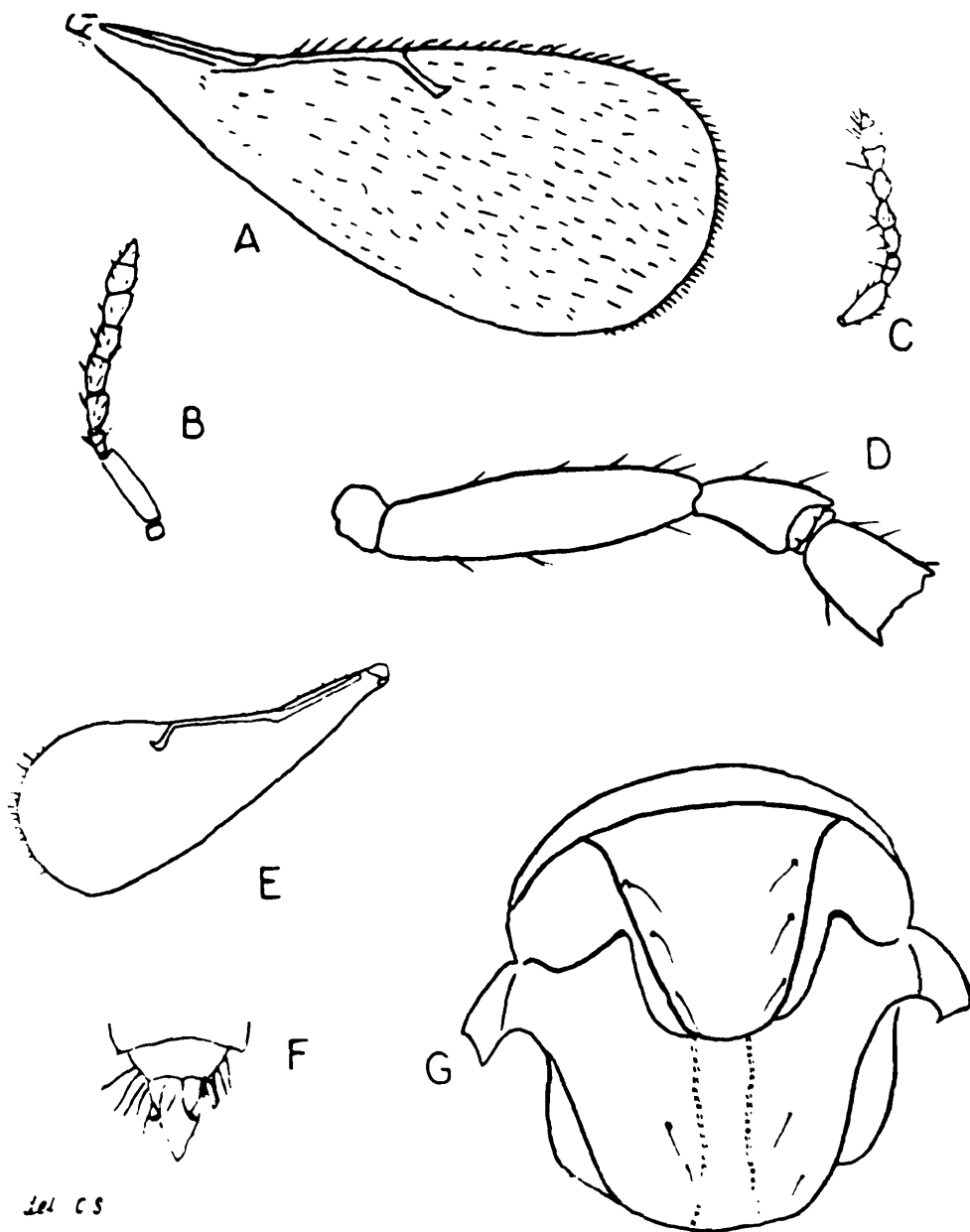
Abdomen finely shagreened, otherwise smooth, about 0.55-0.57 of body; ovipositor and its sheath not exerted beyond the tip of abdomen or only very slightly exerted.

Male : Length 1.44-1.60 mm, mean 1.01 mm. Head, legs and wings colour as in female.

Head in front length to width 80-87 : 100, finely reticulate, with sparse scattered shallow punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellular space 1.75-2.00 times ocellar diameter, front ocellar space about equal or slightly more than ocellar diameter, interocellar space 3 times or very slightly more than 3 times ocellar diameter; eyes very sparsely pubescent, eye length to head length 55 : 100; mandibles tridentate; antennal segments 10 : 1.1.1.4.3, antennal sockets a little above the lower orbital border; scape long, cylindrical, much thicker than in female, about 2.57 times longer than thick, pedicel 11.50 times longer than thick and about 0.33-0.35 of scape; annellus single, minute, much narrower than funicle; first funicular segment shortest, subquadrate, only very slightly longer than thick, subequal to pedicel; second segment very slightly more than 2 times longer than thick and about 1.80 times the first; third segment longest, 2.45 times longer than thick, about 1.11-1.14 times the second and 2 times the first; fourth subequal to the second, very slightly more than 2 times longer than thick; club as thick as funicle, excluding terminal style 4.50 times longer than thick, subequal to preceding 2 funicular segments combined, first segment of club 1.80 times longer than thick, and equal to the first, third segment with a short obtuse style, style about 0.40 of the terminal club segment, excluding style the terminal segment 1.25 times longer than thick and 0.55 of the preceding club segment.

Thorax as in female, except that median longitudinal mesonotal groove faint; fore wing short, broad, length to width 100 : 45-47, fringe long, veins *sm*, *m* with 8 (2 long and 6 short), 8-10 (long) and one (short) setae respectively; veins *sm* : *m* : *st* ratio 100 : 100 : 32-33; hind wing to fore wing length 80-84 : 100; fore coxa 2 times longer than thick, with obscure reticulations; femur 5 times longer than thick, 1.50 times coxa, with a single long seta apically below; tibia equal to femur, slightly more than 6.00 times longer than thick; tarsus 0.80-0.86 of tibia, metatarsus 0.14 of tibia and 0.16 of tarsus, second segment to metatarsus 7 : 10, third subequal to the second, fourth 1.60 times the third; middle coxa 1.25-1.30 times longer than thick, with obscure reticulations; femur 5.00 times longer than thick, subequal to fore femur, 2.70-3.00 times coxa, with a single long seta apically below; tibia long, slender, slightly thickened apically, about 9.50 times longer than thick, 1.25-1.30 times femur, tibial spur 0.16-0.17 of tibia and subequal to metatarsus; tarsus to tibia about 2 : 3, metatarsus 0.25 of tarsus and about 0.16 of tibia, second segment only very slightly shortly

than metatarsus or subequal, third equal to the second, fourth 1.50 times the third; hind coxa 2 times as long as thick, with prominent reticulate sculpture; femur 4 times longer than thick, 1.60-1.70 times coxa, with a single long seta apically below; tibia long, slender, thickened apically, almost equal to middle tibia, about 8 times longer than thick, tibia to femur 9 : 8, spur subequal to metatarsus, about 0.16 of tibia; tarsus to tibia about 5 : 6, metatarsus 0.16 of tibia and 0.20 of tarsus, second segment subequal to metatarsus, third subequal to the second or metatarsus, fourth about 1.70 times the third or metatarsus.



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FIG. 319. *Tetrastichus sexmaculatus* Kurian, A-C. female : A. Fore wing; B. Antenna; D. Basal Segment; D-G. male : C. Antenna; E. Fore wing; F. Genitalia; G. Mesonotum and scutellum with setation.

Abdomen finely shagreened, otherwise smooth, slightly more than 0.50 of the body; aedeagus well exerted, about 0.24-0.30 of abdomen, clasper with a single hook.

Type locality : Tenali (Guntur)

Tetrastichus sexmaculatus Kurian

(Fig. 319)

1953 *Tetrastichus sexmaculatus*, Kurian, *Agra Univ. J. Res. (Sci.)*, 2 (1) : 117.

Male : Length 1.40 mm. Body black with a faint greenish lustre; head black, with a faint metallic-blue lustre; frons and face dark reddish-brown to black, with a faint metallic lustre; mandibles reddish-brown, antenna brown; parapsidal furrows black, with a slight greenish-metallic lustre, with shallow scale-like reticulation; propodeum with the tips of femur, tibia, and tarsi brown; abdomen black with bluish-green lustre, faintly, finely shagreened, with few scattered, short, brownish setae.

Head from above 2 times as broad as long; vertex narrow, irregularly; finely punctate; interocellar space 1.75 times ocellular, 1.33 times the front ocellar; face faintly rugose; scrobes conspicuous with a distinct carinate ridge in between; genal suture distinct; clypeus slightly convex; mandibles small, minutely and acutely bidentate at apex; antenna inserted on lower orbital borders, with 9 segments : scape 2.50 times pedicel; first funicular 0.67 of the pedicel; second funicular slightly less than 2 times annelli; third and fourth funicular segments gradually become longer; first segment of club slightly shorter than the last funicular; second nearly 0.85 of the first club segment; terminal very slightly over 0.50 of the latter, with a short nipple-like process apically.

Prothorax short, conical, roughly, irregularly rugulose; mesothorax 3 times prothorax; parapsidal furrows deep, broad and complete; scutellum 0.67 of mesothorax, slightly convex, concolorous and sculptured like mesothorax, with 2 longitudinal furrows; metathorax short, sculpture same as that of pronotum; propodeum 0.75 of scutellum, finely irregularly sculptured, median longitudinal carina 0.67 of the propodeum combining the transverse carina appearing as if it divides into 2 branches, enclosing a broadly triangular area posteriorly; spiracles medium-sized, spherical, close to but not touching the anterior margin; paraspiraular carina present; hind femur about 2 times coxa; tibia 1.25 times femur; metatarsus 0.25 of the rest of tarsi; tibial spur nearly equal to or very slightly longer than metatarsus; fore wing length 2.25 times the breadth; *sm* nearly 1.25 times *m*, with 7 strong setae; *m* with 8 setae; *st* very slightly more than 0.33 of *m*; *pm* absent.

Abdomen equal to thorax; 6 tergites distinctly visible; first largest; rest become shorter and narrower; apex conical.

Female : Length 1.60 mm. Body black with a faint greenish lustre; eyes dark brown, bare; frons and face with a faint metallic green lustre; mandibles dark reddish-brown; antenna dark brown, with short, stiff silvery-brown pubescence.

Head above length 0.33 times width; vertex narrow, emarginate, dull and smooth, with a few scattered setae; interocellar space 2.50 times front ocellar, latter 0.60 of ocellocular; in front length 0.75 of the breadth; gena 0.71 of eye; frons and face very faintly and finely sculptured, nearly smooth and shiny; clypeus slightly convex, truncate at apex; mandibles short, 3-toothed, first distinctly acute, second somewhat acute and third completely blunt; scrobes distinct reaching front ocellus; antenna inserted just above lower orbital borders, with 9 segments : 1.1.1.3.3; scape cylindrical, nearly as long as pedicel, annellus and first 2 funicular segments combined; pedicel very slightly less than 0.33 of scape; annellus 0.16 of pedicel; first funicular equal to pedicel; second 1.25 times first; third equal to second; first and second club segments subequal and equal to pedicel, second 1.25 times first; third equal to second; first and second club segments subequal and equal to pedicel, third 0.75 of the second; all club segments together 0.83 of scape and slightly longer than the last 2 funicular segments combined; a nipple-like process found on the apex of the club.

Pronotum short; mesonotum slightly over 0.33 of thorax, very faintly coriaceously sculptured; parapsidal furrows deep and complete; scutellum equal to mesonotum, convex, coriaceously longitudinally striate, with 2 faint lateral longitudinal lines; metathorax short, 0.20 of scutellum, nearly smooth and shiny; propodeum 0.80 of scutellum, faintly irregularly coriaceously sculptured, with a median longitudinal carina which bifurcates posteriorly enclosing a triangular area; spiracles small and round; hind femur slightly over 2.50 times trochanter; tibia 1.16 times femur; tibial spur 1.33 times metatarsus; metatarsus 1.16 times femur; tibial spur 1.33 times metatarsus; metatarsus 0.11 of tibia and 0.20 of the rest of tarsi; fore wing length 2.25 times width; *sm* 1.25 times *m*, nearly 3 times *st*; *pm* absent.

Abdomen 0.87 of thorax, nearly round; 6 tergites visible, first the largest and nearly 3 times the rest which nearly subequal; tergites nearly smooth and shiny with a few scattered silvery-white pubescence, except the first which has a faintly shagreened appearance.

Type locality : Bangalore

Host : *Chilomenes sexmaculata*

Tetrastichus gardneri Ferrière

(Fig. 320)

1931 *Tetrastichus gardneri*, Ferrière, *Bull. ent. Res.*, 22 : 291.

1938 *Tetrastichus gardneri*, Mani, *Cat. Indian Ins.*, 23 : 130.

1940 *Tetrastichus gardneri*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female/Male : Length 1.20-1.50 mm, and male 1.00-1.20 mm. Body dark green, in some parts more or less aeneous; antennae

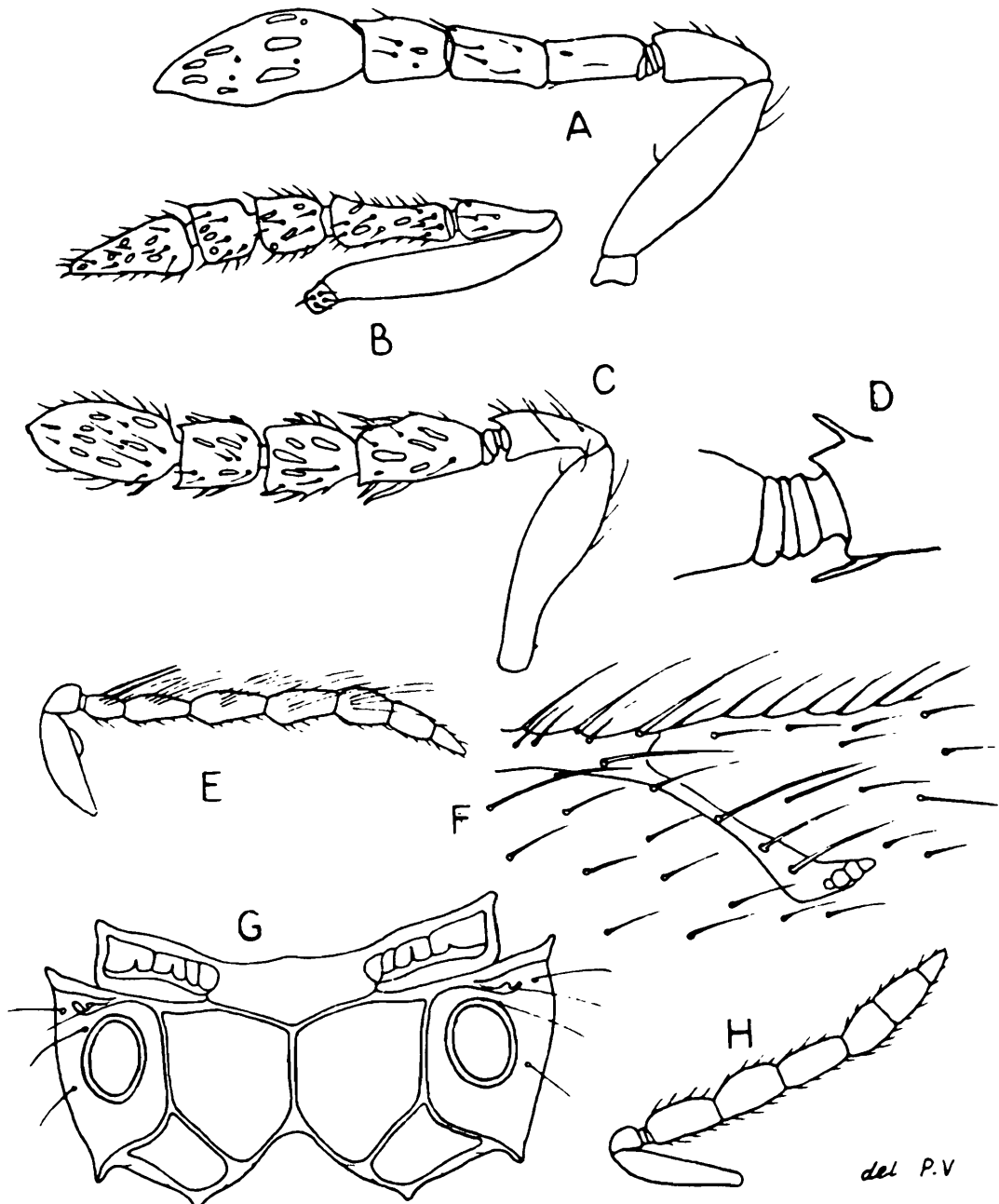


FIG. 320. A. *Tetrastichus coimbatorensis* Rohwer, female : Antenna; B. *Tetrastichus ayyari* Rohwer, female : Antenna; C-D. *Tetrastichus isaaci* Rohwer, female : C. Antenna; D. Annellus; *Tetrastichus gardneri* Ferrière : E. Antenna, male; H. Antenna, female; *Tetrastichus spirabilis* Waterston; F. Stigmal venation; G. Propodeum. (Modified from different authors)

brown, scape yellow; entire antennae more yellow in male; legs entirely yellow, except the coxae concolorous with thorax.

Female : Head transverse, finely shagreened, almost smooth; interocellar space less than ocellocular space; with a small furrow between ocelli and eyes; in front head rounded; gena equal to eye,

with a weak furrow; antennae inserted in the middle of face; scape narrow, reaching front ocellus; pedicel short, a little longer than thick; annelli 2, small; funicular segments elongate, more than 2 times pedicel and about 2 times as long as thick; first segment somewhat longer than 2 others; club pointed, as long as preceding 2 segments combined; funicle and club covered with small white ciliae.

Thorax oval, finely shagreened; mesonotum large, with parapsidal and median furrows well marked; scutellum shorter than mesonotum, very convex, with strong longitudinal furrows; propodeum short, almost smooth, with a median and lateral carina; wings large, reaching far beyond the end of abdomen; vein *sm* with 2 or 3 ciliae; vein *m* long and narrow; *st* also narrow, knob very small; about as long as 0.25 of vein *m*.

Abdomen small, rounded, as broad as thorax but shorter; tergites nearly subequal; ovipositor not exerted.

Male : Similar, differing only in antennae thin, with first funicular segment scarcely longer than pedicel, 3 others elongate, and club as long as preceding 2 segments combined; funicular segments and first club segment bear near the base a semi-circle of long ciliae, each longer than the segment itself; sense-organ on scape small and rounded; abdomen oval, narrower but not much shorter than thorax.

Type locality : India : Dehra Dun

Hosts : Eggs of Pentatomidae on *Tectona grandis* from the same eggs were also bred *Acroclisoides indicus*, *Anastatus colemani* Crawford and 3 males of *Tetrastichus* sp.

Tetrastichus spirabilis Waterston

(Fig. 320 & 321)

1922 *Tetrastichus spirabilis*, Waterston, *Ind. forest Rec.*, 9 : 89.

1938 *Tetrastichus spirabilis*, Mani, *Cat. Indian Ins.*, 23 : 132.

1940 *Tetrastichus spirabilis*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 31.

Female : Length 2.00 mm. Head wider than high; eyes glabrous; clypeus with a median incision; antennae inserted on lower orbital border; scape not quite as long as the funicular segments and 3 times pedicel, length to thickness 19 : 7; pedicel about 1.50 times as long as thick; annelli 2; funicular segments ratio 7 : 7 : 6; club segments ratio 5 : 5 : 4.

Pronotum with 10-11 bristles; mesonotum with distinct impressed median longitudinal line; scutellum with distinct impressed lines; propodeum without sculpture, but with well developed median and lateral carinae; fore wings nearly 2.50 times as long as wide;

vein *sm* a little shorter than *m*, *m* about 4 times *st*; hind tarsal segments proportions 35 : 35 : 30 : 45; sixth abdominal tergite with a row of 16 or 17 bristles.

Male : Length 1.50 mm. Head slightly wider than in female; face above clypeus slightly swollen; scape swollen, a little less than 3 times as long as thick; funicular segments ratio 32 : 38 : 42 : 40; club segments ratio 30 : 26 : 27

Fore wing a little more than 2 times as long as wide; sixth abdominal tergite behind with 12-13 bristles.

Type locality : Dehra Dun

Host : *Hypsipyla robusta*

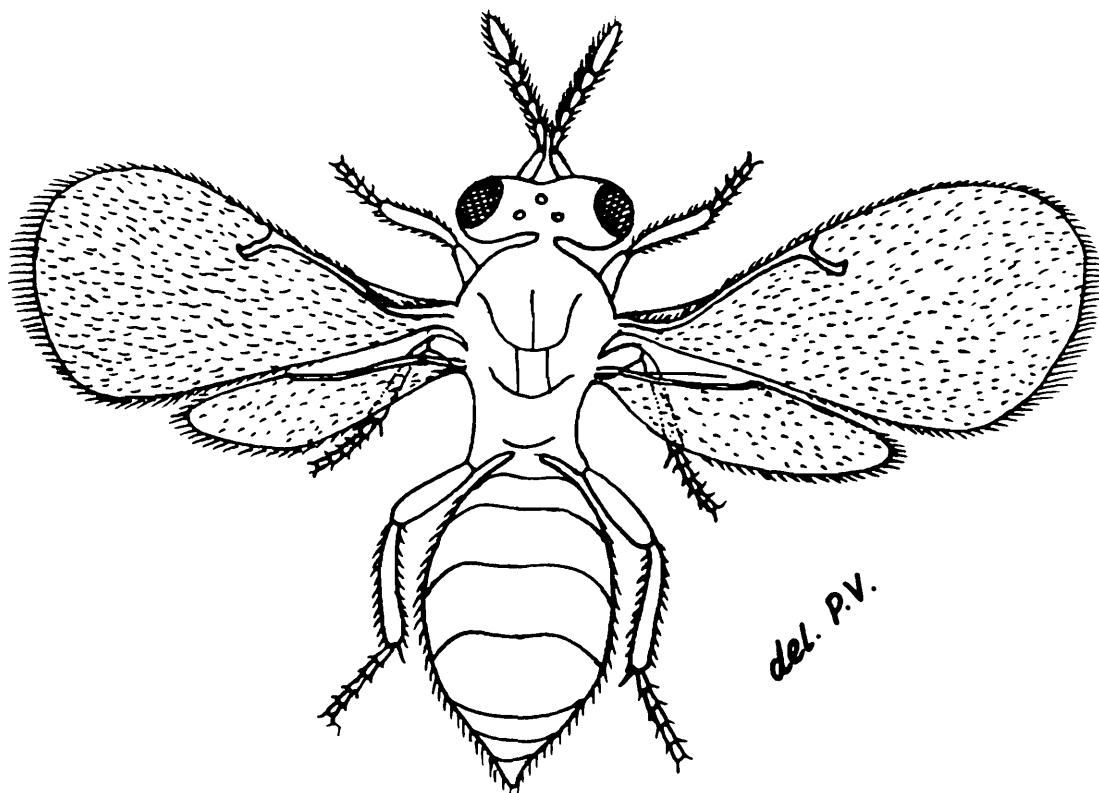


FIG. 321. *Tetrastichus spirabilis* Waterston, female. (Modified from Waterston).

***Tetrastichus coccinellae* Kurdjumov**

1913 *Tetrastichus coccinellae*, Kurjumov, *Rev. Russe. Ent.*, 13 (1) : 27-43.

1947 *Tetrastichus coccinellae*, Ranaweera, *Indian J. Ent.*, 9 (1) : 1.

Female : Length 1.23-1.53 mm., mean 1.40 mm. Body black, with bluish reflections; antennae dark brown; tibiae and tarsi yellow, rest of legs black.

Head from above transverse, about 1.50 times as wide as long, sparsely punctate; ocellular space subequal to interocellar space; scrobes shallow; eyes bare; gena subequal to eye, with conspicuous

genal carina; antennae inserted somewhat below the middle of face; segments 10 : 1.1.2.3.3; scape short but reaching front ocellus, somewhat thicker in the middle than at base and tip; pedicel a little shorter than 0.50 of scape and slightly more than its apical thickness; annellus minute; funicular segments subequal and slightly longer than pedicel; club somewhat longer than preceding 2 segments combined, terminal club segment subconical.

Thorax smooth and shiny, in some angle finely shagreened; parapsidal furrows deep, complete; median longitudinal furrow on mesonotum short, but well developed; scutellum convex, with 2 longitudinal furrows; propodeum finely rugulose, with median longitudinal and lateral carinae distinctly developed; vein *sm* slightly longer than *m*, latter with a row of 8-9 long bristles; *st* almost 0.33 of vein *m*; *pm* absent.

Male : Length 0.90-1.20 mm. Body black female; antennae brown except for the yellow funicle; first funicular segment shorter than others; funicular segments and club with long bristles; club much thicker than rest of antennae; abdomen narrow.

Type locality : Europe

Distribution : Europe, Ceylon

Hosts : *Coccinella septempunctata*, *Chilomenes renipustulatus*, *Chilomenes bipustulata*, *Menochiles sexmaculatus*.

Tetrastichus taprobanensis Ranaweera

1947 *Tetrastichus taprobanensis*, Ranaweera, *Indian J. Ent.*, 9 (1) : 10.

Female : Length 1.91-2.64 mm. Body metallic-blue or metallic-green; coxae and femora concolorous with body; rest of legs pale yellow; scape and pedicel yellow; funicle and club brown.

Head above wider than long, about as wide as thorax; shagreened and deeply punctate; ocelli almost in a straight line in grooves connected to orbits; ocellocular space less than ocellar diameter; eyes oval, naked; gena subequal to eye, finely striate, carina well developed; scrobes deep; antennae inserted a little below middle of face; segments 10 : 1.1.2.3.3; scape a little over 2 times as long as thick; pedicel somewhat less than 0.50 of scape; funicular segments subequal, first funicular segment somewhat more than 2 times pedicel; almost 2 times as long as thick; club subequal to the first funicular segment, annelli and pedicel combined.

Pronotum irregularly aciculate; mesonotum finely reticulate, with a row of long setae mesad of the well developed complete parapsidal furrows; median longitudinal sulcus well developed, complete; scutellum finely reticulate; with deep longitudinal furrows converging

slightly behind; propodeum finely rugulose, with irregular ridges, well developed median and lateral carinae; vein *m* about 2 times *sm*, with a row of 12-15 bristles; vein *st* about 0.33 of *m*.

Abdomen shiny, conic-ovate, subequal to the rest of body; ovipositor slightly exerted.

Male : Length 1.56-2.00 mm. Body colour generally as in female; scape about 3 times as long as thick; pedicel about 0.33 of scape and about 0.50 of first funicular segment; funicular segments 4, subequal, each about 2 times as long as thick; club equal to preceding 2 segments combined; antennal segments with short setae; abdomen shorter than thorax.

Type locality : Ceylon : Passara

Host : Larvae of *Natada nararia*

Tetrastichus schoenobii Ferrière

(Fig. 322)

1931 *Tetrastichus schoenobii*, Ferrière, *Bull. ent. Res.*, 22 : 290.

1938 *Tetrastichus schoenobii*, Mani, *Cat. Indian Ins.*, 23 : 132.

1940 *Tetrastichus schoenobii*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 30.

1964 *Tetrastichus schoenobii*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 333.

Female/Male : Length female 1.10-1.60 mm, male 0.80-1.20 mm. Body shining green with some bluish reflections; antennae brown, scape yellow; legs entirely yellow, except greenish base of fore coxae and the greater part of hind coxae.

Female : Head transverse, very short behind eyes; ocelli in grooves; ocellocular space less than interocellar space; scrobe broad, not deep; eyes almost rounded; gena equal to eye, genal furrow complete; antennae inserted in the middle of face; scape short, scarcely reaching front ocellus; pedicel elongate, a little shorter than 0.50 of scape; annelli 2, first very small; funicular segments 3, elongate, 3 times as long as thick and about 2 times as long as pedicel, subequal in length; club with 3 segments, narrow and elongate, almost as long as the preceding 2 segments combined; all the segments covered with short pubescence.

Thorax smooth and shining, very finely shagreened; mesonotum with deep parapsidal furrows, median furrow very weak, nearly obliterated anteriorly; scutellum as long as mesonotum, with 2 thin, but well marked, longitudinal furrows; propodeum finely rugulose, dull with median and lateral carinae just before spiracles, small and rounded; wings large, reaching beyond the tip of abdomen; vein *sm* with a single hair; vein *m* longer than *sm*; *st* very thin at base, slightly broadening towards the end, broader than vein *m*; its length about 0.33 of *m*; marginal ciliae short.

Abdomen elongate, oval, pointed behind, not broader than thorax and a little longer than head and thorax combined; ovipositor slightly exerted.

Male : Similar but smaller; antennae narrower, first funicular segment smaller than others, about as long as pedicel; funicle and club with short hairs; sensorial organ on the scape narrow elongate, almost as long as scape itself; abdomen oval, a little longer than thorax.

Type locality : Malaya : Setapak

Distribution : Malaya, Thailand, Ceylon

Hosts : Eggs of *Schoenobius bipunctifer* and *Spodoptera mauritia*

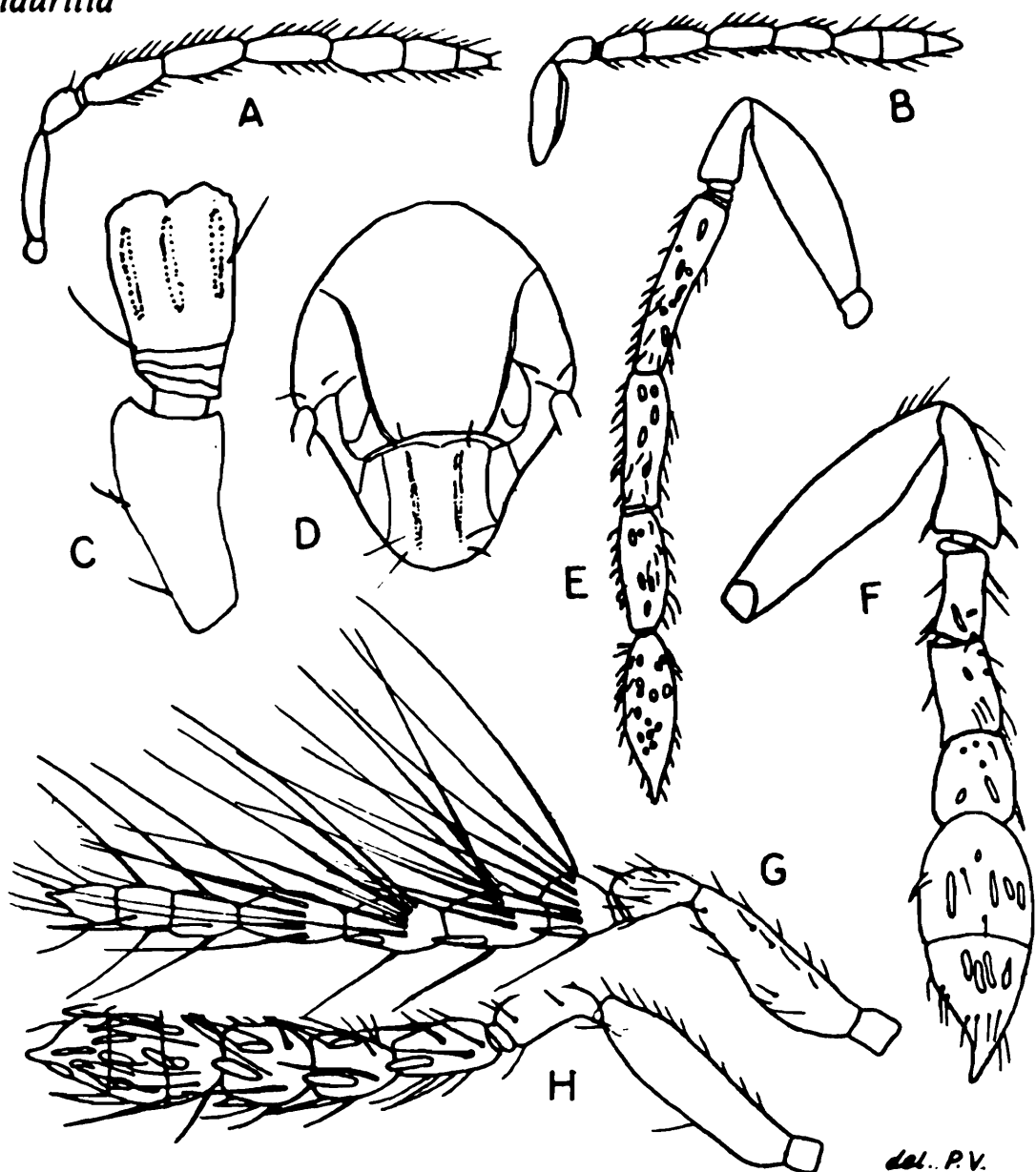


FIG. 322. A-B. *Tetrastichus schoenobii* Ferrière : A. Antenna, female; B. Antenna, male; C-F. *Tetrastichus lasiopterae* Bhatnagar; C. Annellus and pedicel; D. Thorax; E. Antenna male; F. Antenna female; G-H. *Tetrastichus nyemitawus* Rohwer : G. Antenna male, H. Antenna female (Modified from different authors)

Tetrastichus lasiopterae Bhatnagar

(Fig. 322)

1951 *Tetrastichus lasiopterae*, Bhatnagar, *Indian J. Agri. Sci.*, 21 (2) : 176.

Female : Length 1.70 mm. Body light brownish-yellow with 2 dark brown spots below front ocellus very distinct viewed in front; thorax light reddish-brown; legs light yellowish-brown, wing hyaline, veins light yellow.

Vertex with scattered villous setae; more or less smooth; interocellar space subequal to ocellocular space; front wider than high; antennae inserted slightly below orbital border; face virtually impunctate; genal space 0.60 of eye; eyes glabrous; mandibles tridentate; first 2 teeth acute; antennae with 9 segments : 1.1.2.3.2; scape 4 times as long as thick, cylindrical, equal to club; pedicel 2 times as long as thick; annellus very short and narrow; first funicular segment about 0.50 of scape and slightly longer than last segment of funicle, longer than thick; club with obscure indications of a third segment; 1.50 times last funicular segment, ending in a nipple-like projection.

Thorax slightly wider than head; prothorax narrow and rectangular when viewed above; mesothorax smooth with well marked and complete parapsidal furrows; scutellum entirely smooth with 4 longitudinal bands; propodeum smooth; hind tibial spur single and 0.75 of metatarsus; vein *sm* subequal to *m*; *m* with 13 long setae distributed along its margin; *pm* absent; *st* about 0.25 *m*; discal ciliation moderate; fringe dense.

Abdomen sessile, longer than thorax; tapering towards apex; ovipositor subexserted.

Type locality : Trivandrum

Host : *Lasioptera falcata* Felt

Tetrastichus niger Ranaweera1947 *Tetrastichus niger*, Ranaweera, *Indian J. Ent.*, 9 (1) : 12.

Female : Length 1.40-1.70 mm. Body generally shiny black; scape yellowish-brown; pedicel yellowish-brown; rest of antennae dark brown; coxae and femora dark brown; rest of legs brown.

Head above transverse, sparsely punctate; ocelli not imbedded in grooves; ocellocular space subequal to interocellar space; gena smooth, equal to eye; genal carina below the middle of face; segments 10 : 1.1.2.3.3; scape short, not reaching front ocellus; pedicel slightly longer than thick; funicular segments subequal; club thicker than rest of antennae and longer than the preceding 2 segments combined.

Thorax finely shagreened; pronotum finely aciculate; mesonotum reticulate; parapsidal furrows deep, complete, with a row of short setae mesad; median sulcus faint and obliterated anteriorly; scutellum finely reticulate, with 2 longitudinal furrows; propodeum shagreened, with median longitudinal and lateral carinae; vein *sm* with 3-5 bristles; vein *m* longer than *sm*, with a row of 12 bristles; vein *st* about 0.33 of *sm*; abdomen equal to thorax; ovipositor not exerted.

Male : Length 1.00-1.30 mm. Body as in female; funicular segments 4, subequal and slightly shorter than pedicel; club not thicker than funicular segments and somewhat longer than the preceding 2 segments combined, with short setae; abdomen slightly shorter than thorax.

Type locality : Ceylon : Passara

Host : *Simplicia robustalis*

Tetrastichus asthenogmus (Waterston)

1914 *Tetrastichodes asthenogmus*, Waterston, *Bull. ent. Res.*, 5 : 340.

1938 *Tetrastichodes asthenogmus*, Mani, *Cat. Indian Ins.*, 23 : 129.

1940 *Tetrastichodes asthenogmus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female : Length 1.50 mm. Body yellowish-brown; scape and pedicel lemon yellow, rest of antenna fuscous; abdomen brown; legs pale yellowish and brown.

Head a little wider than long; interorbital space about 2 times eye; clypeus straight, with 2 minute lobes below in the middle; vertex narrow, with 2 short bristles behind the ocellus and another pair near the orbital margins; antennae inserted above the lower orbital border; scape about 6 times as long as thick; pedicel 0.33 of scape and about 2 times as long as thick; annelli 3, narrow; funicular segments cylindrical, ratio 5 : 4 : 3; club with 3 segments, first segment slightly shorter than the last funicular segment.

Pronotum coarsely reticulate; parapsidal furrows complete, deep; scutellum with 2 well separated lateral sulci, thorax reticulately sculptured; propodeum more than 2 times as wide as long, median carina indistinct; fore wing 2 times as long as wide vein *sm* : *m* : *st* ratio 3 : 5 : 1; *sm* with 4 bristles, *m* with 13 bristles; hind wing 3 times as long as wide; hind tarsal segments ratio 6 : 5 : 3 : 4.5.

Abdominal tergites subequal, smooth in the middle and obscurely reticulate at the sides.

Type locality : Ceylon

Host : *Periplanata americana*

Tetrastichus versicolor Ranaweera

1947 *Tetrastichus versicolor*, Ranaweera, *Indian J. Ent.*, 9 (1) : 7.

Female : Length 1.70-2.20 mm. Body generally metallic-blue with green reflections; scape testaceous, rest of antenna dark brown to black; coxae and femora concolorous with body; rest of legs pale yellow to yellowish-brown.

Head above transverse, finely punctate; ocelli almost in a straight line within deep groove; ocellocular space less than ocellar diameter; gena subequal to orbital diameter, with genal carina complete, with a few scattered punctae; scrobes shallow; antennae inserted below the middle of face; segments 10 : 1.1.2.3.3; scape reaching front ocellus; pedicel slightly less than 0.50 of scape; annelli minute; first funicular segment slightly longer than second and third, which are subequal; club equal to preceding 2 segments combined.

Pronotum finely aciculate, mesonotum finely reticulate; parapsidal furrows deep, complete; median longitudinal sulcus obscure; scutellum finely reticulate, with deep longitudinal furrows; propodeum finely granulate, with median longitudinal and lateral carinae well developed; vein *st* about 0.33 of *m*.

Male : Length 1.50-1.70 mm. Body coloured as in female; antennae brown; first funicular segment a little longer than pedicel and slightly shorter than others; antennae with segments 9 : 1.1.4.3; all segments with long whorls of setae.

Type locality : Ceylon : Talawakelle

Hosts : Hyperparasite on *Apantreles taragamae* parasitic on larva of Lasiocampid; hyperparasite on *Elasmus homonae* Ferrière and *Macrocentrus homonae* parasitic on *Homona coffearia*; hyperparasite of *Phytodictus capuae* parasitic on *Homona coffearia*; hyperparasite on *Goniozus montanus* parasitic on *Homona coffearia*

Tetrastichus travancorensis Saraswat

1975 *Tetrastichus travancorensis*, Saraswat, *Mem. School Ent.*, 4 : 26.

Female : Length 2.60-2.64 mm. Body black, with metallic bluish-green reflections; eyes and mandibles reddish-brown, antennae dark brown, scape and pedicel brown; hind coxae basally above dark brown, otherwise legs brown; wings hyaline, veins brown.

Head in front length to width 80 : 100, finely reticulate with sparse, scattered, shallow punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellocular space about 3 times ocellar diameter, front ocellar space about 0.50-0.75 of ocellar diameter, interocellar space about 3 times ocellar diameter; eyes sparsely pubescent; mandibles tridentate; antennal segments 11;

1.1.3.3.3; antennal sockets slightly above the lower orbital border; scape long, cylindrical, about 6 times longer than thick, pedicel 2 times longer than thick and 0.40 of scape; annelli slightly narrower than funicle, first annellus slightly more than 2 times thicker than long, second 2.44-2.66 times thicker than long and third very slightly more than 2 times thicker than long; first funicular segment longest, 2.80 times longer than thick, 1.40 times pedicel; second segment only very slightly shorter than the first, about 2.60-2.70 times longer than thick; third segment shortest, 0.90 of the second, 2 times as long as thick; club stouter than funicle, including terminal style about 3 times longer than thick, slightly shorter than preceding 2 funicular segments combined, first segment of club 1.12 times longer than thick and about 0.75 of the preceding funicular segment, second segment 1.14 times thicker than long and about 0.80 of the first, third segment with a short pointed style, including style 1.33 times longer than thick and subequal to the preceding club segment.

Pronotum and propodeum finely reticulate, mesonotum and scutellum very finely, longitudinally reticulately striate; pronotum also with few sparsely scattered punctae; mesonotum with the median groove faint, 3 bristles along the parapsidal furrow on each side and a pair along the posterior margin; scutellum with 2 pairs of prominent longitudinal grooves, 2 pairs of bristles on either side of inner grooves; propodeum with a median carina, a short carina from the anterior margin extending laterally to the spiracle, paraspiracular carinae absent, spiracle touching the lateral margin and separated from the anterior margin by 0.75 of its diameter; fore wing length to width 100 : 40, veins *sm*, *m* and *pm* with 4-5, 13-14 and 1-2 long setae respectively; veins *sm* : *m* : *pm* : *st* ratio 73 : 100 : 3 : 18; hind wing to fore length 80 : 100; hind coxa almost 2 times as long as thick, finely reticulate; femur about 3.50 times longer than thick, 1.47 times coxa, finely reticulately sculptured, with a single long seta apically below; tibia long, slender, slightly thickened apically, about 8 times longer than thick, 1.30 times femur, spur 0.86 of metatarsus; tarsus subequal to femur, about 0.78 of tibia, metatarsus 0.25-0.28 of tarsus, second segment subequal to metatarsus, third 0.70 of the second, fourth subequal to the second or metatarsus.

Abdomen reticulate, only very slightly longer than 0.50 of body; ovipositor little exerted.

Type locality : Travancore

Tetrastichus bicolor Saraswat

1975 *Tetrastichus bicolor*, Saraswat, *Mem. School Ent.*, 4 : 2.

Female : Length 2.78-3.06 mm., mean 2.42 mm. Body yellow, with brownish-black markings, with metallic-bluish-green reflections on thorax and abdomen, otherwise body non-metallic; head

yellowish-brown, vertex and bases of ocelli dark brown, eyes reddish-brown, mandibles red; antennae black, scape yellowish-brown; legs yellow, last tarsal segments dark brown; wings hyaline, veins brown.

Head in front length to width 77 : 100, smooth; clypeal margin in the middle with paired tooth-like projections; ocellocular space equal to about 3.50 times ocellar diameter, front ocellar space slightly less than ocellar diameter, interocellar space equal to about 2.50 times ocellar diameter; eyes sparsely pubescent; mandibles tridentate; antennal segments 11 : 1.1.3.3.3; antennal sockets well above lower orbital borders; scape cylindrical, about 5 times longer than thick; pedicel 2 times as long as thick, 0.33 of scape; 3 annelli subequal, slightly narrower than funicular segments, without hairs; first funicular segment longest, 4.20 times longer than thick, about 0.70 of scape and about 2 times pedicel; second segment very slightly shorter than first, 3.63 times longer than thick; third segment shortest, very slightly shorter than the second, 3.45 times longer than the second, 3.45 times longer than thick; club slightly stouter than funicle, excluding terminal style 4 times as long as thick, first segment 2 times as long as thick, second and third segments more or less fused together and subequal to the first, terminal segment with a short, pointed style, style subequal to terminal segment; club equal to about preceding 1.25 funicular segments combined.

Thorax finely reticulate, reticulations more prominent in dark areas; middle portion of mesonotum and scutellum finely longitudinally reticulate; propodeum with larger and distinctly transverse reticulations, median carina well developed, 4 short carinae on each side (2 obscure and 2 strong) from the posterior margin, paraspicular carinae moderately developed, propodeal spiracle separated from the anterior margin by space 1.25 times of its own diameter, one pair of anterior and posterior bristles present; scutellum with 2 pairs of short bristles, metanotum with a pair of longer bristles; mesoscutum with 4 bristles along the parapsidal furrows on each side, median groove present; fore wing length to width 100 : 37; veins *sm*, *m* and *pm* with 5 (3 long and 2 short), 14 long and one short setae respectively, 2 rows of 7 and 6 setae behind vein *m*; veins *sm* : *m* : *pm* : *st* ratio 70 : 100 : 3 : 10; hind wing to fore wing length 77 : 100; hind femur 3.35 times longer than thick, 1.60 times coxa, with obscure reticulations; tibia thicker apically, about 9 times longer than thick, about 1.40 times femur, spur stout, 1.20 times metatarsus, subequal to second, third to second 4 : 6 and subequal to metatarsus, fourth longest, fourth to third 7 : 4.

Abdomen shagreened throughout, a little longer than thorax; ovipositor sheath slightly projecting beyond the tip of abdomen.

Type locality : Western Ghats : Gudalur-Ooty Road

Tetrastichus malabarensis Saraswat

1975 *Tetrastichus malabarensis*, Saraswat, *Mem. School Ent.*, 4 : 10.

Female : Length 2.00-3.00 mm, mean 2.36 mm. Body non-metallic, brownish-yellow with black markings on head, thorax and abdomen; head concolorous with body, in front with a pair of median black patches, front ocellus, ocellar triangle black, seen from back with a broad horse-shoe-shaped mark touching occipital foramen; eyes and ocelli brownish-red to reddish-brown; mandibles reddish-brown; antennae dark brown; middle coxae brown, all the last tarsi and hind coxae basally dark brown, otherwise legs yellowish-brown; wings hyaline, veins brown.

Head in front length to width 90 : 100, smooth, with fine obscure longitudinally reticulate microsculpture on vertex and frons; a few scattered shallow punctae on vertex; clypeal margin in the middle with a pair of tooth-like projections; ocellocular space 2.50-3.00 times ocellar diameter, front ocellar space subequal to diameter of median ocellus, interocellar space 3.50 times or very slightly more than 3.50 times ocellar diameter; eyes very sparsely pubescent; mandibles tridentate, inner tooth truncate; antennal segments 11 : 1.1.3.3.3; antennal sockets slightly above the lower orbital border; scape finely shagreened, moderately long, slightly thickened subapically, subequal to pedicel, annelli and first funicular segment combined, about 4 times longer than thick; pedicel finely shagreened, 2 times longer than thick, 0.40 of scape; first annellus thickest, other 2 minute, rudimentary and very close to each other; first funicular segment longest, 2.40 times longer than thick and 1.33 times pedicel; second segment only very slightly shorter than first, about 0.90- 0.91 of the first, 2.20 times longer than thick; third segment shortest, 0.90-0.96 the second, 1.70 times longer than thick; club stouter than funicle, 2.50 times longer than thick and about 1.75 of the preceding funicular segments combined, terminal segment with a short pointed style, style about 0.50 of preceding club segment, first segment of club about 1.20 times longer than thick and about 0.90 of the preceding segment, second segment about 1.16 times thicker than long and about 0.70 of the first, third shortly conical, nearly 1.25 times thicker than long and 0.66 of the second.

Pronotum and propodeum finely reticulate, mesonotum and scutellum finely longitudinally shagreened; pronotum also with sparse, scattered punctae; mesonotum with 11-15 scattered punctae with short bristles, or arranged in rows on each side of the complete median longitudinal groove, one long bristle posterolaterally on each side; scutellum with 2 pairs of longitudinal grooves, inner grooves obscure, 2 bristles posteriorly, one behind the other on either side of the inner grooves, one bristle on the posterior margin on either side of the inner grooves; a pair of bristles on metanotum; propodeum with broad and strongly developed median carina,

paraspiracular carinae absent, 3 bristles in a row near the lateral margin, spiracle touching the anterior margin and slightly coming out of the lateral margin; fore wing short, broad, length to width 100 : 46, *sm* with 5 (4 long and one median) setae directing towards front margin, 5 (3 long and 2 short) setae directing behind and 3 shorter setae just above *sm*, *m* with 10-14 long setae, *pm* with a single medium seta; veins *sm* : *m* : *st* ratio 82 : 100 : 27; hind wing to fore wing length 80 : 100; hind coxa about 1.75 times longer than thick; femur about 3.45 times longer than thick, with a single long seta subapically below; tibia long, thickened apically, 6.25 times longer than thick, 1.20 times femur, spur only very slightly longer than metatarsus; tarsus subequal 0.84 of tibia, metatarsus 0.19 of tarsus, second segment about 1.30 times metatarsus, third nearly equal to metatarsus and 0.80 of the second, fourth 1.55 times the third.

Abdomen finely reticulate, 0.50 or slightly more of body; ovipositor slightly exerted beyond the tip of abdomen.

Type locality : Moozhiar-Tekkady Road, Kargudi-Ooty Road : Cardamom-Nilgiri Hills

Tetrastichus fasciatus Ashmead

1894 *Tetrastichus fasciatus*, Ashmead, *J. Linn. Soc. London* (Zool.), 25 : 187.

1922 *Tetrastichus fasciatus*, Gahan, *Proc. US nat. Mus.*, 61 (24) : 18.

Female : Length 1.50 mm. Body pale yellow, tinged with brown; tergites behind with brown, flagellum brown.

Head and thorax smooth, mesonotum with median groove, propodeum with median carinae, abdomen ovate, a little longer than rest of body, annelli 4; first funicular segment subequal to pedicel and about 2.50 times as long as thick; second subequal to first, third slightly shorter, club equal to preceding 2 segments combined, with a short spur; vein *m* distinctly longer than *sm*, *st* about 0.30 of *m*.

Male : Length 1.30 mm. Body similar to female but abdomen black; apical 0.50, shorter than thorax, antennae slender, long; scape below near tip with an ovate spot, pedicel not 2 times as long as thick, annelli 3 minute; funicular segments 4 with long setae; first segment longer than thick; segments 3-4 subequal; fourth shorter; club slender, equal to preceding 2 segments combined, with 3 segments, apical segment short, with a spine.

Type locality : West Indies (St. Vincent) Grenada

Distribution : West Indies; India : Mysore

Host : Gallmidge *Contarinia caudata* Felt

Tetrastichus shencottensis Saraswat

1975 *Tetrastichus shencottensis*, Saraswat, *Mem. School Ent.*, 4 : 24.

Female : Length 2.56 mm. Body non-metallic, brown; eyes red, antennae except yellowish-brown scape, darker brown; legs pale brown; wings hyaline, veins transparent or faintly yellowish; ovipositor tip black.

Head in front length to width 79 : 100; smooth, finely longitudinally reticulate, few scattered shallow punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellular space 2.50 times ocellar diameter, front ocellar space about 0.90 of ocellar diameter, interocellar space 3.25 times ocellar diameter, eyes very sparsely pubescent; mandibles tridentate, inner tooth truncate; antennal segments 12 : 1.1.4.3.3; antennal sockets almost in the middle of frons; scape moderately long, equal to pedicel, annelli and first funicular segment combined, very slightly more than 4 times longer than thick; pedicel 2 times longer than thick, 0.38 of scape, annelli narrower than funicle, fourth annellus thickest, first and third subequal, the second narrow, strip-like; first funicular segment equal to the second, 2.36 times longer than thick; club stouter than funicle, distinctly 3 segmented, about 3.30 times longer than thick, including style equal to preceding 2 funicular segments combined, terminal segment with a short style, about 0.50 of preceding club segment, first segment of club 1.57 times longer than thick and 0.91 of the preceding segment, second as long as thick and 0.63 of the first, third shortly conical, nearly as long as thick and 0.71 of the second.

Pronotum and propodeum finely reticulate, mesonotum and scutellum very finely, longitudinally reticulate, almost smooth; pronotum also with sparse, scattered, fine punctae; mesoscutum with 7 bristles in a row near parapsidal furrow on each side, median longitudinal groove distinct; scutellum with 2 pairs of longitudinal grooves, 2 bristles posteriorly, one behind the other on either side of the inner grooves; propodeum with the strongly developed median carina, parapsiracular carinae absent, 2 bristles in a row near the lateral margin, one bristle on metanotum behind the scutellar bristle, spiracle separated from the anterior margin by 0.50 of its own diameter; slightly coming out of the lateral margin; fore wing length to width 100 : 44, *sm* with 5 setae pointed towards front margin, 3 setae directed behind, *m* with 15 long setae; veins *sm* : *m* : *st* ratio 75 : 100 : 19; hind wing to fore wing length 79 : 100; hind coxa 1.90 times longer than thick, femur 3.43 times longer than thick, 1.26 times coxa; tibia long, slightly thickened apically, 10 times longer than thick, 1.25 times femur, tibial spur 0.16 of tibia and equal to metatarsus; tarsus 0.73 of tibia, metatarsus 0.16 of tibia and about 0.23 of tarsus, second segment 1.20 times longer than metatarsus, third 0.75 of the second, fourth equal to or only slightly longer than the second.

Abdomen with fine microreticulations, abdomen to body 54 : 100; ovipositor not exerted.

Type locality : Shencottah gap (Western Ghats)

Tetrastichus tritrichia Saraswat

1975 *Tetrastichus tritrichia*, Saraswat, *Mem. School Ent.*, 4 : 29.

Female : Length 2.22 mm. Body non-metallic, except for faint metallic-green reflections anteriorly on mesonotum and middle of metanotum, otherwise body brownish-yellow with brown to dark brown markings on thorax and abdomen; head reddish-yellow, eyes red, ocelli dark brown to black; mandibles reddish-brown; antennae except yellowish-brown scape and pedicel, black; legs brownish-yellow; wings hyaline, veins brownish.

Head in front length 73 : 100, smooth, with fine obscure longitudinal microsculpture on vertex and some part of frons, a few scattered deep punctae on vertex; clypeal margin in the middle with a pair of tooth-like projections; ocellular space about 1.75 times ocellar diameter, front ocellar space 0.50 of ocellar diameter, interocellar space 2 times ocellar diameter; eyes very sparsely pubescent; mandibles tridentate, inner tooth truncate; antennal segments 12 : 1.1.4.3.3, antennal sockets almost in the centre of frons; scape moderately long, slightly curved ventrally, slightly thickened in the middle, including radicle subequal to first funicular segment, 4 times longer than thick; pedicel 2.25 times longer than thick, 0.41 of scape; annelli narrower than funicle, first annellus thickest, 2 and 3 subequal and shorter than fourth, fourth a little shorter first; funicular segments slender, cylindrical, first funicular segment longest, about 7 times longer than thick, and about 2.70 times pedicel; second segment 4.60 times longer than thick, 0.66 of the first; third segment shortest, 3.50 times longer than thick, 0.80 of the second; club stouter than funicle, indistinctly 3 segmented, 3.33 times longer than thick and about 1.33 times preceding funicular segment combined, terminal segment with a short mucro.

Pronotum, metanotum and propodeum finely reticulate, mesonotum and scutellum very finely longitudinally reticulate; pronotum also with sparse, scattered, deep punctae; mesoscutum with 3 bristles near parapsidal furrow on each side, median longitudinal groove faint; scutellum with 2 pairs of prominent longitudinal grooves, 2 bristles posteriorly, one behind the other on either side of the inner grooves, one bristle on the posterior margin on either side of the inner grooves; one pair of short bristles on metanotum; propodeum with strongly developed median carina, paraspircular carinae absent, one bristle laterally behind the anterior margin and one bristle laterally in front of the posterior margin on each side, spiracle separated from the anterior margin and from the

lateral margin by its own diameter and 0.50 of its diameter respectively; fore wing length to width 100 : 38; *sm* with 7 long setae directed towards front margin and several long setae directed obliquely behind, *m* with 13 long setae, veins *sm* : *m* : *st* ratio 70 : 100 : 20; hind wing to fore wing length 78 : 100; hind coxa about 2 times longer than thick; femur 4 times longer than thick, 1.43 times coxa, with a single long seta subapically below; tibia long, slender, slightly thickened apically, 11.30 times longer than thick; 1.40 times femur, spur 0.14 of tibia; tarsus 0.82 of tibia, metatarsus 0.23 about 0.28 of tarsus, second segment equal to metatarsus, third 0.84 of metatarsus or the second, fourth subequal to the third.

Abdomen with fine, reticulate microsculpture, 0.58 of the body; ovipositor well exerted beyond the tip of abdomen.

Type locality : Moozhiar : Cardamom Hills

Tetrastichus polyseta Saraswat

1975 *Tetrastichus polyseta*, Saraswat, *Mem. School Ent.*, 4 : 17.

Female : Length 2.34 mm. Body non-metallic, yellowish-brown; head brown; eyes red, ocellar triangle concolorous with body; antennae except for the somewhat lighter basal 0.50 of scape, dark brown; parapsidal furrows dark brown, anterior border of scutellum darker, scutellum with a faint transverse brown line at apical 0.25; propodeal posterior marginal carina in the middle brownish-black; legs brownish-yellow; abdomen concolorous with thorax, except that the posterior margins of tergites obscurely browned; wings hyaline, veins brown.

Head in front length to width 80 : 100, smooth, finely longitudinally reticulate, all over the face, few scattered punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellular space 2.50 times ocellar diameter, front ocellar space about 0.60 of ocellar diameter, interocellar space 3.75 times ocellar diameter; eyes very sparsely finely pubescent; mandibles tridentate, inner tooth truncate; antennal segments 12 : 1.1.4.3.3; antennal sockets almost in the middle of frons; scape moderately long, including radicle subequal to pedicel, annelli and first funicular segment combined, about 4 times longer than thick; pedicel 2 times longer than thick, 0.45 of scape; annelli narrower than funicle, first annellus thickest, second narrow, strip-like, third and fourth subequal; first funicular segment longest, 2.80 times longer than thick and 1.40 times pedicel; second segment 2 times longer than thick and about 0.85 of the first; third subequal to the preceding, almost 2 times longer than thick; club stouter than funicle, distinctly 3 segmented, nearly 3 times longer than thick, slightly less than preceding 1.75 funicular segments combined, terminal segment with a short, slender style, about 0.50 of preceding club segment, first

segment of club about 1.23 times longer than thick and 0.72 of the preceding funicular segment, second about as long as thick and 0.75 of the first, third shortly conical, as long as thick and 0.67 of the second.

Pronotum and propodeum finely reticulate, mesonotum and scutellum very finely, longitudinally reticulate, almost smooth; pronotum with sparse, scattered, fine punctae; mesoscutum with 11 bristles, irregularly arranged near the parapsidal furrows, median longitudinal groove distinct; scutellum with 2 pairs of prominent longitudinal grooves, 2 bristles posteriorly, one behind the other on either side of the inner grooves; propodeum with the strongly developed median carina, paraspicular carinae absent, 3 bristles in a row near the lateral margin, spiracle touching the anterior margin and slightly more than 0.50 of coming out of the lateral margin; fore wing length to width 100 : 47; *sm* with 8 setae directing towards front margin, 5 setae directing behind, *m* with 13-14 long setae; veins *sm* : *m* : *st* ratio 78 : 100 : 25; hind wing to fore wing length 83 : 100; hind coxa about 2 times longer than thick; femur 4 times longer than thick; 1.41 times coxa, with a single long seta subapically below; tibia long, thickened apically, 10 times longer than thick, 1.25 times femur, spur 0.43 of metatarsus; metatarsus 0.23 about 0.30 of tarsus, second segment equal to metatarsus, third 0.70 of the second, fourth 1.12 times the third.

Abdomen with fine reticulate microsculpture, a little more than 0.50 of body; ovipositor slightly exerted beyond the tip of abdomen.

Type locality : Kargudi-Ooty Road : Nilgiri Hills

Tetrastichus ootyensis Saraswat

1975 *Tetrastichus ootyensis*, Saraswat, *Mem. School Ent.*, 4 : 15.

Male : Length 2.40 mm. Body black with metallic-green and blue reflections; abdomen concolorous with thorax, aedeagus brown; head concolorous with body; eyes dark brown, ocelli brown, except black scape and pedicel, rest of antenna and antennal hairs dark brown, all coxae, fore and hind femora except apically, middle femur except apically and distally concolorous with thorax, otherwise legs yellowish-brown, last tarsal segment of all legs brown; wings hyaline, veins brown.

Head in front length to width 77 : 100, with finely, longitudinally reticulate microsculpture and moderately, closely punctate on vertex and frons, gena without punctae; clypeal margin in the middle with a pair of tooth-like projections; ocellular space equal to 2 ocellar diameters; front ocellar space about 1.17 times ocellar diameter, interocellar space 3.60 times ocellar diameter; eyes very finely, sparsely pubescent; antennal segments 12 : 1.1.3.4.3; antennal

sockets only very slightly above the lower orbital border; scape 3.43 times longer than thick, pedicel 1.50 times longer than thick, 0.37 of scape; annelli much narrower than funicle, first annellus thickest, other 2 very minute; funicular segments moderately thickened basally, with whorls of about 9-10 very long setae dorsally; first funicular segment shortest, 2 times longer than thick and 1.66 times pedicel; segments 2-4 subequal, 2.25 times longer than thick 1.20 times the first; club as stout as funicle, 3.75 times longer than thick and very slightly more than preceding 1.50 funicular segments combined, terminal segment with a long pointed style, first segment bears a whorl of long setae, 1.50 times longer than thick and about 0.70 of the preceding funicular segment, second 1.25 times longer than thick and 0.83 of the first, third 1.17 times longer than thick and 0.70 of the second, terminal style less than 0.50 of the terminal segment.

Pronotum and propodeum largely reticulately-squamous, mesonotum and scutellum finely, longitudinally reticulately-squamous; pronotal collar with scattered punctae; mesoscutum with a row of 3 bristles near the parapsidal furrows on each side, median longitudinal groove complete, deep and very prominent; scutellum with 2 pairs of very prominent, deep longitudinal grooves; propodeum with strongly developed median carina, paraspircular carinae present, spiracle separated from the anterior margin by 0.50 of its own diameter; fore wing length to width 100 : 52, *sm* with a single long seta directed in front and 3 behind, *m* with 15-17 setae, stump of *pm* with a single seta; veins *sm* : *m* : *st* ratio 92 : 100 : 30; hind wing to fore wing length 87 : 100; hind coxa 1.80 times longer than thick; femur 3.84 times longer than thick, 1.60 times coxa; tibia equal to middle tibia, 10 times longer than thick, 1.16 times femur, tibial spur 0.15 of tibia and subequal to metatarsus; metatarsus 0.15 of tibia and 0.21 of tarsus, second segment 1.33 times metatarsus, third 1.10 times metatarsus or 0.83 of the second, fourth equal to the second.

Abdomen with large reticulate microsculpture; excluding aedeagus to body 40 : 100; aedeagus 0.32 of abdomen, clasper with a single hook.

Type locality : Kargudi-Ooty Road : Nilgiri Hills

Tetrastichus kodaikanalensis Saraswat

1975 *Tetrastichus kodaikanalensis*, Saraswat, *Mem. School Ent.*, 4 : 5.

Male : Length 1.48 mm. Body blackish-brown, aedeagus brown; head darker than the rest of body, with obscure metallic reflections, eyes chocolate-brown; antennae brown; coxae, femora, middle of fore and middle tibiae and hind tibia except apically concolorous with thorax, otherwise legs brown; wings hyaline, veins brown.

Head in front length to width 78 : 100, closely, longitudinally reticulate on vertex and face, widely spaced punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellocular space slightly more than 2 times ocellar diameter, front ocellar space 0.75 of ocellar diameter, interocellar space 2.75 times ocellar diameter; eyes finely, sparsely pubescent; antennal segments 12 : 1.1.3.4.3, antennal sockets slightly below the middle of frons; scape 4 times longer than thick; pedicel 1.75 times longer than thick and 0.43 of scape; annelli 3, much narrower than funicle, first thickest and other 2 very minute and rudimentary; funicular segments thickened basally, with a whorl of 9-10 very long setae dorsally on each segment; first funicular segment shortest, subglobose 1.10 times longer than thick and 0.71 of pedicel; second 1.80 times longer than first and 2 times longer than thick; fourth also 2.44 times longer than thick; club not stouter than funicle, about 4.70 times longer than thick and equal to preceding 2 funicular segments combined, terminal segment with a long, bluntly pointed style, only the first segment bears a whorl of 9 very setae, first segment subequal to the second, 1.77 times longer than thick and 0.72 of the preceding funicular segment, second almost 2 times longer than thick, third 1.83 times longer than thick and 0.73 of the second, style 0.36 of terminal segment.

Propodeum largely reticulate, mesonotum and scutellum finely, longitudinally reticulate; mesoscutum with a curved row of 5 bristles near the parapsidal furrows; median longitudinal groove complete and prominent; scutellum with 2 pairs of prominent, deep, longitudinal grooves, 2 bristles posteriorly, one behind the other on either side of the inner grooves; one bristle laterally on metanotum; propodeum with the median carina, giving off a fine, short, incomplete side carina near apex; paraspircular carinae absent, 2 bristles laterally, spiracle separated from the anterior margin by 0.25 of its own diameter, but contiguous with the lateral margin; fore wing length to width 100 : 54, *sm* with 3 setae directed in front and 3 behind, *m* with 11 setae, stump of *pm* with a single long seta; veins *sm* : *m* : *st* ratio 85 : 100 : 26, discal cilia 4 in a row extending back from the abrupt thickening of *sm*, hind wing to fore wing length 91 : 100; hind coxa 1.63 times longer than thick; femur 3.50 times longer than thick, about 1.60 times coxa, tibia long, slender, slightly thickened towards apex, 1.21 times femur, 8.50 times longer than thick, tibial spur equal to metatarsus, tarsus 0.82 of tibia, metatarsus 0.21 of tarsus, second segment 1.17 times metatarsus, third equal to metatarsus, fourth 1.33 times the third.

Abdomen with large, reticulate microsculpture; abdomen excluding aedeagus to body 41 : 100; aedeagus 0.30 of abdomen, clasper with a single, curved hook.

Type locality : Munnar-Kodaikanal Road

This species resembles very much with *Tetrastichus kumaonensis* Saraswat, but differs in the following : Antenna to body 52 : 100, first annellus thickest and other 2 very minute and rudimentary, third funicular segment equal to the fourth, terminal style of club 0.36 of terminal segment; coxae, femora, of middle fore and middle tibia and hind tibia except apically, concolorous with thorax, otherwise legs brown; middle tibial spur equal to metatarsus.

***Tetrastichus quadriseta* Saraswat**

1975 *Tetrastichus quadriseta*, Saraswat, *Mem. School Ent.*, 4 : 22.

Male : Length 2.16 mm. Body very dark brown with faint metallic-green and blue reflections; abdomen concolorous with thorax, aedeagus brown; head distinctly darker than the rest of body; eyes brownish-red, ocelli brown; antennae and antennal hairs brown, scape and pedicel dark brown; all coxae and femora concolorous with thorax, otherwise legs pale brown; wings hyaline, veins and stigma brownish.

Head in front length to width 31 : 100, closely longitudinally, reticulate on vertex and closely reticulate on face, shallow scattered punctae on face, a row of punctae close to the orbital border; clypeal margin in the middle with a pair of tooth-like projections; ocellocular space 2.50 times ocellar diameter, front ocellar space equal to ocellar diameter, interocellar space 3.50 times ocellar diameter; eyes finely very sparsely pubescent, antennal segments 12 : 1.1.3.4.3; toruli well above the middle of frons; scape slightly curved, slightly more than 6 times longer than thick, almost equal to pedicel, annelli and first funicular segment combined; pedicel 1.80 times longer than thick, 0.34 of scape; annelli much narrower than funicle, first annellus more slender, longer than others and abruptly thickened at apex, third largest; funicular segments much thickened basally, with whorl of about 9-10 very long setae dorsally on each segment; first funicular segment shortest, 1.50 times longer than thick and 1.33 times pedicel; second, third and fourth segments equal to each other, 2.70 times longer than thick, 1.33 times the first; club not stouter than funicle, 6.33 times longer than thick and slightly shorter than preceding 2.50 funicular segments combined, terminal segment with a very short mucro, all the 3 segments bear whorls of very long setae, first segment 2.17 times longer than thick and 0.81 of the preceding funicular segment, second 2.80 times longer than thick and subequal to the first, third 3 times longer than thick and 0.86 of the second.

Pronotum and propodeum finely reticulate, mesonotum and scutellum finely, longitudinally reticulate; pronotal collar with scattered punctae; mesoscutum with a row of 4 bristles near parapsidal furrows; median longitudinal groove indistinct; scutellum with 2 pairs of prominent longitudinal grooves, 2 bristles posteriorly

one behind the other on either side of the inner grooves, one bristle in the middle of inner side of the outer grooves; propodeum with median carina, paraspircular carinae absent, scattered bristles laterally, spiracle separated from the anterior margin by 0.25 of its own diameter, but contiguous with the lateral margin; fore wing length to width 100 : 46, *sm* with 3 setae directed in front and 5 behind, *m* with 15 setae, *pm* veins *sm* : *m* : *pm* : *st* ratio 91 : 100 : 17 : 21; hind wing to fore wing length 80 : 100; hind coxa 2.15 times longer than thick; femur 3.80 times longer than thick, 1.40 times coxa; tibia long, slender, much thickened apically, very slightly longer than middle tibia, 7.33 times longer than thick, 1.16 times femur, tibial spur 1.50 times metatarsus.

Abdomen largely and finely reticulate, excluding aedeagus to body 47 : 100; aedeagus 0.16 of abdomen.

Type locality : Munnar-Kodaikanal Road

Tetrastichus kumaonensis Saraswat

1975 *Tetrastichus kumaonensis*, Saraswat, *Mem. School Ent.*, 4 : 7.

Male : Length 1.72 mm. Body dark brown with very faint metallic-greenish reflections on mesoscutum, scutellum and abdomen; abdomen concolorous with thorax, aedeagus brown; head darker than the rest of body, metallic reflections more distinct than on thorax; eyes red, ocelli brown; antennae blackish-brown; basal 0.25 of fore and middle coxae and basal 0.75 of hind, coxae concolorous with thorax, otherwise rest of the legs pale brown; wings hyaline, veins brownish-yellow.

Head in front length to width 78 : 100, closely, longitudinally reticulate on vertex; face closely reticulate above the clypeal margin, widely spaced punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellular space equal to 2.50 ocellar diameters, interocellar space 3.50 times ocellar diameter; eyes finely, sparsely pubescent; antennal segments 12 : 1.1.3.4.3, toruli nearly in the middle of frons; scape 3.70 times longer than thick, slightly longer than pedicel, annelli and first funicular segment combined, pedicel 1.80 times longer than thick and 0.40 of scape; annelli much narrower than funicle, first thickest and second thinner than the third; funicular segments much thickened basally, with whorls of about 9 very long setae dorsally; first funicular segment shortest, 1.14 times longer than thick and 0.88 of pedicel; second about 1.80 times longer than the first and 2 times longer than thick; third longest, 1.30 times the second and 3 times longer than thick; fourth 0.94 of the third and 2.83 times longer than thick; club not stouter than funicle, 5.70 times longer than thick and equal to preceding 2 funicular segments combined, terminal segment with a long, bluntly pointed style, the first and the second segments bear

a whorl of 9 very long setae, first segment equal to the second funicular segment, 2.33 times longer than thick and 0.82 of the preceding funicular segment, second segment 2.17 times longer than thick and about 0.93 of the first, third 2 times longer than thick and 0.61 of the second, style 0.50 of terminal segment.

Thorax finely reticulate; mesonotum and scutellum finely, longitudinally reticulate; pronotal collar with scattered punctae; mesoscutum with a row of 5 bristles parallel to the parapsidal furrows, median longitudinal groove complete and prominent; scutellum with 2 pairs of prominent, deep, longitudinal grooves, 2 bristles posteriorly one behind the other on either side of the inner grooves; one bristle, laterally on metanotum; propodeum with the median carina, which gives off a fine, short, incomplete side carina near apex, paraspircular carinae absent, 5 scattered bristles laterally, spiracle separated from the anterior margin by 0.50 of its own diameter, but contiguous with the lateral margin; fore wing length to width 100 : 50, vein *sm* with 4 setae directed in front and 5 behind; *m* with 15 setae, stump of *pm* with a single long seta; veins *sm* : *m* : *st* ratio 81 : 100 : 27; hind coxa 2.14 times longer than thick; femur 5.55 times longer than thick, about 1.70 times coxa; tibia long, slender, slightly thicker towards apex, about 10 times longer than thick, 1.16 times femur, spur 0.90 of metatarsus; tarsus about 0.76 of tibia; metatarsus about 0.23 of tarsus, second segment 1.10 times metatarsus, third equal to metatarsus, fourth 1.20 times the third.

