

Miscellaneous Publication

Occasional Paper No. 25

# Records of the Zoological Survey of India

**ON A COLLECTION OF  
EURYTOMIDAE (CHALCIDOIDEA :  
HYMENOPTERA) FROM INDIA**

By  
M. K. MUKERJEE

Issued by The Director  
Zoological Survey of India, Calcutta

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*By*

**M. K. MUKERJEE**

**School of Entomology, St. John's College, Agra**



*Edited by the Director, Zoological Survey of India, Calcutta*

**1981**

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<b>No. 25</b>	<b>1981</b>	<b>Pages 1—87</b>
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**CONTENTS**

	Page
INTRODUCTION .. .. .	1
KEY TO SPECIES OF <i>Bephrata</i> .. .. .	16
Key to species of <i>Eurytoma</i> .. .. .	27
Key to Species of <i>Eurytomocharis</i> .. .. .	43
Key to Species of <i>Phylloxeroxenus</i> .. .. .	59
Key to Species of <i>Prodecatoma</i> .. .. .	78

ON A COLLECTION OF EURYTOMIDAE  
(CHALCIDOIDEA : HYMENOPTERA)  
FROM INDIA\*

*By*

M. K. MUKERJEE

*School of Entomology, St. John's College, Agra-282002 (India)*

(With 35 Figures)

INTRODUCTION

This paper contains descriptions of thirty-one species, under nine genera of Eurytomidae from India. Of these three genera, viz. *Bephrata* Cameron, *Eurytomocharis* Ashmead, and *Phylloxeroxenus* Ashmead are being recorded for the first time from India, and one genus is new to science. The types and other examples are deposited in the collections of the Zoological Survey of India, Calcutta.

I thank Prof. M. S. Mani for placing this interesting material at my disposal for study as part of PL-480 programme of research. I am also thankful to Dr. P. I. Ittyerah, Principal, and Dr. Santokh Singh, Head of the Department of Zoology, St. John's College, Agra, for permission to work and for facilities.

Tribe : ISOSOMINI

1. ***Harmolita dalhousiae*, sp. nov.**

*Female* : Length 4.36 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles brown ; antenna

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\*Contribution No. 250 from the School of Entomology, St. John's College, Agra-282002.

black except for the brownish-black basal 0.30 of scape; thorax black; sides of pronotum and tegula with yellowish-brown markings; fore leg reddish-brown except for the black coxa and black basal 0.50 of femur; middle leg dark brown except for the black coxa, brownish-black basal 0.30 of femur and tibia except for its base and tip; hind leg brownish-black except for the black coxa and dark brown tarsus; wings entirely light brown; veins brown; abdomen black and shiny.

*Head* with well separated shallow punctate; moderately densely clothed with silvery hairs; vertex with long hairs; eyes finely and sparsely pubescent; mandible bidentate; antennal sockets well above the lower orbital border; scrobe sculptured like the rest of head; front ocellus outside the scrobe. Head viewed from above (Fig. 1F) slightly wider than thorax; length to width 55 : 100; viewed in front (Fig. 1E) length to width 84 : 100; ocellocular space about 3.00 times ocellar diameter; interocellar space subequal to the ocellocular space; front ocellar space very slightly more than the ocellar diameter. *Antenna* (Fig. 1 C,D): Segments 10, 1.1.1.6.1. Scape long, slender, cylindrical, 4.50 times longer than thick; pedicel 0.33 of scape, (1.50) times longer than thick; ring segment almost as long as thick; flagellum with long setae; first funicular segment longest, much longer than the others, slender, 2.00 times the pedicel, 3.33 times longer than thick; second funicular segment 0.70 of the first segment, 2.36 times longer than thick; third and fourth funicular segments subequal, each a little shorter than the second, 2.00 times longer than thick; fifth funicular segment, 0.87 of the fourth segment, 1.75 times longer than thick; sixth funicular segment 0.22 of the preceding segment, 1.44 times longer than thick; club unsegmented, broadly obtusely pointed at the tip, 1.92 times the sixth funicular segment, 2.77 times longer than thick; club subequal to the preceding funicular segments combined.

*Thorax* closely umbilicately punctate; moderately densely clothed with silvery hairs; parapsidal furrows distinct and complete; viewed dorsally length to width 100 : 55; pronotum : mesoscutum : scutellum 8 : 10 : 10; propodeum without carina. *Fore wing* (Fig. 1 A, B) length to width 100 : 36; venation *m* : *pm* : *st* 100 : 64 : 45; discal ciliation complete; marginal fringe moderately long; *sm* long;

with nineteen setae directed forward ; *m* and *pm* with ten and nine setae respectively. *Hind wing* to fore wing 67 : 100 ; length to width

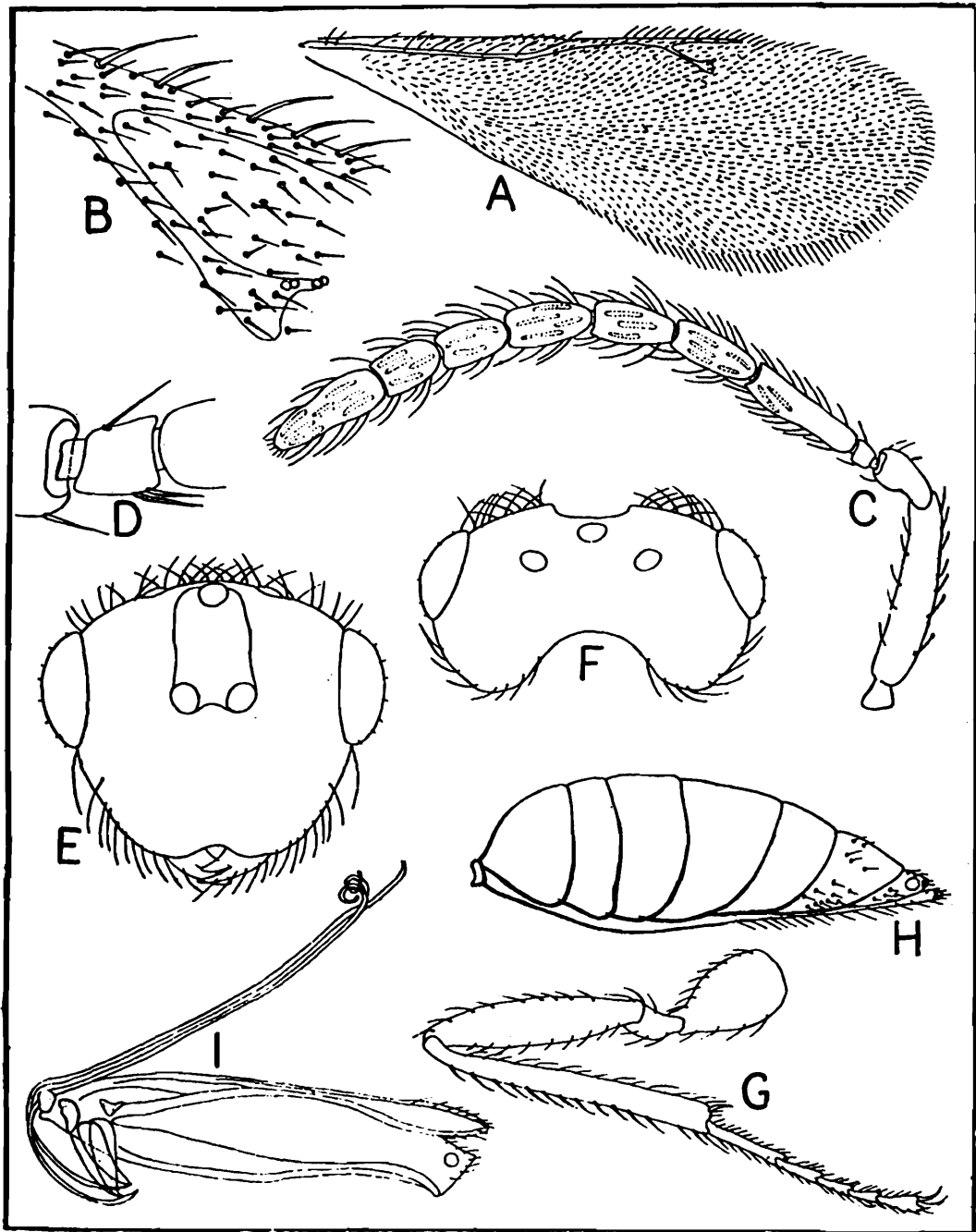


Fig. 1. *Harmolita dalhousiae*, sp. nov. Female.

A. fore wing, B. stigmatal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen, I. genitalia.

100 : 21. *Fore leg* : Coxa 2.00 times longer than thick ; femur 1.57 times coxa ; 4.31 times longer than thick ; tibia slender subequal to femur, 8.21 times longer than thick, tibial spur bifurcated, tibial spur to metatarsus 8.00 : 13.00 ; tarsus almost subequal to tibia ; metatarsus 0.31 of tibia or tarsus. *Middle leg* : Coxa 1.45 times longer than thick ;

femur thickened in the middle, 2.68 times coxa, 4.77 times longer than thick; tibia slender, 1.37 times femur, 10.72 times longer than thick, tibial spur to metatarsus 50 : 100; tarsus 0.74 of tibia and subequal to femur; metatarsus 0.23 of tibia and 0.31 of tarsus. *Hind leg* (Fig. 1 G): Coxa 1.64 times longer than thick; femur thickened in the middle, 1.67 times coxa, about 4.00 times longer than thick; tibia dorsally with stiff bristles throughout its length, slender, 1.44 times femur, 9.71 times longer than thick, tibial spur to metatarsus 6.50 : 18.00; tarsus 0.82 of tibia; metatarsus 0.26 of tibia and 0.32 of tarsus.

*Abdomen* smooth and shiny; 0.56 of body; viewed laterally (Fig. 1 H) length to height 100 : 36; petiole short and transverse; ovipositor slightly exerted; fourth tergite slightly longer than the third.

*Male*: Length 3.12 mm. General colour of body black: body clothed with silvery pubescence; head black; eyes and ocelli very brown; mandibles reddish-brown; antenna black; thorax black; fore leg reddish-brown except for the black coxa; middle leg dark brown except for the black coxa, brownish base and apical about 0.70 of femur, tibia basally and apically and tibial spur; hind leg black except for the brown base and tip of femur, dark brown tibia and tarsal segments; wings subhyaline; veins brown; abdominal petiole and abdomen black,

*Head* closely umbilicately punctate; gena matt; head densely clothed with white hairs; vertex densely pubescent; eyes bare; mandibles bidentate; antennal sockets a little above the middle of face; scrobe punctate like the rest of head; front ocellus outside the scrobe. Head viewed from above (Fig. 2F) slightly wider than thorax; viewed in front (Fig. 2 E) length to width 79 : 100; eye length to head length 50 : 100; ocellular space almost equal to the interocellar space, about 2.50 times ocellar diameter; front ocellar space almost equal to the ocellar diameter. *Antenna* (Fig. 2C, D): Segments 10, 1.1.1.6.1. Scape short, stout, slightly thickened subapically, 3.20 times longer than thick; pedicel 0.20 of scape, subglobose, its length 0.88 of its thickness; ring segment minute; funicular segments much longer than their thickness, with whorls of long hairs; first funicular segment longest, 0.87 of scape, 3.68 times longer than thick; 2-5 funicular

segments subequal, second funicular segment about 0.93 of the first segment, 3.42 times longer than thick ; sixth funicular segment about 0.82 of the preceding segment, 2.36 times longer than thick ; club unsegmented, gradually reduced apically, subequal to the fourth funicular segment, 3.43 times longer than thick.

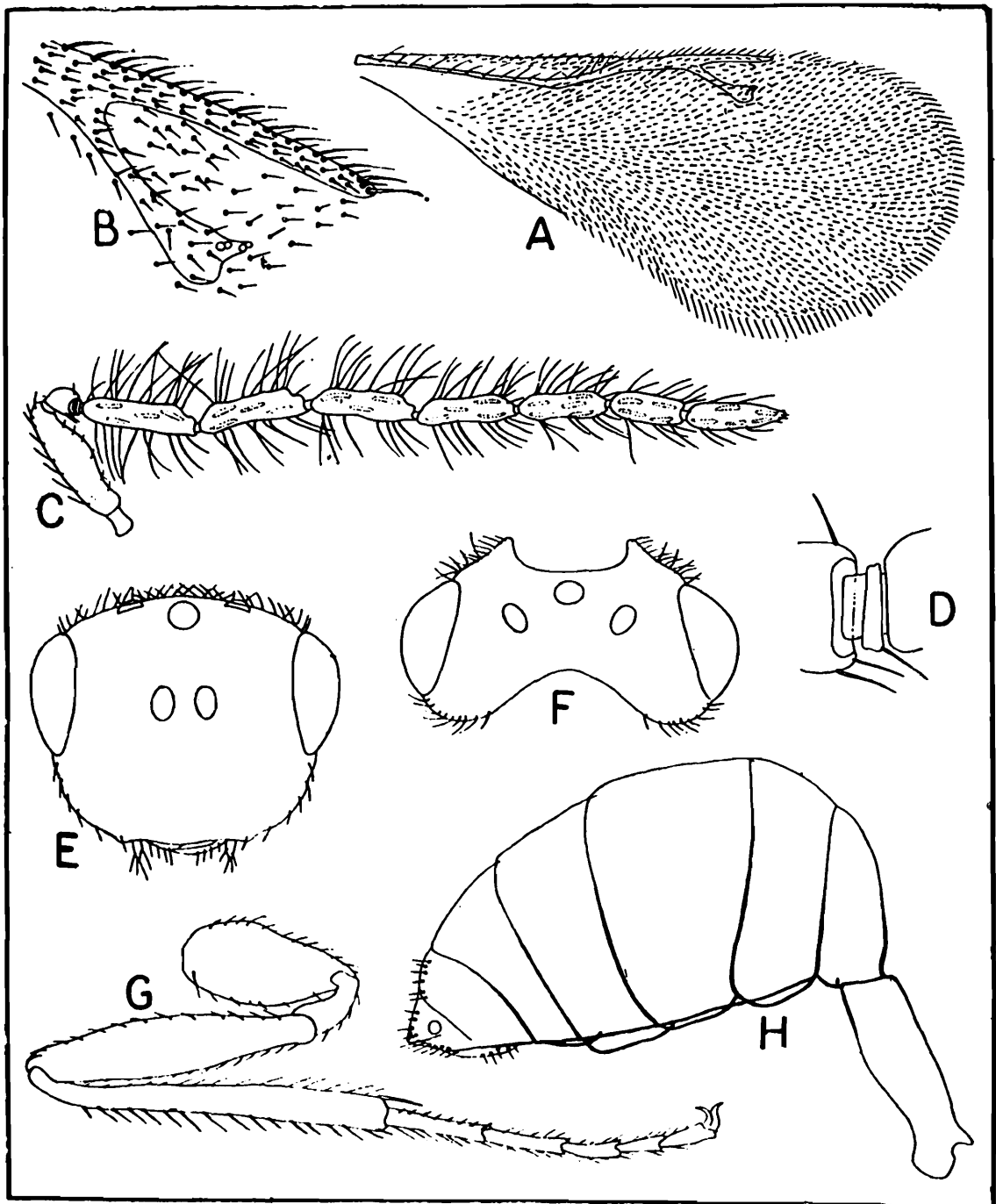


Fig. 2. *Harmolita dalhousiae*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen.

*Thorax* closely umbilicately punctate ; parapsidal furrows present ; viewed dorsally length to width 100 : 49 ; viewed laterally length to

height 100 : 50 ; pronotum : mesoscutum : scutellum 6 : 7.5 : 8. *Fore wing* (Fig. 2 A, B) length to width 100 : 43 ; marginal fringe moderately long ; venation  $m : pm : st$  100 : 89 : 72 ;  $sm$  long, with 16 short setae directed forward ;  $m$  and  $pm$  with 18 short setae. *Hind leg* (Fig. 2 G) : Coxa 2.00 times longer than thick ; femur thickened in the middle, 4.80 times longer than thick ; tibia more or less slender, cylindrical, about 1.20 times femur, dorsally with a row of stiff bristles, about 10.50 times longer than thick, tibial spur single, tibial spur to metatarsus 5.50 : 12.00 ; tarsus 0.93 of tibia ; metatarsus 0.28 of tibia and 0.30 of tarsus ; second segment 0.79 of metatarsus ; third segment 0.68 of the second segment ; fourth segment 0.72 of the third segment ; fifth tarsal segment subequal to the third segment.

*Abdomen* smooth and shiny ; petiole matt ; including petiole about 0.52 of body ; viewed laterally (Fig. 2 H) length to height 100 : 53 ; petiole distinctly longer than hind coxa, about 3.00 times longer than thick, petiole to abdomen 40 : 100 ; third tergite slightly longer than the rests.

*Holotype* : Female on card (one set of legs, wings and antenna on slide) ; *allotype* male on card ; *paratypes* one female on card (genitalia mounted on slide), and one male on slide, l.l. Ahla catchment area : Dalhousie, Coll. M.S. Mani & party, 17. v. 1971.

## 2. *Harmolita deccanensis*, sp. nov.

*Female* : Length about 2.86 mm. General colour of body yellowish-brown ; head yellowish-brown ; eyes and ocelli brown ; mandibles reddish-brown ; antenna brownish-black except for the brownish scape, pedicel and ring segment ; thorax yellowish-brown with irregular darker brown inside parapsidal furrows, sides of scapula, faintly anteriorly on pronotum and middle of scutellum ; legs brown ; wings hyaline ; veins brown ; abdomen brown.

*Head* with minute scattered punctate ; vertex with long hairs ; eyes finely and sparsely pubescent ; mandibles bidentate ; antennal sockets well above the lower orbital border ; scrobe shallow and smooth ; front ocellus outside the scrobe. Head viewed from above (Fig. 3 F) distinctly wider than thorax ; length to width 57 : 100 ; viewed in front (Fig. 3 E) length to width 81 : 100 ; eye length to head length 50 : 100 ; ocellocular space subequal to the interocellar space, about 2.65 times ocellar diameter, front ocellar space 0.83 of the

ocellar diameter. *Antenna* (Fig. 3 C, D) : Segments 11, 1.1.1.5.3. Scape slightly reduced apically, 4.66 times longer than thick ; pedicel 0.35 of scape, 1.51 times longer than thick ; ring segment moderately large, almost as long as thick ; funicular and club segments with long hairs ;

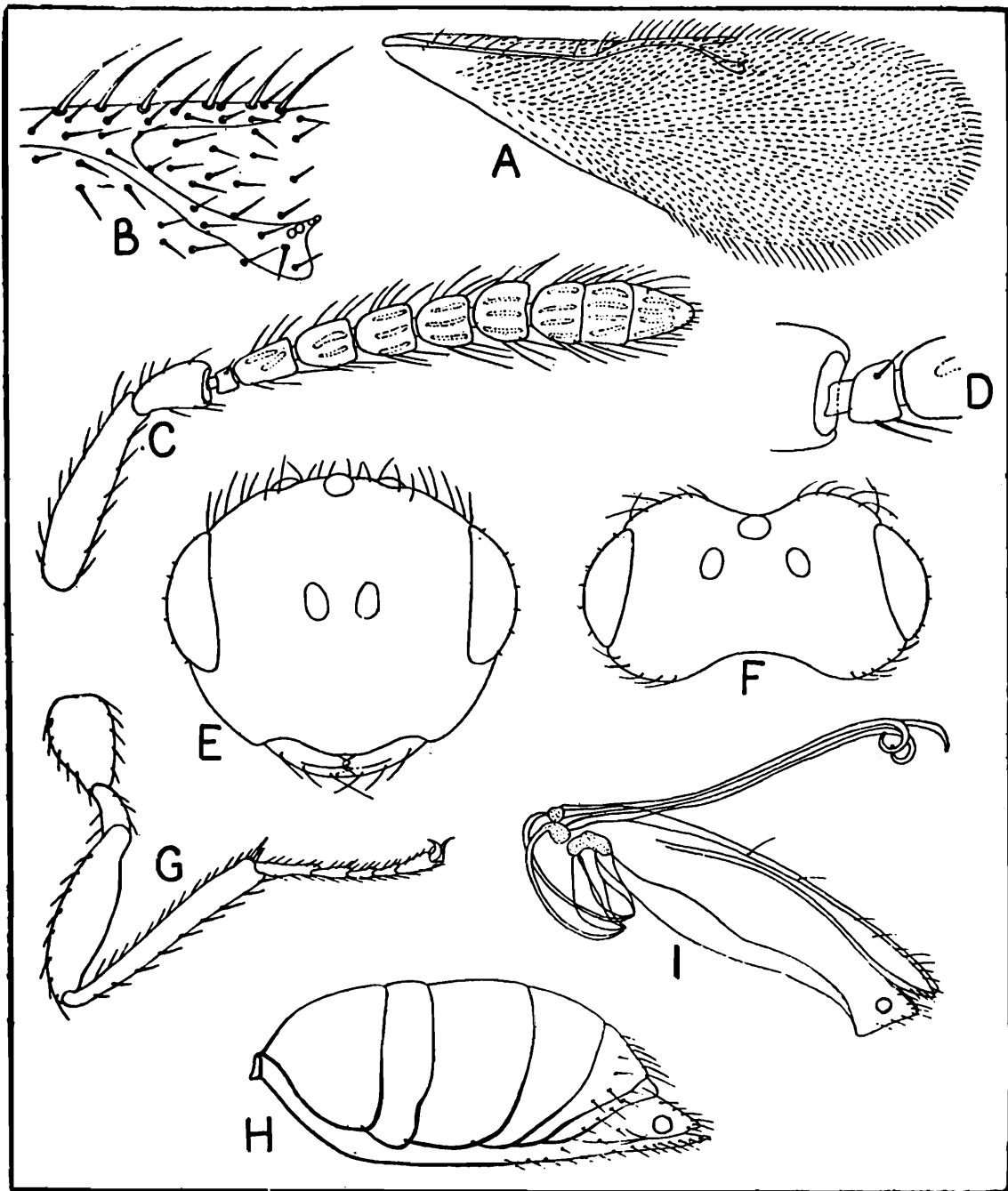


Fig. 3. *Harmolita deccanensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen, I. genitalia.

first funicular segment 0.80 of pedicel, 1.60 times longer than thick ; second funicular segment very slightly shorter than the first segment,

1.26 times longer than thick ; third funicular segment subequal to the first segment, 1.14 times longer than thick ; fourth and fifth funicular segments subequal, each about 0.87 of the third segment ; fourth funicular segment as long as thick ; fifth funicular segment transverse, its length 0.87 of its thickness ; club subequal to the preceding 2.80 funicular segments combined ; first club segment 0.85 of the preceding funicular segment, transverse, its length 0.75 of its thickness ; second club segment subequal to the first segment and transverse ; third club segment ovate, with a wide nipple-like projection apically, 1.33 times the preceding segment, 1.08 times longer than thick.

*Thorax* finely punctate ; propodeum umbilicately punctate ; parapsidal furrows present ; viewed dorsally length to width 100 : 48 ; pronotum : mesoscutum : scutellum 5 : 8 : 8. *Fore wing* (Fig. 3 A, B) length to width 100 : 36 ; discal ciliation well developed ; marginal fringe moderately long ; venation  $m : pm : st$  100 : 50 : 71 ;  $sm$  long, with 14 setae directed forward ;  $m$  with 7 and  $pm$  with 5 setae. *Hind wing* to fore wing 67 : 100 ; length to width 100 : 19. *Fore leg* : Coxa 1.66 times longer than thick, femur 3.67 times longer than thick, tibia thickens apically, subequal to femur, 7.14 times longer than thick, tibial spur bifurcated, tibial spur to metatarsus 7.00 : 5.50 ; tarsus 0.88 of tibia ; metatarsus 0.22 of tibia and 0.25 of tarsus. *Middle leg* : Coxa 1.25 times longer than thick ; femur 3.42 times longer than thick ; tibia slender, 1.37 times femur, 9.42 times longer than thick, tibial spur to metatarsus 5.50 : 6.50 ; tarsus about 0.70 of tibia ; metatarsus 0.19 of tibia and 0.28 of tarsus. *Hind leg* (Fig. 3G) : Coxa 1.33 times longer than thick ; femur thickened in the middle, 2.00 times coxa, 3.29 times longer than thick ; tibia thickens apically, dorsally with 9 stiff bristles, 1.35 times femur, 7.91 times longer than thick, tibial spurs unequal, shorter one about 0.45 of the long spur, longer tibial spur to metatarsus 5.00:9.00 ; tarsus 0.73 of tibia and subequal to femur ; metatarsus 0.23 of tibia and 0.32 of tarsus.

*Abdomen* smooth and shiny ; 0.47 of body ; viewed laterally (Fig. 3 H) length to height 100 : 44 ; petiole very short and transverse ; ovipositor slightly exerted.

*Holotype* : Female on card (one set of legs, wings, and antenna on slide), *paratype* one female on card (genitalia mounted on slide),

4:7 Kelghar-Meta : Satara Road, Coll *M. S. Mani & party*, 17. ix. 1971.

This species differs from *H. dalhousiae* Mukerjee in the club being 3 articulated ; first funicular segment not greatly long, and *pm* being a little shorter than *st*.

Tribe : EURYTOMINI

3. ***Bephrata dalhousiensis***, sp. nov.

*Male* : Length about 4.28 mm ; length of fore wing 3.62 mm ; length of hind wing 2.62 mm ; length of abdomen excluding petiole 2.06 mm ; length of petiole 0.50 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles dark brown ; antenna brownish-black ; thorax black except for the antero-lateral angles of the pronotum dark brown ; legs dark brown except for the black coxae ; wings subhyaline ; veins dark brown ; abdomen brownish-black except for the black first apparent tergite ; abdominal petiole black ; aedeagus brown.