Abdomen with large, reticulate microsculpture; abdomen, excluding aedeagus, to body 45 : 100; aedeagus 0.60 of abdomen, clasper with a single moderately long hook.

Type locality : Chaubattia : Kumaon Hills

Tetrastichus uniarticulatus Saraswat

1975 *Tetrastichus uniarticulatus*, Saraswat, *Mem. School Ent.*, 4 : 31.

Male : Length 1.46-1.70 mm, mean 1.57 mm. Body dark brown with metallic-green reflections; eyes dull red; antennae brown, except the black bases and tips of funicular segments and the whole third segment of club; fore coxae basally above, last tarsi and middle coxae basally brownish; hind coxa, middle and hind last tarsi dark brown, otherwise legs pale brown; wings hyaline, veins brown.

Head in front length to width 76-79 : 100; finely reticulate, with sparsely scattered, minute, punctae on vertex and face; clypeal margin in the middle with a pair of tooth-like projections; ocellular space slightly more than 2 times ocellar diameters, front ocellar space subequal to ocellar diameter, interocellar space only slightly less than 3 times ocellar diameter; eyes very sparsely pubescent, mandibles tridentate; antenna with long and verticillate setae in 2 whorls,

segments 10 : 1.1.1.4.3; scape long, slightly thickened apically, very slightly more than 3 times longer than thick; pedicel 2 times longer than thick and about 0.44 of scape; annellus relatively small but distinct, much narrower than funicle, sometimes with indistinct vestigial 2 others; funicular segments elongate, subfusiform, first funicular segment shortest, about 3.50 times longer than thick and about 1.62 times pedicel; second segment longest, equal to the third, about 4.30 times longer than thick and 1.08 times the first; third 4.30 times longer than thick; fourth 3.70-4.00 times longer than thick and about 0.90 of the third; club not stouter than funicle, terminal segment with inconspicuous style, about 6 times longer than thick and about equal to preceding 1.65-1.75 funicular segments combined, first segment of club 2.80 times longer than thick and about 0.74 of the preceding funicular segment, second segment 2 times longer than thick and about 0.80 of the first, third about 1.75 times longer than thick and about 0.85 of the second.

Pronotum and propodeum reticulate, mesonotum and scutellum finely longitudinally reticulately-striate; pronotum with sparsely scattered deep punctae on anterior and posterior margin; mesonotum with distinct and complete median longitudinal groove, 2 long bristles along the parapsidal furrow and a pair of shorter bristles along the posterior margin; scutellum with 2 pairs of prominent longitudinal grooves, 2 bristles posteriorly, one behind the other on either side of the inner grooves, one bristle on the posterior margin, on either side of the inner grooves; one pair of bristles on metanotum; propodeum with strongly developed median carina, paraspicular carinae absent, one bristle laterally behind the anterior margin and one bristle laterally near the posterior margin on each side; spiracle separated from the anterior margin by its own diameter; fore wing long, marginal fringe very long, about 0.20 of the wing width, length to width 100 : 35-37, *sm* with 2 medium setae directed towards front margin, 2 medium setae directed behind, 3 short setae just above *sm*, directed behind and one short seta directed above, *m* with 10-11 long setae; veins *sm* : *m* : *st* ratio 80 : 100 : 26; hind wing to fore wing length about 80 : 100; hind coxa 1.80 times longer than thick; femur 4 times longer than thick, about 1.60 times coxa, with a single long seta subapically below; tibia long, slender, slightly thickened apically, 9.50 times longer than thick, about 1.35 times femur, spur very slightly shorter than metatarsus; tarsus 0.84 of tibia, metatarsus 0.21 of tibia and 0.25 of tarsus, all segments including metatarsus subequal.

Abdomen finely reticulate, 0.50 of the body; aedeagus a little exerted beyond the tip of abdomen, about 0.11 of the abdomen, clasper with a single hook.

Type locality Nilambur : Malabar

Tetrastichus nilamburensis Saraswat

1975 *Tetrastichus nilamburensis*, Saraswat, *Mem. School Ent.*, 4 : 12.

Male : Length 1.76 mm, fore wing 1.32 mm, hind wing 1.06 mm. Body black with metallic-green and blue reflections; abdomen concolorous with thorax, aedeagus dark brown; head concolorous with body; eyes dark red, ocelli black; mandibles reddish-brown; antennae dark brown, scape brown; fore coxae basally above and middle coxae brown, hind coxae very dark brown, otherwise legs brownish-yellow; wings hyaline, veins brown.

Head in front length to width 88 : 100, finely longitudinally reticulate on vertex, frons and genae, but transversely reticulate in between the antennal sockets and clypeus; scattered, minute deep punctae on face; clypeal margin in the middle with a pair of tooth-like projections; ocellocular space about 2.25 times ocellar diameter, front ocellar space subequal to ocellar diameter, eyes finely sparsely pubescent; mandibles tridentate, inner tooth truncate; antennal segments 11 : 1.1.2.4.3, toruli almost in the centre of frons; scape moderately long, distinctly thickened in the middle, 3.50 times longer than thick; pedicel 1.75 times longer than thick, 0.33 of scape; annelli minute, narrower than funicle; funicular segments slender, cylindrical, basally much thickened, with whorls of about 9-10 very long setae dorsally; first funicular segment shortest, 1.65 times longer than thick and nearly 1.30 times pedicel; second segment longest and subequal to the third, about 3 times longer than thick; fourth 2.83 times longer than thick and about 0.94 of the third; club not stouter than funicle, nearly 6 times longer than thick and only very slightly shorter than preceding 2 funicular segments combined, terminal segment with a very short mucro, all segments bear a whorl of very long setae.

Pronotum, metanotum and propodeum finely reticulate, mesonotum and scutellum very finely, longitudinally reticulate; pronotal collar with deep, scattered, punctae; mesoscutum with 4 bristles near parapsidal furrows and a pair submarginally behind; median longitudinal groove indicated only behind, scutellum with 2 pairs of prominent longitudinal grooves, one bristle anteriorly and one in the middle on inner grooves respectively; one pair of short bristles on metanotum; propodeum with strongly developed median carina, paraspiracular carinae absent, 3 bristles laterally in a row, spiracle separated from the anterior margin by 0.70 of its own diameter, but touching the lateral margin; fore wing length to width 100 : 41, veins *sm*, *m* with 4, 12 long setae respectively; veins *sm* : *m* : *st* ratio 90 : 100 : 20; hind wing to fore wing length 80 : 100; hind coxa about 1.80 times longer than thick; femur 4.25 times longer than thick, 1.55 times coxa, with a single long seta apically below, tibia slender, slightly thickened apically, 11 times longer than thick, 1.30 times femur, spur 0.70 of metatarsus; tarsus 0.90 of tibia, metatarsus about 0.25 of tarsus, second segment equal to metatarsus, third only very slightly shorter or subequal to the second, fourth subequal to metatarsus or the second.

Abdomen with fine, reticulate microsculpture, excluding aedeagus, slightly less than 0.50 of body; aedeagus 0.36 of abdomen, clasper with a single hook.

Type locality : Nilambur

SPECIES INCERTAE SEDIS

Tetrastichus cyaniventris (Motschulsky)

- 1863 *Solenoderus cyaniventris*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 71.
 1909 *Solenoderus cyaniventris*, Schmiedeknecht, *Gen. Ins.*, 97 : 307.
 1938 *Solenoderus cyaniventris*, Mani, *Cat. Indian Ins.*, 23 : 100.

Length 2.50 mm. "Subelongatus, convexus, gibbosus, antice vix nitidus, niger, antennarum scape pedibusque rufo-testaceis, femoribus medio unguiculisque infuscatis; capite depresso, postice arcuatum excavato, marginato, ocellis nigris valde transversis, oculis mediocris, rotundatis, convexis, rufo-ferrugineis, antennis thoracis fere longitudine, sublinearis, depressis, apice acuminatis; thorace capitis latitudine, subgibboso, subopaco, ovato, postice attenuato, pronoto inaequale, postice utrinque obliquo-impresso, medio breviter canaliculato, antice rotundato, mesonoto crasso, convexo, subquadrato, medio tricanaliculato, canaliculis lateralis punctatis, metanoto trapezoidale, rugoso, scutello distincto, triangulare, abdomine thorace angustiore et fere duplo minore, ovato, apice acuminato medio concavo-depressio, sessile, glabro, viridicoeruleo."

Type locality : Ceylon : Mt. Patannas

Tetrastichys ellia Motschulsky

- 1863 *Tetrastichys ellia*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 69.
 1909 *Tetrastichys ellia*, Schmiedeknecht, *Gen. Ins.*, 97 : 474.
 1938 *Tetrastichys ellia*, Mani, *Cat. Indian Ins.*, 23 : 130.

Length 1.00 mm. "Elongatus, angustatus, subconvexus, nitidus, viridi-aeneus, tarsi albidis, his apice antennisque nigris; capite subrotundato, postice arcuatum excavato, fronte subconvexo, ocellis nigris ad marginem postitis, oculis rotundatis, convexis, subprominulis, nigro-fuscis, antennis thoracis fere longitudine, articulis 4 ultimis ovato-moniliformibus, apice acuminatis; thorace capite paulo angustiore, elongato-ovato, antice posticeque attenuato, metallico, pronoto subtransverso, antice biangulato, transversim postice in medio profundo impresso, mesonoto mediocri, arcuatum triangulare, subconvexo, metanoto attenuato vix exserto, abdomine subsessile, ovato subdeplanato, glabro, viride, apice mucronato, segments 1-0 medio impresso, 2-do latissimo."

Type locality : Ceylon : Nuwara Ellia

Tetrastichus nyemitawus Rohwer

- 1921 *Tetrastichus nyemitawus*, Rohwer, *Ann. Mag. nat. Hist.*, 7 : 131.
 1921 *Tetrastichus nyemitawus*, Ballard, *Rep. Proc. Fourth Ent. Meet. Pusa*, 22.
 1938 *Tetrastichus nyemitawus*, Mani, *Cat. Indian Ins.*, 23 : 131.
 1940 *Tetrastichus nyemitawus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 29.

Female : Length 3.00 mm. Body bright green; head below antennae, scape beneath, testaceous; tegulae and legs whitish; wings hyaline, veins pale brown.

Head shining, surface finely lineate; ocelli surrounded by a deep groove.

Pronotum and the sides of scutum lineate; median part of scutum reticulato-lineate; scutum with a median longitudinal depression, but not a sulcus; scutellum reticulate, median sulci deep and parallel; propodeum more than 0.50 of scutellum with umbilicate punctae and with a well defined median carina, the lateral carina weak; vein *m* about 2 times as long as vein *sm*.

Abdomen shining, subequal to thorax, acuminate beyond the middle.

Male : Length 2.50 mm. Like female, except that the testaceous marks on head extensive; antennae slender with very long bristles on the basal segments.

Type locality : Coimbatore

Host : Anthomyid *Atherigona* sp. on shoot of *Sorghum vulgare*

Tetrastichus okawus Rohwer

- 1921 *Tetrastichus okawus*, Rohwer, *Ann. Mag. nat. Hist.* 7 : 128.
 1938 *Tetrastichus okawus*, Mani, *Cat. Indian Ins.*, 23 : 131.
 1940 *Tetrastichus okawus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 30.

Female : Length 1.50 mm. Body dark metallic-green; head below toruli, scape, pedicel, tegulae and legs except apical segment of tarsi, yellow; flagellum brown; wings hyaline, with very sparse pubescence; veins very pale brown.

Head shiny, without distinct sculpture or ridges.

Mesonotum shining, finely longitudinally lineate, with a nearly complete, impressed, longitudinal line medianly; scutellum finely reticulate; median sulci nearly parallel; propodeum very short, without distinct sculpture, median carina very short and broad; vein *m* a little longer than *sm*.

Abdomen distinctly longer than head and thorax, narrow, apically acuminate.

Type locality : Coimbatore

Host : (Probably parasite on larvae of some granary insect) on *Pennisetum typhoides*

Tetrastichus ophiusae Crawford

- 1912 *Tetrastichus ophiusae*, Crawford, *Proc. US nat. Mus.*, 42 : 8.
 1938 *Tetrastichus ophiusae*, Mani, *Cat. Indian Ins.*, 23 : 131.
 1940 *Tetrastichus ophiusae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 30.

Female : Length 2.25 mm. Body dark bluish-green; coxae metallic; femora except tip brown; rest of legs testaceous; scape and pedicel brownish-testaceous; rest of antenna deep brown.

Funicular segments elongate; first funicular segment about 2 times pedicel; club slightly longer than first funicular segment; face finely lineolate, with some large scattered punctae along the inner orbital border; mesonotum and scutellum finely longitudinally lineolate, with median furrow on mesonotum and 2 furrows on scutellum distinct; propodeum with distinct median and lateral carinae between which finely rough; abdomen equal to rest of body.

Type locality : Mysore

Host : *Achaea (Ophiusa) melicerta*

Tetrastichus patannas Motschulsky

- 1863 *Tetrastichus patannas*, Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 36 (3) : 69.
 1909 *Tetrastichus patannas*, Schmiedeknecht, *Gen. Ins.*, 97 : 477.
 1938 *Tetrastichus patannas*, Mani, *Cat. Indian Ins.*, 23 : 131.

This species was described by Motschulsky as being similar to *Tetrastichus ellia* Motschulsky but somewhat smaller in size, head and thorax black, antennae, legs pale fuscous-testaceous.

Length 0.75 mm.

Type locality : Ceylon : Mt. Patannas

Tetrastichus purpureus (Cameron)

- 1913 *Hadrothrix purpureus*, Cameron, *Ind. for. Rec.*, 4 : 103.
 1923 *Tetrastichus immsii*, Mahdihasan, *J. Sc. Assoc. Maharaja's Coll. Vizianagaram*, 1 : 47-99.
 1928 *Tetrastichus purpureus*, Ferrière, *Bull. Ent. Res.*, 19 : 174.
 1933 *Hadrothrix purpureus*, Glover, *Bull. Indian Lac. Res. Inst.*, 16 : 23.
 1938 *Tetrastichus purpureus*, Mani, *Cat. Indian Ins.*, 23 : 131.
 1940 *Tetrastichus purpureus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 30.

Male : Length 1.00-1.20 mm. Body dark purple, shining, the basal tergite of abdomen, except the yellow centre of the basal slope,

dark testaceous; antennae dark testaceous, tip of femora, tibiae and tarsi whitish-yellow, wings hyaline, veins pale testaceous, fringe long.

Female : Length 1.50-1.80 mm. Body black with purplish and greenish reflections; abdomen at base and legs yellow; antennae brown; base of coxae, stripe above and below on femora and tarsal tip brown.

Head very faintly punctulate; vertex short; scape reaching beyond front ocellus; pedicel and 3 funicular segments subequal, about 2 times as long as thick; club equal to the preceding 2 segments combined, with 3 segments.

Thorax finely reticulate; mesonotum with median and scutellum 2 longitudinal grooves, well developed; propodeum shiny, smooth, with short median carina and lateral sulci; vein *m* longer than *sm*; *st* a little more than 0.33 of *m*; vein *sm* with 4 hairs.

Abdomen a little longer than thorax; ovipositor slightly exerted.

Type locality : Ranchi

Distribution : India, Pakistan, Ceylon, Malaya

Host : *Tachardia lacca*, *T albizziae*, *Aspidiotus orientalis*

Tetrastichus pyrillae Crawford

1916 *Tetrastichus pyrillae*, Crawford, *Insec. Inscit. Menstr.*, 4 : 101.

1938 *Tetrastichus pyrillae*, Mani, *Cat. Indian Ins.*, 23 : 132.

1940 *Tetrastichus pyrillae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 30.

Type locality : Pusa

Distribution : Pusa, Cochin, Delhi, Aligarh

Host : *Pyrilla* sp., hyperparasites of *Sacchariococcus sacchari* (Cockerell) on sugarcane

Tetrastichus radiatus Waterston

1922 *Tetrastichus radiatus*, Waterston, *Bull. ent. Res.*, 8 : 55.

1924 *Tetrastichus radiatus*, Husain & Mathur, *Rep. Proc. Fifth Ent. Meet. Pusa*, 121.

1924 *Tetrastichus radiatus*, Husain & Dina Nath, *Rep. Proc. Fifth Ent. Meet. Pusa*, 122.

1938 *Tetrastichus radiatus*, Mani, *Cat. Indian Ins.*, 23 : 132.

1940 *Tetrastichus radiatus*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 30.

Female : Length 1.30 mm. Body black with strong metallic reflections; legs pale, base of abdomen with a pale spot.

Head wider than long, with 7-8 bristles along orbit; scape 3.50 times longer than thick, 2 times pedicel; pedicel and first funicular segment subequal; funicular and club segments ratio 29 : 25 : 16 : 24;

pronotum with scattered bristles; propodeum smooth with carinae; hind tarsal segments ratio 20 : 25 : 23 : 30.

Male : Length 1.10 mm. Head wider than long; smooth above antennal sockets; eye glabrous; scape a little over 3 times longer than thick, about a little more than 2.50 times pedicel and equal to club; funicular segments and club ratio 24 : 33 : 35 : 35 : 22 : 22 : 22; mesonotum with 4 short stout bristles, propodeum smooth, fore wing about 2.25 times as long as wide; hind tarsal segment ratio 15 : 20 : 20 : 25; abdomen smooth.

Type locality : Pakistan : Lyallpur

Distribution : Pakistan : Lyallpur, Sargodha, Gujranwala; India

Host : *Diaphorina citri*

Tetrastichus rhipiphorothripscidis Narayanan,
Subba Rao & Ramachandra Rao

1962 *Tetrastichus rhipiphorothripscidis*, Narayanan *et al.*, *Proc. Nat. Inst. Sci. India*, 26, B (4) : 171.

1965 *Tetrastichus rhipiphorothripscidis*, Sharma, Farooqi & Subba Rao, *Mushi*, 38 (14) : 117.

Female : Length 1.17 mm. Head, thorax and distal 0.67 of abdomen dark brown; scape and legs light yellow, rest of antennae dark yellow; wings hyaline; anterior 0.67 of venter hyaline or light yellow, proximal 0.33 of dorsum light brown and the distal 0.67 dark brown or even black.

Face slightly longer than wide; vertex convex, with transverse reticulations; interocellar space 1.33 times ocellocular space; frons laterad and dorsad of scrobe distinctly transversely reticulate; antennae inserted above lower orbital border; scape cylindrical, a little more than 2 times pedicel; funicular segments subequal except first, slightly longer than others; club 3 segmented, distinctly thicker than funicular segments, slightly shorter than scape; club and the funicular segments with fine bristles; mandible bidentate, margin of the ventral tooth minutely serrate, dorsal with 2 distinct bristles.

Pronotum narrow and transverse; scutum broad, infusate with 3 bristles in a row on either side; scutellum with 2 bristles on either side; mesonotum with 2 small bristles one on each side just below the apical carina; propodeum without median and paraspicular carinae but with 2 bristles in a row laterally; spiracles contiguous with anterior margin, with a distinct long bristle adjacent to each on the apical margin; vein *sm* with 2 long bristles, slightly shorter than *m*; vein *m* with 9 distinct long bristles, apex of the hind wing acute, *pm* with a long fringe.

Abdomen not distinctly petiolate, slightly longer than thorax; ovipositor sheath prominent and slightly projecting beyond the apex of abdomen, with 4 long hairs.

Male : Essentially like female but for the densely hairy antennae.

Type locality : Delhi

Distribution : Delhi

Hosts : *Rhipiphorothrips cruentatus* Hood, *Mallothrips indicus*

This species is closely related to *Tetrastichis thripoponus* Waterston, but differs in the following : Interocellar space only 1.33 times longer than the ocellocular space; antennae inserted above level of lower orbital borders; club distinctly thicker than the rest of antenna; mesonotum with 3 lateral bristles in a row on either side.

Tetrastichus hagenowii (Ratzeburg)

1852 *Entedon hagenowii*, Ratzeburg, *Ichneum. forstins*, 3 : 211.

1901 *Tetrastichus hagenowii*, Ashmead, *Fauna Hawaii. I. Cambridge*, 329.

1913 *Geniocerus hagenowii*, Kurdjumov, *Rev. Russea Ent.*, 13 : 249.

1915 *Geniocerus hagenowii*, Crawford, *Proc. US nat. Mus.*, 48 : 584.

Female : Length 1.60-1.90 mm. Body coppery-red, abdomen above, at base and tip dark violet, with a yellowish-brown spot at base, flagellum yellowish-brown, scape, pedicel, petiole, legs yellow; fore coxae brown, tarsi black at tip, fore wing faintly clouded.

Head minutely reticulate, eyes finely hairy, pedicel 3 times as long as thick, annelli 4, funicular segments with long hairs, first funicular segment elongate, second and third subequal, about 0.80 of first; thorax reticulate; scutellum less conspicuously punctate, propodeum carinate, the carinae behind forming a triangular area; fore wing width to length ratio 21 : 50; veins *sm* : *m* ratio 7 : 6; *st* short; legs long; hind metatarsus long; second segment 0.50 of first; 3 and 4 subequal; abdomen oblong and ovate, acutely pointed, reticulately sulcate, equal to head and thorax.

Male : Annelli large; club with 3 segments, subequal to the preceding 3 segments combined.

Type locality : Europe

Distribution : Europe, Hawaii, Seychelles Islands, India

Host : *Periplanata* and *Blatta*

Tetrastichus dhireni Saraswat

(Fig. 323)

1977 *Tetrastichus dhireni*, Saraswat, *Mem. School Ent.*, 5 : 99.

Female : Length 2.22 mm. Body dark brown with metallic-blue-green reflections. Head concolorous with body; eyes and ocelli red; except the yellow scape and pedicel, antenna brown. Abdomen concolorous with thorax. Except dark brown coxa, all the legs pale yellow. Wings hyaline, veins brownish.

Head viewed in front length to width 90 : 100, distinctly concave in the middle, face finely longitudinally reticulate with scattered

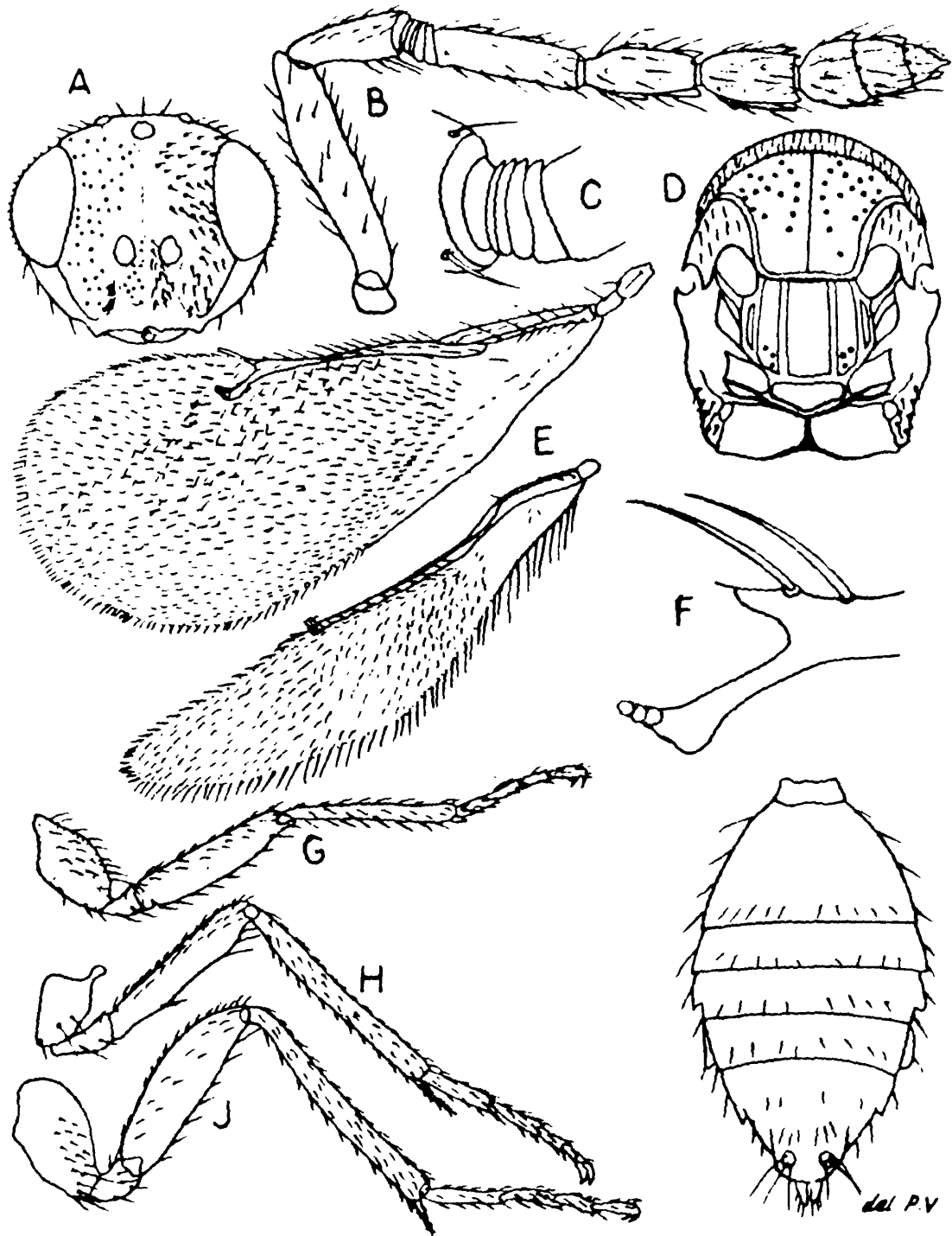


FIG. 323. *Tetrastichus dhireni* Saraswat, female : A. Head in front view; B. Antenna; C. Anelli; D. Thorax in dorsal view; E. Fore and hind wings; F. Stigmal venation; G. Fore leg; H. Middle leg; I. Abdomen; J. Hind leg.

setigerous punctae; clypeal margin in the middle with a pair of conspicuous, widely separated tooth-like projections; ocellular space 2.25 times ocellar diameters, front ocellar space about equal to the diameter of front ocellus, interocellar space 4.50 times ocellar diameter; eyes finely pubescent, eye length to head length 59 : 100. Antenna to body 52 : 100, segments 12, 1.1.4.3.3. antennal sockets very close to the lower orbital border; scape 5 times longer than thick; pedicel 2.80 times longer than thick, 0.46 of scape; annelli as wide as funicle, second annellus minute; first funicular segment longest, 3.27 times longer than thick and 1.28 times pedicel; second segment 2.16 times longer than thick and 0.72 of the first; third 1.57 times longer than thick and 0.84 of the second; club stouter than funicle, distinctly 3 segmented, 2.37 times longer than thick, slightly less than 1.75 preceding funicular segments combined, terminal segment with a conspicuous slender style, style about 0.75 of preceding club segment, first segment of club nearly as long as thick and 0.63 of the preceding segment, second 1.33 times thicker than long and 0.85 of the first, third shortly conical, only slightly thicker than long and 0.70 of the second.

Pronotum, metanotum and propodeum finely reticulate, mesonotum and scutellum finely, longitudinally reticulate; pronotum moderately, densely with setigerous punctae; mesoscutum with 17 bristles, scattered between the median groove and parapsidal furrow, median longitudinal groove complete and posteriorly on either side of the inner grooves; propodeum with the strongly developed median carina, paraspiracular carinae absent, 7 scattered bristles near the lateral margin, spiracle touching the lateral margin and separated from the anterior margin by about 0.33 of its own diameter; fore wing length to width 100 : 45; *sm* with 5 setae directed towards front margin, 6 setae directed behind, *m* with 13 long setae, stump of *pm* with a single long seta; veins *sm* : *m* : *st* ratio 88 : 100 : 24; hind wing to fore wing length 87 : 100; fore coxa about 2 times as long as thick; femur 4.60 times longer than thick, 1.53 times coxa; tibia very slightly longer than femur, about 9.60 times longer than thick; tarsus 0.75 of third equal to metatarsus, fourth equal to the second; middle coxa 1.33 times longer than thick; femur 5.77 times longer than thick, slightly longer than fore tibia, 2.60 times coxa; tibia long, slender, about 13.60 times longer than thick, 1.30 times femur, tibial spur 0.22 of tibia and 0.75 of metatarsus; tarsus subequal to femur, about 0.80 of tibia, metatarsus about 0.30 of tibia and 0.37 of tarsus, second segment 0.70 of metatarsus, third 0.70 of the second and 0.50 of metatarsus, fourth equal to the third, third and fourth combined equal to metatarsus; hind coxa 1.80 times longer than wide; femur subequal to tarsus, 4 times longer than thick, 1.60 times coxa; tibia long, thickened apically, subequal to middle tibia, about 9 times longer than thick, 1.20 times femur, tibial spur 0.14 of tibia and 0.50 of metatarsus; tarsus subequal to middle tarsus, 0.80 of tibia, metatarsus 0.28 of tibia and 0.35 of tarsus, second segment 0.75 of

metatarsus, third 0.66 of the second 0.50 of the second and 0.50 of metatarsus, fourth only slightly longer than third.

Abdomen with fine, reticulate microsculpture, 0.50 of body; ovipositor only slightly exerted.

Type locality : Calcutta

This species comes very close to *T. polyseta* Saraswat, but can be distinguished in the general colour of body and legs; different proportions of funicular segments; mesoscutum with 17 bristles and in much longer middle tibial spur

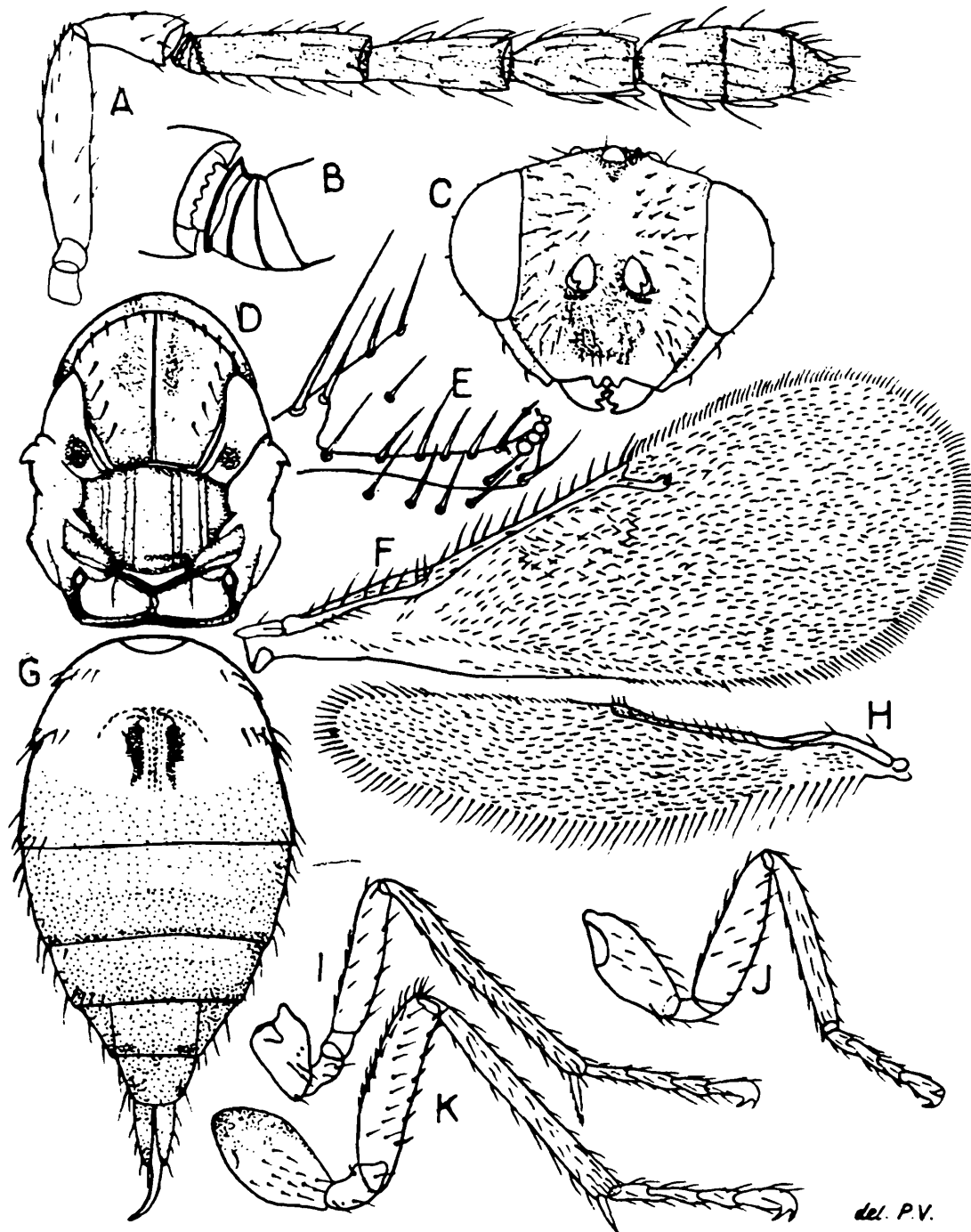


FIG. 324. *Tetrastichus satpurensis* Saraswat, female : A. Antenna; B. Anelli; C. Head in front view; D. Thorax; E. Stigmal venation; F. Fore wing; G. Abdomen; H. Hind wing; I. Middle leg; J. Fore leg; K. Hind leg.

Tetrastichus satpurensis Saraswat

(Fig. 324 & 325)

1977 *Tetrastichus satpurensis*, Saraswat, *Mem. School Ent.*, 5 : 102.

Female : Length 2.60 mm. Body non-metallic, yellowish-brown with very dark brown to black markings; head very dark brown; eyes red; antennae very dark brown, scape and pedicel yellowish-brown; except black basal dorsal 0.50 of hind coxa, all legs brownish-yellow; wings hyaline, veins light brownish; abdomen bright yellowish in the basal 0.33 and blackish-brown for the rest.

Head viewed in front length to width 72 : 100, concave in the middle, face finely reticulate with fine scattered setae; clypeal margin in the middle deeply notched with a pair of tooth-like projections close together; ocellocular space 3 times the ocellar diameter, front ocellar space equal to diameter of lateral ocellus, interocellar space 3.50 times ocellar diameter; eyes obscurely, finely, sparsely pubescent, eye length to head length 65 : 100; antenna to body 46 : 100, segments 11 : 1.1.3.3.3; antennal sockets in the middle of face, well above level of lower orbital margins; scape moderately long, cylindrical, about 4.83 times longer than thick; pedicel 1.83 times longer than thick, 0.37 of scape; first funicular segment longest, 3.33 times longer than thick and 1.80 times pedicel; second segment 2.70 times longer than thick and 0.80 of the first; third 2 times longer than thick and 0.87 of the second; club stouter than funicle, distinctly 3 segmented, excluding terminal style 2.75 times longer than thick, slightly more than 1.50 preceding funicular segments combined, terminal segment with a pointed style, 0.60 preceding club segment, first segment of club 1.25 times longer than thick and 0.71 of the preceding funicular segment, second nearly as long as thick and 0.70 of the first, third shortly conical, only slightly thicker than long and 0.71 of the second.

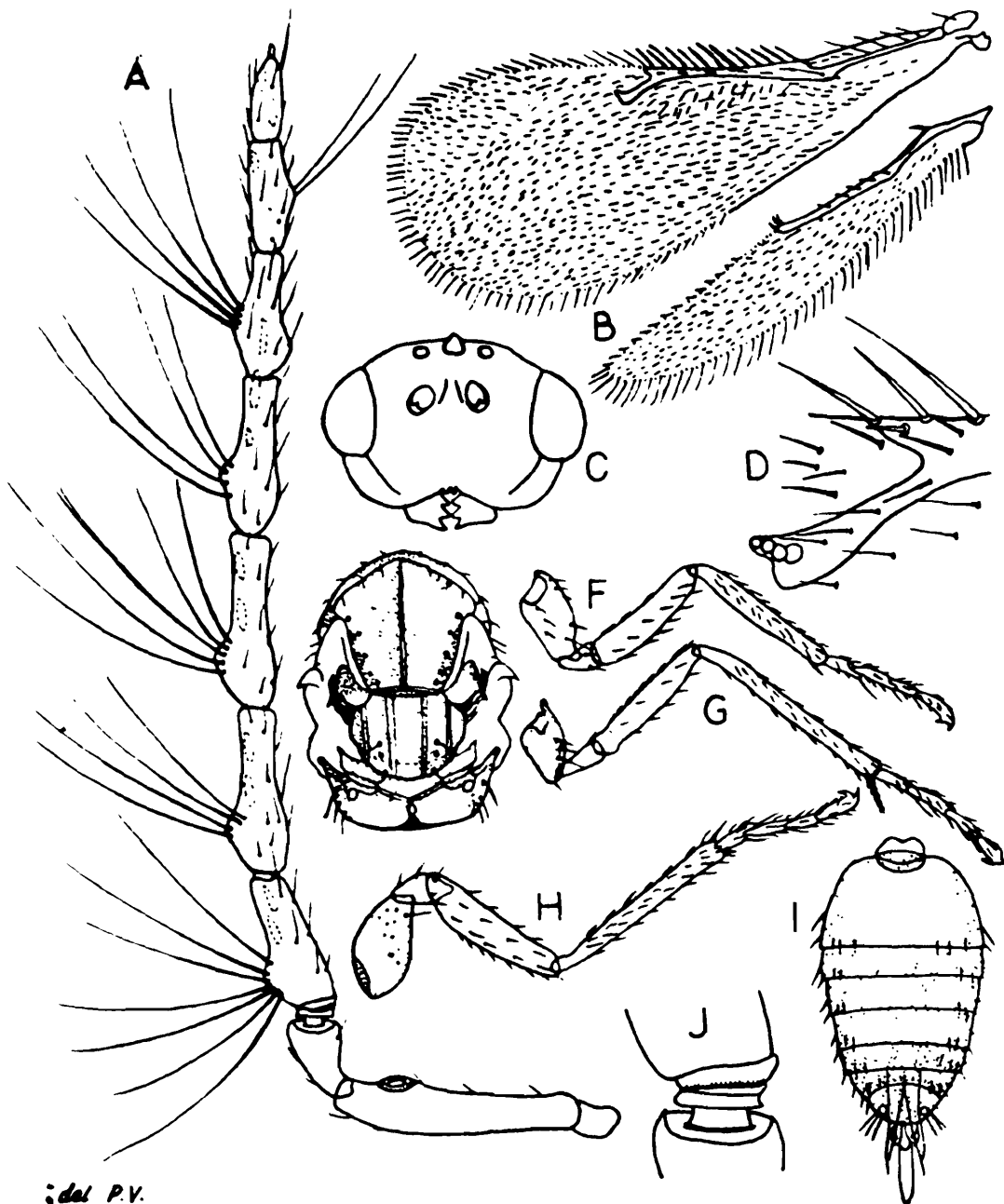
Pronotum and propodeum largely but finely reticulate, mesonotum and scutellum finely, longitudinally reticulate, the reticulations more prominent in darker areas; pronotum with sparse, scattered fine hairs; mesoscutum with 6 bristles, in a row near the parapsidal furrow on each side, median longitudinal groove distinct and complete; scutellum with 2 pairs of very prominent longitudinal grooves, 2 bristles one behind the other on either side of the inner grooves, one longer bristle posteriorly near the margin on either side of the inner grooves; propodeum with the strongly developed median carina, narrowly forked in front from the middle before meeting the anterior margin of propodeum, paraspircular carinae moderately developed, spiracle touching the lateral margin and separated from the anterior margin by about 0.50 of its own diameter; fore wing length to width 100 : 41, *sm* with 8 setae directed forwards, 6 setae directed behind, *m* with 12 long setae, stump of *pm* with a single seta; veins *sm* : *m* : *st* ratio 84 : 100 : 28; hind wing to fore wing

length 82 : 100; fore coxa 1.87 times as long as thick; femur 4 times longer than thick, 1.46 times coxa; tibia 1.13 times femur, 8.33 times longer than thick; tarsus 0.72 of tibia, metatarsus 0.14 of tibia and 0.19 of tarsus, second segment 1.28 times metatarsus, third 0.88 of the second, fourth 1.50 times the third; middle coxa 1.46 times as long as thick; femur 4.60 times longer than thick, subequal to fore femur, very slightly more than 2 times coxa; tibia long, slender, very slightly thicker apically, about 11.70 times longer than thick, 1.52 times femur, tibial spur 0.20 of tibia and 1.27 times metatarsus; tarsus equal to femur, 0.65 of tibia, metatarsus 0.15 of tibia and about 0.23 of tarsus, second segment subequal to metatarsus, third 0.75 of the second, fourth equal to the second; hind coxa 1.80 times as long as wide; femur 4 times longer than thick, 1.44 times coxa; tibia long, thickened apically, equal to middle tibia, 8.75 times longer than thick, 1.34 times femur, tibial spur 0.14 of tibia and equal to metatarsus; tarsus equal to middle tarsus, 0.65 of tibia, metatarsus 0.14 of tibia and 0.21 times tarsus, second segment 1.30 times metatarsus, third equal to metatarsus, fourth 1.40 times the third or metatarsus.

Abdomen with fine, reticulate microsculpture, slightly more than 0.50 of body; ovipositor very well exerted.

Male : Length 1.70 mm. General colour of body as in female, black markings as in female except minor differences; head yellowish-brown, vertex upto antennal sockets dark brown, genae dark brown; eyes red; antennae brown, scape and pedicel pale brown; except brownish middle coxa and dorsally very dark brown hind coxa, all the legs pale brownish; wings as in female; anterior portion of abdomen lighter than thorax.

Head viewed in front length to width 74 : 100, concave in between the 2 antennal sockets, face nearly smooth, fine reticulate microsculpture; clypeal margin in the middle deeply notched with a close, pair of tooth-like projections; ocellular space only very slightly more than 3 ocellar diameters, front ocellar space very slightly less than the diameter of lateral ocellus, interocellar space 3.14 times ocellar diameter; eyes obscurely pubescent, eye length to head length 50 : 100; antenna to body 87 : 100, segments 12 : 1.1.3.4.3; antennal sockets well above the middle of frons; scape 5.20 times longer than thick; pedicel 1.33 times longer than thick, 0.30 of scape; middle annellus rudimentary; all the funicular segments bear a basal whorl of long setae; first funicular segment shortest, 2.14 times longer than thick and nearly 2 times the pedicel; second segment 3 times longer than thick and 1.20 times longer than the first; third 3.17 times longer than thick and subequal to the second; fourth 2.83 times longer than thick and 0.89 of the third; only the first 2 segments of club bear a whorl of long setae, club not stouter than funicle, distinctly 3 segmented, 6.33 times longer than thick, equal to slightly more than preceding 2 funicular segments combined, terminal segment with a



del P.V.

FIG. 325. *Tetrastichus satpurensis* Saraswat, male : A. Antenna; B. Fore and hind wings; C. Head in front view; D. Stigmal venation; E. Thorax; F. Fore leg; G. Middle leg; H. Hind leg; I. Abdomen; J. Anelli.

short and pointed style, first club segment nearly equal to the first funicular segment, second 3.25 times longer than thick and 0.92 of the first, 2.57 times longer than thick and 0.70 of the second.

Pronotum and propodeum largely but finely reticulate, mesonotum and scutellum finely, longitudinally reticulate; pronotum with sparse, scattered fine hairs; mesoscutum with 6 bristles, near the parapsidal furrows on each side, median longitudinal groove distinct and complete; scutellum with 2 pairs of very prominent longitudinal grooves, 2 bristles one behind the other on either side

of the inner grooves, one bristle posteriorly near the margin on either side of the inner grooves; propodeum with the strongly developed median carina as in female; paraspircular carinae obscure, spiracle touching the lateral margin and separated from the anterior margin by about 0.50 of its own diameter; fore wing length to width 100 : 41; veins *sm* : *m* : *st* ratio 98 : 100 : 25; hind wing to fore wing length 80 : 100; fore coxa 2.16 times as long as thick; femur 4.50 times longer than thick; 1.40 times coxa; tibia 8.40 times longer than thick, 1.16 times femur, tarsus equal to femur, 0.85 of tibia, metatarsus 0.16 of tibia and 0.19 of tarsus, second segment 1.57 times metatarsus, third 0.72 of the second, fourth 1.50 times third; middle coxa 1.45 times as long as thick; femur 5.14 times longer than thick, equal to fore femur, tibial spur 0.19 of tibia and 1.10 times metatarsus; tarsus 0.70 of tibia, metatarsus 0.17 of tibia and 0.25 of tarsus, second segment subequal to metatarsus, third 0.72 of the second, fourth equal to metatarsus; hind coxa 2 times as long as wide; femur 4 times longer than wide; 1.43 times coxa; tibia long, thickened apically, subequal to middle tibia, 9 times longer than thick, 1.35 times femur, tibial spur 0.14 of tibia and subequal to metatarsus; tarsus equal to femur and middle tarsus, 0.74 of tibia, metatarsus 0.16 of tibia and 0.22 of tarsus, second segment 1.22 times metatarsus, third only very slightly less than metatarsus, fourth 1.50 times the third.

Abdomen with large, reticulate, microsculpture, excluding aedeagus 0.42 of the body; clasper with a single hook.

Type locality : Pachmarhi : Panarpani

This species differs from *T dhireni* Saraswat in being non-metallic, in presence of black markings on the body and in different proportions of antennal segments. This species resembles *T malabarensis* in having 3 annelli in both male and female and middle tibial spur being slightly longer than metatarsus, but is separated in mesoscutal bristles being only 6 in both sexes, somewhat larger body size, colouration of abdomen and the first funicular segment in female being longest.

Aprostocetus Westwood

1833 *Aprostocetus*, Westwood, *Philos. Mag.*, 2 : 444.

1904 *Aprostocetus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 399, 350.

1909 *Aprostocetus*, Schmiedeknecht, *Gen. Ins.*, 97 : 479.

This genus is closely related to *Tetrastichus*, but antennae with 9 segments, including one annellus, funicle hardly thickened; segments much longer than thick; tibiae and tarsi long and slender; abdomen strongly elongate, apically conical and compressed; ovipositor well exerted; funicular segments in male without long scattered hairs; propodeum smooth, without median longitudinal carinae.

Type-species : *Aprostocetus caudatus* Westwood

KEY TO SPECIES

1. Interocellar space about 2 times or slightly over 2 times the ocellocular 2
Interocellar space 3 times or more than 3 times the ocellocular 3
2. Reddish-brown to black specimens; scape less than 2 times the pedicel *A. israeli* Mani & Kurian
Metallic-blue or green specimens; scape more than 2 times the pedicel 4
3. Mesonotum metallic-blue; propodeum with a fine leathery sculpture; fore wing length 2.33 times the breadth; club very slightly longer than the preceding 2 funicular segments combined *A. punjabensis* Kurian
Mesonotum metallic-green; propodeum rugoso-punctate; fore wing length somewhat more than 2 times the width; club nearly equal to the last 2 funicular segments combined *A. nowsherensis* Kurian
4. Scape 2 times or more than 2 times the pedicel 5
Scape less than 2.50 times the pedicel 6
5. Mesonotum metallic-blue, with a greenish tinge; propodeum finely longitudinally coriaceously striate; first funicular segment nearly 2 times the pedicel; marginal slightly shorter than the submarginal *A. coorgensis* Kurian
Mesonotum black, with a metallic-green lustre; propodeum irregularly rugosely sculptured with leathery appearance; first funicular 1.75 times the pedicel; marginal not shorter than the submarginal *A. epilachnae* Kurian
6. Propodeum finely rugosely sculptured, abdomen about 1.50 times the thorax *A. krishnieri* Mani
Propodeum rugoso-reticulately sculptured, abdomen slightly longer than thorax *A. asphondyliae* Mani & Kurian

Aprostocetus israeli Mani & Kurian

1953 *Aprostocetus israeli*, Mani & Kurian, *Indian J. Ent.*, 15 (1) : 20.

1964 *Aprostocetus israeli*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 333.

Female : Length 1.20-2.00 mm. Body black; head black; scape yellowish-brown.

Head above strongly constricted in the middle, wider than thorax, width more than 4 times median length; vertex narrow, emarginate; sparsely, shallowly and irregularly punctate; interocellar space 2 times ocellocular space; ocellocular space equal to the front ocellar space; head from front nearly circular; antennae inserted below level of lower orbital borders; scape nearly reaching to front ocellus; face shallowly punctate; gena slightly more than 0.30 of eye; eyes large, circular, bare; postorbital space extremely narrow above;

antennae with 9 segments : 1 1.1.3.3; scape somewhat less than 2 times pedicel; first funicular segment equal to pedicel, remaining segments becoming gradually shorter; club equal to the last 2 funicular segments combined.

Prothorax declivous in front; parapsidal furrows distinct; median longitudinal furrow on mesonotum distinct; mesonotum smooth and shiny except for a few shallow and obscure punctate; scutellum convex, with 2 longitudinal grooves, shallowly punctate; propodeum reticulately rugose, with a median longitudinal carina; spiracles large, circular; hind tibial spur single, about 0.50 of metatarsus; fore wing a little less than 2.50 times as long as wide; veins $sm : m : st : pm$ ratio 100 : 75 : 37 : 0.

Abdomen sessile, slightly longer than thorax; first tergite slightly longer than others and nearly equal to tergites 2-3 combined; all tergites nearly smooth and shiny, except for the slight scattered pubescence and faint transverse striations; ovipositor issuing from the fourth tergite, exerted.

Type locality : Cuttack

Host : Pupa of *Argyria* sp.

This species is separated from *Aprostocetus krishneri* by the black non-metallic head, the reticulately rugose propodeum and club very much thicker than the funicular segments.

***Aprostocetus punjabensis* Kurian**

1952 *Aprostocetus punjabensis*, Kurian, *Agra Univ. J. Res. (Sci.)*, 1 : 57.

Female : Length 1.75-2.00 mm. Body metallic-blue and green; scape yellowish-brown, rest of antenna brown; pronotum metallic-green; metathorax metallic-blue; coxae and femora concolorous with body; rest of legs yellowish-brown; abdomen metallic-green with some blue iridescence.

Head from above transverse, about 3 times as wide as long; vertex narrow, with obscure punctae; interocellar space 3.50 times ocellocualr space, about 0.60 of front ocellar space; head from front about 0.75 times as long as wide; clypeus short and broad; face moderately convex; gena slightly less than 0.66 of eye; antennae inserted above lower orbital border; segments 9 : 1.1.1.3.3; scape slightly less than 3 times pedicel; pedicel about 5 times annellus; first funicular segment slightly more than 0.50 of scape and also slightly longer than other funicular segments; second and third funicular segments together slightly shorter than club, which latter subequal to scape; terminal segment of club with a short nipple-like projection.

Pronotum narrow, rugoso-punctate; mesonotum with complete and well developed parapsidal and median longitudinal furrows;

scutellum with 2 parallel longitudinal grooves, coriaceously striate; propodeum slightly convex, with median longitudinal carina, which bifurcates behind with the branches divergent to enclose a triangular area, with a leathery sculpture; mesopleural fovea smooth in front and roughly sculptured behind; hind coxae about 2 times femur; tibia about 1.20 times femur; tibial spur about 0.14 of tibia and 0.66 of metatarsus; metatarsus slightly more than 0.50 of rest of tarsus; fore wings about 2.33 times as long as wide; veins *sm* : *m* : *st* : *pm* ratio 110 : 100 : 33 : 0.

Abdomen sessile; slightly over 1.50 times thorax, depressed; ovipositor slightly exerted.

Type locality : Punjab

Host : Unidentified insect defoliating *Dalbergia sissoo*

This species differs from *Aprostocetus israeli* Mani & Kurian in the interocellar space being 3.50 times ocellocular, which latter 0.80 of front ocellar; first funicular segment being over 0.50 of scape.

***Aprostocetus nowsherensis* Kurian**

1952 *Aprostocetus nowsherensis*, Kurian, *Agra Univ. J. Res.* (Sci.) 1 : 61.

Female : Length 1.50-2.00 mm. Body brilliant metallic-blue-green; head metallic-green; eyes blackish-brown; ocelli reddish-brown; scape and pedicel yellowish-brown, rest of antenna brown; coxae to basal 0.50 of femur dark reddish-brown, rest of legs yellowish-brown.

Head from above transverse, 3 times as wide as long; eyes bare; interocellar space slightly more than ocellocular space; ocellocular space equal to front ocellar space; vertex narrow, emarginate, rugoso-striate, sparsely pubescent; head from front subcircular, with the eyes bulging; face excavate, with front ocellus within the excavation, faintly rugoso-carinate; gena slightly less than 0.50 of eye; antennae inserted immediately above level of lower orbital borders; scape about 3 times pedicel; first funicular segment about 1.50 times pedicel; second funicular segment slightly longer than first, third segment slightly shorter than second; club subequal to preceding 2 segments combined, terminal club segment with a short nipple-like process.

Pronotum short, rugoso-punctae in the middle and rugoso-striate at the sides; mesonotum rugoso-striate; parapsidal furrows complete, deep; lateral oblong fovea outside of the parapsidal furrows distinct; scutellum large with 2 lateral longitudinal furrows, somewhat diverging in front and sculptured like mesonotum; propodeum rugoso-punctate, with a short median longitudinal carina, which bifurcates behind and extends transversely as strong basal carina; spiracles oval; hind femur about 1.33 times coxa-

trochanter; tibia about 1.25 times femur; tibial spur about 0.75 of metatarsus; metatarsus slightly less than 0.20 of tibia and about 0.33 of the rest of tarsi; wings somewhat more than 2 times as long as wide; veins $sm : m : st$: ratio 105 : 100 : 40.

Abdomen sessile, 1.50 times thorax, depressed.

Type locality Nowshera (Northwest Frontier Province : Pakistan)

***Aprostocetus coorgensis* Kurian**

1952 *Aprostocetus coorgensis*, Kurian, *Agra Univ. J. Res. (Sci.)*, 1 : 59.

Female : Length 2.00-2.30 mm. Body bright metallic-blue, with greenish-violet tinge in certain angles; scape pale brown; rest of antenna dark brown; coxae and femora concolorous with body; rest of legs yellowish-brown.

Head from above transverse, about 2.75 times as wide as long; vertex narrow, coarsely rugoso-punctate; interocellar space about 2.25 times ocellular space, almost equal to the front ocellar space; eyes bare; head from front somewhat subtriangular, length about 0.75 of width; gena about 0.60 of eye, with a groove extending from the lower orbital border down to the sides of mouth; antennae inserted immediately above level of lower orbital border; scrobes reaching nearly front ocellus; segments 9 : 1.1.1.3.3; scape 3 times pedicel; pedicel about 7 times the annellus; first funicular segment about 0.75 of scape; rest of the funicular segments shorter; third segment about 0.50 of scape; club slightly shorter than the preceding 2 segments combined; terminal segment of club with a short nipple-like process at tip, with 2 smaller mucros at base.

Pronotum with a leathery sculpture; parapsidal furrows deep, complete; median longitudinal carina present; scutellum with 2 lateral furrows dividing into 3 equal areas; finely longitudinally, coriaceously striate; propodeum carinate medially and laterally, distinctly rugoso-punctate; hind femur about 0.75 of tibia; tibial spur about 0.16 of tibia and subequal to metatarsus; other tarsal segments about 3 times metatarsus; fore wings about 2.25 times as long as wide; veins $sm : m : st : pm$ ratio 105 : 100 : 32 : 0.

Abdomen sessile, depressed, tip acuminate, dorsum smooth, venter shagreened.

Type locality : Tithimatti (Coorg)

Host : Parasite of another Hymenoptera parasitic on an unknown Pyralid, defoliating *Grewia latifolia*

Differs from *A. punjabensis* in the interocellar space 2.25 times ocellular, subequal to front ocellar; club slightly shorter than the preceding 2 segments combined.

Aprostocetus epilachnae Kurian

(Fig. 315)

1954 *Aprostocetus epilachnae*, Kurian, *Agra Univ. J. Res. (Sci.)*, 3 : 129.

Female : Length 1.75 mm. Body black with metallic-green lustre; head black, with metallic-green lustre; eyes brownish-black, with few short pubescence; antenna brown, except lighter scape and pedicel, with silvery-brown pubescence; thorax black with a metallic-green lustre; legs honey-brown, except coxa, trochanter and femur excluding the knee, concolorous with body; abdomen metallic-bluish-green; tergites smooth and shiny, with few scattered silvery-brown pubescence.

Head from above 4 times wider than long; vertex irregularly rugoso-coriaceously sculptured, emarginate; interocellar space 2 times ocellular, which latter about 1.50 times the front ocellar; in front length 0.83 of the width; gena 0.67 of eye, with a faint line from below orbit mouth; frons and face faintly rugoso-coriaceously sculptured; scrobes moderately deep and complete; face with 2 ridges laterally to the base of antenna up to just above the clypeus; clypeus nearly truncate; antenna with 9 segments : 1.1.1.3.3; scape 3 times pedicel; annellus nearly 0.16 of pedicel; first funicular 1.75 times pedicel; second slightly more than the first; third subequal to first; first club segment about 0.67 of the last funicular, rest gradually become shorter, terminal with a short nipple-like process towards apex, all club segments together somewhat longer than scape and 0.85 of the last 2 funicular segments combined.

Pronotum short, rugosely sculptured; mesonotum 2.50 times pronotum, longitudinally rugoso-coriaceous sculptured; parapsidal furrows distinct, deep and complete; median longitudinal furrow present, more distinct posteriorly; metanotum short, faintly irregularly sculptured; scutellum equal to mesonotum, sculpture same as the latter, with 2 lateral longitudinal grooves and 2 broad foveae on either side; propodeum 0.50 of scutellum, irregularly rugosely sculptured with a leathery appearance, with median longitudinal carina running posteriorly and diverging as the basal carina, which joins the very thick lateral carina enclosing 2 areas on either side; hind femur nearly somewhat more than coxa and trochanter combined; tibia 1.16 times femur; tibial spur 0.67 of metatarsus; metatarsus slightly less than 0.50 of rest of tarsi; fore wing slightly more than 2 times longer than wide; vein *sm* very slightly less than *m*, nearly 4 times *st*; vein *pm* absent.

Abdomen 1.25 times thorax; depressed; 6 tergites visible, first the largest, rest subequal; ovipositor not much exerted.

Type locality : Razol

Host : *Epilachna*

Aprostocetus krishnieri Mani

1941 *Aprostocetus krishnieri*, Mani, *Indian J. Ent.*, 3 (1) : 36.

1943 *Aprostocetus krishnieri*, Krishna Iyer, *Indian J. Ent.*, 4 : 225.

Female : Length 2.50 mm. Body dark metallic-blue or dark metallic-green; head dark metallic-green, shiny; vertex width to length ratio 5 : 2; minutely punctate; antenna dark brown; scape brown, somewhat lighter below basally; rest of antennae, coxae and femora concolorous with thorax; knees, tibiae, except apex tarsi, honey-brown; veins dark brown; abdomen with long white hairs towards apex.

Head wider than thorax, ocellular space about 0.50 of interocellar space; scrobes moderately deep and complete; gena subequal to eye, somewhat flat, without sculpture, with a median longitudinal line from orbit to mouth and deeper near orbit than below; mandibles tridentate.

Thorax smooth, mesonotum with complete and deep parapsidal furrows and a median longitudinal furrow; scutellum with 4 longitudinal furrows; propodeum finely rugose, lateral carinae more prominent than median carina; a few scattered minute puncta on scapulae.

Abdomen about 1.50 times thorax.

Type locality : Coimbatore

Host : *Lixus truncatulus* grubs in *Amarantus*

Aprostocetus asphondyliae Mani & Kurian

1953 *Aprostocetus asphondyliae*, Mani & Kurian, *Indian J. Ent.*, 15 (1) : 21.

Female : Length 2.50-2.70 mm. Body metallic-green; coxa and femur black except at tip; tibia and terminal tarsal segment yellowish-brown, rest of tarsi paler

Head above transverse, constricted strongly in the middle, as wide as thorax and somewhat more than 3 times its own median length; vertex narrow, emarginate, with a leathery sculpture; interocellar space slightly more than 2 times ocellular space and about 3 times the front ocellar space; occiput reticulately-striate and dull; head from front triangular; face excavate; antennae inserted on level of lower orbital border; scrobes nearly reaching front ocellus; upper part of face with some leathery sculpture, lower part rugulose punctate; head from side oval, gena slightly less than 0.33 of head; postorbital space very narrow above; eyes bare, nearly circular; mandibles tridentate with the second and third teeth serrate; antennae with 9 segments : 1.1.1.3.3; scape about 2.50 times pedicel; pedicel slightly over 0.50 of first funicular segment which latter is about 0.80 of scape; funicular segments becoming gradually shorter, but also stouter apically; club about 0.80 of the preceding 2 segments combined, with a short nipple-like terminal process.

Pronotum narrow, rugoso-punctae; mesonotum rugoso-punctate, with a longitudinal groove in the middle; scutellum highly convex, with 2 longitudinal grooves, between which the sculpture is irregular; propodeum narrow, rugoso-reticulate, with median longitudinal carina, hind tibial spur single, slightly longer than metatarsus; fore wing about 2 times as long as wide; veins $sm : m : st : pm$ ratio 170 : 100 : 35 : 0.

Abdomen longer than thorax, flattened dorsally; first tergite longest, smooth and shiny; other tergites transversely striate; tip of abdomen acuminate.

Type locality : Mysore

Host : *Asphondylia pongamiae* Felt causing galls on flower of *Pongamia glabra* Vent

Neparaprostocetus Mani

1939 *Neparaprostocetus*, Mani, *Indian J. Ent.*, 1 : 90.

Antennae not clavate, or only slightly thicker apically in female; in male with 10 segments : 1.1.1.4.3; in female with 9 segments : 1.1.1.3.3; scape cylindrical, uniformly thick; funicular segments longer than thick; pronotum not very large; mesonotum with deep longitudinal furrows; scutellum with paired grooved lines; fore wing with vein m slender, pm absent, sm longer than m , st long; hind wing with thin vein m ; tarsi with 4 segments; propodeum with a median longitudinal carina; abdomen in female not compressed, in male slightly depressed.

Type-species : *Neparaprostocetus asphondyliae* Mani

Neparaprostocetus asphondyliae Mani

1939 *Neparaprostocetus asphondyliae*, Mani, *Indian J. Ent.*, 1 : 90.

1940 *Neparaprostocetus asphondyliae*, Pruthi & Mani, *ICAR Misc. Bull.*, 30 : 31.

Female : Length 2.50 mm. Body black; head black; eyes red; antennae reddish-brown, except the brown scape and pedicel; coxae dark green; femora brown, rest of legs light brown; abdomen brown, with metallic-green reflections.

Scrobe deep, front ocellus within scrobe; eyes naked; scape long, slender slightly compressed; funicular segments subequal, each about 0.67 of scape; club as long as scape, somewhat compressed, first segment short, second 2 times the first, third shorter than first, conical.

Thorax reticulately sculptured.

Abdomen as long as thorax, sparsely pubescent.

Male : Length 1.50 mm. Body black; abdomen smooth, dark brown ventrally and dorsally with metallic-green reflections; basal 3 funicular segments subequal, fourth somewhat shorter than third.

Type locality : Tanjore

Hosts Pupae of the gallmidge, *Asphondylia riveae* Mani, from gall on leaf of *Rivea hypocrateriformis* Choisy.

FAMILY TRICHOGRAMMATIDAE

- 1846 *Eulophidae* (partim), Walker, *List Chalcids Brit. Mus.*, 1 : 62.
 1856 *Trichogrammatidae*, Förster, *Hym. Stud.*, 2 : 20,26,27.
 1878 *Trichogrammatina*, Thomson, *Hym. Scand.*, 5 : 299.
 1897 *Trichogrammatinae*, Aurivillius, *Ent. Tidsk.*, 18 : 250.
 1904 *Trichogrammatide*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 359.
 1909 *Trichomminae*, Schmiedeknecht, *Gen. Ins.*, 97 : 480.
 1912 *Trichogrammatidae*, Girault, *Bull. Wisconsin nat. Hist. Soc.*, 10 : 81-100.
 1913 *Trichogrammatidae*, Girault, *Bull. Wisconsin nat. Hist. Soc.*, 11 : 150-179.
 1914 *Trichogrammatidae*, Girault, *Bull. Wisconsin nat. Hist. Soc.*, 12 : 55-71.
 1918 *Trichogrammatidae*, Kryger, *Ent. Meddel.*, 12 : 257-354.
 1918 *Trichogrammatidae*, Girault, *N. Amer. Hym. Trichogrammatidae, Sydney, Austral.*, 11.
 1945 *Trichogrammatidae*, Kloete & Hincks, *Check List Brit. Insects, Arboath, Scotland*, 303.
 1968 *Trichogrammatidae*, Douth & Viggiani, *Proc. California Acad. Sci.*, (4) 35 : 477-586.
 1970 *Trichogrammatidae*, De Santis, *Rev. Mus. La Plata (NS) Zool.*, 11 : 1-19.
 1971 *Trichogrammatidae*, Viggiani, *Boll. Lab. Ent. Agr. Portici*, 19 : 186.
 1979 *Trichogrammatidae*, Krombein *et al.*, *Hymen. N. America*, 1 : 1033.

Tarsi with 3 segments; fore wings short, broad, broadly rounded apically; discal cilia generally arranged in rows of distinct lines, rarely scattered generally; veins *m* and *st* united to form a strong backward curve; hind coxae not enlarged; mesopleura impressed; axillae triangularly advanced into scapula in front of tegulae.

Ashmead recognized the subfamilies Oligositinae, without regular lines of discal cilia on fore wings and Trichogrammatinae with the discal cilia arranged in regular rows of lines. Girault proposed the subfamilies Chaetostichinae and Trichogrammatinae on the basis of the differences in the vein *st*, forming an angle with the vein *m* or forming a continuous arc with vein *m*. Under the Chaetostichinae Girault separated the tribes Chaetostichini and Lathromerini, with the funicle differentiated or not differentiated; under Trichogrammatinae he separated the tribes Trichogrammatini and Poropoeini on the basis of the curvature of veins *m-st*. In 1918 Kryger distinguished the tribes Trichogrammatini, Oligositini and Brachistini on the basis of wing discal ciliation. In 1971 Viggiani utilized the genitalia characters for separating subfamilies and tribes.

KEY TO SUBFAMILIES

1. Wings with hairs in regular lines; copulatory organs with variable phallobase, partly enclosing the body aedeagus; parameres and volsellae digiti variable, well developed or reduced; aedeagus with bacilliform apodeme

Trichogrammatinae

Wings without regular rows of hairs in line;
 copulatory organs without phallobase;
 generally with various elements of phallus
 fused together; apodeme hardly bacilliform *Oligositinae*

SUBFAMILY OLIGOSITINAE

1904 *Oligositinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 359.

1909 *Oligositini*, Schmiedeknecht, *Gen. Ins.*, 97 : 480.

KEY TO TRIBES

1. Copulatory organs with anterodorsal opening
 well differentiated and bordered by annular
 sclerite *Chaetostrichini*
- Copulatory organs with anterodorsal opening
 not distinct or only slightly differentiated *Oligositini*

Tribe Chaetostrichini includes the following genera :
Chaetstricha, *Lathrogramma*, *Bloodiella* and *Uscana*.

Tribe Oligositini includes the following genera : *Oligosita*,
Ufensia, *Prestwichia*, *Brachista* and *Doirania*.

Paruscanoidea Girault

1915 *Paruscanoidea*, Girault, *Mem. Queensland Mus.*, 3 : 152.

This genus runs nearest to *Uscanoidea* Girault, but differs in bearing a long, slender vein *m*; vein *sm* as long as vein *m* and 2 times the *st*; fore wing quite naked; scape distinctly shorter than club; valves of ovipositor distinctly extruded; hind wing narrow, acute, with very long caudal marginal fringes.

Type-species : *Paruscanoidea dickensi* Girault

Paruscanoidea indica Mani

(Fig. 326)

1939 *Paruscanoidea indica*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 91.

Female : Length 0.42 mm. Head slightly wider than long, reddish-brown; mandibles 4 dentate; antennae inserted on the ocular line, segments 4, first segment of club somewhat shorter than pedicel, terminal club segment conically pointed; thorax honey-yellow; mesonotum somewhat darker anteriorly than posteriorly; scutellum nearly 2 times as long; wings hyaline, clouded at base of vein *m* and somewhat more faintly so behind vein *st*, vein *pm* nearly as long as *m*; legs honey-yellow, femora slightly clouded, except first yellow segment, rest of abdomen black.

Male : Same as female but antennae paler

Type locality : Pusa

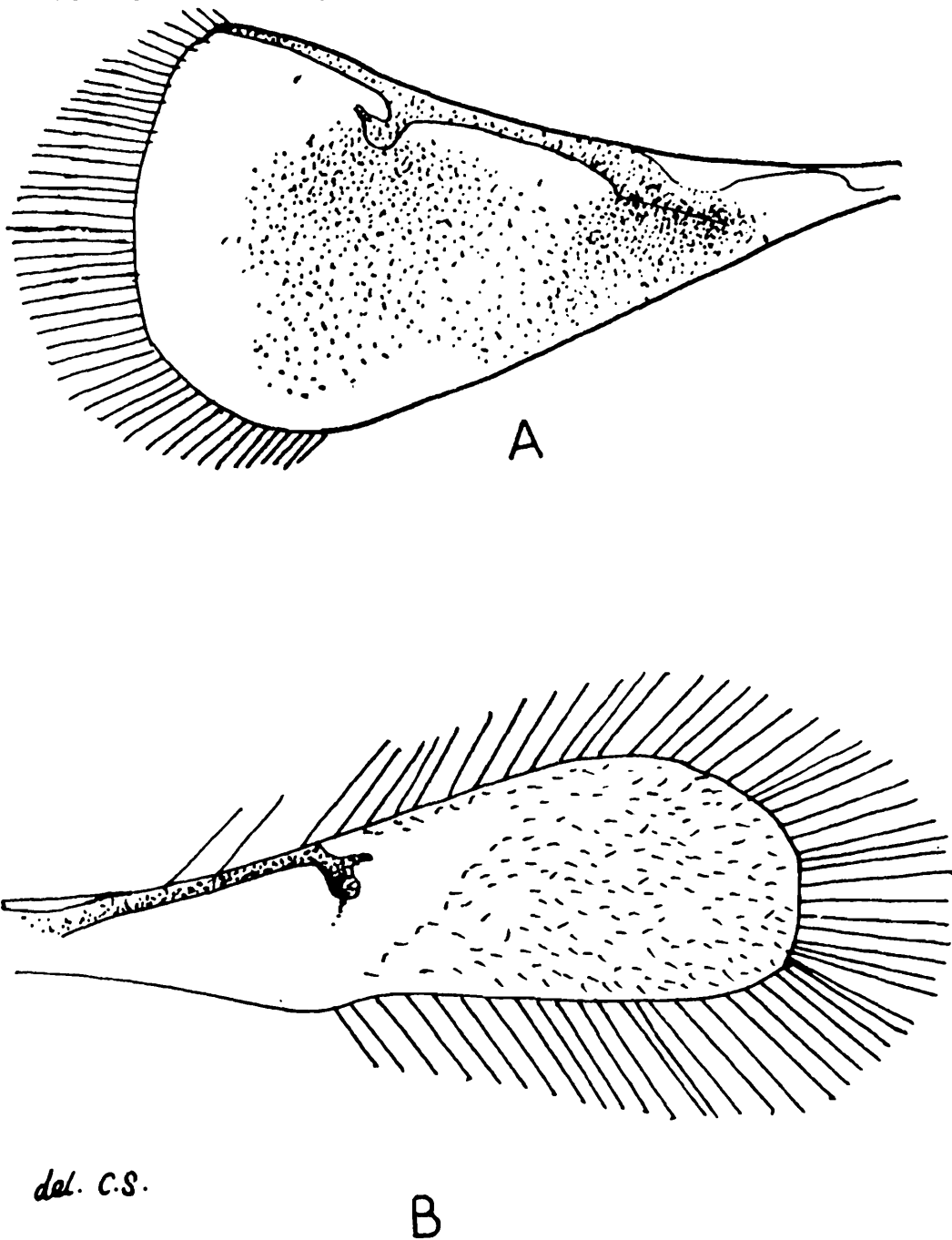
Host : *Hilda bengalensis*

Oligosita Walker

- 1851 *Oligosita*, Walker, *Ann. Mag. Nat. Hist.*, 7 (2) : 212-213.
 1904 *Westwoodella*, Ashmead, *Mem. Carnegie Mus.*, 1 : 359.
 1911 *Paroligosita*, Kurdjumov, *Obozr. Russ. Ent.*, 11 : 434.
 1913 *Pseudoligosita*, Girault, *Mem. Queensland Mus.*, 2 : 104.
 1915 *Zorontogramma*, Silvestri, *Bol. Lab. Zool. Agric. Portici*, 9 : 327.
 1979 *Oligosita*, Krombein *et al.*, *Hymen. N. America*, 1 : 1034.

Antenna with 7 segments including one annellus; fore wing narrow with long marginal fringe, without substigmal fascia; scape straight or clavate; single funicular segment scarcely longer than thick.