*Head* closely umbilicately punctate ; vertex and frons with long setae ; eyes bare ; antennal sockets well above the middle of face ; scrobe moderately deep, closely coarsely minutely punctate, matt with the front ocellus well within at its tip ; mandibles bidentate. Head viewed from above (Fig. 4 F) a little wider than the pronotum ; length to width 52 : 100 ; head viewed in front (Fig. 4 E) length to width 86 : 100 ; eye length to head length 42 : 100 ; ocellular space 2.50 times ocellar diameter ; interocellar space a little less than 2.50 times ocellar diameter ; front ocellar space about 0.75 of the ocellar diameter. *Antenna* (Fig. 4 C, D) : Segments 10, 1.1.1.6.1. Flagellar segments except pedicel with whorls of long hairs ; scape nearly fusiform, distinctly swollen in the middle, 2.66 times longer than thick ; pedicel short, 0.31 of scape, very slightly longer than its thickness ; ring segment distinctly transverse ; funicular segments much longer than their thickness ; first funicular segment 6.62 times longer than thick, about 5.30 times pedicel and slightly more than 1.50 times scape ; 2-4 funicular segments subequal, each about 0.83 of the first segment, 6.28 times longer than thick ; fifth funicular segment slightly shorter than the preceding one, 5.71 times longer than thick ; sixth funicular segment 0.90 of the fifth segment, 5.14 times

longer than thick ; club with a distinct but short nipple-like prolongation at its tip, 1.11 times the sixth funicular segment, 6.66 times longer than thick, subequal to the preceding 1.10 funicular segments combined.

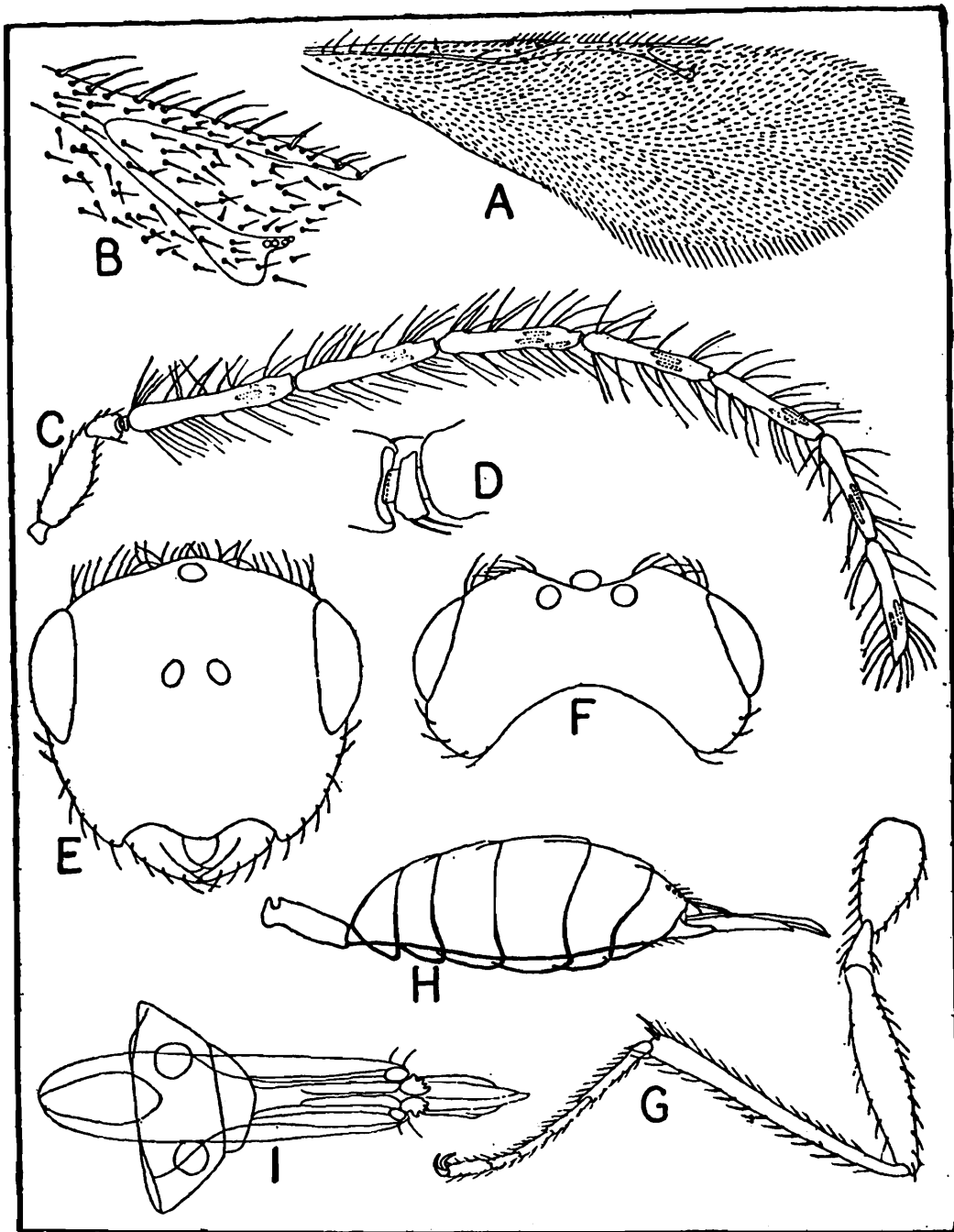


Fig. 4. *Bephrata dalhousiensis*, sp. nov. Male.

- A. fore wing, B. stigmal vein, C. antenna, D. anellus,  
 E. head in front view, F. head viewed from above,  
 G. hind leg, H. abdomen, I. genitalia.

*Thorax* closely umbilicately punctate ; moderately densely clothed with long white setae ; scutellum more finely than the rest of the thorax, with a distinct transverse groove a little beyond the

middle ; propodeum rugosely punctate ; parapsidal furrows complete ; thorax viewed dorsally length to width 100 : 41 ; pronotum : mesoscutum : scutellum 6 : 11 : 11. *Fore wing* (Fig. 4 A, B) length to width 100 : 33 ; venation  $m : pm : st$  100 : 67 : 56 ;  $sm$  long, with 17 setae directed forward ;  $m$  with 9 and  $pm$  with 6 setae. *Hind wing* to fore wing 72 : 100 ; length to width 100 : 19. *Fore leg* : Coxa 2.44 times longer than thick ; femur thickened basally, 5.14 times longer than thick, 1.63 times coxa ; tibia slender, subequal to femur, 12.00 times longer than thick, tibial spur bifurcated, tibial spur to metatarsus 8.50 : 10.00 ; tarsus very slightly shorter than tibia ; metatarsus 0.27 of tibia or tarsus. *Middle leg* : Coxa 1.44 times longer than thick ; femur thickened in the middle, 5.14 times longer than thick, 2.76 times coxa ; tibia slender, 14.28 times longer than thick, 1.38 times femur, tibial spur to metatarsus 5.00 : 10.00 ; tarsus 0.72 of tibia and subequal to femur ; metatarsus 0.20 of tibia and 0.27 of tarsus. *Hind leg* (Fig. 4 G) : Coxa 1.66 times longer than thick ; femur slightly uniformly thickened in the middle, 2.00 times coxa, 4.44 times longer than thick ; tibia more or less slender but thickens apically, 11.60 times longer than thick, 1.45 times femur, tibial spurs unequal, shorter one about 0.40 of the long spur, longer tibial spur to metatarsus 2.00 : 5.00 ; tarsus 0.80 of tibia ; metatarsus 0.25 of tibia and 0.31 of tarsus.

*Abdomen* smooth and shiny ; excluding petiole 0.48 of body ; viewed laterally (Fig. 4 H) length to height 100 : 33 ; petiole distinctly longer than hind coxa, slightly less than 0.25 of abdomen, 3.07 times longer than thick ; fourth apparent tergite longest ; aedeagus well exerted beyond the tip of abdomen (as in figure).

*Holotype* : Male on card, *paratypes* two males on slides, 1. 1. Ahla catchment area : Dalhousie, Coll. *M.S. Mani & party*, 14-25. v. 1971.

This is the first definitive record of the genus *Bephrata* from India. The species described here is distinguished by its relatively larger size and the brown spot at the anterolateral angle of pronotum.

#### 4. *Bephrata kumaonensis*, sp. nov.

*Male* : Length 4.18 mm. General colour of body black ; head black ; eyes very dark brown ; ocelli brown ; maxillary palpi brown ; labial palpi dark brown ; mandibles reddish ; antenna black except for the brown radicle and ring segment ; thorax black ; fore leg black

except for the brown apical 0.18 of femur, tibia, tibial spur and tarsal segments; middle and hind legs black except for the brown tip of femur, base and tip of tibiae, tibial spurs and tarsal segments, base of middle femur also brown; wings hyaline; veins dark brown; abdominal petiole and abdomen black.

*Head*: Clypeus longitudinally striate, otherwise head closely umbilicately punctate; vertex finely and densely pubescent; eyes bare; mandibles bidentate; antennal sockets a little above the middle of face; scrobe smooth and shiny, front ocellus at its tip. Head viewed from above (Fig. 5 F) slightly wider than thorax; viewed in front (Fig. 5 E) length to width 76 : 100; eye length to head length 45 : 100; ocellocular space 2.33 times ocellar diameter; interocellar space 3.50 times ocellar diameter; front ocellar space about 1.40 times ocellar diameter. *Antenna* (Fig. 5 C, D): Segments 10, 1. 1. 1. 6. 1. Scape more or less slender, cylindrical except for the slight subapical thickening, 3.66 times longer than thick; pedicel short, subglobose, 0.19 of scape, its length 0.84 of its thickness; ring segment minute; funicular segments constricted at their apices, with long setae, much longer than their thickness; first funicular segment longest, subequal to the scape, 3.66 times longer than thick; 2-4 funicular segments subequal; second funicular segment 0.81 of the first segment, 3.33 times longer than thick; third and fourth funicular segments about 3.60 times longer than thick; fifth funicular segment slightly shorter than the preceding segment, 3.95 times longer than thick; sixth funicular segment 0.90 of the fifth segment, 3.44 times longer than thick; club elongated, slender, cylindrical, conically pointed at the tip, 1.22 times the sixth funicular segment, 5.00 times longer than thick.

*Thorax* closely umbilicately punctate; propodeum sculptured like the mesonotum; parapsidal furrows present; viewed dorsally length to width 100 : 61; viewed laterally length to height 100 : 62; pronotum : mesoscutum : scutellum 8 : 10 : 12. *Fore wing* (Fig. 5 A, B) length to width 100 : 46; marginal fringe very short; discal ciliation complete; venation  $m : pm : st$  100 : 90 : 73;  $sm$  long, with 14 moderately long setae directed forward;  $m$  and  $pm$  with a series of shorter setae. *Hind leg* (Fig. 5 I): Coxa 1.23 times longer than thick; femur thickened in the middle, 3.82 times longer than thick; tibia more or less slender, dorsally with a row of stiff bristles, 1.13 times femur, 7.14 times longer than thick, tibial spurs 2, subequal to each other, tibial spur to metatarsus 6.00 : 15.00; tarsus 0.90 of tibia and very slightly longer

than femur ; metatarsus 0.30 of tibia and 0.33 of tarsus ; second segment 0.66 of metatarsus ; third segment 0.70 of the second segment ; fourth segment 0.71 of the third segment ; fifth tarsal segment 1.14 times the third segment.

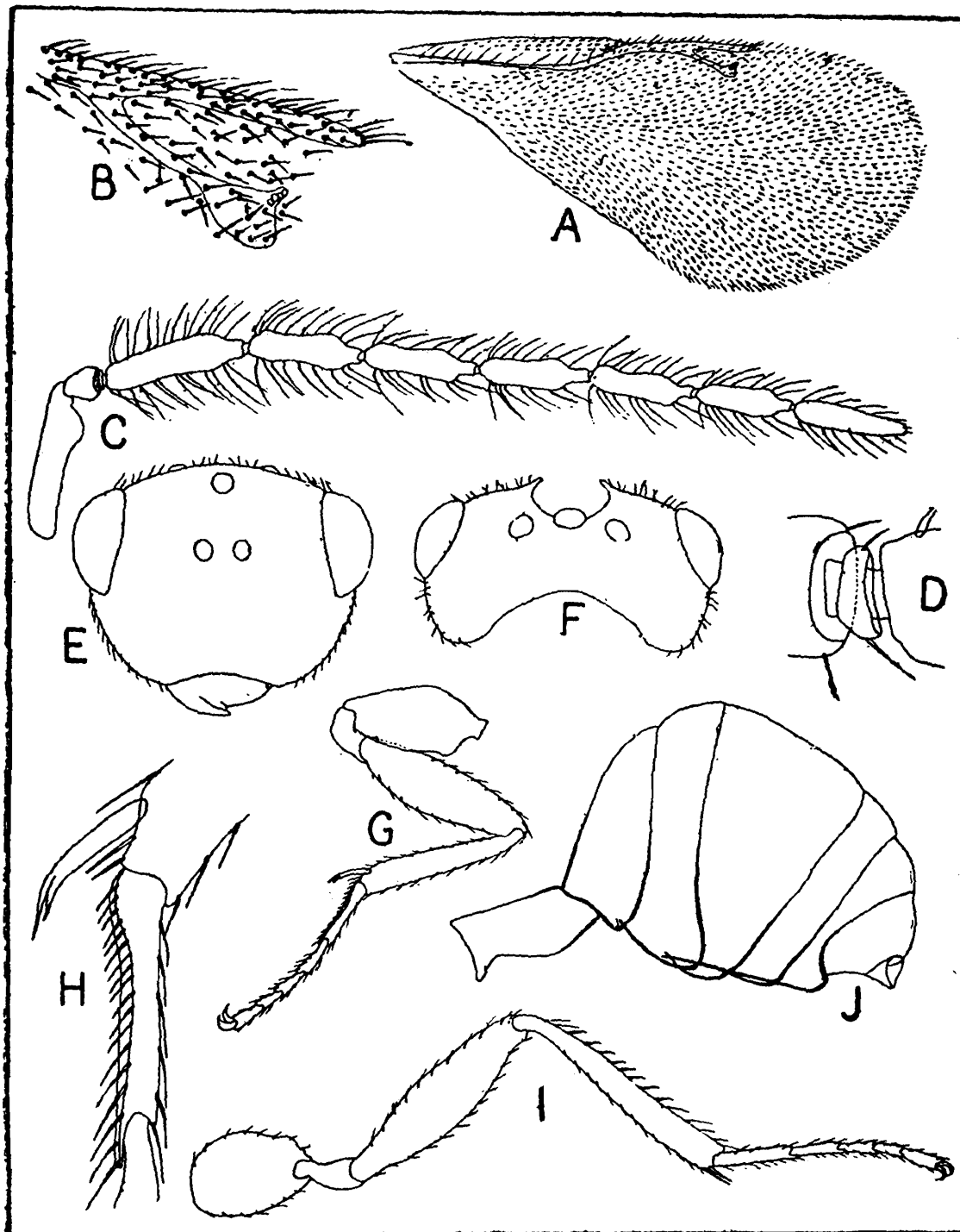


Fig. 5. *Bephrata kumaonensis*, sp. nov. Male.

A. fore wing, B. stigmal vein C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I hind leg. J. abdomen.

*Abdomen* smooth and shiny ; petiole matt ; including petiole 0.42 of body ; viewed laterally (Fig. 5 J) length to height 100 : 78 ; petiole

distinctly longer than the hind coxa, length to width 100 : 46 ; petiole to abdomen 39 : 100 ; third tergite longest.

*Holotype* : Male on card ; *paratypes* 4 males on cards (wing, legs and antennae mounted on slide). 11.5. Chaubattia : Kumaon Survey, Coll. M.S. Mani & party, 25, 27. vi. 1974.

5. ***Bephrata nepalensis***, sp. nov.

*Male* : Length 3.02 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles reddish-brown ; antenna dark brown except for the brownish scape which is dark brown in the apical 0.33 ; thorax black ; legs brown except for the black coxae ; wings subhyaline ; veins brown ; abdominal petiole and abdomen black.

*Head* closely umbilicately punctate ; vertex finely and densely pubescent ; eyes bare ; mandibles bidentate ; antennal sockets in the middle of face ; scrobe smooth and shiny, front ocellus well within at its tip. Head viewed from above (Fig. 6 F) slightly wider than thorax ; viewed in front (Fig. 6 E) length to width 76 : 100 ; eye length to head length 52 : 100 ; ocellular space 2.00 times ocellar diameter ; interocellar space 4.00 times ocellar diameter ; front ocellar space about 1.50 times ocellar diameter. *Antenna* (Fig. 6 C,D) : Segments 10, 1.1.1.6.1. Scape 4.73 times longer than thick ; pedicel short, subglobose, 0.16 of scape, its length 0.85 of its thickness ; ring segment minute ; funicular and club segments much longer than their thickness, and with whorls of long hairs ; funicular segments constricted apically with short necks ; first funicular segment longest, 0.88 of scape, 4.57 times longer than thick ; second funicular segment 0.87 of the first segment, 4.25 times longer than thick ; third funicular segment about 0.93 of the second segment, 4.06 times longer than thick ; fourth funicular segment 0.92 of the third segment, 4.00 times longer than thick ; fifth funicular segment 0.88 of the fourth segment, 3.53 times longer than thick ; sixth funicular segment 0.80 of the preceding segment, about 3.00 times longer than thick ; club slender, gradually reduced apically, 1.17 times the sixth funicular segment, 3.57 times longer than thick.

*Thorax* closely umbilicately punctate except for the anterior half of

the mesonotum matt; propodeum also punctate like mesonotum; parapsidal furrows complete; viewed dorsally length to width 100:61; viewed laterally length to height 100:63; pronotum: mesoscutum: scutellum 5:10:10. Fore wing (Fig. 6 A, B) length to width 100:45;

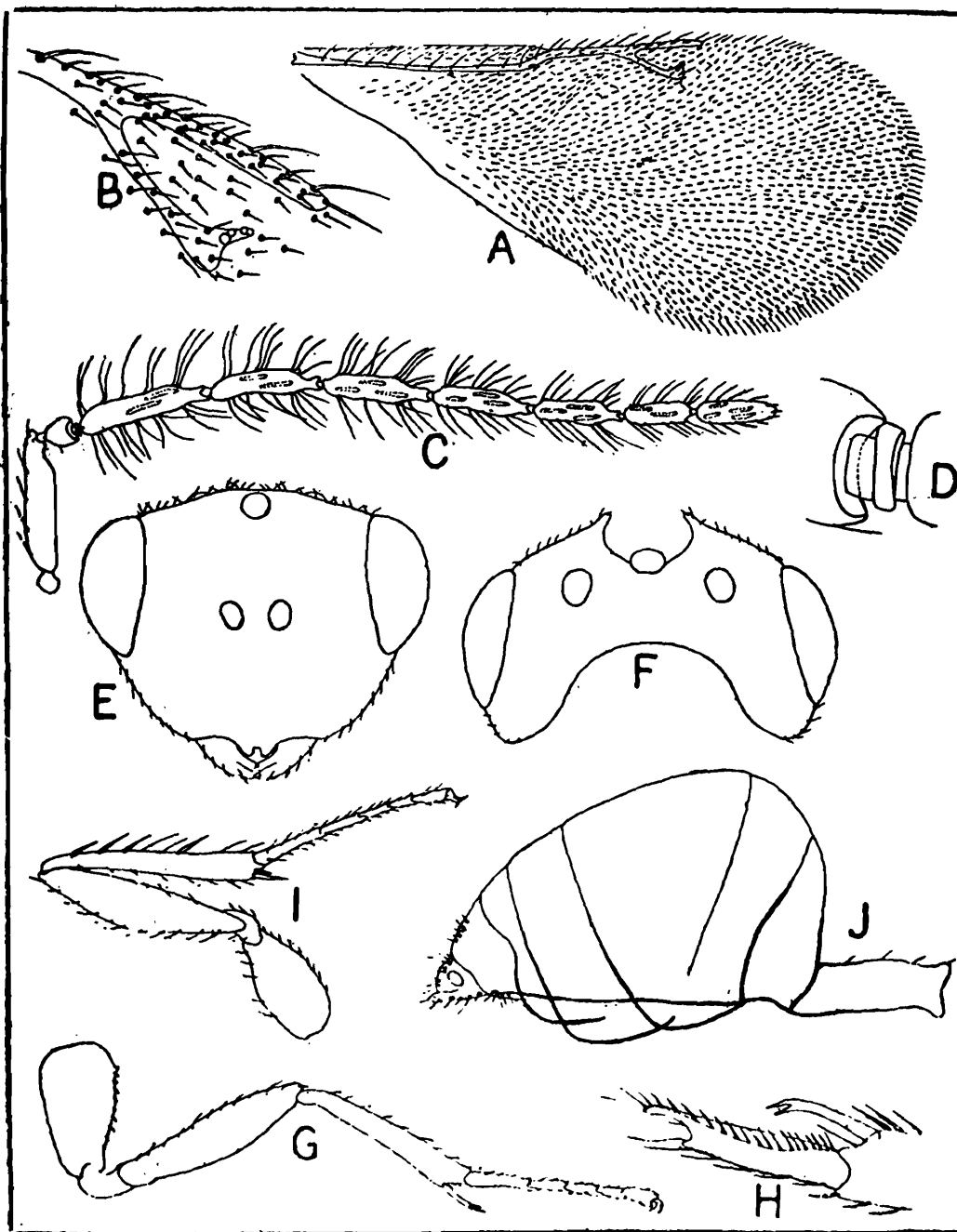


Fig. 6 *Bephrata nepalensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I. hind leg. J. abdomen.

marginal fringe moderately long; venation  $m : pm : st$  100 : 78 : 59;  $sm$  long, with 11 moderately long setae directed forward;  $m$  and  $pm$  with

11 short setae. *Hind leg* (Fig. 6 I) : Coxa 1.70 times longer than thick ; femur thickened in the middle, 4.26 times longer than thick ; tibia thickens apically, dorsally with 4 stiff bristles, 1.06 times femur, about 8.00 times longer than thick, tibial spurs 2, shorter spur a little less than half of the long spur, longer spur to metatarsus 6.00 : 10.50 ; tarsus 0.94 of tibia ; metatarsus about 0.31 of tibia and about 0.33 of tarsus ; second segment 0.62 of metatarsus ; third segment 0.69 of the second segment ; fourth segment 0.77 of the third segment ; fifth tarsal segment 1.71 times the preceding segment.

*Abdomen* smooth and shiny ; petiole closely finely punctate ; including petiole 0.41 of body ; viewed laterally (Fig. 6 J) length to height 100 : 66 ; petiole subequal to the hind coxa, length to width 100 : 36, petiole to abdomen 40 : 100 ; third tergite longest.

*Holotype* : Male on card ; *paratypes* 3 males (two on cards and one mounted on slide), 7.1. Kirtipur (Nepal), Coll. *M.S. Mani & party*, 29. ix 1972.

#### KEY TO SPECIES OF *BEPHRATA*

1. Scape long, slender, at least four and a half times longer than thick . . . . .

*B. nepalensis* Male

Scape not specially elongated.....2

2. Fore wing about three times as long as wide ; head wholly umbilicately punctate.....

*B. dalhousiensis* Male

Fore wing wider than in the foregoing species, a little over twice as long as wide ; head longitudinally striate below antennal sockets.....

*B. kumaonensis* Male

#### 6. *Eurytoma karnatakensis*, sp. nov.

*Female* : Length 2.00 mm. General colour of body black ; head black ; eyes and ocelli brownish ; mandibles reddish ; antenna brown except for the yellowish-brown scape ; thorax black ; fore leg yellowish-brown except for the black coxa, and paler tibia and tarsus ; middle leg yellowish-brown except for the dark brown coxa, and paler tarsus ; hind leg blackish-brown except for the black coxa, yellowish-brown tip of femur and tibia, and paler tarsus ; wings hyaline ; veins pale brown ; abdomen black except for the reddish-brown tip of ovipositor.