Type-species : *Oligosita collina* Walker



del. C.S.

B

FIG. 326. A. *Paruscanoidea indica* Mani, female : fore wing; B. *Oligosita nephoteticum* (Mani); Fore wing.

Oligosita nephoteticum Mani

1939 *Oligosita nephoteticum*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 92.

Female : Length 0.60 mm. Body yellowish-brown; mesonotum dark brown; coxae, except bases and knees femora dark brown; terminal segment fuscus; rest of legs yellow; scutellum, metanotum and propodeum yellow; abdomen brown.

Scape subclavate, slender apically; pedicel 0.50 of the length of scape, slightly over 1.25 times as long as thick; funicular segment slightly shorter than thick, subglobose, narrower than club; latter as long as scape, first segment short, subglobose, second larger and more slender, third as long, tapering to a thick apex.

Type locality : Pusa

Host : *Nephotettix bipunctatus*

Oligosita manii (Mani)

1939 *Westwoodella nephoteticum*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 92.

1981 *Oligosita manii*, Viggiani, *Boll. Lak. Ent. Agr. portici*, 38 : 126.

Female : Length 0.50 mm. Body yellow; thorax wholly yellow; coxae above, femora in the middle slightly fuscus, legs otherwise light yellow; abdomen dark brown in the basal 0.50 and rich yellow apically.

Scape short, clavate; pedicel as long as scape; funicular segment longer than thick; substigmal cloud of fore wings distinct and large.

Type locality : Balasore (Orissa)

Host : *Nephotettix bipunctatus*

Oligosita subfasciata Westwood

1879 *Oligosita subfasciata*, Westwood, *Trans. Linn. Soc. London (Zool.)*, 1 : 591-592.

1904 *Westwoodella subfasciata*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 359.

1939 *Westwoodella subfasciata*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 93.

Type locality : Ceylon

Oligosita nodicornis Westwood

1879 *Oligosita nodicornis*, Westwood, *Trans. Linn. Soc. London (Zool.)*, 1 : 591.

1909 *Oligosita nodicornis*, Schmiedeknecht, *Gen. Ins.*, 97 : 483.

1938 *Oligosita nodicornis*, Mani, *Cat. Indian Ins.*, 23 : 134.

1939 *Oligosita nodicornis*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 92.

Type locality : Ceylon

Oligosita staniforthi Westwood

- 1879 *Oligosita staniforthi*, Westwood, *Trans. Linn. Soc. London* (Zool.), 1 : 591.
 1909 *Oligosita staniforthi*, Schmiedeknecht, *Gen. Ins.*, 97 : 483.
 1938 *Oligosita staniforthi*, Mani, *Cat. Indian Ins.*, 23 : 134.
 1939 *Oligosita staniforthi*, Mani, *Indian J. Ent.*, 1 (1 & 2) : 92.

Type locality : Ceylon

SUBFAMILY TRICHOGRAMMATINAE

- 1904 *Trichogrammatinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 359, 360.
 1909 *Trichogrammatini*, Schmiedeknecht, *Gen. Ins.*, 97 : 483.

KEY TO TRIBES

- | | |
|--|-------------------------|
| 1. Phallobase tubular, generally swollen about the middle; anterodorsal opening variable | <i>Trichogrammatini</i> |
| Phallobase subtruncate-conical, with anterodorsal opening short, generally transverse or subrotund | <i>Paracentrobini</i> |

Tribe Trichogrammatini includes the following genera : *Trichogramma*, *Poropoea*, *Ophioneurus*, *Mirufens*, *Pterandrophysalis*, *Ceratogramma*, *Oligositoides*, *Hydrophylita*, *Trichogrammatoidea*, *Ufens*, *Monorthochaeta*, *Brachygrammatella*, *Lathromeris*, *Aphelinoidea*, *Tumidiclava* and *Hispidophila*.

Tribe Paracentrobini includes the following genera : *Paracentrobia*, *Ittys* and *Paraittys*.

KEY TO GENERA

- | | | |
|---|---|------------------------------|
| 1. Fore wing with veins <i>sm</i> and <i>st</i> forming together an arch; antennae with 8 segments | 2 | |
| Fore wing with veins <i>sm</i> and <i>st</i> not forming an arch; antennae with less than 8 segments | 3 | |
| 2. Vein <i>m</i> absent, <i>sm</i> not reaching front margin; body short, stout | | <i>Poropoea</i> Förster |
| Vein <i>m</i> present, <i>sm</i> reaching front margin | | <i>Trichogramma</i> Westwood |
| 3. Antennae with 7 segments | 4 | |
| Antennae with 6 or only 3 segments. | 5 | |
| 4. Fore wing with marginal fringe short and found all round | | <i>Uscana</i> Girault |
| 5. Antennae with only 3 segments; with long solid club; vein <i>m</i> not longer than 2 times <i>st</i> | | <i>Aprobosca</i> Westwood |
| Antennae with 6 segments. | 6 | |
| 6. Antennae with scape, pedicel, one annellus, funicular segments 2 and unsegmented club | 7 | |
| Antennae with scape, pedicel, single segmented funicle and 3 segmented club; ovipositor exerted.. | 8 | |

7. Wings narrow as in Mymarids, with long fringe *Megaphragma* Timberlake
 8. Postscutellum distinct, with a triangular process *Paracentrobia* Howard

Poropoea Förster

- 1851 *Poropoea*, Förster, *Verh. Naturh. Ver. Preuss. Rheinlande*, 1 : 28.
 1898 *Poropoea*, Dalla Torre, *Cat. Hym.*, 5 : 1.
 1904 *Poropoea*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360.
 1909 *Poropoea*, Schmiedeknecht, *Gen. Ins.*, 97 : 484.
 1916 *Poropoea*, Silvestri, *Boll. Lab. Zool. gen. Agr. Portici* 11 : 120-135.
 1936 *Poropoea*, Subgen. *Poropoeoides*, Nowicki, *Ztschr. angew. Ent.*, 23 : 125.
 1968 *Poropoea*, Doutt & Viggiani, *Proc. Calif. Acad. Sci.*, 35 : 515-516.
 1969 *Poropoea*, Subba Rao, *Orient. Ins.*, 3 (4) : 319.
 1971 *Poropoea*, Viggiani, *Boll. Lab. Ent. Agr. Portici*, 29 : 186.
 1979 *Poropoea*, Krombein *et al.*, *Hymen. N. America*, 1 : 1040.

This genus may be separated by the differences in the length of the ovipositor sheath, colouration of body and the arrangement of discal cilia.

Members of this genus are parasitic in the eggs of attelabid beetles.

Type-species : *Poropoea stollwekii* Förster

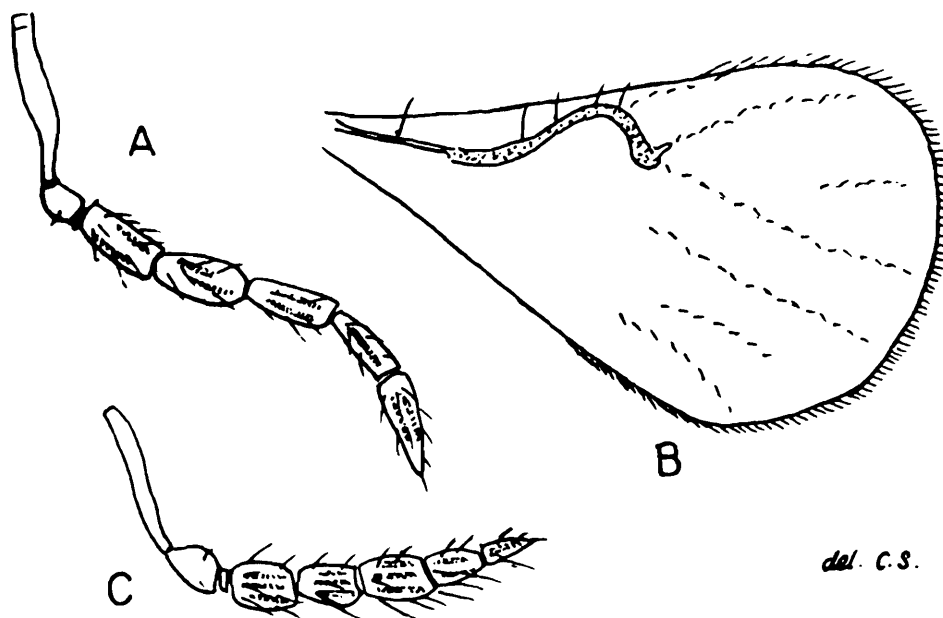


FIG. 327. *Poropoea indica* Subba Rao : A. Antenna, male; B. Fore wing, female; C. Antenna, female. (Modified from Subba Rao)

Poropoea indica Subba Rao

(Fig. 327)

1969 *Poropoea indica*, Subba Rao, *Orient. Ins.*, 3 (4) : 322.

Female : Head, including face and vertex brown; antennae concolorous with head; thorax dark brown, with mesoscutum and scutellum darker; abdomen brown; ovipositor light brown to yellow; legs brown, except yellow tarsi; wings hyaline; discal cilia thick and prominent.

Head in front almost as long as wide and rounded; frons with 2 rows and gena with 3 rows of silvery-white hairs; scrobes deep, without interscrobal elevation; fronto-clypeal area with 2 longitudinal grooves; vertex transversely striate; occiput acutely margined; ocellar triangle broadly obtuse, appearing almost in a line; ocellular space equal to ocellar diameter; antennae inserted close to each other, slightly above the middle of face; scape slender, about 3 times pedicel; annelli 2, minute; funicular segments subequal, combined shorter than scape; mandibles quadridentate, outer 2 teeth acute inner 2 teeth short obtuse; maxillary and labial palpi with 2 segments.

Thorax only slightly arched, compressed; setae on thorax as in *P. orientalis*; mesonotum with 2 pairs of setae; longer scutellar pair at posterior margin; fore wings slightly longer than wide; upper side with 7 longitudinal rows of discal cilia and one arc-shaped row basad of pterostigma with 5 cilia, both upper and lower surface together have 15 rows of discal cilia; veins with 5 upper bristles and one lower bristle; fringe longer than in *P. orientalis* and closely spaced; hind wing with 3 longitudinal rows of cilia; fringe comparatively long, about 0.75 of wing width.

Abdomen highly compressed; ovipositor curved upwards at rest, shorter than abdomen.

Male : Like female.

Type locality : Delhi.

Host : Eggs of *Apoderus sissu* Marshall rolling leaves *Dalbergia sissou*.

Trichogramma Westwood

- 1833 *Trichogramma*, Westwood, *Edinb. and Dublin. Phil. Mag. J. Sci. London*, (3) 2 : 444.
 1833 *Calleptiles*, Haliday, *Ent. Mag.*, 1 : 340.
 1872 *Pentarthron*, Packard, *Rec. American Ent.*, 8.
 1878 *Trichogramma*, Subgen. *Aprobosca*, Westwood, *Trans. Linn. Soc. London Zool.*, (2) 1 : 592.
 1898 *Oophthora*, Aurivillius, *Ent. Tidskr.*, 18 : 250.
 1898 *Pentarthrum*, Dalla Torre, *Cat. Hym.*, 5 : 3.

- 1904 *Pentarthrum*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360, 361.
 1904 *Trichogramma*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360.
 1904 *Xanthoatomus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360.
 1909 *Trichogramma*, Schmiedeknecht, *Gen. Ins.*, 97 : 485.
 1911 *Neotrichogramma*, Girault, *Trans. American ent. Soc.*, 37 : 38-39.
 1918 *Trichogramma*, Girault, *N. American Hym. Trichogrammatidae, Sydney, Austral.*, 4.
 1932 *Trichogramma*, Subgen. *Trichogrammatana*, Girault, *New lower Hymenoptera from Australia and India, Brisbane Austral.*, 1.
 1937 *Trichogramma*, Flanders, *Ann. ent. Soc. America*, 30 : 208-210.
 1938 *Trichogramma*, Flanders, *J. econ. Ent.*, 31 : 456-457.
 1938 *Trichogramma*, Mani, *Cat. Indian Ins.*, 23 : 135.
 1941 *Trichogramma*, Ishii, *Kontyu*, 14 : 169-176.
 1960 *Trichogramma*, Flanders & Quednau, *Entomophaga*, 5 : 285-294.
 1960 *Trichogramma*, Quednau, *Mitt. Biol. Bund. Land. Forstw.*, 100 : 11-50.
 1971 *Trichogramma*, Nagarkatti & Nagaraja, *Bull. ent. Res.*, 61 : 13-31.
 1979 *Trichogramma*, Krombein *et al.*, *Hymen. N. America*, 1 : 1037.

This genus agrees with *Poropoea* closely and like that genus antennae with 8 segments; vein *sm* forms with *st* an arched curve; in female ovipositor exerted; the main difference lies in the vein *sm* reaching the front margin of wing and lies at the margin for some distance to form a distinct vein *m*.

Antennae with 8 segments : 1.1.1.2.3; fore wings with regular rows of hairs.

***Trichogramma achaeae* Nagaraja & Nagarkatti**

- 1969 *Trichogramma achaeae*, Nagaraja & Nagarkatti, *Entomophaga*, 14 (4) : 396.

Males : Length 0.50 mm. Reared on eggs of *C. cephalonica* at 80°F and 50% R.H., yellow with black sides of pronotum, mesonotum, mesopleurae, abdomen; hind coxae and femora; antennae with long hairs, the longest nearly 2.50 times thickness of flagellum; genitalia with prominent sclerotised dorsal expansion of gonobase, almost triangular, with obtuse tip, nearly reaching tips of gonoforceps and side of extruded portion being almost parallel; aedeagus about 1.50 times as long as apodemes; chelate structures in level with tips of gonoforceps; median ventral projection very minute and inconspicuous; minute protuberances present at base of chelate structures, one on either side of median ventral projection; median chitinized ridge bifurcated half way along length of genitalia, with another ridge between forked ridge and anterior margin of gonobase; aedeagus and apodemes together about 0.66 of hind tibia and slightly shorter than entire male genitalia.

Female : Resembles male reared on same host and under same temperature conditions, except for darker head; antennae clubbed with few short hairs on flagellum; ovipositor almost as long as hind tibia.

Type locality : Kalimpong (Bengal)

Host : Eggs of *Achaea janata* feeding on leaf of *Ricinus communis*

Trichogramma australicum Girault

1912 *Trichogramma australicum*, Girault, *Bull. Wis. nat. Soc.*, 10 : 109-110.

1964 *Trichogramma australicum*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 338.

1971 *Trichogramma australicum*, Nagarkatti & Nagaraja, *Bull. ent. Res.*, 61 : 15-17.

Male : Body yellow; scutum and abdomen black; antennal setae moderately long, about 2.50 times thickness of antennal segments; fore wing fringe about 0.60 of wing width; dorsal expansion of gonobase triangular, with very prominent lateral lobes; clasper markedly below the level of gonoforceps; median ventral projection prominent, broad basally, median chitinized ridge paired, extending in front to about 0.66 of genitalia; aedeagus as long as apodemes, together slightly shorter than hind tibiae.

Female : Body yellow; first tergite black; antennae clavate, with few scattered hairs on flagellum; ovipositor as long as or slightly longer than hind tibiae.

Type locality : Australia

Distribution : Australian & Oriental Regions (including Japan), Madagascar and Mauritius

Trichogramma chilotraeae Nagaraja & Nagarkatti

1969 *Trichogramma chilotraeae*, Nagaraja & Nagarkatti, *Entomophaga*, 14 (4) : 395.

Males : Length 0.20 mm. Reared on eggs of *C. cephalonica* at 80°F and 50% R.H., yellow, black pronotum, mesopleurae, mesoscutum, terga and hind coxae; flagellum with long hairs, longest more than 3 times maximum width of flagellum, genitalia with more or less triangular dorsal expansion of gonobase, having a tapering apex, projecting beyond gonoforceps, but extending only to level of chelate structures; aedeagus prominent and long 1.20 times as long as or slightly longer than entire male genitalia; large chelate structures far below level to tips of gonoforceps; protuberances at base of structures very minute and inconspicuous; median ventral projection very distinct, long with 2 chitinous ridges extending anteriorly only for a short distance from median ventral projection; aedeagus together with apodemes slightly shorter than hind tibia.

Females reared on same host and under same temperature conditions resemble males; one or more penultimate abdominal tergites appear yellow medially and anteriormost portion of mesoscutum black; antennae typically clubbed with few short hairs; ovipositor slightly longer than hind tibia.

Type locality : Plassey (Bengal)

Host : Eggs of *Chilo traea infuscatellus* on sugarcane

Trichogramma evanescens Westwood

- 1833 *Trichogramma evanescens*, Westwood, *Lond. Edinb. Dubl. Phil. Mag.*, 2 : 444.
 1938 *Trichogramma evanescens*, Mani, *Cat. Indian Ins.*, 23 : 136.
 1960 *Trichogramma evanescens*, Quednau, *Mitt. Biol. Bund. Land. Forstw.*, 100 : 11-50.
 1964 *Trichogramma evanescens*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 338.
 1971 *Trichogramma evanescens*, Nagarkatti & Nagaraja, *Bull. ent. Res.*, 61 : 18.
 1979 *Trichogramma evanescens*, Krombein *et al.*, *Hymen. N. America*, 1 : 1038.

Male : Body dull yellow; head, prothorax and abdomen dark brown; antennal setae very long, finely tapering, the longest being almost 4 times the maximum width of flagellum; fore wing with fringe 0.60 of wing width; genitalia with broadly rounded sides and marked constriction basally, chelate structure far below the level of tips of length of gonoforceps; median ventral projection distinct; median chitinized ridge paired, extending anteriorly to about 0.75 of genitalia; aedeagus slightly longer than apodemes, both together shorter than hind tibiae.

Female : Body colour as in male; antennae clavate, with a few short setae on flagellum; ovipositor as long as hind tibiae.

Type locality : England

Distribution : Palaearctic Region and Egypt; India

Hosts *Agrotis segetum*, *Chilo* sp., *Heliothis assulta*, *Hyphantria cunea*, *Mamestra brassicae*, *Pegomyia betae*, *Pieris brassicae*, *Plutella xylostella*, *Sesamia cretica*, etc.

Trichogramma flandersi Nagaraja & Nagarkatti

- 1969 *Trichogramma flandersi*, Nagaraja & Nagarkatti, *Entomophaga*, 14 (4) : 394.

Male : Length 0.45 mm. Yellow with nearly black pronotum, mesonotum, abdomen, mesopleura and hind coxae; flagellum unsegmented, with long hairs, the longest hair nearly 3 times thickness of flagellum; genitalia with prominent dorsal expansion of gonobase, the posterior extremity ending in a characteristic rounded terminal lobe, projecting far beyond gonoforceps; a median ventral chitinized ridge extending from the anterior margin of gonobase to almost 0.50 of genitalia; apodemes of aedeagus nearly 0.66 of aedeagus; chelate structures close to tips of gonoforceps; markedly hook-like; median ventral projection inconspicuous, but a pair of minute sclerotized protuberances present at base of chelate structures, close to median ventral ridge; the latter extending forwards for some

distance, bifurcating and ending beyond suture between gonobase and volsella.

Female Same colour as males when reared on some host and under same temperature conditions; flagellum typically clubbed with a few short hairs; ovipositor almost as long as hind tibiae.

Type locality : Karaswadi-Haniyambadi, Mandya District : Mysore State.

Host : Eggs of *Chilo traea infuscatellus* on sugarcane

Trichogramma japonicum Ashmead

1904 *Trichogramma japonicum*, Ashmead, *N. Y. ent. Soc.*, 12 : 165.

1911 *Neotrichogramma japonicum*, Girault, *Can. Ent.*, 43 : 38-39.

1964 *Trichogramma japonicum*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 334.

1971 *Trichogramma japonicum*, Nagarkatti & Nagaraja, *Bull. ent. Res.*, 61 : 22.

Male Body dull yellow; thorax and abdominal tergites black; antennal hairs long, sharply tapering, the longest about 3.50 times the maximum thickness of flagellum; fringe on fore wings about 0.20 times wing width; fringe on outer margin subequal to the ones on tornus; genitalia : dorsal expansion of gonobase extending slightly beyond the side of genitalia; chelate structure far below the level of tips of gonoforceps; median ventral projection inconspicuous, the entire region highly chitinised; median chitinised ridge paired, extending to about 0.66 of the genitalia, aedeagus distinctly longer than apodemes, both together equal or very slightly longer than hind tibiae.

Female : Body dull brownish-yellow; sclerites black; antennae clavate, with few short setae on flagellum; ovipositor nearly 1.50 times longer than hind tibiae.

Type locality : Japan

Distribution : India, Japan, Malaysia, Philippines, Thailand, Chosen, Taiwan, Indonesia (Java), Burma and China

Hosts *Chilo suppressalis*, *Lampides boeticus*, *Naranga aenescens* Moore, *Parnara guttata*, *Scripophagus* sp., *Sepedon sauteri*, *Susmia exigua*, *Trichoplusiani* and *Tryporyza incertulas*

Trichogramma minutum Riley

(Fig. 328)

1871 *Trichogramma minutum*, Riley, *Third annual report in the noxious, beneficial and other insects of the State of Missouri*, 157-158.

1879 *Trichogramma pretiosa*, Riley, *Canad. Ent.*, 11 : 161.

1885 *Trichogramma odonatae*, Howard, *Ent. Amer.*, 1 : 117.

- 1895 *Trichogramma intermedium*, Howard : In Scudder Butterflies of eastern US and Canada, 1872.
 1904 *Trichogramma albipes*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360.
 1906 *Trichogramma pretiosanigra*, Girault, *Canad. Ent.*, 38 : 82.
 1911 *Trichogramma euproctacidis*, Girault, *Trans. Am. ent. Soc.*, 37 : 46.
 1938 *Trichogramma minutum*, Mani, *Cat. Indian Ins.*, 23 : 137.
 1953 *Trichogramma minutum*, Flanders, *Ann. Soc. Ent., Amer.*, 46 : 85.
 1960 *Trichogramma minutum*, Quednau, *Mitt. Biol. Bund. Land. Forstw.*, 100 : 11-50.
 1964 *Trichogramma minutum*, Subba Rao & Chawla, *Indian J. Ent.*, 26 : 334, 339.
 1971 *Trichogramma minutum*, Nagarkatti & Nagaraja, *Bull. ent. Res.*, 61 : 23.
 1979 *Trichogramma minutum*, Krombein *et al.*, *Hymen. N. America* 1 : 1039.

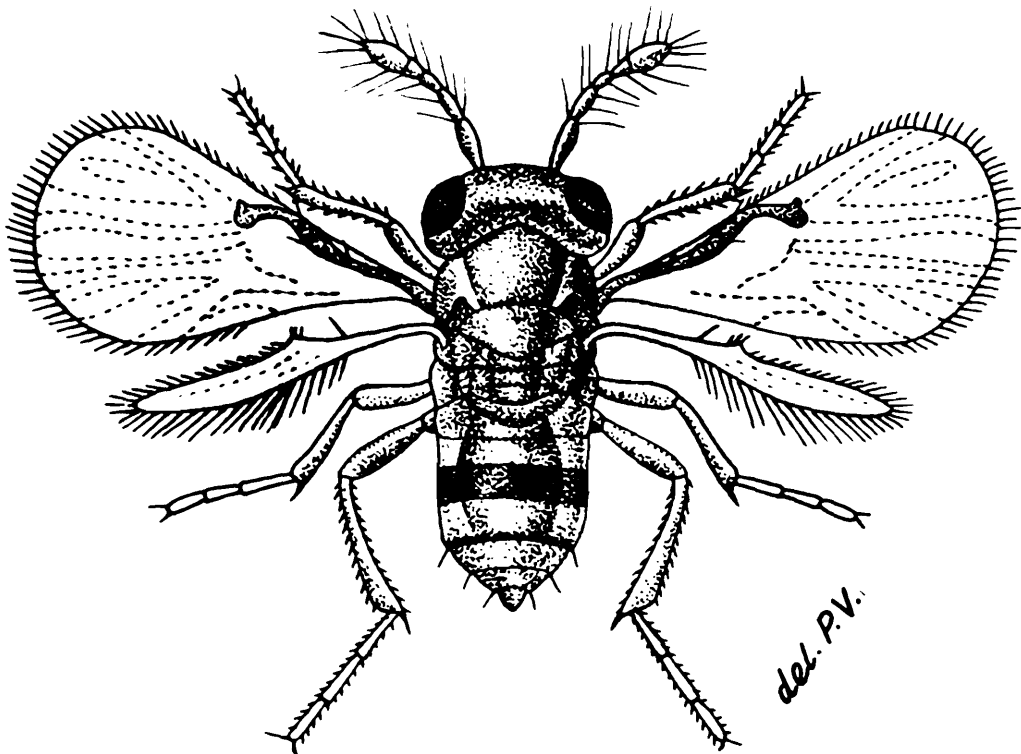


FIG. 328. *Trichogramma minutum* Riley, female.

Male : Body pale yellow, scutum, parapsides and abdomen black; antennal hairs finely tapering and moderately long, the longest about 2.50 times the maximum thickness of flagellum; fore wings with fringe on tornus about 0.60 of wing width; genitalia dorsal expansion of gonobase moderately chitinized, with rounded sides and marked constriction basally; chelate structure well below of level of tips of gonoforceps; median ventral projection distinct, pointed and located below the level of chelate structure, median chitinized ridges paired, extending anteriorly to about 0.66 of the length of genitalia; aedeagus longer than apodemes, both together shorter than hind tibiae.

Female : Body yellow, with dark pigmentation; antennae clavate, with few short setae on flagellum; ovipositor about 1.50 times the hind tibiae.

Type locality America : USA

Distribution : Quednau (1960) lists USA, Canada and Southern Russia

Hosts : *Alabama argillacea*, *Amorbia essigana* Busck, *Argyrotaenia velutinana*, *Choristoneura fumierana*, *Cydia molesta*, *C. pomonella*, *Danaus plexippus*, *Heliothis zea*, *Hemerocampa pseudotsugata* and *Limenitis archippus*

Uscana Girault

1911 *Uscana*, Girault, *Trans. Amer. ent. Soc.*, 37 : 22.

1924 *Bruchoctonus*, Grese In : *Korabs Satav Admin. St. Assoc. Sugar Indust. Bull.*, 7 : 116.

1979 *Uscana*, Krombein *et al.*, *Hymen. N. America*. 1 : 1042.

Type-species *Uscana semifumipennis* Girault

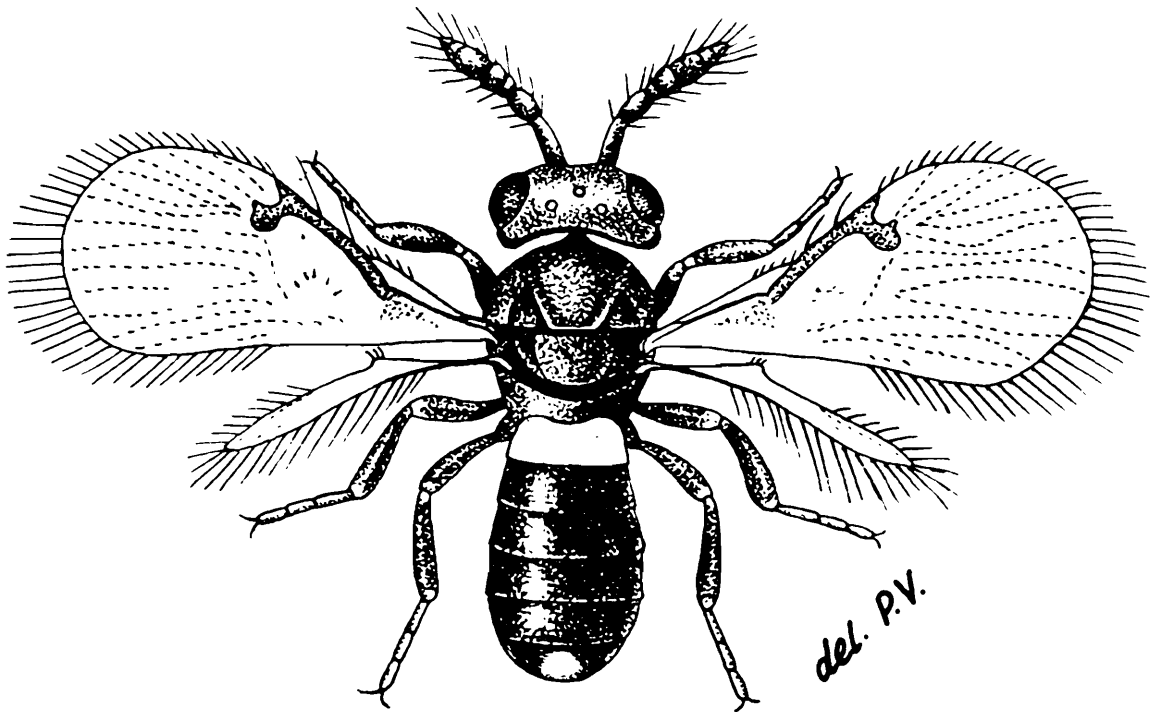


FIG. 329. *Uscana semifumipennis* Girault, female.

Uscana semifumipennis Girault

(Fig. 329)

1911 *Uscana semifumipennis*, Girault, *Trans. Amer. ent. Soc.*, 37 : 23.

1935 *Chaetostricha mukerjii*, Mani, *Rec. Indian Mus.*, 37 : 337.

1979 *Uscana semifumipennis*, Krombein *et al.*, *Hymen. N. America*, 1 : 1042.

Female/Male : Length 0.40-0.50 mm. Body generally dark brownish to black.

Head deeply and broadly striate in front and behind; width subequal to 0.50 of body length; antennae less than 0.33 of body, brown, densely clothed with long fine setae; stout, with 7 segments : 1.1.1.1.3; scape somewhat attenuated beyond the basal 0.50; pedicel about 0.66 of scape, apically 2 times as wide as at base; annellus moderately stout; funicular segment about 0.75 of pedicel and slightly slender basally; club about 2 times pedicel, gradually tapering to the rounded tip, more slender than the funicle, triarticulate, the basal 2 segments subequal, apical segment slightly more slender and longer, covered by longer setae than other segments; ocellular space subequal to ocellar diameter; thorax about 0.50 of body; mesonotum and scutellum smooth; scutellum about 0.60 of mesonotum; legs moderately setose; mostly brownish-black except the dirty white or pale brown bases and tips of femora and tibiae; fore wing about 2 times as long as wide; vein *sm* about 2 times *m*.

Type locality : USA

Distribution : USA, Hawaii, India

Hosts : Bruchid eggs : *Acanthoscelides albosutellatus*, *Althaeus hibisci*, *Callosobruchus maculatus*, *Stator limbatus*.

Aprobosca Westwood

- 1878 *Aprobosca*, Westwood, *Trans. Linn. Soc. London* (Zool.), 1 : 592.
 1904 *Aprobosca*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360.
 1909 *Aprobosca*, Schmiedeknecht, *Gen. Ins.*, 97 : 487.
 1938 *Aprobosca*, Mani, *Cat. Indian Ins.*, 23 : 141.

This genus is separated from other genera by the antennae having only 3 segments; scape, pedicel and long unsegmented club; wing with short fringe, only in front; vein *m* short about 2 times *st*; otherwise the genus resembles *Trichogramma*.

Type-species *Aprobosca erosicornis* Westwood

Aprobosca erosicornis Westwood

- 1878 *Aprobosca erosicornis*, Westwood, *Trans. Linn. Soc. London* (Zool.), 1 : 593.
 1909 *Aprobosca erosicornis*, Schmiedeknecht, *Gen. Ins.*, 97 : 487.
 1938 *Aprobosca erosicornis*, Mani, *Cat. Indian Ins.*, 23 : 141.

Type locality : Ceylon

Megaphragma Timberlake

- 1924 *Megaphragma*, Timberlake, *Proc. Hawaiian ent. Soc.*, 5 : 412.
 1932 *Sethosiella*, Kryger, *Bull. Ent. Egypt*, 38.

- 1939 *Megaphragma*, Ghesquiere, *Rev. Zool. Bot. Afr.*, 35 : 39.
 1970 *Megaphragma*, De Santis, *Rev. Soc. ent. Arg.*, 32 : 69.
 1979 *Megaphragma*, Krombein *et al.*, *Hymen. N. America*, 1 : 1034.

Female : Head thin fronto-occipitally, frontovertex somewhat wider than 0.33 of head; eyes large, gena short, sides of gena gibbously convergent on the mouth; ocelli absent; antennae inserted very high on face between eyes, closer to the occipital margin than to mouth, with 6 segments; scape compressed, but not very wide; pedicel large, pyriform, reduced apically, thicker apically than scape; funicle with minute annellus; club as long as the rest of antennae, with 3 segments, strongly fusiform; basal segment about 2 times as long as thick, but becoming thicker apically; second segment about 2 times as long and 3 times as thick the first segment and stoutest just beyond the middle; terminal segment strongly conical, almost equal to the preceding segment, with longitudinal chitinous ridges; mandibles bidentate, acute; maxillary palpi uniarticulate, elongate; parapsidal furrows developed; scutellum 2 times as wide as long, very broadly rounded apically; abdomen broadly sessile, slightly narrower than thorax and a little longer, tip narrowly rounded; ovipositor not exerted; femora stout, compressed; fore tibiae enlarged; middle and hind tibiae and all tarsi cylindrical, slender; fore wings resembling Mymarid wings, linear, about 7 times as long as wide with long marginal fringe; venation reaching middle of front margin; veins *sm* and *m* subequal; hind wings extremely narrow, rounded apically.

Type-species : *Megaphragma mymaripenne* Timberlake

Known from Africa, America and India, hosts include *Heliothrips*, *Leucothrips*, *Panchaetothrips* and *Retithrips*.

Members of this genus, being parasites in the eggs of thrips, are thought to be the smallest of all insects; length of only 0.17-0.18 mm. Some *Alaptus* Haliday only 0.20mm, much more slender

***Megaphragma longiciliatum* Subba Rao**

- 1969 *Megaphragma longiciliatum*, Subba Rao, *Proc. R. ent. Soc. London*, (B) 38 (7-8) : 114.

Female : Length 0.25 mm. Head, thorax and abdomen yellow; mesoscutum and scutellum deep yellowish-brown; eyes black; antennae and legs pale yellow; wings hyaline.

Head in front triangular; gena short; ocelli almost in a straight line; antennae inserted high on face with 6 segments; scape compressed, reaching vertex; pedicel pyriform, slightly less than 0.50 of scape, much thicker than the following 2 segments; annellus minute, much thicker than long, club with 3 segments, longer than thick, cylindrical; middle segment conical, with 2 sensoria and 4 long setae, with the tips not reaching beyond tip of third segment; terminal

segment conical, with a few small setae; 4 chitinous sensoria project beyond the tip of terminal club segment.

Fore wings nearly 7.50 times as long as wide; with about 8 minute setae in an irregular median longitudinal row on apical 0.50 beyond venation; vein *m* as long as *sm*; vein *st* short, stubby with a single minute seta; marginal fringe of 25 hairs long, the first 3 originating at posterior margin opposite to vein *st*, rather short, the rest progressively longer, those at on both sides of apex about 4.50 times wing width; 3 very minute setae between the long dorsal margin setae and vein *st* on dorsal border; hind wings exceedingly narrow, sub-pedunculate, triangularly widened at the hooklets, apex rounded; discal cilia absent; fringe of 11 setae, beginning on posterior margin beyond hooklets and terminating at apex; fringe setae slightly shorter than those of fore wing; fore tarsi shorter than fore tibiae; hind tarsi and middle legs shorter than the corresponding tibiae.

Ovipositor not exerted.

Type locality : Bangalore

Host : *Frankliniella lilivora* Takahashi on *Polyanthes tuberosa* Linn.

Paracentrobia Howard

- 1897 *Paracentrobia*, Howard, *J. Linn. Soc. London*, (Zool.), 26 : 178.
 1904 *Paracentrobia*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 360.
 1909 *Paracentrobia*, Schmiedeknecht, *Gen. Ins.*, 97 : 488.
 1911 *Abbella*, Girault, *Trans. American ent. Soc.*, 37 : 9.
 1911 *Ittys*, Girault, *Trans. American ent. Soc.*, 37 : 25.
 1911 *Branchistella*, Girault, *J.N.Y. ent Soc.*, 19 : 184.
 1912 *Jassidophthora*, Perkins, *Hawaiian Sugar Planters' Assoc. Expt. Sta. Div. Ent. Bull.*, 10 : 17.
 1946 *Abbellisca*, Ghesquiere, *Rev. Zool. Bot. Africanes*, 39 : 371 (New name unnecessarily proposed)
 1968 *Paracentrobia*, Doutt & Viggiani, *Proc. Calif. Acad. Sci.*, (4) 35 : 562.
 1979 *Paracentrobia*, Krombein *et al.*, *Hymen. N. America*, 1 : 1035.

Antennae with 6 segments : 1.1.1.0.3; without annellus; fore wing with short fringe on outer margin; veins *sm* and *st* form together a short arch; postscutellum distinct, with a triangular process.

Type-species : *Paracentrobia punctata* Howard

Paracentrobia (Paracentrobia) cassidavora Subba Rao

(Fig. 330)

- 1974 *Paracentrobia (Paracentrobia) cassidavora*, Subba Rao, *Mushi*, 48 (1) : 2.

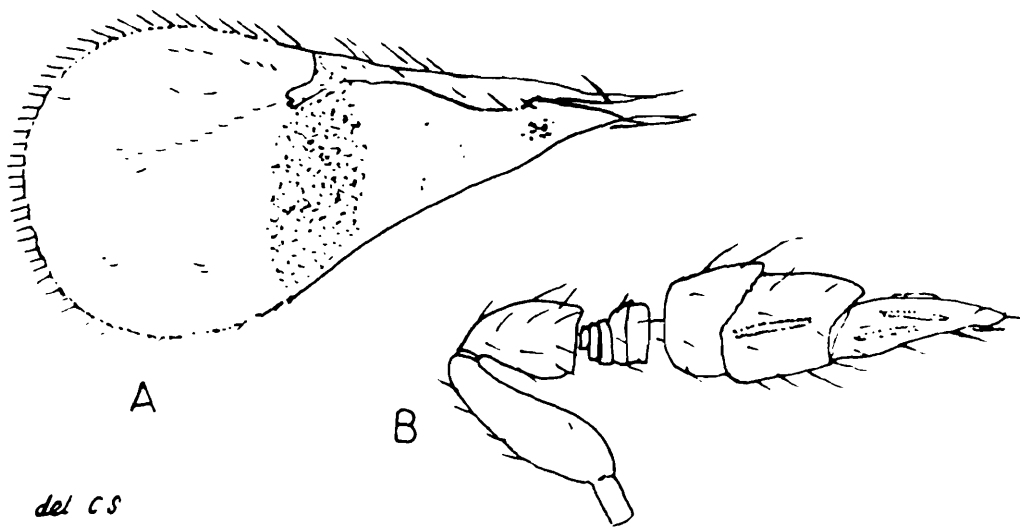


FIG. 330. *Paracentrobia (Paracentrobia) cassidavora* Subba Rao, female; A. Fore wing; B. Antenna. (Modified from Subba Rao).

Female : Eyes red; vertex yellow, face brown; pronotum brown; mesoscutum yellow with 2 vertical brown patches; scutellum pale white; propodeum and abdomen dark brown; antennae except club yellow; pedicel dorsally and club brown; fore wing hyaline in the distal 0.50, smoky in the proximal 0.50, with a dark band across almost in the middle.

Antennae short, stout; club very long, nearly 2 times as long as pedicel and funicular segments combined; segments ratio 16 : 9 : 5 : 26.

Thorax short, quadrate; mesoscutum microscopically reticulate, scutellum striate; marginal fringe short; hind wing with 3 rows of discal cilia of which front 2 rows dark closely arranged cilia and hind row with delicate sparsely arranged cilia.

Abdomen longer than head and thorax combined; ovipositor slightly exerted.

Male : Like female; Kryger (1932, *Bull. Soc. Ent. Egypte*, 16 : 38-44), pair of sausage-shaped appendages connected with the reproductive organ, bulbous.

Type locality : Pakistan

Host : Eggs of *Cassida indicola* on *Convolvulus arvensis*

***Pseudobrachysticha semiaurea* Girault**

1915 *Pseudobrachysticha semiaurea*, Girault, *Canad. Ent.*, 47 : 233.

1922 *Pseudobrachysticha semiaurea*, Gahan, *Proc. US nat. Mus.*, 61 (24) : 21.

Female : Length 0.60 mm. Head, thorax and legs pale yellow; abdomen black; wings distinctly infuscate from base to a little beyond vein *st*, darkest behind vein *m*; apically; broadly hyaline.

Head and thorax finely granular; ocellocular space subequal to ocellar diameter; antennae short; scape subcylindrical, slightly shorter than club; pedicel stout, slightly longer than thick; annellus very minute, almost invisible; first funicular segment as stout as pedicel, transversely wedge-shaped; second funicular segment subequal to scape, acuminate apically, with an obscure suture a little beyond the basal 0.50.

Parapsidal furrows deep; scutum about as long as wide; scutellum transverse, 2 times as wide as long, rounded apically; fore wing short, broad, squarely truncate apically and only rounded at hind angle; vein *m* equal to *sm*, vein *st* thick extending to apex; disc mostly with only a row of 2-4 hairs from the tip of vein *st* to the apical margin and another shorter row of 2-4 hairs close to the hind margin; marginal fringe uniformly long, about 0.33 of wing width, extending to hind angle and disappearing thereafter; terminal tarsal segment the longest; tibial spurs distinct.

Abdomen subequal to rest of body, broadly sessile, narrowed gradually to tip; ovipositor concealed.

Male : Length 0.48 mm. Similar to female, but the scape a little thicker and body colour darker.

Type locality : Pusa (Bihar)

Host : *Hilda bengalensis* Distant

Note : Since this work was sent to press, Hayat & Subba Rao (1986 *Orient. Ins.*, 20 : 193-208) have published an excellent review-catalogue of the family Trichogrammatidae. The student should invariably follow that work in this difficult family. — M.S. Mani

FAMILY MYMARIDAE

- 1833 *Mymares*, Haliday, *Ent. Mag.*, 1 : 341.
 1839 *Mymaridae*, Haliday, *Hym. Synop.*, 11.
 1840 *Mymarides*, Westwood, *Intr. Modern Class. Ins.*, 2 (Synop.) : 78.
 1846 *Mymaridae*, Walker, *Ann. Mag. nat. Hist.*, 18 : 49.
 1856 *Mymaroidae*, Förster, *Hym. Stud.*, 2 : 20, 27, 116.
 1897 *Mymaridae*, Ashmead, *Proc. ent. Soc. Washington*, 4 : 236.
 1904 *Mymaridae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 361.
 1909 *Mymarinae*, Schmiedeknecht, *Gen. Ins.*, 97 : 488.
 1915 *Mymaridae*, Girault, *Mem. Queensland Mus.*, 3 : 96.
 1927 *Mymaridae*, Gahan, *Pan-Pacific Ent. San Francisco*, 3 : 180.
 1932 *Mymaridae*, Dozier, *J. Dep. Agric. Puerto Rico, San Juan.*, 16 : 81.
 1933 *Mymaridae*, Close Wats, *Micr. Rec.*, 29 : 3.
 1938 *Mymaridae*, Mani, *Cat. Indian Ins.*, 23 : 141.
 1942 *Mymaroidea*, Ghesquiere, *Rev. Zool.-bot. Afr.*, 36 : 319.
 1942 *Lymaenonidae*, Ghesquiere, *Rev. Zool.-bot. Afr.*, 36 : 319.
 1948 *Mymaridae*, Debauche, *Mem. Mus. Hist. Nat. Belg.*, 108 : 7.

- 1948 *Mymarommidae*, Debauche, *Mem. Mus. Hist. Nat. Belg.*, 108 : 7.
 1950 *Mymaridae*, Risbec, *Trav. Lab. Ent. Sec. Soudanais Rech. Agron.*, 11 : 512.
 1961 *Mymaridae, Signiphoridae*, Annecke & Doutt, *Ent. Rev. Dept. Agric. Tech. Serv. Repb. S. Africa*, 5 : 2.
 1963 *Mymaridae*, Peck, *Canad. Ent. (Suppl.)*, 30 : 18.
 1964 *Mymaridae*, Peck, Boucek & Hoffer, *Mem. ent. Soc. Canada*, 34 : 112.
 1969 *Mymaridae*, Graham, *Bull. Ent. Mus. Ent.*, (Suppl.), 16 : 12.
 1972 *Mymaridae*, Taguchi, *Kontyu*, 40 (4) : 223.
 1973 *Gonatoceridae*, Mani & Saraswat, *Mem. School Ent.*, 2 : 78.
 1975 *Mymaridae*, Yoshimoto, *Cant. Ent.*, 107 : 502.
 1979 *Mymaridae*, De Santis, *Catalago de Los Himenopteros Calcidioideo de America al Sur de Los Estados Unidos* : 360.
 1979 *Mymaridae*, Krombein *et al.*, *Hymen. N. America*, 1 : 1022.
 1983 *Mymaridae*, Subba Rao & Hayat, *Cont. Amer. ent. Inst.*, 20 : 125, 127.

Head transverse with raised carinate lines, best seen in living material; antennae at the most with 13 segments, without annellus; scape minute, mostly compressed; in female antennae usually with a greatly swollen ovate club, rarely club biarticulate; in male antennae filiform; mandibles tridentate; palpi vestigial; pronotum usually large, rounded or conically produced in front; wings narrow; more or less petiolate basally; margin with long fringed hairs, almost without trace of any veins; vein *st* always absent; vein *m* mostly punctiform; legs long and slender; tarsi with 4 or 5 segments; abdomen petiolate or sessile; body generally black, with yellow markings. Species probably the smallest insects; they are mostly parasitic on eggs of various insects, including some aquatic hosts.

KEY TO SUBFAMILIES

- | | |
|---|------------------|
| 1. Abdomen sessile; mesopostphragma plainly projecting into abdomen | <i>Alaptinae</i> |
| Abdomen petiolate; mesopostphragma not projecting into abdomen | <i>Mymarinae</i> |

SUBFAMILY ALAPTINAE

- 1929 *Alaptinae*, Girault, *N. American Hymenoptera Mymaridae*, (privately printed) : 29.
 1948 *Lymaenonini*, Debauche, *Mem. Mus. Roy. Hist. Nat. Belg.*, 108 : 1-248.
 1961 *Alaptinae*, Annecke & Doutt, *Ent. Mem. Dept. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1979 *Alaptinae*, Krombein *et al.*, *Hymen. N. America*, 1 : 1022.
 1983 *Alaptinae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 128.

Abdomen sessile; mesopostphragma plainly projecting into the abdomen.

KEY TO TRIBES

- | | |
|--------------------------|-----------------|
| 1. Tarsi with 4 segments | <i>Anagrini</i> |
| Tarsi with 5 segments | <i>Alaptini</i> |

TRIBE ANAGRINI

- 1929 *Anagrini*, Girault, *N. American Hymenoptera Mymaridae*, (privately printed) : 29.
 1961 *Anagrini*, Annecke & Doutt, *Ent. Mem. Dep. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1979 *Anagrini*, Krombein *et al.*, *Hymen. N. America*, 1 : 1022.
 1983 *Anagrini*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 128.

Tarsi with 4 segments. Genera included : *Anagrus* Haliday, *Platypatasson* Oglobin, *Stethynium* Oglobin, Enock and *Platystethynium* Oglobin *Anaphes* Haliday, *Anthemus* Howard

KEY TO GENERA

- | | |
|--|--------------------------------|
| 1. Antennae in female with 8, in male 9 segments | <i>Anthemus</i> Howard |
| Antennae in female with 9, in male 12-13 segments | 2 |
| 2. Antennae in male with 12 segments; vein <i>m</i> long, somewhat thickened only apically | <i>Anaphes</i> Haliday |
| Antennae in male with 13 segments | 3 |
| 3. Club solid; postscutellum with a pair of distinct plates; in male antennae with 13 segments | <i>Anagrus</i> Haliday |
| Club with 2 or 3 segments; postscutellum with a single plate | 4 |
| 4. Club with 2 segments; body dorsoventrally flattened | <i>Platypatasson</i> Oglobin |
| Club with 3 segments | 5 |
| 5. Club with oblique sutures; body not flattened | <i>Stethynium</i> Enock |
| Club with perpendicular sutures; body strongly flattened | <i>Platystethynium</i> Oglobin |

Anaphes Haliday

- 1833 *Anaphes*, Haliday, *Ent. Mag.*, 1 : 269, 346.
 1904 *Anaphes*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 363.
 1909 *Anaphes*, Schmiedeknecht, *Gen. Ins.*, 97 : 499.
 1913 *Clinomymar*, Kieffer, *Bull. Soc. Agr. Alger.*, 4 : 100.
 1946 *Synanaphes*, Soyka, *Zentbl. Gesamtgeb. Ent.*, 1 : 181.
 1946 *Ferrierella*, Soyka, *Zentbl. Gesamtgeb. Ent.*, 1 : 182.
 1949 *Anaphes*, Gahan, *J. Washington Acad. Sci.*, 39 (6) : 204-205.
 1950 *Stammeriella*, Soyka, *Ent. Nachr. Burgdorf.*, 3 : 120.
 1979 *Anaphes*, Krombein *et al.*, *Hymen. N. America*, 1 : 1028.

Antennae in female with 9, in male 12 segments; scape in female compressed, narrow at both ends; pedicel transverse; first funicular segment very short, other funicular segments subequal, gradually becoming thicker apically; terminal segment stout, elongate-ovate; funicle in male filiform; segments subequal; pro- and mesonotum very short; scutellum ovate; fore wing somewhat broad, fringe equal

to wing width; vein *m* distinct and rather long, hind wing rather linear, with long fringe; tarsal segments 4; abdomen shortly ovate, sessile; ovipositor hardly exerted; body generally black with yellow or brown antennae and legs.

Type-species : *Anaphes punctum* (Shaw)

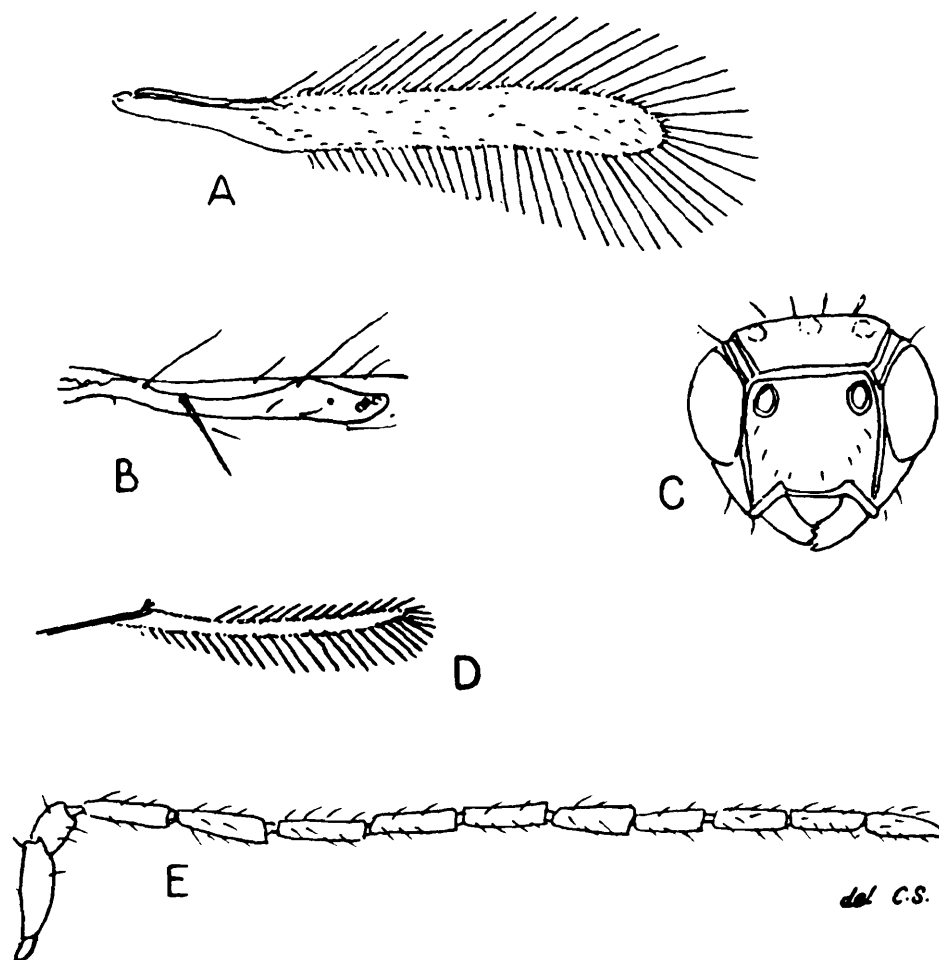


FIG. 331. *Anaphes himalayanus* Mani & Saraswat, male : A. Fore wing; B. Venation; C. Head in front view; D. Hind wing; E. Antenna.

Anaphes himalayanus Mani & Saraswat

(Fig.331)

1973 *Anaphes himalayanus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 101.

Female Length 1.24 mm. Body black; head black; antenna shiny black, except yellowish-brown scape and pedicel; legs yellowish-brown; wings faintly brown, darker behind vein *st*; veins dark brown, abdomen black.

Head in front length to width 91 : 100, vertex with fine transverse reticulate striations; face and gena with coarse punctae; ocellular space about 2.80 times ocellar diameter and equal to front ocellar space; antenna with 9 segments; radicle 0.33 of scape; scape long, cylindrical, 3 times radicle and 5.30 times longer than thick; pedicel 2.30 times as long as thick, 0.33 of scape and about equal to radicle; first funicular segment longest, 4.50 times longer than thick and about 1.20 times pedicel, also equal to following 2.25 funicular segments combined; segments 2-6 subequal; second segment subconical, 1.70 times as long as thick and a little less than 0.50 of the first; third 1.30 times as long as thick; fourth 1.20 times as long as thick; fifth 1.10 times as long as thick; sixth almost quadrate and as long as thick; club very stout, about 3.50 times longer than thick and nearly equal to preceding 5.50 funicular segments combined.

Pronotum and mesonotum with fine reticulate microsculpture; fore wing 4 times as long as wide, fringe on hind margin about 0.66 of maximum width; hind wing to fore wing 94 : 100; fore coxa 2 times as long as thick; femur 5.50 times longer than thick and 1.80 times coxa, with a long stout spine ventrally a little before the tip; tibia to femur 6 : 7 and little less than 7 times longer than thick; tarsus slightly longer than tibia, metatarsus about 0.43 of tibia and 0.40 of tarsus, second segment 0.50 of metatarsus and equal to the third, fourth tarsal segment 1.20 times third; middle coxa 1.30 times as long as thick; femur slightly longer than fore femur, 6.70 times as long as thick and 2.60 times coxa; tibia 1.30 times femur, spur 7.25 times metatarsus; tarsus 0.80 of tibia, metatarsus little more than 0.33 of tarsus and little less than 0.33 of tibia, second segment 0.66 of metatarsus, third segment 0.75 of the second and nearly equal to the fourth; hind coxa 2 times as long as thick, with a long slender bristle; femur 6 times longer than thick and 2.20 times coxa; tibia 1.20 times femur, spur about 0.50 of metatarsus; tarsus 0.75 of tibia, metatarsus little less than 0.33 of tarsus, second segment little longer than 0.75 of metatarsus, third slightly shorter than second, fourth about equal to the third.

Abdomen subsessile, 0.50 mm, slightly less than 0.50 of body; ovipositor not exerted beyond the tip of abdomen.

Male : Length 0.80 mm. Body black; head brownish-black; antenna brown, scape and pedicel yellowish-brown; legs dark brown; wings subhyaline, brownish, veins brown; abdomen black.

Head viewed in front length to width 86 : 100; face and vertex with fine reticulate longitudinal striations; ocellular space 1.50 times ocellar diameter, front ocellar space about 1.70 times ocellar diameter; eye length to head length 62 : 100; antenna longer than body, slender, segments 12, cylindrical, antenna to body 5 : 4; scape 3.70 times as long as thick; pedicel 1.50 times as long as thick and little less than 0.50 of scape; first funicular segment

4.20 times longer than thick and little less than 2 times pedicel; segments 2-4 subequal and slightly longer than first; segments 5-8 subequal and a little shorter than fourth; ninth to the eighth segment 8 : 90; club nearly equal to the last funicular segment.

Pro- meso- and metanota reticulately sculptured; fore wing length to width 100 : 132, fringe on hind margin slightly less than 2 times maximum width of the wing; hind wing to fore wing length 91 : 100; fore coxa 1.80 times longer than thick; femur 4.50 times as long as thick and 1.80 times coxa; tibia little longer than femur and 9 times longer than thick; tarsus slightly shorter than tibia and equal to femur, metatarsus slightly more than 0.25 tarsus and 0.25 of the tibia, second segment about 0.75 of metatarsus, second segment and metatarsus combined about 0.50 of tarsus, third little shorter than second, fourth about equal to metatarsus and almost 1.50 times the third; middle coxae 1.30 times longer than thick; femur 6.40 times as long as thick and 2.60 times coxa; tibia 1.40 times femur; tibial spur about 0.40 of metatarsus; tarsus to tibia 4 : 5, metatarsus 0.28 of tarsus and about 0.25 of tibia, metatarsus and second segment combined a little over 0.50 of tarsus, second segment more than 0.75 of metatarsus, third slightly shorter than second and 0.75 of metatarsus; fourth segment more or less equal to metatarsus; hind coxa little more than 2 times as long as thick; femur 5.40 times longer than thick and little shorter than 2 times coxa; tibia 1.40 times femur; tibial spur equal to the mid tibial spur and little less than 0.33 of metatarsus; tarsus nearly 0.75 of tibia, metatarsus about 0.33 of tarsus and slightly less than 0.25 of tibia, second segment 0.75 of metatarsus, third 0.86 of the second, fourth about equal to second.

Abdomen slightly less than 0.50 of body.

Type locality : Northwest Himalaya : Dalhousie (Kalatop, Dhenkund)*

Anagrus Haliday

- 1833 *Anagrus*, Haliday, *Ent. Mag.*, 1 : 346.
 1864 *Pteratomus*, Packard, *Proc. Essex Inst.*, 4 : 137.
 1904 *Packardiella*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 363.
 1905 *Paranagrus*, Perkins, *Div. Ent. Bul. Hawaii. Sugar Planter's Assoc.*, 1 : 199.
 1911 *Anagrus*, Girault, *Trans. Amer. ent. Soc.*, 37 : 277, 289.
 1979 *Anargus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1022.
 1983 *Anagrus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

Antennae with 9 segments in female; scape longer than the following 2 segments combined; thicker apically than basally; third

* In a recent contribution in 1983 (*Contr. Amer. ent. Inst.*, 20 : 131) Subba Rao & Hayat have suggested that this species may have to be placed in *Anagroidea* Girault (1912 *Mem. Queensland Mus.*, 1 : 151.)

segment very short, the following segment subequal, terminal segment large, stout, elliptic, equal to the preceding 2 segments combined; in male with 13 segments, third segment shorter than the following; wings narrow, long; fringe long; vein *m* punctiform; tarsal segments 4; abdomen sessile, in female the tergites gradually becoming larger, subequal in male; ovipositor exerted; body usually yellow to brown.

Type-species : *Anagrus atomus* (Linnaeus)

Anagrus columbi Perkins

1905 *Anagrus columbi*, Perkins, *Rept. expt. Stn. Hawaii. Sug. Planter's Assoc. Div. Ent. Bull.*, 1 (6) : 198.

1983 *Anagrus columbi*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

I have not seen specimens of this species and I have no access to the original description by Perkins.

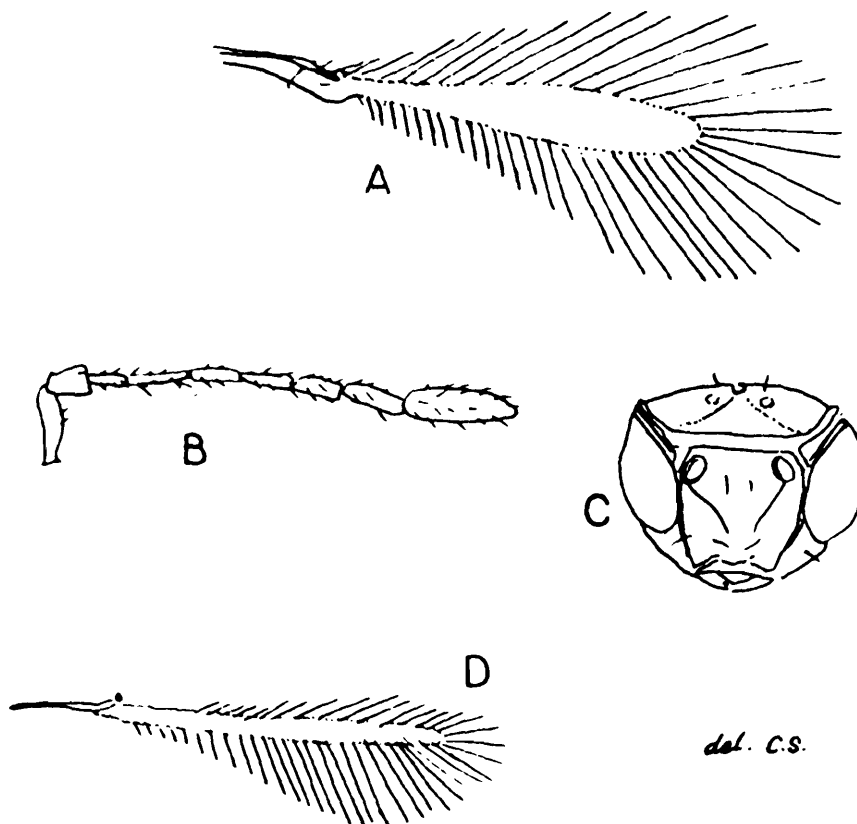


FIG. 332. *Anagrus dalhousieanus* Mani & Saraswat, female : A. Fore wing; B. Antenna; C. Head in front view; D. Hind wing.

Type locality : Ohio, USA (HSPA)

Distribution : USA : Ohio; India : Andhra Pradesh

Host *Sogatella furcifera* (Horwath)

Anagrus dalhousieanus Mani & Saraswat

(Fig.332)

1973 *Anagrus dalhousieanus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 104.

1983 *Anagrus dalhousieanus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

Female : Length 0.80 mm. Body brownish-black; head dark brown; antenna brown; legs yellowish-brown; wings subhyaline, veins brown; abdomen, ovipositor, pronotum and mesonotum dark brown; metanotum and propodeum brownish-yellow.

Head in front length to width 87 : 100; ocellular space about 5 times ocellar diameter, front ocellar space slightly more than ocellar diameter; eye length to head length 68 : 100; face and vertex with reticulate microsculpture; antenna about equal to body, with 9 segments slender; scape about 3 times longer than thick; pedicel 1.30 times as long as as thick and 0.50 of scape; first funicular segment equal to pedicel and 3 times longer than thick; third segment 0.88 of second and 5.60 times as long as thick; fourth equal to third and 4.60 times as long as thick; fifth 3.25 times longer than thick, slightly shorter than fourth; segment 6 equal to the second and little over 3 times longer than thick; club stouter, 3.30 times as long as thick and equal to almost preceding 2 funicular segments combined.

Fore wings length to width 100 : 14, fringe on hind margin 2.50 times the maximum width, vein *m* punctiform; hind wing to fore wing 93 : 100; fore coxa 1.30 times as long as thick; femur 5.60 times as long as thick and 2.20 times coxa; tibia equal to femur; tarsus 1.40 times tibia, metatarsus 0.28 of tarsus and 0.40 of tibia, second segment about 0.75 of metatarsus; third a little longer than second and equal to the fourth; middle coxa 1.20 times as long as thick; femur 5.40 times as long as thick and 3 times coxa; tibia 1.60 times femur; tibial spur about 0.33 of metatarsus; tarsus 0.83 of tibia, metatarsus shortest, about 0.20 of tarsus and 0.16 of tibia, second segment 1.50 times metatarsus, second and metatarsus combined slightly less than 0.50 of tarsus, third slightly shorter than second and equal to the fourth; hind coxa about 2.40 times longer than thick, femur 4.60 times longer than thick and 1.30 times coxa; tibia about 1.60 times longer than femur; hind tibial spur little less than 0.50 of metatarsus; tarsus to tibia 13 : 15; metatarsus 0.22 of tarsus and about 0.20 of tibia, second segment 1.30 times metatarsus, second metatarsus combined about 0.50 of tarsus, third slightly more than 0.83 of the second the equal to the fourth.

Abdomen sessile, little wider than head and thorax, 0.50 of body; ovipositor not exerted.

Type locality : Northwest Himalaya : Dalhousie (Khajjiar)

Anagrus empoascae Dozier

1932 *Anagrus empoascae*, Dozier, *J. Dep. Agric. P. Rico*, 16 : 86.

1966 *Anagrus empoascae*, Subba Rao, *Indian J. Ent.*, 28 : 189.

1983 *Anagrus empoascae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

“*Male* : Length 0.58 mm; thorax 0.20; fore wing length 0.55mm, breadth 0.07 mm. Body generally brown; abdominal tergite darker

Antennae compressed and long; sensory ridges absent in first 4 funicular segments; venation similar to that of female except for the longer vein *st*.”

Type locality : Haiti

Distribution : India : Delhi; Haiti : Damien

Host : *Empoasca devastans* Distant on leaves of the bean plant.

Anagrus flaveolus Waterhouse

1913 *Anagrus flaveolus*, Waterhouse, *Bull. ent. Res.*, 4 : 87.

1983 *Anagrus flaveolus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

Antennae with 4-9 segments pale grey; third segment very small, a little longer than thick, 0.50 of second segment; fourth segment slender, second and third equal; fifth segment 0.25 times shorter equally thick, segments 6-8 subequal to fifth but slightly thicker; wings hyaline behind vein; 9 times as long as wide; fringe to wing width 132 : 60 mm; hind wing without cilia except for 3-4 at tip.

Type locality : Trinidad

Distribution : India : Orissa, Andhra Pradesh; Pakistan; Sri Lanka; West Malaysia; Philippines; Trinidad

Host : *Nilaparvata lugens* Stal; *Perigynus maidis*

SPECIES INCERTAE SEDIS

Anagrus optabilis (Perkins)

1905 *Paranagrus optabilis*, Perkins, *Bull. Hawaii. Sug. Planters' Assoc.*, 1 : 199.

1938 *Paranagrus optabilis*, Mani, *Cat. Indian Ins.*, 23 : 152.

1983 *Anagrus optabilis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

This species is not known to me.

Type locality : Queensland, Australia

Distribution Fiji, Australia; India : Andhra Pradesh, Orissa

Host : *Perkinsiella saccharicida* Kirkaldy (Brown planthopper)

Anagrus perforator (Perkins)

1905 *Paranagrus perforator*, Perkins, *Rept. Expt. Stn. Hawaii. Sug. Planter's Assoc. Div. Ent. Bull.*, 1 (6) : 199.

1983 *Anagrus perforator*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

This species is not known to me.

Type locality Fiji

Distribution : Fiji; Philippines; India : Orissa

Hosts *Nilaparvata lugens* Stal; *Tarophagus proserpina* (Kirkaldy)

Stethynium Enock

1909 *Stethynium*, Enock, *Trans. R. ent. Soc. London*, 1909 : 452.

1979 *Stethynium*, Krombein *et al.*, *Hymen. N. America*, 1 : 1023.

1983 *Stethynium*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Body not depressed; club with 3 segments, separated by oblique sutures; postscutellum with only a single plate; antennae in male with 13 segments and in female 9 segments.

Type-species : *Stethynium triclavatum* Enock

Stethynium empoascae Subba Rao

1966 *Stethynium empoascae*, Subba Rao, *Indian J. Ent.*, 28 : 189.

1983 *Stethynium empoascae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Female Body golden-yellow; scutellum deep orange; abdomen with transverse brown bands; legs light yellow; eyes dark brown.

Head almost cubical, as wide as thorax, triangular in front; carinae well developed; antennae short, with 9 segments; scape short, almost 2 times pedicel, dilated; pedicel short; first funicular segment cylindrical, shorter than second but equal to pedicel; second segment longest; third shortest; segments 4-6 almost equal and thicker than the preceding segments; club ovoid, 3 segmented, segments very thick, strongly oblique, with sensory ridges.

Fore wing hyaline, distinctly dilated in distal 0.33; apex broadly pointed; vein *m* long, curved, touching the margin at origin of proximal and distal macrocheta, vein *st* shorter than *m*, with 3 prominent round sensillae; proximal sensilla distal to distal

macrocheta short, weak; hypochaeta strong, curved discal pubescence regular with about 16-18 rows at the broadest point of the wing; marginal ciliation regularly increasing in length on the inner margin from the wing base to the broadest point of the wing and shortest at apex; hind wing narrow, almost parallel-sided, except at pointed apex; marginal fringe long.

Abdomen long, conic ovate; ovipositor issuing from base of abdomen, extending beyond the tip.

Male Like female; antennae 13 segmented, compressed; sensory ridges present only on last 9 segments.

Type locality : Delhi

Host : *Emposca devastans* Distant

TRIBE ALAPTINI

- 1929 *Alaptini*, Girault, *N. American Hymenoptera Mymaridae*, (privately printed) : 29.
 1961 *Alaptini*, Annecke & Doutt, *Ent. Mem. Dep. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1979 *Alaptini*, Krombein *et al.*, *Hymen. N. America*, 1 : 1023.
 1983 *Alaptini*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 128.

Tarsi with 5 segments; abdomen sessile; mesopostphragma distinctly projecting into abdomen.

KEY TO GENERA

1. Funicle with 5 segments; suctellum and postscutellum not strongly sculptured; vein *m* short; hind margin of fore wing excised beneath the venation; in male antennae with 10 segments *Alaptus* Westwood
 Funicle with 6 segments; scutellum and postscutellum strongly sculptured; vein *m* long; hind margin of fore wing normally rounded; male unknown. *Litus* Haliday

Alaptus Westwood

- 1839 *Alaptus*, Westwood, *Intr. modern Class. Ins.*, 2 : 79.
 1904 *Alaptus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Alaptus*, Schmiedeknecht, *Gen. Ins.*, 97 : 493.
 1912 *Parvulinus*, Mercet, *Bol. Soc. Esp. Hist. Nat.*, 12 : 331.
 1917 *Metalaptus*, Malenotti, *Redia*, 12 : 339.
 1938 *Alaptus*, Mani, *Cat. Indian Ins.*, 23 : 143.
 1949 *Alaptus*, Debauche, *Cong. Belg., Inst. Parcs. Nat. Expl. Parc. Nat. Albert. Miss. de Witte*, 49 : 9.
 1979 *Alaptus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1023.
 1983 *Alaptus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

Antennae in female with 8 and in male 10 segments; vein *m* not reaching the middle of front margin in fore wing; tarsal segments 5;

abdomen sessile; females resemble *Limacis* in number of antennal segments; males with *Camptoptera*; shorter vein *m* separates from *Limacis* and sessile abdomen from *Camptoptera*.

Type-species : *Alaptus minimus* (Westwood)

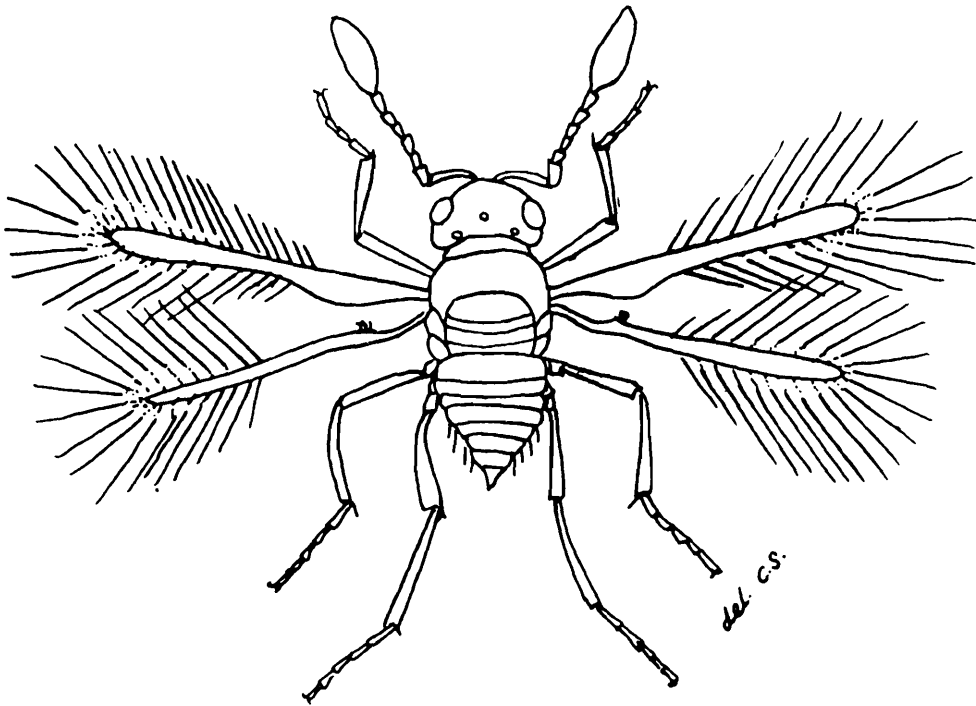


FIG. 333. *Alaptus delhiensis* Mani, male.