*Head* closely umbilicately punctate; vertex densely pubescent; eyes finely and sparsely pubescent; mandibles bidentate; antennal sockets slightly below the middle of face; scrobe shallow, sculptured like the rest of head above, and smooth below; front ocellus outside the scrobe. Head viewed from above (Fig. 7 F) slightly wider than

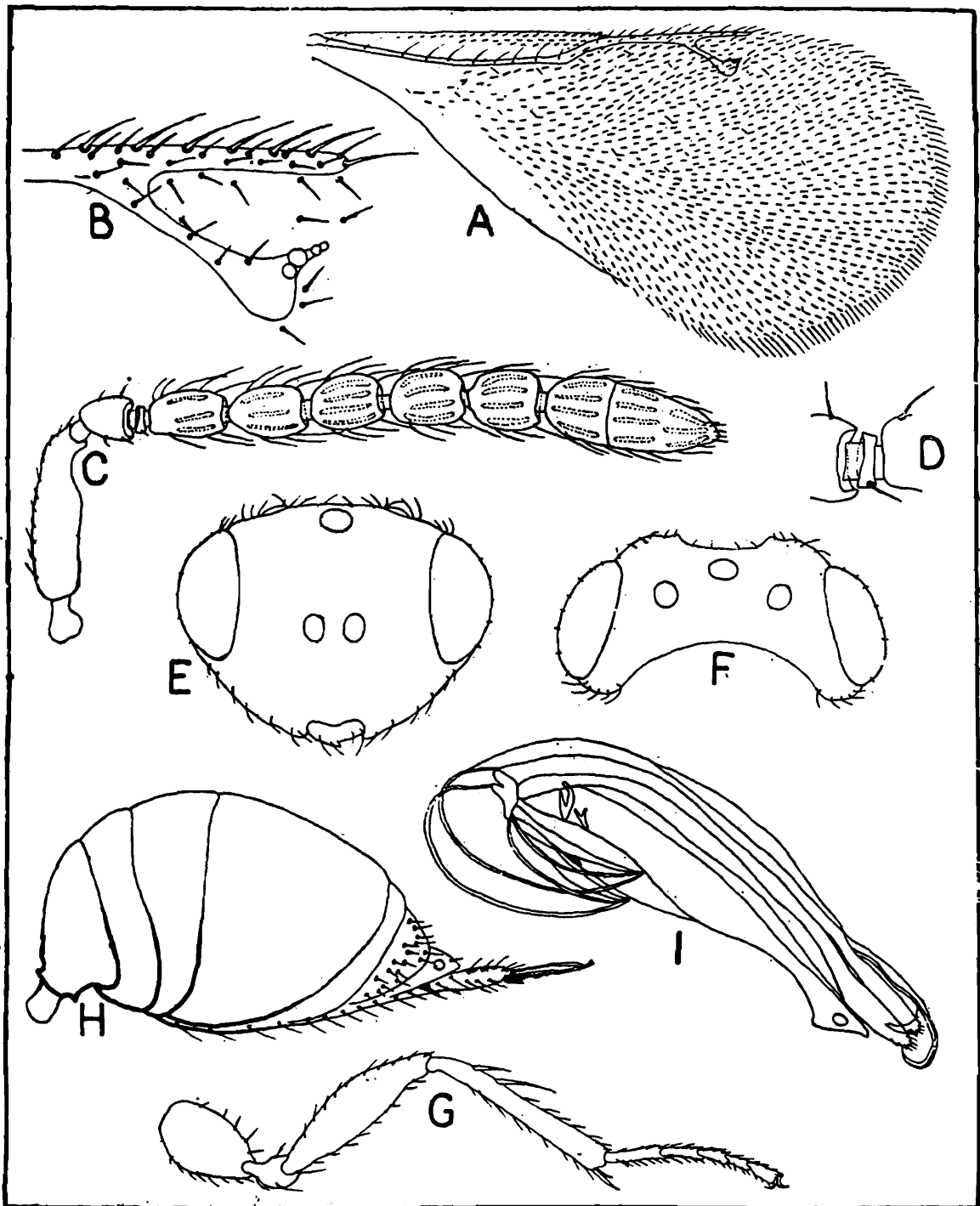


Fig. 7. *Eurytoma karnatakensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen, I. genitalia.

thorax; viewed in front (Fig. 7 E) length to width 74 : 100; eye length to head length 58 : 100; ocellocular space 1.50 times ocellar

diameter ; interocellar space 3.50 times ocellar diameter ; front ocellar space about 1.30 times ocellar diameter. *Antenna* (Fig. 7 C, D) : Segments 10, 1. 1. 1. 5. 2. Scape narrowed apically, 3.46 times longer than thick ; pedicel 0.26 of scape, almost as long as thick ; ring segment distinctly transverse ; funicle submoniliform, segments subequal, first segment distinctly cylindrical, others subglobose ; flagellum with moderately long hairs ; first funicular segment 0.44 of scape, 1.48 times longer than thick ; 2-5 funicular segments subequal to the first ; second funicular segment 1.33 times longer than thick ; club subequal to the preceding 2.33 funicular segments combined ; segments distinctly separated from each other ; first club segment 0.87 of the second funicular segment, transverse, its length about 0.90 of its thickness ; second club segment 1.77 times the first segment, 1.72 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct viewed dorsally length to width 100 : 68 ; viewed laterally length to height 100 : 60 ; pronotum : mesoscutum : scutellum 5 : 10 : 10. *Fore wing* (Fig. 7 A, B) length to width 100 : 48 ; marginal fringe moderately long ; discal ciliation sparse venation *m* : *pm* : *st* 100 : 52 : 48 ; *sm* long, with 10 setae directed forward ; *m* and *pm* with a series of shorter setae. *Hind leg* (Fig. 7 G) : Coxa 1.37 times longer than thick ; femur thickened in the middle, 2.00 times coxa, 3.81 times longer than thick ; tibia very slightly thickens apically, dorsally with two conspicuously long spines near the base, about 1.10 times femur, 7.66 times longer than thick ; tibial spurs 2, shorter one about 0.60 of the long spur, longer spur to metatarsus 3.70 : 6.00 ; tarsus 0.87 of tibia ; metatarsus 0.26 of tibia and 0.30 of tarsus ; second segment 0.66 of metatarsus ; third segment 0.75 of the second segment ; fourth segment 0.83 of the third segment ; fifth tarsal segment subequal to the second segment.

*Abdomen* smooth and shiny ; 0.50 of body ; viewed laterally (Fig. 7 H) length to height 100 : 60 ; petiole short, shorter than hind coxa, very slightly longer than thick ; fourth tergite longest ; ovipositor well exerted beyond the tip of abdomen.

*Male* : Length 1.84 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles reddish ; colour of antennae and legs as in female ; wings hyaline ; veins brownish ; abdominal petiole and abdomen black.

*Head* closely umbilicately punctate; vertex closely pubescent; eyes finely and sparsely pubescent; mandibles bidentate; antennal sockets a little above the middle of face. Head viewed from above (Fig. 8 F) very slightly wider than thorax; viewed in front (Fig. 8 E)

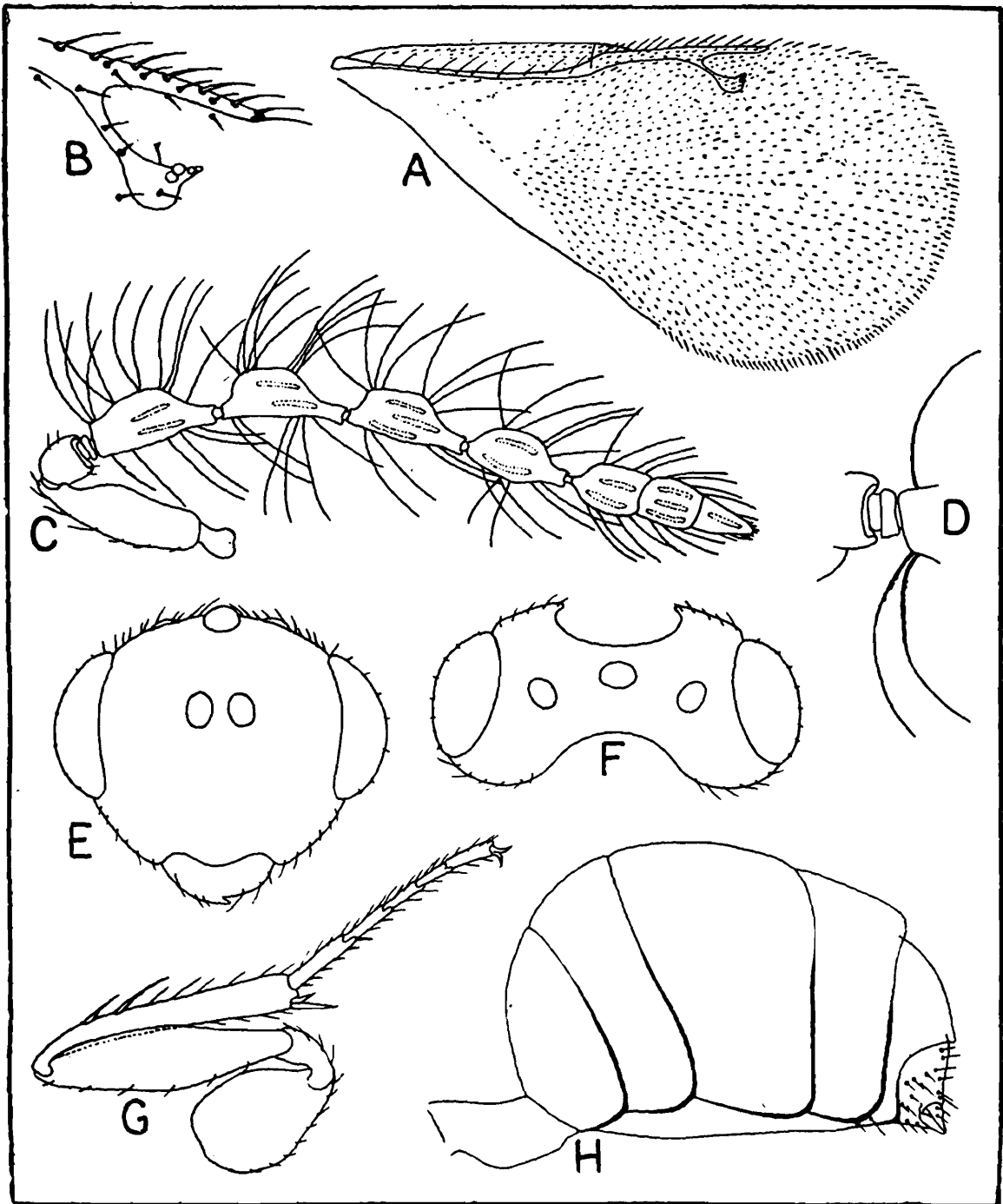


Fig. 8. *Eurytoma karnatakensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen.

length to width 78 : 100 ; eye length to head length 57 : 100 ; ocellocular space 1.60 times ocellar diameter ; interocellar space 3.00 times ocellar diameter ; front ocellar space about 0.85 of ocellar diameter. *Antenna*

(Fig. 8 C, D) : Segments 10, 1. 1. 1. 4. 3. Scape short, stout, 3.33 times longer than thick ; pedicel 0.25 of scape, subglobose, its length about 0.83 of its thickness ; ring segment distinctly transverse ; funicular segments constricted apically into long slender necks ; 1-3 funicular segments subequal ; first funicular segment 0.75 of scape, 2.14 times longer than thick ; second funicular segment 2.50 times longer than thick ; third funicular segment 2.33 times longer than thick ; fourth funicular segment 0.85 of the third segment, 2.00 times longer than thick ; club subequal to the preceding 1.70 funicular segments distinctly separated from each other ; first club segment 0.66 of the preceding funicular segment, 1.33 times longer than thick ; second club segments 0.87 of the first segment, 1.16 times longer than thick ; third club segment conical, obtusely pointed, subequal to the preceding segment in its length, 1.59 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 65 ; viewed laterally length to height 100 : 60 ; pronotum : mesoscutum : scutellum 4 : 9 : 9. *Fore wing* (Fig. 8 A, B) length to width about 100 : 50 ; marginal fringe moderately developed ; discal ciliation sparse ; venation almost as in female ; *sm* long, with moderately long ; 11 setae directed forward ; *m* and *pm* with 14 setae. *Hind leg* (Fig. 8 G) : Coxa 1.37 times longer than thick ; femur thickened in the middle, 1.81 times coxa, 3.63 times longer than thick ; tibia more or less slender, cylindrical, 1.10 times femur, with two long spines dorsally near the base as in female, about 7.00 times longer than thick, tibial spurs two, shorter spur about 0.50 of the long spur, to metatarsus 4.00 : 6.00 ; tarsus about 0.91 of tibia, and subequal to femur ; metatarsus 0.27 of tibia and 0.30 of tarsus ; second segment 0.66 of metatarsus ; third segment 0.87 of the second segment ; fourth segment 0.85 of the third segment ; fifth tarsal segment subequal to the second segment.

*Abdomen* smooth ; petiole matt ; about 0.35 of body ; viewed laterally (Fig. 8H) length to height 100:69 ; petiole subequal to the hind coxa, length to width 100:50 ; third tergite longest ; aedeagus very slightly exerted.

*Holotype* : Female on card (one fore leg and fore wing, antennae and hind legs on slide) : *allotype* male on card (one fore leg and fore

wing, antennae and hind legs on slide) ; *paratype* one female on card (genitalia mounted on slide) ; *paratype* one female on card (genitalia mounted on slide) 17.8. Hogenakal (Eastern Ghats Survey), Coll. M. S. Mani & party. 1.ii.1977 ; *other material examined* : two males on cards, 17.4. Tirupati (Eastern Ghat Survey), Coll. M. S. Mani & party, 25-26.i.1977.

### 7. *Eurytoma kasaragodensis*, sp. nov.

*Female* : Length 2.00 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles black with dark brown teeth ; antenna brown ; thorax black ; fore and middle legs brown except for the black coxae ; hind leg brown except for the black coxa and dark brown femur ; wings hyaline ; veins very light brown ; abdomen black ; ovipositor sheath brownish-black.

*Head* closely umbilicately punctate ; vertex hairy ; eyes very finely and sparsely pubescent ; antennal socket well above the lower orbital border, about in the middle of the face ; scrobe smooth ; front ocellus outside the scrobe. Head viewed (Fig. 9 F) distinctly wider than thorax ; length to width 50:100 ; viewed in front (Fig. 9 E) length to width 75:100 ; eye length to head length 56:100 ; ocellocular space 1.16 times ocellar diameter ; interocellar space 3.00 times ocellar diameter ; front ocellar space equal to the ocellar diameter. *Antenna* (Fig. 9 C, D) : Segments 10, 1.1.1.5.2. Scape 3.33 times longer than thick ; pedicel subglobose, 0.25 of scape, its length 0.89 of its thickness ; ring segment distinctly transverse ; flagellum with long hairs ; funicle submoniliform ; first funicular segment longest, 1.80 times pedicel, 1.28 times longer than thick ; 2-5 funicular segments subequal ; second funicular segment 0.77 of the first segment, 1.16 times longer than thick ; third and fourth funicular segments 1.25 times longer than thick ; fifth funicular segment 1.14 times longer than thick ; club subequal to the preceding 2.30 funicular segments combined ; first club segment 0.87 of the fifth funicular segment, its length 0.85 of its thickness ; second club segment ovate, about 2.00 times the first segment, 1.62 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows complete ; viewed dorsally length to width 100:70 ; pronotum:mesoscutum:scutellum 6:19:8. *Fore wing* (Fig. 9 A, B) length to width 100:52 ; venation *m:pm:st* 100:50:50 ; *sm* long, with 12 setae directed forward ; *m* with 6 and *pm* with 5 setae ; marginal fringe short ; discal ciliation

fine. *Hind wing* to fore wing 79:100 ; length to width 100:24. *Fore leg* (Fig. 9 G) : Coxa 1.62 times longer than thick ; tibia thickens apically, slightly shorter than femur, 4.85 times longer than thick,

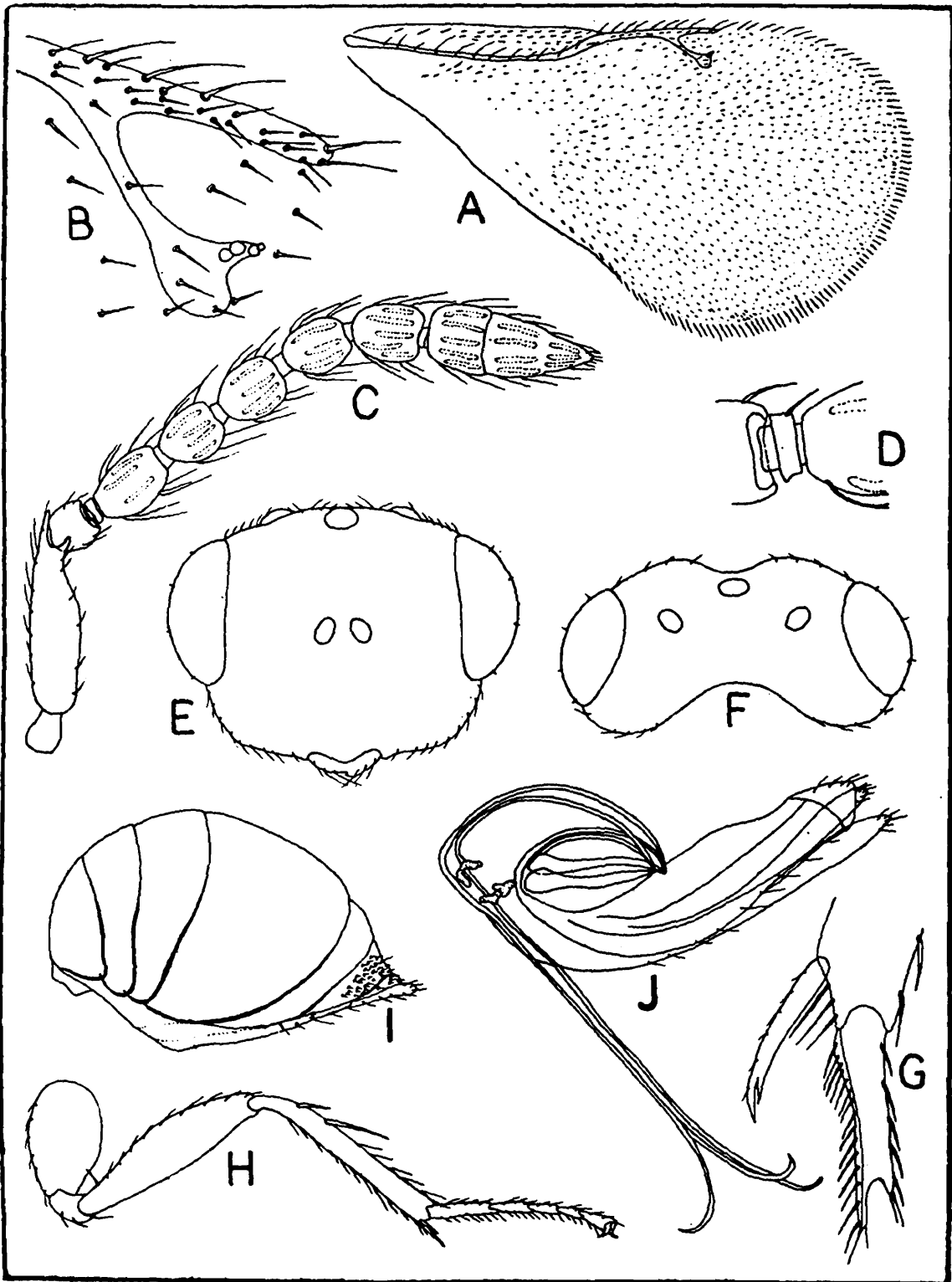


Fig. 9 *Eurytoma kasaragodensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. tip of fore tibia and metatarsus enlarged, H. hind leg, I. abdomen. J. genitalia.

tibial spur bifurcated, tibial spur to metatarsus 6.00:5.00 ; tarsus subequal to tibia ; metatarsus about 0.30 of tibia or tarsus. *Middle*

*leg* : Coxa 1.07 times longer than thick ; femur 2.85 times coxa, 4.16 times longer than thick ; tibia slender, 1.20 times femur, 8.57 times longer than thick, tibial spur to metatarsus 5.00:6.00 ; tarsus 0.83 of tibia ; metatarsus 0.25 of tibia and 0.30 of tarsus. *Hind leg* (Fig. 9 H) : Coxa 1.47 times longer than thick ; femur thickened in the middle, 1.78 time coxa, 3.84 times longer than thick ; tibia more or less slender, slightly longer than femur, 7.42 times longer than thick, with two conspicuously long spines on the dorsal side near base (apical spine longer), tibial spurs unequal, shorter one about 0.60 of the long spur, longer spur to metatarsus 5.00:7.00 ; tarsus 0.80 of tibia ; metatarsus 0.26 of tibia and 0.33 of tarsus.

*Abdomen* smooth 0.55 of body ; viewed laterally (Fig. 9 I) length to height 100:70 ; petiole very short, transverse, much shorter than the hind coxa ; fourth tergite largest ; ovipositor slightly exerted.

*Holotype* : Female on card (legs, fore wing and antenna on slide) ; *paratype* one female on card (genitalia mounted on slide), 14.6. Kasaragod (Western Ghat Survey), Coll. *M.S. Mani and party*, 16.iii.1975.

#### 8. *Eurytoma manpurensis*, sp. nov.

*Female* : Length 2.08 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles brown ; antenna brown except for the yellowish-brown scape ; thorax black ; legs brown except for the dark brown coxae of the hind legs ; wings hyaline ; veins brown ; abdominal petiole and abdomen black : ovipositor sheath brown.

*Head* closely umbilicately punctate ; vertex hairy ; eyes bare ; mandibles bidentate ; antennal sockets slightly above the lower orbital border ; scrobe smooth and shiny ; front ocellus outside the scrobe. Head viewed from above (Fig. 10 F) distinctly wider than thorax ; length to width 56:100 ; viewed in front (Fig. 10 E) length 2.00 times ocellar diameter ; interocellar space 3.66 times ocellar diameter ; front ocellar space 1.33 times oceller diameter. *Antenna* (Fig. 10 C, D) : Segments 10, 1.1.1.6.1. Scape more or less slender, cylindrical, 4.24 times longer than thick ; pedicel 0.36 of scape, 1.42 times longer than thick ; ring joint distinctly transverse ; funicle submoniliform, with long hairs ; first funicular segment longest, 1.25 times pedicel, 1.66

times longer than thick ; 2-5 funicular segments subequal, each about 0.90 of the first segment, 1.50 times longer than thick ; sixth funicular segment shortest, 0.77 of the preceding segment, 1.16 times longer than thick ; club elongate ovate, obtusely pointed, with long hairs, 2.57 times the sixth funicular segment, 2.36 times longer than thick.

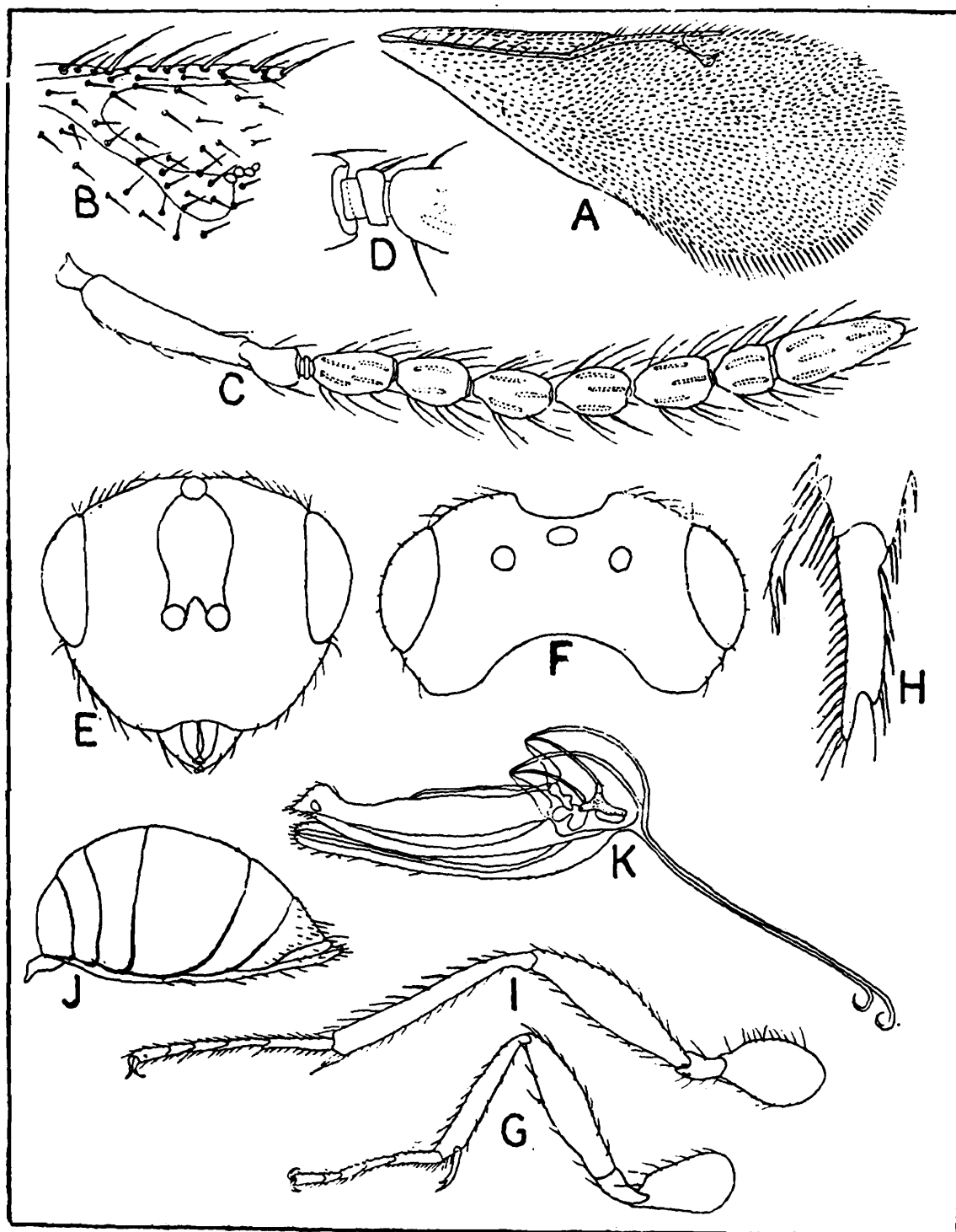


Fig. 10. *Eurytoma manpurensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I. hind leg. J. abdomen.  
K. genitalia.

*Thorax* closely umbilicately punctate ; parapsidal furrows complete ; viewed dorsally length to width 100:59 ; pronotum:mesoscutum:scutellum 6:10:10. *Fore wing* (Fig. 10 A, B) length to width 100:42 ; venation  $m:pm:st$  100:60:60 ;  $sm$  long, with 13 setae directed forward ;  $m$  with 7 and  $pm$  with 6 setae. *Hind wing* to fore wing 73:100 : length to width 100:19. *Fore leg* (Fig. 10 G, H) : Coxa 1.73 times longer than thick ; femur thickened in the middle, 1.53 times coxa, 3.36 times longer than thick ; tibia thickens apically, 0.90 of femur, 600 times longer than thick ; tibial spur bifurcated, tibial spur to metatarsus 100:100 ; tarsus subequal to tibia ; metatarsus about 0.33 of tibia or tarsus. *Middle leg* : Coxa 1.33 times longer than thick ; femur 2.62 times coxa, 4.20 longer than thick ; tibia slender, 1.14 times femur, 9.61 times longer than thick, tibial spur to metatarsus 5.50:7.00 ; tarsus 0.88 of tibia ; metatarsus 0.28 of tibia and 0.31 of tarsus ; *Hind leg* (Fig. 10 I) : Coxa 1.33 times longer than thick ; femur thickened in the middle, 1.91 times coxa, 3.53 times longer than thick ; tibia slender 1.26 times femur, 8.28 times longer than thick, dorsally with about 5 stiff spines, tibial spurs unequal, shorter one about 0.60 of the long spur, longer spur to metatarsus 5.00:8.00 ; tarsus 0.86 of tibia ; metatarsus 0.27 of tibia and 0.32 of tarsus.