***Alaptus delhiensis* Mani**

(Fig. 333)

1942 *Alaptus delhiensis*, Mani, *Indian J. Ent.*, 4 (2) : 160.

1983 *Alaptus delhiensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

Female : Length 0.25 mm. Body dark brown; head viewed from above length 0.50 of width; ocellocular space 2 times ocellar diameter; interocellar space 2.50 times ocellocular space; pedicel about 0.50 of scape; club relatively stouter than in *Alaptus ramakrishnai*, equal to funicle.

Type locality : Delhi

***Alaptus magnanimus* Annandale**

1909 *Alaptus magnanimus*, Annandale, *Rec. Indian, Mus.*, 3 : 299.

1938 *Alaptus magnanimus*, Mani, *Cat. Indian Ins.*, 23 : 143.

1983 *Alaptus magnanimus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

Female : Length 0.20 mm. Head above short and broad, anteriorly truncate; in front deep, eyes large, elongate oval, separated

by more than 3 times transverse diameter; lateral ocelli close to the inner margin of each eye and front ocellus in the middle of the vertex; a minute bristle in front of each lateral ocellus; antennae minutely hairy, with 9 segments (in male); scape subcylindrical, tapering slightly apically; second segment much shorter, pear-shaped, with the narrow end proximal; third and fourth segments subcylindrical, the latter shortest; other segments (5-9) pyriform, narrower at base than at tip, gradually increasing in size.

Pronotum transverse, angulate, almost linear, produced at either side, tip of the projection with a bunch of minute hairs; mesothorax much longer, transversely lozenge-shaped but with posterior angle replaced by a broad concavity; scutellum narrow, especially in front; the front margin depressed convex forwards; a single bristle on either side near centre; postscutellum imperfectly separated, transverse, band-like with a single bristle on either side; propodeum large, transverse, with the anterior margin sinuous and the posterior convex; fore wings long and slender, obliquely rounded apically; base very narrow becoming somewhat dilated; marginal fringe with 45 hairs, long becoming shorter towards the base of the wing on both margins, longest being rather less than 0.50 of wing; within the fringe, near the edge of the wing a row of minute bristle, and 2 similar bristles near the centre of the disc; on the anterior surface a single long bristle at the widest part of the wing; hind wing almost linear, very little dilated distally, tip narrowly rounded; fringe without inner row of bristles, consisting on the anterior margin of 5 short hairs followed distally by about 20 long one, and on the posterior margin of about 11 moderate hairs basally; basal 0.50 of the posterior margin bare; a minutely serrated ridge runs down the middle of the distal 0.50 of the wing; legs moderately long; femur, tibia and tarsus subequal; tarsi minutely hairy, with 5 subequal segments, claws 2 minute; middle and hind tibiae clothed with minute recumbent hairs and with a pair of small bristles at tip; middle legs with a single, longer bristle on the anterior surface.

Abdomen stout, globose with scale-like hairs laterally; first tergite with a single bristle on either side near the posterior margin; penultimate tergite with a pair of unequal bristles on either side, the longer bristle being posterior to and nearer the middle of the segment than the shorter one.

Male : Abdomen rounded; sides clothed with scale like hairs; first tergite with a pair of bristles; penultimate tergite with a pair of unequal bristles.

Type locality : Calcutta

***Alaptus ramakrishnae* Mani**

(Fig. 334)

1942 *Alaptus ramakrishnae*, Mani, *Indian J. Ent.*, 4 (2) : 159.

1983 *Alaptus ramakrishnae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

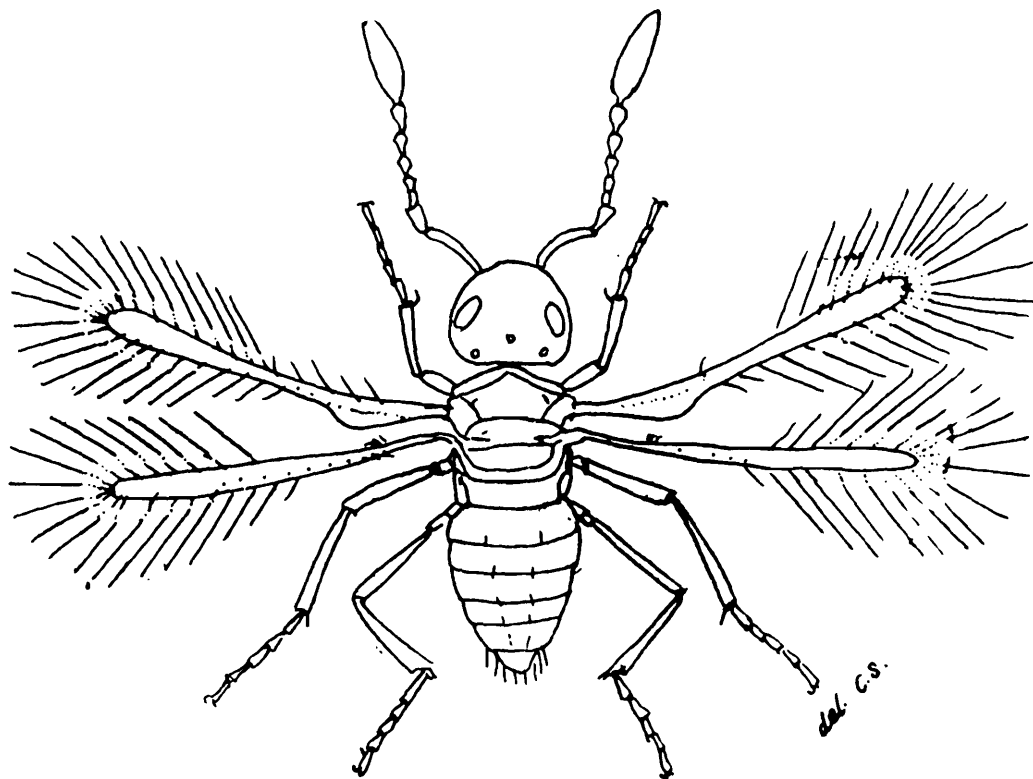


FIG. 334. *Alaptus ramakrishnae* Mani, male.

Male : Length 0.25 mm. Body dark brown; head above subpyriform; ocellar triangle obtuse-angled, interocellar and ocellocular spaces about 2 times ocellar diameter; scape equal to the first 4 funicular segments combined; pedicel equal to the first 2 funicular segments combined; ; club equal to preceding 4 funicular segments combined.

Type locality : Coimbatore

Host : Parasitic on mealy-bug, *Coccus nucifera*

Litus Haliday

- 1833 *Litus*, Haliday, *Ent. month. Mag.*, 1 : 269.
 1895 *Litus*, Howard, *Proc. US nat. Mus.*, 18 (1092) : 643.
 1901 *Malfaltia*, (?) Meun, *Ann. Soc. Sci. Bruxelles*, 25 : 2.
 1904 *Litus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Litus*, Schmiedeknecht, *Gen. Ins.*, 97 : 492.
 1938 *Litus*, Mani, *Cat. Indian Ins.*, 23 : 142.
 1983 *Litus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 137.

Antennae in female with 9 segments, simple club; tarsi with 5 segments; abdomen sessile or subsessile. Ashmead describes the antennae with 13 segments; male with 11 segments; vertex broad,

occiput flat, excavate; scape long; pedicel transverse; funicular segments 6 minute; terminal segment longer than others combined; abdomen rounded, somewhat compressed; body generally black.

Type-species : *Litus cynipscus* Haliday

Litus enocki Howard

- 1895 *Litus enocki*, Howard, *Proc. US nat. Mus.*, 18 : 643.
 1909 *Litus enocki*, Schmiedeknecht, *Gen. Ins.*, 97 : 492.
 1938 *Litus enocki*, Mani, *Cat. Indian Ins.*, 23 : 142.
 1983 *Litus enocki*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 137.

Female : Length 0.27 mm; wing expanse 0.79 mm, tips of fringe 1.02 mm. Body dark brown; legs, scape and pedicel lighter; abdomen lighter near the base below; wings faintly infuscated near base.

Scape and pedicel swollen; funicular segments attenuate, segments 1-2 subequal, about as long as pedicel; segments 3-4 a little shorter; segments 5-6 still shorter, slightly swollen; club longer than preceding 3 segments combined, slightly thicker, elongate-oval; abdomen sessile; thorax strongly arched.

Type locality : Ceylong : Punduloya

Host : *Eriococcus*

SUBFAMILY MYMARINAE

- 1904 *Mymarinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 363.
 1904 *Gonatocerinae*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Mymarina*, Schmiedeknecht, *Gen. Ins.*, 97 : 494.
 1909 *Gonatocerina*, Schmiedeknecht, *Gen. Ins.*, 97 : 489.
 1929 *Mymarinae*, Girault, *N. American Hymenoptera Mymaridae*, (privately printed) : 29.
 1938 *Mymarinae*, Mani, *Cat. Indian Ins.*, 23 : 143.
 1938 *Gonatocerinae*, Mani, *Cat. Indian Ins.* 23 : 142.
 1948 *Mymarini*, Debauche, *Mem. Mus. Roy. Hist., Nat. Belg.*, 108 : 1-248.
 1961 *Mymarinae*, Annecke & Doutt, *Ent. Mem. Dep. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1972 *Eurocinae*, Yoshimoro, Kozlov & Trjapitzin, *Ent. Obozr.*, 51 : 878-885, (Syn.)
 1979 *Mymarinae*, Krombein *et al.*, *Hymen. N. America*, 1 : 1024.
 1983 *Mymarinae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 128.

Abdomen petiolate; mesopostphragma not projecting into the abdomen.

KEY TO TRIBES

- | | |
|--------------------------|------------------|
| 1. Tarsi with 4 segments | <i>Mymarini</i> |
| Tarsi with 5 segments. | <i>Ooctonini</i> |

TRIBE MYMARINI

- 1904 *Mymarini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 363.
 1904 *Anaphini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 363. (Syn. Nov.)
 1909 *Mymarina*, Schmiedeknecht, *Gen. Ins.*, 97 : 494.
 1909 *Anaphina*, Schmiedeknecht, *Gen. Ins.*, 97 : 498.
 1929 *Mymarini*, Girault, *N. American Hymenoptera Mymaridae*, (privately printed) : 29.
 1938 *Mymaririae*, Mani, *Cat. Indian Ins.*, 23 : 143.
 1938 *Anaphesariae*, Mani, *Cat. Indian Ins.*, 23 : 144.
 1961 *Mymarini*, Annecke & Doutt., *Entt. Mem. Dep. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1961 *Anaphini*, Annecke & Doutt., *Ent. Mem. Dep. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1979 *Anaphini*, Krombein *et al.*, *Hymen. N. America*, 1 : 1027.
 1979 *Mymarini*, Krombein *et al.*, *Hymen. N. America*, 1 : 1030.
 1983 *Mymarini*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 128.

Abdomen distinctly petiolate; tarsal segments 4.

KEY TO GENERA

1. Abdomen sessile or nearly so, if with a short petiole, then petiole thicker than long 2
 Abdomen distinctly petiolate; petiole longer than thick or at least as long as thick 7
2. Funicle with 8 segments, club unsegmented; propodeum and first tergite strongly carinate; propodeum laterally with long bristle *Ptilomymar* Annecke & Doutt
 Funicle with 5-6 segments; propodeum and first tergite not carinate; no long bristle laterally on propodeum 3
3. Antennae in female with 8 (funicle with 5) and in male with 12 segments *Paralleoptera* Enock
 Antennae in female with 9-10 (funicle 6) segments 4
4. Club unsegmented 5
 Club biarticulate; antennae in male with 12 segments *Patasson* Walker
5. Antennae in male with 12 segments; fore wings curved both in front and behind; hypopygium not extending abdominal tip *Eofoesteria* Mathot
 Antennae in male with 13 segments; fore wing not curved; hypopygium not extending to abdominal tip 6
6. Hind wing narrow, wings sparsely hairy; first tergite not strongly carinate laterally *Erythmelus* Enock
7. Hind wing short, filiform, at the most vestigial; fore wing pedunculate, spatulate; scape long *Mymar* Curtis
 Hind wing not filiform; fore wing not pedunculate 8

8. Hind legs with exceedingly long spiny hairs; hind coxae longer than petiole; fore wings with cilia in curved alternately strong and weak rows; terminal funicular segment forming club
Narayanella Subba Rao
 Not as described above. 9
9. Thorax with stout spiny setae; propodeum with 2 carinae, converging behind to base of petiole; fore wings often banded; discal cilia often with thick base ..
Acmopolynema Oglobin
 Thorax without such setae 10
10. Propodeum with 2 carinae strongly converging behind; fore wings banded ..
Acmopolynema Oglobin
 Propodeum not carinate; fore wings not banded 11
11. Scape without scaly structures; vein *m* thin
Stephanodes Enock
 Scape without scaly structures; vein *m* thick; discal cilia not in 2 rows only in base
Polynema Haliday

Ptilomymar Annecke & Doutt

- 1961 *Ptilomymar*, Annecke & Doutt, *Ent. Mem. Dep. Agric. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
- 1972 *Ptilomymar*, Taguchi, *Kontyu*, 40 (4) : 229.
- 1974 *Ptilomymar*, Viggiani, *Boll. Lab. Ent. Agric. Portici*, 31 : 6.
- 1983 *Ptilomymar*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Abdomen sessile; funicular segments 8; club solid; propodeum and first tergite carinate; propodeum with long bristles at the sides.

Type-species : *Ptilomymar rete* Annecke & Doutt

Ptilomymar besucheti Viggiani

- 1974 *Ptilomymar besucheti*, Viggiani, *Boll. Soc. Ent. Agr. Filippo Silvestri Portici*, 31 : 7.
- 1983 *Ptilomymar besucheti*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Female : Length 0.57 mm. Body black; antennae and legs dark brown; wings infumate; head above width about 0.50 of length; ocellar area transversely elevated and sculptured; eyes glabrous; antennal sockets close to frontal transverse carina; mandible tridentate; thorax 0.33 of abdomen; pronotum very short, scutum subtrapezoid; propodeum with 2 median longitudinal carinae; fore wing with 7 long setae on vein *sm*; abdomen subconical; ovipositor slightly projecting.

Male : Antennae with 13 segments ratio 22 : 10 : 4 : 15 : 13 : 13 : 13 : 13 : 13 : 13 : 12 : 14; abdomen compressed, a little longer than thorax; aedeagus calvate, phallobase long; reduced basally.

Type locality : Ceylon : Mahaweli Ganga

Patasson Walker

- 1846 *Patasson*, Walker, *Ann. Mag. nat. Hist.*, 18 (8) : 50.
 1909 *Anaphojdea*, Girault, *J.N.Y. ent. Soc.*, 17 : 167.
 1915 *Anaphoides*, Enoch, *Hastings and East Sussex Nat.*, 2 : 181.
 1950 *Hofenderia*, Soyka, *Ent. Nachr. Burgdorf.*, 3 : 123.
 1950 *Antoniella*, Soyka, *Ent. Nachr. Burgdorf.*, 3 : 121.
 1950 *Mariella*, Soyka, *Ent. Nachr. Burgdorf.*, 3 : 123.
 1950 *Fulmikiella*, Soyka, *Ent. Nachr. Burgdorf.*, 3 : 123.
 1951 *Anaphoides*, Peck in Muesebeck *et al.*, *US Dept. Agr.*, 2 : 414.
 1979 *Patasson*, Krombein *et al.*, *Hymen. N. America*, 1 : 1029.
 1983 *Patasson*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Tarsi tetramerous; antennae in male with 13 and in female 9 segments; abdomen subsessile.

Type-species : *Patasson crassicornis* (Haliday)

***Patasson himalayanus* (Mani & Saraswat)**

- 1973 *Anaphes himalayanus* (partim), Mani & Saraswat, *Mem. School Ent.*, 2 : 101.
 1983 *Patasson himalayanus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

Male Length 0.80 mm. Body black; head brownish-black; antenna brown, scape and pedicel yellowish-brown; legs dark brown; wings subhyaline, brownish, veins brown; abdomen black.

Head in front length to width 86 : 100; face vertex with fine reticulate longitudinal striations; ocellular space 1.50 times ocellar diameter, front ocellar space about 1.70 times ocellar diameter; eye length to head length 62 : 100; antenna longer than body, slender, with 12 cylindrical segments; scape 3.70 times as long as thick; pedicel 1.50 times as long as thick and little less than 0.50 of scape; first funicular segment 4.20 times longer than thick and little less than 0.50 of scape; first funicular segment 4.20 times longer than thick and little less than 2 times pedicel; segments 2-4 subequal and slightly longer than first; segments 5-8 subequal and a little shorter than fourth; ninth a little shorter; club nearly equal to the last funicular segment.

Pronotum, mesonotum and metanotum reticulate; fore wing length : width ratio 100 : 32; fringe on hind margin slightly less than 2 times maximum width; hind wing to fore wing length 9 : 100; fore coxa 1.80 times longer than thick; femur 4.50 times as long as thick and 1.80 times coxa; tibia little longer than femur and 9 times longer than thick; tarsus slightly shorter than tibia and equal to femur, metatarsus slightly more than 0.25 of tarsus and 0.25 of tibia, second segment about 0.75 of metatarsus, second segment and metatarsus combined about 0.50 of tarsus, third little shorter than second, fourth about equal to metatarsus and almost 1.50 times the third; middle coxa 1.30 times longer than thick; femur 6.40 times as long as thick

and 2.60 times coxa; tibia 1.40 times femur; spur about 0.40 of metatarsus; tarsus to tibia 4 : 5, metatarsus 0.28 of tarsus and about 0.25 of tibia, metatarsus and second segment combined a little over 0.50 of tarsus, second segment more than 0.75 of metatarsus, third slightly shorter than second and 0.75 of metatarsus; fourth segment more or less equal to metatarsus; hind coxa a little more than 2 times as long as thick; femur 5.40 times longer than thick and little shorter than 2 times coxa; tibia 1.40 times femur; spur equal to a little less than 0.33 of metatarsus; tarsus nearly 0.75 of tibia, metatarsus about 0.33 of tarsus and slightly less than 0.25 of tibia, second segment 0.75 of metatarsus, third 0.86 of the second, fourth about equal to second.

Abdomen slightly less than 0.50 of body.

Type locality : Northwest Himalaya : Dalhousie (Kalatop, Dhenkund)

Eofersteria Mathot

1966 *Eofersteria*, Mathot, *Bull. Ann. Soc. R. ent. Belgique*, 102 : 213-239.

1983 *Eofersteria*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

Abdomen sessile; in male antennae with 12 segments, in female with 9 - 10 segments, club solid; fore wing curved both in front and behind.

Eofersteria secunda Viggiani

1978 *Eofersteria secunda*, Viggiani, *Boll. Soc. Ent. Ital.*, 110 : 39.

1983 *Eofersteria secunda*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

“Tarsi with 4 segments; first funicular segment 0.33 times longer than second; club shorter than the last 3 funicular segments.”

Type locality : Kodaikanal, India

Erythmelus Enock

1909 *Erythmelus*, Enock, *Trans. R. ent. Soc. London*, 1909 : 454.

1909 *Enaesus*, Enock, *Trans. Roy. ent. Soc. London*, 1909 : 456.

1948 *Erythmelus*, Debauche, *Mem. Mus. Roy. Hist. Nat. Belg.*, 108 : 192.

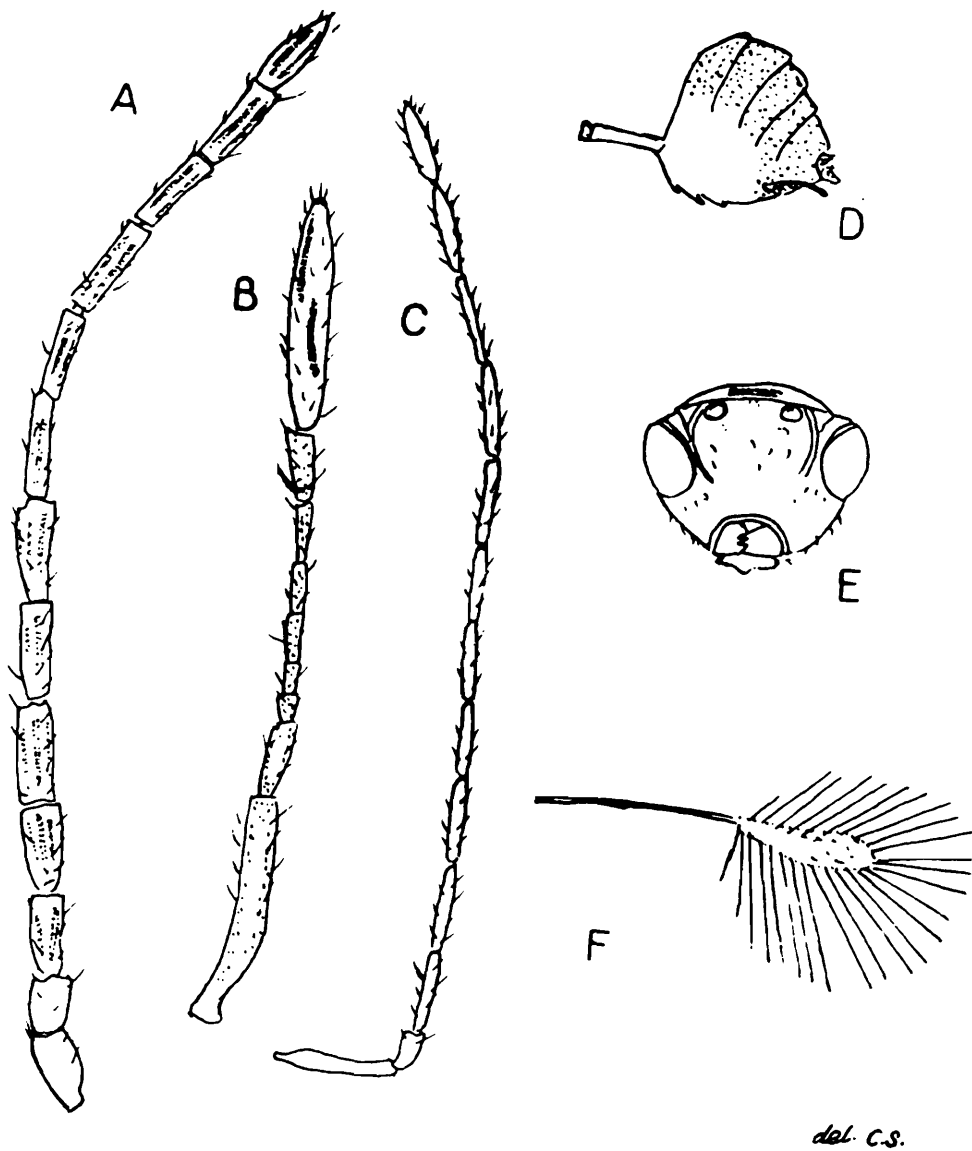
1961 *Erythmelus*, Annecke & Doutt, *Ent. Mem. Dept. Agric. Tech. Ser. S. Africa*, 5 : 18.

1979 *Erythmelus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1028.

1983 *Erthmelus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

Abdomen sessile; antennae in male with 13 segments; fore wing not curved in front and behind; hind wing narrow, first tergite not strongly carinate at the sides.

Type-species : *Erythmelus goochi* Enock



del. C.S.

FIG. 335. A-B. *Erythmelus empoascae* Subba Rao : A. Antenna, male; B. Antenna, female : (Modified from Subba Rao) C-F. *Mymar taprobanicum* Ward, male : C. Antenna; D. Abdomen; E. Head in front view; F. Fore wing.

***Erythmelus empoascae* Subba Rao**

(Fig. 335)

1966 *Erythmelus empoascae*, Subba Rao, *Indian J. Ent.*, 28 : 192.

1983 *Erythmelus empoascae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

Female : Length 0.74 mm. Body generally dark yellow, suffused with dark patches; distal tergites dark brown to black; legs lemon yellow; eyes dark brown; wings hyaline.

Head laterally longer than wide; face between eyes convex; head in front almost as wide as long; facial line transverse, broad and unbroken; scape slender, a little shorter than club, pedicel more

slender than scape, nearly 0.33 of length; first funicular segment shortest, less than 0.33 of sixth funicular segment; second funicular segment longer than first, but less than 0.50 of the sixth segment; segments 3-5 almost equal, but shorter than sixth segment; club solid, 3 times longer than preceding funicular segment with 2 distinct longitudinal sensory ridges.

Thorax robust; scutellum longitudinally striate, apex of metanotum acutely projecting dorsally; fore wings long, narrow, width 0.25 of the length; discal ciliation sparse, about 6-8 rows at the broadest point; marginal fringe long, the longest as long as width of wing; hind wing with single complete median row of cilia; hind marginal fringe nearly 3 times width.

Abdomen slightly longer than thorax; prominent; ventral sheath beneath prominent; ovipositor and lateral valves slightly exerted.

Male : Length 0.71 mm. Essentially like female; genitalia extended tip of abdomen; funicular segments with longitudinal carinae and longer than scape or pedicel.

Type locality : Delhi : India

Host : *Empoasca devastans* Distant

Erythmelus helopeltidis Gahan

- 1949 *Erythmelus helopeltidis*, Gahan, *Proc. ent. Soc. Washington*, 51 : 75.
 1970 *Erythmelus helopeltidis*, Subba Rao, *Bull. ent. Res.*, 59 : 662.
 1983 *Erythmelus helopeltidis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

Type locality : Kuala Lumpur, Malaysia

Distribution : Malaysia, Kuala Lumpur; India : Andhra Pradesh, Uttar Pradesh

Hosts : *Helopeltis chinchonae* Mann., *Ophiomyia lantanae*

Mymar Curtis

- 1832 *Mymar*, Curtis, *Brit. Ent.*, 9 : 411.
 1877 *Flabrinus*, Rondani, *Bull. Soc. Ent. Italy*, 9 : 180.
 1904 *Mymar*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 364.
 1909 *Mymar*, Schmiedeknecht, *Gen. Ins.*, 97 : 496.
 1943 *Pterolinonyktera*, Malac, *Folia Ent. Brno*, 6 : 51.
 1946 *Oglobliniella*, Soyka, *Zentbl. Ges. Ent.*, 1 : 180.
 1949 *Mymar*, Gahan, *J. Washington Acad. Sci.*, 39 (6) : 204-205.
 1979 *Mymar*, Krombein *et al.*, *Hymen. N. America*, 1 : 1030.
 1983 *Mymar*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 137.

Antennae in female with 9 segments, in male 13 segments, knob simple; scape reaching front ocellus; wings linear, fore wing petiolate;

marginal fringe long, expanded only at tip, hind wing reduced to setaceous appendage; tarsi with 4 segments; abdomen petiolate; head globose, vertex broad and flat, antennae long; body generally yellow.

Type-species : *Mymar pulchellum* Curtis

***Mymar schwanni* Girault**

1912 *Mymar schwanni*, Girault, *Mem. Queensland Mus.*, 1 : 166.

1980 *Mymar schwanni*, Verma, *J. Bombay nat. Hist. Soc.*, 76 : 536.

1983 *Mymar schwanni*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 137.

Female : Length 0.70 mm. Body brown, abdomen dirty brown in the distal 0.30; vertex carina dirty brown; petiole, last 2 funicular segments, coxae and femora light fuscus or pale yellow; distal tarsal segments, first 4 funicular segments, club black; peduncle of fore wing and distal 0.50 of wing black; rest of wing hyaline.

Girault separates this species from *Mymar pulchellum* by the fourth funicular segment being black not yellow.

Type locality : Victoria, Australia

Distribution : Australia; India

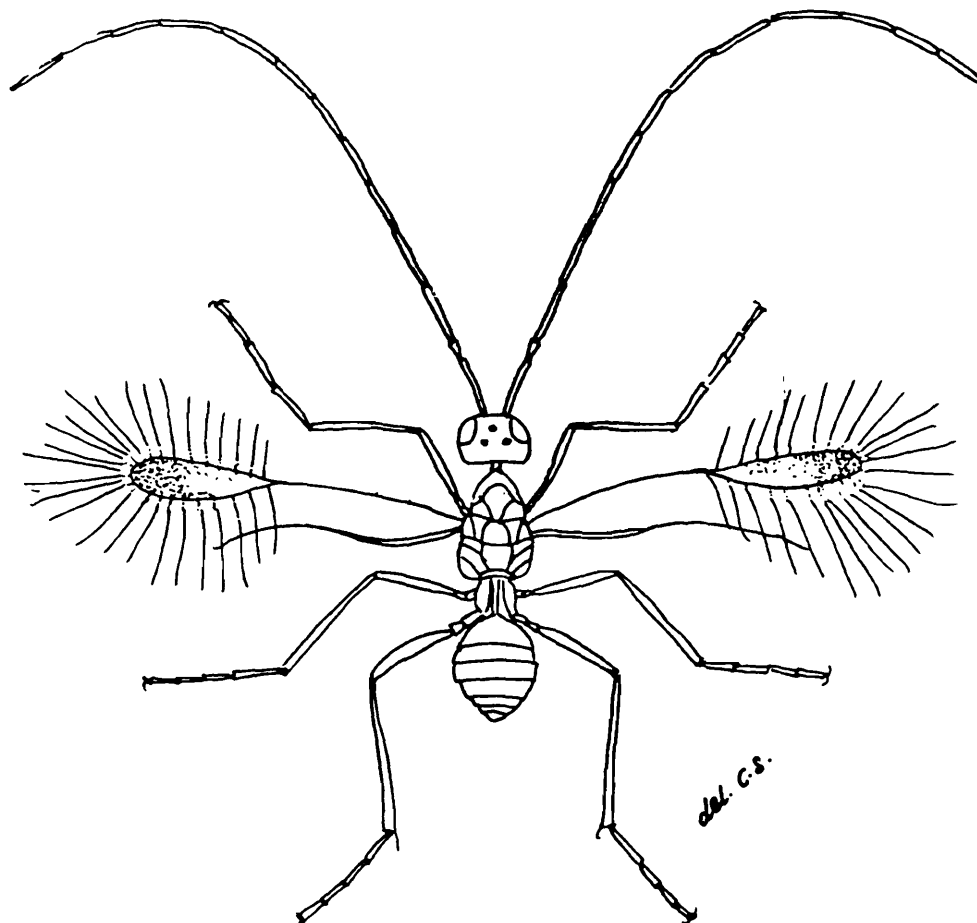


FIG. 336. *Mymar taprobanicum* Ward.

Mymar taprobanicum Ward

(Fig. 335 & 336)

- 1875 *Mymar taprobanicus*, Ward, *Ent. mon. Mag.*, 11 : 197.
 1879 *Mymar (Mymarilla) taprobanicus*, Westwood, *Trans. Linn. Soc. London*, (Zool.), (2) 1 : 585.
 1909 *Mymar (Mymarilla) taprobanicus*, Schmiedeknecht, *Gen. Ins.*, 97 : 495.
 1912 *Mymar tyndalli*, Girault, *Mem. Queensland Mus.*, 1 : 168.
 1937 *Mymar antillanum*, Dozier, *J. Agr. Univ. P. Rico*, 21 (2) : 130.
 1938 *Mymarilla taprobanicus*, Mani, *Cat. Indian Ins.*, 23 : 143.
 1942 *Mymar indica*, Mani, *Indian J. Ent.*, 4 (2) : 8.
 1950 *Oglobliniella arguktiaca*, Soyka, *Bull. Soc. Fouad Ent.*, 34 : 31.
 1961 *Mymar taprobanicum*, Annecke, *S. Afr. J. Agr. Sci.*, 4 : 547.
 1966 *Mymar taprobanicum*, Viggiani, *Boll. Soc. Ent. Ital.*, 96 : 113-117.
 1971 *Mymar taprobanicum*, Taguchi, *Trans. Shikoku ent. Soc.*, 11 (2) : 54.
 1973 *Mymar indica*, Mani & Saraswat, *Mem. School Ent.*, 2 : 107.
 1975 *Mymar taprobanicum*, Taguchi, *Trans. Shikoku ent. Soc.*, 12 : 22.
 1977 *Mymar taptobanicum*, Hayat, *Newsl. Zool. Survey India*, 3 (5) : 283.
 1976 *Mymar taprobanicum*, Subba Rao, *Orient Ins.*, 10 (1) : 89.
 1983 *Mymar taprobanicum*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Male : Length 0.70 mm. Body brown; head brown; antenna dark brown; legs yellowish-brown; wings subhyaline; petiole, front margin and tip of fore wings brown, rest hyaline; hairs dark brown; veins brown; hind wing brown; dorsal and ventral posterior 0.50 of abdomen dark brown, petiole yellowish-brown.

Head in front length to width 80 : 100; ocellocular space about 4 times ocellar diameter, front ocellar space 3.50 times ocellar diameter; eye length to head length 45 : 100; antenna slightly longer than 2 times body, segments 13 : 1.1.10.1; scape elongate, cylindrical about 7.50 times as long as thick; pedicel about 2 times as long as thick and about 0.33 of scape; funicular segments elongate, cylindrical, 1-3 subequal; first segment about 6 times longer than thick and little more than 2 times pedicel; segments 2-3 about 6 times longer than thick; segments 4-6 subequal, slightly shorter than third and 6.50 times as long as thick; seventh segment a little longer than thick; segments 8-9 subequal, longest and compared to seventh 10 : 9; eighth segment 6.40 times as long as thick and ninth 8 times longer than thick; tenth segment very slightly shorter than ninth and 5 times as long as thick; club elongate, oval, equal to the preceding funicular segment, 4.60 times longer than thick.

Wings linear, fore wing with a hair-like petiole, petiole to wing 57 : 100; fore wing length to width 100 : 11, fringe on hind margin about 4 times maximum width of wing; hind wing hair-like, gradually becoming more and more thin towards tip, with a few scattered hairs; hind wing to fore wing length 62 : 100; fore coxa 1.20 times as long as thick; femur distinctly attenuated at apical 0.30, and 6.60 times longer than thick and about 3.70 times coxa; tibia to femur 11 : 10;

tarsus 1.30 times tibia, metatarsus 0.50 of tibia and 0.40 of tarsus, second segment 0.60 of metatarsus, third segment about 0.75 of second and 0.85 of fourth; middle coxa almost as long as thick and subequal to fore coxa; femur not so strongly attenuated apically as fore femur, equal to fore femur, 7 times longer than thick and about 3.70 times coxa; tibia to femur 13 : 10; spur slightly more than 0.22 of metatarsus; tarsus shorter than tibia, metatarsus 0.28 of tibia and very slightly less than 0.33 of tarsus, second segment about 0.75 of metatarsus, third segment slightly more than 0.75 of second, fourth tarsal segment a little longer than third and about equal to second; coxa 1.50 times as long as thick; femur distinctly attenuated like fore femur, 8 times longer than thick and about 3.70 times coxa; tibia to femur 5 : 4; spur about 0.33 of metatarsus; tarsus shorter than tibia, metatarsus slightly more than 0.20 of tibia and about 0.33 of tarsus, second segment about 0.75 of metatarsus, third slightly more than 0.75 of second, fourth tarsal segment 1.40 times the third.

Abdomen petiolate, including petiole about 0.50 of body, petiole 4 times longer than thick and little less than 0.50 of abdomen.

Type locality : Ceylon

Distribution : Sri Lanka, India, Japan, Korea, Formosa (probably cosmopolitan)

Hosts : *Delphacodes straitella*, and Thrips (?)

Narayanella Subba Rao

1976 *Narayana*, Subba Rao, *Orient. Ins.*, 10 (1) : 87. (preoccupied in Distant, 1908).

1976 *Narayanella*, Subba Rao, *Orient. Ins.*, 10 (3) : 352.

1983 *Narayanella*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Female : Head flat dorsally, slightly produced forward below the insertion of antennae; antenna with 9 segments; funicle 5 segmented, club 2 segmented; scape short, almost quadrate, last funicular segment dilated; transfrontal trabecula well developed; eyes almost bare; ocellar triangle with base longer than sides.

Thorax not elongated as in *Tanaomymar* Annecke & Doutt; prothorax short, mesoscutum and scutellum elongate; prothorax with normal sessile spiracles at the postero-lateral angles; parapsidal furrows deep, entire, without anterior foveae; scutellum wide, rounded posteriorly; axillary setae absent; propodeum normal with a pair of strong longitudinal carinae; strong setae on either side of carinae midway between insertion of coxae and base; fore wings as in *Polynema*, but with rows of strong discal cilia alternating with rows of weak cilia; hind legs very long, slender; coxae prodigiously lengthened, longer than petiole and middle femur; with numerous long needle-like setae; tarsi with 4 segments.

Petiole very long, slender; abdomen short; ovipositor very slightly exerted.

Male : Like female, but antennae with 13 segments.

Type-species : *Narayanella pilipes* (Subba Rao)

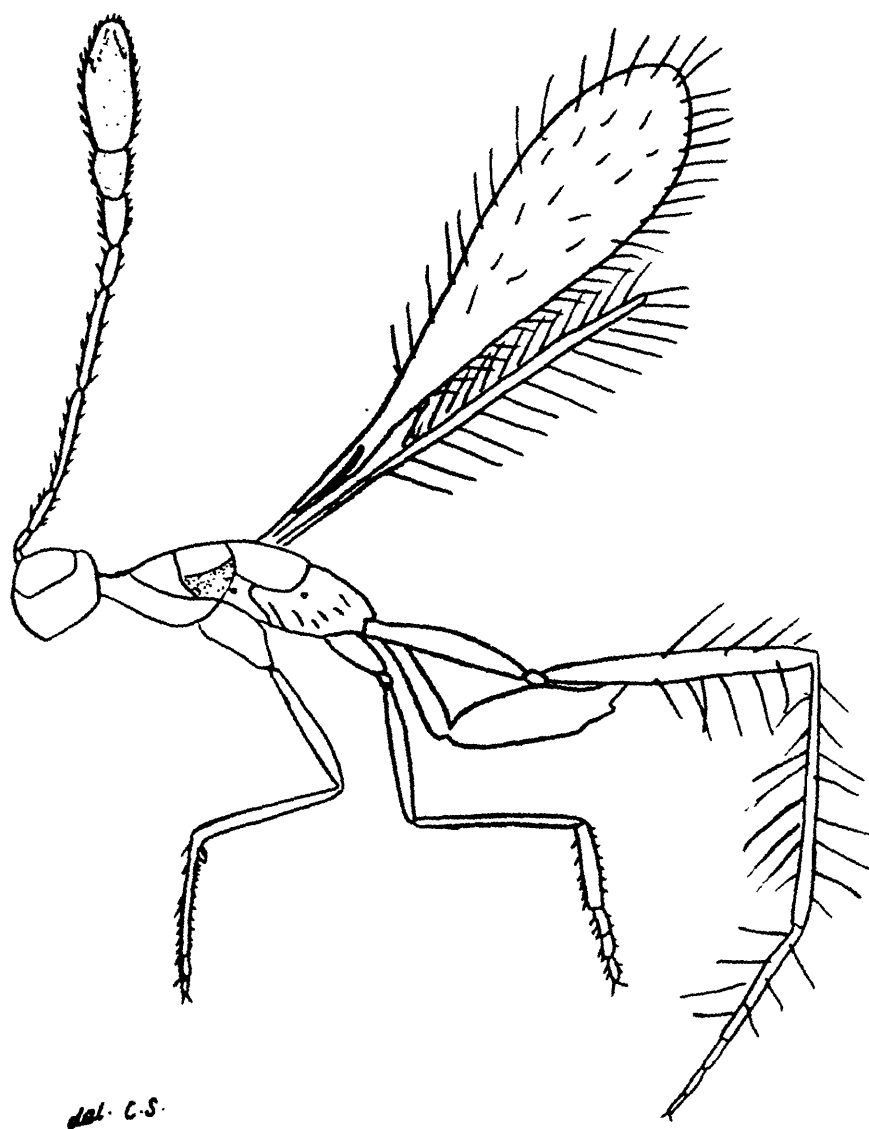


FIG. 337. *Narayanella pilipes* (Subba Rao), female. (Modified from Subba Rao).

***Narayanella pilipes* (Subba Rao)**

(Fig. 337 & 338)

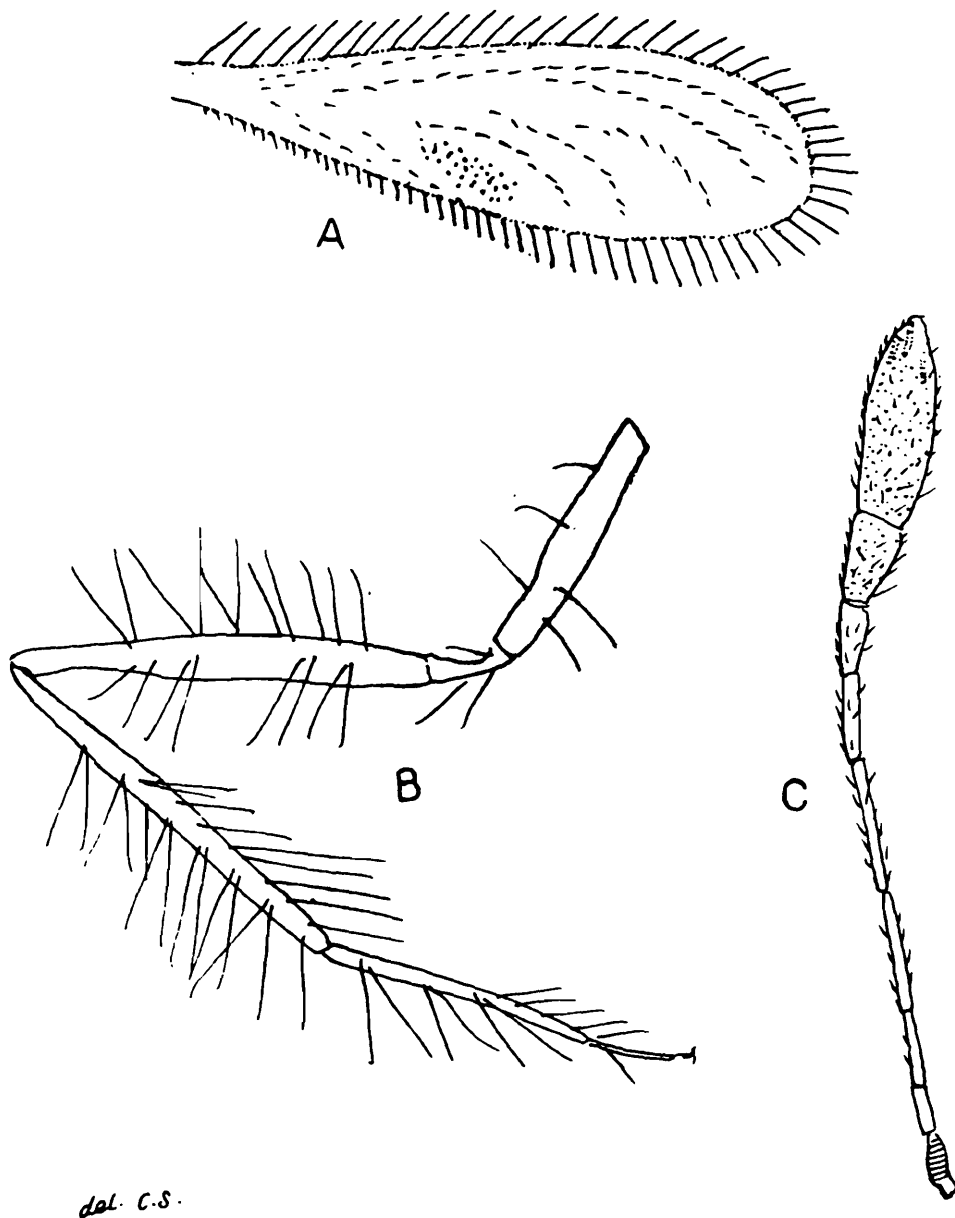
1976 *Narayana pilipes*, Subba Rao, *Orient. Ins.*, 10 : 88.

1976 *Narayanella pilipes*, Subba Rao, *Orient. Ins.*, 10 : 352.

1983 *Narayanella pilipes*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Female : Length 1.40-1.60 mm. Body yellowish-brown; abdomen light brown; antennae excluding club, legs yellowish-brown; club dark brown; wings hyaline; veins brown to dark brown.

Head in front slightly wider than long; vertex flat, transfrontal trabecula strong, but not touching orbital trabeculae; ocellar triangle equilateral; ocellocular space about a little less than 2 ocellar diameters; interocellar space subequal to ocellocular space; scape a little longer than pedicel, inner surface with transverse grooves; funicle slightly longer than scape, funicular segments 2-3 equal, 2 times the first; fourth segment longer than first; fifth equal to first, club slightly longer than last 3 funicular segments combined.



del. C.S.

FIG. 338. *Narayanella pilipes* (Subba Rao), female : A. Fore wing, B. Hind leg; C. Antenna. (Modified from Subba Rao).

Thorax moderately elongate, entirely smooth, shining, except for the rugose side lobes of mesoscutum, parapsidal furrows lightly impressed; prothorax medially divided by a longitudinal suture, suture connected in front with several transverse rugae; spiracles small and sessile; parapsides with a single seta; metanotum crescent-shaped; propodeum without keels, with one and one seta almost at mid distance from base to apex; a pair of almost converging strong longitudinal carinae; fore wings long, narrow; marginal fringe long on hind margin, longest about 0.25 of wing at its widest, discal ciliation commencing only about middle of wings, in alternating strong and weak rows of long and short cilia; hind wing narrow and almost parallel-sided, discal cilia absent; fringe on hind margin about 2.50 times wing width; fore and middle legs normal; hind legs much lengthened; hind coxae prodigiously long, longer than petiole; coxae, femora, tibiae and first tarsal segments with very long spine-like seta.

Petiole very long, nearly 0.80 of abdomen, smooth; ovipositor slightly exerted.

Male : Like female; but antennae with 13 segments.

Type locality : Burma

Distribution : Burma

Host Reared from galls on *Lagestroemia flosreginae*

Narayanella thornypoda (Narayanan & Subba Rao)

(Figs. 339 & 340)

- 1961 *Polynema (Polynema) thornypoda*, Narayanan & Subba Rao, *Britr. Ent.*, 11 : 665.
 1973 *Anagrus khandalus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 105.
 1975 *Anagrus khandalus*, Saraswat & Mukerjee, *Mem. School Ent.*, 4 : 62.
 1976 *Narayana thornypoda*, Subba Rao, *Orient. Ins.*, 10 : 89.
 1976 *Narayanella thornypoda*, Subba Rao, *Orient. Ins.*, 10 : 352.
 1983 *Narayanella thornypoda*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Female : Length 1.50 mm. Body brown; head reddish-brown; antenna brown; bases of funicular segments 2-4, whole of sixth funicular segment and club black; fore and middle legs brown; hind coxa, trochanter and femur reddish-brown; hind tibia and tarsus brownish-black, hairs white; fore wing with brown cloudings at hind margin, behind vein *st* extending towards front margin and another in the middle, darker third in between the middle clouding and tip; an obscure infuscation just at tip; periphery of fore wing brownish; veins pale brown; vein *st* dark brown; abdomen yellowish-brown.

Head in front length to width 85 : 100; ocellocular space 3 times ocellar diameter, front ocellar space equal to ocellar diameter;

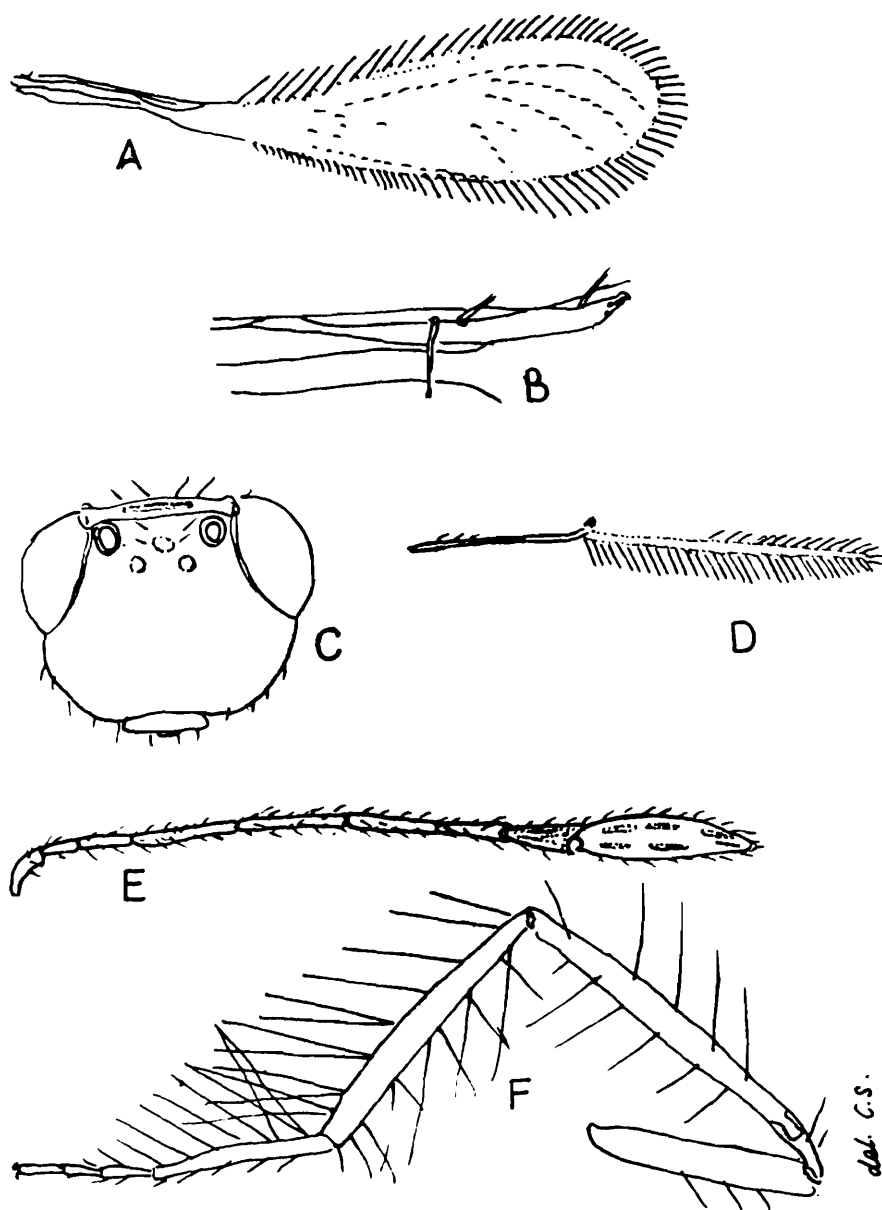
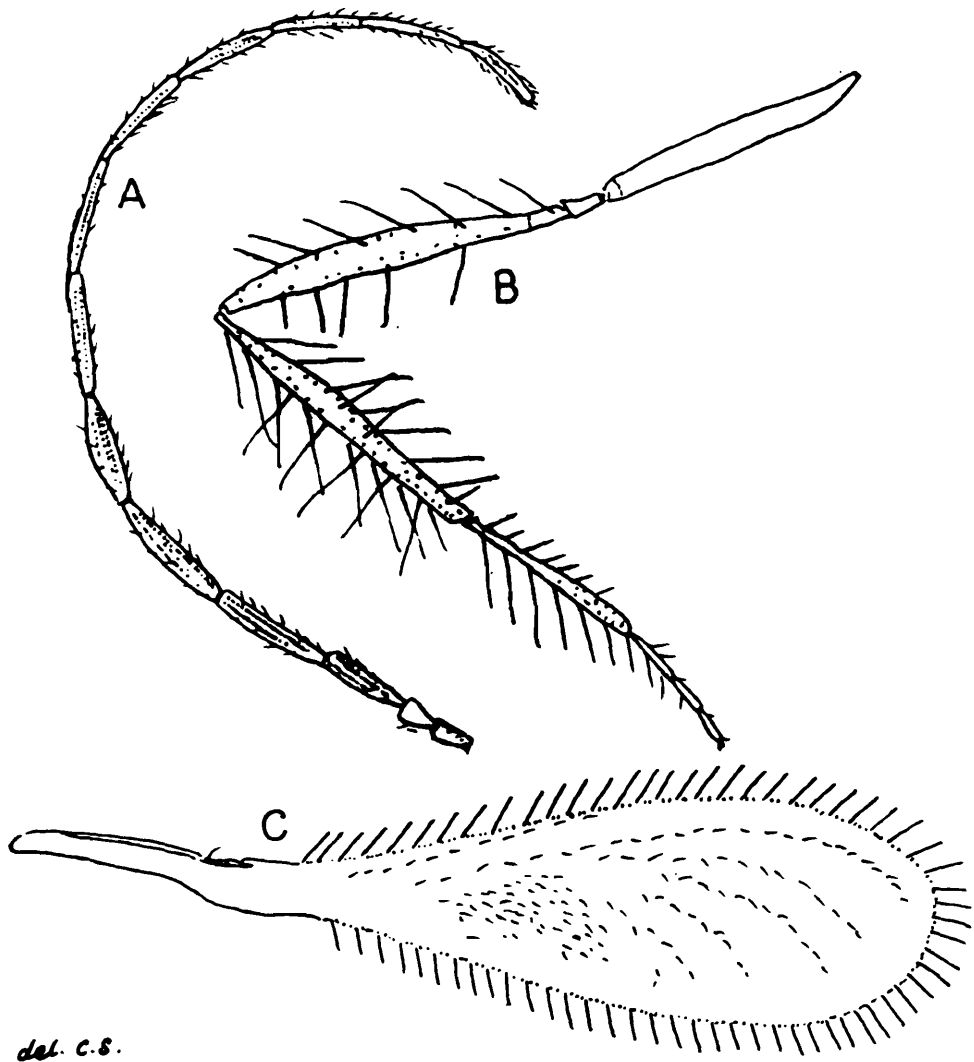


FIG. 339. *Narayanella thornypoda* (Narayanan & Subba Rao), female : A. Fore wing; B. Stigmal venation; C. Head in front view; D. Hind wing; E. Antenna; F. Hind leg. (Modified from Subba Rao).

antenna longer than body, with 9 segments; scape about 2 times as long as thick; pedicel nearly equal to scape and 2.50 times longer than thick; first funicular segment 1.50 times pedicel and 5 times as long as thick; second segment longest, 2 times first and equal to third; fourth little more than 0.75 of third and 7 times longer than thick; fifth thicker than others, 0.75 of fourth and 3.60 times as long

as thick; sixth thickest, about 3 times longer than thick and equal to fourth; club short, 3.30 times longer than thick and equal to preceding 2.25 funicular segments combined.

Fore wing length to width 100 : 21, fringe on hind margin about 0.33 of width of wing, vein *m* punctiform; hind wing to fore wing 75 : 100; fore coxa as long as thick, femur 8 times longer than thick and 2.50 times coxa; tibia also 8 times longer than thick, femur to tibia 10 : 9, tibia with stout peg-shaped spines; tarsus about 1.30 times longer than tibia, metatarsus little less than 0.50 of tarsus 0.60 of tibia, also with less stout spines, second segment about 0.50 of metatarsus, third shortest and 0.75 of second, fourth tarsal segment slightly shorter than second; middle coxa 2 times as long as thick; femur about 7 times longer than thick and 2.30 times coxa; equal to fore tibia; tibia little more than 1.50 times femur and with long hairs; spur 0.13 of metatarsus; tarsus to tibia 13 : 15, metatarsus



det. C.S.

FIG. 340. *Narayanella thornypoda* (Narayanan & Subba Rao), male : A. Antenna; B. Hind leg; C. Fore wing. (Modified from Subba Rao).

about 0.50 of tarsus and 0.40 of tibia, second segment little less than 0.50 of metatarsus, third 0.75 of the second, fourth a little longer than third; hind leg with hexagonal reticulations on coxa and femur; coxa much elongated, with 5 hairs on each side cylindrical, 6.70 times as long as thick; femur 9.80 times longer than thick and 1.50 times coxa, long hairs on the sides longest hair 0.25 of femur; tibia to femur 7 : 8, tibia about 0.90 shorter than femur and with very long hairs on the sides, longest hair about 0.50 of tibia; spur about 0.20 of metatarsus; tarsus little longer than tibia, metatarsus 0.57 of tibia, metatarsal hairs shorter than tibial hairs, longest hair a little longer than 0.50 of metatarsus; second segment about 0.33 of metatarsus, third 0.66 of second equal to the fourth.

Abdomen sessile, 0.50 of body; ovipositor slightly exerted.

Male: Head testaceous; thorax, petiole and abdomen dark brown; fore and middle legs yellowish-brown, hind legs concolorous with body.

Head cubical, eyes small; face slightly depressed above the insertion of antennae; carinae well developed; antennal segments 13; scape very small, just reaching the vertex; funicular segments long, flat, with numerous sensory ridges.

Thorax longer than abdomen; petiole very long, straight cylindrical; fore wings very long; vein *m* long slender, *st* shorter; *pm* very long, not well differentiated; proximal and distal macrocheta strong, well developed, black; hypocheta close to proximal macrocheta long, almost equal to wing width; proximal sensillae just below the distal macrocheta; fore and hind legs normal; tibiae armed with short spines; hind legs very long, coxa long, almost cylindrical; femur, tibia and tarsi with long acute spines.

Type locality : Mysore : Balehonnur

Distribution India : Bihar : Ranchi; Balehonnur : Karnataka; Maharashtra.

Host Unknown

***Acmopolynema* Oglobin**

1946 *Acmopolynema*, Oglobin, *J. Sci. Iowa St. College*, 20 : 286.

1979 *Acmopolynema*, Krombein *et al.*, *Hymen. N. America*, 1 : 1031.

1983 *Acmopolynema*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

Hind wing not filiform; fore wing often banded, not pedunculate; thorax with stout spines; propodeum with paired carinae converging behind to petiolar base; abdomen petiolate.

Type-species *Acmopolynema bifasciatipennis* (Girault)

***Acmopolynema bagicha* (Narayanan, Subba Rao & Kaur)**

(Fig. 341)

- 1960 *Polynema bagicha*, Narayanan *et al.*, *Britr. Ent.*, 10 : 886.
 1973 *Mymarilla deccana*, Mani & Saraswat, *Mem. School Ent.*, 2 : 109.
 1973 *Polynema indopenisularis*, Mani & Saraswat, *Mem. School Ent.* 2 : 119.
 1976 *Polynema deccana*, Subba Rao, *Orient. Ins.*, 10 : 89.
 1983 *Acmopolynema bagicha*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

Female : Length 0.80-1.40 mm. Body generally yellowish-brown; head reddish-brown; antenna pale brown; club, base of second and third funicular segments black; legs yellowish-brown, last tarsal segments black; hind femur basal 0.50 darker; wings hyaline, except for the smoky-brown bands, abdomen yellowish-brown.

Head in front length to width 70 : 100; vertex with long hairs; vertex and face sparsely, minutely punctate; ocellular and front ocellar spaces 4 times ocellar diameter; antenna short, slender, segments 9; scape 2.70 times as long as thick; pedicel slightly thinner than scape; 2.30 times longer than thick and about 0.75 of scape; funicular segments 1-3 thinner, more cylindrical, nearly uniform thickness; segments 4-6 gradually become thicker apically; first funicular segment about 6 times longer than thick and nearly equal to scape; second segment longest and equal to third, both about 11 times longer than thick and nearly 2 times the first; fourth 7.20 times longer than thick and about 0.75 of the second; fifth equal to first and 5.30 times as long as thick; sixth segment shortest, 3 times longer than thick 0.75 of the fifth; club very much stouter, 4 times as long as thick, subequal to the preceding 2 funicular segments combined.

Thorax smooth, pronotum with long hairs; fore wing length to width 100 : 15, hind margin near vein *st* broadened, *m* punctiform; fringe on hind margin 1.30 times maximum width of the wing; hind wing to fore wing length 90 : 100; fore coxa about 1.20 times as long as thick; femur 7 times longer than thick and about 3.20 times coxa; tibia about 0.86 of femur; tarsus 1.40 times tibia, metatarsus about 0.44 of tarsus, also equal to the second and third segments combined, second segment little less than 0.75 of metatarsus, third segment little less 0.75 of second and equal to the fourth tarsal segment; middle coxa 1.50 times as long as thick; femur about 9 times longer than thick and nearly 3.30 times coxa; tibia about 1.20 times femur; tibial spur 0.90 of metatarsus, tarsus about 1.40 times longer than tibia, metatarsus 0.50 of tarsus, second segment slightly less than 0.50 of metatarsus, third little less than 0.75 of the second and equal to the fourth tarsal segment; hind coxa 1.50 times longer than thick; femur about 8 times longer than thick and 2.50 times coxa; tibia about 1.10 times femur, spur 0.11 of metatarsus; tarsus 1.20 times tibia,

metatarsus little more than 0.50 of tarsus, second segment 0.33 of metatarsus, third 0.75 of the second and equal to the fourth tarsal segment.

Abdomen cordate, including petiole just 0.50 of body; petiole little more than 5 times longer than thick and about 0.40 of abdomen; ovipositor exerted.

Male : Length 1.00 mm. Body yellowish-brown; head reddish-brown; antenna pale brown; legs and wings as in female; abdomen yellowish-brown, posterior 0.50 dark brown.

Head in front length to width 86 : 100; vertex with long hairs; ocellular space 2 times ocellar diameter, front ocellar space about 4 times ocellar diameter; antenna long, slender, segments 13; scape 2.50 times as long as thick; pedicel about 1.60 times longer than thick and 0.75 of scape; funicular segments from 1-6 and 7-10 subequal; club equal to the preceding funicular segment, reduced apically.

Thorax and wings as in female; fore wing length to width 100 : 18, fringe on hind margin 1.20 times maximum width; hind wing to fore wing length 87 : 100; fore coxa 1.50 times as long as thick; femur about 6 times longer than thick and 3 times coxa; tibia equal to femur; tarsus about 1.30 times longer than tibia, metatarsus 7.40 times tarsus and about 0.50 of tibia, second segment 0.75 of metatarsus, third about 0.60 of the second and equal to the fourth; middle coxa about 1.40 times as long as thick; femur about 9 times longer than thick and nearly 3.30 times coxa; tibia 1.30 times femur, spur about 0.90 of metatarsus; tarsus about 1.20 times tibia, metatarsus 0.50 of tarsus, second segment about 0.50 of metatarsus, third little more than 0.50 of the second and equal to the fourth tarsal segment; hind coxa about 2 times as long as thick; femur 9 times longer than thick and about 2.80 times coxa; tibia 1.20 times femur, spur about 0.13 of metatarsus; tarsus equal to mid tarsus and its all the segments more or less in the same proportions as in middle tarsus.

Abdomen 0.50 of body; petiole 4.50 times as long as thick and about 0.50 of abdomen.

Type locality : Delhi

Distribution : Delhi, Bhor Ghat : Poona; Mandya; Kodaikanal Hills.

***Acropolynema incognita* (Narayanan, Subba Rao & Kaur)**

(Fig. 341)

- 1960 *Maidliella incognita*, Narayanan, Subba Rao & Kaur, *Britr. Ent.* 10 : 889.
 1961 *Polynema (Maidliella) incognita*, Narayanan & Subba Rao, *Britr. Ent.*, 11 : 667.
 1983 *Acropolynema incognita*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 131.

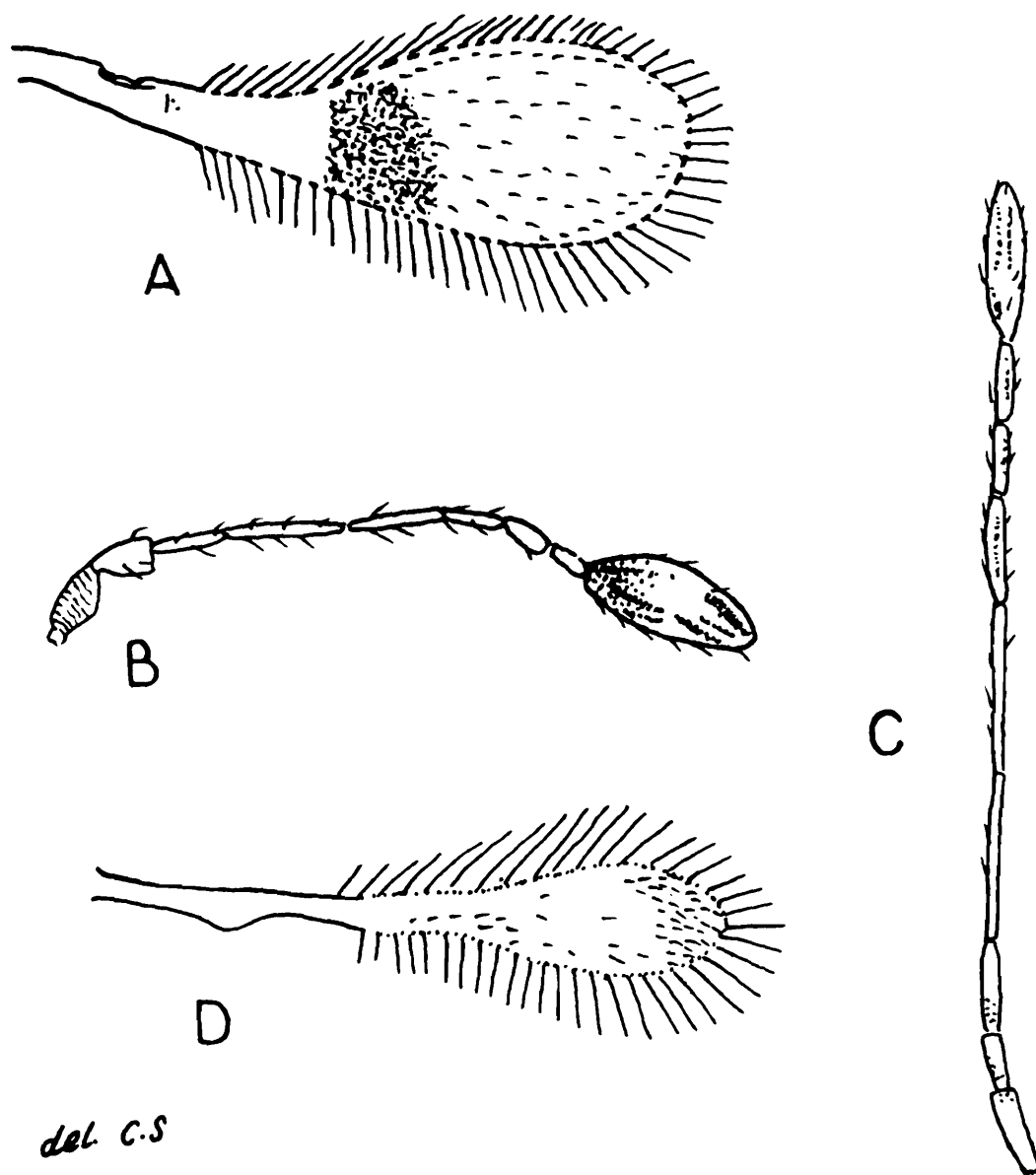


FIG. 341. A-B. *Acropolynema incognita* (Narayanan, Subba Rao & Kaur), female : A. Fore wing; B. Antenna; C-D. *Acropolynema bagicha* (Narayanan, Subba Rao & Kaur) : C. Antenna; D. Fore wing. (Modified from Subba Rao).

Female : Length 1.50 mm. Body yellow; club, metatarsus and ovipositor brown; middle and hind tibiae and hind femora infuscate; otherwise legs pale.

Head slightly wider than long, with scattered minute bristles, more on vertex and front; eyes small; gena longer than eyes; ocellar triangle obtuse; interocellar space almost 2 times frontocellar and 5 times ocellular space; antennae less than 0.50 of body; scape 2 times longer than thick; pedicel 2 times as long as thick; funicular segments 1-3 slender, 4-6 clearly thicker; club almost 4 times longer than thick; antennal segments ratio 11 : 9 : 10 : 18 : 14 : 8 : 7.5 : 7.27

Thorax elongate, oval, narrow anteriorly; prothorax conical; bristles scattered throughout prothorax.; scutum with 10 such bristles along front margin; fore wings 3.50 times as long as wide, only one fuscous fascia in the middle, with about 12 rows of strong brown bristles; proximal 0.50 of the wing upto fascia clear; rest hyaline; fringe 0.50 of the greatest wing width; hind wing shorter; hind tarsus equal to tibia but longer than femur and trochanters combined; middle tarsus almost equal to hind tarsus, but longer than tibia.

Petiole equal to or slightly shorter than hind coxae; abdomen longer than thorax, conical apically; first tergite widest behind but gradually tapering anteriorly; ovipositor exerted.

Type locality Delhi

Stephanodes Enoch

1909 *Stephanodes*, Enoch, *Trans. R. ent. Soc. London*, 1909 : 457.

1979 *Stephanodes*, Krombein *et al.*, *Hymen. N. America*, 1 : 1032.

1983 *Stephanodes*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Scape with a scaly structure; vein *m* slender; propodeum not carinate; wing not banded; thorax without stout setae; hind legs normally hairy; fore wing not pedunculate; abdomen petiolate.

Type-species : *Stephanodes elegans* Enoch

Stephanodes imbricatus (Narayanan & Subba Rao)

1961 *Polynema (Stephanodes) imbricatus*, Narayanan & Subba Rao, *Beitr. Ent.*, 11 : 667.

1983 *Stephanodes imbricatus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Female : Length 1.11 mm. Body brown; first 3 antennal segments, legs including the coxae but except the last tarsal segment and petiole bright golden-yellow, fourth antennal segment onwards light to dark brown.

Head cubical, hardly wider than thorax, concave behind, frons strongly excavate; lateral ocellar carinae strong; mandibles strong; tridentate; antenna with 9 segments, funicular segments elongate, slender, without sensorial ridges, which latter are present only on club; club large, simple elliptical; scape nearly 2 times as long as pedicel and much dilated ventrally, shagreened.

Thorax short, somewhat compressed, entirely smooth; mesonotum slightly convex; longer than broad; parapsidal furrows strong, diverging in front; scutellum quadrate, somewhat convex, shorter than mesonotum; metanotum transverse; fore wings large, extending much beyond body; uniformly pubescent; vein *m* long, narrow, not reaching margin and giving off an ill defined long vein

pm from the point insertion of the distal macrocheta; vein *st* narrow; proximal macrocheta absent; hypocheta strong, well developed; distal macrocheta short and stout; legs slender, long, femora dilated in the middle and reduced basally and apically; tibia long, subcylindrical; tarsi small, delicate; metatarsus long; fore metatarsus strongly bent in its proximal 0.50 to form club.

Petiole cylindrical, longer than coxae; abdomen ovate, conical behind; ovipositor not exerted.

Type locality : Delhi

Polynema Haliday

- 1833 *Polynema*, Haliday, *Ent. Mag.*, 1 : 269, 347.
 1834 *Eutriche*, Nees, *Hymen. Inchn. Aff. Monog.*, 2 : 186.
 1848 *Callitriche*, Agassiz, *Nomencl. Zool. Index Univ.*, 173, 439.
 1856 *Cosmocoma*, Förster, *Hym. Stud.*, 22 : 117, 120.
 1878 *Valkarella*, Westwood, *Proc. Linn. Soc. London (Zool.)*, 1 : 584.
 1883 *Walkerella*, Westwood, *Trans. R. ent. Soc. London*, (2) 1 : 32.
 1904 *Polynema*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 364.
 1904 *Walkerella*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 240.
 1909 *Walkerella*, Schmiedeknecht, *Gen. Ins.*, 97 : 97.
 1909 *Polynema*, Schmiedeknecht, *Gen. Ins.*, 97 : 499.
 1946 *Maidliella*, Soyka, *Zentbl. Gesamtgeb. Ent.*, 1 : 178.
 1946 *Novickyella*, Soyka, *Zentbl. Gesamtgeb. Ent.*, 1 : 179.
 1956 *Polynema*, Soyka, *Abhandl. zool.-bot. Ges. Wien.*, 19 : 32.
 1976 *Polynema*, New, *Austral. J. Zool.*, (Suppl.) 42 : 1-65.
 1979 *Polynema*, Krombein *et al.*, *Hymen. N. America*, 1 : 1032.
 1983 *Polynema*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Antennae in female with 9 segments and male 13 segments; club simple; scape enlarged and curved in both sexes; first funicular segment in female shorter than fourth; remaining segments become shorter and thicker; terminal segment stout, ovate; in male funicle filiform; head and thorax smooth, shiny; fore wing narrow, rounded apically; fringe long, legs long, tarsi with 4 segments; metatarsus equal to or longer than following 3 segments combined; abdomen petiolate; lanzette-pointed apically; ovipositor slightly exerted; body generally black or brown.

Type-species : *Polynema ovulorum* (Linnaeus)

KEY TO SPECIES

- | | |
|---|---|
| 1. Fore wing 5 or more than as long as wide | 3 |
| Fore wing less than 5 as long as wide | 2 |
| 2. Fore wings 4 as long as wide | 4 |
| Fore wings 3.30 times or a little less than 4 times as long as wide | 6 |

3. In male fore wing 5 times as long as wide; first funicular segment distinctly longest, segments 2-9 subequal, tenth shorter *P. kalatopensis* Mani & Saraswat
4. First and fourth funicular segments shortest, second segment longest; club very slightly shorter than preceding 3 funicular segments combined *P. dhenkunda* Mani & Saraswat
- First funicular segment not shortest 5
5. First funicular segment about equal to scape, second segment longest; scape with prominent hexagonal microsculpture; club little shorter than preceding 2.50 funicular segments combined *P. ahlaensis* Mani & Saraswat
- Second funicular segment longest; sixth shortest; club equal to a little less than the preceding 3 segments combined *P. orientalis* (Narayanan, Subba Rao & Kaur)
- First funicular segment in male longest, rest from 2-10 more or less of the uniform length; scape with fine transverse lines *P. anamalaiensis* Mani & Saraswat
6. In male funicular segments from 1-7 and 8-10 subequal; scape very short . . . *P. crassa* Mani & Saraswat
- In female first funicular segment almost equal to pedicel and fourth funicular segment, second segment longest with dark brown base; club slightly more than preceding 1.75 funicular segments combined *P. kamathi* Mani & Saraswat

Polynema kalatopensis Mani & Saraswat

1973 *Polynema kalatopensis*, Mani & Saraswat, *Mem. School Ent.*, 2 : 122.

1983 *Polynema kalatopensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Male : Length 0.80 mm. Body very dark brown; head very dark brown; antenna and legs brown, last tarsal segment of all legs dark brown; wings hyaline, veins brown; abdomen blackish-brown.

Head in front length to width 86 : 100; vertex and face with transverse reticulate microsculpture; ocellular space 2.60 times ocellar diameter and equal to front ocellar space; antenna with 13 segments, cylindrical; scape short, 2 times as long as thick; pedicel 1.20 times as long as thick and slightly less than 0.75 of scape; first funicular segment slightly longer than others, about 3 times as long as thick and slightly more than 1.50 times the pedicel; segments 2-9 subequal; tenth slightly shorter; club subequal to ninth segment, 3.80 times longer than thick.

Mesonotum and mentanotum with obscure transverse microsculpture; fore wing length to width 100 : 20, fringe on hind margin 1.50 times width; vein *m* punctiform; hind wing to fore wing length

66 : 100; fore coxa 1.50 times as long as thick; femur distinctly attenuated subapically, about 5 times longer than thick and 2.40 times coxa; tibia slightly shorter than femur; tarsus 1.40 times tibia, metatarsus slightly less than 0.50 of tibia and about 0.33 of tarsus, second segment 0.75 of metatarsus, third a little shorter than second and subequal to fourth; middle coxa about 1.30 times as long as thick; femur very slightly reduced apically, about 5 times longer than thick and 2.60 times coxa; tibia 1.40 times femur, spur about 0.20 of metatarsus; tarsus little longer than tibia; hind coxa 2 times as long as thick; femur slightly reduced apically, slightly more than 5 times longer than thick and almost 2 times coxa; tibia a little more than 1.25 times femur, spur slightly less than 0.33 of metatarsus; tarsus little longer than tibia, metatarsus slightly less than 0.40 of tarsus, second segment 0.60 of metatarsus, third 0.75 of second and subequal to the fourth tarsal segment.

Petiole 3 times as long as thick and 0.40 of abdomen; abdomen including petiole little less than 0.50 of body.

Type locality : Northwest Himalaya : Dalhousie (Kalatop)

Polynema dhenkunda Mani & Saraswat

(Figs. 342 & 343)

1973 *Polynema dhenkunda*, Mani & Saraswat, *Mem. School Ent.*, 2 : 116.

1983 *Polynema dhenkunda*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Female : Length 1.00 mm. Body very dark brown to black; head dark brown; antenna dark brown, except the pale brown scape and pedicel; legs brown; coxa, femur and tibia of all legs dark brown; wings hyaline except for an obscure brown clouding basally behind vein *m* in fore wings; veins dark brown; abdomen dark brown.

Head in front length to width 85 : 100; vertex and face with very faint reticulations; ocellular space about 5 times ocellar diameter; antenna slender, slightly shorter than 0.75 of body, segments 9; scape short, flattened, 2.70 times as long as thick; pedicel about 0.50 of scape and 1.60 times longer than thick; first funicular segment short and equal to fourth segment, little shorter than pedicel; second funicular segment equal to scape and 2 times pedicel; third nearly equal to sixth and about 0.60 of the second; fourth about 0.44 of the second; fifth 1.30 times longer than fourth and equal to pedicel; sixth about 1.20 times the fifth; club stout, thick, about 2.60 times as long as thick and very slightly shorter than preceding 3 funicular segments combined.

Fore wing 4 times as long as wide; fringe on hind margin nearly equal to width; hind wing to fore wing length 70 : 100, *m* punctiform; fore coxa 1.60 times as long as thick; femur about 6 times longer

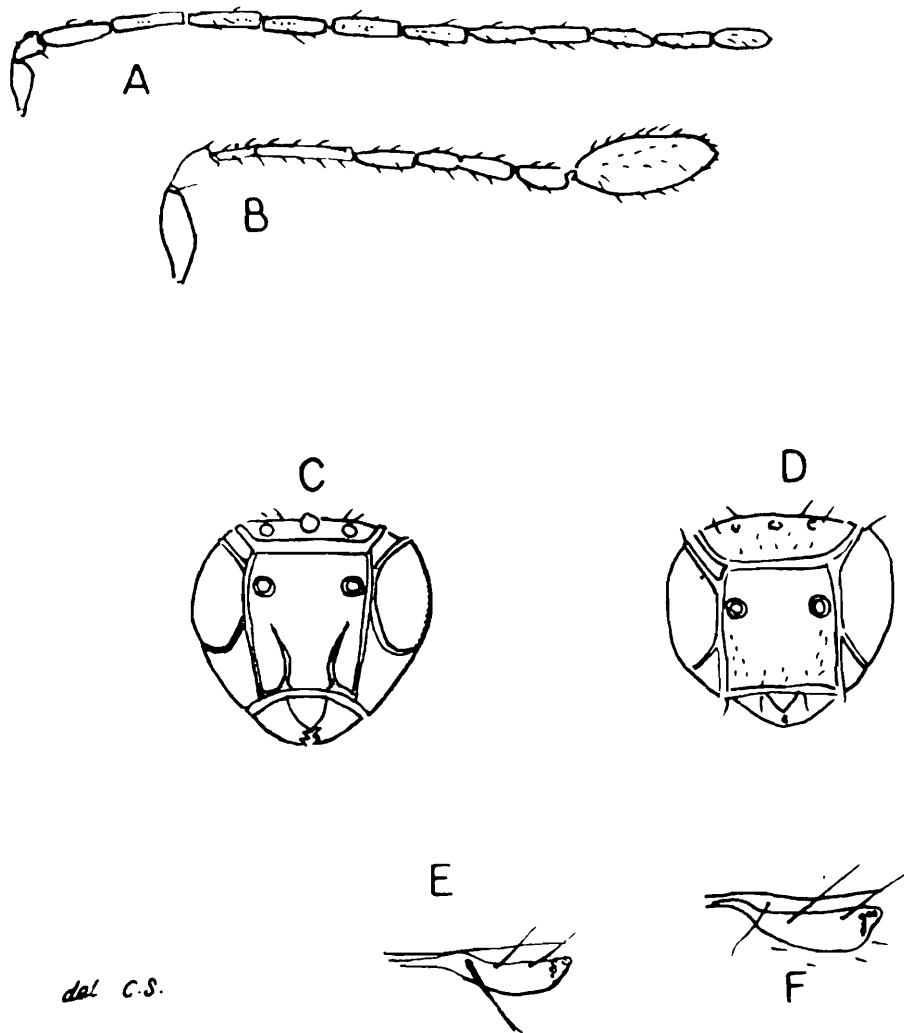
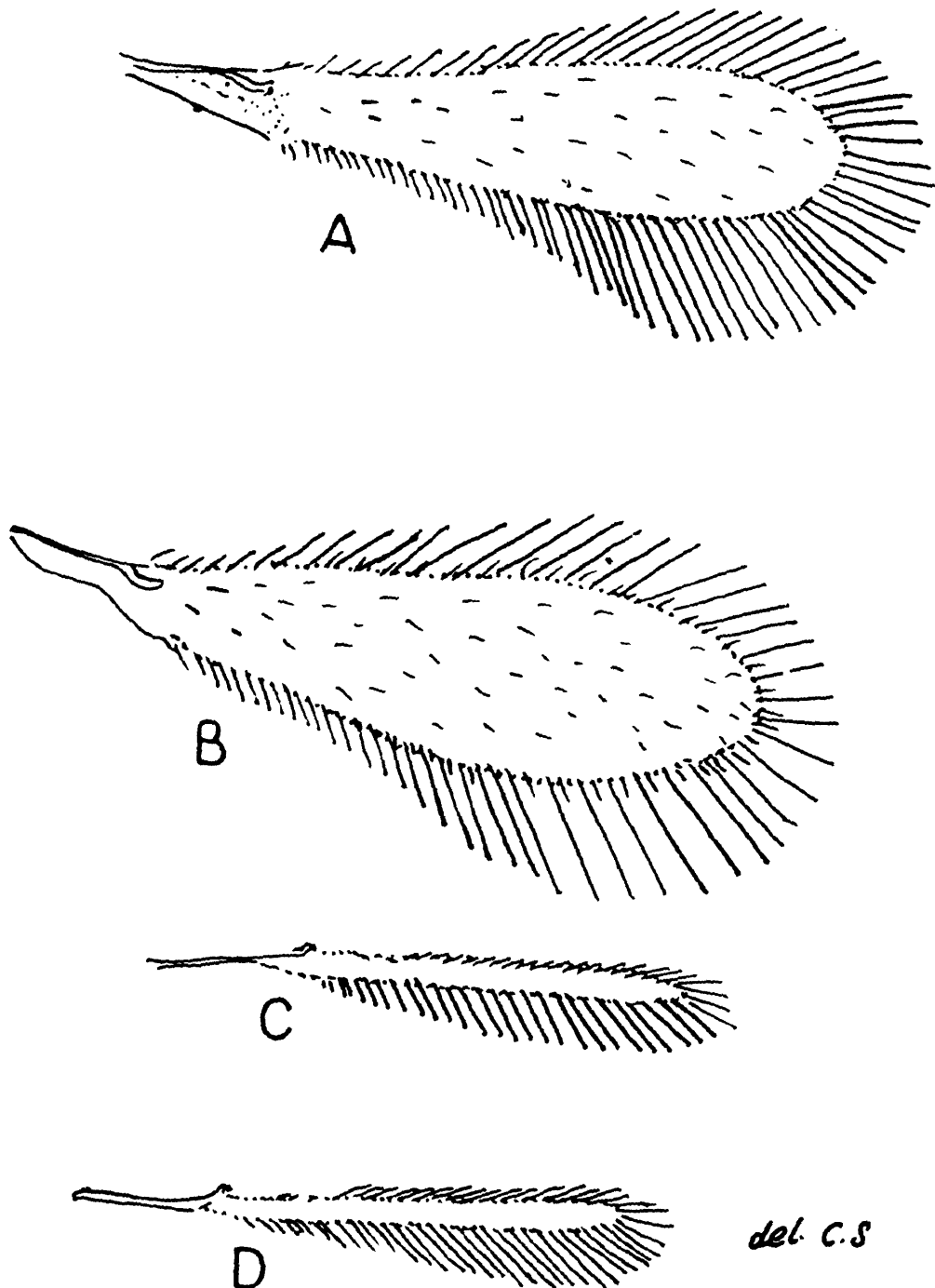


FIG. 342. *Polynema dhenkunda* Mani & Saraswat : A. Antenna, male; B. Antenna, female; C. Head in front view, female; D. Head in front view, male; E. Stigmal venation, female; F. Stigmal venation, male.

than thick and 2.50 times coxa; tibia to femur 10 : 11; 10 times longer than thick; tarsus 1.40 times longer than tibia, metatarsus 0.40 of tarsus, also equal to second and third tarsal segments combined, second segment 0.57 of metatarsus, third segment 0.75 of second, fourth 0.50 of metatarsus; middle coxa 1.40 times as long as thick and more or less equal to fore coxa; femur about 5.50 times longer than thick and about 2.30 times coxa; tibia about 1.30 times femur, spur about 0.20 of metatarsus; tarsus equal to tibia, metatarsus almost equal following 1.50 tarsal segments combined, second segment about 0.75 of metatarsus and 0.25 of tarsus, third segment about 0.75 of the second and equal to the fourth; hind coxa about

2 times as long as thick; femur about 6 times longer than thick and 2 times coxa; tibia about 1.30 times femur, spur 0.33 of metatarsus; tarsus about 0.80 of tibia, metatarsus little more than 0.33 of tarsus and equal to second and third tarsal segments combined, third about 0.75 of the second, fourth segment 0.50 of metatarsus and slightly longer than third.



del. C.S

FIG. 343. *Polynema dhenkunda* Mani & Saraswat : A. Fore wing, female; B. Fore wing, male; C. Hind wing, female; D. Hind wing, male.

Abdomen ovate, including petiole slightly more than 0.50 of body; petiole 3.60 times longer than thick and about 0.33 of abdomen; ovipositor little exerted.

Male : Length 1.00 mm. Body very dark brown to black; head dark brown; antenna brown, except the pale brown scape and pedicel; petiole and legs brown; last tarsal segment of all legs dark brown; wings hyaline as in female; abdomen brownish-black.

Head in front length to width 87 : 100; vertex and face with conspicuous transverse reticulations; ocellular space about 3 times ocellar diameter, front ocellar space slightly more than 2 times ocellar diameter; eye length to head length 52 : 100; antenna with 13 segments; scape short 2.70 times as long as thick; pedicel thicker than other segments, about 0.50 of scape and 1.20 times as long as thick; funicular segments long and cylindrical; first funicular segment 5 times longer than thick and 2.50 times pedicel; segments 2-3 subequal to first; segments 4-5 subequal and a little shorter than third; sixth a little shorter than fifth and 4.50 times as long as thick; segments 7-10 subequal, 4 times longer than thick; club equal to the tenth funicular segment and 4 times longer than thick.

Mesonotum and metanotum with fine reticulate microsculpture; fore wing length to width 100 : 21, fringe on hind margin equal to width; vein *m* punctiform; hind wing to fore wing length 74 : 100; fore coxa 1.50 times as long as thick; femur distinctly reduced apically, little more than 6 times longer than thick, about 2.50 times coxa; tibia subequal to femur, 10 times longer than thick; tarsus 1.40 times tibia, metatarsus 0.50 of tibia and little more than 0.33 of tarsus, also equal to following 1.50 segments combined, second segment 0.75 of metatarsus, third 0.75 of second and equal to fourth; middle coxa 1.50 times as long as thick; femur nearly uniformly thick, about 7 times as long as thick; femur nearly uniformly thick, about 7 times longer than thick and 2.60 times coxa; tibia 1.30 times femur, spur about 0.20 of metatarsus, tarsus about equal to fore tarsus, tibia to tarsus 8 : 9, metatarsus equal to following 1.50 segments combined, third tarsal segment slightly less than 0.75 of the second and equal to the fourth; hind coxa 2.30 times as long as thick; femur slightly reduced apically, 6.30 times longer than thick and little more than 2 times coxa; tibia 1.20 times femur, hind spur about 0.33 of metatarsus; tarsus equal to tibia, metatarsus slightly less than 0.40 of tarsus, second segment about 0.60 of metatarsus, third tarsal segment 0.75 of the second, 0.50 of metatarsus, and equal to the fourth.

Petiole about 3 times longer than thick, a little more than 0.33 of abdomen, including petiole abdomen a little less than 0.50 of body.

Type locality Northwest Himalaya : Dalhousie (Dhenkund, Khajjiar)

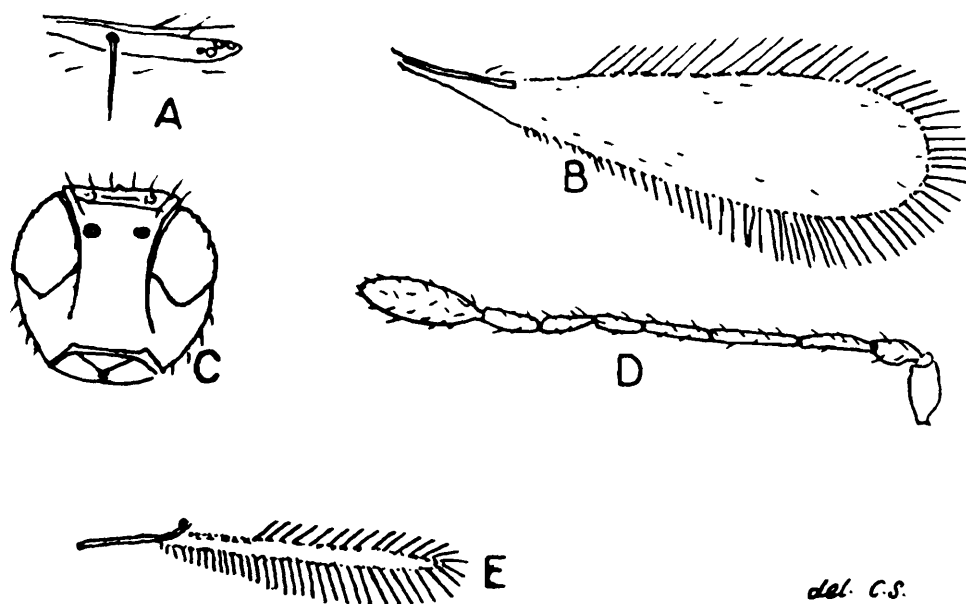


FIG. 344. *Polynema ahlaensis* Mani & Saraswat, female; A. Stigmal venation; B. Fore wing; C. Head in front view; D. Antenna; E. Hind wing.

***Polynema ahlaensis* Mani & Saraswat**

(Fig. 344)

1973 *Polynema ahlaensis*, Mani & Saraswat, *Mem. School Ent.*, 2 : 111.

1983 *Polynema ahlaensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Female : Length 1.00 mm. Body dark brown to black; head brownish-black; antenna black, except the brown scape, pedicel and first funicular segment; legs yellowish-brown, all second and third tarsal segments brown and fourth tarsal segments dark brown; wings hyaline, veins dark brown; abdomen brownish-black, petiole yellowish-brown.

Head in front as long as wide; vertex and face with fine reticulate microsculpture; ocellocular space equal to front ocellar space and about 2 times ocellar diameter; eye length to head length 51 : 100; antenna slightly shorter than body, slender, segments 9; scape short, 2.50 times as long as thick, with hexagonal microsculpture dorsally; pedicel 2 times as long as thick and a little more than 0.50 of scape; first funicular segment 7 times longer than thick, subequal to scape; second segment longest, 7.40 times longer than thick and 1.20 times the first, also 2 times pedicel; third funicular segment about 6 times longer than thick, slightly shorter than first and 0.75 of second, fourth segment 3.50 times longer than thick and 0.75 of third; fifth funicular segment very slightly longer than fourth; 3.50 times as long as thick and subequal to sixth; sixth 2.50 times longer than thick; club stouter than funicle, about 3.50 times longer than thick and a little shorter than preceding 2.50 funicular segments combined.

Mesonotum and metanotum longitudinally striate-reticulate; fore wing 4 times as long as wide, fringe on hind margin about 0.50 of width; hind wing to fore wing length 68 : 100; fore coxa 1.50 times longer than thick; femur uniformly thick, slightly more than 7 times longer than thick and 3.20 times coxa; tibia to femur 8 : 7; tarsus 1.25 times tibia, metatarsus almost 0.50 of tarsus, second segment 0.38 of metatarsus and subequal to third and fourth tarsal segments; middle coxa 1.60 times as long as thick, about equal to fore coxa; femur uniformly thick, about 7.40 times longer than thick and 2.60 times coxa; tibia 1.50 times longer than femur, spur about 0.20 of metatarsus; tarsus equal to tibia, metatarsus slightly less than 0.50 of tibia and also slightly less than 0.50 of tarsus, second segment about 0.43 of metatarsus, third very slightly shorter than second, fourth about equal to third; hind coxa 2.50 times longer than thick; femur slightly thicker in the middle, about 7 times as long as thick and little more than 2 times coxa; tibia 1.30 times femur, spur slightly less than 0.25 of metatarsus; tarsus equal to middle tarsus, with segments also more or less in the same proportions.

Petiole cylindrical, 4.40 times longer than thick and about 0.40 of abdomen, also equal to hind coxa; abdomen including petiole slightly more than 0.50 of body; first tergite more than 0.50 of abdomen; ovipositor a little exerted.

Type locality : Northwest Himalaya : Dalhousie

***Polynema orientalis* (Narayanan, Subba Rao & Kaur)**

(Fig. 345)

1960 *Maidliella orientalis*, Narayanan *et al.*, *Beitr. Ent.*, 10 (7/8) : 888.

1961 *Polynema (Maidliella) orientalis*, Narayanan & Subba Rao, *Beitr. Ent.*, 11 : 667.

1983 *Polynema orientalis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Female : Length 1.86 mm. Body honey-yellow; head darker; club, metatarsus, vertex and ovipositor brown; hind femora and tibia infuscate apically.

Head wider than long, with minute scattered bristles, more so on vertex and frons; eyes small; gena longer than eyes; ocelli in an obtuse triangle; interocular space almost 2 times front ocellar and 5 times ocellocular; antenna shorter than body; scape thick, a little over 0.50 times as long as thick; pedicel 2 times as long as thick; antennal segments ratios 7 : 6 : 11 : 19 : 17 : 8.5 : 8 : 6.5 : 20; funicular segments slender; first segment about 10 times as long as thick; segments 1-3 equal thickness from 4-6 a gradual increase in thickness; segment 6 about 4 times longer than thick; club with 4 longitudinal sensillae.

Thorax elongate-oval, narrow anteriorly; prothorax conical, with 5 bristles on each side; mesoscutum longer than scutellum with

a pair of bristles anteriorly; parapsidal furrows complete; cephalic pairs of bristles on scutellum as far apart as the furrow at apex; spiracular sulci prominent; fore wings almost 4 times as long as wide, narrow proximad and evenly expanded distad, apex smoothly rounded; vein *m* short; 2 fuscous fascia present, one almost in the middle, second in the apical 0.50, comparatively larger; discal hairs irregular, more concentrated in the apical 0.50; prominent brown bristles present in the first fascia, arranged in horizontal rows out of which 2 such rows extend to the second fascia; caudal margin fringe longer, the longest being less than 0.50 of wing width; hind wing shorter than fore wing; legs long; tarsi longer than their respective tibiae; hind legs longest; hind tarsus longer than middle tarsus; tibia longer than femur and trochanter combined; hind coxae very long.

Petiole subequal to hind coxae; abdomen longer than thorax, conical apically; first tergite widest behind but gradually tapers anteriorly; ovipositor exerted to about 0.18.

Male : Length 1.82 mm. Like female except basal 2 or 3 antennal segments yellow, rest brownish; scape and pedicel almost equal, each about 1.50 times as long as thick; the following segments of almost equal length.

Type locality : Delhi

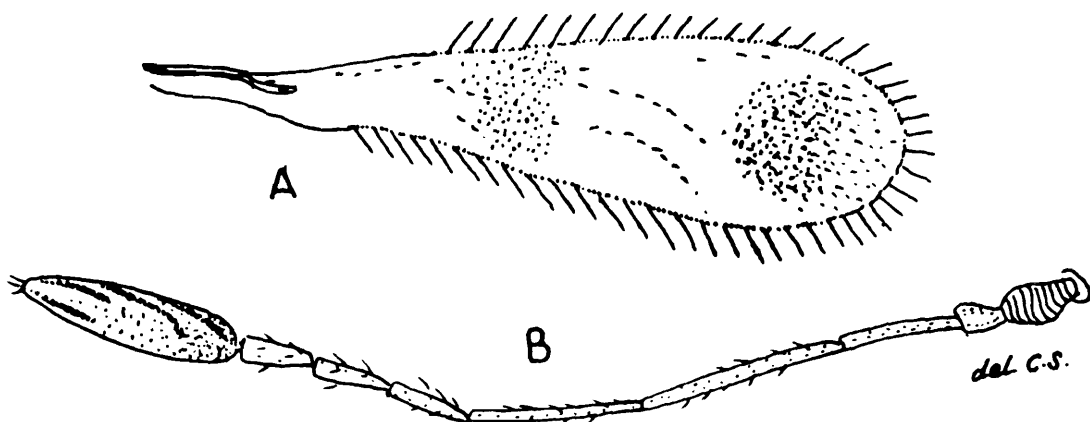


FIG. 345. *Polynema orientalis* (Narayanan, Subba Rao & Kaur), female : A. Fore wing; B. Antenna. (Modified from Subba Rao).

***Polynema anamalaiensis* Mani & Saraswat**

(Fig.346)

1973 *Polynema anamalaiensis*, Mani & Saraswat, *Mem. School Ent.*, 2 : 113.

1983 *Polynema anamalaiensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Male : Length 0.80 mm. Body dark brown to black; head and thorax brownish-black; antenna dark brown to black, except pale

brown scape, pedicel and first funicular segments; legs pale yellowish-brown, all fourth tarsal segments dark brown; wings hyaline, veins dark brown; abdomen black, petiole yellowish-brown.

Head in front as long as wide; vertex and face with fine reticulate microsculpture; antenna slightly longer than body, slender, segments 13; scape 2 times as long as thick, with fine transverse lines dorsally; pedicel slightly thicker than scape, 1.20 times as long as thick and 0.66 of scape, except first funicular segment which is the longest, rest subequal; club slightly longer than preceding funicular segment.

Fore wing length to width 100 : 25, fringe on hind margin about 0.75 of width; vein *m* punctiform; hind wing to fore wing length 80 : 100; fore coxa 1.50 times longer than thick; femur distinctly reduced apically, about 6 times longer than thick and 2.60 times coxa; tibia about 9 times longer than thick and little shorter than femur; tarsus 1.30 times tibia, metatarsus 0.50 of tibia and about 0.40 of tarsus, second segment 0.60 of metatarsus, third slightly shorter than second and equal to fourth; middle coxa about 1.30 times longer than thick; femur distinctly reduced apically, 5.50 times longer than thick and little less than 3 times coxa; tibia 1.30 times femur, spur 2.25 times metatarsus; tarsus to tibia 10 : 9, metatarsus 0.38 of tibia and very slightly more than 0.33 of tarsus, second segment slightly less than 0.75 of metatarsus, third tarsal segment 0.75 of the second and equal to fourth; hind coxa about 2.50 times longer than thick; femur distinctly reduced apically, 5.50 times longer than thick and little less than 2 times coxa; tibia about 1.30 times femur, spur about 0.25 of metatarsus; tarsus a little shorter than tibia, metatarsus about 0.38 of tarsus, second segment 0.60 of metatarsus, third tarsal segment slightly more than 0.75 of second and equal to fourth.

Petiole slightly less than 3 times longer than thick and little more than 0.33 of abdomen; abdomen including petiole 0.50 body.

Type locality : Palghat : Malampuzha Dam

***Polynema crassa* Mani & Saraswat**

(Fig. 346)

1973 *Polynema crassa*, Mani & Saraswat, *Mem. School Ent.*, 2 : 114.

1983 *Polynema crassa*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Male : Length 1.20 mm. Body very dark brown to black; head dark brown; antenna dark brown; legs dark brown, except last tarsal segments, legs dark brown; wings hyaline except clouding at base, veins dark brown.

Head in front length to width 90 : 100; vertex and face with faint reticulations; ocellular space subequal to ocellar diameter, front ocellar space slightly less than 2 times ocellar diameter; antenna

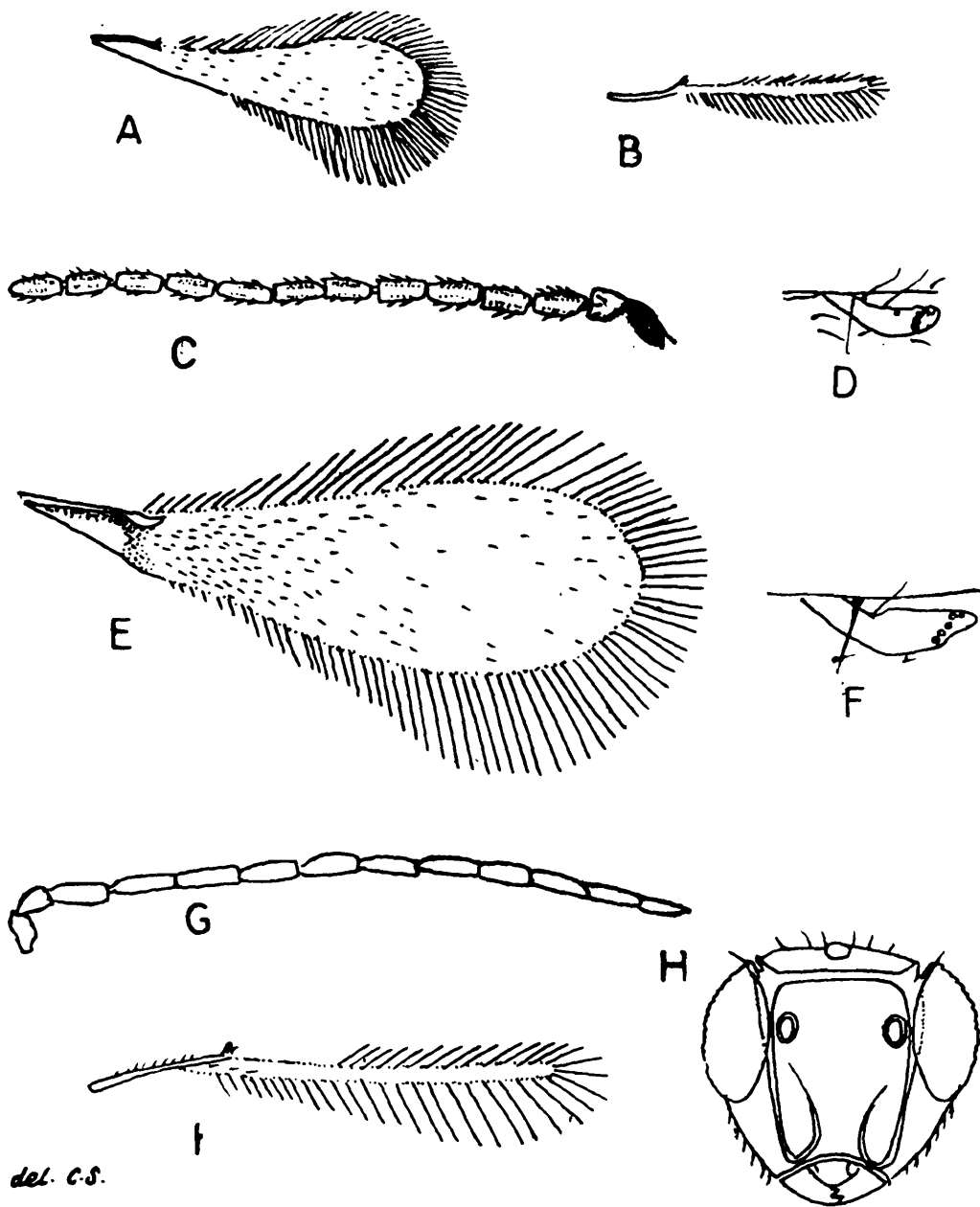


FIG. 346. A-D. *Polynema analalaiensis* Mani & Saraswat, male : A. Fore wing; B. Hind wing; C. Antenna; D. Stigmal venation; E-I. *Polynema crassa* Mani & Saraswat, male : E. Fore wing; F. Stigmal venation; G. Antenna; H. Head; I. Hind wing.

longer than body, slender, segments 13, cylindrical; scape short, 1.40 times as long as thick; pedicel slightly shorter than scape and 1.10 times as long as thick; funicular segments 1-7 subequal and about 3 times longer than thick; segments 8-10 subequal and also about 3 times longer than thick; club equal to the preceding funicular segment, slightly more slender, 3.70 times as long as thick.

Mesonotum and metanotum with fine reticulate microsculpture; fore wing length to width 100 : 30, fringe on hind margin slightly

less than 0.75 width; hind wing to fore wing length 76 : 100; fore coxa 1.40 times as long as thick; femur 7 times longer than thick and about 2.50 times coxa; tibia nearly equal to femur; tarsus 1.20 times tibia, metatarsus 0.40 of tibia and 0.33 of tarsus, second segment 0.75 of metatarsus; third slightly shorter than second and subequal to fourth; middle coxa about 1.50 times as long as thick; femur 7.60 times longer than thick and 2.70 times coxa; tibia about 1.30 times longer than femur, spur about 0.13 of metatarsus; tarsus a little longer than tibia, metatarsus, little less than 0.50 of tibia, second segment 0.66 of metatarsus, third tarsal segment about 0.75 of the second and subequal to fourth; hind coxa about 2.40 times as long as thick; femur slightly more than 6 times longer than thick and nearly 2 times coxa; tibia 1.25 times femur, spur about 0.25 of metatarsus; tarsus a little longer than tibia, metatarsus 0.50 of tibia and slightly less than 0.50 of tarsus, second segment 0.50 of metatarsus, third 0.75 of the second and subequal to the fourth.

Petiole 3.60 times longer than thick, abdomen including petiole little less than 0.50 of body.

Type locality : Northwest Himalaya : Dalhousie (Kalatop)

Polynema kamathi Mani & Saraswat

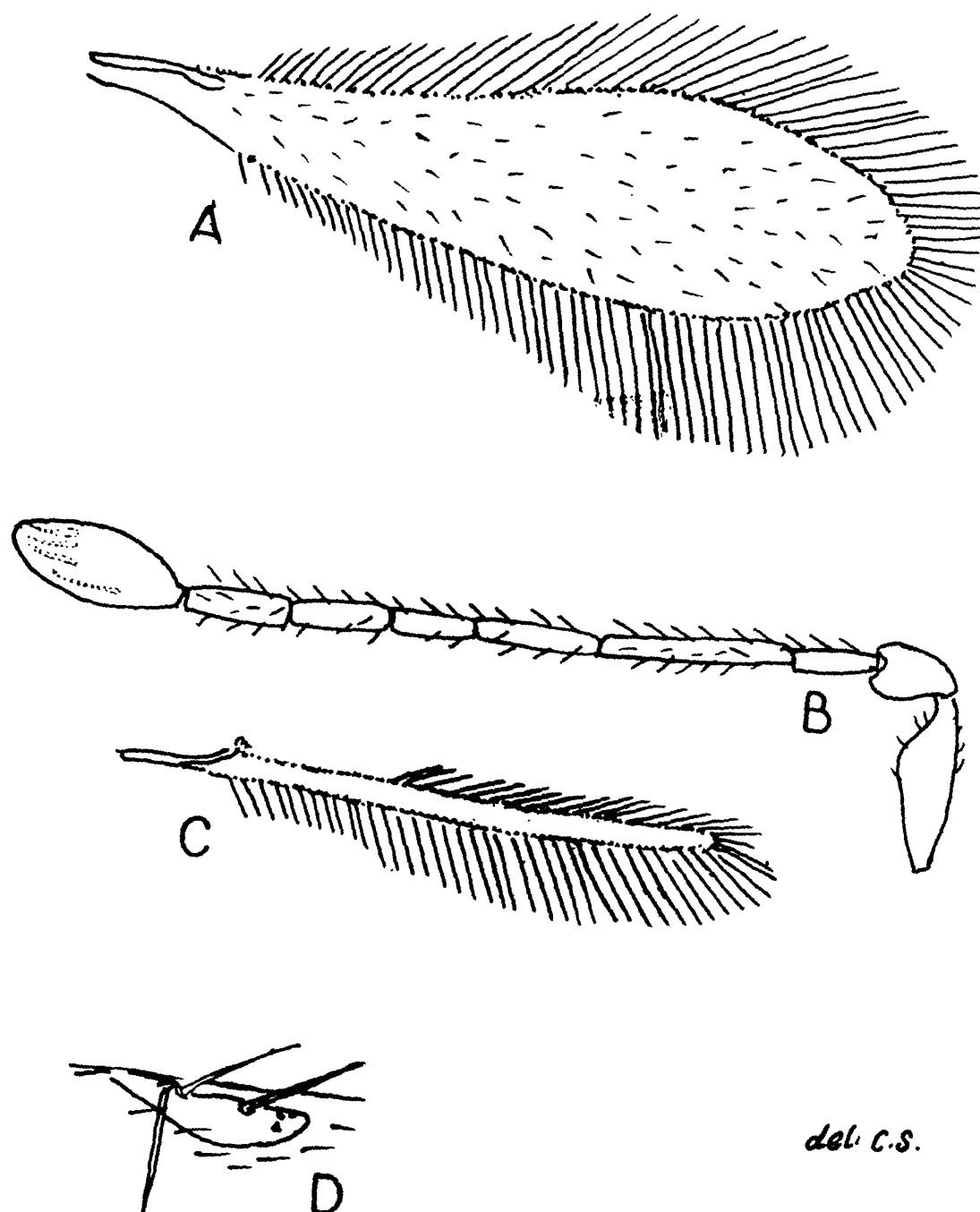
(Fig. 347)

1973 *Polynema kamathi*, Mani & Saraswat, *Mem. School Ent.*, 2 : 123.

1983 *Polynema kamathi*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Female : Length 1.80 mm. Body black; head black; scape, pedicel, first and second funicular segments yellowish-brown; base of second funicular segment and rest of antenna dark brown; legs yellowish-brown, except dark brown fourth tarsal segment of all legs; wings hyaline, except for an obscure brown clouding basally behind vein, veins dark brown; abdomen black.

Head in front length to width 86 : 100; vertex and face with conspicuous reticulate microsculpture; ocellular space about 3 times ocellar diameter, front ocellar space nearly 2.50 times ocellar diameter; antenna shorter than body, with 9 segments; scape about 3 times as long as thick; pedicel 1.60 times longer than thick and about 0.50 of scape; all funicular segments cylindrical; segments from 1-5 more or less of uniform thickness, except sixth which is a little thicker than the rest; first funicular segment about 4 times longer than thick, almost equal to pedicel and fourth funicular segment; second segment 8.80 times longer than thick, 2.25 times first funicular segment; third segment nearly 6 times longer than thick and almost 0.60 of the second; fourth about 0.60 of the third and 4 times longer than thick; fifth 4.40 times longer than thick and about 1.20 times the fourth and also 0.50 of the second; sixth funicular segment 3.40



del. C.S.

FIG. 347. *Polynema kamathi* Mani & Saraswat, female : A. Fore wing; B. Antenna; C. Hind wing; D. Stigmal venation.

times longer than thick and a little longer than fifth; club stout, elliptic-ovate, 2.60 times longer than thick and slightly more than preceding 1.75 funicular segments combined.

Pronotum, mesonotum and metanotum, pleurites and tergites longitudinally reticulate; fore wing length to width 100 : 26, fringe on hind margin about 0.75 of width, vein *m* punctiform; hind wing to fore wing length 70 : 100; coxa 2.10 times as long as thick; femur about 6 times longer than thick; tibia equal to femur and 9 times

longer than thick; tarsus 1.30 times tibia, metatarsus 0.40 of tarsus and slightly more than 0.50 of tibia, also equal to the second and third tarsal segment combined, second segment 0.60 of metatarsus, third segment about 0.75 of the second and almost equal to the fourth; middle coxa subglobose, 1.20 times as long as thick; femur about 5.50 times longer than thick and almost 2.60 times coxa; tibia to femur 3 : 2, spur about 0.16 of metatarsus; tarsus to tibia 13 : 12, metatarsus slightly longer than following 2 tarsal segments combined, second segment about 0.50 of metatarsus, third slightly less than 0.75 of the second and almost equal to the fourth; hind coxa nearly 2 times as long as thick; femur about 6 times longer than thick and little longer than 2 times coxa; tibia to femur 7 : 5; spur 0.16 of metatarsus; tarsus little longer than tibia, metatarsus almost 0.50 of tarsus, third tarsal segment about 0.75 of the second, fourth slightly shorter than third.

Petiole 3.30 times longer than thick and slightly less than 0.33 of abdomen; abdomen including petiole 1.00 mm, slightly more than 0.50 of body; abdomen elongate, oval; ovipositor a little exerted.

Type locality : Northwest Himalaya : Dalhousie (Ahla Catchment Area)

***Polynema truncata* Narayanan & Subba Rao**

1961 *Polynema (Polynema) truncata*, Narayanan & Subba Rao, *Britr. ent.*, 11 : 664.

1983 *Polynema truncata*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 140.

Female : Length 0.89 mm. Head, thorax and abdomen brown; legs pale yellow; scape and pedicel yellow, rest of antennae gradually darkening; club dark brown; eyes red.

Head cubical, wider than thorax, concave behind; eyes and ocelli prominent; face not much excavated; carinae strongly developed; antennae with 9 segments; inner side of scape with very weak transverse striations; funicular segments moderately elongate, devoid of sensorial ridges; pedicel short, not much dilated; third segment slightly shorter than pedicel, fourth segment 2 times as long as the third, fifth longer than segments 6-8; club large, elliptical.

Thorax short, smooth, convex, parapsidal furrows strong; scutellum subquadrate; metanotum transverse, propodeum gradually declivous; fore wings normal, vein *m* short and broad, not reaching margin; proximal and distal macrocheta short, but well developed; hypocheta stout, almost as long as wing width at base; legs moderately stout.

Abdomen ovate, longer than thorax; petiole stout, sigmoid; ovipositor slightly exerted.

Type locality : Delhi

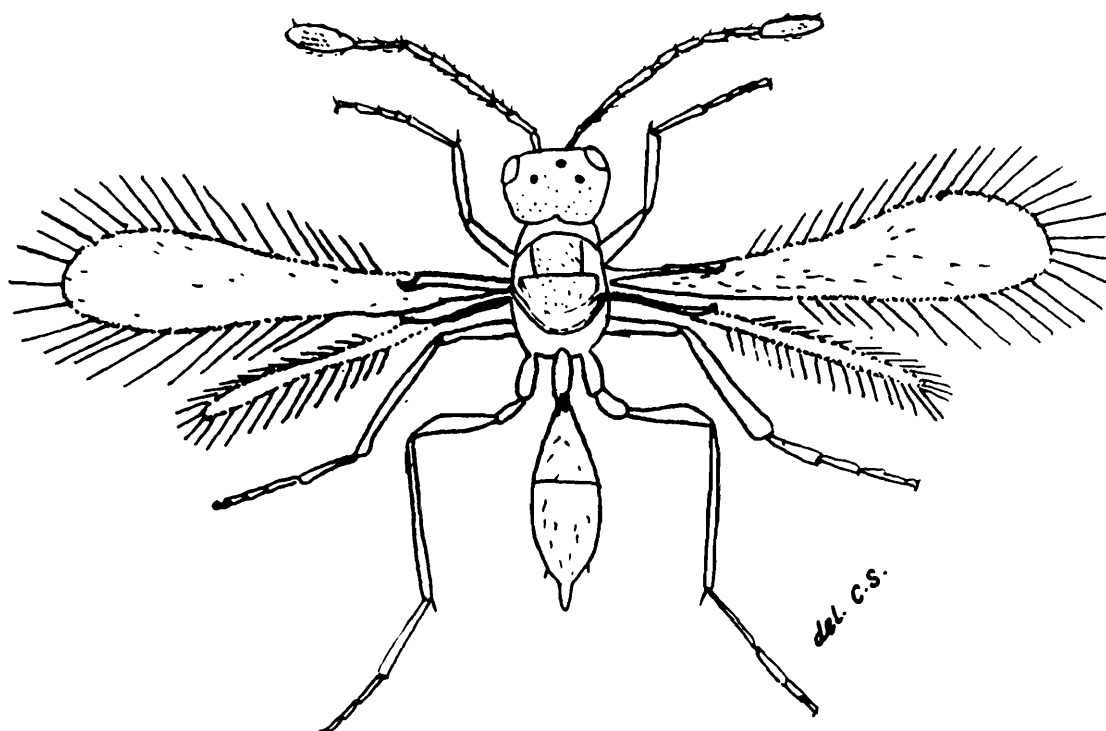


FIG. 348. *Polynema indica* Narayanan & Subba Rao, female. (Modified from Subba Rao).

***Polynema indica* Narayanan & Subba Rao**

(Fig. 348)

1961 *Polynema (Polynema) indica*, Narayanan & Subba Rao, *Britr. Ent.*, 11 : 663.

1983 *Polynema indica*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Female : Length 0.93 mm. Head and throax dark brown; abdomen brown; legs, petiole and scape bright golden-yellow; pedicel, funicular segments and club darkening gradually from golden-yellow to brown.

Head cubical; eyes small; scape reaching beyond vertex, not much dilated, about 1.50 times longer than pedicel, which latter is a little longer than third segment; fourth segment more than 2 times third; fifth shorter than fourth but longer than third; segments 6 and 8 slightly longer than 7; club longer than scape.

Thorax subcompressed; scutum and scutellum almost flat; propodeum gradually declivous; fore wings long, extending beyond abdomen; vein *m* short; both distal and proximal macrocheta well developed but short and stout; hypocheta a little away from the proximal macrocheta, long and almost as long as wing width at base.

Abdomen elongate, longer than thorax; petiole moderately long; ovipositor slightly exserted.

Type locality : Delhi

SPECIES INCERTAE SEDIS

Polynema anantanagana Narayanan

- 1961 *Polynema anantanagana*, Narayanan, *Proc. Natl. Inst. Sci. India*, (B) 26 : 24.
 1983 *Polynema anantanagana*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 139.

Host (?) *Quadraspidiotus perniciosus* (Comstock)

TRIBE OOCYTONINI

- 1904 *Gonatocerini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1904 *Oocyttonini*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Oocyttonina*, Schmiedeknecht, *Gen. Ins.*, 97 : 49.
 1909 *Gonatocerina*, Schmiedeknecht, *Gen. Ins.*, 97 : 491.
 1929 *Oocyttonini*, Girault, *N. American Hymenoptera Mymaridae* (privately printed) : 29.
 1938 *Gonatocerariae*, Mani, *Cat. Indian Ins.*, 23 : 142.
 1961 *Oocyttonini*, Annecke & Doutt, *Ent. Mem. Dept. Agr. Tech. Serv. Repub. S. Africa*, 5 : 1-71.
 1979 *Oocyttonini*, Krombein *et al.*, *Hymen N. America*, 1 : 1024.
 1983 *Oocyttonini*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 183.

Tarsi with 5 segments.

KEY TO GENERA

- | | |
|---|---------------------------------|
| 1. Petiole short, thicker than long | 2 |
| Petiole at least as long as thick | 3 |
| 2. Funicle with 5 segments; club solid or apparently with 2 or 3 segments; vein <i>m</i> very long; venation extending to 0.50 or more the length of wing | <i>Arescon</i> Walker |
| Funicle with 8 segments; club solid; vein <i>m</i> not very long; venation not extending beyond the 0.33 of the wing | <i>Gonatocerus</i> Nees |
| 3. Funicle with 8 segments; antennae with 11 segments; propodeum with well developed carinae | <i>Oocyttonus</i> Haliday |
| Funicle with 7 segments; antennae with 10 segments; propodeum at most very weakly carinate | 4 |
| 4. Funicle without annellus | <i>Eomymar</i> Perkins |
| Funicle with annellus, sometimes so small as to be overlooked | 5 |
| 5. Fore wing narrow, distinctly curved on both margins, vein <i>st</i> short, less than 0.50 of <i>m</i> , with a truncate apex | <i>Camptoptera</i> Förster |
| Fore wing comparatively broad, not all curved; vein <i>st</i> long, more than 0.50 of <i>m</i> , narrowed apically | <i>Camptopteroides</i> Viggiani |

Arescon Walker

- 1846 *Arescon*, Walker, *Ann. Mag. nat. Hist.*, 18 : 49.
 1846 *Panthus*, Walker, *Ann. Mag. nat. Hist.*, 18 : 52.
 1847 *Leimacis*, Förster, *Linnaea Ent.*, 2 : 208.
 1885 *Arescon*, Howard, *Div. Ent. Bull. US Dept. Agric.*, 5 : 43.
 1904 *Leimacis*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Leimacis*, Schmiedeknecht, *Gen. Ins.*, 97 : 493.
 1911 *Arescon*, Girault, *Arch. Naturgesch.*, 77 (1) : sup. 2 : 132.
 1912 *Arescon*, Mercet, *Trab. Mus. Nac. Cien. Nat. Madrid*, 10 : 95.
 1913 *Xenomymar*, Crawford, *Proc. US nat. Mus.*, 46 : 343.
 1914 *Neurotes*, Enock, *Proc. Roy. Ent. Soc. London*, 1913 : 134.
 1979 *Arescon*, Krombein *et al.*, *Hymen. N. America*, 1 : 1024.
 1983 *Arescon*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

Antennae in female with 8 segments; club simple; in male with 13 segments; vein *m* reaching to the middle of wing; tarsi with 5 segments; abdomen sessile; in female the first funicular segment little longer than pedicel; second segment unusually long, almost equal to club, which latter is oval; but not longer than the laterally projecting segments combined; in male first funicular segment not longer than pedicel, remaining a little longer; body generally brown.

Type-species : *Arescon dimidiatus* (Haliday)

Arescon enocki (Subba Rao & Kaur)

- 1959 *Neurotes enocki*, Subba Rao & Kaur, *Proc. Indian Acad. Sci.*, (B) 49 : 235.
 1966 *Arescon enocki*, Subba Rao, *Indian J. Ent.*, 28 : 187.
 1983 *Arescon enocki*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 132.

Female : Length 0.67 mm. Body brownish-yellow; vertex brown; eyes and ocelli red; antennae uniformly brownish-yellow; anterior tip of mesothorax brown; a brown spot in parapsides; propodeum somewhat brown; legs lemon-yellow.

Head above subcomplanate, almost 1.50 times wider than long, and about as wide as thorax; eyes glabrous; gena about 0.50 of eye; ocelli in a low arc; interocular space 3 times interocellar space, latter slightly over ocellocular space; antennae with 8 segments, glabrous; shorter than body, antennal segments ratio 12 : 6 : 2.5 : 7.8 : 8 : 7 : 28; scape cylindrical; pedicel 1.50 times longer than thick; first funicular segment longer than thick, the following 4 segments about 3 times their own thick; club solid, rounded apically, slightly pubescent, 4 times longer than thick, sensory ridges present on distal 4 funicular segments.

Thorax oblong, faintly longitudinally striate; parapsidal furrows not deeply impressed; just at the base of scutum, in front of the anterior border of scutellum, there is belt of 3 rectangular carinae

with largest in middle; scutellum smooth, smaller than scutum; mesothorax with one median diamond-shaped carina; propodeum feebly sculptured; the lower tip of the metathoracic carina 12-16 faint longitudinal lines radiate towards the base of the propodeum; fore wings long, narrow, with the costal edge a little convex, 4.50 times longer than wide; fringe long, dense, along whole margin except basally, the longest a little over wing width; vein *sm* thin, short; vein *m* very long, reaching to beyond the middle of the wing, tip slightly enlarged; veins *pm* and *st* absent; hind wings narrow, linear, a little smaller than the fore wings, fringe dense but cilia not longer than those of the fore wings; legs long slender; coxae moderately developed; fore tibia comparatively thicker and shorter; hind tibia slender slightly more than 1.50 times hind femur; tarsi pentamerous, segments equal, hind tarsus equal to hind tibia; fore tarsus longer than fore tibia, almost equal to fore femur

Abdomen subpetiolate, smooth, conical; slightly longer than thorax; first tergite the smallest, size increases gradually upto 6, the largest; 7 small triangular; ovipositor slightly exerted, from behind the tip of abdomen.

Type locality : New Delhi

Distribution : Bihar, Delhi, Gujarat, Himachal Pradesh, Karnataka, Maharashtra

Host Jassid eggs

Gonatocerus Nees

- 1834 *Gonatocerus*, Nees, *Hym. Ichn. Affin. Monog.*, 2 : 192.
 1846 *Lymaenon*, Walker, *Ann. Mag. nat. Hist.*, 18 : 49.
 1847 *Rachistus*, Förster, *Linnaea, Ent.*, 2 : 203.
 1898 *Rhachistus*, Dalla Torre, *Cat. Hymen.*, 5 : 429.
 1904 *Gonatocerus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Gonatocerus*, Schmiedeknecht, *Gen. Ins.*, 97 : 491.
 1909 *Oophilus*, Enoch, *Trans. ent. Soc. London*, 1909 : 458.
 1913 *Agonatocerus*, Girault, *Canad. Ent.*, 45 : 276.
 1913 *Gonatoceroides*, Girault, *Canad. Ent.*, 45 : 276.
 1938 *Gonatocerus*, Mani, *Cat. Indian Ins.*, 23 : 142.
 1979 *Gonatocerus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1025.
 1983 *Gonatocerus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Antennae in female with 8 segments; radicle equal to scape; in male with 13 segments; fore wing with a very short vein *m* not reaching the middle of wing; tarsi with 5 segments; abdomen sessile. The genus is separated from *Octonus* by the sessile abdomen, distinct radicle and from *Litus*, females of which have 11 segments; male resembles *Litus* in antennal segments but differs in vein *m*.

Type-species : *Gonatocerus longicornis* Nees

KEY TO SPECIES

- | | |
|--|--|
| 1. Ovipositor not exerted | 2 |
| Ovipositor exerted | 3 |
| 2. Body yellowish-brown; funicular segments 1-2 shortest | <i>G. delhiensis</i> (Narayanan & Subba Rao) |
| Body dark brown; funicular segments 1-4 short | <i>G. brevifuniculatus</i> Subba Rao |
| 3. Ovipositor long | 4 |
| Ovipositor short | 6 |
| 4. Scape slender | <i>G. munnarus</i> Mani & Saraswat |
| Scape dilated | 5 |
| 5. Funicular segments subequal | <i>G. devikulamus</i> Mani & Saraswat |
| Funicular segments unequal | <i>G. empoascae</i> (Subba Rao) |
| 6. Fore wings 4 times longer than wide | 17 |
| Fore wings less than 4 times longer than wide | 7 |
| 7. Fore wings 3 times as long as wide | 10 |
| Fore wings less than 3 times as long as wide | 8 |
| 8. Scape 3 times longer than thick or more | 9 |
| Scape 2.50 times longer than thick; funicular segments 1-4 short; club equal to the preceding 3.50 segments combined | <i>G. tamilanus</i> Mani & Saraswat |
| 9. Scape 3 times longer than thick; funicular segments 2-3 subequal, shortest; 4-8 subequal; club equal to the preceding 4 funicular segments combined | <i>G. indicus</i> (Subba Rao & Kaur) |
| Scape 3.60 times longer than thick; funicular segments 1-4 short, one and 3 subequal, 2 and 4 subequal shortest; club equal to the preceding 3 segments combined | <i>G. bakrotus</i> Mani & Saraswat |
| 10. Third funicular segment longest | 11 |
| Third funicular segment not the longest | 14 |
| 11. First funicular segment shortest | 12 |
| First funicular segment not shortest | 13 |
| 12. Funicular segments 1-4 short; 5-8 longer | <i>G. narayani</i> (Subba Rao & Kaur) |
| Funicular segments 2 and 4 short | <i>G. nigriodes</i> (Narayanan & Subba Rao) |
| 13. Club equal to the preceding 4.50 segments combined; second funicular segment shortest | <i>G. sahadevani</i> (Subba Rao & Kaur) |
| Club equal to the preceding 3.25 segments combined; funicular segments 2 subequal to first | <i>G. udakamandus</i> (Mani & Saraswat) |
| 14. Second funicular segment longest; segment 8 shortest; club equal to the preceding 3.50 segments combined | <i>G. shasthryi</i> (Subba Rao & Kaur) |
| Second funicular segment not the longest | 15 |

15. Fifth and seventh segments longest; second shortest; club equal to the preceding 3 segments combined
G. ramakrishnai (Subba Rao & Kaur)
 16
 Fifth segment longest
16. Funicular segments 1-4 short; fifth longest; club equal to the preceding 3.50 segments combined
G. devitatakus Mani & Saraswat
 Funicular segments 1-3 short; 1-3 and 8 subequal, 4, 6 and 7 subequal, fifth longest; club equal to the preceding 3 segments combined
G. berijamus Mani & Saraswat
17. Scape 3 times longer than thick
 18
 Scape 5 times longer than thick
 19
18. Scape 3 times pedicel
G. tarae (Narayanan & Subba Rao)
 Scape 2 times pedicel
G. uttarodeccanus Mani & Saraswat
19. First funicular segment short, fourth longest; club equal to the preceding 2.75 segments combined; ovipositor not projecting abdominal tip
G. relictus Mani & Saraswat
 First 2 funicular segments short, subequal; segment 5 longest, 6-7 subequal; club equal to the preceding 3 segments combined; ovipositor not projecting abdominal tip
G. kanheriensis Mani & Saraswat

***Gonatocerus delhiensis* (Narayanan & Subba Rao)**

1961 *Lymaenon delhiensis*, Narayanan & Subba Rao, *Britr. Ent.*, 11 : 659.

1983 *Gonatocerus delhiensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 1.04 mm. Body yellowish-brown with dark patches on thorax; antennae light brown; legs concolorous with body; eyes prominent, red.

Head cubical, front slightly excavate above toruli; antennae stout; funicular segments short, cylindrical, ending in a long elliptical club; scape long, slightly dilated in middle pedicel much dilated, as thick as and about 0.33 of scape; segments 3 and 4 smallest; rest longer, gradually becoming thicker.

Thorax arched, not compressed; parapsidal furrows well developed; fore wings large, vein *m* long, slightly oblique, touching the border at the junction of veins *st* and *m*; vein *st* 0.33 of *m*; distal group composed of 3 small almost ovoidal sensillae; discal pubescence fine, regular, covering the entire disc of the wing and continuing towards base, ending near the origin vein *m*; marginal fringe normal; hind wing normal.

Abdomen ovoid, slightly longer than thorax, devoid of fine setae on the tergum; ovipositor not exerted.

Type locality : Delhi

Gonatocerus brevifuniculatus Subba Rao

- 1970 *Gonatocerus brevifuniculatus*, Subba Rao, *Bull. ent. Res.*, 59 : 664.
 1983 *Gonatocerus brevifuniculatus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 2.00 mm. Body generally dark brown; eyes red; legs brown, except pale trochanters.

Head in front almost rounded, as wide as thorax; eyes moderately large, glabrous; scape slightly dilated medially, pedicel short, first 4 funicular segments very short, combined slightly more than fifth funicular segment; segments 5-7 almost equal; segment 8 slightly shorter; club ovoid, equal to the first 5 funicular segments combined; sensory cones only on segments 5-8 and club.

Thorax short, broad, stout; prothoracic spiracles large, ovoid; scutellum very finely reticulate; propodeum with a pair of widely separated median longitudinal carinae united proximally; fore wings venation and the position of the macrochaeta and hypochaeta typical of the genus; discal ciliation uniform.

Abdomen shorter than thorax; ovipositor not exerted.

Male : Essentially like female.

Type locality : Pakistan : Hyderabad

Distribution : Indonesia : East Sumatra; Pakistan : Hyderabad

Host : Scale insect on *Albizia* sp.

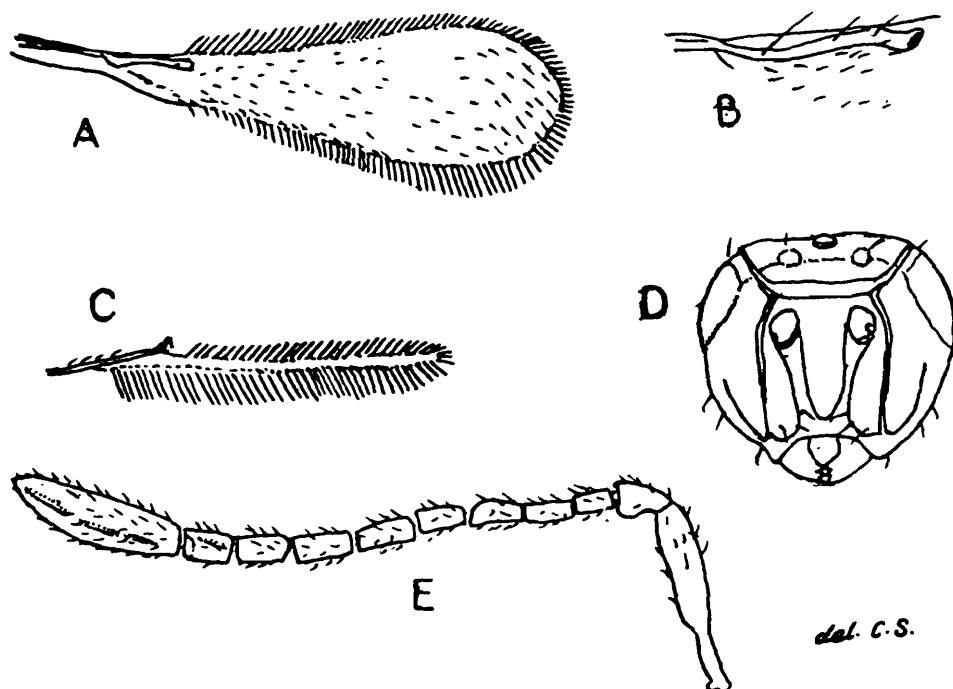


FIG. 349. *Gonatocerus munnarus* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Hind wing; D. Head in front view; E. Antenna.

Gonatocerus munnarus Mani & Saraswat

(Fig. 349)

1973 *Gonatocerus munnarus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 89.1983 *Gonatocerus munnarus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 1.25 mm. Body largely blackish-brown, with yellow; scape narrowly ventrally, vertex, pronotum, parts of mesonotum, basal 0.50 and apical tergite of abdomen, fore coxae, all trochanters and femora yellow, antenna otherwise black; middle and hind coxae, all tibiae, tarsi and ovipositor sheath brownish-grey; mesonotum with a broad transverse median band, paired smaller trapezoidal submedian spots posteriorly and one subtriangular spot laterally on each side blackish-brown; scutellum largely, mesopleura and propodeum, fourth and fifth abdominal tergites brownish-black; face, gena and postociput dark brown; wings hyaline; veins reddish-brown.

Head in front subtriangular, very slightly wider than long; vertex broadly rounded; face finely reticulately shagreened; ocellular space 2 times ocellar diameter; interocellar space 3 times ocellar diameter; eyes about 0.50 of head; mandibles tridentate; antenna nearly as long as body; segments 11 : 1.1.8.1; radicle slender, elongate; scape elongate, slender, equal to following 3 segments combined; pedicel, first and second funicular segments subequal; segments 3-5 subequal; sixth funicular segment longest; segments 7-8 subequal and equal to the fifth; club slender, almost as thick as funicle, about equal to preceding 3 funicular segments combined.

Mesonotum, scutellum, pleura and propodeum finely reticulate, appearing as shagreening in certain angles; scutellum about 0.75 of median length of mesonotum; propodeum almost equal to scutellum; fore wing length : width 108 : 26, fringe on hind margin about 0.25 of maximum width of wings; *m* almost punctiform; fore wing to hind wing 100 : 71; fore coxa large, pyriform, length to thickness 3 : 2; femur about 1.50 times coxa; tibia about 1.20 times femur; tarsus about 1.30 times tibia, metatarsus equal to following 2 tarsal segments combined; tarsal segments 2-5 subequal; middle coxa nearly as long as thick; femur about equal to fore femur; tibia almost 2 times femur; spur about 0.33 of metatarsus; tarsus subequal to tibia, metatarsus about 2 times second tarsal segment; tarsal segments 2-5 subequal; hind coxa nearly 2 times as long as thick at base; femur about 1.60 times coxa; tibia 2 times femur; hind tibial spur 0.33 of metatarsus; tarsus to tibia 4 : 5; metatarsus about 1.60 times the second tarsal segment, tarsal segments 2-5 subequal.

Abdomen slender, slightly longer than thorax, sessile; ovipositor well exerted to 0.38 of abdomen.

Type locality : Anamalai Hills : Munnar

Gonatocerus devikulamus Mani & Saraswat

(Fig. 350)

1973 *Gonatocerus devikulamus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 84.1983 *Gonatocerus devikulamus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 1.40 mm, excluding ovipositor. Body black; legs except the paler femora blackish-brown, except the brown scape, antenna black; wings hyaline; veins and ovipositor blackish-brown; fore coxa almost concolorous with thorax.

Head in front width to length 100 : 61; vertex broadly rounded; face, vertex and gena with fine reticulate microsculpture; ocellular space 3 times ocellar diameter, front ocellar space a little over ocellar

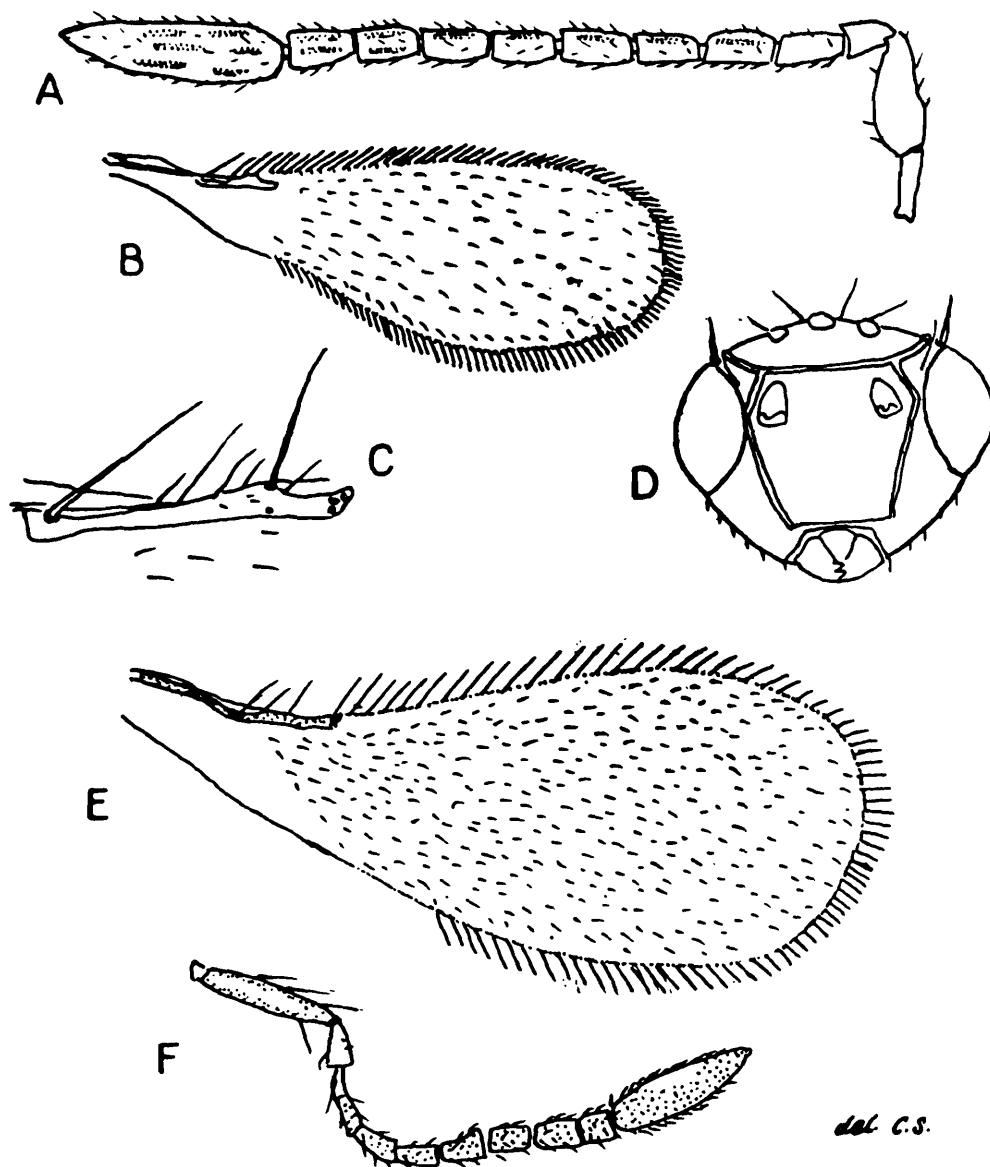


FIG. 350. *Gonatocerus devikulamus* Mani & Saraswat, female : A. Antenna; B. Fore wing; C. Stigmal venation; D. Head; E-F. *Gonatocerus nigriodes* (Narayanan & Subba Rao), female : E. Fore wing; F. Antenna.

diameter; mandibles tridentate, middle tooth longest; antennal segments slender, cylindrical, 11 : 1.1.8.1; radicle about 0.57 of scape; scape 2.40 times as long as thick in the middle, shorter than first 2 funicular segments combined and slightly more than pedicel and first funicular segment combined; all funicular segments subequal; club distinctly stouter than funicle, equal to the preceding 3.50 funicular segments combined and 4 times as long as thick.

Mesonotum, scutellum and propodeum finely reticulate; scutellum as long as propodeum, a little shorter than mesonotum; fore wing length to width 100 : 33, vein *m* punctiform, fringe on hind border short, about 0.20 of width of wing; hind wing to fore wing 70 : 100; fore coxa pyriform, about 2 times as long as wide; femur about 1.40 times coxa and 5 times as long as thick; tibia equal to femur; metatarsus 0.33 of tarsus, tarsal segments 2-5 subequal; middle coxa about 1.50 times as long as thick; femur equal to fore femur; tibia 1.40 times femur; spur short, about 0.33 of metatarsus; tarsus equal to tibia; metatarsus about 1.50 times the following tarsal segments combined, second tarsal segment about 0.66 of metatarsus, third tarsal segment slightly shorter, fourth and fifth segments subequal; hind coxa relatively slender, length about 2.70 times width; femur about 1.40 times coxa; tibia about 1.60 times femur, spurs about 0.17 of metatarsus; tarsus almost equal to tibia, metatarsus about 1.50 times the following segments combined, second tarsal segment about 0.66 of metatarsus; third segment about 0.66 of the second; fourth and fifth segments short, subequal.

Abdomen slightly longer than thorax; ovipositor about 0.66 of abdomen.

Type locality : Anamalai Hills : Devikulam

Gonatocerus empoascae (Subba Rao)

1966 *Lymaenon empoascae*, Subba Rao, *Indian J. Ent.*, 28 : 195.

1983 *Gonatocerus empoascae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 1.17 mm. Body brown; antenna almost black, except scape, pedicel and first funicular segment; abdomen light brown; legs pale yellow.

Antenna short; club large, elliptical; scape long, dilated; funicular segments longer than thick, unequal sensory ridges present on 4-6 funicular segments and club.

Fore wings large, hyaline, uniformly pubescent, extending beyond abdomen; apex smooth rounded; vein *m* long, narrow; proximal macrochaeta short, distal macrochaeta long, curved; 3 distinct setae on the dorsal margin of vein *m* between the proximal and distal macrochaeta; marginal fringe short.

Abdomen shorter than thorax, rounded apically; ovipositor exerted.