*Abdomen* smooth ; 0.58 of body ; viewed laterally (Fig. 10 J) length to height 100 : 52 ; petiole short, shorter than the hind coxa ; fourth tergite largest ; ovipositor slightly exerted.

*Holotype* : Female on card (one set of legs, wings and antenna on slide) ; *paratype* one female on card (genitalia mounted on slide), 4.15. Manpur (Madhya Pradesh), Coll. *M. S. Mani & party*, 30. ix. 1971

#### 9. *Eurytoma poroensis* sp. nov.

*Female* : Length 2.54 mm. General colour of body black ; head black ; eyes and ocelli yellowish-brown ; mandibles reddish ; antenna dark brown except for the brownish-yellow scape ; thorax black ; legs yellowish-brown except for the black coxae and paler tarsal segments ; wings hyaline ; veins very light brown ; abdomen black ; tip of ovipositor reddish-brown.

*Head* closely umbilicately punctate ; vertex hairy ; eyes bare ; antennal sockets very slightly above the middle of face ; scrobe shallow ;

front ocellus outside the scrobe. Head viewed from above (Fig. 11 F) slightly wider than thorax ; viewed in front (Fig. 11 E) length to width 70 : 100 ; eye length to head length 50 : 100 ; ocellular space 2.00 times ocellar diameter ; interocellar space 4.00 times ocellar diameter ; front ocellar space about 1.25 times ocellar diameter. *Antenna* (Fig. 11 C, D) : Segments 10, 1.1.1.5.2. Scape thickened in the basal 0.60, 5.00

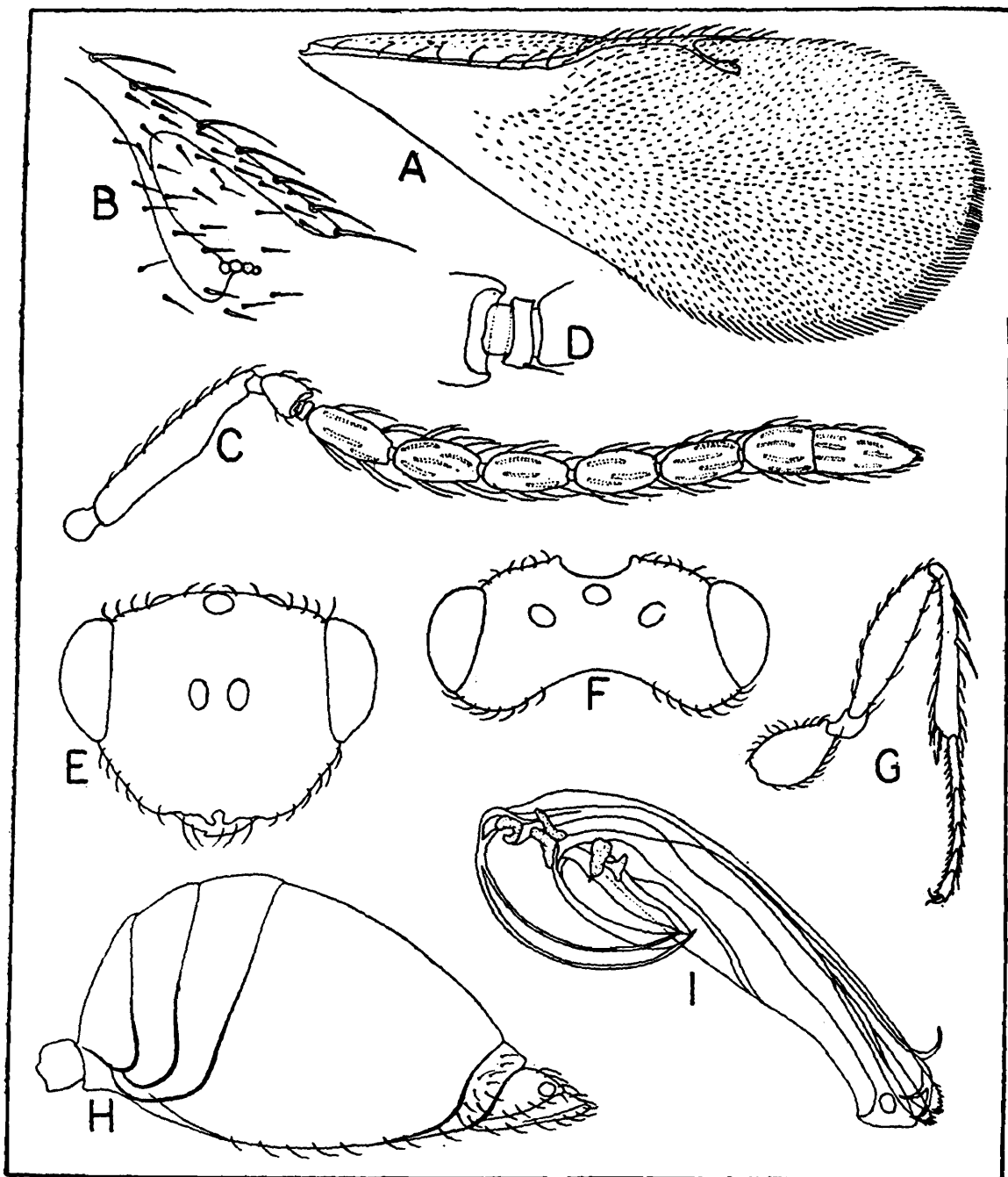


Fig. 11. *Eurytoma poroensis*, sp. nov. Female.

- A. fore wing, B. stigmal vein, C. antenna, D. anellus,  
 E. head in front view, F. head viewed from above,  
 G. hind leg, H. abdomen, I. genitalia.

times longer than thick ; pedicel 0.20 of scape, as long as thick ; ring segment distinctly transverse ; flagellum with moderately long hairs ;

funicular segments elongate oval ; first funicular segment longest, 2.33 times pedicel, 2.33 times longer than thick ; 2-5 funicular segments subequal ; second funicular segment very slightly shorter than the first segment, 2.00 times longer than thick ; club subequal to the preceding 2 funicular segments combined ; segments distinctly separated from each other ; first club segment 0.83 of the second funicular segment, 1.35 times longer than thick ; second club segment 1.60 times the first segment, 2.28 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 62 ; viewed laterally length to height 100 : 54 ; pronotum : mesoscutum : scutellum 4 : 7 : 7, *Fore wing* (Fig. 11 A, B) length to width 100 : 41 ; marginal fringe moderately long ; discal ciliation fine ; venation *m* : *pm* : *st* 100 : 67 : 54 ; *sm* long, with 10 setae directed forward ; *m* and *pm* with 12 setae *Hind leg* (Fig. 11 G) : Coxa 1.47 times longer than thick ; femur thickened in the middle, 2.00 times coxa, 4.00 times longer than thick ; tibia thickens apically, dorsally with three long spines (third spine longest), very slightly longer than femur, 7.25 times longer than thick, tibial spurs 2, shorter one about 0.50 of the long spur, longer spur to metatarsus 6.00 : 9.00 ; tarsus 0.93 of tibia ; metatarsus 0.31 of tibia and 0.33 of tarsus ; second segment 0.66 of metatarsus ; third segment 0.66 of the second segment ; fourth segment 0.75 of the third segment ; fifth tarsal segment 1.66 times the preceding segment.

*Abdomen* smooth ; 0.41 of body ; viewed laterally (Fig. 11 H) length to height 100:58 ; petiole short, shorter than the hind coxa, almost as long thick ; fourth tergite longest ; ovipositor slightly exerted.

*Holotype* : Female on card (one fore leg, hind legs, fore wings and antennae on slide) ; *paratype* one female on card (genitalia mounted on slide), 16.4. Poro North (North-Bengal Survey), Coll. *M.S. Mani & party*, 6-24.iv.1976.

#### KEY TO SPECIES OF *EURYTOMA*

- |  |       |   |
|--|-------|---|
| 1. Vein <i>pm</i> distinctly longer than <i>st</i>   | ..... | 2 |
| Vein <i>pm</i> not longer, but subequal to <i>st</i> | ..... | 3 |

2. Body size large, over 3 mm in length ; ocellocular space sub-equal to ocellar diameter ..... *E. parasae* Gahan\*
- Body smaller, not exceeding 3 mm in length, but usually about 2.50 mm ; ocellocular space about 2.00 times the ocellar diameter ..... *E. poroensis*, sp. nov.
3. Vein *m* longer than *pm* ..... 4  
 Vein *m* subequal to *pm* ..... 12
4. Vein *m* 2.00 times *pm* ..... 5  
 Vein *m* less than 2.00 times *pm* ..... 11
5. Body over 2.50 mm long ..... 6  
 Body not much longer than 2 mm ..... 8
6. Antennal club 2-segmented ; hind tibial spur to metatarsus ratio 6.00:10.00 ; scape at least 3.42 times longer than thick...  
*E. monemae* Ruschka\*
- Antennal club 3-segmented, though the second suture may be faint ..... 7
7. Antennae entirely pale testaceous ; vein *m* about 1.50 times *st* ..... *E. setitibia* Gahan
- Antennae brownish-black, except for the honey-yellow scape ; vein *m* 1.25 times *st* ..... *E. sabiae* Mani
8. Club more or less distinctly 3-segmented *E. nesiotus* Crawford  
 Club less than three segmented, either two segmented or unsegmented ..... 9
9. Club unsegmented ; ocellocular space 2.00 times ocellar diameter ..... *E. manpurensis*, sp. nov.  
 Club two segmented ..... 10
10. Third abdominal tergite largest ; longer hind tibial spur to metatarsus 5.00:7.00 ; ocellocular space less than 1.20 times ocellar diameter ..... *E. kasaragodensis*, sp. nov.
- Fourth abdominal tergite largest ; longer hind tibial spur to metatarsus 4.00:6.00 ; ocellocular space 1.50 times ocellar diameter ..... *E. karnatakensis*, sp. nov. Female

11. Third abdominal tergite largest.....

*E. karnatakensis*, sp. nov. Male

12. Frons between the antennal groove and the eye margins longitudinally reticulate ; club distinctly three segmented...

*E. hindupurensis* Gahan

Frons and face rugosely sculptured. club two segmented...

*E. tatipakensis* Kurian

10. ***Eurytomocharis coromandalicus***, sp. nov.

*Male* : Length 1.50 mm. General colour of body black ; head black ; eyes and ocelli reddish-brown ; antenna dark brown ; thorax black ; fore legs very dark brown except for the brown tibia and yellowish-brown tibial spur and tarsal segments ; middle and hind legs dark brown except for the brownish tibial spur and tarsal segments, and very dark brown coxae ; wings hyaline ; veins brownish ; abdominal petiole and abdomen black.

*Head* : Vertex closely umbilicately punctate ; face and gena finely longitudinally striate ; vertex hairy ; eyes bare ; antennal sockets in the middle of face ; scrobe moderately deep and smooth ; front ocellus outside the scrobe. Head viewed from above (Fig. 12 F) distinctly wider than thorax ; viewed in front (Fig. 12 E) length to width 74 : 100 ; eye length to head length 57 : 100 ; ocellular space 1.80 times ocellar diameter ; interocellar space 3.50 times ocellar diameter ; front ocellar space 1.20 times ocellar diameter. *Antenna* (Fig. 12 C, D) : Segments 10, 1.1.1.5.2. Scape slightly reduced apically, 4.00 times longer than thick ; pedicel 0.25 of scape, subglobose, its length about 0.85 of its thickness ; ring segment distinctly transverse ; funicular segments constricted at their apices, stems of the segments short and stout ; funicular and club segments with whorls of long setae ; first funicular and club segments with whorls of long setae ; first funicular segment longest, 0.75 of scape, 2.14 times longer than thick ; second funicular segment 0.91 of the first segment, about 2.00 times longer than thick ; third and fourth funicular segments subequal to the second segment ; fifth funicular segment 0.82 of the second segment, 1.73 times longer than thick ; first club segment subequal to the preceding funicular segment, 1.73 times longer than thick ; second club segment subequal to the first segment in its length, 2.25 times longer than thick ; club subequal to the preceding 1.75 funicular segments combined.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 63 ; viewed laterally length to width 100 : 63 ; viewed laterally to height 100 : 63 ; pronotum : mesoscutum : scutellum 8 : 15 : 16. *Fore wing* (Fig. 12A B) length to

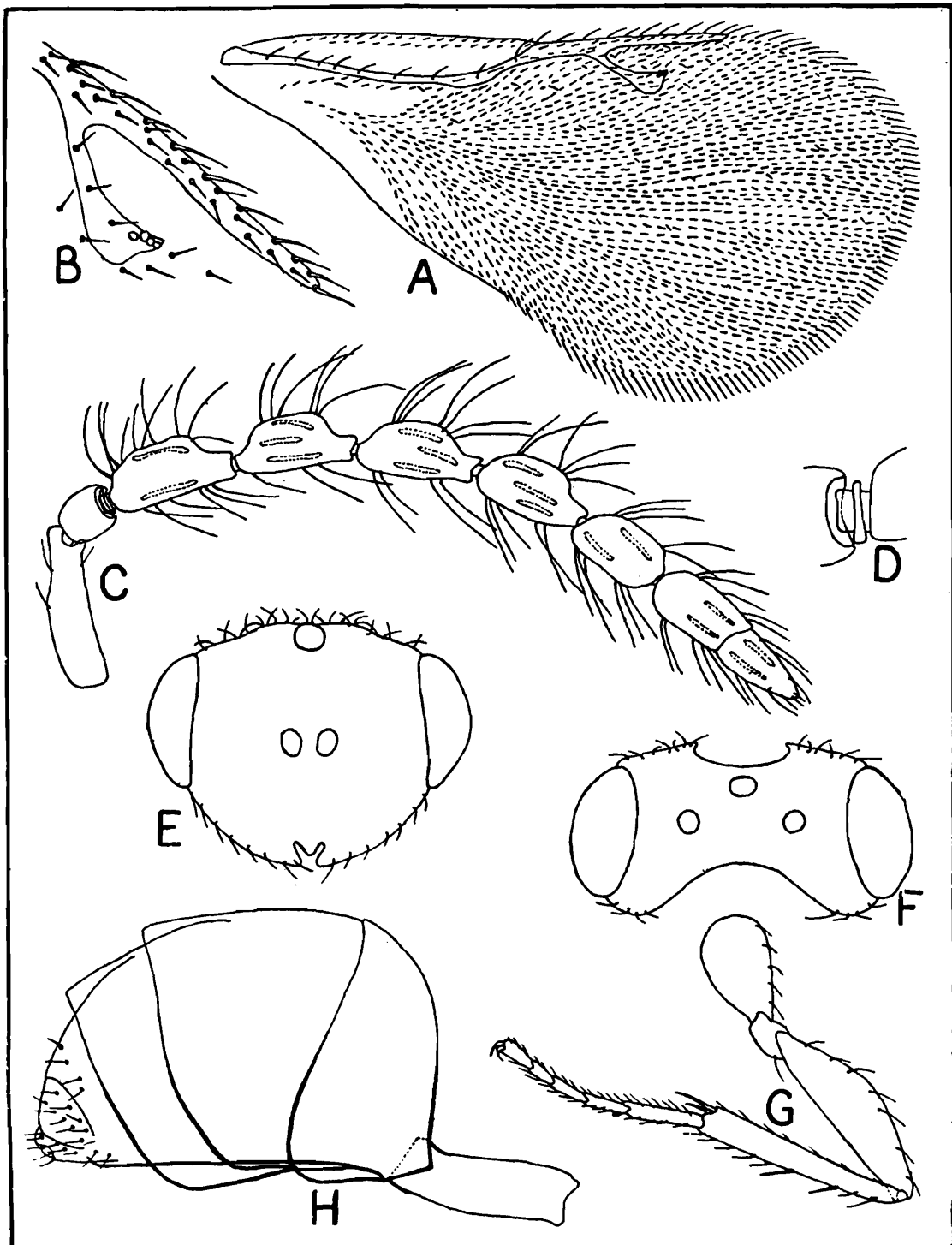


Fig. 12. *Eurytomocharis coromandalicus*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen,

width 100 : 50 ; marginal fringe moderate ; venation  $m : pm : st$  100 : 160 : 90 ;  $sm$  long, with 11 setae directed forward ;  $m$  and  $pm$  with

11 setae. *Hind leg* (Fig. 12 G) : Coxa 1.45 times longer than thick ; femur thickened in the middle, 4.00 times longer than thick ; tibia slightly thickens apically, dorsally with 2 stiff bristles, 1.12 times femur, about 7.00 times longer than thick, tibial spurs 2, shorter one about 0.60 of the long spur, longer spur to metatarsus 4.00 : 6.00 ; tarsus subequal to tibia ; metatarsus 0.33 of tibia or tarsus ; second segment 0.66 of metatarsus ; third segment 0.75 of the second segment ; fourth segment 0.73 of the third segment ; fifth tarsal segment subequal to the third segment.

*Abdomen* : Smooth ; petiole matt, more than twice as long as the hind coxa, length to width 100 : 34, petiole to abdomen 43 : 100 ; abdomen (including petiole) 0.44 of body ; viewed laterally (Fig. 12H) length to height 100 : 70 ; second tergite longest.

*Holotype* : Male on card, 5.21. Tanjore-Vannar Bank, Coll. M. S. Mani & party, 7. iv. 1972 ; *paratype* one male on slide, 9. 15. Thanjavur (Coromandel coast, Coll. M.S. Mani and party, 5. v. 1973.

#### 11. *Eurytomocharis dubeyi*, sp. nov.

*Male* : Length 2.42 mm. General colour of body brownish-black to black ; head black ; eyes and ocelli black ; mandibles black except for the reddish-brown teeth ; antenna black ; thorax black ; fore leg brownish-black except for the brown tibia and brownish tibial spur and tarsus ; middle and hind legs black except for the dark brown base and tip of tibia and brownish tibial spur and tarsus ; wings hyaline ; veins brownish ; abdomen brownish-black to black ; petiole black.

*Head* : Frons and gena longitudinally striate, otherwise head closely umbilicately shallowly punctate ; vertex pubescent ; eyes bare ; antennal sockets a little below the middle of face ; scrobe deep, coarsely punctate, front ocellus outside the scrobe. Head viewed from above (Fig. 13 F) slightly wider than thorax ; viewed in front (Fig. 13 E) length to width 76 : 100 ; eye length to head length 55 : 100 ; ocellocular space 1.25 times ocellar diameter ; interocellar space 4.00 times ocellar diameter ; front ocellar space 1.30 times ocellar diameter. *Antenna* (Fig. 13 C, D) : Segments 10, 1.1.1.5.2 Scape

short, stout subapically, 3.15 times longer than thick; pedicel subglobose, 0.25 of scape, as long as thick; ring segment distinctly transverse; funicular segments constricted at their apices; funicular and club segments with whorls of long hairs; first funicular segment

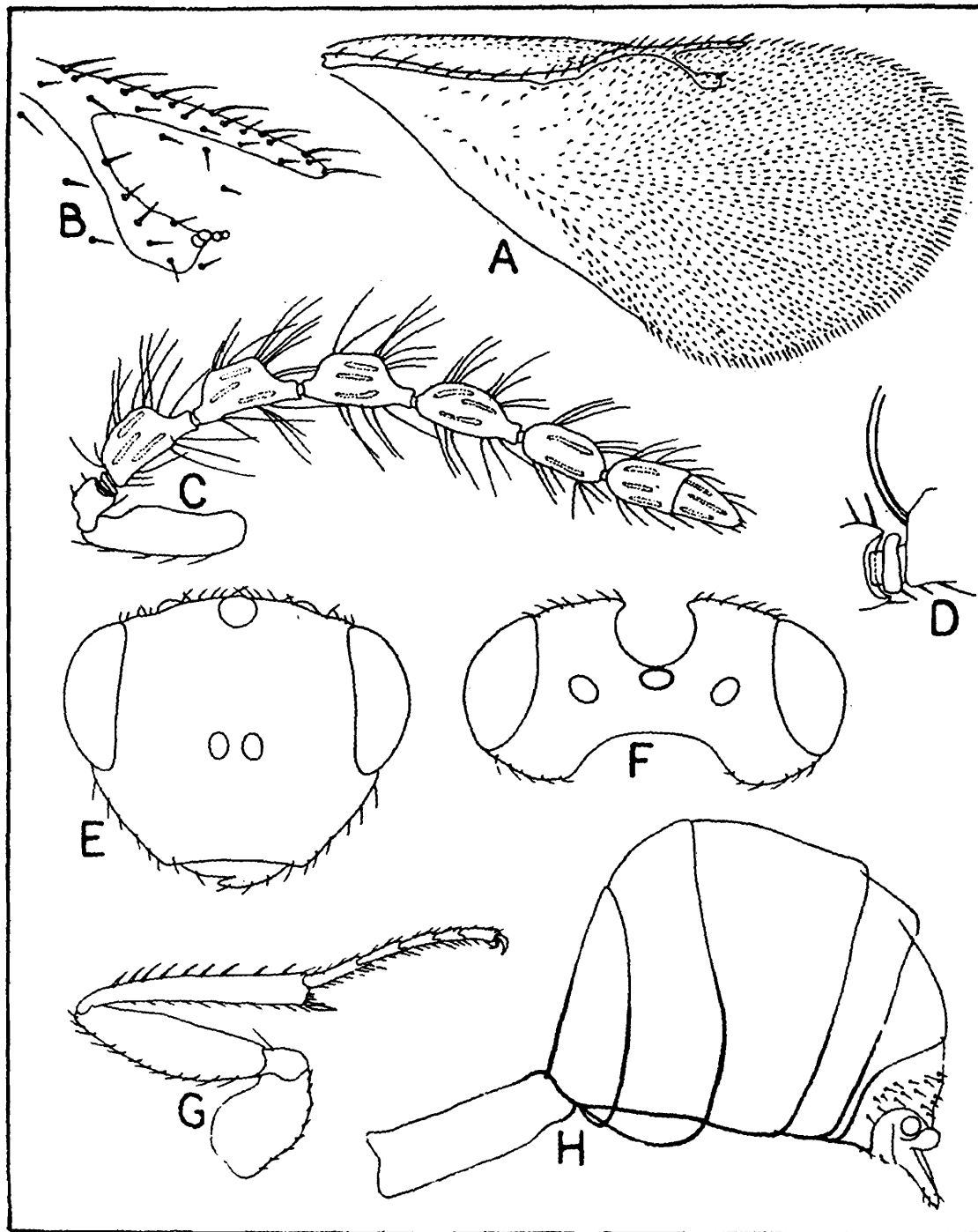


Fig. 13. *Eurytomocharis dubeyi*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna. D. anellus, E. head in front view, F. head viewed from above, G. hjn leg. H. abdomen

0.66 of scape, 2.00 times longer than thick; second funicular segment subequal to the first segment; third funicular segment 1.12 times the

first segment, 2.04 times longer than thick ; fourth funicular segment subequal to the preceding segment in its length, 2.12 times longer than thick ; fifth funicular segment 0.82 of the fourth segment, about 2.00 times longer than thick ; first club segment 0.78 of the preceding funicular segment, 1.44 times longer than thick ; second club segment gradually reduced apically, subequal to the first segment, 1.57 times longer than thick ; club subequal to the preceding 1.50 funicular segments combined.

*Thorax* closely umbilicately shallowly punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 66 ; viewed laterally length to height 100 : 68 ; pronotum : mesoscutum : scutellum 5 : 12 : 12. *Fore wing* (Fig. 13 A, B) length to width 100 : 50 ; marginal fringe short ; venation  $m : pm : st$  100 : 106 : 81 ;  $sm$  long, with 12 setae directed forward ;  $m$  and  $pm$  with 11 short setae. *Hind leg* (Fig. 13 G) : Coxa 1.40 times longer than thick ; femur slightly thickened in the middle, 3.43 times longer than thick ; tibia slightly thickens apically, dorsally with a row of stiff bristles, 1.16 times tibia, 7.00 times longer than thick, tibial spurs 2, shorter one about 0.55 of the long spur, longer spur to metatarsus 60 : 100 ; tarsus 0.89 of tibia ; metatarsus 0.5 of tibia and 0.28 of tarsus ; second segment 0.78 of metatarsus ; third segment 0.82 of the second segment ; fourth segment 0.77 of the third segment ; fifth tarsal segment slightly longer than the third segment.

*Abdomen* smooth ; including petiole 0.51 of the body ; petiole matt, as long as the hind coxa, length to width 100 : 33, petiole to abdomen 51 : 100 ; abdomen viewed laterally (Fig. 13 H) length to width 100 : 83 ; third apparent tergite distinctly longer than the second.

*Holotype* : Male on pin, *paratypes* 6 males on pin (head, legs, wings and antennae of one example are mounted on slide), 9.2. Nilambur (Malabar), Coll. Mani & party, 8.iv.1973.

## 12. *Eurytomocharis karalensis*, sp. nov.

*Female* : Length 2.04 mm ; length of fore wing 1.40 mm ; length of hind wing 1.10 mm ; length of abdomen 1.00 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles dark brown ; antenna dark brown except for the brown scape ; thorax

black ; fore leg brown except for the brownish-black coxae and dark brown femur ; middle leg dark brown except for the brown base of femur, base and tip of tibia, and very light brown tarsus ; hind leg very dark brown except for the brown base and tip of tibia and very light brown tarsus ; wings hyaline ; veins brown ; abdomen black ; ovipositor sheath brownish-black.

*Head* closely umbilicately shallowly punctate ; vertex with a few long setae ; eyes very finely and sparsely pubescent ; face convex ; antennal sockets for above the lower orbital border, more or less in the middle of face ; scrobe not very deep, smooth and shiny ; median ocellus outside the scrobe. Head viewed from above (Fig. 14F) very slightly wider than thorax ; length to width 56 : 100 ; viewed in front (Fig. 14 E) length to width 76 : 100 ; eye length to head length 57 : 100 ; ocellocular space equal to the ocellar diameter ; interocellar space 3.66 time ocellar diameter ; front ocellar space 1.33 times ocellar diameter. *Antenna* (Fig. 14 C, D) : Segments 10, 1.1.1.5.2. Scape long, more or less slender, 4.00 times longer than thick ; pedicel 0.35 of scape, 1.40 times longer than thick ; funicular segment with long hairs ; first funicular segment longest, 1.28 times pedicel, 1.60 times longer than thick ; 2-5 funicular segments subglobose and well separated by constriction ; 2-4 funicular segment subequal, each about 0.77 of the first and subequal to the pedicel, 1.09 times longer than thick ; fifth funicular segment slightly longer than the fourth, 1.05 times longer than thick ; club with long hairs ; first club segment subequal to the preceding funicular segment, transverse, its length very slightly less than its thickness ; second club segment tapering apically, 1.75 times the first, 1.85 times longer than thick ; club subequal to the preceding 2.50 funicular segments combined.

*Thorax* closely shallowly umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 70 ; pronotum : mesoscutum : scutellum 5.5 : 9 : 11. *Fore wing* (Fig. 14 A, B) length to width 100 : 50 ; marginal fringe short ; venation *m* : *pm* : *st* 100 : 88 : 100 ; *sm* long with 11 setae directed forward ; *m* with 4 and *pm* also with 4 setae. *Hind Wing* to fore wing 79 : 100 ; length to width 100 : 25. *Fore leg* : Coxa 1.25 times longer than thick ; femur thickened in the middle, 1.70 times coxa, 3.40 times longer than thick ; tibia thickens apically ; subequal to femur, 5.33 times longer than thick ; tibial spur bifurcated, tibial spur to metatarsus 5 : 6 ; tarsus equal to tibia ;

metatarsus 0.31 of tibia or tarsus. *Middle leg*: Coxa as long as thick ; femur dilated apically, 3.00 times coxa, 4.50 times longer than thick ; tibia slender, 1.22 times femur, 8.14 times longer than thick ;

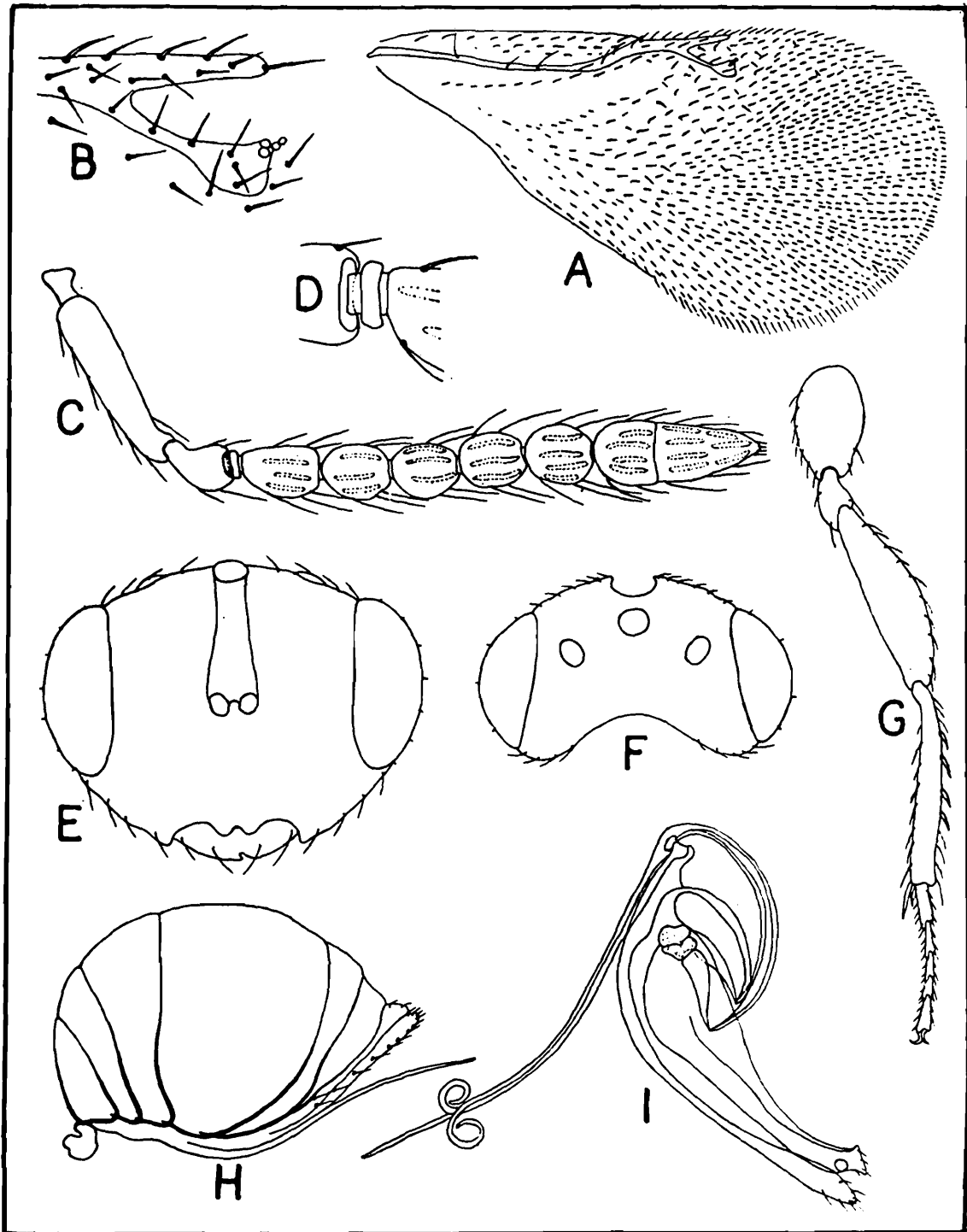


Fig. 14. *Eurytomocharis keralensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view. F. head viewed from above, G. hind leg, H. abdomen, I. genitalia.

tibial spur to metatarsus 4.50 : 5.00 ; tarsus 0.81 of tibia ; metatarsus 0.22 of tibia and 0.27 of tarsus. *Hind leg* (Fig. 14 G) : Coxa 1.50 times longer than thick ; femur thickened in the middle, 1.91 times coxa,

3.83 times longer than thick ; tibia slender, very slightly longer than femur, 8.00 times longer than thick, tibial spur to metatarsus 5.00 : 4.50 ; tarsus 0.70 of tibia ; metatarsus 0.18 of tibia and 0.26 of tarsus.

*Abdomen* smooth ; petiole distinctly shorter than the hind coxa, almost as long as wide ; 0.46 of body ; fourth apparent tergite (sixth of Bugbee) longest ; when viewed from side (Fig. 14 H) nearly as long as wide ; ovipositor slightly exerted.

*Holotype* : Female on card (one set of legs, wings and one antenna on slide), *paratype* one female on card (abdomen used for taking out the ovipositor), 14.6 Kasaragod (Western Ghats Survey) Coll. M.S. Mani & party, 16.iii.1975.

This species runs in Bugbee's key<sup>1</sup> to couplet No. 8. It differs from the two species contained in the couplet by its much larger size (body 2.04 mm) and legs not yellow.

### 13. **Eurytomocharis nilamburensis**, sp. nov.

*Male* : Length 1.76 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles dark brown ; antenna brownish-black except for the black scape ; thorax black ; fore leg brown except for the brownish-black coxa and femur ; middle leg very dark brown except for the black coxa and brown base and tip of femur and tibia and light brown tarsus ; hind leg black except for the brown base and tip of tibia and light brown tarsus ; fore wings obscurely infumated brown basally ; hind wings infumated light-brown ; veins dark brown ; abdominal petiole and abdomen black and shiny.

*Head* closely umbilicately punctate ; gena and clypeus longitudinally striate ; vertex hairy ; eyes bare ; antennal sockets far above the lower orbital border ; scrobe shallow and dull ; front ocellus outside the scrobe ; mandibles bidentate. Head viewed from above (Fig. 15 F) distinctly wider than thorax ; length to width about 53 : 100 ; viewed in front (Fig. 15 E) length to width 71 : 100 ; eye length to head length 59 : 100 ; ocellocular space 1.66 times ocellar diameter ; interocellar space about 3.33 times ocellar diameter ; front

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1. 1966, *The Amer. Midland Nat.*, 75(2) : 371-373

ocellar space subequal to the ocellar diameter. *Antenna* (Fig. 15 C, D) : segments 10, 1. 1. 1. 5. 2. Scape conspicuously reduced apically,

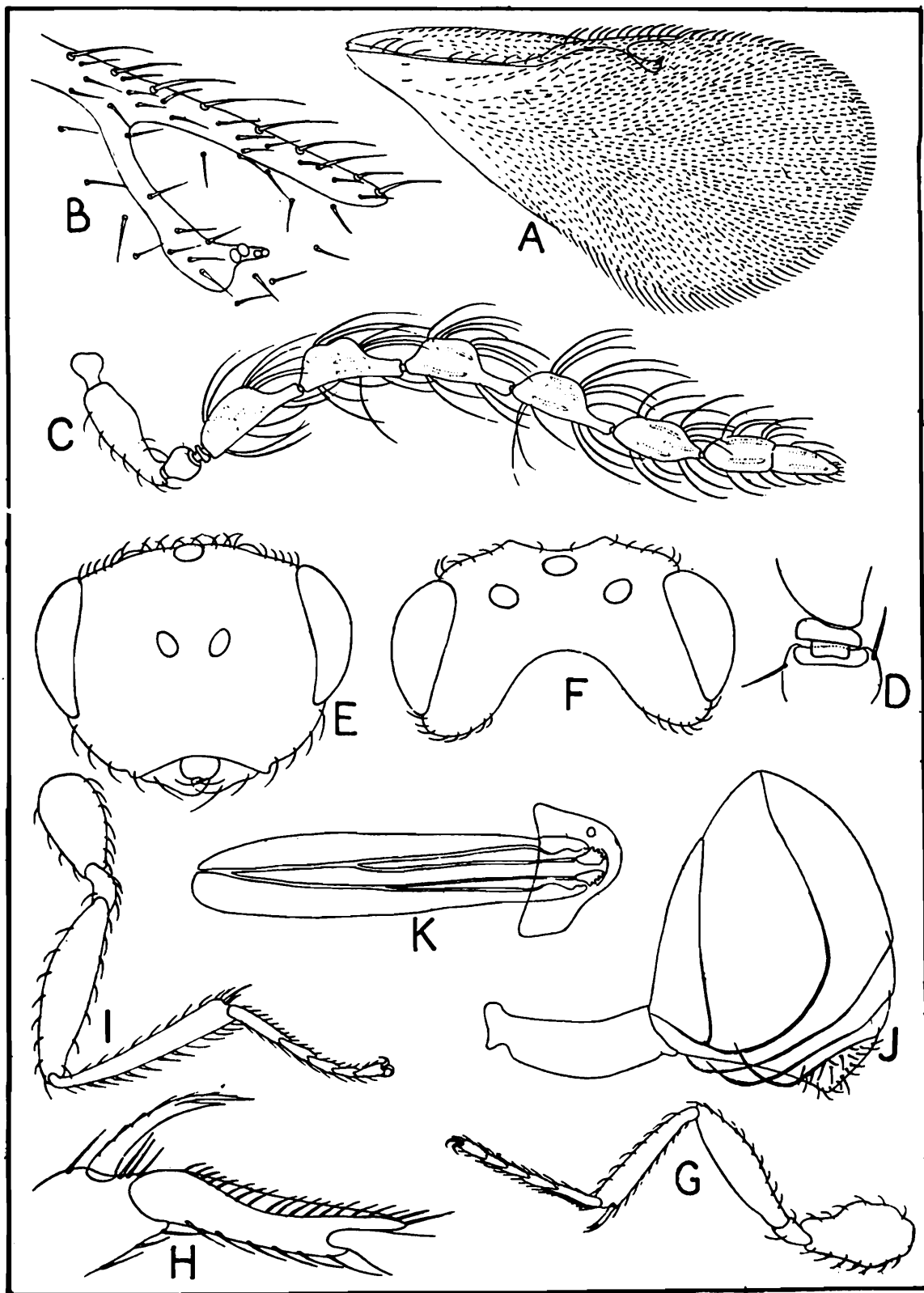


Fig. 15 *Eurytomocharis nilamburensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I. hind leg, J. abdomen. K. genitalia.

obclavate, 3.00 times longer than thick; pedicel short, 0.25 of scape, subglobose, its length 0.85 of its thickness; funicular segments modose,

with long stems ; funicular and club segments with whorls of long hairs ; first funicular segment longest, 3.50 times the pedicel and 0.87 of scape, 2.62 times longer than thick ; 2-4 funicular segments subequal, each about 0.95 of the first segment, 2.50 times longer than thick ; fifth funicular segment 0.90 of the fourth segment, 2.25 times longer than thick ; first club segment 0.77 of the fifth funicular segment, 2.00 times longer than thick ; second club segment subequal to the first segment, conical, 2.41 times longer than thick ; club subequal to the preceding 1.40 funicular segments combined.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 58 ; pronotum : mesoscutum : scutellum 9 : 11 : 11. *Fore wing* (Fig. 15 A, B) length to width 100 : 50 ; venation *m* : *pm* : *st* 100 : 89 : 67 ; *sm* long, with 11 setae directed forward ; *m* with 6 and *pm* also with 6 setae. *Hind Wing* to fore wing 73 : 100 ; length to width 100 : 25. *Fore leg* (Fig. 15 G, H) ; Coxa 1.68 times longer than thick femur thickened apically, 1.25 times coxa, 3.44 times longer than thick ; tibia more or less slender, equal to the femur, 5.71 times longer than thick, tibial spur bifurcated, tibial spur to metatarsus 100 : 100 ; tarsus 1.15 times tibia ; metatarsus 0.35 of tibia and 0.30 of tarsus. *Middle leg* ; Coxa 1.42 times longer than thick ; femur thickened in the middle, 2.20 times coxa, 4.40 times longer than thick ; tibia slender, 1.22 times femur, 9.00 times longer than thick, tibial spur to metatarsus 6.00 : 7.00 ; tarsus 0.81 of tibia and subequal to femur ; metatarsus 0.25 of tibia and 0.31 of tarsus *Hind leg* (Fig. 15 I) : Coxa 1.55 times longer than thick ; femur thickened in the middle, slightly less than 2.00 times coxa, 3.85 times longer than thick ; tibia thickens apically, 1.11 times femur, 7.50 times longer than thick, tibial spurs unequal, shorter one about 0.50 of the long spur, longer tibial spur to metatarsus 5.00 : 9.00 ; tarsus 0.83 of tibia ; metatarsus 0.30 of tibia and 0.36 of tarsus.

*Abdomen* : Short and smooth ; 0.52 of body ; petiole long, 2.00 times the hind coxa, 3.00 times longer than thick, petiole to abdomen 80 : 100 ; abdomen viewed laterally (Fig. 15 J) length to height 79 : 100 ; second and third tergites nearly equal.

*Holotype* : Male on pin ; *paratype* 10 males on pin (genitalia wings, legs and antenna of two specimens on slide), 9.2 Nilambur (Malabar), Coll *M. S. Mani & party*, 11.iv.1973.

**14. Eurytomocharis pechipariensis, sp. nov.**

*Male* : Length 2.30 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles reddish-brown except for the black teeth ; antenna brown except for the brownish-black scape which is brown basally ; thorax black ; fore leg brown except for the black coxa, yellowish-brown tip of femur, base and tip of tibia and tarsus ; middle leg dark brown except for the black coxa and yellowish tarsus ; hind leg very dark brown except for black coxa, yellowish-brown tip of femur, base and tip of tibia and yellowish tibial spur and tarsus wings hyaline ; veins yellowish-brown ; abdomen black ; aedeagus brown ; abdominal petiole black.

*Head* closely, umbilicately shallowly punctate ; vertex densely pubescent ; eyes finely and sparsely pubescent ; antennal sockets a little above the middle of face ; scrobe well impressed and matt ; front ocellus outside the scrobe ; mandibles bidentate. Head viewed from above (Fig. 16F) slightly wider than thorax ; viewed in front (Fig. 16 E) length to width 76 : 100 ; eye length to head length 59 : 100 ; ocellocular space 1.55 times ocellar diameter ; interocellar space 2.55 times ocellar diameter ; front ocellar space almost equal to the ocellar diameter. *Antenna* (Fig. 16 C, D) : Segments 10,1.1.1.5.2. Scape somewhat thickened above the base, slightly reduced apically, short, stout, 3.00 times longer than thick ; pedicel 0.25 of scape, subglobose, its length 0.93 of its thickness ; ring segment distinctly transverse ; funicular segments constricted at their apices ; funicular and club segments with whorls of long hairs ; first funicular segment longest, 0.75 of scape, 2.25 times longer than thick ; second funicular segment about 0.90 of the first segment, 2.00 times longer than thick ; third and fourth funicular segments subequal to the second segment in their lengths more than 2.00 times their thickness ; fifth funicular segment 0.87 of the preceding segment, 2.00 times longer than thick ; first club segment 0.78 of the preceding funicular segment, 1.57 times longer than thick ; second club segment conical, subequal to the first segment in its length, 1.83 times longer than thick ; club subequal to the preceding 1.44 funicular segments combined.

*Thorax* closely umbilicately shallowly punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 60 viewed laterally length to height 100 : 64 ; pronotum : mesoscutum : scutellum 6 : 11 : 13. *Fore wing* (Fig. 16 A, B) length to width 100 : 46 ; marginal

fringe short ; venation  $m : pm : st$  100 : 100 : 90 ;  $sm$  long, with 12 short setae directed forward,  $m$  and  $pm$  with 15 short setae. *Hind leg* (Fig. 16 G). Coxa 1.33 times longer than thick ; femur thickened

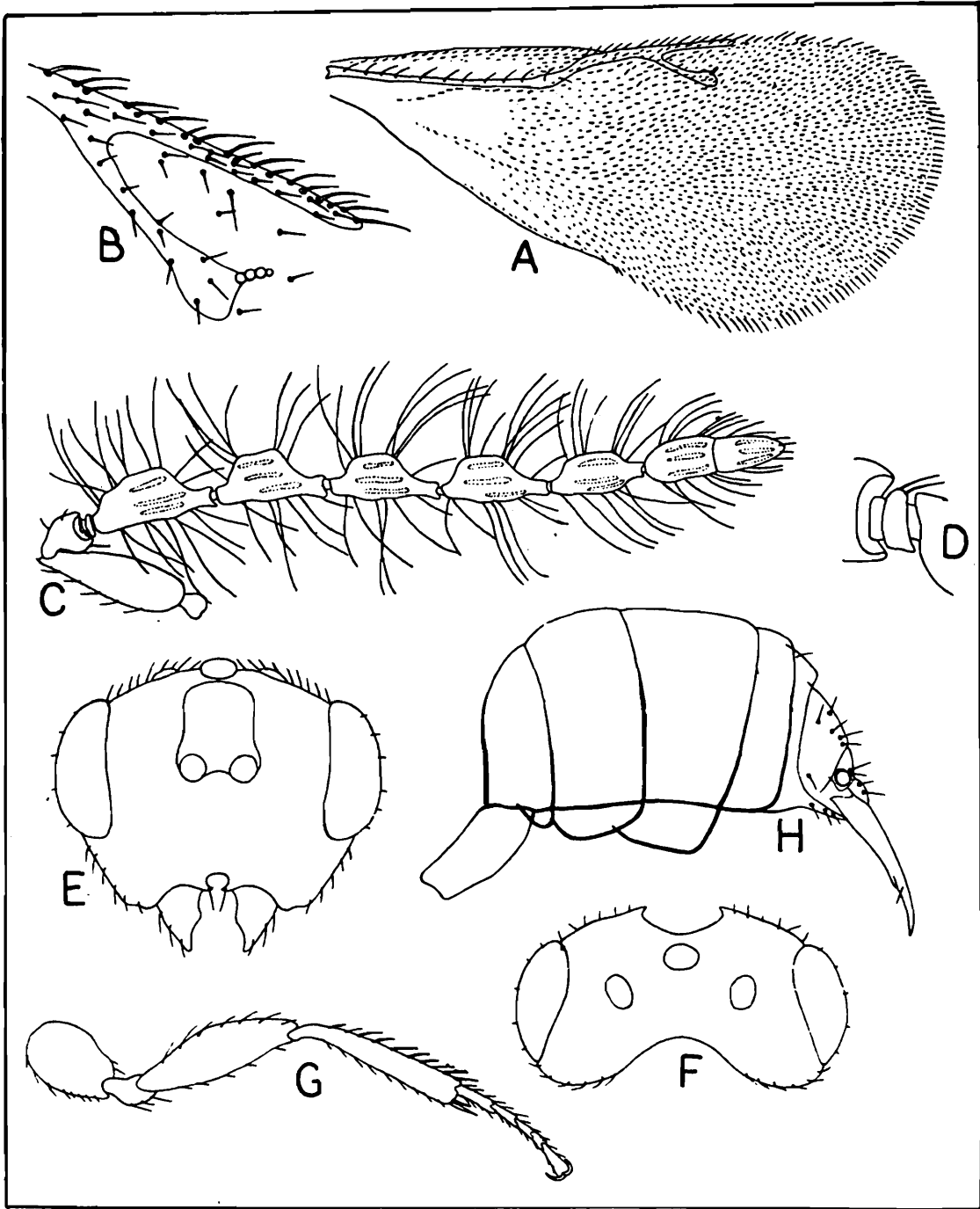


Fig. 16. *Eurytomocharis peehipariensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna. D. anellus, E. head in front view, F. head viewed from above, G. hind leg. H. abdomen

in the middle, 3.25 times longer than thick ; tibia more or less slender, cylindrical, dorsally with a row of stiff bristles 1.07 times femur, 6.36 times longer than thick, tibial spurs 2, shorter spur about 0.66 of the long spur, longer spur to metatarsus 5.00 : 6.00 ; tarsal segments very

stout ; tarsus 0.78 of tibia ; metatarsus 0.21 of tibia and 0.27 of tarsus ; second segment 0.75 of metatarsus , third segment 0.77 of the second segment ; fourth segment 0.85 of the third segment ; fifth tarsal segment subequal to the metatarsus.

*Abdomen* smooth ; petiole matt, nearly equal to the hind coxa, length to width 100 : 46, petiole to abdomen 31 : 100 ; abdomen (excluding petiole) 0.36 of body ; viewed laterally (Fig. 16 H) length to height 100 : 55 ; third apparent tergite somewhat longer than the second : aedeagus to abdomen 45 : 100.

*Holotype* : Male on pin (one set of legs, wings and one antenna on slide), 12.5. Pechiparai (Kerala Survey), Coll. M. S. Mani & party, 25, 27.viii.1974.

15. **Eurytomocharis sayadriensis**, sp. nov.

*Female* : Length 4.50 mm. General colour of body variable, yellowish brown to reddish-brown with black on thorax and abdomen ; head yellowish-brown to reddish-brown ; ocellar area dark brown to black ; clypeal margin reddish-brown ; eyes and ocelli very dark brown ; mandibles reddish ; antenna dark brown except for the yellowish scape ; thorax yellowish-brown to brown, in some specimens obscurely black becoming deeper and wider from pronotum to scutellum in the middle, scapula also often darkened ; legs yellowish-brown ; wings hyaline ; veins brownish ; abdomen brownish ; abdomen brownish except for the black distal ends of tergites ; petiole brown to black ; tip of ovipositor black.

*Head* : Face below the antennal sockets and gena longitudinally striate, otherwise head closely umbilicately punctate ; vertex pubescent ; eyes bare ; antennal sockets in the middle of face ; scrobe deep, margined and smooth ; mandibles bidentate. Head viewed from above (Fig. 17 F) slightly wider than thorax ; median ocellus outside the scrobe ; viewed in front (Fig. 17 E) length to width 75 : 100 ; eye length to head length 56 : 100 ; ocellocular space 2.60 times ocellar diameter ; interocellar space about 2.00 times ocellar diameter ; front ocellar space 0.45 of the ocellar diameter. *Antenna* (Fig. 17 C, D) : Segments 10, 1.1.1.5.2. Scape uniformly slender, cylindrical, about 4.00 times longer than thick ; pedicel 0.26 of scape, 1.31 times longer

than thick ; ring segment distinctly transverse ; first funicular segment longest, 0.47 of scape, 2.00 times longer than thick ; second funicular segment 0.77 of first segment, 1.62 times longer than thick : 3-5 funi-

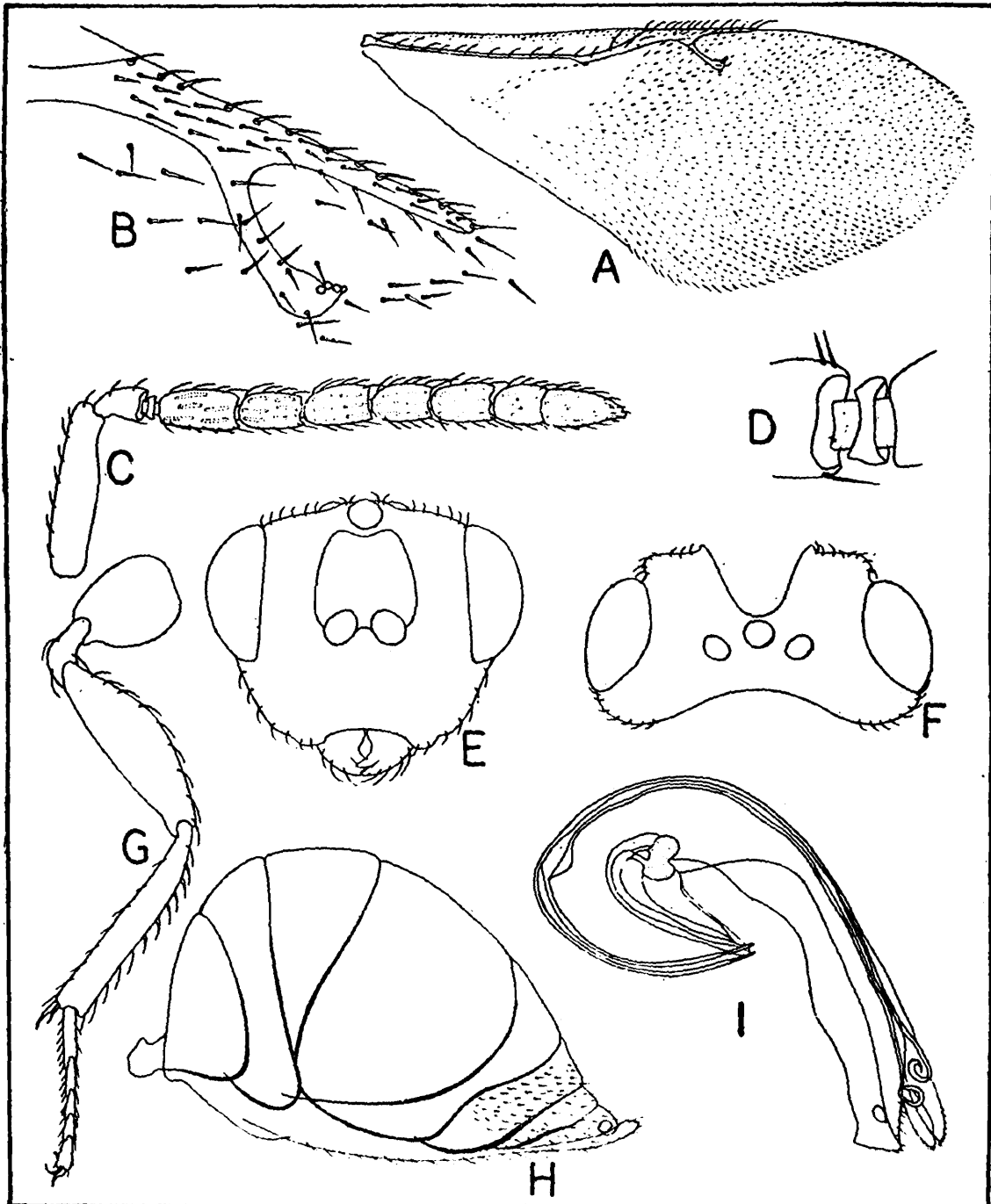


Fig. 17. *Eurytomocharis sayadriensis*, sp. nov. Female.