Type locality : India : Jullander (Punjab)

Host : *Empoasca devastans* Distant

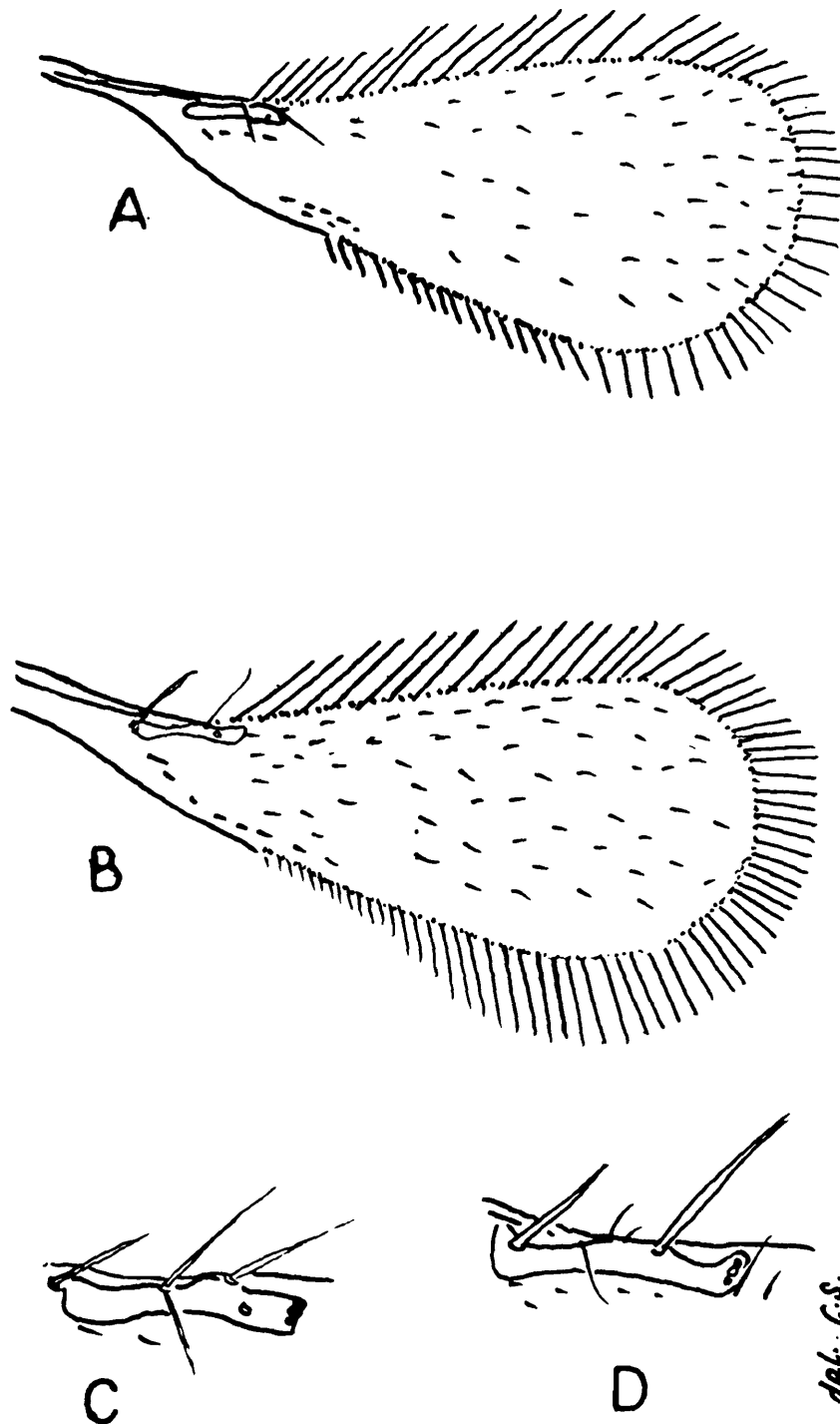


FIG. 351. *Gonatocerus tamilanus* Mani & Saraswat : A. Fore wing, female; B. Fore wing, male; C. Stigmal venation, female; D. Stigmal venation, male.

Gonatocerus tamilanus Mani & Saraswat

(Figs. 351 & 352)

1973 *Gonatocerus tamilanus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 93.1983 *Gonatocerus tamilanus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 0.90 mm. Body black to brownish-black; scape and femora brown; wings hyaline; veins blackish-brown.

Head width to length 100 : 87; ocellocular space 3 times ocellar diameter; vertex and face with fine transverse reticulate microsculpture; antenna short, segments 11 : 1.1.8.1; radicle about 0.50 of scape; scape 2.50 times as long as thick; pedicel 0.50 of scape;

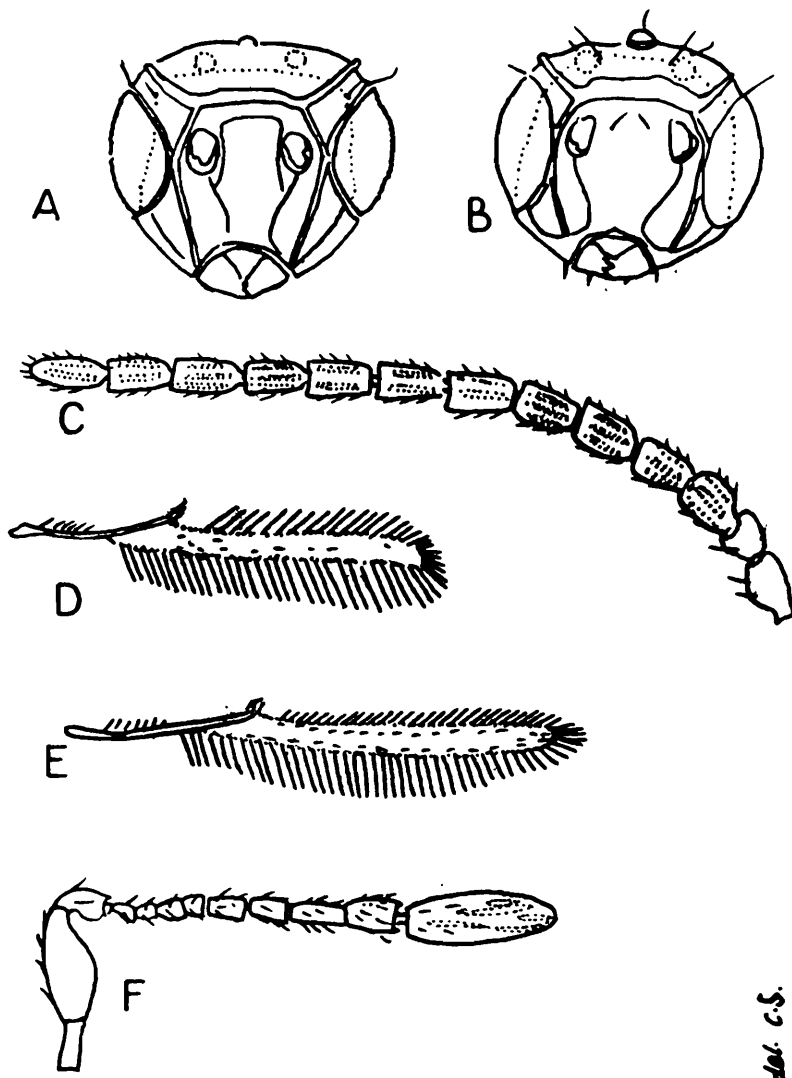


FIG. 352. *Gonatocerus tamilanus* Mani & Saraswat : A. Head in front view, female; B. Head in front view, male; C. Antenna, male; D. Hind wing, male; E. Hind wing, female; F. Antenna, female.

funicular segments 1-4 short, funicular segments 1 and 3 subequal and about 0.50 of pedicel; funicular segments 2 and 4 subequal, shortest; segments 5-6 subequal and nearly 2 times the second segment; segments 7-8 subequal, longest and 1.60 times the sixth segment; club equal to preceding 3.50 funicular segments combined and about 4 times as long as thick, slightly stouter than funicle.

Mesonotum and scutellum with transverse, reticulo-striate microsculpture; fore wing length to width 100 : 38, fringe on hind margin about 0.25 of the maximum width of wing; fore wing to hind wing 100 : 86; legs short stout; fore coxa about 2 times as long as thick; femur 3 times as long as thick; tibia slightly longer; tarsus 1.40 times tibia, metatarsus a little less than 0.33 of tarsus, tarsal segments 2-5 subequal; middle coxa 1.50 times as long as thick; femur 3 times as long as thick, equal to fore femur; tibia 1.50 times femur; spur 0.50 of metatarsus; tarsus slightly longer than tibia, metatarsus 0.33 of tarsus, tarsal segments 2-5 subequal and 0.60 of metatarsus; hind coxa slightly less than 2 times as long as thick; femur about 3 times as long as thick; tibia 1.40 times femur; spur 0.50 of metatarsus; tarsus slightly longer than tibia; metatarsus about 0.33 of tarsus; segments 2-5 subequal and about 0.60 of metatarsus.

Abdomen 0.50 of body; ovipositor distinctly projecting beyond the tip of abdomen.

Male : Length 0.60 mm. Body as in female; head width to length 100 : 85; ocellocular space 2 times ocellar diameter, front ocellar space equal to ocellocular space; antenna subequal to body, segments 13 : 1.1.10.1; scape 1.70 times as long as thick; pedicel short; subglobose; funicular segments 5-6 subequal and distinctly longer than others; segments 1-4, 8 subequal, distinctly shorter than fifth and about 1.50 times the pedicel; segments 7, 9, 10 subequal and slightly longer than fourth; club distinctly longer than fifth funicular segment, as stout as funicle, fore wing length to width 100 : 37, fringe on hind margin almost 0.50 of wing width; fore wing to hind wing 100 : 75; fore femur and tibia subequal; middle and hind tibia almost 1.30 times the femora, otherwise as in female.

Type locality : Mahabalipuram Road, Madras

Distribution : Madras and Coimbatore

Gonatocerus indicus (Subba Rao & Kaur)

- 1959 *Lymaenon indicus*, Subba Rao & Kaur, *Proc. Indian Acad. Sci.*, 49 : 229.
1983 *Gonatocerus indicus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 1.17 mm. Head, thorax, fore coxae, hind tibia, distal 8 segments of the antennae brown; rest of antennae and legs yellow; eyes deep red; abdomen with a banded appearance; anterior 0.50 of each tergite lemon coloured, rest brown; ventrally yellow; proximal 0.50 of abdomen lighter than the distal 0.50.

Head slightly wider than long, a little wider than thorax; vertex broad, very faintly reticulate; ocelli very prominent, in obtuse-angled triangle; interocular space about 2 times interocellar space; front-ocellar space slightly less than ocellocular space and almost 0.50 of interocellar space; head with 6 prominent spines; 2 between ocelli, 2 above it; 2 just below eyes; antennae slightly pubescent; scape compressed 3 times as long as thick; antennal segments ratio 22 : 8 : 5 : 5 : 8 : 7 : 8 : 7 : 7 : 6 : 28; club solid, oblong, a little thicker than preceding segments, with 4 linear sensillae; each funicular segment except the first 2, with one such sensilla.

Thorax smooth, with a few spines on pro- and mesonotum; parapsidal furrows complete, weak; scutum subequal to scutellum; metathorax narrow; fore wings 2.75 times longer than wide, a little longer than hind wing; vein *sm* about 1.50 times *m*; marginal cilia short, the longest being 0.16 of the greatest wing width; surface pubescence from beyond the middle of vein *st*, evenly distributed; hind tibia about 1.50 times longer than femora but almost equal to femur and trochanter combined; hind tarsus equal to tibia.

Abdomen sessile, ovate, with a row of 7 spines on each segment except the first, which have a few; ovipositor slightly exerted, starting from behind the tip of abdomen.

Male : Like female except in antennal and wing ratio; scape and pedicel almost as long as thick; former slightly longer than pedicel; other segments subequal, with sensory lists; fore wing about 3 times as long as wide.

Type locality : Delhi

Gonatocerus bakrotus Mani & Saraswat

(Fig. 353)

1973 *Gonatocerus bakrotus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 80.

1983 *Gonatocerus bakrotus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 0.90 mm. Body shiny black, head largely black to blackish-brown; paler except trochanters, tips of femora, base and tip of tibia, all legs brownish-black; antenna blackish-brown; wings hyaline, veins blackish-brown; ovipositor black.

Head in front width to length 100 : 82; ocellocular space 3 times ocellar diameter, front ocellar space 2 times ocellar diameter; face and vertex transversely reticulate; antenna a little shorter than body, with 11 segments; radicle about 0.50 of scape; scape 3.60 times as long as thick; pedicel to scape 4 : 11; funicular segments 1-3 short, subequal, about 0.75 of pedicel; segments 4, 6 and 8 subequal, as long as pedicel; segments 5 and 7 subequal, longest, 1.25 times the fourth; club distinctly stouter than funicle and equal to preceding 3 funicular segments combined.

Mesonotum and scutellum finely reticulate; fore wing length to width 100 : 40; fringe on hind margin about 0.20 of width of wing; hind wing to fore wing 81 : 100; fore coxa 2 times as long as thick, femur 5 times longer than thick; tibia equal to femur; tarsus slightly longer; metatarsus 0.30 of tarsus, segment 2-5 subequal, 0.50 of metatarsus; middle coxa slightly over 2 times longer than thick; femur about 4.50 times as long as thick; tibia 1.40 times femur, spur almost 0.25 of metatarsus; tarsus slightly longer than tibia; metatarsus about 0.30 of tarsus, second segment nearly 0.75 of metatarsus, segments 3-5 subequal; hind coxa about 2.30 times as long as thick; femur 5 times as long as thick; tibia almost 1.20 times femur; hind tibial

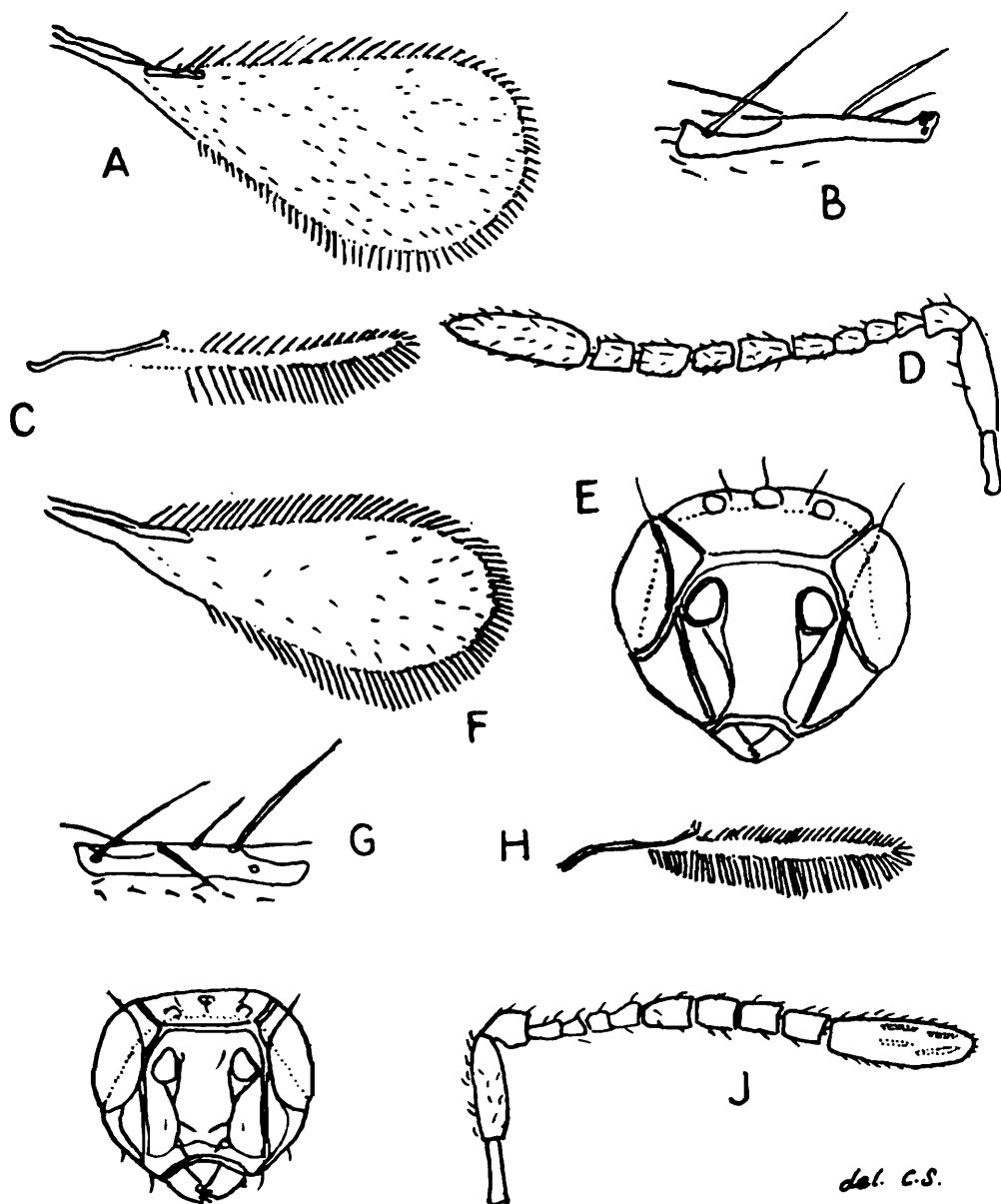


FIG 353. A-E. *Gonatocerus bakrotus* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Hind wing; D. Antenna; E. Head in front view; F-J. *Gonatocerus devitatakus* Mani & Saraswat, female : F. Fore wing; G. Stigmal venation; H. Hind wing; I. Head; J. Antenna.

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spur slightly less than 0.50 of metatarsus; tarsus slightly longer than tibia; metatarsus about 0.30 of tarsus, second segment about 0.60 of metatarsus; segments 3-5 subequal, 0.66 of the second segment.

Abdomen equal to thorax; ovipositor very slightly projecting beyond the tip of abdomen.

Type locality : Northwest Himalaya : Dalhousie (Upper Bakrota)

Gonatocerus narayani (Subba Rao & Kaur)

1959 *Lymaenon narayani*, Subba Rao & Kaur, *Proc. Indian Acad. Sci.*, 49 : 227.

1983 *Gonatocerus narayani*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 0.97 mm. Body generally yellow with brown spots; eyes and ocelli red; antennae brown; front 0.50 of scutellum brown, behind yellow; propodeum brown; front 0.50 yellow, brown behind; coxae and femora yellow; tibia and tarsi somewhat brown.

Head slightly more than 1.33 times as wide as long; eyes elongate; gena slightly more than 0.50 of eyes; interocular space 3 times interocellar space and 4 times ocellular; the latter 3 times the frontocellar space; antennae inserted slightly below the middle of head; sockets 3 times their own diameter apart; antennal segments ratio 20 : 8 : 4 : 3 : 3.5 : 4 : 7 : 7 : 7 : 23; club solid; about 3.33 times its own thick; with 5 linear sensillae; funicular segments 4-8 with one or more sensillae in each.

Thorax very faintly reticulate; parapsidal furrows weak; scutum almost equal to scutellum; metathorax narrow; propodeum with spiracular sulci; fore wings 3.33 times as long as wide, a little longer than hind wing; vein *sm* 1.50 times *m*; surface hair numerous, from behind the proximal end of vein *m* and evenly distributed; marginal fringe short; longest a little less than 0.33 of greatest wing width; legs slender hind tibia equal to femur and trochanter combined and also to tarsus.

Abdomen conic-ovate, faintly reticulate; a row of spines in each segment; first row of 2; ovipositor slightly exerted, from behind the tip of abdomen.

Type locality : Delhi.

Gonatocerus nigriodes (Narayanan & Subba Rao)

(Fig. 350)

1961 *Lymaenon nigriodes*, Narayanan & Subba Rao, *Britr. Ent.*, 11 : 656.

1983 *Gonatocerus nigriodes*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 1.23 mm. Antennae except scape and pedicel brown to dark brown; thorax almost black; abdomen bright yellow; legs pale yellow.

Head cubical; vertex raised; eyes prominent; antenna stout; scape long, slightly dilated, nearly 3 times pedicel; third antennal segment shortest; segments 4 and 6 shorter than 5; segments 7-10 almost equal; club elliptical, much thicker than funicular segments, slightly longer than scape; all segments except tenth and club devoid of sensory ridges.

Thorax not compressed, propodeum abruptly declivous; fore wings large, hyaline, uniformly hairy, extending beyond the abdomen; apex smoothly rounded; vein *m* long narrow; *st* well developed; proximal macrochaeta stout and well developed; distal macrochaeta slightly longer than thick; hypochaeta long but curved; 2 short macrochaeta around the distal macrochaeta; marginal fringe short.

Abdomen shorter than thorax, rounded apically; ovipositor slightly exerted; tergites with a transverse row of fine setae.

Type locality : Delhi

Gonatocerus sahaddevani (Subba Rao & Kaur)

1959 *Lymaenon sahaddevani*, Subba Rao & Kaur, *Proc. Indian Acad. Sci.*, (B) 49 : 231.

1983 *Gonatocerus sahaddevani*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 1.04 mm. This species is closely related to *G. indicus*, but abdomen and metatarsus are darker; scape and pedicel yellow; rest of antennae brown; abdomen brown both dorsally and ventrally; anterior 0.33 of tergites lemon-yellow, rest brown.

Differs also in lengths of antennal segments 18 : 8 : 4 : 3 : 7 : 4 : 6.5 : 4.5 : 6 : 5.5 : 24 linear sensillae present in club and funicular segments 3, 5, 7 and 8.

Thorax smooth, with a few spines on the pro- and mesonotum; parapsidal furrows complete, weak; scutum almost equal to scutellum; metathorax narrow; fore wings 3 times as long as wide; a little shorter than in *G. indicus*; surface hair starts from beyond vein *m*.

Type locality : Delhi

Gonatocerus udakamandus Mani & Saraswat

1973 *Gonatocerus udakamandus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 96.

1983 *Gonatocerus udakamandus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 137.

Female : Length 1.20 mm. Body black; head and antenna black; all coxa, basal 0.75 of fore femur, middle and hind femora and tibiae, hind tarsus black, rest of legs brown; wings subhyaline, veins brown; abdomen black, ovipositor sheath black.

Head in front length to width 86 : 100; ocellocular space slightly more than 2 times ocellar diameter, front ocellar space 1.50 times ocellar diameter; vertex and face with longitudinal reticulate microsculpture; antennae 1.10 mm, long, distinctly shorter than body, segments 11 : 1.1.8.1; radicle about 0.33 of scape; scape broad, 3 times longer than thick; pedicel 1.50 times as long as thick and 0.40 of scape; first funicular segment 2 times as long as thick; 0.86 of pedicel; second equal to the first and also 2 times as long as thick; third segment subequal to fifth, longest and about 3 times as long as thick and slightly less than preceding 1.75 funicular segments combined; fourth segment 2 times as long as thick and equal to the second; fifth 2.50 times longer than thick; sixth about 1.70 times longer than thick and slightly more than 0.75 of the fifth; seventh equal to sixth; eighth little more than 0.75 of the seventh, also equal to pedicel; club stout, about 3 times longer than thick and nearly equal to preceding 3.25 funicular segments combined.

Pronotum, mesonotum and metanotum with fine reticulate microsculpture and deep punctae at sides; fore wings length to width 100 : 34, vein *m* punctiform, fringe on hind margin about 0.20 of maximum width of the wing; hind wing to fore wing 80 : 100; all coxae and femora with fine microsculpture; fore coxa 2 times as long as thick; femur 3 times longer than thick and about 1.20 times coxa; tibia cylindrical, almost 10 times longer than thick and nearly equal to femur and trochanter, tarsus 1.20 times longer than tibia, metatarsus slightly more than 7.25 times tarsus and 0.33 of tibia, second segment 0.25 of tarsus and slightly shorter than metatarsus, second segment and metatarsus combined 0.50 of tarsus, third segment 0.60 of second, fourth slightly longer than third, 0.75 of second and equal to fifth; middle coxa 1.30 times as long as thick; femur equal to fore femur, 4.30 times longer than thick and about 2 times coxa; tibia long, slender, 1.80 times femur, spur 0.33 of metatarsus; tarsus little longer than fore tarsus and 0.86 of tibia, metatarsus 0.29 of tarsus, second segment 0.75 of metatarsus, second segment and metatarsus combined 0.50 of tarsus, third to second 8 : 9, fourth slightly shorter than third and equal to fifth; hind coxa 1.50 times as long as thick; femur 3.50 times longer than thick and 2 times coxa; tibia long, slender, 1.50 times femur, spur 0.40 of metatarsus; tarsus 0.86 of tibia, metatarsus about 0.33 of tarsus, metatarsus to tibia 3 : 11, second segment 0.60 of metatarsus, second segment and metatarsus combined 0.50 of tarsus, third segment equal to second, fourth segment to third 8 : 9 and equal to the fifth.

Abdomen slightly more than 0.50 of body, sessile, with very fine microsculpture, ovipositor not exerted beyond the tip of abdomen.

Type locality : Nilgiri Hills : Ootacamund

Gonatocerus shashthryi (Subba Rao & Kaur)

1959 *Lymaenon shashthryi*, Subba Rao & Kaur, *Proc. Indian Acad. Sci.*, 49 : 234.

1983 *Gonatocerus shashthryi*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 1.20-1.35 mm. Body yellow with brown spots; prothorax light brown; pleurae brown; axillae brown separate; scutum and scutellum with a large brown spot anteriorly and in the middle respectively; tergites 1-3 and 7 brownish-yellow; 4-6 dark brown; legs brownish-yellow; coxae darker.

Head slightly wider than thorax and a little wider than long; eyes glabrous, interocular space a little more than 3 times interocellar; latter almost 2 times frontocellar and ocellocular; vertex with a pair of spines on either sides apically; antennae long, slightly pubescent; inserted close to lower orbital border; scape cylindrical; segments ratio 20: 9: 10: 13: 12: 11: 11: 10: 10: 9: 34; funicular segments slender, equally thick; club solid, 4.50 times longer than thick.

Thorax elongate, moderately convex, with a faint median groove; parapsidal furrows distinct; scutellum slightly shorter than scutum; metathorax slightly curved into the region of propodeum; propodeum with 4 carinae the 2 middle ones hexagonal, side ones shorter, subrectangular; fore wings 3.33 times longer than wide, 1.33 times longer than hind wing; vein *sm* a little longer than *m*; marginal fringe short, uniformly distributed, longest being a little more than 0.25 of the greatest wing width; surface cilia uniformly distributed; hind femora slightly more than 0.50 of tibia; the latter 1.20 times longer than tarsus.

Abdomen elongate, broad in the middle, gradually and uniformly tapering distally; tergites with a row of spines except one; ovipositor exerted to about 0.16 of abdomen, with a pair of spines on sheath.

Male : Length 0.90-1.17 mm. Head brown with eyes and vertex darker; antenna longer than body; pedicel 0.50 of first funicular segment, except these 2 rest of antennal segments almost equal; segments beyond the pedicel with linear parallel sensillae; club solid and oblong.

Thorax as in female, no carinae on propodeum; wings as in female; legs long slender; hind tibia equal to tarsus.

Type locality : Mandya (Mysore State)

Host : *Tettigonella spectra*

Gonatocerus ramakrishnai (Subba Rao & Kaur)

- 1959 *Lymaenon ramakrishnai*, Subba Rao & Kaur, *Proc. Indian Acad. Sci. (B)* 49 : 232.
 1983 *Gonatocerus ramakrishnai*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 0.88 mm. Body brown with dark sutures, legs lighter; eyes red; antennae, thorax and abdomen anterior 0.33 of each tergite lemon-yellow, rest brown.

Head about 1.33 times wider than long; eyes glabrous; slightly less than 1.50 times gena; interocular space about 2 times interocellar space; latter 2 times ocellocular space; antennae inserted close to lower orbital borders; sockets 2 times their own diameter apart; scape cylindrical, 4 times longer than thick; antennal segments radio 16: 7: 4.5: 3.5: 4: 4: 7: 6: 7: 6.5: 20; club solid, conical, a little more than 3.50 times longer than thick, with 4 prominent sensillae; funicular segments 5, 7 and 9 also with 1 sensilla in each.

Thorax slightly convex; parapsidal furrows complete, well impressed; scutum a little shorter than scutellum; spiracular sulci prominent; fore wing about 3 times as long as wide; vein *sm* weak and a little less than 2 times *m*, which is slightly thicker as compared to vein *m* of *G. narayani* (Subba Rao & Kaur), marginal fringe normal, longest little less than 0.50 of the greatest wing width; surface hair from just before vein *m* equally distributed; hind tibia equal to femur and trochanter combined and slightly less than its tarsus; fore tibia almost equal to its femur.

Male : Length 0.87 mm. Like female, except for antennae; scape a little longer than thick, pedicel almost as long as thick, slightly less than scape; eyes orange-yellow.

Type locality : Delhi

Gonatocerus devitatakus Mani & Saraswat

- 1973 *Gonatocerus devitatakus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 86.
 1983 *Gonatocerus devitatakus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 0.75 m.m. Body brownish-black; antenna and legs dark brown to brownish-black.

Head in front width to length 100 : 90; ocellocular space 2 times ocellar diameter, front ocellar space equal to ocellocular; vertex and face obscurely reticulate; antenna with 11 segments : 1.1.8.1; radicle 0.75 of scape; scape 1.50 times as long as thick; pedicel 0.40 of scape; funicular segments 1-4 short; first funicular segment nearly 0.75 of pedicel; second segment shortest, almost 2 times the second; fifth funicular segment longest and nearly 2 times the first; segments 6-8 subequal, slightly shorter than fifth; club equal to preceding 3.50 funicular segments combined and slightly over 3 times as long as thick.

Mesonotum and scutellum, transversely reticulate striate; fore wing length to width 100 : 32, fringe on hind margin about 0.33 of wing width; fore to hind wing 100 : 75; fore coxa 1.60 times as long as thick; femur 4 times as long as thick; tibia equal to femur; tarsus almost 1.40 times tibia, metatarsus almost 0.25 of tarsus; middle coxa as long as thick; femur 3 times as long as thick; tibia a little less than 2 times femur; spur 0.25 of metatarsus; tarsus a little shorter than tibia, metatarsus almost 0.25 of tarsus, segments 2-5 subequal; hind coxa 2.50 times as long as thick; femur 4.50 times as long as thick; tibia 1.40 times femur, spur 0.50 of metatarsus; tarsus distinctly shorter than tibia, metatarsus about 0.33 of tarsus, segments 2-5 subequal.

Abdomen 0.50 of body; ovipositor sheath only very slightly projecting beyond the tip of abdomen.

Type locality : Anamalai Hills : Devikulam

Gonatocerus berijamus Mani & Saraswat

(Fig. 354)

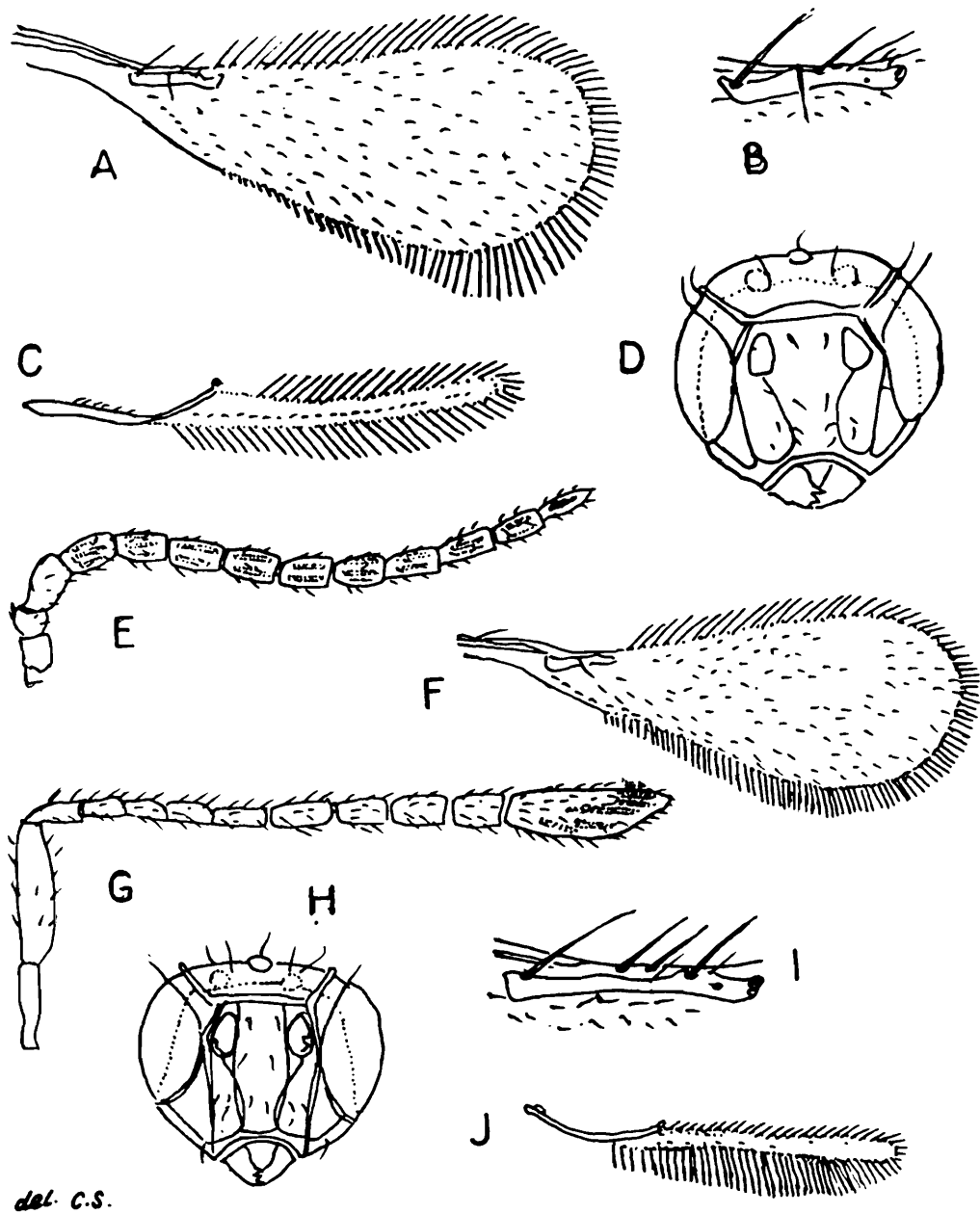
1973 *Gonatocerus berijamus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 82.

1983 *Gonatocerus berijamus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 135.

Female : Length 1.00 mm. Body brown to dark brown, except the brown scape, rest of antennae blackish-brown; wings hyaline, veins dark brown.

Head in front length to width 80 : 100; ocellular space 2 times ocellar diameter, front ocellar space almost equal to ocellar diameter; vertex and face finely longitudinally reticulo-striate; antenna long, slender, almost as long as body, with 11 segments : 1.1.8.1; radicle about 0.51 of scape; scape long, moderately thickened, about 4 times as long as thick; pedicel 0.38 of scape; funicular segments 1-3 moderately short; first and second subequal, almost 0.75 of pedicel; third funicular segment slightly shorter than pedicel, fourth almost 0.75 of pedicel; third funicular segment slightly shorter than pedicel, fourth almost equal to pedicel; fifth segment longest and distinctly longer than pedicel; segments 6 and 7 subequal to fourth; eighth segment equal to third; club nearly 3.70 times as long as thick and equal to preceding 3 funicular segments combined.

Mesonotum and scutellum finely reticulate; fore wing length to width 100 : 33, fringe on hind margin about 0.20 of maximum width of wing; hind wing to fore wing 84 : 100; fore coxa 2 times as long as thick; femur 3 times as long as thick; tibia 1.80 times femur; tarsus 1.40 times tibia, metatarsus 0.33 of tarsus, second segment about 0.66 of metatarsus, segments 3-4 subequal; middle coxa about 1.60 times femur; spur almost 0.25 of metatarsus; tarsus equal to tibia,



del. C.S.

FIG. 354. A-E. *Gonatocerus berijamus* Mani & Saraswat, male : A. Fore wing; B. Stigmal venation; C. Hind wing; D. Head in front view; E. Antenna; F-J. female : F. Fore wing; G. Antenna; H. Head in front view; I. Stigmal venation; J. Hind wing.

metatarsus about 0.38 of tarsus, second segment almost 0.50 of metatarsus, segments 3-5 subequal; hind coxa 2 times as long as thick; femur a little over 4 times as long as thick; femur a little over 4 times as long as thick; tibia a little over 1.70 times femur; spur about 0.33 of metatarsus; tarsus slightly shorter than tibia; metatarsus slightly over 0.33 of tarsus, second segment 0.66 of metatarsus, segments 3-5 subequal and almost 0.50 of the second segment.

Abdomen 0.50 of body; ovipositor only very slightly projecting beyond the tip of abdomen.

Male : Length 0.75 mm. Body brown to dark brown; except the brown scape, rest of antenna dark brown to brownish-black; legs largely brown; basal 0.50 abdomen brown, otherwise dark brown; wings hyaline, veins dark brown; microsculpture as in female.

Head in front width to length 100 : 83; ocellocular space 3 times ocellar diameter, front ocellar space 2 times ocellar diameter; antenna nearly as long as body; segments 13 : 1.1.10.1; scape and pedicel subglobose; funicular segments 1-3 and 6-10 subequal but becoming gradually thinner; segments 4-5 subequal and distinctly longer than third; club slender, distinctly longer than fifth funicular segment.

Fore wing length to width 100 : 32, fringe on hind margin about 0.33 of width; hind to fore wing 82 : 100; fore coxa about 1.40 times as long as thick; femur slightly over 3 times as long as thick; tibia equal to femur; tarsus almost 1.60 times femur and metatarsus almost 0.33 of tarsus; middle coxa as long as thick; femur 4 times as long as thick; tibia 1.60 times femur, spur 0.25 of metatarsus; tarsus slightly longer than tibia, metatarsus about 0.33 of tarsus, second segment about 0.75 of metatarsus, segments 3-5 shorter and subequal; hind coxa 1.80 times as long as thick; femur a little over 3 times as long as thick; tibia 1.40 times femur, spur about 0.50 of metatarsus; tarsus slightly longer than tibia, metatarsus about 0.25 of tarsus, second segment about 0.75 of metatarsus, segments 3-5 shorter and subequal.

Abdomen a little less than 0.50 of the body.

Type locality : Anamalai Hills : Between Brerijam and Munnar

Distribution : Poona : Bhorghat

Gonatocerus tarae (Narayanan & Subba Rao)

1961 *Lynaenon tarae*, Narayanan & Subba Rao, *Beitr. Ent.* 11 (5-6) : 657.

1983 *Gonatocerus tarae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 137.

Female : Length 1.07 mm. Body generally lemon-yellow, with irregular brown patches; scape and pedicel concolorous with body; rest of antenna brown.

Head cubical, antennae slender, funicular segments elongate, scape cylindrical, at least 3 times longer than pedicel, third antennal segment slightly dilated distally, rest cylindrical; club large, elliptic.

Thorax not compressed; parapsidal furrows distinct; fore wing long, narrowed basally, subspatulate; vein *st* about 0.25 of vein *m*; macrochaeta strong, well developed; hypochaeta situated nearer the distal macrochaeta; proximal sensilla just below the distal macrochaeta; distal sensilla 4 in a group arranged to form an angle; distal pubescence fine, regular; hind wing markedly shorter; marginal fringe shorter than that of the fore wing.

Abdomen large, longer than thorax; tergites with rows of fine setae; ovipositor very slightly exerted.

Type locality : Delhi

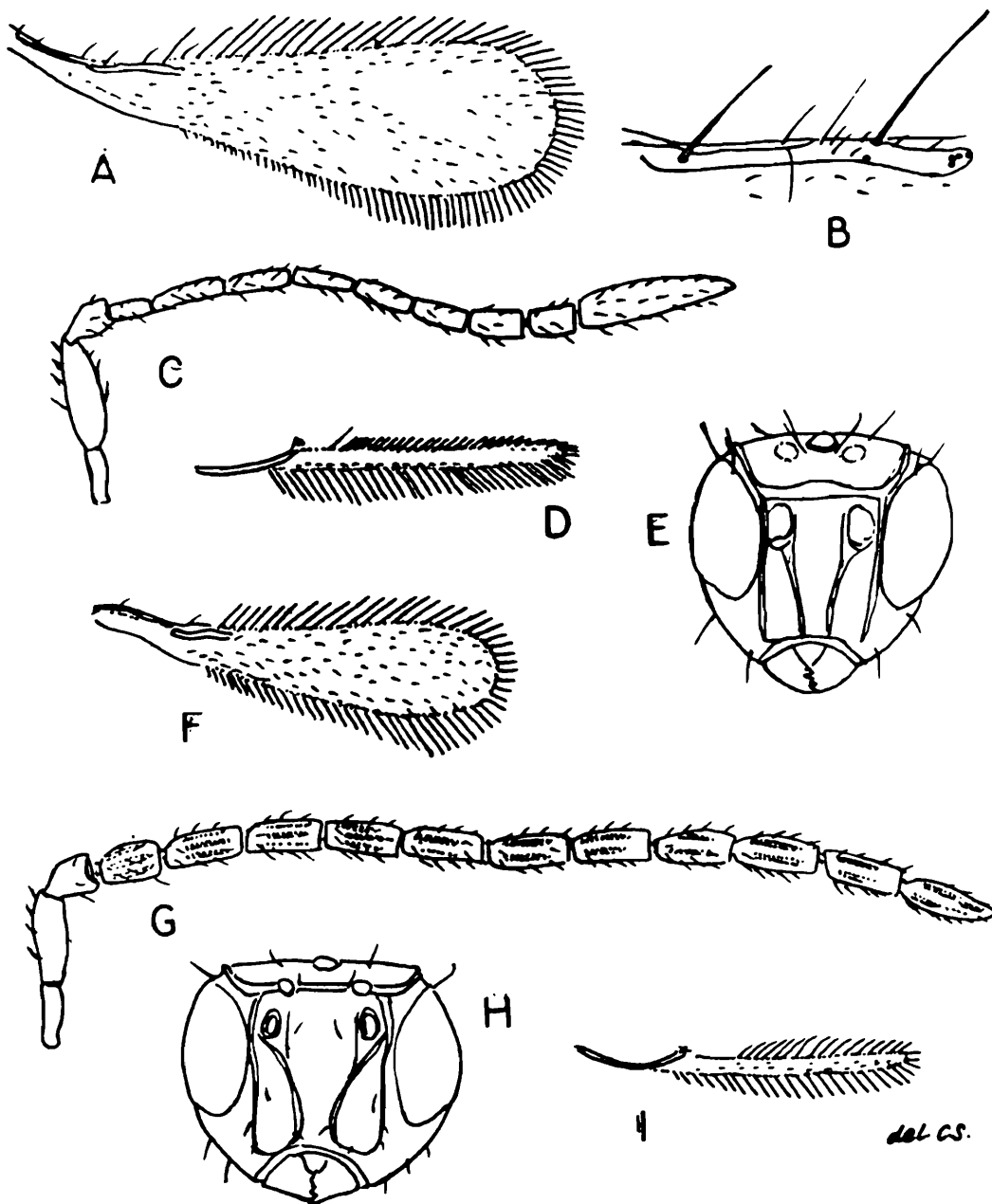


FIG. 355. A-F. *Gonatocerus uttarodeccanus* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Antenna; D. Hind wing; E. Head in front; F. Fore wing; G. Male antenna; H. Male head; I. Hind wing.

***Gonatocerus uttarodeccanus* Mani & Saraswat**

(Fig. 355)

- 1973 *Gonatocerus uttarodeccanus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 97.
 1983 *Gonatocerus uttarodeccanus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 1.25 mm. Body black; scape, pedicel and first funicular segment brown; all legs including coxae brown; first tergite brown, rest of abdomen including ovipositor black; wings hyaline, veins brown.

Head in front length to width 94 : 100; vertex and face finely transversely reticulate; ocellular space distinctly more than 2 times ocellar diameter, front ocellar space subequal to ocellar diameter; eye length to head length 57 : 100; mandibles tridentate; antennal segments 11 : 1.1.8.1; flagellar segments cylindrical; scape moderately long, about 3 times as long as thick; evenly enlarged about the middle; radicle about 0.50 of scape; pedicel almost 0.50 of scape; radicle about 0.50 of scape; first funicular segment shortest, shorter than pedicel; second funicular segment elongate, slender, longest, about 0.66 of scape; segments 3-4 subequal, a little shorter than the second; segments 5-7 subequal and a little shorter than the fourth; eighth funicular segment only slightly longer than the first, 0.66 of second funicular segment; club slender, elongate, little thicker than funicle, almost equal to preceding 3 funicular segments combined.

Thorax finely reticulate on mesonotum, scutellum, propodeum and mesopleura; fore wing length to width 100 : 25, fringe on hind margin about 0.33 of maximum width of wing; hind to fore wing length 60 : 100; fore coxa about 1.60 times as long as thick; femur 1.60 times coxa and about 3 times as long as thick; tibia equal to femur; tarsus about 1.25 times tibia, metatarsus almost 0.33 of tarsus, second segment about 0.71 of metatarsus, third, fourth and fifth segments equal and about 0.75 of second; middle coxa subglobose; femur about 2.50 times coxa, more slender and almost equal to fore femur; tibia almost 1.60 times femur; spur short, about 0.33 of metatarsus; tarsus about 0.75 of tibia, metatarsus about 0.33 of tarsus, second segment 0.60 of metatarsus, third to fifth segments subequal and about 0.75 of the second segment; hind coxa about equal to fore coxa; femur nearly as stout as coxa and a little over 2 times as long as thick; spur a little over 0.33 of metatarsus; tarsus somewhat shorter than tibia, metatarsus almost 0.33 of tarsus; second, fourth and fifth tarsal segments equal and about 0.60 of metatarsus, third tarsal segment shortest and slightly more than 0.50 of metatarsus.

Abdomen 0.50 of body; ovipositor projecting beyond tip of abdomen, ovipositor 0.30 of abdomen.

Male : Length 0.90 mm. Body yellowish-brown to brown; head dark brown; antenna blackish-brown; legs brown; pronotum with one median patch and one lateral subtriangular dark brown spot; mesonotum with a pair of subtriangular, median dark brown spots in continuation with one median patch of pronotum; wings hyaline, veins brown; posterior 0.50 of abdomen dark brown.

Head in front width to length 100 : 86; vertex and face finely reticulate; ocellular space about 3 times ocellar diameter, front ocellar space almost 1.50 times ocellar diameter; antenna long, slender, segments cylindrical, 13 : 1.1.10.1; radicle slightly less than 0.75 of scape; scape 2 times pedicel and 2.50 times as long as thick; pedicel 0.50 of scape and 1.20 times as long as thick; first funicular segment equal to radicle and about 1.40 times pedicel, shortest; funicular segments 2-4 subequal, segments 5-6 subequal and 1.20 times longer than any segment from 2-4; 7-8 subequal; 9 equal to 6; 10 slightly longer than 9; club longest, almost 1.01 times the tenth funicular segment.

Pronotum and mesonotum with fine obscure microsculpture; fore wing 100 : 21, fringe on hind margin about 0.50 of maximum width of wing; hind wing to fore wing length 84 : 100; fore coxa about 2 times as long as thick; femur slightly more than 3 times as long as thick and about 1.40 times coxa; tibia 7.50 times longer than thick and equal to femur and trochanter combined; tarsus equal to tibia, metatarsus about 0.25 of tarsus and equal to following 1.25 tarsal segments combined, second segments 0.75 of metatarsus, third equal to second, fourth and fifth tarsal segment subequal; middle coxa 1.50 times as long as thick; femur 4.70 times as long as thick and 1.70 times coxa; tibia about 2 times femur, tibial spur about 0.33 of metatarsus; tarsus about 0.75 of tibia, metatarsus nearly 0.25 of tarsus, second segment about 0.75 of metatarsus and equal to the third, fourth segment about 0.75 of the third and equal to the fifth; hind coxa 1.60 times as long as thick; femur 3 times longer than thick and 2.30 times coxa; tibia about 2 times femur, spur little more than 0.50 of metatarsus; tarsus a little more than 0.75 of tibia, metatarsus slightly less than metatarsus, tarsal segments from 3-5 subequal.

Abdomen conical, slightly less than 0.50 of body.

Type locality : Anamalai Hills : Munnar

Distribution : Anamalai Hills; Northwest Himalaya

Gonatocerus relictus Mani & Saraswat

(Fig. 356)

1973 *Gonatocerus relictus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 90.

1983 *Gonatocerus relictus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 1.00 mm. Body yellowish-brown to brown; head reddish-brown; antenna, except for the brown radicle, black; mesonotum with a large black patch in the middle and a subtriangular spot laterally; scutellum with one subcordate, dark brown spot on each side; propodeum largely dark brown; veins dark brown; wings hyaline, legs brown except tibiae and tarsi black; tergites red to dark brown; ovipositor dark reddish-brown.

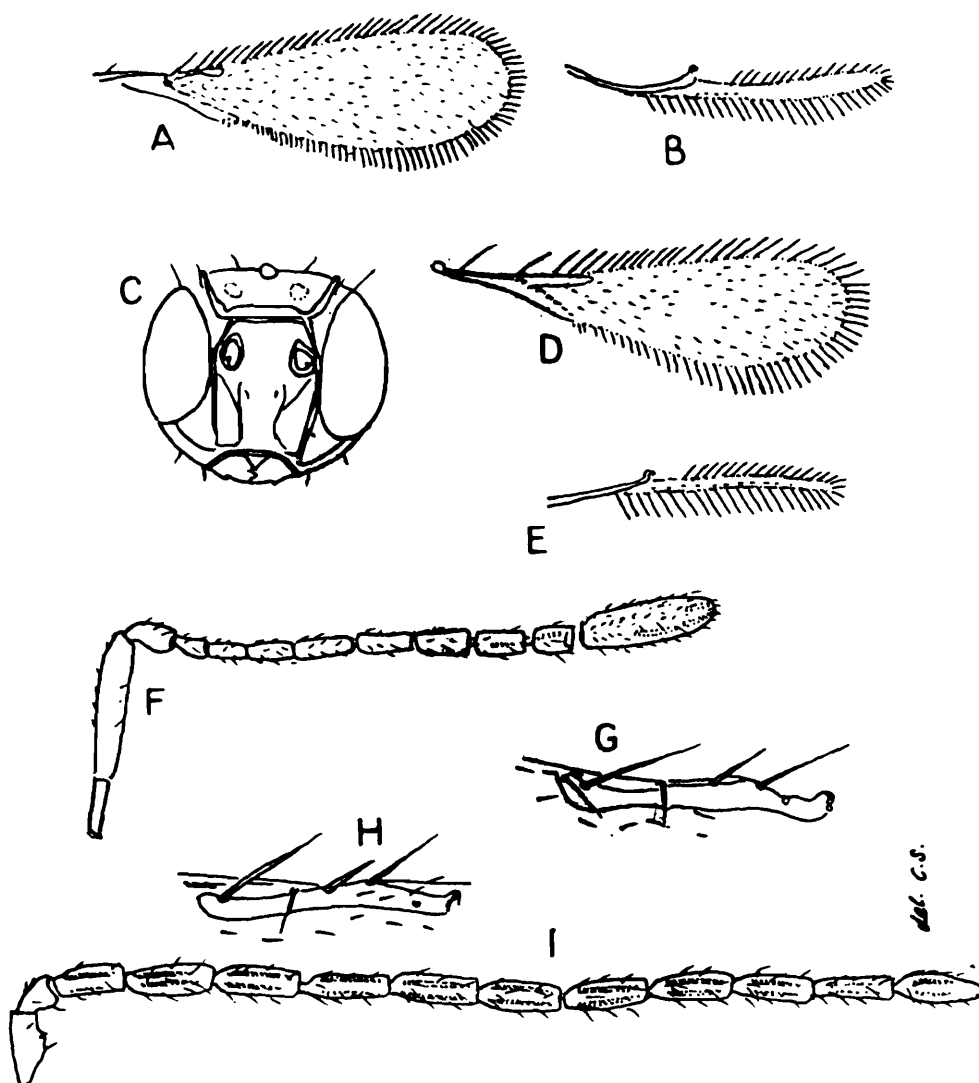


FIG 356. *Gonatocerus relictus* Mani & Saraswat : A. Fore wing, female; B. Hind wing, female; C. Head in front view; D. Fore wing, male; E. Hind wing, male; F. Antenna, female; G. Stigmal venation, female; H. Stigmal venation, male; I. Antenna, male.

Head length to width 81 : 100; vertex and face finely reticulately striate; ocellocular space about 4 times ocellar diameter, front ocellar space 1.50 times ocellar diameter; eye length to head length 69 : 100; antenna a little shorter than body, segments 11 : 1.1.8.1; radicle about 0.50 of scape; scape long, slender, over 5 times as long as thick and nearly equal to following 3.50 segments combined; first funicular segment short; second a little longer; third segment almost 1.50 times the first; fourth segment longest and almost 2 times the first; segments 5-7 subequal and about 0.90 of the fourth segment; segment 8 short, equal to first; club stout, about 4 times as long as thick and equal to preceding 2.75 funicular segments combined and a little shorter than scape.

Mesonotum and scutellum with microreticulate striations; fore wing length to width 100 : 28, vein *m* punctiform; fringe on hind margin about 0.25 of maximum width of wing; hind wing to fore wing 81 : 100; fore coxa about 1.75 times as long as thick; femur nearly 3.70 times as long as thick; tibia equal to femur; tarsus about 1.40 times tibia; metatarsus about 0.40 of tarsus; second tarsal segment slightly less than 0.50 of metatarsus, segments 3-5 subequal; middle coxa almost 2 times as long as thick; femur 5 times as long as thick; tibia about 1.40 times femur; spur almost 0.25 of metatarsus; tarsus slightly shorter than tibia, metatarsus about a little over 0.33 of tarsus, second tarsal segment about 0.57 of metatarsus; third segment slightly shorter; fourth slightly shorter than third, fifth subequal to fourth; hind coxa about 1.30 times as long as thick; femur about 4.60 times as long as thick; tibia about 1.40 times femur, spur about 0.40 of metatarsus; tarsus slightly shorter than tibia, metatarsus a little over 0.25 of tarsus, second segment about 0.60 of metatarsus; third segment slightly shorter; fourth a little shorter than third, fifth subequal to fourth.

Abdomen short, cordate, 0.50 of body; ovipositor not projecting beyond the tip of abdomen.

Male : Length 1.00 mm. Like female. Head in front as wide as long; ocellocular space about 2 times ocellar diameter, front ocellar space almost equal to ocellar diameter; antenna long, slender, somewhat longer than body, with slender, cylindrical segments; scape nearly 2.60 times as long as thick and also equal to first funicular segment; pedicel about 0.50 of scape; first funicular segment about 2 times pedicel, shortest; segments 2-7 subequal; segments 8-9 subequal and a little shorter than seventh; tenth segment a little shorter than ninth; club equal to second funicular segment.

Fore wing length to width 100 : 26; fore wing to hind wing 100 : 77; fore coxa 1.60 times as long as thick; femur 5 times as long as thick; tibia equal to femur; tarsus 1.30 times tibia; metatarsus 0.33 of tarsus, second tarsal segment about 0.50 of metatarsus, fourth and fifth segments subequal and about 0.80 of the third; middle coxa 1.50 times as long as thick; femur 6 times as long as thick; tibia 1.50 times femur; spur 0.50 of metatarsus; tarsus a little shorter than tibia, metatarsus about 0.25 of tarsus, second tarsal segment 0.75 of metatarsus, third and fourth segments subequal, fifth segment 0.75 of fourth; hind coxa 3 times as long as thick; femur 4.60 times as long as thick; tibia 1.40 times the femur; spur slightly less than 0.50 of metatarsus; tarsus 0.80 of tibia, metatarsus 0.33 of tarsus, second segment 0.60 of metatarsus, third and fourth segments subequal and a little shorter than second, fifth segment slightly longer

Abdomen equal to thorax.

Type locality : Anamalai Hills

Distribution : Poona

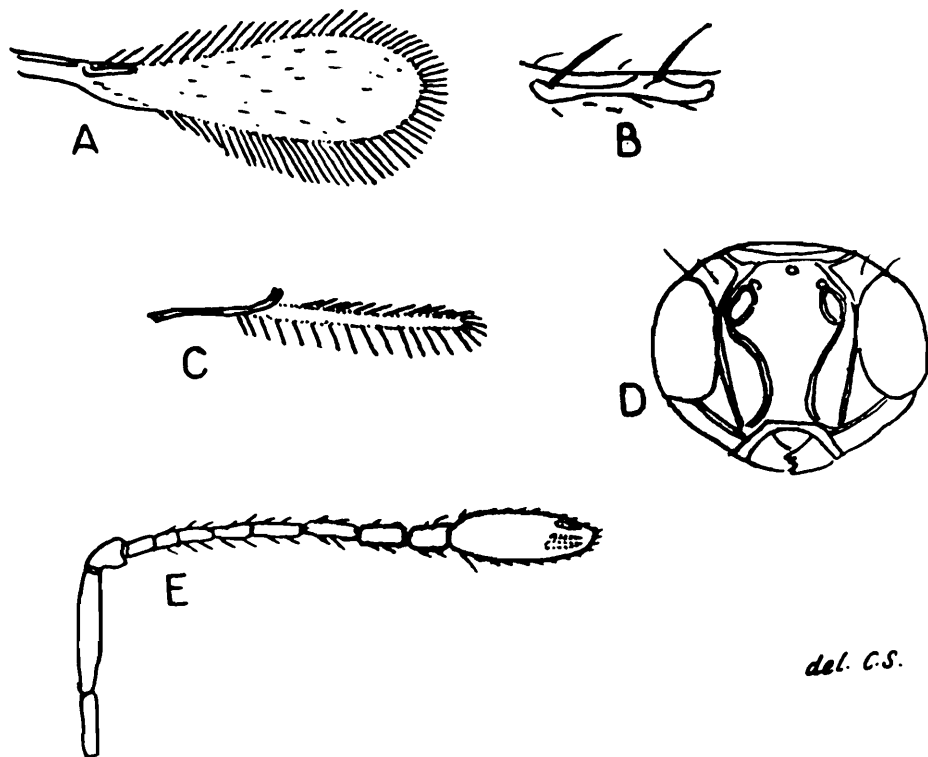


FIG 357. *Gonatocerus kanheriensis* Mani & Saraswat, female : A. Fore wing; B. Stigmal venation; C. Hind wing; D. Head in front view; E. Antenna.

Gonatocerus kanheriensis Mani & Saraswat

(Fig. 357)

1973 *Gonatocerus kanheriensis*, Mani & Saraswat, *Mem. School Ent.*, 2 : 87.

1983 *Gonatocerus kanheriensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Female : Length 0.90 mm. Body yellowish-brown to brown; head yellowish-brown; antenna dark brown; legs brown; mesonotum with one middle patch and one lateral subtriangular dark brown spot; propodeum dark brown; wings hyaline, veins dark brown; abdomen brown.

Head length to width 83 : 100; vertex and face obscurely finely reticulate; ocellocular space about 1.50 times ocellar diameter, front ocellar space subequal to ocellar diameter; antenna equal to body, segments 11 : 1.1.8.1; radicle 0.50 of scape; scape long, slender, little over 5 times as long as thick and nearly equal to following 3.75 segments combined; pedicel 0.33 of scape and about 2 times longer than thick; first 2 funicular segment short, subequal; third a little longer; fourth segment about 1.50 times the first; fifth segment longest and almost 2 times the first; segments 6-7 subequal; eighth

segment short and equal to pedicel; club stout, 3 times as long as thick and equal to preceding 3 funicular segments combined and about 1.20 times the scape.

Pronotum and mesonotum obscurely finely reticulate; fore wing length to width 100 : 25; vein *m* punctiform, fringe on hind margin slightly more than 0.50 of width of wing; hind wing to fore wing length 79 : 100; fore coxa about 1.60 times as long as thick; femur nearly 3.50 times as long as thick and 1.30 times coxa; tibia 1.25 times femur; tarsus about 1.40 times tibia, metatarsus about 0.33 of tarsus, second tarsal segment slightly less than 0.75 of metatarsus, tarsal segment 3-5 subequal; middle coxa 1.25 times longer than thick; femur 5 times as long as thick and about 2.30 times coxa; tibia nearly 1.70 times femur; spur almost 0.25 of metatarsus; tarsus equal to tibia; metatarsus slightly less than 0.33 of tarsus, second tarsal segment about 0.60 of metatarsus, third segment slightly shorter than second, fourth slightly shorter than third, fifth subequal to fourth; hind coxa about 1.80 times as long as thick; femur 3.50 times as long as thick and about 1.60 times coxa; tibia 1.80 times longer than femur, spur about 0.33 of metatarsus; tarsus slightly shorter than tibia, metatarsus slightly less than 0.33 of tarsus, second segment about 0.60 of metatarsus, third segment slightly shorter than second, fourth slightly shorter than third, fifth subequal to fourth.

Abdomen short, cordate, nearly 0.50 of body; ovipositor not projecting beyond the tip of abdomen.

Type locality : Bombay : Borivili National Park (below Kanheri Caves)

Gonatocerus longicrus Kieffer

1913 *Gonatocerus longicrus*, Kieffer, *Rec. Indian Mus.*, 9 : 201.

1938 *Gonatocerus longicrus*, Mani, *Cat. Indian Ins.*, 23 : 142.

1983 *Gonatocerus longicrus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136

“*Female* : Brun; vertex, hanches, pattes angles postérieurs du pronotum, mesonotum sauf la moitié antérieure du lobe median et l'estremite antérieure des lobes lateraux, scutellum sauf le bord antérieur qui longe le mesonotum, petiole, moitié antérieure de l'abdomen et segment anal jaunes. Tête beaucoup plus large que le thorax, un peu transversale. Vertex quadrangulaire, borde lateralement par une arête qui le sèpare de l'oeil. Yeux glabres. Ocelles en triangle, plus eloignes des yeux que lun de l'autre. Joes fablement stries, ayant la moitié de la longueur des yeux. Bouchè etite. Entre chaque oeil et le vertex se trouvent deux fortes soies. Antennes insèrèes plus près des yeux que l'une de l'autre, composèes de 11 articles, dont le 9e et le 10e sont parcourus par deux arètes sensoriels, les 2 premiers grossis, le scape de moitié plus long que le pedicule, celui-ci obconique et de moitié plus long que gros; les

6 suivants d'égale grosseur et d'égale longueur, le 1^{er} en cône renverse les suivants cylindriques, deux fois aussi longs, 9e et 10e à peine plus longs que les précédents mais grossis, de moitié plus long que gros, 11e un peu plus gros que le 10e et quatre fois aussi long, pointu à l'extrémité.

Thorax deux fois aussi long que large; des soies grosses et peu longues se répartissent une à chaque angle postérieur du pronotum, une à l'angle postérieur de chaque lobe latéral du mesonotum et une de chaque côté en avant du lobe médian; le scutellum, le metanotum et le segment médian en sont dépourvus. Pronotum fortement découpé au milieu postérieurement, ses lobes s'arrêtent peu avant les écailles. Mesonotum triangulaire, un peu transversal, trois fois aussi long que le pronotum; sillons parapsidaux percurrents, ties divergents en avant. Scutellum transversal, atteignant les 2/3 du mesonotum. Segment médian aussi long que le mesonotum. Aile antérieure graduellement amincie proximale, arrondie à l'extrémité, avec des soies denses et petites, les cils ne dépassent guère en longueur le tiers de la plus grande largeur de l'aile. Aile postérieure linéaire, amincie à l'extrémité, 20 fois aussi longue que large, munie d'un pétiole ayant le tiers de sa longueur, cils du bord supérieur à peine 2 fois aussi longs que sa largeur. Les 4 mandibules postérieures se touchent; trochanters distinctement biarticulés; tous les femurs réfléchis en massue, moins gros distalement, deux fois aussi gros que les tibias, 1^{er} antérieur un peu plus court que le tibia, les 4 postérieurs dépassant à peine la moitié du tibia; épéron antérieur bilobé, métatarse antérieur avec un peigne; tarsi de 5 articles subégaux, métatarse postérieur dépassant peu la longueur de l'épéron du tibia. Pétiole un peu transversal, les tergites suivants portent de chaque côté 3 soies au tergite anal les 2 soies externes des deux rangées sont 3-4 fois aussi longues que les autres. Tarière sortant de la base du 2^e tergite et ne dépassant pas l'abdomen."

Length 0.90 mm.

Type locality : Orissa : India

Distribution : Puri, Orissa

SPECIES INCERTAE SEDIS

***Gonatocerus pahlgamensis* (Narayanan)**

1961 *Lymaenon pahlgamensis*, Narayanan, *Proc. Nat. Inst. Sci. India*, (B) 26 : 25.

1983 *Gonatocerus pahlgamensis*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 136.

Type locality : Jammu-Kashmir

Host : *Quadrasspidiotus perniciosus* (Comstock)

Ooctonus Haliday

- 1833 *Ooctonus*, Haliday, *Ent. Mag.*, 1 : 269, 343.
 1846 *Sphecomicrus*, Walker, *Ann. Mag. nat. Hist.*, 18 : 50.
 1904 *Ooctonus*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1909 *Ooctonus*, Schmiedeknecht, *Gen. Ins.*, 97 : 490.
 1979 *Ooctonus*, Krombein *et al.*, *Hymen. N. America*, 1 : 1027.
 1983 *Ooctonus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Antennae in female with 11 and male with 13 segments; tarsi with 5 segments; abdomen distinctly petiolate. Generally resembling *Polynema*, but separated by 11 segmented antenna; males by 5 segmented tarsi, short metatarsus. Body sculptured leathery to rugose; generally black.

Type-species : *Ooctonus insignis* Haliday

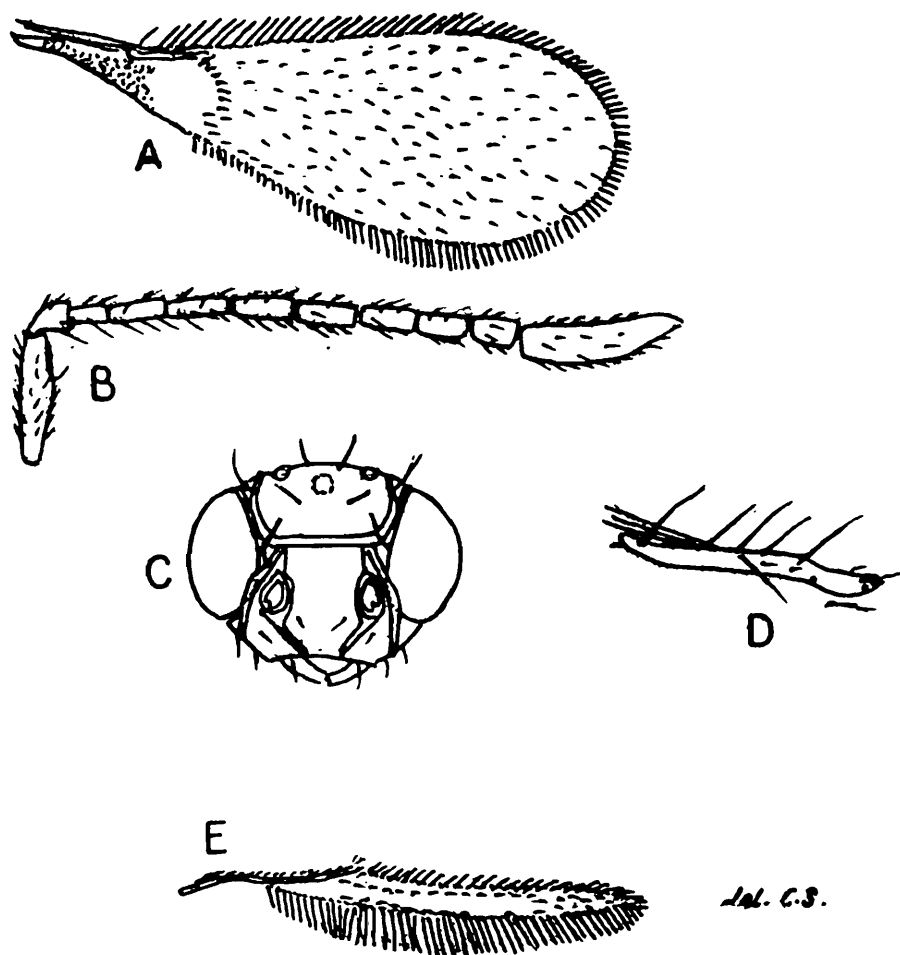


FIG. 358. *Ooctonus kodaianus* Mani & Saraswat : A. Fore wing, female; B. Antenna; C. Head in front view; D. Venation; E. Hind wing.

Ooctonus kodaianus Mani & Saraswat

(Fig. 358)

1973 *Ooctonus kodaianus*, Mani & Saraswat, *Mem. School Ent.*, 2 : 78.1983 *Ooctonus kodaianus*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 138.

Female : Length 1.50 mm. Body dark brown to black, head dark brown; antenna, except the brown scape and pedicel, black; fore leg, except the dark brown coxa, middle and hind legs yellowish-brown; propodeum brown; wings subhyaline, veins brown; abdomen dark brown.

Head in front width to length 100 : 72; vertex and face with fine reticulate microsculpture; ocellular space 3.80 times ocellar diameter, front ocellar space about 1.50 times ocellar diameter; eyes length to head length 63 : 100; antenna equal to body, segments 11 : radicle 0.16 of scape; scape flattened, stout, 3.30 times longer than thick and equal to following 2.75 segments combined; pedicel 0.30 of scape and about 1.30 times longer than thick; first funicular segment shortest, slightly shorter than pedicel; second 1.50 times the first; funicular segments 3-4 and 5-6 subequal; seventh segment slightly shorter than sixth; eighth a little longer than first; club 3.80 times longer than thick and equal to preceding 3.25 funicular segments combined.

Scutellum and propodeum with obscure reticulate microsculpture; fore wing length to width 100 : 33, fringe on hind margin about 0.16 of maximum width; hind wing to fore wing 74 : 100; fore coxa 2 times longer than thick; femur 4.20 times longer than thick and about 1.30 times coxa; tibia about 1.30 times femur; tarsus about 1.10 tibia, metatarsus 0.25 of tarsus, second tarsal segment more or less equal to metatarsus, third slightly shorter than second, fourth and fifth subequal; middle coxa about 1.28 times longer than thick; femur 6.40 times as long as thick and 2.50 times coxa; tibia about 1.70 times femur; spur about 0.25 of metatarsus; tarsus 0.75 of tibia, metatarsus about 0.25 of tibia and 0.30 of tarsus, second segment about 0.75 of metatarsus, third segment 0.75 of second, fourth and fifth tarsal segments subequal; hind coxa 2 times as long as thick; femur 4.50 times longer than thick and 1.80 times coxa; tibia about 1.70 times femur; spur 0.25 of metatarsus; tarsus about 0.75 of tibia, metatarsus slightly more than 0.30 of tarsus and nearly equal to second and third tarsal segments combined, second segment 0.60 of metatarsus, third segment 0.75 of the second, fourth and fifth tarsal segment subequal.

Abdomen shortly petiolate; almost 0.50 of body; ovipositor not projecting beyond the tip of abdomen.

Type locality : Anamalai - Kodaikanal Hills : Berijam

Camptoptera Förster

- 1856 *Camptoptera*, Förster, *Hym. Stud.*, 2 : 116, 119, 144.
 1856 *Pteroclisia*, Förster, *Hym. Stud.*, 2 : 144.
 1856 *Stichothrix*, Förster, *Hym. Stud.*, 2 : 117, 118, 121.
 1904 *Camptoptera*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 362.
 1904 *Stichothrix*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 364.
 1909 *Camptoptera*, Schmiedeknecht, *Gen. Ins.*, 97 : 490.
 1910 *Macrocamptoptera*, Girault, *J.N.Y. Ent. Soc.*, 18 : 239.
 1942 *Congolia*, Ghesquiere, *Rev. Zool. Bot. Africaines*, 36 : 320.
 1953 *Camptoptera*, Soyka, *Natuurh. Haandbl.*, 42 : 57-80.
 1971 *Camptoptera*, Taguchi, *Trans. Shikoku ent. Soc.*, 11 (2) : 49.
 1972 *Camptoptera*, Taguchi, *Kontyu*, 40 (4) : 223.
 1979 *Camptoptera*, Krombein *et al.*, *Hymen. N. America*, 1 : 1027.
 1983 *Camptoptera*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 133.

Antennae in female with 9 segments, in male 10 segments; wings narrow, near base with a process and curved behind that, abdomen shortly petiolate, antennae inserted on level of lower orbital border; in female first funicular segment a little longer than pedicel; second segment much longer than first; third segment shorter than first, fourth shorter than third; last segment forms a strongly elongate subelliptic club, subequal to the preceding segments combined; 2 club segments somewhat thicker than funicular segments; in male funicular segments subequal; terminal segment ends with a pointed prolongation; body brown; antennae, petiole and legs yellow.

Type-species : *Camptoptera papaversis* Förster

KEY TO SPECIES (modified from Viggiani)

- | | |
|---|------------------------------------|
| 1. Occipital area with transversal striation | 2 |
| Occipital area with transversal reticulation | 4 |
| 2. Mesoscutum and scutellum without evident sculpture in the central area | <i>C. serenellae</i> Viggiani |
| Mesoscutum and scutellum completely sculptured | 3 |
| 3. Petiole latero-ventrally ridged, without lamella; pedicel as long as the first funicular segment | <i>C. ambrae</i> Viggiani |
| Petiole without apparent sculpture and with lamella; first funicular segment 2 times the pedicel length | <i>C. longifuniculata</i> Viggiani |
| 4. Fore wings without discal ciliae arranged in the central area; scutellum with lateral reticulation represented by polygonal cells rather short, not more than 2 times longer than wide | <i>C. tuberculata</i> Viggiani |
| Fore wings with discal ciliae arranged in a median line; sculpture on the scutellum laterally formed by narrow cells, 3-4 times longer than wide | <i>C. protuberculata</i> Viggiani |

Camptoptera serenellae Viggiani

1978 *Camptoptera serenellae*, Viggiani, *Rev. Suisse Zool.*, 85 : 151.

1983 *Camptoptera serenellae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 133.

Male : Length 0.43 mm. Body dark brown, with scape, pedicel and legs (from femur) yellowish-brown.

Head with transverso-frontal trabecula undivided; ocellar area reticulate; mandibles simple, eyes bare; occipital surface transversely striate; antennae with one annellus; scape 2 times the pedicel; first flagellar segment a little shorter than the third, others subequal.

Thorax longer than abdomen; mesoscutum with short parapsidal furrows, only laterally reticulate; scutellum without sculpture in the central area; propodeum smooth, with carinae; fore wings length : width ratio 513 : 57; fringe 171; discal ciliae arranged in 4 longitudinal rows; vein *m* with distal macrochaeta as long as the disc width; hind wings with 2 submarginal rows of discal ciliae; legs normal; posterior coxae with reticulate sculpture; length ratio of tarsal segments : fore tarsi, 4 : 2.5 : 2 : 2 : 4; middle tarsi 3 : 2.5 : 2 : 4, hind tarsi, 4 : 3 : 3 : 3 : 4.