- A. fore wing, B. stigmal vein, C. antenna, D. anellus,  
 E. head in front view, F. head viewed from above,  
 G. hind leg, H. abdomen, I. genitalia.

cular segments subequal to the second segment ; club 3.30 times longer than thick ; first club segment 0.78 of the second funicular segment, 1.17 times longer than thick ; second club segment 1.82

times the first segment, 2.27 times longer than thick ; club subequal to the preceding 2.19 funicular segments combined.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 69 ; viewed laterally length to height 100 : 74 ; pronotum : mesoscutum : scutellum 12 : 25 : 21. *Fore wing* (Fig. 17 A, B) length to width 100 : 43 ; marginal fringe almost absent ; venation  $m : pm : st$  100 : 118 : 82 ;  $sm$  long, with 16 short setae directed forward ;  $m$  and  $pm$  with a series of shorter setae. *Hind leg* (Fig. 17 G) : Coxa 1.13 times longer than thick ; femur thickened in the middle, 3.13 times longer than thick ; tibia more or less slender, cylindrical, dorsally with 6 stiff hairs, 1.10 times femur, 6.50 times longer than thick, tibial spurs 2, shorter one 0.66 of the long spur, longer spur to metatarsus 9.00 : 12.00 ; tarsus 0.73 of tibia , metatarsus 0.23 of tibia and 0.31 of tarsus ; second segment 0.62 of metatarsus ; third segment 0.80 of the second segment ; fourth segment 0.75 of the third segment ; fifth tarsal segment very slightly longer than the second segment.

*Abdomen* minutely punctate ; 0.61 of the body ; viewed laterally (Fig. 17 H) length to height 100 : 68 ; petiole almost as long as thick ; fourth apparent tergite (VI of Bugbee) longest ; sixth tergite with dense setigerous punctae ; ovipositor very slightly exerted (as in figure).

*Holotype* : Female on pin (wings, legs and antenna mounted on slide), 5.23. Khandala Ghat : Poona, Coll. M. S. Mani & party, 7. iv. 1972. *Other material examined* : 1 female on pin (abdomen used for taking out the ovipositor), 1.1. Ahla catchment Area : Dalhousie, Coll. M. S. Mani & party, 14-25. v. 1971.

#### KEY TO SPECIES OF *EURYTOMOCHARIS*

- |   |       |   |
|---|-------|---|
| 1. $pm$ not long, not longer than $st$ , shorter or at the most equal to $st$ | ..... | 5 |
| $pm$ distinctly longer than $st$  | ..... | 2 |
| 2. $pm$ slightly longer than $st$   | ..... | 4 |
| $pm$ much longer than $st$  | ..... | 3 |

3. Ocellocular space 2.60 times ocellar diameter  
 ... ..*E. sayadriensis*, Female.
- Ocellocular space 1.80 times ocellar diameter  
 .....*E. coromandalicus*, Male.
- 4 Funicular segments with slender necks ; tergites II and III  
 subequal ..... *E. nilamburensis*, Male,
- Funicular segments with stout necks, tergite III largest  
 ..... *E. dubeyi*, Male.
5. Hind tibial spur slightly longer than metatarsus ; ocello-  
 cular space equal to the ocellar diameter  
 ..... *E. keralensis*, Female.
- Hind tibial spur shorter than metatarsus ; ocellocular space  
 1.55 times the ocellar diameter ...*E. pechipariensis*, Male.

### **Odonteurytoma**, gen. Nov.

Body robust. Head with a deep antennal scrobe, bordered by a conspicuous carina close to the orbital border and meeting above over the front ocellus, which lies within the scrobe. Vertex transverse ; gena shortly margined behind. Antennae inserted distinctly above the lower orbital border ; segments 10, not conspicuously clavate, with short stout necks and conspicuously constricted, 1.1.1.5.2 ; in male flagellar segments with whorls of long hairs ; in female submoniliform, with the funicular segments elongate, first funicular segment longest. Parapsidal furrows complete, well developed. Scutellum nearly circular, convex, armed with a long slender spine before apex. Thorax closely umbilicately punctate. Hind tibial spurs two. Wings hyaline, discal ciliation fine, marginal fringe moderately developed ; *m* short, subequal to *pm*, and *st*. Abdomen petiolate, elongate, conical, strongly compressed, with the third tergite largest in male and fourth in female.

This genus differs from all other genera of Eurytomini in the presence of scutellar spine and the carina of head.

*Generic type* : *Odonteurytoma tanjorensis*, sp. nov.

**16. *Odonteurytoma tanjorensis*, sp. nov.**

*Female* : Length 4.81 mm. General colour of body black ; head black ; eyes and ocelli reddish-brown ; mandibles reddish-brown with reddish teeth ; antenna brownish-black except for the reddish-brown scape ; thorax black ; fore and middle legs reddish-brown except for the black coxae and yellowish-brown tarsi ; hind leg black except for the reddish base and tip of femur and tibia, and yellowish-brown tibial spurs and tarsus ; wings hyaline ; veins brownish ; abdomen black.

*Head* closely umbilicately punctate ; gena and clypeus longitudinally striate ; vertex densely pubescent ; eyes bare ; mandibles bidentate ; eyes bordered medially by strong, obtuse carina of the scrobe margin, continuing to vertex and uniting behind the front ocellus, appearing like short horns of the head in dorsal view ; antennal sockets distinctly above the lower orbital border ; scrobe smooth and shiny ; front ocellus inside the scrobe. Head viewed from above (Fig. 18 F) a little wider than thorax ; viewed in front (Fig. 18 E) length to width 76 : 100 ; eye length to head length 61:100 ; ocellocular space 1.70 times ocellar diameter ; interocellar space 2.00 times ocellar diameter ; front ocellar space about 0.60 ocellar diameter. *Antenna* (Fig. 18 C, D) : Segments 10, 1.1.1.5.2. Scape abruptly narrow apically, 3.77 times longer than thick ; pedicel subglobose, about 0.16 of scape, its length about 0.67 of its thickness ; ring segment distinctly transverse ; first funicular segment longest, 0.58 of scape, 2.08 times longer than thick ; 2-4 funicular segments subequal ; second funicular segment 0.90 of the first segment, 2.00 times longer than thick ; fourth funicular segment 1.70 times longer than thick ; fifth funicular segment slightly shorter than the preceding segment ; club subequal to the preceding 1.92 funicular segments combined ; segment distinctly separated from each other ; first club segment about 0.80 of the fourth funicular segment, 1.33 times longer than thick ; second club segment elongate oval, about 1.50 times the first segment, 2.00 times longer than thick.

*Thorax* (Fig. 20) closely umbilicately punctate ; propodeum coarsely reticulate with a pair of longitudinal carina on either side of the median sulcus ; parapsidal furrows present and complete ; scutellum continues into a long, slender spine before apex ; thorax

viewed dorsally length to width 100 : 54 ; veiwed laterally length to height 100 : 60 : pronotum : mesoscutum : scutellum 6 : 13 : 13. *Fore wing* (Fig. 19 A, B) length to width 100 : 45 ; marginal fringe moderately long ; venation  $m : pm : st$  100 : 100 ; 100 ;  $sm$  long, with about 10 setae directed forward ;  $m$  and  $pm$  with a series of setae. *Hind leg* (Fig. 18 G) : Coxa 1.25 times longer than thick ; femur stout in the

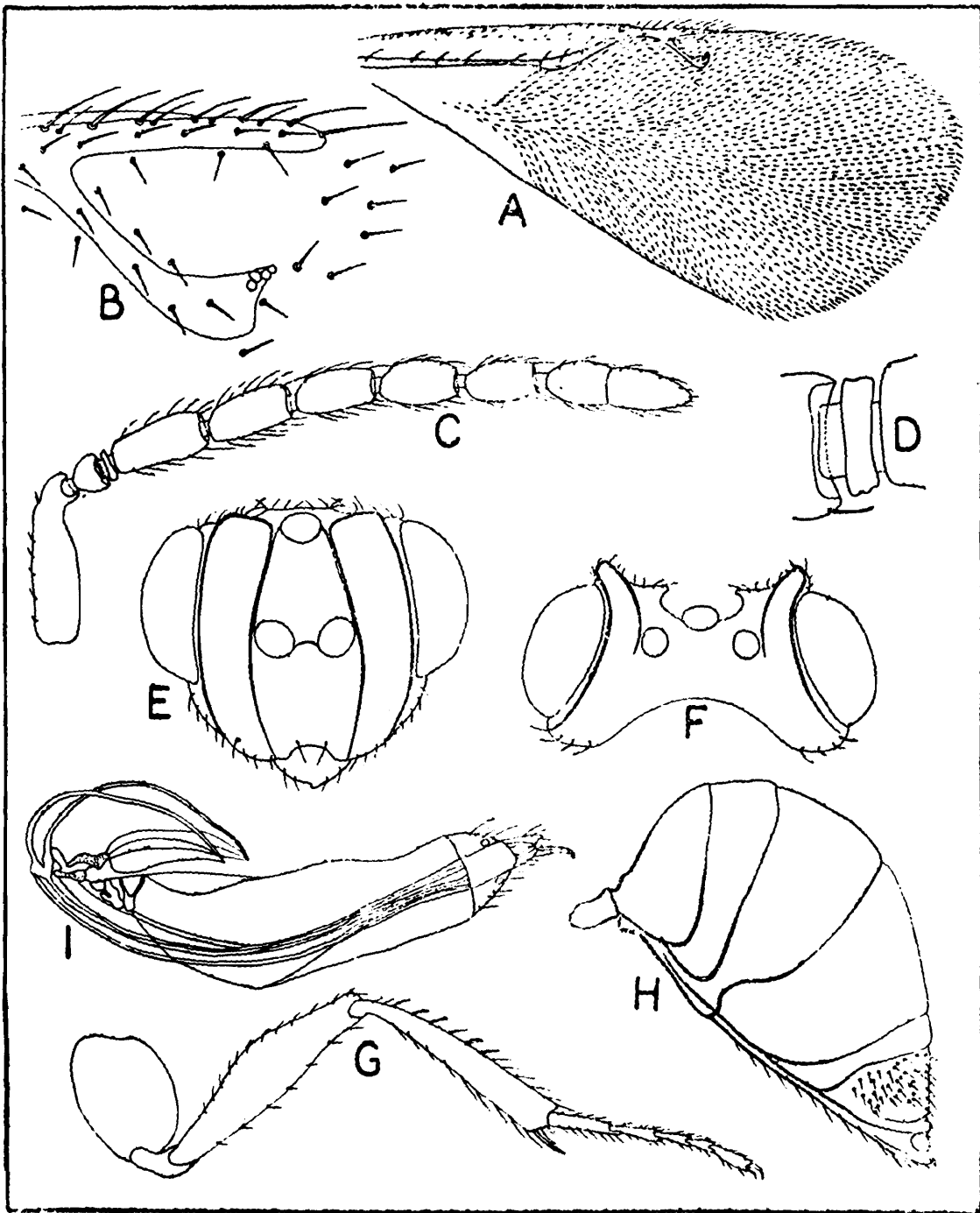


Fig. 18. *Odonteurytoma tanjorensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen, I. genitalia.

middle, about 2.00 times coxa, 4.16 times longer than thick ; tibia thickens apically, dorsally with 6 stiff bristles, subequal to femur, 6.12

times longer than thick, tibial spurs 2, shorter one about 0.65 of the long spur, longer spur metatarsus 8.00 : 11.50 ; tarsus 0.83 of tibia ; metatarsus about 0.25 of tibia 0.28 of tarsus ; second segment about 0.87 of metatarsus ; third segment 0.70 of the second segment ; fourth segment 0.71 of the third segment ; fifth tarsal segment 1.60 times the preceding segment.

*Abdomen* : Petiole, first and second tergites smooth, third tergite onwards with scattered minute punctae ; abdomen 0.41 of body ; viewed laterally (Fig. 18 H) length to height 100 : 60 ; petiole short, equal to the hind coxa, about 1.50 times longer than thick ; fourth tergite largest ; ovipositor very slightly exerted.

*Male* : Length of body 4.37 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles dark brown ; antenna blackish-brown except for the reddish-brown scape which is black dorsally in the apical 0.45 ; thorax black ; fore leg brown except for the paler tarsus and black coxa ; middle leg brown except for the dark brown femur, black coxa, and very light brown tarsal segments ; hind leg black except for the reddish-brown trochanter, tip of femur, base and tip of tibia, and very light brown tibial spurs and tarsal segments ; wings hyaline ; veins very light brown ; abdominal petiole and abdomen black.

*Head* closely umbilicately punctate, except for the obliquely striated genae ; carina as in female ; face with white dense hairs ; vertex finely and densely pubescent ; eyes bare ; mandibles bidentate ; antennal sockets distinctly above the lower orbital border ; scrobe smooth and shiny ; front ocellus inside the scrobe. Head viewed from (Fig. 19 F) slightly wider than thorax ; viewed in front (Fig. 19 E) length to width 81 : 100 ; eye length to head length 54 : 100 ; ocellocular space 2.00 times ocellar diameter ; interocellar space 2.55 times ocellar diameter ; front ocellar space 0.55 of ocellar diameter. *Antenna* (Fig. 19 C, D) : Segments 10. 1.1.1.5.2. Scape short, stout, abruptly narrow apically, 3.09 times longer than thick ; pedicel subglobose, 0.14 of scape, its length 0.62 of its thickness ; ring segment distinctly transverse ; flagellum with whorls of long hairs ; first funicular segment 0.70 of scape, 2.40 times longer than thick ; 2-4 funicular segments subequal to the first segment ; fifth funicular segment 0.91 of the first segment, 2.50 times longer than thick ; club

subequal to the preceding 1.43 funicular segments combined ; segments distinctly separated from each other ; first club segment 0.77 of the preceding funicular segment, 2.12 times longer than thick ; second

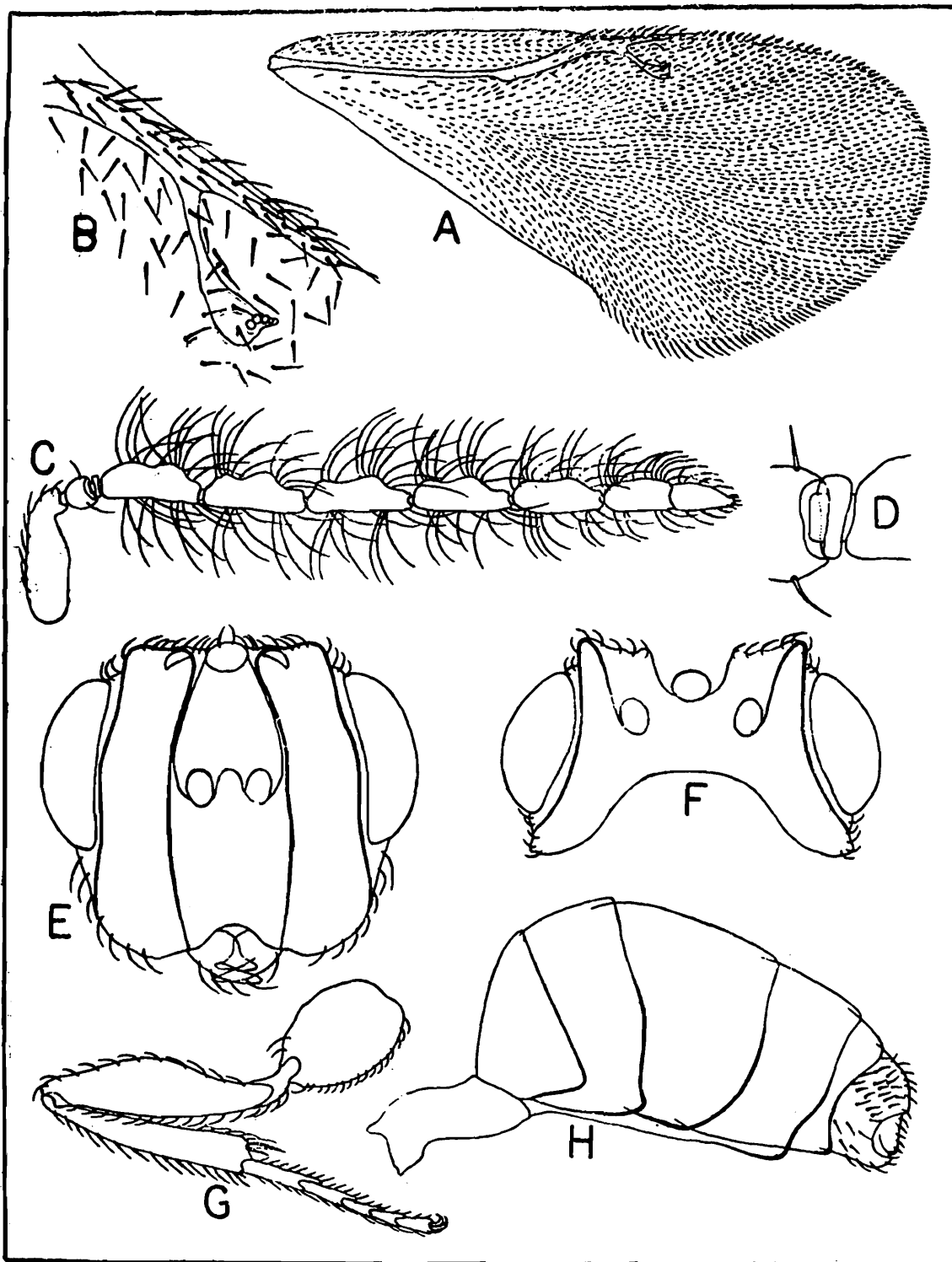


Fig. 19. *Odonteurytoma tanjorensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen.

club segment elongate ovate, obtusely pointed, subequal to the first segment in its length, 2.42 times longer than thick.

*Thorax* closely umbilicately punctate ; clothed with white dense hairs ; parapsidal furrows distinct ; scutellum and propodeum as in female ; pronotum : mesoscutum : scutellum 6 : 13 : 12.5. *Fore wing* (Fig. 19 A, B) almost as in female ; length to width 100 : 48 ; venation as in female. *Hind leg* (Fig. 19 G) : Coxa 1.25 times longer than thick ;

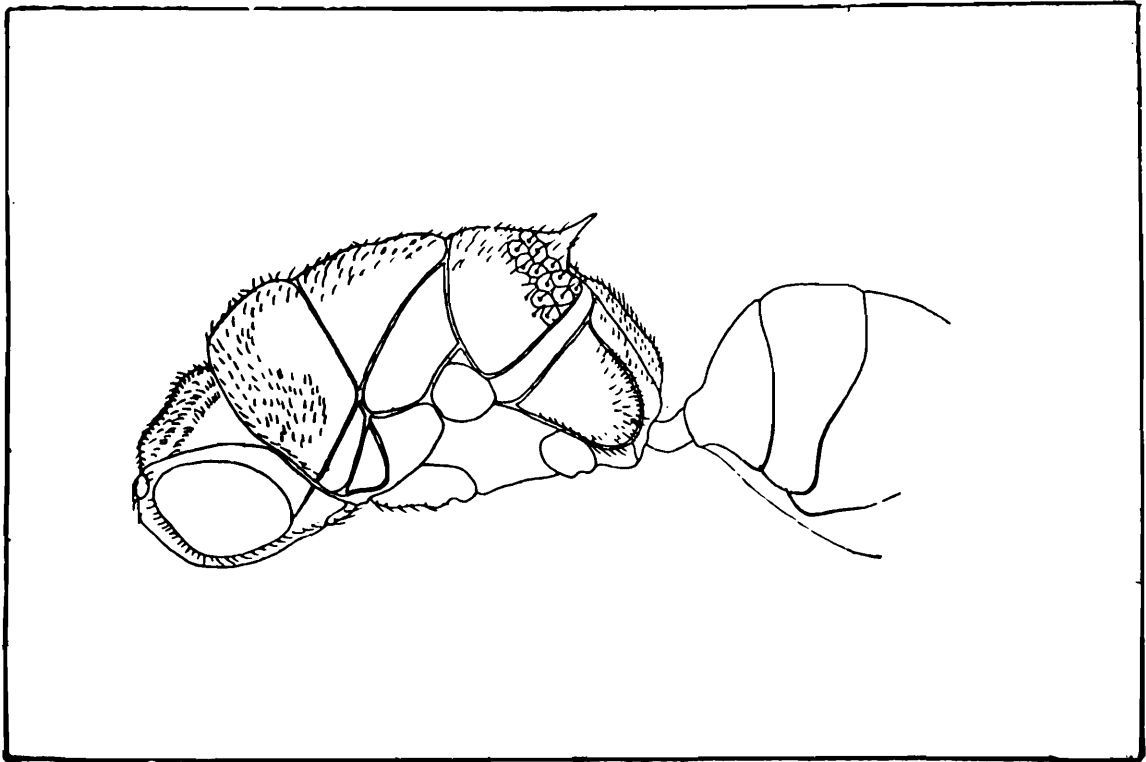


Fig. 20. *Odonteurytoma tanjorensis*, sp. nov. Female.

Body viewed dorso-laterally to show the scutellar spine.

femur stout in the middle, 3.84 times longer than thick ; tibia thickens apically, dorsally with a row of stiff bristles, very slightly shorter than femur, 6.00 times longer than thick, tibial spurs 2, shorter spur 0.58 of the long spur, longer spur to metatarsus 8.20 : 12.00 ; tarsus very slightly shorter than tibia ; metatarsus 0.26 of tibia and 0.29 of tarsus ; second segment 0.75 of metatarsus ; third segment 0.66 of the second segment ; fourth segment 0.83 of the third segment ; fifth tarsal segment 1.40 times the preceding segment.

*Abdomen* very minutely punctate ; including petiole about 0.44 of body ; viewed laterally (Fig. 19 H) length to height 100 : 50 ; petiole length to width 100 : 43 ; petiole to abdomen 29 : 100 ; third tergite largest.

*Holotype* : Female on card ; *allotype* male on card (one fore leg and hind leg, middle legs, fore wing and antennae on slide) ; *paratypes*

3 females on cards (genitalia, hind legs, antennae and wings mounted on slide), 5.21. Tanjore (Thanjavur): Vannar Bank, Coll. M. S. Mani & party, 7.iv. 1972.

17. **Phylloxeroxenus godiarenensis**, sp nov.

*Male*: Length 2.06 mm. General colour of body black; head black; eyes and ocelli dark brown; mandibles reddishbrown; antenna very dark brown except for the black scape; thorax black; fore leg brownish-black except for the black coxa and yellowish-brown tip of femur, tibia, tibial spurs and tarsal segments; middle leg dark brown except for the black coxa and yellowish-brown tarsal segments; hind leg black except for the dark brown tibia which is yellowish-brown basally and apically, yellowish tibial spur and tarsal segments; wings hyaline; veins brownish; abdominal petiole and abdomen black; aedeagus brownish-yellow.

*Head* closely umbilicately punctate; vertex with a row of long hairs; eyes bare; antennal sockets well above the middle of face; scrobe smooth and shiny; front ocellus outside the scrobe. Head viewed from above (Fig. 21 F) distinctly wider than thorax; viewed in front (Fig. 21 E) length to width 84 : 100; eye length to head length 50 : 100; ocellocular space 1.50 times ocellar diameter; interocellar space about 3.40 times ocellar diameter; front ocellar space about 1.12 times ocellar diameter. *Antenna* (Fig. 21 C, D : Segments 10, 1.1.1.5 2. Scape short, abruptly narrow subapically 3.21 times longer than thick; pedicel 0.33 of scape, 1.07 times longer than thick; funicular segments constricted at their apices; funicular and club segments with whorls of long hairs; funicular segments 1-4 subequal; first funicular segment 0.83 of scape, 3.26 times longer than thick; second, third and fourth funicular segments about 2.77 times longer than thick; fifth funicular segment 0.90 of the second segment, 2.43 times longer than thick; club subequal to the preceding 1.25 funicular segments combined; club distinctly biarticulate; first club segment 0.73 of the preceding funicular segment, 1.78 times longer than thick; second club segment conical, with a short, stout prolongation apically, 0.86 of the first segment, 1.87 times longer than thick.

*Thorax* closely umbilicately shallowly punctate; parapsidal furrows complete; viewed dorsally length to width 100 : 53; viewed laterally length to height 100 : 50; pronotum; mesoscutum; scutellum

10 : 20 : 20. *Fore wing* (Fig. 21 A, B) length to width 100 : 42 ; marginal fringe moderately long ; discal ciliation almost absent basally behind *sm* ; venation *m* : *pm* : *st* 100 : 67 : 61 ; *sm* long, with 11 short setae directed forward ; *m* and *pm* with 10 setae. *Hind leg* (Fig. 21 G) : Coxa 1.43 times longer than thick ; femur thickened in the middle, about 3.00 times longer than thick ; tibia slightly thicken apically, 1.17 times femur, 6.66 times longer than thick, dorsally with

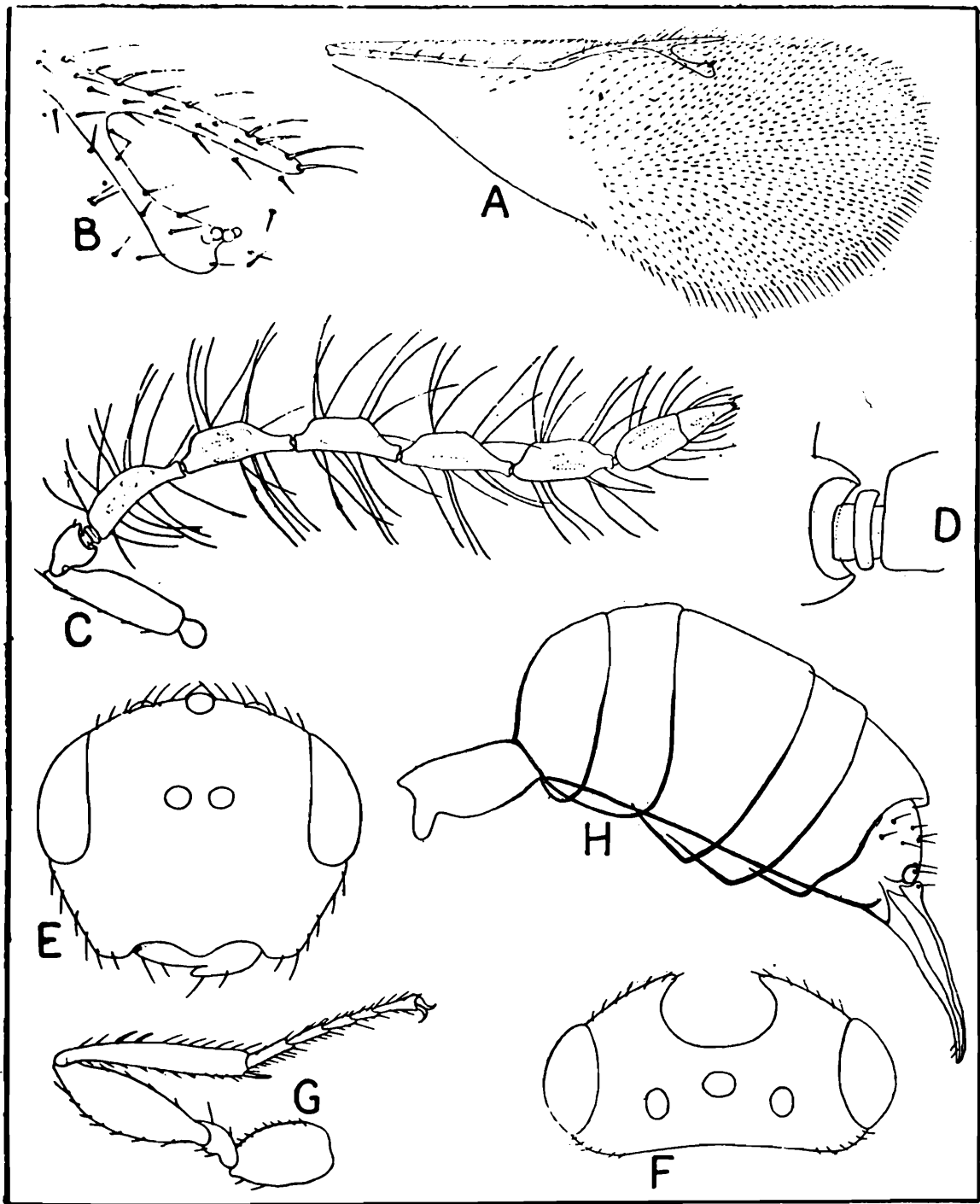


Fig. 21. *Phylloxeroxenus godiariensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen.

2 stiff bristles, tibial spur single, tibial spur to metatarsus 3.00 : 5.00 ; tarsus very slightly shorter than tibia ; metatarsus 0.25 of tibia and 0.26 of tarsus ; second segment 0.80 of metatarsus ; third segment 0.75 of the second segment ; fourth segment 0.87 of the preceding segment ; fifth tarsal segment 0.90 of the metatarsus.

*Abdomen* smooth ; petiole finely closely punctate ; abdomen (including petiole and excluding ovipositor) 0.43 of body ; viewed laterally (Fig. 21 H) length to height 100 : 49 ; petiole slightly longer than hind coxa, length to width 100 : 50, petiole to abdomen 29 : 100 ; third tergite longest ; sixth tergite with a few scattered setae ; aedeagus to abdomen 40 : 100.

*Holotype* : Male on card (fore and middle legs, fore wing and antenna on slide). 12.5. Pechiparai (Kerala Survey), Coll. *M.S. Mani & party*. 2 -27.viii.1974.

#### 18. **Phylloxeroxenus pechipariensis**, sp. nov.

*Male* : Length 2.84 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles reddish-brown with reddish teeth ; antenna black except for the yellowish-brown basal portion of scape and radicle ; thorax black ; fore leg very dark brown except for the brownish tibia, tibial spur and tarsal segments ; middle and hind legs very dark brown except for the yellowish-brown femur at the tips. tibiae basally and apically and very light brown tarsus with the last tarsal segment brown ; wings hyaline ; veins brownish ; abdomen very dark brown to black ; abdominal petiole black.

*Head* : Face below the antennal sockets and gena longitudinally striate, otherwise head closely umbilicately punctate ; vertex moderately setose ; eyes bare ; mandibles bidentate ; antennal sockets in the middle face ; scrobe shiny median ocellus outside the scrobe. Head viewed from above (Fig. 22 F) slightly wider than thorax viewed in front (Fig. 22 E) length to width 60 : 100 ; eye length to head length 52 : 100 ; ocellocular space 1.35 times ocellar diameter ; front ocellar space about 3.10 times ocellar diameter ; front ocellar space equal to the ocellar diameter. *Antenna* (Fig. 22 C, D) : Segments 10, 1.1.1.5.2. Scape slightly thickened subapically, 3.42 times longer than thick ; pedicel 0.27 of scape, subglobose, its length 0.92 of

its thickness; ring segment minute; funicular segments with whorls of very long hairs; 1-4 funicular segments subequal; first funicular segment 2.28 times the pedicel, 2.00 times longer than thick; fifth funicular segment 0.87 of the fourth segment, 1.75 times longer than thick; club subequal to the preceding 1.52 funicular segments combined; segments distinctly separated from each other,

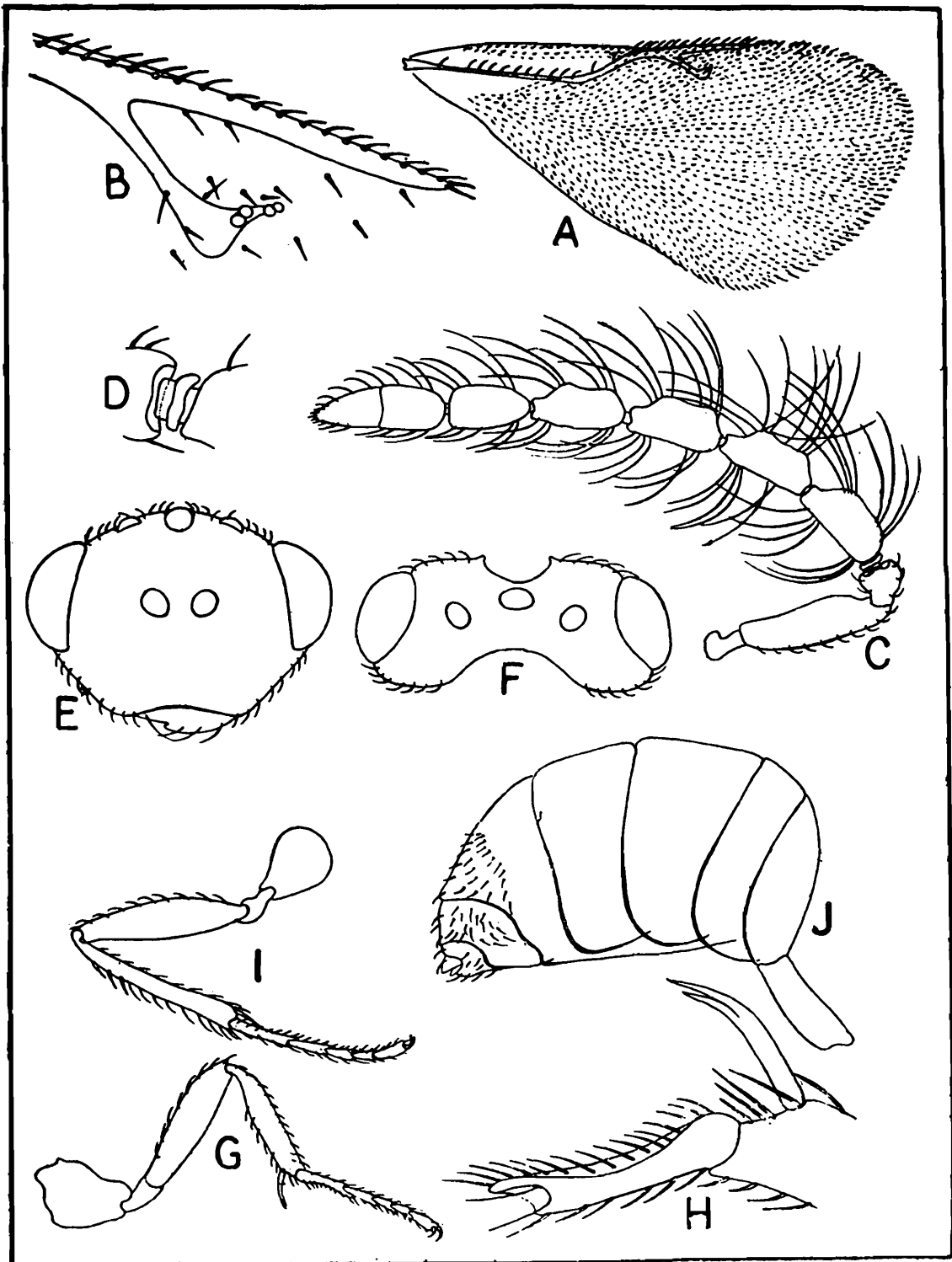


Fig. 22. *Phylloxeroxenus pechipariensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I. hind leg, J. abdomen.

with moderately long hairs; first club segment 0.78 of the preceding funicular segment, 1.37 times longer than thick; second club segment subconical and obtuse at tip, very slightly longer than the first segment, 1.71 times longer than thick.

*Thorax* closely umbilicately punctate; parapsidal furrows complete; viewed dorsally length to width 100 : 60; viewed laterally length to height 100 : 64; pronotum; mesoscutum; scutellum 6 : 10 : 14. *Fore wing* (Fig. 22 A, B) length to width 100 : 48 marginal fringe almost absent; discal ciliation sparse; venation  $m : pm : st$  100 : 150 : 81;  $sm$  long, with 13 short setae;  $m$  and  $pm$  with a series of very short setae directed forward. *Hind leg* (Fig. 22 I): Coxa 1.18 times longer than thick; femur slightly thickened in the middle, 4.28 times longer than thick; tibia very slightly thickens apically, dorsally with 3 stout, stiff bristles, very slightly longer than femur, 7.87 times longer than thick, tibial spur single, tibial spur to metatarsus 6.00 : 10.00; tarsus subequal to tibia; metatarsus about 0.33 of tibia or tarsus; second segment 0.70 of metatarsus; third segment 0.64 of the second segment; fourth segment 0.66 of the third segment; fifth tarsal segment 1.11 times the third segment.

*Abdomen* smooth and shiny; petiole finely punctate; including petiole 0.45 of body; viewed laterally (Fig. 22 J) length to height 100 : 65; petiole length to width 100 : 38, petiole to abdomen 33 : 100; third tergite longest; apical part of fifth and sixth tergites with dense, setigerous minute punctae.

*Holotype*: Male on card (one set of legs, wings and antenna on slide), 12.5. Pechiparai (Kerala Survey), Coll. *M. S. Mani & party*, 25-27.viii.1974.

#### 19. **Phylloxeroxenus poroensis**, sp. nov.

*Female*: Length 3.40 mm. General colour of body black; head black; eyes and ocelli dark reddish-brown; mandibles reddish; antenna dark brown except for the black scape and brownish-black pedicel; thorax black; fore and middle legs black except for the brown tip of femur and tibiae and paler tarsal segments; hind leg black except for the reddish-brown tip of femur, base and tip of tibia and very pale brown tibial spurs and tarsal segments; wings hyaline; veins brownish; abdomen black; ovipositor black.

**Head:** Vertex and face above the antennal sockets closely umbilicately punctate; clypeus and gena longitudinally striate; vertex with a few hairs; eyes very finely and sparsely pubescent; mandibles bidentate; antennal sockets in the middle of face; scrobe dull and shallow; median ocellus outside the scrobe. Head viewed from above (Fig. 23 F) slightly wider than thorax; viewed in front

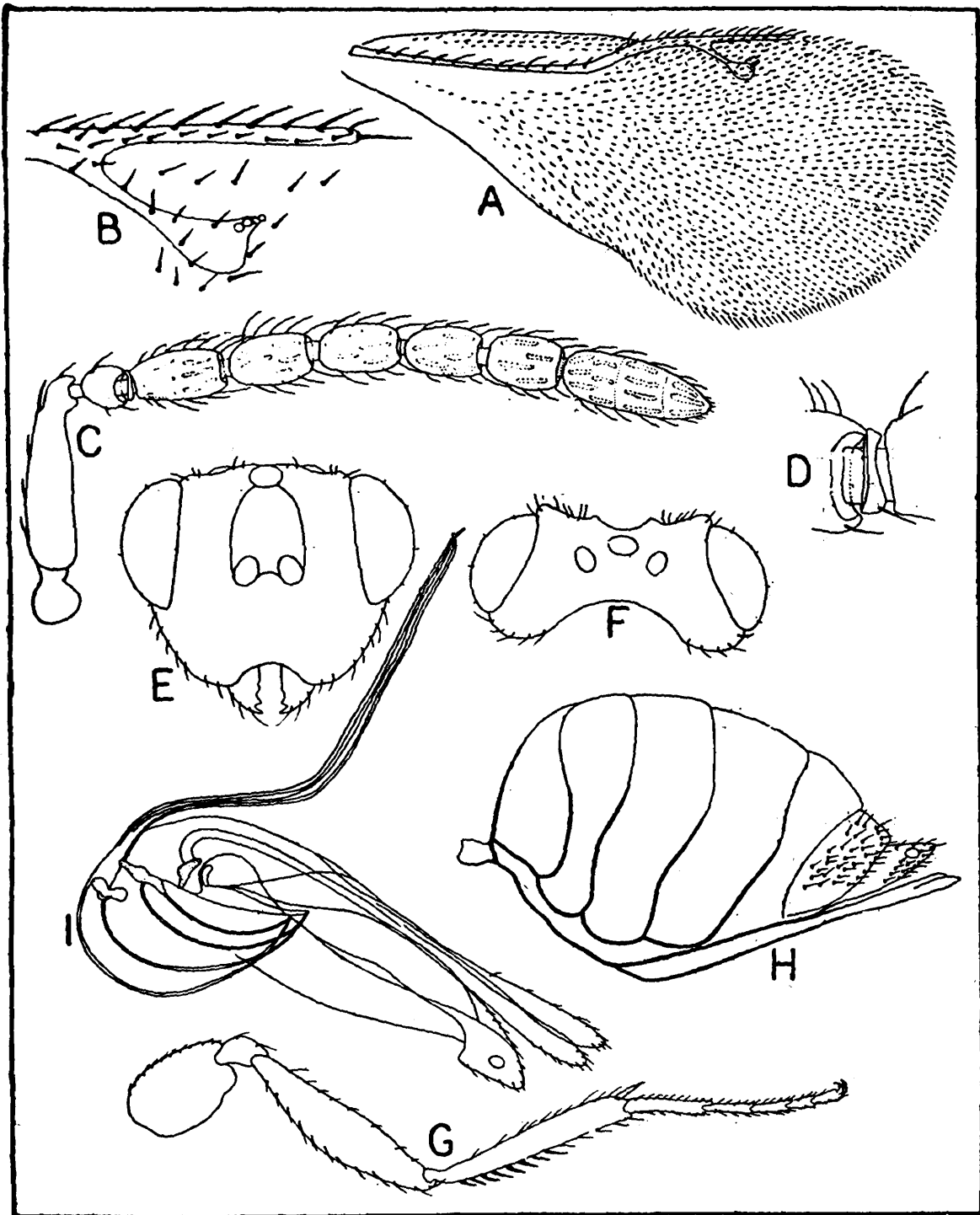


Fig. 23. *Phylloxeroxenus poroensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view. F. head viewed from above, G. hind leg, H. abdomen, I. genitalia.

(Fig. 23 E) length to width 78 : 100 ; eye length to head length 55 : 100 ; ocellular space 1.20 times ocellar diameter ; interocellar space 3.00 times ocellar diameter ; front ocellar space about 0.80 of ocellar diameter. *Antenna* (Fig. 23 C, D) : Segments 11, 1.1.1.5.3. Scape gradually reduced apically, about 4.00 times longer than thick ; pedicel 0.16 of scape, subglobose, its length 0.71 of its thickness ; ring segment small ; first funicular segment longest, 0.46 of scape, 1.75 times longer than thick ; second funicular segment 0.93 of the first segment, 1.62 times longer than thick ; 3-4 funicular segments subequal to the second segment ; fifth funicular segment 0.84 of the second segment, 1.37 times longer than thick ; club subequal to the preceding 2 funicular segments combined ; club indistinctly divided into 3 segments, 2.18 times the preceding funicular segment, 2.79 times longer than thick.

*Thorax* closely umbilicately shallowly punctate ; parapsidal furrows complete ; viewed dorsally length to width 100 : 68 ; viewed laterally length to height 100 : 74 ; pronotum : mesoscutum ; scutellum 8 : 15 : 15. *Fore wing* (Fig. 23 A, B ) length to width 100 : 47 ; marginal fringe very short venation *m* : *pm* : *st* 100 : 108 : 70 ; *sm* long, with 14 setae directed forward ; *m* and *pm* with 15 setae. *Hind leg* (Fig. 23 G) : Coxa 1.28 times longer than thick ; femur thickened in the middle, a little more than 2.00 times coxa, 4.22 times longer than thick ; tibia more or less slender, cylindrical, dorsally with 8 stiff bristles, subequal to femur, 7.40 times longer than thick, tibial spur single, tibial spur to metatarsus 5.40 : 12.00 ; tarsus subequal to tibia ; metatarsus 0.33 of tibia or tarsus ; second segment 0.66 of metatarsus ; third segment 0.75 of the second segment ; fourth segment 0.66 of the third segment ; fifth tarsal segment ; 1.25 times the preceding segment.

*Abdomen* smooth and shiny, except for the sixth tergite matt and with setigerous punctae ; 0.48 of body ; viewed laterally (Fig. 23 H) length to height 100 : 72 ; petiole short, about 1.50 times longer than thick ; third and fourth tergites subequal ; ovipositor slightly exerted beyond the tip of abdomen.

*Holotype* : Female on card (fore and hind legs, wings and antennae on slide) ; *paratype* 1 female on card (genitalia on slide), 16. 4. Poro North (North-Bengal Survey), Coll. M. S. Mani & party, 6-24. iv. 1976.

20. **Phylloxeroxenus rajaensis**, sp. nov.

*Male* : Length 3.30 mm. General colour of body black ; head black ; eyes and ocelli reddish-brown ; mandibles reddish ; antenna black except for the brownish-black pedicel and brown scape which is black apically on the dorsal half ; thorax black ; fore leg brown except for the brownish tibia and tarsus and black coxa ; middle and hind legs brown except for the black coxae, yellowish-white tip of tibiae, whitish tibial spurs and tarsal segments ; wings hyaline ; veins yellowish-brown ; abdomen and abdominal petiole black.

*Head* closely umbilicately punctate ; vertex hairy ; eyes very finely and sparsely pubescent ; mandibles bidentate ; antennal sockets very slightly above the middle of face ; scrobe deep, smooth and shiny ; front ocellus outside the scrobe. Head viewed from above (Fig. 24 F) almost as wide as the maximum width of thorax ; viewed in front (Fig. 24 E) length to width 81 : 100 ; eye length to head length 56 : 100 ; ocellocular space about 1.80 times ocellar diameter ; interocellar space 2.70 times ocellar diameter ; front ocellar space about 0.90 of the ocellar diameter. *Antenna* (Fig. 24 C, D) : Segments 10, 1.1.1.5.2. Scape subcylindrical and slightly thinner apically, 3.40 times longer than thick ; pedicel 0.23 of scape, almost as long as thick ; ring segment minute ; funicular segments constricted at their apices ; funicular and club segments with whorls of long hairs ; funicular segments 1-4 subequal, each becoming gradually thinner ; first funicular segment 0.70 of scape, 2.18 times longer than thick ; second and third funicular segments about 2.60 times longer than thick ; fourth funicular segment about 3.00 times longer than thick ; fifth funicular segment 0.84 of the fourth segment, 2.75 times longer than thick ; club subequal to the preceding 1.60 funicular segments combined ; first club segment about 0.82 of the preceding funicular segment, 2.25 times longer than thick ; second club segment 1.11 times the first segment, 2.63 times longer than thick.

*Thorax* closely umbilicately shallowly punctate ; parapsidal furrows complete ; viewed dorsally length to width 100 : 60 ; viewed laterally length to height 100 : 55 ; pronotum : mesoscutum : scutellum 11 : 14 : 19. *Fore wing* (Fig. 24 A, B) length to width about 100 : 50 ; marginal fringe very short ; discal ciliation sparse and almost obsolete basally ; venation  $m : pm : st$  100 : 92 : 67 ;  $sm$  long, with 15 setae

directed forward ; *m* and *pm* with a series of shorter setae. *Hind leg* (Fig. 24 G) : Coxa 1.31 times longer than thick ; femur thickened in the middle, 3.63 times longer than thick ; tibia more or less slender, cylindrical, dorsally with 8 stiff bristles, subequal to femur, 6.83 times longer than thick, tibial spurs 2, shorter one about 0.62 of the long spur, longer spur to metatarsus 8.00 : 11.00 ; tarsus 0.87 of tibia ; metatarsus about 0.27 of tibia and 0.30 of tarsus ; second segment 0.72 of

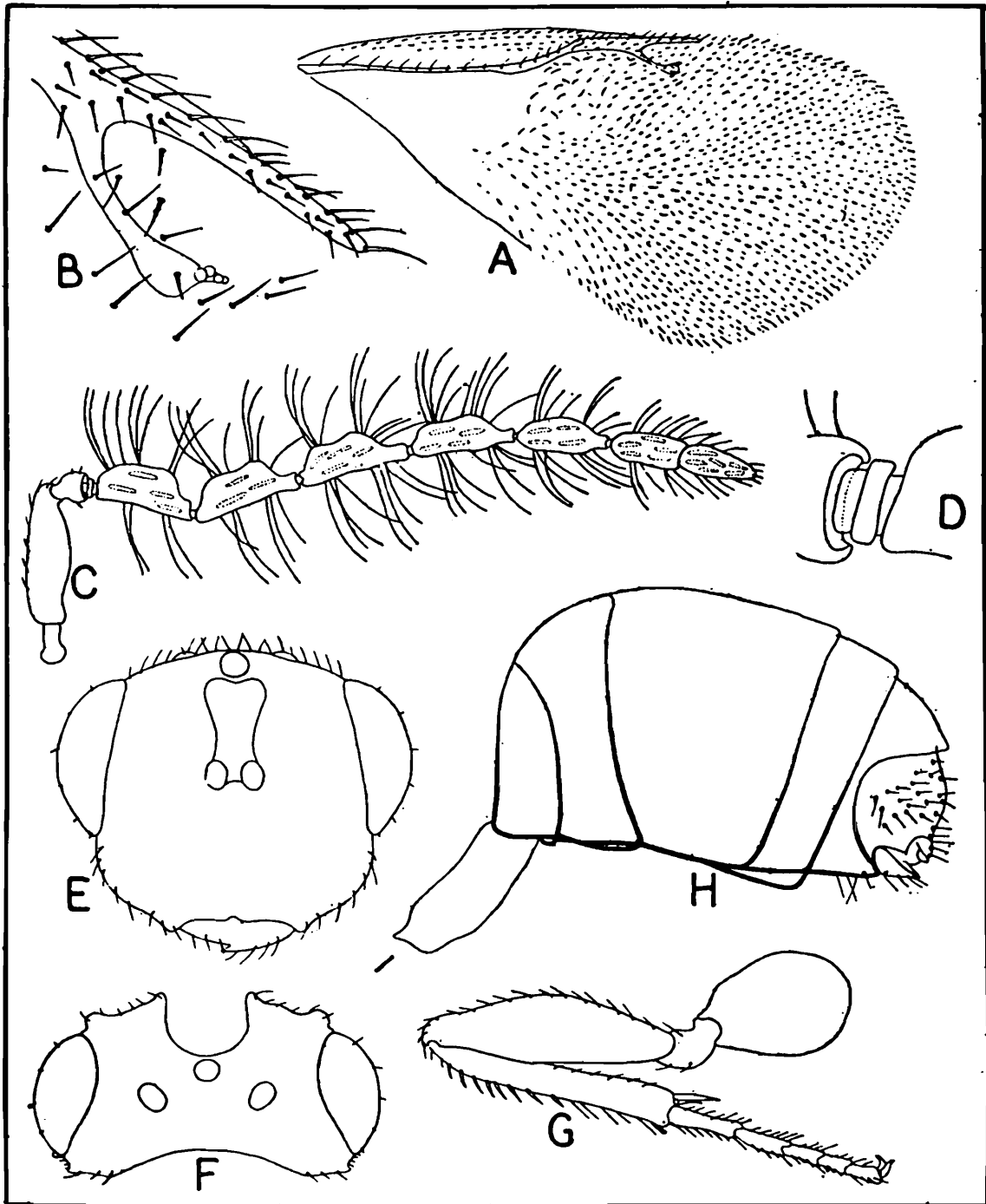


Fig. 24. *Phylloxeroxenus rajaensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen.

metatarsus and subequal to the longer tibial spur; third segment 0.75 of the second segment; fourth segment 0.66 of the third segment; fifth tarsal segment subequal to the third segment.