Abdomen with petiole as long as the hind metatarsus, lateroventrally ridged.

Female : Unknown

Type locality : Hakgala, Sri Lanka

The new species is related to *Camptoptera concava* Taguchi in the structure of propodeum, but it is distinguishable by the sculpture on mesoscutum, scutellum and petiole.

Camptoptera ambrae Viggiani

1978 *Camptoptera ambrae*, Viggiani, *Rev. Suisse Zool.*, 85 : 152.

1983 *Camptoptera ambrae*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 133.

Female : Length 0.47 mm. Body dark brown, with antennae and legs yellowish-brown.

Head similar to *C. serenellae*; antennae with slender and curved scape; pedicel as long as the first funicular segment; one annellus; third funicular segment cylindrical, subequal to the first funicular segment; segments 4-7 longer than thick; club ovate, a little longer than last 3 funicular segments.

Thorax equal to abdomen, with sculpture on the mesoscutum and scutellum; propodeum smooth, with 2 median carinae and a long subspiracular seta; fore wings length : width ratio 532 : 38; fringe 190; vein *m* with distal macrochaeta 2 times the discal width; discal ciliation represented by 2 submarginal and one incomplete, median

lines; legs and abdomen as in *C. serenellae*; ovipositor with the base at the middle of abdomen and not extruded.

Male : Unknown.

Type locality : Madras : Kodaikanal, 2200 m.

Camptoptera ambrae Viggiani may be distinguished from other species by antennal structure; reticulation on the mesoscutum and scutellum; structures of the propodeum and petiole; thorax and propodeum setae.

***Camptoptera longifuniculata* Viggiani**

1978 *Camptoptera longifuniculata*, Viggiani, *Rev. Suisse Zool.*, 85 : 153.

1983 *Camptoptera longifuniculata*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 133.

Female : Length 0.66 mm. Body dark brown, with antennal scape and legs yellowish-brown.

Head with transversofrontal trabecula undivided; occipital area transversely reticulate; mandibles rather long, narrow and curved; antennae with first funicular segment 2 times the pedicel length; length ratio of antennal segments 15; 4 : 8 : 0.5 : 9 : 6.5 : 6 : 6 : 14; thickness ratio 2 : 1 : 1 : 1 : 1.5 : 1.5 : 2 : 2 : 4.

Thorax : abdomen ratio 35 : 30; mesoscutum transversally reticulate, with parapsidal furrows well developed; scutellum with reticulate sculpture, posteriorly with cells ending in a denticle; propodeum large, smooth, with 2 median carinae and 4 microsetae in central area; subspiracular setae long, reaching the base of hind coxae; fore wings as long as the body, with the venation reaching 0.33 of the total length; distal macrochaeta as long as the discal with 2 submarginal and one median lines; legs normal.

Petiole with lamella, without apparent sculpture, shorter than hind coxae; ovipositor rather long, with the base inserted in the first 0.50 of the abdomen and distally not protruded.

Male : Unknown.

Type locality : Kodaikanal

The new species is related to *Camptoptera philippina* Taguchi, *C. yamagishii* Taguchi and *C. reticulata* Ogloblin, but it is distinguished by the sculpture of the scutellum and the shape of the propodeum.

***Camptoptera tuberculata* Viggiani**

1978 *Camptoptera tuberculata*, Viggiani, *Rev. Suisse Zool.*, 85 : 154.

1983 *Camptoptera tuberculata*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 133.

Female : Length 0.57 mm. Body as in *C. ambrae*.

Head normal; transversofrontal trabecula undivided; ocellar area with heavy reticulation; occipital area transversely reticulate; mandibles rather short, narrow and not curved as in *C. serenellae* and *C. longifuniculata* : antennae with pedicel longer than first funicular segment; length and breadth ratios of antennal segments : 12 (3) : 5 (3) : 4 (1) : 1 (0.5) : 5 (1) : 3.5 (1) : 3.5 (1) : 3.5 (1) : 11 (3).

Thorax shorter than abdomen; mesoscutum with very short parapsidal furrows and well defined sculpture; propodeum with median carinae and lateral branch oriented to the spiracle; about 20 tubercles in the central area; fore wings with the distal macrochaeta about 2 times the discal breadth, reaching the base of the second cephalic cilia; area under the veins *m* and *st* bare; discal ciliation in the distal 0.50, fringe 5 times the discal breadth; legs normal.

Abdomen with petiole as in *C. serenellae* Viggiani; ovipositor short, 0.33 of abdomen length, a little protruded.

Male : Unknown.

Type locality : Sri Lanka : Ambagasewa

Camptoptera tuberculata Viggiani is mainly related to *C. vinea* Taguchi in the structure of the propodeum, but it is distinguishable by the reticulation on the scutellum.

Camptoptera protuberculata Viggiani

1978 *Camptoptera protuberculata*, Viggiani, *Rev. Suisse Zool.*, 85 : 155.

1983 *Camptoptera protuberculata*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 133.

Female : Very similar to *C. tuberculata* Viggiani in the head structure and other characters, but distinguishable by the scutellum laterally formed by narrow cells (3-4 times longer than wide), the longer distal macrochaeta and the discal ciliation with a complete median line.

Male : Unknown.

Type locality : Ceylon : Mululla

Camptopteroides Viggiani

1974 *Camptopteroides*, Viggiani, *Bull. Soc. ent. Agr. Filippo Silvestri Portici*, 31 : 23-29.

1983 *Camptopteroides*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

Antennae in male with 12 segments as in *Camptoptera* Förster; fourth funicular segment annelliform; thorax convex, pronotum very short, parapsidal furrows deep; propodeum well developed, with

carina reticulately punctate; fore wing straight; distally acutely pointed; vein not reaching basal 0.33; fore tibiae with 6 spines; tarsi with 5 segments; phallobase distally fused with aedeagus, with apodeme.

Type-species : *Camptopteroides armata* Viggiani

Camptopteroides armata Viggiani

- 1974 *Camptopteroides armata*, Viggiani, *Boll. Soc. ent. Agr. Filippo Silvestri Portici*, 31 : 24.
1983 *Camptopteroides armata*, Subba Rao & Hayat, *Contr. Amer. ent. Inst.*, 20 : 134.

Male : Length 1.25 mm. Body black, pedicel and antennae brownish-black; fore legs excluding coxae, middle and hind tarsi dark brown; fore wing infumate; head as long as wide; frontal transverse carina continuous, reticulate, occipital suture present; clypeus slightly concave, ocellar triangle isocetes; antennae with 12 segments; scape slightly expanded, 3 times as long as thick; pedicel 0.33 of scape, first funicular segment 5 times as long as thick; second funicular segment modified into annellus; and about 0.10 of the first; mandible with 2 teeth and one truncature; thorax a little shorter than abdomen, convex; parapsidal furrows complete, sculpture reticulate; propodeum strongly reticulately sculptured; fore legs and hind coxae strongly sculptured like propodeum; hind legs proportions 18 : 8 : 42 : 47 : 3 : 16 : 7 : 6 : 5 : 8; abdomen suboval, phallobase straight.

Type locality : Hatton, Ceylon

SUPPLEMENT

FAMILY CHALCIDIDAE

SUBFAMILY HALTICHELLINAE

In a recent paper, Roy & Farooqui (*Mem. ent. Soc. India*, 10 : 1-59, 1984) have reported a number of Haltichellinae, from the collections of the Indian Agricultural Research Institute, New Delhi. There is considerable confusion about the concept, limits and synonymies of most species dealt with by them. Furthermore, the descriptions suffer from many inaccuracies and inconsistencies. I have not also seen the new forms described by them. The following is a list of species included in the paper :

TRIBE HALTICELLINI

1. *Antrocephalus brevidentata* Roy & Farooqi
2. *Antrocephalus delhiatus* Roy & Farooqi
3. *Antrocephalus longidentata* Roy & Farooqi
4. *Antrocephalus mitys* (Walker)
5. *Antrocephalus renalis* Waterston
6. *Antrocephalus varipilosus* Cameron
7. *Antrocephalus galleriae* Subba Rao
8. *Antrocephalus naduganiensis* (Mani & Dubey)
9. *Antrocephalus nepalensis* (Mani & Dubey)
10. *Eucepsis brevispinosa* Roy & Farooqi
11. *Eucepsis cordigaster* Roy & Farooqi
12. *Eucepsis destructor* (Waterston)
13. *Eucepsis longigastor* Roy & Farooqi
14. *Eucepsis longispinosa* Roy & Farooqi
15. *Eucepsis mansues* (Nikolskaya)
16. *Eucepsis ornatipennis* (Cameron)
17. *Eugastrochalcis breviceps* (Masi)
18. *Haltichella delhiensis* Roy & Farooqi
19. *Haltichella macroclava* Roy & Farooqi
20. *Haltichella nigroclava* Roy & Farooqi
21. *Haltichella nipponensis* Habu
22. *Hockeria aligarhensis* Roy & Farooqi
23. *Hockeria atra* Masi
24. *Hockeria amamioshinensis* Habu
25. *Hockeria brachygaster* Boucek
26. *Hockeria dehradunensis* Roy & Farooqi
27. *Oxycoryphus pilosellus* Cameron
28. *Stomatoceras ayyari* Gahan
29. *Tanycoryphus micans* Steffan
30. *Temnata maculipennis* Cameron
31. *Uga menoni* Kerrich

TRIBE HYBOTHORACINI

32. *Boucekia differens* (Boucek)
33. *Euchalcidia crasicornis* Masi

34. *Euchalcidia emarginata* Roy & Farooqi
35. *Euchalcidia reticulata* Roy & Farooqi
36. *Euchalcidia ricini* Roy & Farooqi
37. *Hyperchalcidia soudanensis* Steffan
38. *Indoinveria bouceki* Roy & Farooqi
39. *Indoinveria menoni* Roy & Farooqi
40. *Inveria liqustica* Masi
41. *Inveria menoni* Roy & Farooqi
42. *Inveria subarmata* (Förster)
43. *Lasiochalcidia dragelasii* (Latreille)
44. *Peltochalcidia indica* Mani & Dubey
45. *Tropimeris monodon* Boucek

Epitranus Walker

Narendran (1986) has recently clarified the synonymies of the species of this genus. Several well known species are shown to be synonyms, a fate which is unavoidable, when species from a region are studied in isolation from other regions. The following is a list of species, with their synonyms :

1. *Epitranus albipennis* Walk.
E. sontakayi (Mani & Kurian)
E. marathensis (Mani & Dubey)
2. *Epitranus clavatus* (Fabr.)
E. cawnporensis (Mani & Dubey)
3. *Epitranus erythrogaster* (Cam.)
E. ceylonensis (Mani)
E. raoi (Mani & Kaur)
E. ambadevia (Mani & Dubey)
E. nilamburensis (Mani & Dubey)
E. pallava (Mani & Dubey)
E. tanjorensis (Mani & Dubey)
E. malabarensis (Mani & Dubey)
E. keralensis (Mani & Dubey)
4. *Epitranus obscurator* Walk.
E. muzafferi (Mani & Kurian)
E. shaffii (Mani & Kurian)
5. *Epitranus parvidens* (Strand)
E. borivilius (Mani & Dubey)
E. monticolus (Mani & Dubey)
E. ultima (Mani & Dubey)
6. *Epitranus ramnathi* (Mani)
E. annexia (Mani & Dubey)
E. ophiomontana (Mani & Dubey)
E. sanctijohani (Mani & Dubey)

FAMILY APHELINIDAE

Hispaniella tertia Subba Rao

1984 *Hispaniella tertia*, Subba Rao, *Proc. Ind. Acad. Sci. Golden Jubilee*, 93 (3) : 256.

Female : Body dark brown; antennae and tarsi yellow; head in front slightly wider than long, mandible with 2 acute and one blunt

teeth; maxillary palpi with 2 and labial palpi with one segment; ocellar triangle obtuse; ocellocular space 2 times the ocellar diameter; antennae inserted near mouth; segments 8 : 1 : 1 : 2 : 4; scape cylindrical, 2 times the radicle; pedicel a little longer than 0.5 of scape; first funicular segment a little longer than second; club about 2.7 times the funicle; mesoscutum finely reticulate; scutellum smooth; fore wing length 2.5 times width, faintly infuscated basally; vein *m* a little shorter than *sm*; vein *st* short; fringe longer than 0.5 of width; hind wing fringe longer than width; middle tibial spur equal to metatarsus; abdomen slightly longer than thorax.

Type locality : Quetta (Pakistan)

Host : *Lepidosaphes baluchistanus*

Eretmocerus breviclavus Subba Rao

1984 *Eretmocerus breviclavus*, Subba Rao, *Proc. Indian Acad. Sci.*, 93 (3) : 257.

Female : Length 0.6 to 0.62 mm. Body yellow; head orange-yellow; antennae and legs pale yellow; pronotal angle and propodeum dusky brown; head in front width height ratio 23 : 17; ocellar triangle obtuse; interocellar space 3 times the ocellocular space; antennae inserted widely apart below the lower orbital border near clypeus; mandibles tridentate; mesoscutum areolate reticulate; scutellum finely straited; fore wing length 2.5 times width, hyaline, fringe about 0.12 of wing width; veins *m* and *st* subequal, speculum bordered by one to 3 rows of setae; hind wings 7 times as long as broad, fringe a little longer than width; abdomen a little longer than thorax. Male like for female but for antennae.

Type locality : Bangalore

Encarsia longifasciata Subba Rao

1984 *Encarsia longifasciata*, Subba Rao, *Proc. Indian Acad. Sci.*, 93 (3) : 260.

Female : Length 0.55 to 0.75 mm. Body generally dark brown, except axillae and abdominal tergite at the sides; scutellum and propodeum paler; head width 2.5 times height; ocellar triangle equilateral, interocellar space equal to ocellocular space, ocelloccipital space 3 times ocellar diameter, eyes finely pubescent; antennal segments 8 : 1 : 1 : 4 : 2; scape 5 times as long as thick and 2 times the radicle; pedicel nearly 0.3 of scape; fourth funicular segment longest; antennal segment ratio 40 : 14 : 12 : 18 : 20 : 24 : 25 : 25; mesoscutum, scutellum and propodeum smooth, somewhat reticulate at sides; fore wing 3 times as long as broad, veins *sm* : *m* ratio 4 : 6; hind wing with fringe shorter than width; abdomen 2 times as thorax.

Male : Not known

Type locality : Bangalore

Azotus bharathius Subba Rao

1984 *Azotus bharathius*, Subba Rao, *Proc. Indian Acad. Sci.*, 93 (3) : 261.

Female : Length 0.95 to 1.10 mm. Body dark blackish-brown; pronotum metallic-green; head silvery-white below eyes; frontovertex white; scape, pedicel basally, funicular segments 1 to 3 and club dark brown; fore wing infumate from vein *st* to base, behind vein *st* hyaline, outside of which a sinuate infumate band and distally with 2 hyaline areas; ocellar triangle isocelles; interocellar space a little more than ocellocular space; scape slightly expanded; pedicel a little less than 0.50 of scape; first funicular segment longest; antennal segmental ratio 52 : 24 : 28 : 26 : 14 : 24 : 55; thorax transversely reticulate; abdomen nearly 2 times thorax.

Male like female except antennae and wings.

Type locality : Lucknow

Host *Aspidiotus glomaratus*

Azotus fumipennis Subba Rao

1984 *Azotus fumipennis*, Subba Rao, *Proc. Indian Acad. Sci.*, 93 (3) : 261.

Subba Rao separates this species from *A. bharathius* by the ratio of antennal segments and fore wing strongly infumate from base to tip of vein *st*.

Type locality : Lucknow

Dist : Gangavathi, Coimbatore, Hospet

Host : *Aspidiotus glomaratus*

Coccobius Ratzeburg

1984 *Coccobius*, Hayat, *Orient. Ins.*, 18 : 291.

Twenty-seven species of *Coccobius* Ratzeburg and *Prophyscus* De Santis, with special reference to the species described by Girault and Howard, are revised, with three new specific synonymies in *Coccobius*, a new name in *Prophyscus*, and several new combinations (including transfer of *Encarsia flaviclava* Howard to *Coccobius*) are proposed; 55 species of *Coccobius* and 2 species of *Prophyscus* are recognised.

Coccobius aligarhensis (Hayat)

1974 *Physcus aligarhensis*, Hayat, *J. Bombay nat. Hist. Soc.*, 71 : 66.

1984 *Coccobius aligarhensis*, Hayat, *Orient. Ins.*, 18 : 293.

Frontovertex pale brown to dusky, paler bands on mesoscutum and scutellum not clearly and sharply delimited; thoracic dorsum almost wholly dark brown, mesopostphragma, from the apex of scutellum very slightly shorter than scutellum; third valvula, middle tibia and basitarsus ratio of ovipositor 25.7 : 77.2 : 17.6.

Male very similar to the male of *ceroplastidis*. However, that species is based on a single male specimen and such males are also known in other species (*Odonaspidis flavoflagellatus*, possibly also *reticulatus*). Also such differences as the number of setae (6) on scutellum and the presence of *pm* in *ceroplastidis*, are evidence of its validity.

Distribution : India

Host : *Aonidiella orientalis* (Newstead)

Coccobius ceroplastidis (Agarwal)

1964 *Prophyscus ceroplastidis*, Agarwal, *Proc. Indian Acad. Sci.*, (B) 60 : 324.

1974 *Physcus ceroplastidis*, Hayat, *J. nat. Hist.*, 8 : 181.

1984 *Coccobius ceroplastidis*, Hayat, *Orient. Ins.*, 18 : 295.

Based on only a single male, this species seems uncertain pending discovery of females.

Distribution : India

Host : *Ceroplastes* sp. on *Zizyphus jujuba*

Coccobius comperei (Hayat)

1972 *Physcus comperei*, Hayat, *Bull. Ent.*, 12 : 118.

1983 *Coccobius comperei*, Hayat, *Syst. Ent.*, 8 : 86.

1984 *Coccobius comperei*, Hayat, *Orient. Ins.*, 18 : 295. fig. 6, 7, 53-56.

Very close to *reticulatus*, but proportions of funicular segments, longer third valvula and the slightly different mesoscutal sculpture separate it. These colour of body seem to be constant, but in *reticulatus*, are subject to variations. Mesopostphragma slightly longer than scutellum; third valvula, middle tibia and basitarsus of middle leg ratio with the ovipositor 28.8 : 58.6 : 16.3.

Distribution : India

Host : Unidentified, coccids

Coccobius confusus (Compere & Annecke)

1961 *Physcus confusus*, Compere & Annecke, *J. ent. Soc. South Afr.*, 24 : 25.

1984 *Coccobius confusus*, Hayat, *Orient. Ins.*, 18 : 296.

Distribution : Burma

Host : *Aonidiella* sp. on *Citrus*

Coccobius debachi (Compere & Annecke)

1961 *Physcus debachi*, Compere & Annecke, *J. ent. Soc. South Afr.*, 24 : 23.

1984 *Coccobius debachi*, Hayat, *Orient. Ins.*, 18 : 296.

Distribution : Burma, Thailand

Host : *Aonidiella aurantii* (Maskell); males on the encyrtids, *Comperiella bifasciata* Howard and *Habrolepis rouxi* Compere.

Coccobius reticulatus (Compere & Annecke)

- 1961 *Physcus reticulatus*, Compere & Annecke, *J. Ent. Soc. South Afr.*, 24 : 24.
 1972 *Physcus reticulatus*, Hayat, *Bull. Ent.*, 12 : 118.
 1978 *Physcus gunturensis*, Ahmed & Shafee, *J. Bombay nat. Hist. Soc.*, 75 : 164.
 1982 *Physcus oriensis*, Husain & Agarwal, *J. Bombay nat. Hist. Soc.*, 79 : 159.
 1984 *Coccobius reticulatus*, Hayat, *Orient. Ins.*, 18 : 308.

This species varies much in colour and proportions of antennal segments; mesoscutum transversely reticulate; vein *pm* present. Mesopostphragma generally as long as scutellum, or slightly longer; third valvulae, middle tibiae and basitarsi of middle legs ratio with ovipositor 24 : 58 : 16.5, 23.4 : 60.5 : 16, middle tibia length, 60 and 62.8; length of the ovipositor in both specimens taken as 100.

Distribution : India, Pakistan; Sultanate of Oman

Hosts : *Aonidiella orientalis* (Newstead) (?), *Cerococcus hibisci* Green, *Coccus hesperidum* L., Coccids on rose presumably *A. orientalis*.

Coccobius subflavus (Annecke & Insley)

- 1970 *Physcus subflavus*, Annecke & Insley, *Bull. ent. Res.*, 60 : 248.
 1983 *Coccobius subflavus*, Hayat, *Syst. Ent.*, 8 : 86.
 1984 *Coccobius subflavus*, Hayat, *Orient. Ins.*, 18 : 310.

Distribution : India (introduced); Kenya; Mauritius (introduced); Tanzania; Thailand (introduced)

Hosts : *Aulacaspis tegalensis* (Zehntner); *Melanaspis glomerata* (Green), introduced in India for control of this Coccid.

FAMILY ENTEDONIDAE**SUBFAMILY PEDIOSIINAE****Nesomyia Ashmead**

- 1904 *Nesomyia*, Ashmead, *Mem. Carnegie Mus.*, 1 (4) : 344, 382.
 1909 *Nesomyia*, Schmiedeknecht, *Gen. Ins.*, 97 : 447.
 1979 *Nesomyia*, Krombein, *Hym. N. Amer.*, 1020.

Antennae filiform, with 9 segments : 1, 1, 1, 3, 3, including one minute annellus; funicular segments cylindrical, elongate, reduced apically, sparsely with long setae, terminal segment reduced abruptly; body non-metallic; mesonotum with reticulate squamous sculpture; parapsidal furrows present; fore wings with short fringe, vein *m* long, veins *st* and *pm* short; abdomen sessile; ovipositor not or only very slightly exerted.

Type-species : *Nesomyia albipes* Ashmead

This genus is separated from *Pediobius* Walker by the funicular segments being not moniliform and reticulo-squamous sculpture of thorax.

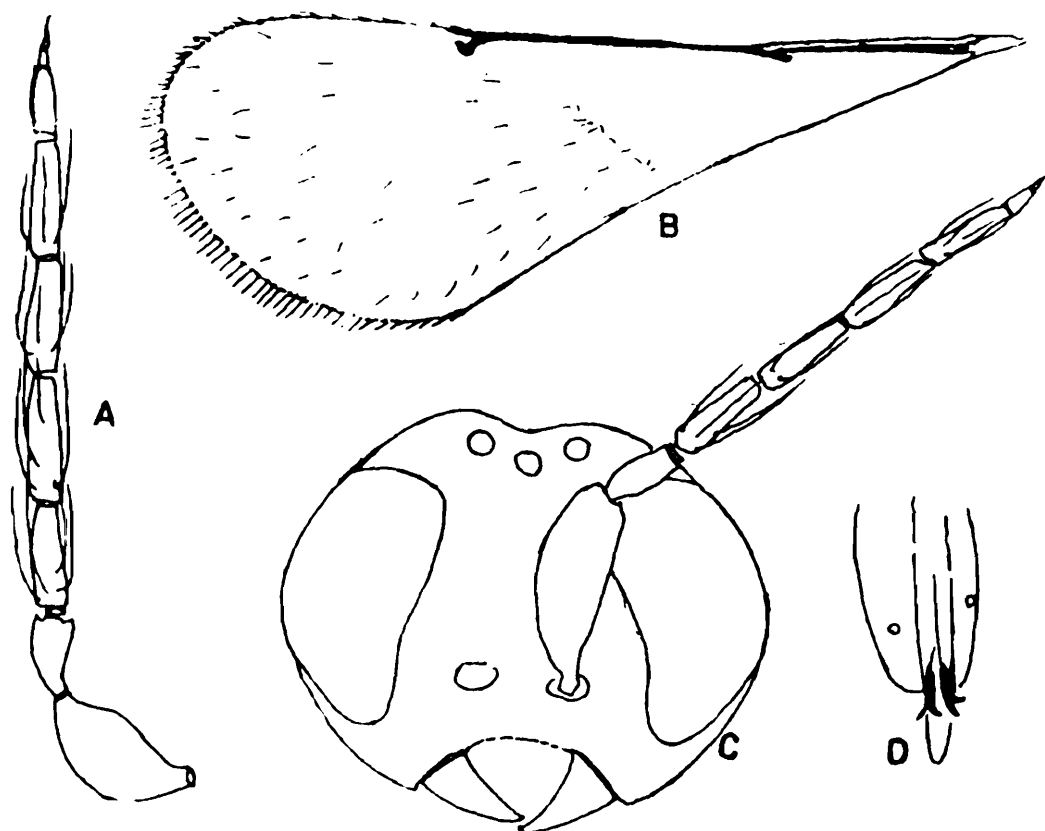


FIG. 359. *Nesomyia echinata*, sp. nov. A. Antenna Male; B. Forewing female; C. Head and antennae female view in front; D. External genitalia male.

***Nesomyia echinata*, sp. nov.**

(Fig.359)

Female : Length 1.50 mm. Body general colour yellow; mesothorax dark greenish-brown; abdomen except the yellow base banded dark brown; antennae except the yellow scape and pedicel, dark brown, ocelli red. Head viewed above slightly wider than thorax; ocellular space equals 2 ocellar diameters and subequal to interocular space, front ocellar space somewhat less than ocellar diameter; viewed in front suborbicular, length : height ratio 22 : 19, gena about 0.45 of eye length; toruli as far from each other as from eye border. Antennae inserted slightly above level of lower orbital borders; scape fusiform-ovate, stout in the middle and reduced basally and apically, about 2 times as long as thick; pedicel about 0.50 of scape and 2 times as long as thick; annellus minute but distinct; funicular segments subcylindrical, thinner apically than basally, funicular segments 1-3 length ratio 10 : 9 : 8; first funicular segment a little less than 1.50 of pedicel; third funicular segment distinctly thinner than the second; first club segment subcylindrical, subequal to the preceding last funicular segment; second club segment about 0.60 of the first and distinctly conically reduced, apically; third segment abruptly slender and style-like, subequal to

the second club segment. Mesonotum with fine reticulate squamous sculpture; parapsidal subevanescent behind. Forewing length : width ratio 3 : 1; veins *sm* : *m* : *pm* : *st* ratio 30 : 50 : 4 : 4; fringe short; discal cilia sparse, longer spur of hind tibia about 0.33 of metatarsus and shorter spur 0.50 of the longer. Abdomen sessile, subequal to rest of body, globosely-ovate.

Male : Length 1.25 mm. Body general colour as in female. Ocellocular space : interocellar space ratio 1 : 6; ocellocular space : ocellar diameter ratio 3 : 2. Scape 2 times longer than thick; pedicel about 0.50 of scape; annellus about 0.10 of pedicel; first funicular segment 1.50 times the pedicel, basal thickness to apical thickness 15 : 10; second funicular segment about 1.60 of pedicel and somewhat longer than the first, apically reduced; third funicular segment about 0.88 of the first and about 0.80 of the second segment; club segments ratio 37 : 25 : 12, terminal club segment reduced to a slender style. Thorax and wings as in female. Abdomen somewhat widened apically, second tergite large; genitalia as in figure. Longer spur of hind tibia about 0.33 of metatarsus, shorter spur 0.50 of the longer.

Holotype 1 female, *allotype* 1 male, *paratypes* 2 females and 1 male on slides. Reared from the echinate gall No.263 on leaf of *Ficus bengalensis* Linn. Madras. Coll. Jayaraman, April 1987 Deposited in ZSI, Calcutta.

MYMARIDAE

Parallelaptera teleonemiae Subba Rao

1984 *Parallelaptera teleonemiae*, Subba Rao, *Proc. Indian Acad. Sci.*, 93 (3) : 253.

1986 *Parallelaptera teleonemiae*, Subba Rao, *et al. Orient. Ins.*, 20 : 189.

Female : Length 0.4-0.45 mm. Body brown; head in front wider than high; transverso-frontal-trabecula entire; ocellar triangle equilateral; ocellocular space equal to ocellar diameter; toruli a little above lower orbital border widely separated; antennal segments 8 : 1, 1, 5, 1; segments ratio 22 : 10 : 4 : 5 : 4 : 7 : 15 : 30; pronotum with 3 bristles; parapsidal furrows straight, scutellar length to width 29 : 34; fore wings with parallel sides, length to width ratio 120 : 20; vein *m* well developed, fringe 6 times the width of wing; hind wing with fringe 7 times the width; abdomen a little shorter than thorax.

Male : like female

Type-locality : Bangalore

Distribution : Bangalore, Madras

Hosts : *Teleonemia scropulosa*, *Phenotropis cleopatrae* and *Urentius euonymus*.

Anastatus mantoidae (Motsch.) fig. 160, pp. 691-692 (*vide supra*) is certainly not an *Anastatus*, but *Podagrion*.

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HOST-PARASITE INDEX

Host	Parasite
<i>Acanthoscelides obtectus</i>	<i>Dinarmus laticeps</i>
<i>Acanthoscelis alboscuteclatus</i>	<i>Uscana semifumipennis</i>
<i>Acaudaleyrodes rachipora</i>	<i>Encarsia acaudaleyrodis</i>
<i>Acaudaleyrodes rachipora</i>	<i>Eretmocerus rajasthanicus</i>
<i>Achaea janata</i>	<i>Euplectrus leuostomus</i>
<i>Achaea janata</i>	<i>Tetrastichus ophiusae</i>
<i>Achaea janata</i>	<i>Trichogramma achaeae</i>
<i>Achaea janata</i>	<i>Trichogramma chilonis</i>
<i>Achaea janata</i>	<i>Trichogramma semblidis</i>
<i>Achaea janata</i>	<i>Trichogrammatoidea bactrae</i>
<i>Achaea janata</i>	<i>Trichogrammatoidea prabhakeri</i>
<i>Acherontia styx</i>	<i>Agiommatus paria</i>
<i>Acherontia styx</i>	<i>Anastatus acherontiae</i>
<i>Acigona steniellus</i>	<i>Elasmus zehntneri</i>
<i>Aclerda distorta</i>	<i>Coccophagus zebratus</i>
<i>Aclerda takahashii</i>	<i>Botryoideclava bhartiya</i>
<i>Acridomyia sacharovi</i>	<i>Brachymeria tachardiae</i>
<i>Acrocercops ordinatella</i>	<i>Sympiesis purpureus</i>
<i>Acrocercops orthostacta</i>	<i>Paratrachogramma giraulti</i>
<i>Acroectasis campanulata</i>	<i>Prodecatoma sabiae</i>
<i>Acroectasis campanulata</i>	<i>Eurytoma sabiae</i>
<i>Adisura atkinsoni</i>	<i>Spalangia gemina</i>
<i>Adoxophyes congruana</i>	<i>Brachymeria lasus</i>
<i>Adoxophyes orana</i>	<i>Brachymeria excarinata</i>
<i>Adoxophyes orana</i>	<i>Brachymeria lasus</i>
<i>Adoxophyes privatana</i>	<i>Brachymeria lasus</i>
<i>Agonoxem argaula</i>	<i>Ooencyrtus malayensis</i>
<i>Agraulis vanillae</i>	<i>Metastenus concinus</i>
<i>Agrilus</i>	<i>Oodera ahoma</i>
<i>Agromyza phaseoli</i>	<i>Callitula rugosa</i>
<i>Agromyza phaseoli</i>	<i>Halticoptera propinqua</i>
<i>Agromyza sp.</i>	<i>Closterocerus agromyzae</i>
<i>Agrotis segetum</i>	<i>Trichogramma evanescens</i>
<i>Agyrotaenia velutinana</i>	<i>Pteromalus puparum</i>
<i>Alabama argillacea</i>	<i>Trichogramma minutum</i>
<i>Alcidodes bubo</i>	<i>Eurytoma pigra</i>
<i>Alcidodes leeuweni</i>	<i>Pareuderus torymoides</i>
<i>Aldrichina grahmi</i>	<i>Brachymeria podagrica</i>
<i>Aleurocanthus spiniferus</i>	<i>Encarsia smithi</i>
<i>Aleurocanthus woglumi</i>	<i>Ablerus connectans</i>
<i>Aleurocanthus woglumi</i>	<i>Encarsia bennetti</i>
<i>Aleurocanthus woglumi</i>	<i>Encarsia clypealis</i>
<i>Aleurocanthus woglumi</i>	<i>Encarsia merceti</i>
<i>Aleurocanthus woglumi</i>	<i>Encarsia smithi</i>
<i>Aleurocanthus woglumi</i>	<i>Eretmocerus serius</i>

Host	Parasite
Aleurocanthus racini	Encarsia lahorensis
Aleurolobus barodensis	Azotus delhiensis
Aleurolobus barodensis	Encarsia isaaci
Aleurolobus barodensis	Encarsia muliyali
Aleurolobus barodensis	Euderomphale secunda
Aleurolobus sp.	Eretmocerus haldemani
Aleurolobus sp.	Eretmocerus indicus
Aleyrodes	Eretmocerus gunturiensis
Aleyrodes	Eretmocerus mashhoodi
Aleyrodes	Eretmocerus mundus
Aleyrodes	Encarsia tristislumis
Aleyrodes	Encarsia lutea
Aleyrodes longicornis	Azotus pulchriceps
Allograpta javana	Syrphophagus aphidivorus
Althaeus hibisci	Uscana semifumipennis
Amblypalpis olivierella	Hockeria tamaricis
Amorbia emigratella	Brachymeria lasus
Amorbia essigana	Trichogramma minutum
Amorphococcus mesuae	Eupelmus amorphococci
Amradiplosis echinogalliperda	Hockeria tamaricis
Amrasca devastans	Anagrus empoascae
Amrasca devastans	Arescon enocki
Amrasca devastans	Erythmelus empoascae
Amrasca devastans	Gonatocerus empoascae
Amrasca devastans	Stethynium empoascae
Anadevidia peponis	Brachymeria lasus
Anadevidia peponis	Tetrastichus israeli
Anagyrus kivuensis	Promuscidea unifasciiventris
Anamaspis coniferarum	Aphytis sensorius
Anaphaeis aurata	Brachymeria amphissa
Anarsia ephippias	Paralitomastix varicornis
Anastatus colemani	Tetrastichus gardneri
Anastrepha	Pachycrepoideus vindemmiae
Aneurophis helichrysi	Pachyneuron triarticulata
Anomalococcus crematogastris	Cheilonicetus daulai
Anomalococcus crematogastris	Pseudomicroterys angustifrons
Anomalococcus	Elasmus indicus
Anomalococcus	Promuseidea laticeps
Anilastus	Brachymeria secundaria
Anisops bouvieri	Prestwichia indica
Anthomyiid	Tetrastichus nyemitawus
antlions	Euchalcis myrmeleonae
Antonina graminis	Anagyrus diversicornis
Antonina graminis	Cheiloneurus bangalorensis
Antonina graminis	Neodusmatia sangwani
Antonina indica	Neodusmatia sangwani
Antonina indica	Cheiloneurus bangalorensis

Host	Parasite
<i>Antonina purpurea</i>	<i>Anagyrus diversicornis</i>
<i>Aonidia corniger</i>	<i>Encarsia aonidiae</i>
<i>Aonidiella aurantii</i>	<i>Anabrolepis bifasciata</i>
<i>Aonidiella aurantii</i>	<i>Aspidiotiphagus citrinus</i>
<i>Aonidiella aurantii</i>	<i>Prosaphelinus proclia</i>
<i>Aonidiella aurantii</i>	<i>Comperiella bifasciata</i>
<i>Aonidiella citrina</i>	<i>Aspidiotiphagus citrinus</i>
<i>Aonidiella citrina</i>	<i>Comperiella bifasciata</i>
<i>Aonidiella orientalis</i>	<i>Adelencyrtus bimaculatus</i>
<i>Aonidiella orientalis</i>	<i>Comperiella aspidiotiphaga</i>
<i>Aonidiella orientalis</i>	<i>Comperiella bifasciata</i>
<i>Aonidiella orientalis</i>	<i>Comperiella lemniscata</i>
<i>Aonidiella orientalis</i>	<i>Comperiella unifasciata</i>
<i>Aonidiella orientalis</i>	<i>Metaphycus zebratus</i>
<i>Aonidiella taxus</i>	<i>Comperiella bifasciata</i>
<i>Aonidiella sp.</i>	<i>Adelencyrtus shafeei</i>
<i>Aonidiella sp.</i>	<i>Physcus reticulatus</i>
<i>Apanteles delhiensis</i>	<i>Anastatus amara</i>
<i>Apanteles glomeratus</i>	<i>Catolaccus ater</i>
<i>Apanteles importunus</i>	<i>Elasmus johnstoni</i>
<i>Apanteles liparidis</i>	<i>Brachymeria secundaria</i>
<i>Apanteles machaeralis</i>	<i>Perilampus microgastris</i>
<i>Apanteles malevolus</i>	<i>Elasmus albomaculatus</i>
<i>Apanteles malevolus</i>	<i>Elasmus johnstoni</i>
<i>Apanteles malevolus</i>	<i>Mokrzeckia orientalis</i>
<i>Apanteles obliqua niger</i>	<i>Euplectrus indicus</i>
<i>Apanteles obliqua niger</i>	<i>Mokrzeckia indica</i>
<i>Apanteles obliqua niger</i>	<i>Mokrzeckia orientalis</i>
<i>Apanteles ordinarius</i>	<i>Brachymeria secundaria</i>
<i>Apanteles plutellae</i>	<i>Brachymeria excarinata plutellae</i>
<i>Apanteles ruficus</i>	<i>Brachymeria lasus</i>
<i>Apanteles ruficus</i>	<i>Mokrzeckia menzeli</i>
<i>Apanteles tachardiae</i>	<i>Eupelmus tachardiae</i>
<i>Apanteles tachardiae</i>	<i>Eurytoma pallidiscapus</i>
<i>Apanteles taragamae</i>	<i>Brachymeria nephantidis</i>
<i>Apanteles taragamae</i>	<i>Perilampus microgastris</i>
<i>Apanteles taragamae</i>	<i>Tetrastichus versicolor</i>
<i>Apanteles sp.</i>	<i>Elasmus brevicornis</i>
<i>Apanteles sp.</i>	<i>Mokrzeckia orientalis</i>
<i>Apanteles sp.</i>	<i>Pteromalus semotus</i>
<i>Aphidius sp.</i>	<i>Asaphes suspensus</i>
<i>Aphidius sp.</i>	<i>Pachyneuron aphidis</i>
<i>Aphids</i>	<i>Aphelinus abdominalis</i>
<i>Aphis citricola</i>	<i>Aphelinus flavipes</i>
<i>Aphis citricola</i>	<i>Aphelinus mali</i>
<i>Aphis craccivora</i>	<i>Aphelinus abdominalis</i>
<i>Aphis craccivora</i>	<i>Syrphophagus aphidivorus</i>

Host	Parasite
<i>Aphis gossypii</i>	<i>Aphelinus flavipes</i>
<i>Aphis helichrysi</i>	<i>Coccidencyrtus kumaonensis</i>
<i>Aphis helichrysi</i>	<i>Pachycrepoideus indicus</i>
<i>Aphis laburni</i>	<i>Syrphophagus aphidivorus</i>
<i>Aphis pomi</i>	<i>Aphelinus kashmiriensis</i>
<i>Aphis rumicis</i>	<i>Pachyneuron aphidis</i>
<i>Aphis sacchari</i>	<i>Leiocyrtus aphidivorus</i>
<i>Apion</i> sp.	<i>Entedon pempheridis</i>
<i>Apion corchori</i>	<i>Eupelmus urozonus</i>
<i>Apoderus sissu</i>	<i>Paropola indica</i>
<i>Aporia crataegi</i>	<i>Brachymeria flavipes</i>
<i>Aproaerema modicella</i>	<i>Asympiesiella indica</i>
<i>Aproaerema modicella</i>	<i>Elasmus brevicornis</i>
<i>Aproaerema modicella</i>	<i>Stenomesus japonicus</i>
<i>Araecerus fasciculatus</i>	<i>Eupelmus javae</i>
<i>Archips asiaticus</i>	<i>Brachymeria lasus</i>
<i>Archips</i> sp.	<i>Brachymeria excarinata</i>
<i>Archips</i> sp.	<i>Brachymeria intermedia</i>
<i>Archips</i> sp.	<i>Brachymeria lasus</i>
<i>Arge luteiventris</i>	<i>Spilochalcis fletcheri</i>
<i>Argus convolvuli</i>	<i>Trichogramma achaeae</i>
<i>Argyria</i> sp.	<i>Aprostocetus israeli</i>
<i>Argyrogramma signata</i>	<i>Copidosoma javae</i>
<i>Argyrophylax nigrotibialis</i>	<i>Brachymeria lasus</i>
<i>Argyrotaenia velutiana</i>	<i>Trichogramma minutum</i>
<i>Artona catoxantha</i>	<i>Anastatoidea brachartoniae</i>
<i>Ascotis sealenaria imparata</i>	<i>Euplectrus parvulus</i>
<i>Ascotis</i> sp.	<i>Brachymeria lasus</i>
<i>Asphondylia pongamiae</i>	<i>Aprostocetus asphondyliae</i>
<i>Asphondylia pongamiae</i>	<i>Prodecatoma pongamiae</i>
<i>Asphondylia riveae</i>	<i>Neparaprostocetus asphondyliae</i>
<i>Asphondylia sesami</i>	<i>Eurytoma nesiotis</i>
<i>Asphondylia</i> sp.	<i>Eupelmus urozonus</i>
<i>Aspidiotus acuminatus</i>	<i>Aneristus ceroplastae</i>
<i>Aspidiotus cryptomeriae</i>	<i>Comperiella bifasciata</i>
<i>Aspidiotus destructor</i>	<i>Aspidiotiphagus citrinus</i>
<i>Aspidiotus destructor</i>	<i>Comperiella bifasciata</i>
<i>Aspidiotus destructor</i>	<i>Comperiella unifasciata</i>
<i>Aspidiotus destructor</i>	<i>Prosaphelinus proclia</i>
<i>Aspidiotus destructor</i>	<i>Thomsonisca pakistanensis</i>
<i>Aspidiotus glomeratus</i>	<i>Anabrolepis mayarai</i>
<i>Aspidiotus glomeratus</i>	<i>Azotus bharathius</i>
<i>Aspidiotus glomeratus</i>	<i>Azotus delhiensis</i>
<i>Aspidiotus glomeratus</i>	<i>Azotus fumipennis</i>
<i>Aspidiotus hederiae</i>	<i>Arrhenophagus chionaspidis</i>
<i>Aspidiotus nerii</i>	<i>Aspidiotiphagus citrinus</i>
<i>Aspidiotus nerii</i>	<i>Prosaphelinus proclia</i>
<i>Aspidiotus orientalis</i>	<i>Comperiella aspidiotiphaga</i>

Host	Parasite
<i>Aspidiotus secretus</i>	<i>Homalopoda cristata</i>
<i>Aspidiotus tamarindi</i>	<i>Comperiella indica</i>
<i>Aspidiotus theae</i>	<i>Aphelinus theae</i>
<i>Aspidiotus</i> sp.	<i>Comperiella aspidiotiphaga</i>
<i>Aspidomorpha miliaris</i>	<i>Brachymeria burksi</i>
<i>Aspidomorpha miliaris</i>	<i>Cassidocida aspidomorphae</i>
<i>Aspidomorpha miliaris</i>	<i>Tetrastichus miliaris</i>
<i>Asterolecanium</i> sp.	<i>Moranila californica</i>
<i>Asympiesiella nelsonensis</i>	<i>Asympiesiella giraulti</i>
<i>Atherigona soccata</i>	<i>Tetrastichus agarwali</i>
<i>Atherigona soccata</i>	<i>Tetrastichus delhiensis</i>
<i>Atherigona soccata</i>	<i>Tetrastichus nyemitawus</i>
<i>Atherigona soccata</i>	<i>Trichogramma chilonis</i>
<i>Atherigona</i> sp.	<i>Tetrastichus nyemitawus</i>
<i>Athesapeuta cyperia</i>	<i>Anisopteromalus calandrae</i>
<i>Atteva fabriciella</i>	<i>Brachymeria himeattevae</i>
<i>Atteva fabriciella</i>	<i>Brachymeria lugubris</i>
<i>Aulacaspis abietis</i>	<i>Comperiella bifasciata</i>
<i>Aulacaspis nigrisigna</i>	<i>Brachymeria lasus</i>
<i>Aulacaspis rosae</i>	<i>Prosaphelinus proclia</i>
<i>Aulacaspis</i> sp.	<i>Thomsonisca pakistanensis</i>
<i>Aulacaspis</i> sp.	<i>Thomsonisca sankarani</i>
<i>Aximopsis javensis</i>	<i>Eupelmus javae</i>
<i>Bactra</i> sp.	<i>Trichogramma chilonis</i>
<i>Bactra</i> sp.	<i>Trichogrammatoidea bactrae</i>
<i>Bactra venosana</i>	<i>Trichogrammatoidea bactrae</i>
<i>Bactra venosana</i>	<i>Trichogrammatoidea nana</i>
<i>Bambusaspis delicata</i>	<i>Cheiloneuromyia planchoniae</i>
<i>Bambusaspis delicata</i>	<i>Encarsia planchoniae</i>
<i>Batracomorphus indicus</i>	<i>Anagyrodes</i> sp.
<i>Bemisia tabaci</i>	<i>Eretmocerus corni</i>
<i>Bena prasinana</i>	<i>Brachymeria lasus</i>
<i>Bercaea haemorrhoidalis</i>	<i>Brachymeria minuta</i>
<i>Bercaea haemorrhoidalis</i>	<i>Brachymeria podagrica</i>
<i>Bessa remota</i>	<i>Tachinobia reponda</i>
<i>Bethyplectes curculiois</i>	<i>Tetrastichus ayyari</i>
<i>Blacus</i> sp.	<i>Mokrzeckia indica</i>
<i>Blastophagus</i> sp.	<i>Metacolus unifasciatus</i>
<i>Blepharipa</i> sp.	<i>Brachymeria fiskei</i>
<i>Boettcherisca peregrin.</i>	<i>Brachymeria podagrica</i>
<i>Bombyx mandarina</i>	<i>Brachymeria lasus</i>
<i>Borbo cinnara</i>	<i>Brachymeria lasus</i>
<i>Brachycaudus helichrysi</i>	<i>Aphelinus gossypii</i>
<i>Brachycaudus helichrysi</i>	<i>Asaphes vulgaris</i>
<i>Brachycaudus helichrysi</i>	<i>Pachyneuron aphidis</i>
<i>Brachycaudus helichrysi</i>	<i>Syrphophagus kumanoensis</i>

Host	Parasite
Brachycaudus helichrysi	Torymus chaubattiensis
Brachycaudus sp.	Pachyneuron groenlandicum
Bracon greeni	Euprelmus tachardiae
Bracon osculator	Pteromalus semotus
Braconidae sp.	Brachymeria secundaria
Braconidae sp.	Brachymeria suspensus
Brevicoryne brassicae	Asaphes suspensus
Brevicoryne brassicae	Pachyneuron triarticulata
Bruchid	Oedaule stringifrons
Bruchid	Dinarmus acutus
Bruchid	Dinarmus vagabundus
Bruchophagus mellipes	Megastigmus indi
Bruchus brachialis	Lariophagus distinguendus
Bruchus sp.	Dibrachys (Dibrachys) cavus
Brumoides suturalis	Homalotylus flaminus
Calliphora vicina	Nasonia vitripennis
Calliphora sp.	Nasonia vitripennis
Calliphora sp.	Pachycrepoideus vindemmiae
Calliphora sp.	Brachymeria podagrica
Callopepla leayana	Brachymeria minuta callopeplae
Callosobruchus analis	Dinarmus basalis
Callosobruchus analis	Uscana semifumipennis
Callosobruchus chinnesis	Anisopteromalus calandrae
Callosobruchus chinnesis	Bruchocida orientalis
Callosobruchus chinnesis	Dinarmus colemani
Callosobruchus maculatus	Dinarmus laticeps
Callosobruchus maculatus	Uscana semifumipennis
Callosobruchus phaseoli	Anisopteromalus calandrae
Callosobruchus pisorum	Dinarmus laticeps
Caloptilia theivora	Mestocharella javensis
Calymnoides conchylis	Brachymeria lasus
Camponotus compressus	Epitranus chilkaensis
Canephora unicolor	Brachymeria lasus
Capua reynoldsiana	Brachymeria lasus
Carcelia sp.	Brachymeria fiskei
Carea subtilis	Brachymeria jambolana
Carpomyia vesuviana	Euderus carpomyiae
Carpophilus sp.	Cerchysiella abilis
Carstarinia caudata	Eupelmus popa
Caruluspis visci	Aspidiotiphagus citrinus
Caryedon gonagra	Oedaule stringifrons
Caryedon pallidus	Euchalcidia caryobori
Cassida circumdata	Brachymeria menoni
Cassida indicola	Paracentrobia (Paracentrobia) cassidavora
Catopsilia pyranthe	Brachymeria lasus

Host	Parasite
Cecidomyiid of <i>Artemisia</i> galls	<i>Hyperteles longicauda</i>
<i>Centrocooccus insolitus</i>	<i>Chartocerus hyalipennis</i>
<i>Centrocooccus insolitus</i>	<i>Chartocerus kerrichi</i>
<i>Centrocooccus insolitus</i> (Coccinellid on)	<i>Homalotylus albiclavatus</i>
<i>Centrocooccus insolitus</i>	<i>Leptomasix nigrocoxalis</i>
<i>Centrocooccus insolitus</i>	<i>Neocharitopus orientalis</i>
<i>Centrocooccus insolitus</i>	<i>Prochiloneuroides albifuniculus</i>
<i>Centrocooccus</i> sp. (Coccinellid on)	<i>Homalotylus nigrilus</i>
<i>Centrocooccus</i> sp.	<i>Leptomastix nigrocoxalis</i>
<i>Cephaleta brunniventris</i>	<i>Promuscidea unifasciiventris</i>
<i>Cephrenes chrysozona</i>	<i>Brachymeria lasus</i>
<i>Cephrenes mosleyi</i>	<i>Brachymeria lasus</i>
<i>Cerapterocerus</i> sp.	<i>Marietta picta</i>
<i>Ceratitis capitata</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Cerococcus hibisci</i>	<i>Microterys kerrichi</i>
<i>Cerococcus hibisci</i>	<i>Pseudmicroterys angustifrons</i>
<i>Cerococcus hibisci</i>	<i>Pseudmicroterys cerococci</i>
<i>Cerococcus indicus</i>	<i>Cephaleta australiensis</i>
<i>Cerococcus indicus</i>	<i>Cephaleta brunniventris</i>
<i>Cerococcus indicus</i>	<i>Coccobius reticulatus</i>
<i>Cerococcus indicus</i>	<i>Eriaphytis orientalis</i>
<i>Cerococcus indicus</i>	<i>Marietta leopardina</i>
<i>Cerococcus indicus</i>	<i>Metaphycus cerococci</i>
<i>Cerococcus indicus</i>	<i>Metaphycus crotolariae</i>
<i>Cerococcus indicus</i>	<i>Metaphycus (Microterys) kerrichi</i>
<i>Cerococcus indicus</i>	<i>Neastymachus angustifrons</i>
<i>Cerococcus indicus</i>	<i>Neastymachus cerococci</i>
<i>Cerococcus indicus</i>	<i>Promuscidea unifasciiventris</i>
<i>Cerococcus</i> sp.	<i>Cephaleta australiensis</i>
<i>Cerococcus</i> sp.	<i>Chartocerus kerrichi</i>
<i>Cerococcus</i> sp.	<i>Euaphycus cerococci</i>
<i>Cerococcus</i> sp.	<i>Eriaphytis orientalis</i>
<i>Cerococcus</i> sp. (Coccinellid on)	<i>Homalotylus ferrierei</i>
<i>Ceronema koebelei</i>	<i>Metaphycus lichtensiae</i>
<i>Ceronema koebelei</i>	<i>Microterys lichtensiae</i>
<i>Ceroplastes actiniformis</i>	<i>Anicetus angustus</i>
<i>Ceroplastes actiniformis</i>	<i>Anicetus beneficiens</i>
<i>Ceroplastes actiniformis</i>	<i>Coccophagus orientalis</i>
<i>Ceroplastes actiniformis</i>	<i>Diversinervus madgaoensis</i>
<i>Ceroplastes actiniformis</i>	<i>Anicetus beneficiens</i>
<i>Ceroplastes cajani</i>	<i>Anicetus ceroplastodis</i>
<i>Ceroplastes cajani</i>	<i>Anicetus ceylonensis</i>
<i>Ceroplastes cajani</i>	<i>Anicetus integrellus</i>
<i>Ceroplastes cajani</i>	<i>Aphycus fusidorsum</i>
<i>Ceroplastes cajani</i>	<i>Metaphycus zebratus</i>
<i>Ceroplastes ceriferus</i>	<i>Diversinervus madgaoensis</i>
<i>Ceroplastes euphorbiae</i>	<i>Aneristus ceroplastae</i>

Host	Parasite
<i>Ceroplastes floridensis</i>	<i>Anicetus ceroplastodis</i>
<i>Ceroplastes galeatus</i>	<i>Scutellista cyanea</i>
<i>Ceroplastes japonicus</i>	<i>Anicetus ceroplastodis</i>
<i>Ceroplastes pseudoceriferus</i>	<i>Anicetus dodonia</i>
<i>Ceroplastes pseudoceriferus</i>	<i>Cephaleta brunniventris</i>
<i>Ceroplastes pseudoceriferus</i>	<i>Coccophagus bivittatus</i>
<i>Ceroplastes pseudoceriferus</i>	<i>Coccophagus ceroplastae</i>
<i>Ceroplastes pseudoceriferus</i>	<i>Coccophagus ochraceus</i>
<i>Ceroplastes pseudoceriferus</i>	<i>Diversinerus madgaoensis</i>
<i>Ceroplastes rubens</i>	<i>Anicetus beneficiens</i>
<i>Ceroplastes rubens</i>	<i>Anicetus ceroplastodis</i>
<i>Ceroplastes rubens</i>	<i>Ericydnus ceroplastis</i>
<i>Ceroplastes rusci</i>	<i>Scutellista cyanea</i>
<i>Ceroplastes sinensis</i>	<i>Scutellista cyanea</i>
<i>Ceroplastes</i> sp.	<i>Anicetus aligarhensis</i>
<i>Ceroplastes</i> sp.	<i>Anicetus ashmeadi</i>
<i>Ceroplastes</i> sp.	<i>Anicetus beneficus</i>
<i>Ceroplastes</i> sp.	<i>Anicetus dodonia</i>
<i>Ceroplastes</i> sp.	<i>Anicetus howardi</i>
<i>Ceroplastes</i> sp.	<i>Anicetus orientalis</i>
<i>Ceroplastes</i> sp.	<i>Anicetus stylatus</i>
<i>Ceroplastes</i> sp.	<i>Anicetus yasumatsui</i>
<i>Ceroplastes</i> sp.	<i>Cephaleta brunniventris</i>
<i>Ceroplastes</i> sp.	<i>Coccobius ceroplastidis</i>
<i>Ceroplastes</i> sp.	<i>Mashhoodiella echthromorpha</i>
<i>Ceroplastes</i> sp.	<i>Metaphycus maculatus</i>
<i>Ceroplastes</i> sp.	<i>Microterys indicus</i>
<i>Ceroplastes</i> sp.	<i>Moranila californica</i>
<i>Ceroplastes</i> sp.	<i>Paracerapterocerus brevicaudatus</i>
<i>Ceroplastes</i> sp.	<i>Paracerapterocerus italicus</i>
<i>Ceroplastodes cajani</i>	<i>Chartocerus fimbriae</i>
<i>Ceroplastodes cajani</i>	<i>Coccophagus longicornis</i>
<i>Ceroplastodes cajani</i>	<i>Euaphycus crotolariae</i>
<i>Ceroplastodes</i> sp.	<i>Cheiloneurus diversicolor</i>
<i>Ceroplastodes</i> sp.	<i>Coccophagus cowperi</i>
<i>Ceroplastodes suppressalis</i>	<i>Trichogramma japonicum</i>
Chalcids	<i>Marietta picta</i>
<i>Characoma nilotica</i>	<i>Catolaccus ater</i>
<i>Charistoneura fumierana</i>	<i>Trichogramma minutum</i>
<i>Chilo auricilia</i>	<i>Tetrastichus ayyari</i>
<i>Chilo infuscatellus</i>	<i>Tetrastichus ayyari</i>
<i>Chilo partellus</i>	<i>Invreia gahanii</i>
<i>Chilo sacchariphagus indicus</i>	<i>Pediobius elasmii</i>
<i>Chilo sacchariphagus indicus</i>	<i>Tetrastrichus ayyari</i>
<i>Chilo sacchariphagus indicus</i>	<i>Trichogramma chilonis</i>
<i>Chilo sacchariphagus indicus</i>	<i>Trichospilus diatraeae</i>
<i>Chilo simplex</i>	<i>Tetrastichus ayyari</i>

Host	Parasite
Chilo suppressalis	Tetrastichus ayyari
Chilo venosatus	Trichospilus diatraeae
Chilo zonellus	Tetrastichus ayyari
Chilocorus nigrita	Homalotylus mexicanus
Chilomenes bipustulata	Tetrastichus coccinellae
Chilomenes renipustulatus	Tetrastichus coccinellae
*Chilomenes sexmaculata	Homalotylus terminalis
Chionaspis pinifoliae	Aspidiotiphagus citrinus
Chionaspis graminis	Adelencyrtus chionaspidis
Chionaspis graminis	Anthemus chionaspidis
Chionaspis greeni	Arrhenophagus chionaspidis
Chionaspis salicis	Arrhenophagus chionaspidis
Chionaspis sp.	Neocharitopus orientalis
Chionaspis sp.	Physcus varicornis
Chionaspis sp.	Prochiloneurus metallicus
Chloropulvinaria polygonata	Coccophagus chloropulvinariae
Chloropulvinaria psidii	Diversinervus intermedius
Chloropulvinaria psidii	Encyrtus lecaniorum
Chloropulvinaria sp.	Coccophagus bivitatus
Chloropulvinaria sp.	Coccophagus bogoriensis
Chloropulvinaria sp.	Euaphycus longiclavatus
Chorizococcus rostellum	Anagyrus swezeyi
Chromatomyia horticola	Chrysocharis horticola
Chromatomyia horticola	Closterocerus agromyzae
Chromatomyia horticola	Closterocerus phytomyzae
Chromatomyia horticola	Dicladocerus guptai
Chromatomyia horticola	Diglyphus horticola
Chromatomyia horticola	Hemiptarsenus indicus
Chromatomyia horticola	Pediobius indicus
Chromatomyia horticola	Pediobius thakerei
Chrysobothris	Trigonura ruficaudis
Chrysodeixis chalcites	Brachymeria lasus
Chrysomela alnicola	Schizonotus latus
Chrysomela interrupta	Schizonotus latus
Chrysomela knabi	Schizonotus latus
Chrysomela scripta	Schizonotus latus
Chrysomphalus aonidum	Aspidiotiphagus citrinus
Chrysomphalus aonidum	Prosaphelinus proclia
Chrysomphalus bifasciatus	Comperiella bifasciata
Chrysomphalus dictyospermi	Aphytis diaspidis
Chrysomphalus dictyospermi	Aspidiotiphagus citrinus
Chrysomphalus dictyospermi	Comperiella bifasciata
Chrysomphalus dictyospermi	Prosaphelinus proclia
Chrysomphalus ficus	Comperiella bifasciata
Chrysomphalus sp.	Comperiella bifasciata

**Vide* under *Menochiles sexmaculata*

Host	Parasite
<i>Chrysomyia aenea</i>	<i>Spalangia cameroni</i>
<i>Chrysomyia aenea</i>	<i>Spalangia endius</i>
<i>Chrysomyia aenea</i>	<i>Spalangia nigroaenea</i>
<i>Chrysomyia megacephala</i>	<i>Dirhinus himalayanus</i>
<i>Chrysopa madestes</i>	<i>Anagyrus greeni</i>
<i>Chrysopa</i> sp.	<i>Copidosomyia ambiguous</i>
<i>Cnaphalocrocis</i>	<i>Elasmus brevicornis</i>
<i>Cnaphalocrocis medinalis</i>	<i>Brachymeria excarinata</i>
<i>Cnaphalocrocis medinalis</i>	<i>Eupteromalus parnarae</i>
<i>Cnaphalocrocis medinalis</i>	<i>Kriechbaumerella</i> sp.
<i>Cnaphalocrocis medinalis</i>	<i>Tetrastichus ayyari</i>
<i>Cnaphalocrocis medinalis</i>	<i>Trichogramma chilonis</i>
<i>Cnaphalocrocis medinalis</i>	<i>Trichomalopsis apanteloctena</i>
<i>Cnaphalocrocis medinalis</i>	<i>Trochospilus pupivora</i>
Coccids	<i>Aphytis diaspidis</i>
Coccid sp.	<i>Protyndarichus nigriclavatus</i>
Coccid (<i>Pseudococcus</i>) sp.	<i>Anagyrus alamii</i>
<i>Coccidohystrix insolita</i>	<i>Doliphoceras tachikawai</i>
<i>Coccidohystrix</i> sp.	<i>Anagyrus inopus</i>
<i>Coccidohystrix</i> sp.	<i>Homalotylus nigritus</i>
<i>Coccidohystrix</i> sp.	<i>Leptomastix nigrocoxalis</i>
<i>Coccidohystrix</i> sp.	<i>Prochiloneurus insolitus</i>
Coccidophagous coccinellids	<i>Metastenus concinnus</i>
<i>Coccidyphaga scitula</i>	<i>Elasmus claripennis</i>
<i>Coccinella septempunctata</i>	<i>Pediobius foveolatus</i>
<i>Coccinella septempunctata</i>	<i>Tetrastichus coccinellae</i>
Coccinellid	<i>Homalotylus ferrierei</i>
<i>Coccus elongatus</i>	<i>Aneristus ceroplastae</i>
<i>Coccus hesperidum</i>	<i>Aspidiotiphagus citrinus</i>
<i>Coccus hesperidum</i>	<i>Coccophagus gilvus</i>
<i>Coccus hesperidum</i>	<i>Moranila californica</i>
<i>Coccus hesperidum</i>	<i>Scutellista cyanea</i>
<i>Coccus piperis</i>	<i>Microterys flavus</i>
<i>Coccus pseudomagnoliarum</i>	<i>Aneristus ceroplastae</i>
<i>Coccus viridis</i>	<i>Aneristus ceroplastae</i>
<i>Coccus</i> sp.	<i>Anicetus deltoideus</i>
<i>Coccus</i> sp.	<i>Microterys mirzae</i>
<i>Coccus</i> sp.	<i>Thomsonisca pakistanensis</i>
<i>Coccygomimus disparis</i>	<i>Brachymeria lasus</i>
<i>Cochliomyia hominivorax</i>	<i>Nasonia vitripennis</i>
<i>Cochliomyia macellaria</i>	<i>Nasonia vitripennis</i>
<i>Cochlochila bullita</i>	<i>Lathromeromyia tingiphaga</i>
<i>Coelioxys</i> sp.	<i>Leucospis gigas</i>
<i>Cofana spectra</i>	<i>Gonatocerus shastryi</i>
<i>Coleophora frischella</i>	<i>Pteromalus semotus</i>
<i>Coleophora laricella</i>	<i>Spilochalcis xanthostigma</i>
<i>Colias philodice</i>	<i>Metastenus concinnus</i>

Host	Parasite
Comperiella bifasciata	Coccobius debachi
Comperiella bifasciata	Marietta carnesi
Comperiella bifasciata	Promuscidea unifasciati ventris
Compsolechia metagramma	Brachymeria excarinata
Coniatus indicus	Catolaccus ater
Contarinia caudata	Eupelmus popa
Contarinia caudata	Tetrastichus fasciatus
Contarinia dalbergiae	Systasis dalbergiae
Contarinia sorghicola	Eupelmus popa
Contheyla rotunda	Antrocephalus hackonensis
Contigaspis sp.	Arrhenophagus chionaspidis
Contigaspis sp.	Marietta leopardina
Corcyra cephalonica	Antrocephalus pandens
Corcyra cephalonica	Brachymeria hime attevae
Corcyra cephalonica	Epitranus erythrogaster
Corcyra cephalonica	Trichogramma achaeae
Corcyra cephalonica	Trichogramma agriae
Corcyra cephalonica	Trichogramma chilonis
Corcyra cephalonica	Trichogramma chilotraeae
Corcyra cephalonica	Trichogramma erosicornis
Corcyra cephalonica	Trichogramma exiguum
Corcyra cephalonica	Trichogramma fasciatum
Corcyra cephalonica	Trichogramma hesperidis
Corcyra cephalonica	Trichogramma plasseyensis
Corcyra cephalonica	Trichogramma poliae
Corcyra cephalonica	Trichogramma raoi
Corcyra cephalonica	Trichogramma semblidis
Corcyra cephalonica	Trichogrammatoidea armigera
Corcyra cephalonica	Trichogrammatoidea bactrae
Corcyra cephalonica	Trichogrammatoidea nana
Cornuaspis beckii	Aphytis lepidosaphes
Cre mastophagus hapaliae	Perilampus cremastophagus
Cre mastus	Brachymeria lasus
Cre mifania nigrocellulatae	Pachyneuron leucopiscida
Cricula sp.	Brachymeria criculae
Crocidolomia binotalis	Tetrastichus ayyari
Crocidosema plebejana	Brachymeria lasus
Crypsithyris longicornis	Epitranus ramnathi
Crypsithyris sp.	Epitranus clavatus
Cryptocephalus faustulus	Psilocera ghanii
Cryptolaemus montrouzieri	Cowperia indica
Cryptophlebia illepada	Brachymeria lasus
Cryptophlebia ombrodelta	Trichogrammatoidea fulva
Ctenoplectra chalybea	Leucospis histrio histrio
Cydia molesta	Trichogramma minutum
Cydia pomonella	Trichogramma cacoeciae pallidum
Cydia pomonella	Trichogramma embryophagum

Host	Parasite
<i>Cydia sinana</i>	<i>Cryptoptyx latipes</i>
<i>Cynthia cardui</i>	<i>Metastenus concinnus</i>
<i>Cynthia carye</i>	<i>Metastenus concinnus</i>
<i>Cyphosticha caerulea</i>	<i>Stenomesus japonicus</i>
<i>Cypparis decidua</i>	<i>Cyrtoptyx latipes</i>
<i>Cytophora cicatrosa</i>	<i>Desantisca palanichamyi</i>
<i>Cystidia strantonice</i>	<i>Brachymeria lasus</i>
<i>Dactylopius aonidum</i>	<i>Coccophagus ceroplastae</i>
<i>Dactylopius saccharifolii</i>	<i>Paraleptomastix dactylopii</i>
<i>Dacus caudatus</i>	<i>Aceratoneuromyia indica</i>
<i>Dacus cucurbitae</i>	<i>Dirhinus anthracia</i>
<i>Dacus dorsalis</i>	<i>Tachinaephagus ceylonicus</i>
<i>Dacus sp.</i>	<i>Dirhinus auratus</i>
<i>Daimio tethys</i>	<i>Brachymeria lasus</i>
<i>Danaus archippus</i>	<i>Brachymeria lasus</i>
<i>Danaus chrysippus</i>	<i>Brachymeria hearseyi</i> var. <i>xanthoterus</i>
<i>Danaus plexippus</i>	<i>Trichogramma minutum</i>
* <i>Darna nararia</i>	<i>Euderus natadae</i>
<i>Darna nararia</i>	<i>Euplectromorpha natadae</i>
<i>Darna nararia</i>	<i>Eurytoma tatipakensis</i>
<i>Darna nararia</i>	<i>Metaplectrus thoseae</i>
<i>Darna nararia</i>	<i>Neoplectrus maculatus</i>
<i>Darna nararia</i>	<i>Omphale narariae</i>
<i>Darna nararia</i>	<i>Platyplectrus natadae</i>
<i>Darna nararia</i>	<i>Tetrastichus taprobanensis</i>
<i>Dasineura lini</i>	<i>Herbertia tashkiri</i>
<i>Dasineura lini</i>	<i>Semiotellus dasyneura</i>
<i>Dasychira argentata</i>	<i>Brachymeria fiskei</i>
<i>Dasychira argentata</i>	<i>Brachymeria lasus</i>
<i>Dasychira grotei</i>	<i>Brachymeria dunensis</i>
<i>Dasychira sp.</i>	<i>Brachymeria dunensis</i>
<i>Dasychira sp.</i>	<i>Euplectromorpha viridiceps</i>
<i>Dasychira thwaitesii</i>	<i>Brachymeria euploae</i>
<i>Dasychira thwaitesii</i>	<i>Brachymeria lasus</i>
<i>Decadarchis simulans</i>	<i>Brachymeria lasus</i>
<i>Delias eucharis</i>	<i>Meyeriella indica</i>
<i>Delias hyparete</i>	<i>Ooencyrtus erionotae</i>
<i>Delias sp.</i>	<i>Brachymeria lasus</i>
<i>Delias sp.</i>	<i>Brachymeria megaspila</i>
<i>Delphacodes striatellus</i>	<i>Mymar taprobanicum</i>
<i>Dendrolimus spectabilis</i>	<i>Brachymeria lasus</i>
<i>Dendrolimus spectabilis</i>	<i>Brachymeria minuta</i>
<i>Derolus dissicollis</i>	<i>Trigonura ruficaudis</i>
<i>Devorgilla sp.</i>	<i>Perilampus microgastris</i>
<i>Diacavus furtivus</i>	<i>Monacon productum</i>

* *Vide* also under *Natada*.

Host	Parasite
<i>Dialeurodes citri</i>	<i>Aphytis diaspidis</i>
<i>Dialeurodes citri</i>	<i>Encarsia lahorensis</i>
<i>Diaphania indica</i>	<i>Brachymeria excarinata</i>
<i>Diaphania indica</i>	<i>Brachymeria lasus</i>
<i>Diaphania indica</i>	<i>Brachymeria margaroniae</i>
<i>Diaphania sp.</i>	<i>Brachymeria lasus</i>
<i>Diaphorina cardiae</i>	<i>Chartocerus walkeri</i>
<i>Diaphorina cardiae</i>	<i>Diaphorencyrtus aligarhensis</i>
<i>Diaphorina cardiae</i>	<i>Psyllaphycus diaphorinae</i>
<i>Diaphorina citri</i>	<i>Psyllaephagus aligarhensis</i>
<i>Diaphorina citri</i>	<i>Tetrastichus radiatus</i>
<i>Diaphorina sp.</i>	<i>Psyllaephagus diaphorinae</i>
<i>Diapus furtivus</i>	<i>Monacon productum</i>
<i>Diaretiella rapae</i>	<i>Asaphes suspensus</i>
<i>Diaspidiotus ancyclus</i>	<i>Aspidiotiphagus citrinus</i>
<i>Diaspidiotus bromeliae</i>	<i>Prosaphelinus proclia</i>
<i>Diaspidiotus echinocacti</i>	<i>Prosaphelinus proclia</i>
<i>Diaspidiotus pronorum</i>	<i>Anthemus maculatus</i>
<i>Diaspidiotus uvae</i>	<i>Prosaphelinus proclia</i>
<i>Diaspis bromeliae</i>	<i>Aspidiotiphagus citrinus</i>
<i>Diaspis echinocacti</i>	<i>Aspidiotiphagus citrinus</i>
<i>Diaspis ostreaeformis</i>	<i>Arrhenophagus chionaspidis</i>
<i>Diaspis sp.</i>	<i>Arrhenophagus diaspidiatus</i>
<i>Diatraea sticticrasis</i>	<i>Tetrastichus ayyari</i>
<i>Dichocrocis punctiferalis</i>	<i>Brachymeria lasus</i>
<i>Dichomeris eridantis</i>	<i>Paralitomastix varicornis</i>
<i>Dictyla sp.</i>	<i>Parallelaptera teleonemiae</i>
<i>Dinoderus sp.</i>	<i>Endobia donacis</i>
<i>Dinoderus sp.</i>	<i>Metapelma indica</i>
<i>Diorthus simplex</i>	<i>Trigonura ruficaudis</i>
<i>Dioryctria splendidella</i>	<i>Brachymeria nosatoi</i>
<i>Dischidesia melanolopha</i>	<i>Brachymeria lasus</i>
<i>Doleschallia hexophthalmos</i>	<i>Brachymeria lasus</i>
<i>Drosicha stebbengii</i>	<i>Anagyrus bohemani</i>
<i>Drosicha stebbengii</i>	<i>Homalotylus flaminus</i>
<i>Drosophila melanogaster</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Dryinus pyrillae</i>	<i>Cheiloneurus quadricolor</i>
<i>Dulinius conchatus</i>	<i>Epiligosita dulinae</i>
<i>Duplachionaspis sp.</i>	<i>Adelencyrtus mysorensis</i>
<i>Dynaspidiotus britannicus</i>	<i>Arrhenophagus chionaspidis</i>
<i>Dynaspidiotus britannicus</i>	<i>Aspidiotiphagus citrinus</i>
<i>Dysmicoccus sp.</i>	<i>Prochiloneurus insolitus</i>
<i>Dysodia viridatrix</i>	<i>Tetrastichus ayyari</i>
<i>Earias biplaga</i>	<i>Brachymeria minuta</i>
<i>Earias cupreoviridis</i>	<i>Brachymeria lasus</i>
<i>Earias cupreoviridis</i>	<i>Elasmus johnstoni</i>

Host	Parasite
<i>Earias insulana</i>	<i>Brachymeria lasus</i>
<i>Earias insulana</i>	<i>Brachymeria minuta</i>
<i>Earias insulana</i>	<i>Brachymeria tachardiae</i>
<i>Earias insulana</i>	<i>Elasmus dorsalis</i>
<i>Earias insulana</i>	<i>Elasmus johnstoni</i>
<i>Earias insulana</i>	<i>Elasmus orientalis</i>
<i>Earias insulana</i>	<i>Trichogramma achaeae</i>
<i>Earias insulana</i>	<i>Trichogramma chilonis</i>
<i>Earias sp.</i>	<i>Brachymeria amphissa</i>
<i>Earias sp.</i>	<i>Brachymeria bengalensis</i>
<i>Earias sp.</i>	<i>Brachymeria rufescens</i>
<i>Earias vitella</i>	<i>Brachymeria lasus</i>
<i>Earias vitella</i>	<i>Brachymeria tachardiae</i>
<i>Earias vitella</i>	<i>Elasmus dorsalis</i>
<i>Earias vitella</i>	<i>Elasmus johnstoni</i>
<i>Earias vitella</i>	<i>Elasmus orientalis</i>
<i>Earias vitella</i>	<i>Trichogramma achaeae</i>
<i>Earias vitella</i>	<i>Trichogramma chilonis</i>
<i>Earias vitella</i>	<i>Trichogrammatoidea</i>
<i>Ectomyelois ceratoniae</i>	<i>Anisopteromalus calandrae</i>
<i>Ectropis deodarae</i>	<i>Dibrachys cavus</i>
<i>Egropa bengalensis</i>	<i>Pseudobrachysticha indica</i>
<i>Egropa bengalensis</i>	<i>Pseudobrachysticha semiaurea</i>
<i>Elasmus homonae</i>	<i>Tetrastichus versicolor</i>
<i>Elasmus sp.</i>	<i>Euplectrus plecopterae</i>
<i>Elymnias sp.</i>	<i>Brachymeria lasus</i>
<i>Empoasca devastans</i>	<i>Anagyrus empoascae</i>
<i>Empoasca devastans</i>	<i>Erythmelus empoascae</i>
<i>Empoasca devastans</i>	<i>Gonatocerus empoascae</i>
<i>Empoasca devastans</i>	<i>Stethynium empoascae</i>
<i>Enarmonia leucostoma</i>	<i>Elasmus homonae</i>
<i>Enicospilus striolatus</i>	<i>Brachymeria lasus</i>
<i>Epargyreus tityrus</i>	<i>Metastenus concinnus</i>
<i>Epargyreus tityrus</i>	<i>Pteromalus puparum</i>
<i>Ephedrus sp.</i>	<i>Asaphes suspensus</i>
<i>Ephestia cautella</i>	<i>Trichogramma chilonis</i>
<i>Ephestia cautella</i>	<i>Trichogramma erosicornis</i>
<i>Ephestia cautella</i>	<i>Trichogramma exiguum</i>
<i>Ephestia cautella</i>	<i>Trichogrammatoidea</i>
<i>Ephestia elutella</i>	<i>Anisopteromalus calandrae</i>
<i>Ephestia kuehniella</i>	<i>Trichogramma erosicornis</i>
<i>Ephestia capulifera</i>	<i>Brachymeria lasus</i>
<i>Epilachna</i>	<i>Achrysocharis appannai</i>
<i>Epilachna</i>	<i>Anastatus vermai</i>
<i>Epilachna</i>	<i>Aprostocetus epilachnae</i>
<i>Epilachna sp.</i>	<i>Pediobius epilachnae</i>
<i>Epilachna vigintioctopunctata</i>	<i>Pediobius foveolatus</i>

Host	Parasite
<i>Epipemphigus imaicus</i>	<i>Protaphelinus nikolskayae</i>
<i>Epiphayas postivittana</i>	<i>Brachymeria lasus</i>
<i>Erencyrtus dewitzi</i>	<i>Eupelmus tachardiae</i>
<i>Ergolis merione</i>	<i>Brachymeria lasus</i>
<i>Eriococcus greeni</i>	<i>Alamella flava</i>
<i>Eriococcus greeni</i>	<i>Chartocerus kerrichi</i>
<i>Eriococcus lagerstremiae</i>	<i>Adelencyrtus longiclavatus</i>
<i>Eriococcus lagerstremiae</i>	<i>Metaphycus maculatus</i>
<i>Eriococcus rhodomyrtil</i>	<i>Adelencyrtus solidus</i>
<i>Erionota thrax</i>	<i>Brachymeria albotibialis</i>
<i>Erionota thrax</i>	<i>Brachymeria euploae</i>
<i>Erionota thrax</i>	<i>Brachymeria lasus</i>
<i>Erionota thrax</i>	<i>Brachymeria thracis</i>
<i>Eriosoma lanigereum</i>	<i>Aphelinus mali</i>
<i>Eublemma amabilis</i>	<i>Brachymeria tachardiae</i>
<i>Eublemma amabilis</i>	<i>Elasmus claripennis</i>
<i>Eucosma critica</i>	<i>Elasmus claripennis</i>
<i>Eucosma critica</i>	<i>Elasmus indicus</i>
<i>Eucosma sp.</i>	<i>Paralitomastix varicornis</i>
<i>Eulecanium coryte</i>	<i>Encyrtus siddiquii</i>
<i>Eulecanium ficinum</i>	<i>Scutellista cyanea</i>
<i>Eulecanium sp.</i>	<i>Microterys chalcostomus</i>
<i>Eulecanium tiliae</i>	<i>Blastothrix siddiquii</i>
<i>Eumeta cramerii</i>	<i>Brachymeria carinata</i>
<i>Eumeta minuscula</i>	<i>Brachymeria fiskei</i>
<i>Eumeta minuscula</i>	<i>Brachymeria lasus</i>
<i>Eumeta minuscula</i>	<i>Brachymeria podagrica</i>
<i>Eumeta pryeri</i>	<i>Brachymeria lasus</i>
<i>Euphalerus citri</i>	<i>Tetrastichus radiatus</i>
<i>Euphydryas phaeton</i>	<i>Brachymeria intermedia</i>
<i>Euphyllura eastopi</i>	<i>Trechnites manaliensis</i>
<i>Euphyllura sp.</i>	<i>Trechnites manaliensis</i>
<i>Euploea core</i>	<i>Brachymeria hearseyi</i> var. <i>xanthoterus</i>
<i>Euploea leucostictos</i>	<i>Brachymeria lasus</i>
<i>Euproctis fraterna</i>	<i>Euplectrus ceylonensis</i>
<i>Eupterote mollifera</i>	<i>Oocencyrtus erionotae</i>
<i>Eurema blanda silhetana</i>	<i>Brachymeria megapila</i>
<i>Eurema hecabe</i>	<i>Brachymeria lasus</i>
<i>Eurema hecabe</i>	<i>Brachymeria megapila</i>
<i>Eurema lisa</i>	<i>Pteromalus puparum</i>
<i>Eurybrachys tomentosa</i>	<i>Proleurocerus fulgoridis</i>
<i>Euterocca fasciata</i>	<i>Perilampus nilamburensis</i>
<i>Euzophera perticella</i>	<i>Epitranus perticellus</i>
<i>Evertia cristata</i>	<i>Brachymeria nosatoi</i>
<i>Fannia canicularis</i>	<i>Nasonia vitripennis</i>
<i>Fannia canicularis</i>	<i>Pachycrepoideus vindemmiae</i>

Host	Parasite
<i>Fannia femoralis</i>	<i>Nasonia vitripennis</i>
<i>Fannia scalaris</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Ferrisia</i> sp.	<i>Anagyrus comperei</i>
<i>Ferrisia virgata</i>	<i>Anagyrus bivuensis</i>
<i>Ferrisia virgata</i>	<i>Coccophagus zebratulus</i>
<i>Ferrisia virgata</i>	<i>Aenasius advena</i>
<i>Ferrisia virgata</i>	<i>Anagyrus nigroradiculatus</i>
<i>Ferrisia virgata</i>	<i>Leptanusia indica</i>
<i>Ferrisia virgata</i>	<i>Leptanusia quadrii</i>
<i>Ferrisia virgata</i>	<i>Leptomastidea indica</i>
<i>Ferrisia virgata</i>	<i>Pseudanasius clavis</i>
<i>Ficus mysorensis</i>	<i>Eupristina belgaumensis</i>
<i>Fiorinia saposomae</i>	<i>Arrhenophagus albitibiae</i>
<i>Fiorinia saposomae</i>	<i>Arrhenophagus chionaspidis</i>
<i>Fiorinia theae</i>	<i>Aphytis theae</i>
<i>Forficula</i>	<i>Dibrachys (Dibrachys) cavus</i>
<i>Frankliniella lilivora</i>	<i>Megaphragma longiciliatum</i>
<i>Gabala argentata</i>	<i>Brachymeria lasus</i>
<i>Galerucella birmanica</i>	<i>Tetrastichus xanthomelanae</i>
<i>Galleria melonella</i>	<i>Antrocephalus galleriae</i>
<i>Galleria melonella</i>	<i>Tetrastichus ayyari</i>
gallmidge	<i>Tetrastichus fasciatus</i>
<i>Glenea</i>	<i>Trigonura ruficaudis</i>
<i>Glyphodes pyloalis</i>	<i>Brachymeria excarinata</i>
<i>Glyphodes pyloalis</i>	<i>Brachymeria lasus</i>
<i>Gonizous</i> sp.	<i>Pediobius bethylicidus</i>
<i>Goniozus montanus</i>	<i>Tetrastichus versicolor</i>
<i>Gracilaria</i>	<i>Asymplesiella india</i>
<i>Graphium agamemnon</i>	<i>Brachymeria jambolana</i>
<i>Graphium agamemnon</i>	<i>Brachymeria semirufa</i>
<i>Grapholitha</i>	<i>Brachymeria hime</i>
<i>Grapholitha divergens</i>	<i>Manicnemus indicus</i>
<i>Grapholitha divergens</i>	<i>Parablastothrix indicus</i>
<i>Grapholitha molesta</i>	<i>Brachymeria excarinata</i>
<i>Greeniella cornigera</i>	<i>Encarsia aonidiae</i>
<i>Gyransoidea mirzai</i>	<i>Marietta leopardina</i>
<i>Habrochila laeta</i>	<i>Lathromeromyia tingiphaga</i>
<i>Habrocytus</i>	<i>Dibrachys (Dibrachys) cavus</i>
<i>Haemaphysalis bispinosa</i>	<i>Hunterellus sagarensis</i>
<i>Haematobia irritans</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Halys dentata</i>	<i>Anastatus dentatus</i>
<i>Halys sulcata</i>	<i>Anastatus dentatus</i>
<i>Hapalia machaeralis</i>	<i>Brachymeria hime attevae</i>
<i>Hapalia machaeralis</i>	<i>Dirhinus (Dirhinus) intermedius</i>
<i>Hapalia machaeralis</i>	<i>Perilampus microgastris</i>
<i>Hapalia machaeralis</i>	<i>Trichospilus diatracae</i>

Host	Parasite
Hapafia machaeralis	Trichoxenia zigonensis
Hedylepta indicata	Elasmus brevicornis
Hedylepta indicata	Elasmus indicus
Heliothis armigera	Brachymeria lasus
Heliothis armigera	Trichogramma achaeae
Heliothis armigera	Trichogramma brasiliensis
Heliothis armigera	Trichogramma chilonis
Heliothis armigera	Trichogramma chilotraeae
Heliothis armigera	Trichogramma exiguum
Heliothis armigera	Trichogramma perkinsi
Heliothis armigera	Trichogramma semblidis
Heliothis armigera	Trichogrammatoidea armigera
Heliothis armigera	Trichogrammatoidea bactrae
Heliothis armigera	Stenomesus japonicus
Heliothis armigera	Tetrastichus ayyari
Heliothis assulta	Trichogramma evanescens
Heliothis zea	Trichogramma minutum
Heliothrips sp.	Thripobius semiluteus
Helopeltis antonii	Trichogramma minutum
Helopeltis cinchonae	Erythmelus helopeltidis
Hemaspidopectus cinereus	Parechthrodryinus hemiaspidoproctis
Hemerocampa leucostigma	Brachymeria intermedia
Hemerocampa pseudotsugata	Trichogramma minutum
Hemiaspidoproctis cinereus	Protyndarichus hemiaspidoproctis
Hemiberlesia rapax	Comperiella bifasciata
Hemiberlesia rapax	Prosaphelinus proclia
Hemichionapsis minor	Aphytis diaspidis
Hemigraphis	Chartocerus fimbriae
Hemigraphis	Chartocerus hyalipennis
Hemigraphis	Chartocerus kurdjumovi
Henosepilachna sparsa	Pediobius foveolatus
Hestina japonica	Brachymeria lasus
Heterocampa guttivittata	Brachymeria intermedia
Hidari erava	Brachymeria euploaeae
Hilda bengalensis	Pseudobrachysticha semiaurea
Hippodamia variegata	Homalotylus flaminus
Holcocera pulvereae	Eurytoma pallidiscapus
Homona	Brachymeria excarinata
Homona coffearia	Brachymeria lasus
Homona coffearia	Elasmus homonae
Homona coffearia	Mokrzeckia orientalis
Homona coffearia	Tetrastichus versicolor
Homona coffearia	Trichogramma chilonis
Homona coffearia	Trichogramma erosicornis
Hubneria estigmenensis	Nasonia vitripennis
Hyalomma anatolicum	Hunterellus hookeri

Host	Parasite
Hyblaea puera	Brachymeria euplocae
Hyblaea puera	Brachymeria lasus
Hyblaea puera	Elasmus anticles
Hyblaea puera	Elasmus hyblaeae
Hyblaea puera	Elasmus johnstoni
Hyblaea puera	Mokrzeckia indica
Hyblaea puera	Tetrastichus ayyari
Hyblaea puera	Trichogrammatoidea nana
Hylema brassicae	Pachycrepoideus vindemmiae
Hymenia recurvalis	Catolaccus crassiceps
Hymenia recurvalis	Anastatus amarus
Hymenia recurvalis	Trichogramma chilonis
Hypera	Dibrachys (Dibrachys) cavus
Hypera postica	Necremnus leucarthros
Hypera postica	Tetrastichus bruchophagi
Hypera postica	Tetrastichus pyrillae
Hyphantria cunea	Brachymeria lasus
Hyphantria cunea	Dirhinus himalayanus
Hyphantria cunea	Trichogramma evanescens
Hypoderma sp.	Nasonia vitripennis
Hypolixus sp.	Cyrtoptyx latipes
Hypolixus sp.	Macroneura pedetoria
Hypolixus truncatulus	Cyrtoptyx latipes
Hypolixus truncatulus	Entedon pempheridis
Hypolixus truncatulus	Euderus pempheriphila
Hypolixus truncatulus	Eupelmus urozonus
Hypolixus truncatulus	Eurytoma curculionum
Hypolixus truncatulus	Macroneura pedetoria
Hypolixus truncatulus	Oxysychnus coimbatorensis
Hypolixus truncatulus	Pareuderus torymoides
Hypolixus truncatulus	Tetrastichus krishnieri
Hypsipyla robusta	Antrocephalus hakonensis
Hypsipyla robusta	Brachymeria euplocae
Hypsipyla robusta	Brachymeria hearseyi
Hypsipyla robusta	Brachymeria tachardiae
Hypsipyla robusta	Kriechbaumerella destructor
Hypsipyla robusta	Tetrastichus spirabilis
Hypsipyla robusta	Trichogrammatoidea nana
Hypsipyla robusta	Trichospilus diatraeae
Hysteroneura setariae	Tassonia magniclava
Icerya aegyptiaca	Leptomastix brevis
Icerya aegyptiaca	Leptomastix nigrocoxalis
Icerya formicarum	Prochiloneuroides comperei
Icerya pilosa	Euryischia indica
Icerya purchasi	Euryischia indica
Icerya sp.	Cheiloneurus axillaris
Icerya sp.	Coccophagus ceroplastae

Host	Parasite
<i>Icerya</i> sp.	<i>Oricoruna arcotensis</i>
<i>Isiphya memorialis</i>	<i>Mesidia argiepa</i>
<i>Isodonata nigrella</i>	<i>Leucospis japonica</i>
<i>Jauravia</i> sp.	<i>Cowperia indica</i>
<i>Kermes</i> sp.	<i>Paksimmondsius pakistanensis</i>
<i>Kerria albizziae</i>	<i>Tachardiaephagus tachardiae</i>
<i>Kerria chinensis</i>	<i>Lakshaphagus hautefeuilli</i>
<i>Kerria chinensis</i>	<i>Parechthrodryinus clavicornis</i>
<i>Kerria chinensis</i>	<i>Tachardiaephagus tachardiae</i>
<i>Kerria communis</i>	<i>Erencyrtus dewitzi</i>
<i>Kerria communis</i>	<i>Parechthrodryinus clavicornis</i>
<i>Kerria communis</i>	<i>Tachardiaephagus tachardiae</i>
<i>Kerria lacca</i>	<i>Anastatus colemani</i>
<i>Kerria lacca</i>	<i>Brachymeria tachardiae</i>
<i>Kerria lacca</i>	<i>Clausenia lacca</i>
<i>Kerria lacca</i>	<i>Coccophagus longiclavatus</i>
<i>Kerria lacca</i>	<i>Coccophagus tschirchii</i>
<i>Kerria lacca</i>	<i>Elasmus claripennis</i>
<i>Kerria lacca</i>	<i>Erencyrtus dewitzi</i>
<i>Kerria lacca</i>	<i>Euplemus tachardiae</i>
<i>Kerria lacca</i>	<i>Lakshaphagus hautefeuilli</i>
<i>Kerria lacca</i>	<i>Marietta leopardina</i>
<i>Kerria lacca</i>	<i>Parechthrodryinus clavicornis</i>
<i>Kerria lacca</i>	<i>Promuscidea aphelinoides</i>
<i>Kerria lacca</i>	<i>Tachardiaephagus tachardiae</i>
<i>kerria lacca</i>	<i>Tetrastichus purpureus</i>
<i>Kerria lacca</i>	<i>Trichogrammatoidea nana</i>
<i>Kerria nagoliensis</i>	<i>Parechthrodryinus clavicornis</i>
<i>Kerria nagoliensis</i>	<i>Tachardiaephagus tachardiae</i>
<i>Kiritshenkella sacchari</i>	<i>Anagyrus saccharicola</i>
<i>Kiritshenkella sacchari</i>	<i>Rhopus sacchari</i>
<i>Kirrodesa spicelis</i>	<i>Brachymeria euploae</i>
<i>Kirrodesa spicelis</i>	<i>Brachymeria lasus</i>
<i>Kuwanaspis hikosani</i>	<i>Aspidiothiphagus citrinus</i>
<i>Laccifer lacca</i>	<i>Protyndarichus submetallicus</i>
<i>Lambdina fiscellaria</i>	<i>Pteromalus puparum</i>
<i>Lamida moncusalis</i>	<i>Antrocephalus pandens</i>
<i>Lamida moncusalis</i>	<i>Brachymeria lasus</i>
<i>Lamida moncusalis</i>	<i>Nearretocera</i> sp.
<i>Lampides boeticus</i>	<i>Trichogramma japonicum</i>
<i>Lamprosema accepta</i>	<i>Brachymeria lasus</i>
<i>Lamprosema annubilobata</i>	<i>Trichospilus pupivora</i>
<i>Lamprosema octasema</i>	<i>Brachymeria lasus</i>
<i>Lasiocampid pupa</i>	<i>Brachymeria circularae</i>
<i>Lasioderma serricorne</i>	<i>Anisopteromalus calandrae</i>
<i>Lasioderma serricorne</i>	<i>Lariophagus distinguendus</i>
<i>Lasioptera falcata</i>	<i>Tetrastichus lassiopterae</i>

Host	Parasite
Lasioptera toombii	Eupelmus tenuicornis
Lasioptera textor	Eupelmus tenuicornis
Lecanium coffeae	Coccophagus flavescens
Lecanium coffeae	Cirrospilus coccivorus
Lecanium coffeae	Diversinervus paradisicus
Lecanium coffeae	Encyrtus rufescens
Lecanium coffeae	Marietta leopardina
Lecanium hemisphericum	Coccophagus flavescens
Lecanium nigrum	Coccophagus longifasciatus
Lecanium nigrum	Encyrtus barbatus
Lecanium nigrum	Encyrtus kotinsky
Lecanium viridae	Encyrtus ceroplastis
Lecanium viridae	Praleurocerus viridis
Lecanium sp.	Coccophagus anthracinus
Lecanium sp.	Coccophagus delhiensis
Lecanium sp.	Encyrtus flavus
Leguminivora tricentra	Elasmus homonae
Lepidosaphes	Adelencyrtus clavatus
Lepidosaphes beckii	Aspidiotiphagus citrinus
Lepidosaphes beckii	Prosaphelinus proclia
Lepidosaphes belutchistanus	Hispaniella tertia
Lepidosaphes conchiformis	Aphytis maculicornis
Lepidosaphes gloverii	Prosaphelinus proclia
Lepidosaphes ulmi	Aspidiotiphagus citrinus
Lepidosaphes ulmi	Prosaphelinus proclia
Leucas cephalotus	Chartocerus hyalipennis
Leucinodes orbanalis	Epitranus areolatus
Leucinodes orbanalis	Epitranus giganticus
Leucinodes orbanalis	Epitranus indicus
Leucinodes orbanalis	Epitranus melongenus
Leucinodes orbanalis	Epitranus rossicorpus
Leucopis nigricornis	Pachyneuron leucospiscida
Leucopis sp.	Anagyrus bohemani
Limacoidae	Metaplectrus thoseae
Limenitis archippus	Pteromalus puparum
Limenitis archippus	Brachymeria intermedia
Lipaphis erysimi	Aphelinus asychis
Lipaphis erysimi	Aphelinus flavipes
Lipaphis erysimi	Asaphes suspensus
Liriomyza sp.	Herbertia indica
Litchensia koebeli	Aphycus litchensisae
Litchensia koebeli	Encyrtus litchensisae
Lixus truncatulus	Aprostocetus krishnieri
Lixus truncatulus	Dinarmus sauteri
Lobotrachelus sp.	Entedon pempheridis
Longiunguis sacchari	Aphelinus desantisi
Lucilia illustris	Nasonia vitripennis

Host	Parasite
Lucilia illustris	Pachycrepoideus vindemmiae
Lucilia sp.	Nasonia vitripennis
Lygropia obrinusalis	Elasmus brevicornis
Lygropia quaternalis	Brachymeria lasus
Lygropia quaternalis	Elasmus brevicornis
Lygropia quaternalis	Perilampus nilamburensis
Lymantria dispar	Brachymeria fiskei
Lymantria obfuscata	Anastatus kashmirensis
Lymantria obfuscata	Brachymeria lasus
Lymantrid	Perilampus desaii
Lyonetia sp.	Cirrospilus variegatus
Lyperosia exigua	Spalangia nigroaenea
Machaerota planitiae	Eupelmus tachardiae
Maconellicoccus hirsutus	Rhopus longiclavatus
Macrina arenaria	Tetrastichus isaaci
Macrocentrus homonae	Tetrastichus versicolor
Macrocentrus sp.	Dibrachys (Dibrachys) cavus
Macrocentrus sp.	Ooencyrtus malayensis
Macrosiphonella artemesia	Asaphes suspensus
Macrosiphum	Asaphes suspensus
Magdalis aenescens	Cheiopachus quadrum
Mahasena corbetti	Brachymeria euploae
Mahasena minuscula	Brachymeria fiskei
Malacosoma americanum	Pteromalus puparum
Mallothrips indicus	Tetrastichus rhipiphorothripscidis
Mamestra brassicae	Trichogramma evanescens
Mantha albipes	Elasmus ceylonensis
Mantha albipes	Elasmus hutsoni
Mantid	Podagrion chichawatnensis
Mantid	Podagrion opisthacanthum
Mantid	Podagrion orchesticum
Mantis religiosa	Podagrion pachymerum
Mantis sp.	Podagrion greeni
Marasmia trapezalis	Anthrocephalus indicus
Marasmia trapezalis	Elasmus brevicornis
Marasmia trapezalis	Pediobium acantha
Margaronia marginata	Pentalitomastix nacoleiae
Maskellia zonata	Anagyrus greeni
Mayetiola destructor	Cheiloneurus elegans
Megachile pacifica	Monodontomerus obscurus
Megachile sp.	Leucospis histrio histrio
Melanagromyza coffeae	Closterocerus phytomyzae
Melanagromyza coffeae	Herbertia indica
Melanagromyza obscura	Thysanus ater
Melanagromyza obtusa	Diglyphus funicularis
Melanagromyza obtusa	Diglyphus mandibularis
Melanagromyza obtusa	Euderus agromyzae

Host	Parasite
<i>Melanagromyza obtusa</i>	<i>Euderus lividus</i>
<i>Melanagromyza obtusa</i>	<i>Antistrophoplex</i> sp.
<i>Melanagromyza</i> sp.	<i>Herbertia indica</i>
<i>Melanagromyza</i> sp.	<i>Plutarchia indefensa</i>
<i>Melanagromyza</i> sp.	<i>Sphegigaster peninsularis</i>
<i>Melanagromyza</i> sp.	<i>Sphegigaster stepicola</i>
<i>Melanagromyza</i> sp.	<i>Trigonogastra peninsularis</i>
<i>Melanagromyza tenebricosa</i>	<i>Aspidiotiphagus citrinus</i>
<i>Melanitis ismene</i>	<i>Brachymeria jayaraji</i>
<i>Melasoma populi</i>	<i>Schizonotus sieboldi</i>
<i>Menochilus sexmaculatus</i>	<i>Homalotylus terminalis</i>
<i>Menochilus sexmaculatus</i>	<i>Pediobius foveolatus</i>
<i>Menochilus sexmaculatus</i>	<i>Tetrastichus coccinellae</i>
<i>Menochilus sexmaculatus</i>	<i>Tetrastichus sexmaculatus</i>
<i>Metaceronema japonica</i>	<i>Cerapteroceroides japonicus</i>
<i>Metanestia hyrta</i>	<i>Brachymeria criculae</i>
<i>Matatachardia conchiferata</i>	<i>Erencyrtus dewitzi</i>
<i>Meteorus rubens</i>	<i>Brachymeria secundaria</i>
<i>Meteorus</i> sp.	<i>Dibrachys (Dibrachys) cavus</i>
<i>Matriona circumdata</i>	<i>Brachymeria menoni</i>
<i>Micrapis</i> sp.	<i>Brachymeria podagrica</i>
<i>Microgaster indicus</i>	<i>Perilampus microgastris</i>
<i>Microlarius</i> sp.	<i>Eurytoma pigra</i>
<i>Microplitis maculipennis</i>	<i>Brachymeria koduvalliensis</i>
<i>Microterys flavus</i>	<i>Moranila californica</i>
<i>Microterys nietneri</i>	<i>Chartocerus musciformis</i>
<i>Microterys</i> sp.	<i>Promuscidea unifasciati-ventris</i>
<i>Miocolus dubius</i>	<i>Mokrzeckia indica</i>
<i>Miocolus dubius</i>	<i>Mokrzeckia orientalis</i>
<i>Monemae flavescens</i>	<i>Eurytoma monemae</i>
<i>Musca demestica</i>	<i>Nasonia vitripennis</i>
<i>Musca domestica</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Musca domestica</i>	<i>Spalangia nigroaenea</i>
<i>Musca fergusonii</i>	<i>Spalangia nigroaenea</i>
<i>Musca hilli</i>	<i>Spalangia nigroaenea</i>
<i>Musca sorbens</i>	<i>Spalangia nigroaenea</i>
<i>Musca terraereginae</i>	<i>Spalangia nigroaenea</i>
<i>Musca vetustissima</i>	<i>Spalangia nigroaenea</i>
<i>Mycalesis</i> sp.	<i>Brachymeria flavotibialis</i>
<i>Myrmeleon formicarius</i>	<i>Brachymeria minuta</i>
<i>Mythimna albistigma</i>	<i>Tetrastichus ayyari</i>
<i>Mythimna loreyi</i>	<i>Brachymeria lasus</i>
<i>Mythimna separata</i>	<i>Brachymeria euploaeae</i>
<i>Mythimna</i> sp.	<i>Euplectrus spodopterae</i>
<i>Mytilaspis</i> sp.	<i>Aphytis hispanicus</i>

Host	Parasite
<i>Myzus persicae</i>	<i>Pachyneuron aphidis</i>
<i>Myzus persicae</i>	<i>Pachyneuron triarticulata</i>
<i>Nacobia annubilata</i>	<i>Trichospilus pupivora</i>
<i>Naranga aenescens</i>	<i>Trichogramma japonicum</i>
<i>Narosa conspersa</i>	<i>Metaplectrus solitarius</i>
<i>Natada nararia</i>	<i>Euderus natadae</i>
<i>Natada nararia</i>	<i>Euplectromorpha natada</i>
<i>Natada nararia</i>	<i>Eurytoma tatipakensis</i>
<i>Natada nararia</i>	<i>Metaplectrus thoseae</i>
<i>Natada nararia</i>	<i>Platyplectrus natadae</i>
<i>Natada nararia</i>	<i>Secodes narariae</i>
<i>Natada nararia</i>	<i>Tetrastichus taprobanensis</i>
<i>Naxa seriaria</i>	<i>Brachymeria fiskei</i>
<i>Neodiscodes indicus</i>	<i>Promuscidea unifasciiventris</i>
<i>Neomaskellia andropoginis</i>	<i>Encarsia tristis</i>
<i>Neomaskellia bergii</i>	<i>Encarsia tristis</i>
<i>Neomaskellia bergii</i>	<i>Eretmocerus delhiensis</i>
<i>Neopollenia stygia</i>	<i>Spalangia nigroaenea</i>
<i>Neostylopyga rhombifolia</i>	<i>Anastatus umae</i>
<i>Nephantis serinopa</i>	<i>Brachymeria hime attevae</i>
<i>Nephantis serinopa</i>	<i>Brachymeria nephantidis</i>
<i>Nephantis serinopa</i>	<i>Brachymeria nosatoi</i>
<i>Nephantis serinopa</i>	<i>Elasmus nephantidis</i>
<i>Nephantis serinopa</i>	<i>Perilampus microgastris</i>
<i>Nephantis serinopa</i>	<i>Trichospilus pupivora</i>
<i>Nephopterix rhodobasalis</i>	<i>Pediobius stenochoreus</i>
<i>Nephopterix bipunctatus</i>	<i>Oligosita manii</i>
<i>Nephopterix bipunctatus</i>	<i>Oligosita naias</i>
<i>Nilaparvata lugens</i>	<i>Anagrus flaveolus</i>
<i>Nilaparvata lugens</i>	<i>Anagrus perforator</i>
<i>Nipaecoccus</i> sp.	<i>Cheiloneurus albifuniculus</i>
<i>Nipaecoccus</i> sp.	<i>Cheiloneurus longicornis</i>
<i>Nipaecoccus</i> sp.	<i>Chartocerus kurdjumovi</i>
<i>Nipaecoccus</i> sp.	<i>Cheiloneurus nigricornis</i>
<i>Nipaecoccus</i> sp.	<i>Coccophagus perhispidis</i>
<i>Nipaecoccus</i> sp.	<i>Gyranusoidea indica</i>
<i>Nipaecoccus</i> sp.	<i>Homalotylus nigrinus</i>
<i>Nipaecoccus</i> sp.	<i>Metaphycus zebratus</i>
<i>Nipaecoccus</i> sp.	<i>Ophelosia crawfordi</i>
<i>Nipaecoccus</i> sp.	<i>Prochiloneuroides albiclavatus</i>
<i>Nipaecoccus</i> sp.	<i>Prochiloneuroides albifuniculus</i>
<i>Nipaecoccus</i> sp.	<i>Prochiloneuroides comperei</i>
<i>Nipaecoccus</i> sp.	<i>Prochiloneuroides insolitus</i>
<i>Nipaecoccus</i> sp.	<i>Prochiloneuroides hayati</i>
<i>Nipaecoccus vastator</i>	<i>Alamella flava</i>
<i>Nipaecoccus vastator</i>	<i>Anagyrus almoriensis</i>

Host	Parasite
<i>Nipaecoccus vastator</i>	<i>Anagyrus gunturiensis</i>
<i>Nipaecoccus vastator</i>	<i>Anagyrus indicus</i>
<i>Nipaecoccus vastator</i>	<i>Anagyrus mirzai</i>
<i>Nipaecoccus vastator</i>	<i>Anagyrus nigroradiculatus</i>
<i>Nipaecoccus vastator</i>	<i>Anagyrus scutomaculatus</i>
<i>Nipaecoccus vastator</i>	<i>Caenocerus terebratus</i>
<i>Nipaecoccus vastator</i>	<i>Chartocerus fimbriae</i>
<i>Nipaecoccus vastator</i>	<i>Chartocerus hyalipennis</i>
<i>Nipaecoccus vastator</i>	<i>Chartocerus kerrichi</i>
<i>Nipaecoccus vastator</i>	<i>Coccophagus cowperi</i>
<i>Nipaecoccus vastator</i>	<i>Euryischomyia alami</i>
<i>Nipaecoccus vastator</i>	<i>Homalotylus albiclavatus</i>
<i>Nipaecoccus vastator</i>	<i>Leptomastix nigrocoxalis</i>
<i>Nipaecoccus vastator</i>	<i>Neoprochiloneurus nipaecocci</i>
<i>Nipaecoccus vastator</i>	<i>Neoprochiloneurus aegyptiacus</i>
<i>Nipaecoccus vastator</i>	<i>Prochiloneuroides albifuniculus</i>
<i>Nipaecoccus vastator</i>	<i>Prochiloneurus indicus</i>
<i>Nipaecoccus vastator</i>	<i>Prochiloneurus teataceus</i>
<i>Nipaecoccus vastator</i>	<i>Prochiloneurus unifaciativentris</i>
<i>Noorda moringae</i>	<i>Elasmus hyblaeae</i>
<i>Notolophus posticus</i>	<i>Tetrastichus versicolor</i>
<i>Nuculaspis californica</i>	<i>Aspidiotiphagus citrinus</i>
<i>Nupserha bicolor</i>	<i>Norbanus acuminatus</i>
<i>Nupserha bicolor</i>	<i>Oxysychus nupserhae</i>
<i>Nyctemera laticinia</i>	<i>Euplectrus nyctemerae</i>
<i>Nymphalis antiopa</i>	<i>Pteromalus puparum</i>
<i>Odonaspis secreta</i>	<i>Homalopoda cristata</i>
<i>Odonaspis secreta</i>	<i>Proaphelinoides elongatiformis</i>
<i>Oecophylla smaragdina</i>	<i>Smicromorpha keralensis</i>
<i>Oecophyllembius neglectus</i>	<i>Cirrospilus variegatus</i>
<i>Oecophyllembius neglectus</i>	<i>Euplectrus maternus</i>
<i>Olethreutes mori</i>	<i>Brachymeria lasus</i>
<i>Oligotrophus mangiferae</i>	<i>Gastrancistrus muneswari</i>
<i>Omotoma fumiferanae</i>	<i>Nasonia vitripennis</i>
<i>Oocassida pudibunda</i>	<i>Pediobius parvulus</i>
<i>ootheca (Mantid)</i>	<i>Podagrion ahlonei</i>
<i>Ophiomyia lantanae</i>	<i>Erythmelus helopeltidis</i>
<i>Ophiusa melicerta</i>	<i>Tetrastichus ophiusae</i>
<i>Ophyra aenescens</i>	<i>Nasonia vitripennis</i>
<i>Ophyra anthrax</i>	<i>Spalangia nigroaenea</i>
<i>Ophyra leucostoma</i>	<i>Nasonia vitripennis</i>
<i>Opodiphthera simplex</i>	<i>Brachymeria euploae</i>
<i>Oreta carnea</i>	<i>Brachymeria euploae</i>
<i>Orgyia postica</i>	<i>Brachymeria lasus</i>
<i>Orgyia postica</i>	<i>Necremnus leucarthros</i>
<i>Ornithodoros</i>	<i>Ixodiphagus mysorensis</i>

Host	Parasite
<i>Oreseola oryzae</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Orseola oryzae</i>	<i>Propicroscytus mirificus</i>
<i>Oryzaephilus surinamensis</i>	<i>Anisopteromalus calandrae</i>
<i>Oscinis theae</i>	<i>Closterocerus insignis</i>
<i>Osmia</i>	<i>Diamorus cupreus</i>
<i>Osmia cordata</i>	<i>Monodontomerus obscurus</i>
<i>Osmia lignaria</i>	<i>Monodontomerus obscurus</i>
<i>Ostrinia nubilalis</i>	<i>Brachymeria euploae</i>
<i>Ostrinia nubilalis</i>	<i>Brachymeria lasus</i>
<i>Othreis fullonia</i>	<i>Euplectrus maternus</i>
<i>Othreis fullonia</i>	<i>Pediobius agaristae</i>
<i>Othreis materna</i>	<i>Euplectrus maternus</i>
<i>Otinotus oneratus</i>	<i>Mirufens ceylonensis</i>
<i>Otinotus sp.</i>	<i>Centrodora azizi</i>
<i>Oxya velox</i>	<i>Anastatus</i>
<i>Oxya velox</i>	<i>Centrodora oophaga</i>
<i>Oxyodes scrobiculata</i>	<i>Brachymeria euploae</i>
<i>Oxyrhachis sp.</i>	<i>Centrodora mumtazi</i>
<i>Oxyrhachis tarandus</i>	<i>Brachygrammatella aligarhensis</i>
<i>Oxyrhachis tarandus</i>	<i>Brachygrammatella longiclavata</i>
<i>Oxyrhachis tarandus</i>	<i>Mirufens albiscutellum</i>
<i>Oxyrhachis tarandus</i>	<i>Mirufens brevifuniculata</i>
<i>Oxyrhachis tarandus</i>	<i>Mirufens longiclavata</i>
<i>Oxyrhachis tarandus</i>	<i>Mirufens magniclavata</i>
<i>Pachydiplosis oryzae</i>	<i>Neanastatus grallarius</i>
<i>Pachyneuron leucopiscida</i>	<i>Marietta cheriani</i>
<i>Panchaetothrips indicus</i>	<i>Thripobius semiluteus</i>
<i>Papilio agamemnon</i>	<i>Brachymeria semirufa</i>
<i>Papilio demoleus</i>	<i>Ooencyrtus erionotae</i>
<i>Papilio lagai</i>	<i>Tachinobia repanda</i>
<i>Papilio polytes</i>	<i>Brachymeria lasus</i>
<i>Papilio polyxenes assterius</i>	<i>Pteromalus puparum</i>
<i>Papilio sp.</i>	<i>Ooencyrtus papilionis</i>
<i>Paraleptomenes mephitis</i>	<i>Krombeinius eumenidarum</i>
<i>Paraqus sp.</i>	<i>Paracarotomus cephalotes</i>
<i>Parasa lepida</i>	<i>Eurytoma monemae</i>
<i>Parasa lepida</i>	<i>Hockeria ayyari</i>
<i>Parasarcophaga aurifrons</i>	<i>Dirhinus anthracia</i>
<i>Parasarcophaga crassipalpis</i>	<i>Dirhinus himalayanus</i>
<i>Parasarcophaga harpax</i>	<i>Brachymeria minuta</i>
<i>Paratachardina lobata</i>	<i>Marietta leopardine</i>
<i>Paratachardina lobata</i>	<i>Parechthrodryinus clavicornis</i>
<i>Paratachardina lobata</i>	<i>Parechthrodryinus clavicornis</i>
<i>Paratachardina lobata</i>	<i>Tachardiaephagus tachardiae</i>
<i>Paratheresia claripalpis</i>	<i>Spalangia nigroaenea</i>
<i>Parlatoria oleae</i>	<i>Aspidiotiphagus citrinus</i>
<i>Parlatoria oleae</i>	<i>Aspidiotiphagus citrinus</i>

Host	Parasite
<i>Parlatoria pergandii</i>	<i>Aspidiotiphagus citrinus</i>
<i>Parnara guttata</i>	<i>Brachymeria lasus</i>
<i>Parnara mathias</i>	<i>Brachymeria albotibialis</i>
<i>Parnara mathias</i>	<i>Brachymeria jayaraji</i>
<i>Parnara mathias</i>	<i>Eupteromalus parnae</i>
<i>Paspalidium</i>	<i>Propicroscytus mirificus</i>
<i>Pausia californica</i>	<i>Euneura lachni</i>
<i>Pausia ponderosae</i>	<i>Euneura lachni</i>
<i>Pectinophora gossypiella</i>	<i>Brachymeria lasus</i>
<i>Pectinophora gossypiella</i>	<i>Catolaccus crassiceps</i>
<i>Pectinophora gossypiella</i>	<i>Elasmus johnstoni</i>
<i>Pectinophora gossypiella</i>	<i>Elasmus platyedrae</i>
<i>Pectinophora gossypiella</i>	<i>Pediobius bruchicida</i>
<i>Pectinophora gossypiella</i>	<i>Tetrastichus ayyari</i>
<i>Pectinophora gossypiella</i>	<i>Trichogramma achaeae</i>
<i>Pegomyia betae</i>	<i>Trichogramma evanescens</i>
<i>Peliococcus</i> sp.	<i>Anagrus nigricorpus</i>
<i>Peliococcus</i> sp.	<i>Cheiloneurus latifrons</i>
<i>Peliococcus</i> sp.	<i>Plagiomerus bangaloriensis</i>
<i>Pelopidas mathias</i>	<i>Brachymeria albotibialis</i>
<i>Pelopidas mathias</i>	<i>Brachymeria excarinata</i>
<i>Pelopidas mathias</i>	<i>Brachymeria jayaraji</i>
<i>Pelopidas mathias</i>	<i>Brachymeria lasus</i>
<i>Pelopidas mathias</i>	<i>Brachymeria nigricorporis</i>
<i>Pelopidas mathias</i>	<i>Euplectrus nyctenerae</i>
<i>Pelopidas mathias</i>	<i>Trichogramma chilonis</i>
<i>Pelopidas mathias</i>	<i>Trichogrammatoidea bactrae</i>
<i>Pelopidas mathias</i>	<i>Trichogrammalopsis apanteloctena</i>
<i>Pempheres affinis</i>	<i>Euderus pempheriphila</i>
<i>Pennisetum typhoides</i>	<i>Tetrastichus okawus</i>
<i>Pentatomidae</i>	<i>Tetrastichus gardneri</i>
<i>Pericyma cruegeri</i>	<i>Brachymeria albotibialis</i>
<i>Pericyma cruegeri</i>	<i>Brachymeria lasus</i>
<i>Periplaneta americana</i>	<i>Anastatus tenuipes</i>
<i>Periplaneta americana</i>	<i>Tetrastichus asthenogmus</i>
<i>Periplaneta australasiae</i>	<i>Tetrastichus asthenogmus</i>
<i>Periplaneta australasiae</i>	<i>Tetrastichus hagenowii</i>
<i>Perisierola nephantidis</i>	<i>Eurytoma albotibialis</i>
<i>Perisierola nephantidis</i>	<i>Pediobius imbreus</i>
<i>Perisierola</i> sp.	<i>Pediobius bethylicidus</i>
<i>Perisierola</i> sp.	<i>Pediobius imbreus</i>
<i>Perkinsiella saccharicida</i>	<i>Anagrus optabilis</i>
<i>Petrova cristata</i>	<i>Brachymeria nosatoi</i>
<i>Phaenicia eximia</i>	<i>Nasonia vitripennis</i>
<i>Phaenicia mexicana</i>	<i>Nasonia vitripennis</i>
<i>Phaenicia sericata</i>	<i>Nasonia vitripennis</i>
<i>Phaenicia sericata</i>	<i>Pachycrepoideus vindemmiae</i>

Host	Parasite
<i>Phaenodiscus aeneus</i>	<i>Cerapterocerus mirabilis</i>
<i>Phaonia querceti</i>	<i>Spalangia nigroaenea</i>
<i>Phenacaspis vitis</i>	<i>Archenomus bicolor</i>
<i>Phenacaspis</i> sp.	<i>Neoadelencyrtus mandibularis</i>
<i>Phenacaspis</i> sp.	<i>Thomsonisca pakistanensis</i>
<i>Phenacoccus artemisiae</i>	<i>Scutellistae cyanea</i>
<i>Phenacoccus mangiferae</i>	<i>Copidosomyia ambiguous</i>
<i>Phenotropis cleopatra</i>	<i>Parallelaptera teleonemiae</i>
<i>Phloeosinus canadensis</i>	<i>Cheiropachus quadrum</i>
<i>Phloeosinus punctatus</i>	<i>Thomsonisca pakistanensis</i>
<i>Phormia regina</i>	<i>Nasonia vitripennis</i>
<i>Phormia regina</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Phthonandria atrilineata</i>	<i>Brachymeria lasus</i>
<i>Phthorimaea</i>	<i>Dibrachys (Dibrachys) cavus</i>
<i>Phyllocnistis citrella</i>	<i>Scotolinx quadristriata</i>
<i>Phyllonorecter</i> sp.	<i>Pediobius stenochoreus</i>
<i>Phytodiaetus capuae</i>	<i>Tetrastichus versicolor</i>
<i>Phytomyza atricornis</i>	<i>Chrysocharis melaenis</i>
<i>Phytomyza atricornis</i>	<i>Pediobius thakerei</i>
<i>Phytomyza horticola</i>	<i>Chrysocharis melaenis</i>
<i>Phytomyza</i> sp.	<i>Pediobius acantha</i>
<i>Phytomyza</i> sp.	<i>Sphegigaster stepicola</i>
<i>Pieris brassicae</i>	<i>Brachymeria flavipes</i>
<i>Pieris brassicae</i>	<i>Trichogramma evanescens</i>
<i>Pieris canidia</i>	<i>Brachymeria lasus</i>
<i>Pieris protodice</i>	<i>Pteromalus puparum</i>
<i>Pieris rapae</i>	<i>Brachymeria flavipes</i>
<i>Pieris rapae</i>	<i>Pteromalus puparum</i>
<i>Pinnaspis aspidistrae</i>	<i>Aspidiotiphagus citrinus</i>
<i>Pinnaspis strachani</i>	<i>Adelencyrtus coxalis</i>
<i>Pinnaspis strachani</i>	<i>Aspidiotiphagus citrinus</i>
<i>Pinnaspis strachani</i>	<i>Physcus flaviceps</i>
<i>Pinnaspis strachani</i>	<i>Prosaphelinus proclia</i>
<i>Piophilha casei</i>	<i>Nasonia vitripennis</i>
<i>Piophilha casei</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Pithecolobium</i>	<i>Brachymeria carinata</i>
<i>Pityogenes</i>	<i>Metacolus unifasciatus</i>
<i>Plagiodera versicolora</i>	<i>Schizonotus latus</i>
<i>Planchonia delicata</i>	<i>Adelencyrtus planchoniae</i>
<i>Planchonia delicata</i>	<i>Encarsia plachoniae</i>
<i>Planococcides robustus</i>	<i>Gyranusoidea flava</i>
<i>Planococcus citri</i>	<i>Agarwalencyrtus citri</i>
<i>Planococcus citri</i>	<i>Anagyrus citri</i>
<i>Planococcus citri</i>	<i>Anagyrus tibimaculatus</i>
<i>Planococcus citri</i>	<i>Aphytis alami</i>
<i>Planococcus citri</i>	<i>Cerapterocerus virens</i>
<i>Planococcus citri</i>	<i>Coccobius fulvus</i>

Host	Parasite
Planococcus citri	Coccophagus indicus
Planococcus citri	Coccophagus manii
Planococcus citri	Encarsia agarwali
Planococcus citri	Gyranusoidea mirzai
Planococcus citri	Homalotylus indicus
Planococcus citri	Lakshaphagus fusiscapus
Planococcus citri	Leptomastix nigrocoxalis
Planococcus citri	Marietta leopardina
Planococcus citri	Tetracnemoidea indica
Planococcus lilacinus	Promuseidea unifaciativentris
Planococcus robustus	Anagyrus flavidus
Planococcus sp.	Coccophagus coorgensis
Planococcus sp.	Coccophagus flavifrons
Platyedra gossypiella	Catolaccus ater
Platygaster zosine	Chiloneurus elegans
Platypus uncinatus	Monacon abruptum
Plea frontalis	Prestwichia indica
Plecoptera reflexa	Dirhinus (Dirhinus) intermedius
Plecoptera reflexa	Euplectrus plecopterae
Plecoptera reflexa	Tetrastichus plecopterae
Plusia festata	Brachymeria lasus
Plusia signata	Litomastix javae
Plutella maculipennis	Brachymeria excarinata
Plutella xylostella	Brachymeria excarinata
Plutella xylostella	Brachymeria plutellophaga
Plutella xylostella	Brachymeria wittei
Plutella xylostella	Tetrastichus ayyari
Plutella xylostella	Tetrastichus sokolowskii
Plutella xylostella	Trichogrammatoidea armigera
Plutella xylostella	Trichogramma evanescens
Polistes lardaria	Nasonia vitripennis
Polyanthes tuberosa	Megaphragma longiciliatum
Polychrosis botrana	Brachymeria minuta
Polychrosis botrana	Brachymeria secundaria
Polygonia satyrus	Pteromalus puparum
Polyocha depressella	Trichogramma chilonis
Polyocha depressella	Trichogrammatoidea bactrae
Polyptychus dentatus	Anastatus coimbatorensis
Polythlipta macralis	Mokrzeckia menzeli
Polythlipta macralis	Stenomesus japonicus
Polytela gloriosae	Tetrastichus ayyari
Pontanus puerilis	Erythmelus empoascae
Pontia daplidice	Brachymeria ornatipes
Porthetria dispar	Anastatus japonicus
Porthetria dispar	Anastatus kashmirensis
Porthetria dispar	Brachymeria fiskei
Porthetria dispar	Brachymeria intermedia

Host	Parasite
Porthetria dispar	Brachymeria lasus
Porthetria dispar	Brachymeria minuta
Porthetria dispar	Brachymeria podagrica
Porthetria dispar	Brachymeria porthetrialis
Porthetria dispar	Brachymeria secundaria
Porthetria sp.	Brachymeria intermedia porthetrialis
Porthetria sp.	Brachymeria porthetrialis
Praon sp.	Coruna clavata
praying mantid	Podagrion chatterjeei
praying mantid	Podagrion calopeplum
praying mantid	Eulophus manticehthrus
Precis orithya	Tetrastichus ayyari
Promecothea cumingii	Cotterellia lankensis
Promecothea cumingii	Pediobius parvulus
Promecothea reichei	Pediobius parvulus
Prospalta conducta	Euplectrus euplexiae
Protocalliphora avium	Nasonia vitripennis
Protocalliphora sialia	Nasonia vitripennis
Protopulvinaria mangiferae	Aneristus ceroplastae
Psara sp.	Brachymeria euploae
Psara sp.	Trichogramma chilonis
Pseudaonidia duplex	Aspidiotiphagus citrinus
Pseudaonidia duplex	Comperiella unifasciata
Pseudaonidia duplex	Prosaphelinus proclia
Pseudaulacaspis pentagonia	Aspidiotiphagus citrinus
Pseudaulacaspis pentagonia	Prosaphelinus proclia
Pseudococcus aonidium	Aneristus ceroplastae
Pseudococcus citri	Anagyrus citri
Pseudococcus citri	Anagyrus mirzai
Pseudococcus citri	Anagyrus tibimaculatus
Pseudococcus citri	Arhypoideus indicus
Pseudococcus citri	Cerapterocerus virens
Pseudococcus citri	Cheiloneurus fusciscapus
Pseudococcus citri	Coccidencyrtus citri
Pseudococcus citri	Leptomastix nigrocoxalis
Pseudococcus citri	Paraleptomastix dactylopii
Pseudococcus coffeae	Encyrtus neitneri
Pseudococcus comstocki	Anagyrus diversicornis
Pseudococcus multivorus	Anagyrus diversicornis
Pseudococcus sp.	Anagyrus flavidus
Pseudococcus sp.	Anagyrus kivuensis
Pseudococcus sp.	Hexacladia indica
Pseudococcus sp. (Coccinellid on)	Homalotylus nigrinus
Psyche albipes	Elasmus hutsoni
Psyche vitrea	Anastatoidea brachartoniae

Host	Parasite
<i>Psylla</i> sp.	<i>Aphidencyrthus aligarhensis</i>
<i>Pteromalus</i> sp.	<i>Dibrachys (Dibrachys) cavus</i>
<i>Pteroma pendula</i>	<i>Pediobius imbreus</i>
<i>Pteroma plagiophleps</i>	<i>Brachymeria wittei</i>
<i>Pteylus nebulas</i>	<i>Carabunia orientalis</i>
<i>Ptychomyia remota</i>	<i>Anastatoidea brachartona</i>
<i>Pueraria tuberosa</i>	<i>Oedaule stringifrons</i>
<i>Puercus pachyphylla</i>	<i>Eurytoma sulcata</i>
<i>Pulvinaria iceryi</i>	<i>Aneristus ceroplastae</i>
<i>Pulvinaria maxima</i>	<i>Anicetus ceylonensis</i>
<i>Pulvinaria maxima</i>	<i>Anicetus dodonia</i>
<i>Pulvinaria maxima</i>	<i>Euaphycus latiscapus</i>
<i>Pulvinaria maxima</i>	<i>Thysanus alter</i>
<i>Pulvinaria polygonata</i>	<i>Aneristus ceroplastae</i>
<i>Pulvinaria</i> sp.	<i>Aneristus ceroplastae</i>
<i>Pulvinaria</i> sp.	<i>Diversinervus madgaoensis</i>
<i>Pulvinaria</i> sp.	<i>Encyrtus flavus</i>
<i>Pulvinaria</i> sp.	<i>Metaphycus indicus</i>
<i>Pulvinaria</i> sp.	<i>Metaphycus maculatus</i>
<i>Pulvinaria</i> sp.	<i>Neoplatycerus tachikawai</i>
<i>Pundaluoya simplicia</i>	<i>Anagrus optabilis</i>
<i>Pyralid</i>	<i>Aprostocetus coorgensis</i>
<i>Pyrausta machaeralis</i>	<i>Brachymeria euploae</i>
<i>Pyrausta machaeralis</i>	<i>Brachymeria hime attevae</i>
<i>Pyrausta machaeralis</i>	<i>Brachymeria lasus</i>
<i>Pyrausta machaeralis</i>	<i>Dirhinus anthracia</i>
<i>Pyrausta machaeralis</i>	<i>Elasmus brevicornis</i>
<i>Pyrausta machaeralis</i>	<i>Hockeria zigonensis</i>
<i>Pyrausta machaeralis</i>	<i>Mokrzeckia indica</i>
<i>Pyrausta machaeralis</i>	<i>Pediobius soror</i>
<i>Pyrausta machaeralis</i>	<i>Perilampus birmanus</i>
<i>Pyrausta machaeralis</i>	<i>Stenomesus japonicus</i>
<i>Pyrausta machaeralis</i>	<i>Trichogrammatoidea nana</i>
<i>Pyrausta machaeralis</i>	<i>Trichospilus diatraeae</i>
<i>Pyrilla aberrans</i>	<i>Ooencyrtus pyrillae</i>
<i>Pyrilla</i> sp.	<i>Cheiloneurus pyrillae</i>
<i>Pyrilla</i> sp.	<i>Ooencyrtus papilionis</i>
<i>Pyrilla</i> sp.	<i>Proleuroceroides pyrillae</i>
<i>Pyrilla</i> sp.	<i>Tetrastichus pyrillae</i>
<i>Quadraspidotus gigas</i>	<i>Comperiella bifasciata</i>
<i>Quadraspidotus juglansregiae</i>	<i>Prosaphelinus proclia</i>
<i>Quadraspidotus perniciosus</i>	<i>Gonatocerus pahalgamensis</i>
<i>Quadraspidotus perniciosus</i>	<i>Polynema anantanagana</i>
<i>Rastrococcus</i>	<i>Chartocerus kerrichi</i>
<i>Rastrococcus iceryoides</i>	<i>Anagrus sawadai</i>
<i>Rastrococcus iceryoides</i>	<i>Aminellus indicus</i>

Host	Parasite
Rastrococcus iceryoides	Chartocerus kurdjumovi
Rastrococcus iceryoides	Chartocerus walkeri
Rastrococcus iceryoides	Homalotylus indicus
Rastrococcus iceryoides	Neoplatycerus tachikawai
Rastrococcus iceryoides	Praleurocerus viridis
Rastrococcus iceryoides	Prochiloneurus insolitus
Rastrococcus iceryoides	Promuseidea unifasciatiiventris
Ravinia striata	Spalangia nigroaenea
Rhagoletis sp.	Pachycrepoideus vindemmiae
Rhagoletis fausta	Pachycrepoideus vindemmiae
Rhipiphorothrips cruentatus	Ceranisus maculatus
Rhipiphorothrips cruentatus	Tetrastichus rhipiphorothripscidis
Rhopalosiphum padi	Aphelinus gossypii
Rogas	Brachymeria secundaria
Rhizopertha dominica	Lariophagus distinguendus
Rhynckosia mimosa	Neocharitopus orientalis
Ripersia sp.	Rhopus quadrii
Rodolia sp.	Homalotylus flaminus
Rondotia menciiana	Brachymeria lasus
Saccharicoccus sacchari	Anagyrus aligarhensis
Saccharicoccus sacchari	Anagyrus punctulatus
Saccharicoccus sacchari	Anagyrus swezeyi
Saccharicoccus sacchari	Chartocerus ranae
Saccharicoccus sacchari	Hamusencyrtus mymaricoides
Saccharicoccus sacchari	Microterys delhiensis
Saccharicoccus sacchari	Phaenodiscus sacchari
Saccharicoccus sacchari	Tetrastichus pyrrillae
Saissetia coffeae	Cephaleta brunniventris
Saissetia coffeae	Cirrospilus coccivorus
Saissetia coffeae	Coccophagus ceroplastae
Saissetia coffeae	Coccophagus cowperi
Saissetia coffeae	Coccophagus flavescens
Saissetia coffeae	Cheiloneurus basiri
Saissetia coffeae	Diversinervus elegans
Saissetia coffeae	Diversinervus paradisicus
Saissetia coffeae	Encyrtus lecaniorum
Saissetia coffeae	Marietta leopardina
Saissetia coffeae	Metaphycus maculatus
Saissetia coffeae	Microterys flavus
Saissetia coffeae	Microterys nietneri
Saissetia coffeae	Moranila californica
Saissetia hemisphaerica	Aneristus ceroplastae
Saissetia hemisphaerica	Cheiloneurus basiri
Saissetia hemisphaerica	Scutellista cyanea
Saissetia nigra	Aneristus ceroplastae
Saissetia nigra	Cephaleta brunniventris

Host	Parasite
<i>Saissetia nigra</i>	<i>Moranila californica</i>
<i>Saissetia nigra</i>	<i>Scutellista cyanea</i>
<i>Saissetia nigra</i>	<i>Anicetus ceylonensis</i>
<i>Saissetia oleae</i>	<i>Aneristus ceroplastae</i>
<i>Saissetia oleae</i>	<i>Cephaleta brunniventris</i>
<i>Saissetia oleae</i>	<i>Moranila californica</i>
<i>Saissetia oleae</i>	<i>Scutellista cyanea</i>
<i>Salrretia oleae</i>	<i>Aphycus flavus</i>
<i>Saissetia persicae</i>	<i>Scutellista cyanea</i>
<i>Saissetia privigna</i>	<i>Coccophagus ceroplastae</i>
<i>Saissetia privigna</i>	<i>Encyrtus lecaniorum</i>
<i>Saissetia privigna</i>	<i>Metaphycus citricola</i>
<i>Saltusaphis</i>	<i>Mesidia argiope</i>
<i>Sarcophaga banksi</i>	<i>Tachinobia repanda</i>
<i>Sarcophaga dux</i>	<i>Spalangia nigroaenea</i>
<i>Sarcophaga frontalis</i>	<i>Spalangia nigroaenea</i>
<i>Sarcophaga impatiens</i>	<i>Spalangia nigroaenea</i>
<i>Sarcophaga lineata</i>	<i>Brachymeria minuta</i>
<i>Sarcophaga</i>	<i>Dirhinus (Dirhinus) hesperidum</i>
<i>Sargus metallinus</i>	<i>Dirhinus batheri</i>
<i>Schoenobius</i>	<i>Syntomosphyrum israeli</i>
<i>Schoenobius bipunctifer</i>	<i>Tetrastichus schoenobii</i>
<i>Scirpophaga excerptalis</i>	<i>Elasmus zehntneri</i>
<i>Scirpophaga incertulas</i>	<i>Propicroscytus mirificus</i>
<i>Scirpophaga incertulas</i>	<i>Tetrastichus ayyari</i>
<i>Scirpophaga incertulas</i>	<i>Tetrastichus israeli</i>
<i>Scirpophaga incertulas</i>	<i>Tetrastichus kuriani</i>
<i>Scirpophaga incertulas</i>	<i>Trichogramma chilonis</i>
<i>Scirpophaga incertulas</i>	<i>Trichogramma japonicum</i>
<i>Scirpophaga incertulas</i>	<i>Trichogramma minutum</i>
<i>Scirpophaga incertulas</i>	<i>Trichogramma pallidiventris</i>
<i>Scirpophaga incertulas</i>	<i>Trichospilus diatraeae</i>
<i>Scirpophaga mirella</i>	<i>Bephrata saccharicola</i>
<i>Scirpophaga nivella</i>	<i>Elasmus zehntneri</i>
<i>Scolytus multistriatus</i>	<i>Cheiropachus quadrum</i>
<i>Scolytus rugulosus</i>	<i>Cheiropachus quadrum</i>
<i>Scymnus</i>	<i>Syntomosphyrum taprobanes</i>
<i>Selepa docilis</i>	<i>Euplectrus euplexiae</i>
<i>Sepedon sauteri</i>	<i>Trichogramma japonicum</i>
<i>Sepedon sphegea</i>	<i>Trichogramma japonicum</i>
<i>Sepedon sphegea</i>	<i>Trichogramma bactrae</i>
<i>Sesamia cretica</i>	<i>Trichogramma evanescens</i>
<i>Sesamia inferens</i>	<i>Trichospilus diatraeae</i>
<i>Sesamia inferens</i>	<i>Tetrastichus inferens</i>
<i>Simplicia robustalis</i>	<i>Brachymeria nursei</i>
<i>Simplicia robustalis</i>	<i>Tetrastichus niger</i>

Host	Parasite
<i>Simmondsius pakistanensis</i>	<i>Tetrastichus epilachnae</i>
<i>Sitophilus granarius</i>	<i>Anisopteromalus calandrae</i>
<i>Sitophilus granarius</i>	<i>Lariophagus distinguendus</i>
<i>Sitophilus oryzae</i>	<i>Anisopteromalus calandrae</i>
<i>Sitophilus oryzae</i>	<i>Lariophagus distinguendus</i>
<i>Sitophilus</i> sp.	<i>Dibrachys (Dibrachys) cavus</i>
<i>Sitophilus zeamaizae</i>	<i>Anisopteromalus calandrae</i>
<i>Sitophilus zeamaizae</i>	<i>Lariophagus distinguendus</i>
<i>Sitotroga cerealella</i>	<i>Trichogramma chilonis</i>
<i>Sitotroga cerealella</i>	<i>Trichogramma erosicornis</i>
<i>Sitotroga cerealella</i>	<i>Trichogramma exiguum</i>
<i>Sogatella furcifera</i>	<i>Anagrus columbi</i>
<i>Spatulifimbria castaneiceps</i>	<i>Autoplectrus taprobanes</i>
<i>Sphegidae</i>	<i>Diamorus cupreus</i>
<i>Sphegidae</i>	<i>Diamorus orientalis</i>
<i>Sphenoptera gossypii</i>	<i>Euderus gossypii</i>
<i>Sphenoptera gossypii</i>	<i>Oxysychus sphenopterae</i>
<i>Spilosoma obliqua</i>	<i>Brachymeria campestris</i>
<i>Spilosoma obliqua</i>	<i>Brachymeria rufotibialis</i>
<i>Spilosoma obliqua</i>	<i>Hockeria nikolskayae</i>
<i>Spilosoma obliqua</i>	<i>Trichogrammatoidea nana</i>
<i>Spilosoma obliqua</i>	<i>Tropimeris indicus</i>
<i>Spilosoma subcarnea</i>	<i>Brachymeria lasus</i>
<i>Spilosoma</i> sp.	<i>Dirhinus anthracia</i>
<i>Spodoptera exigua</i>	<i>Brachymeria lasus</i>
<i>Spodoptera exigua</i>	<i>Euplectrus gopimohani</i>
<i>Spodoptera litura</i>	<i>Proleuroceroides pyrillae</i>
<i>Spodoptera litura</i>	<i>Tetrastichus ayyari</i>
<i>Spodoptera litura</i>	<i>Trichogramma chilonis</i>
<i>Spodoptera litura</i>	<i>Trichospilus pupivora</i>
<i>Spodoptera mauritia</i>	<i>Tetrastichus schoenobii</i>
<i>Spodoptera mauritia</i>	<i>Trichospilus pupivora</i>
<i>Stator limbatus</i>	<i>Uscana semifumipennis</i>
<i>Stator pruininus</i>	<i>Anisopteromalus calandrae</i>
<i>Stegobium paniceum</i>	<i>Anisopteromalus calandrae</i>
<i>Stegobium paniceum</i>	<i>Lariophagus distinguendus</i>
<i>Stigmella ipomoeella</i>	<i>Parablastothrix nepticulae</i>
<i>Stigmella ipomoeella</i>	<i>Sarasvatia srilankiensis</i>
<i>Stigmella ipomoeella</i>	<i>Visnuella nepticulae</i>
<i>Stomatomyia bezziana</i>	<i>Exoristobia philippinensis</i>
<i>Stomatomyia bezziana</i>	<i>Trichospilus pupivora</i>
<i>Stomopteryx nerteria</i>	<i>Miotropis ashmeadi</i>
<i>Stomoxys calcitrans</i>	<i>Pachycrepoideus vindemmiae</i>
<i>Stomoxys calcitrans</i>	<i>Spalangia nigroaenea</i>
<i>Stomoxys nigroaenea</i>	<i>Spalangia nigroaenea</i>
<i>Supella longipalpa</i>	<i>Comperia merceti</i>
<i>Supella superllectilium</i>	<i>Anastatus tenuipes</i>

Host	Parasite
<i>Susumia exigua</i>	<i>Trichogramma japonicum</i>
<i>Sylepta derogata</i>	<i>Brachymeria bengalensis</i>
<i>Sylepta derogata</i>	<i>Trichospilus diatraeae</i>
<i>Synthesiomyia nudiseta</i>	<i>Nasonia vitripennis</i>
syrphid puparia	<i>Paracarotomus cephalotes</i>
Syrphids	<i>Pachyneuron aeneum</i>
Syrphus	<i>Pachyneuron groenlandicum</i>
<i>Systole albipennis</i>	<i>Liodontomerus indicus</i>
<i>Tabanus macer</i>	<i>Trichogramma semblidis</i>
<i>Tachardia albizziae</i>	<i>Anastatus tachardiae</i>
<i>Tachardiaephagus tachardiae</i>	<i>Eupelmus tachardiae</i>
<i>Tachardiaephagus tachardiae</i>	<i>Tetrastichus purpureus</i>
Tachinid parasites	<i>Tachinobia repanda</i>
Tachinid parasite	<i>Perilampus nilamburensis</i>
<i>Tarophagus proserpina</i>	<i>Anagrus perforator</i>
<i>Tarucus theophrastus</i>	<i>Trichogrammatoidea nana</i>
<i>Teleonemia scrupulosa</i>	<i>Parallelaptera teleonemiae</i>
<i>Telicota bambusae</i>	<i>Brachymeria euploaeae</i>
<i>Tephrina disputaria</i>	<i>Euplectrus parvulus</i>
<i>Terminalia</i>	<i>Eupelmus terminaliae</i>
<i>Tessaratoma javanica</i>	<i>Anastatus amarus</i>
<i>Tessaratoma javanica</i>	<i>Anastatus colemani</i>
<i>Tessaratoma javanica</i>	<i>Anastatus dentatus</i>
<i>Tetrastichus</i> sp.	<i>Euplectrus parvulus</i>
<i>Tetroda histeroides</i>	<i>Anastatus colemani</i>
<i>Tettigonella spectra</i>	<i>Gonatocerus shasthryi</i>
<i>Thosea asigna</i>	<i>Trichogrammatoidea nana</i>
<i>Thosea cervina</i>	<i>Autoplectrus taprobanes</i>
<i>Thosea cervina</i>	<i>Metaplectrus solitarius</i>
<i>Thosea cervina</i>	<i>Trichospilus pupivora</i>
Thrips	<i>Dasyscapus thripsivorous</i>
<i>Thyridopteryx ephemeraeformis</i>	<i>Pteromalus puparum</i>
<i>Thysanoplusia orichalcea</i>	<i>Brachymeria lasus</i>
<i>Tinea</i> sp.	<i>Elasmus anticles</i>
<i>Tinea</i> sp.	<i>Epitranus clavatus</i>
<i>Tiracola plagiata</i>	<i>Trichogramma chilonis</i>
<i>Tiracola plagiata</i>	<i>Trichospilus pupivora</i>
<i>Tirathaba mundella</i>	<i>Spalangia obscura</i>
<i>Tirathaba</i> sp.	<i>Antrocephalus sulcatiscutellum</i>
<i>Tirathaba</i> sp.	<i>Elasmus fumipennis</i>
<i>Tirathaba</i> sp.	<i>Trichospilus pupivora</i>
<i>Tomosvaryella</i> sp.	<i>Agarwalencyrtus citri</i>
<i>Tortrix viridana</i>	<i>Brachymeria minuta</i>
<i>Toxares</i> sp.	<i>Asaphes suspensus</i>
<i>Toxoptera aurantii</i>	<i>Pachyneuron triarticulata</i>
<i>Trabala vishnu</i>	<i>Euplectrus leucostomus</i>

Host	Parasite
Trabala vishnu	Mesocomys orientalis
Trathala hapaliae	Perilampus cremastophagus
Trialeurodes packardi	Eretmocerus corni
Tribolius castaneus	Anisopteromalus calandrae
Trichoplusia ni	Brachymeria intermedia
Trichoplusia ni	Brachymeria lasus
Trichoplusia ni	Trichogramma chilonis
Trichoplusia ni	Trichogramma japonicum
Trichoplusia ni	Trichogrammatoidea bactrae
Trionymus insularis	Anagyrus swezeyi
Trionymus sacchari	Anagyrus saccharicola
Trioxys indicus	Coruna clavata
Trioxys sp.	Asaphes suspensus
Trioza fletcheri	Eurytoma setitibia
Trogoderma granarium	Dinarmus basalis
Tropicomyia atomella	Epiclerus indicus
Tropicomyia atomella	Tetrastichus atomelli
Tropicomyia atomella	Tetrastichus bruchophagi
Tropicomyia coffeae	Closterocerus phytomyzae
Tropicomyia sp.	Nigricolana megacephala
Tropicomyia theae	Closterocerus insignis
Tropicomyia theae	Nigricolana megacephala
Tryporyza incertulas	Trichogramma japonicum
Tyria jacobaeae	Brachymeria minuta
Unaspis atricolor	Adelencyrtus clavatus
Unaspis euonymi	Prosaphelinus proclia
Urentius euonymus	Parallelaptera teleonemiae
Uroleucon compositae	Syrphophagus aphidivorus
Urostylis punctifera	Manineura pentatomivora
Utetheisa pulchella	Euplectrus utetheisae
Utetheisa pulchella	Brachymeria bengalensis
Vaga blackburni	Brachymeria lasus
Vanessa atalanta	Pteromalus puparum
Vanessa virginiensis	Pteromalus puparum
Vinsonia stellifera	Anicetus ceylonensis
Virachola isocrates	Brachymeria euploaeae
Watara sudra	Anagrus empoascae
Xenorhynchium	Leucospis pyriformis
Xylocopa tenuiscapa	Coelopencyrtus krishnamurtii
Xylotrechus	Metapelma compressipes
Yponomeuta evonymella	Brachymeria lasus
Yponomeuta malinella	Brachymeria-fiskei
Yponomeuta malinella	Brachymeria minuta
Ypsolophus ochrophanes	Antrocephalus vitatus
Zabrotes subfasciatus	Bruchocida orientalis
Zeuzera sp.	Brachymeria margaroniae
Zygaena filipendulae	Brachymeria flaripes
Zygaena trifolii	Brachymeria minuta

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