*Abdomen* : Petiole regulose; tergites smooth and shiny; abdomen (including petiole) 0.54 of body; viewed laterally (Fig. 24 H) length to height 100 : 59; petiole length to width 100 : 41, petiole to abdomen 33 : 100; sixth tergite with a few scattered setigerous fine punctae.

*Holotype* : Male on card (antennae, fore legs, one hind leg and one set of wings on slide), 16.3(I). Raja Bhat Khawa (North Bengal Survey), Coll. M. S. Mani & party, 2-23. iv. 1976.

#### KEY TO SPECIES OF *PHYLLOXEROXENUS*

1. *pm* and *m* subequal 2  
    *pm* and *m* not subequal 3
2. Head below antennal sockets longitudinally stultate; ocellular space about 1.20 times ocellar diameter  
    *P. poroensis* Female  
    Head uniformly umbilicately punctate; ocellular space 1.80 times ocellar diameter *P. rajaensis* Male
3. Head below antennal sockets longitudinally striate; *pm* longer than *st*, nearly twice as long  
    *P. pechipariensis* Male  
    Head uniformly umbilicately punctate; *pm* and *st* subequal *P. godiarenensis* Male

#### 21. *Prodecatoma ahlaensis*, sp. nov.

*Female* : Length about 3.50 mm. General colour of body black; head black; eyes and ocelli dark brown; mandibles brown; antenna dark brown except for the brown basal 0.15 of scape; thorax black; legs brown except for the black coxae; wings subhyaline; veins brown; abdomen black.

*Head* closely umbilicately punctate; vertex densely pubescent; eyes finely and sparsely pubescent; antennal sockets at the level of the lower orbital border; scrobe shiny; front ocellus inside the scrobe. Head viewed from above (Fig. 25 F) slightly wider than thorax; length to width 45 : 100; viewed in front (Fig. 25 E) length to width 77 : 100; eye length to head length 50 : 100; ocellular space 1.40 times

ocellar diameter ; interocellar space about 2.00 times ocellar diameter ; front ocellar space 0.60 of the ocellar diameter. *Antenna* (Fig. 25 C, D) : Segments 10, 1.1.1.5.2. Scape more or less slender, abruptly narrow

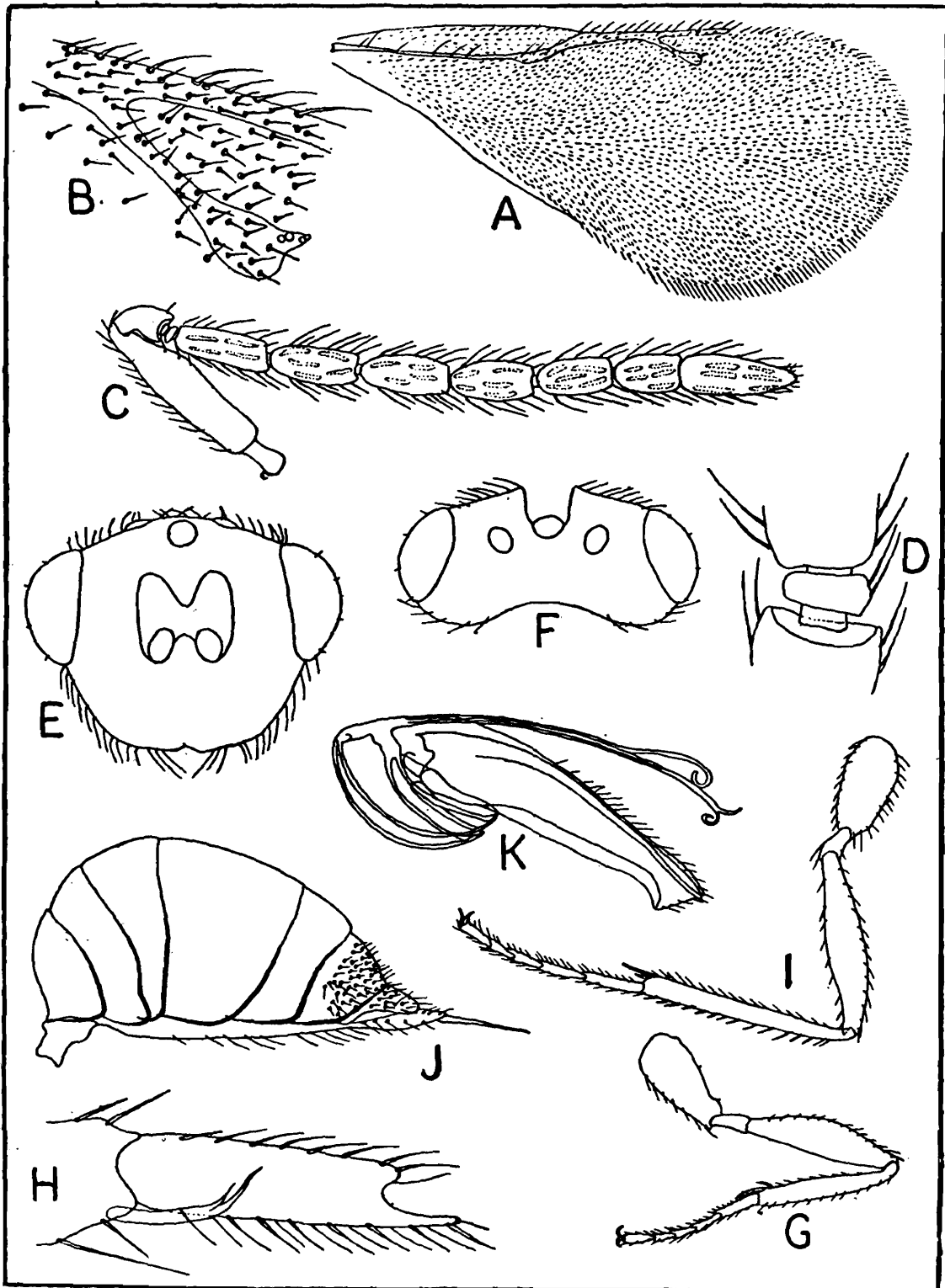


Fig. 25. *Prodecatoma ahlaensis*, sp. nov. Female.

- A. fore wing, B. stigmal vein, C. antenna, D. anellus,  
 E. head in front view, F. head viewed from above,  
 G. fore leg, H. tip of fore tibia and metatarsus enlarged,  
 I. hind leg, J. abdomen, K. genitalia.

towards apex, about 3.60 times longer than thick ; pedicel short, 0.27 of scape, 1.42 times longer than thick ; funicular and club segments with moderately long hairs ; first funicular segment longest, 2.00 times pedicel, 2.63 times longer than thick ; second and third funicular segments subequal, each about 0.90 of the first segment, 2.25 times longer than thick ; fourth funicular segment slightly shorter than the third segment, 2.12 times longer than thick ; fifth funicular segment about 0.90 of the fourth segment, 2.00 times longer than thick ; first club segment 0.87 of the preceding segment, 1.75 times longer than thick ; second segment slightly reduced apically, obtuse at tip, 1.78 times the first segment, 3.12 times longer than thick.

*Thorax* umbilicately punctate, the punctae separated from each other by a distance less than the diameter of the puncture ; clothed with white dense hairs ; propodeum more densely setose than the rest of thorax ; parapsidal furrows present ; thorax viewed dorsally length to width 100 : 57 ; pronotum : mesoscutum : scutellum 6 : 10 : 11. *Fore wing* (Fig. 25 A, B) length to width 100 : 45 ; venation *m* : *pm* : *st* 100 : 100 : 64 ; *sm* long, with 19 setae directed forward ; *m* with 8 and *pm* with 9 setae. *Hind wing* to fore wing 75 : 100 ; length to width 100 : 24. *Fore leg* (Fig. 25 G, H) : Coxa 2.00 times longer than thick ; femur 1.60 times coxa, 4.37 times longer than thick ; tibia slender, 0.91 of femur, 6.80 times longer than thick ; tarsus subequal to tibia ; metatarsus about 0.30 of tibia or tarsus. *Middle leg* : Coxa 1.47 times longer than thick ; femur 2.64 times coxa, 4.93 times longer than thick ; tibia slender, about 1.30 times femur, 10.66 times longer than thick, tibial spur to metatarsus 8.00 : 12.00 ; tarsus 0.79 of tibia and very slightly longer than femur ; metatarsus 0.25 of tibia and 0.31 of tarsus. *Hind leg* (Fig. 25 I) : Coxa 1.84 times longer than thick ; femur thickened in the middle, 1.66 times coxa, 4.00 times longer than thick ; tibia slender, with a row of stiff bristles dorsally, 1.35 times femur, 9.00 times longer than thick, tibial spurs unequal, shorter one about 0.45 of the long spur, longer tibial spur to metatarsus 50 : 100 ; tarsus 0.87 of tibia ; metatarsus 0.25 of tibia and about 0.30 of tarsus.

*Abdomen* smooth and shiny ; 0.48 of body ; viewed laterally (Fig. 25 J) length to height 100 : 57 ; petiole short ; fourth targite longest ; ovipositor well exerted beyond the tip of abdomen.

*Holotype* : Female on card (one set of wings, antenna and legs on slide) ; *paratype* 1 female on card (genitalia mounted on slide), 1.1. Ahla Catchment Area : Dalhousie, Coll. *Mani & party*, 17. v. 1971.

## 22. *Prodecatoma bengalensis*, sp. nov.

*Male* : Length 3.64 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles reddish ; antenna black ; thorax black ; fore leg black except for the brown tip of femur, brown tibia which is black on the dorsal surface and paler apically, brownish tibial spur and tarsus ; middle and hind legs black except for the brown tip of femur, base of tibia, and whitish apical 0.33 of tibiae, tibial spurs and tarsal segments ; wings hyaline ; veins brownish ; abdominal petiole and abdomen black.

*Head* closely umbilicately shallowly punctate ; clypeus longitudinally striate ; vertex hairy ; eyes bare ; mandibles bidentate ; antennal sockets slightly above the middle of face ; scrobe shiny, strongly margined, front ocellus inside it. Head viewed from above (Fig. 26 F) slightly wider than thorax ; viewed in front (Fig. 26 E) length to width 77 : 100 ; eye length to head length 55 : 100 ; ocellocular space 1.50 times ocellar diameter ; interocellar space 2.50 times ocellar diameter ; front ocellar space almost equal to the ocellar diameter. *Antenna* (Fig. 26 C, D) : Segments 10, 1.1.1.6.1. Scape abruptly narrow in the apical half ; 3.21 times longer than thick ; pedicel short, subglobose, 0.19 of scape, its length about 0.87 of its thickness ; ring segment minute ; funicular segments constricted at their apices ; flagellar segments with whorls of very long setae ; first funicular segment 0.77 of scape, about 3.00 times longer than thick ; second funicular segment about 1.10 times the first segment, 3.41 times longer than thick ; third and fourth funicular segments subequal and longest ; third funicular segment about 1.10 times the second segment, 3.90 times longer than thick ; fifth funicular segment, subequal to the second segment, about 4.00 times longer than thick ; sixth funicular segment 0.70 of the preceding segment, 3.50 times longer than thick ; club subequal to the preceding funicular segment, slightly reduced apically, 3.50 times longer than thick.

*Thorax* closely umbilicately shallowly punctate ; parapsidal furrows present ; viewed dorsally length to width 100.65 ; viewed laterally length to height 100 : 63 ; pronotum : mesoscutum : scutellum

5 : 6 : 10. *Fore wing* (Fig. 26 A, B) length to width 100 : 46 ; marginal fringe short ; discal ciliation complete ; venation  $m : pm : st$  100 : 80 : 53 ;  $sm$  long, with 15 short setae directed forward ;  $m$  and  $pm$  with 16 setae. *Hind leg* (Fig. 26 G) : Coxa 1.46 times longer than thick ; femur thickened in the middle, 4.25 times longer than thick ; tibia very

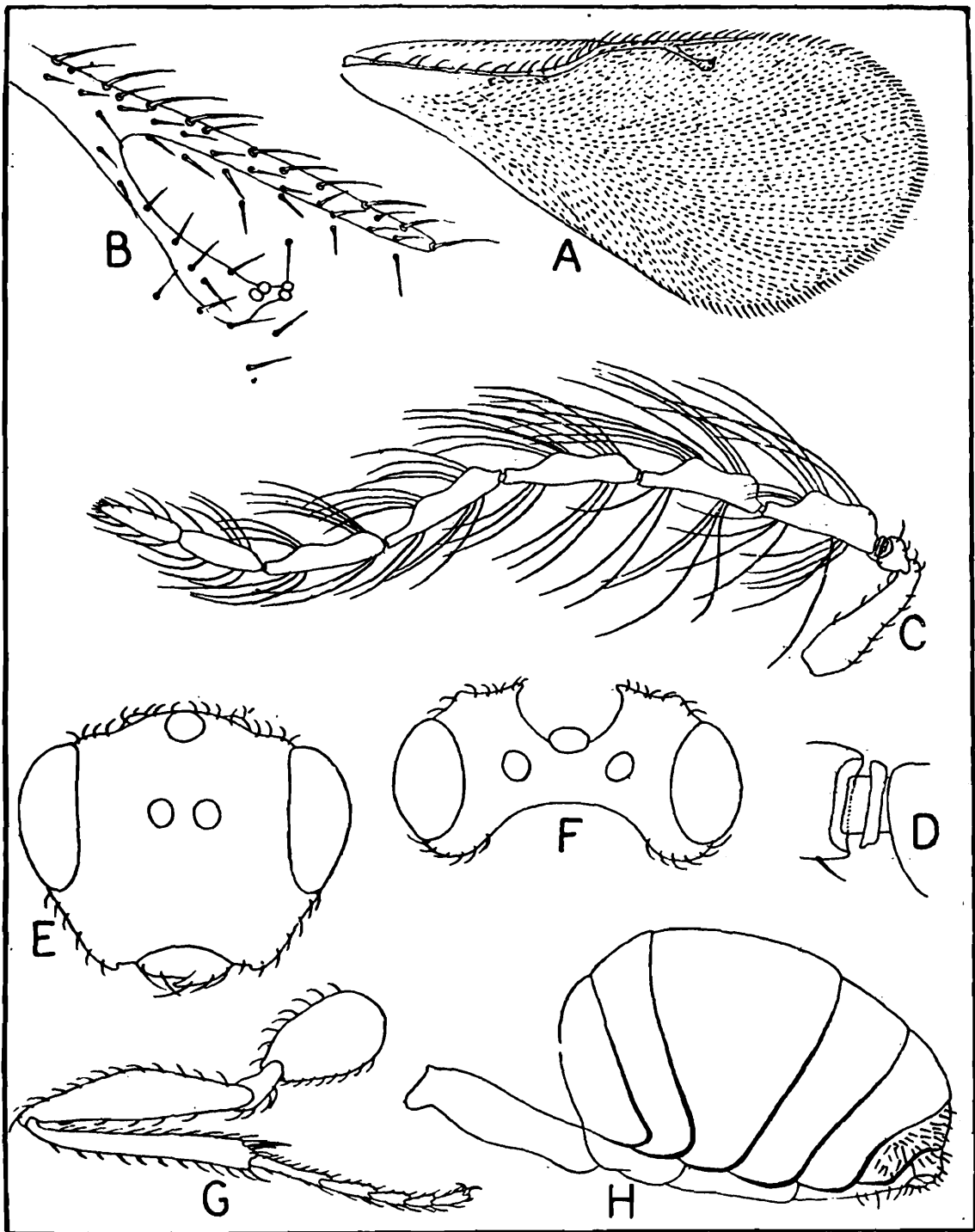


Fig. 26. *Prodecatoma bengalensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna. D. anellus, E. head in front view, F. head viewed from above, G. hind leg. H. abdomen.

slightly thickens apically, slightly longer than femur, dorsally with 7 stiff bristles, 7.20 times longer than thick, tibial spurs 2, shorter spur about 0.60 of the long spur, longer spur to metatarsus 7.50 : 11.00 ; tarsus subequal to tibia ; metatarsus 0.33 of tibia or tarsus ; second segment 0.68 of metatarsus ; third segment 0.66 of the second segment ; fourth segment 0.80 of the third segment ; fifth tarsal segment 1.37 times the preceding segment.

*Abdomen* smooth ; petiole matt, with leathery sculpture ; including petiole 0.44 of body ; viewed laterally (Fig. 26 H) length to height 100 : 80 ; petiole length to width 100 : 27, petiole to abdomen 60 : 100 ; third tergite largest.

*Holotype* : Male on card (one fore leg, hind legs, wings, and antennae mounted on slide), 16.3 (2). Raja Bhat Khawa (North Bengal Survey), Coll. *M.S. Mani & party*, 2-18. iv. 1976.

### 23. *Prodecatoma brachynerva*, sp. nov.

*Male* : Length 2.34 mm. General colour of body black ; head black ; eyes and ocelli dark brown ; mandibles reddish-brown ; antenna brown except for the lighter scape ; thorax black ; fore and middle legs brown except for the lighter tarsi and black coxae ; hind leg dark brown except for the black coxa, brownish-black apical 0.50 of femur and very light brown tarsal segments ; wings hyaline ; veins brownish ; abdomen black ; aedeagus yellowish-brown.

*Head* closely umbilicately punctate ; vertex hairy ; eyes finely and sparsely pubescent ; mandibles bidentate ; antennal sockets in the middle of face ; scrobe shiny ; front ocellus inside the scrobe. Head viewed from above (Fig. 27 F) almost as wide as thorax ; viewed in front (Fig. 27 E) length to width 76 : 100 ; eye length to head length 53 : 100 ; ocellocular space 1.40 times ocellar diameter ; interocellar space about 3.00 times ocellar diameter ; front ocellar space almost equal to the ocellar diameter. *Antenna* (Fig. 27 C, D) : Segments 10, 1.1.1.5.2. Scape slightly reduced in the apical 0.25, 3.14 times longer than thick ; pedicel 0.27 of scape, almost as long as thick ; ring segment distinctly transverse ; funicular and club segments with whorls of long hairs ; first funicular segment longest, 0.63 of scape, 2.00 times longer than thick ; 2-4 funicular segments subequal ; second funicular segment 0.78 of the first segment, 1.57 times longer than thick ; third and fourth funicular segments about 1.40 times longer than thick ;

fifth funicular segment 0.80 of the fourth segment, 1.14 times longer than thick ; club ovate, indistinctly segmented, subequal to the preceding 1.77 funicular segments combined ; first club segment subequal to the preceding funicular segment ; second club segment shortly conical, subequal to the first segment in its length, 1.33 times longer than thick.

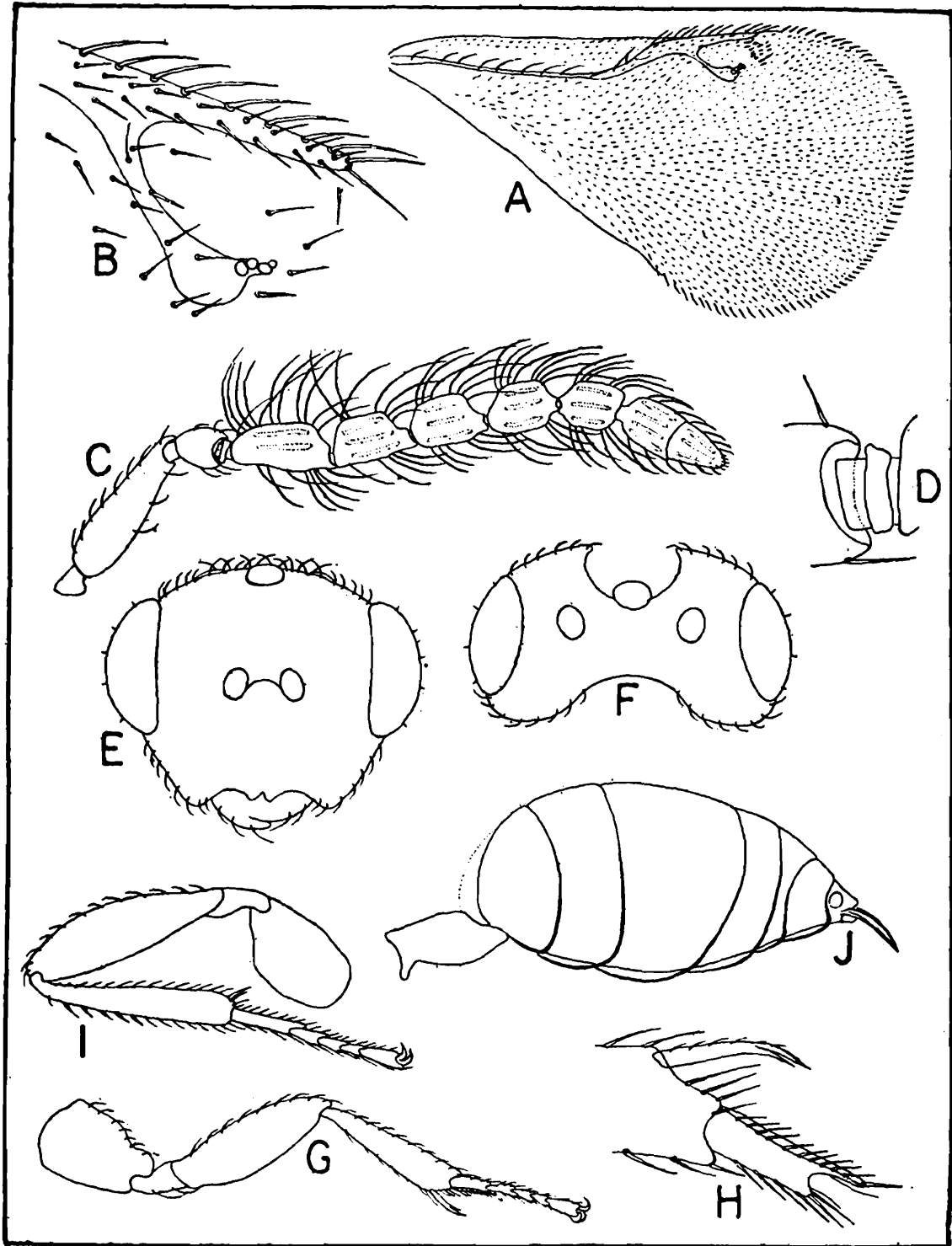


Fig. 27. *Prodecatoma brachynerva*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I. hind leg, J. abdomen.

*Thorax* closely umbilicately punctate ; parapsidal furrows present ; viewed dorsally length to width 100 : 57 ; viewed laterally length to height 100 : 57 ; pronotum ; mesoscutum : scutellum 7.5 : 10 : 11. *Fore wing* (Fig. 27 A, B) length to width 100 : 54 ; marginal fringe short ; venation  $m : pm : st$  100 : 117 : 100 ;  $sm$  long, with 12 short setae directed forward ;  $m$  and  $pm$  with 12 setae. *Hind leg* (Fig. 27 I) : Coxa 1.50 times longer than thick ; femur thickened in the middle, 3.50 times longer than thick ; tibia thickens apically, subequal to femur, 6.00 times longer than thick, dorsally with 5 stiff bristles, tibial spurs 2, shorter one about 0.75 of the long spur, longer spur to metatarsus 4.00 : 10.00 ; tarsus 0.85 of tibia ; metatarsus 0.31 of tibia and 0.37 of tarsus ; second segment about 0.50 of metatarsus ; third segment 0.75 of the second segment ; fourth segment 0.66 of the third segment ; fifth tarsal segment 1.25 times the second segment.

*Abdomen* smooth and shiny ; including petiole about 0.47 of body ; viewed laterally (Fig. 27 J) length to height 100 : 48 ; petiole matt, length to width 100 : 55, petiole to abdomen 25 : 100 ; third tergite largest ; aedeagus slightly exerted beyond the top of abdomen.

*Holotype* : Male on card ; *paratype* 1 male on card (one fore leg and middle leg, fore wings, hind legs and antennae on slide), 9.14. Mandapam (Coromandel Coast), Coll. *M. S. Mani & party*, 1. v. 1973.

#### 24. *Prodecatoma fusciscapa*, sp. nov.

*Male* : Length 2.28 mm. General colour of body black ; head black ; eyes and ocelli black ; mandibles brownish ; antenna brownish-black except for the brownish scape ; thorax black ; fore and middle legs brown except for the darker coxae ; hind leg dark brown except for the black coxa, and brownish tibial spurs and tarsal segments ; wings hyaline ; veins brownish ; abdominal petiole and abdomen black ; aedeagus brownish.

*Head* closely umbilicately punctate ; vertex closely pubescent ; eyes bare ; mandibles bidentate ; antennal sockets in the middle of face ; scrobe shiny and margined ; front ocellus inside the scrobe. Head viewed from above (Fig. 28 F) slightly wider than thorax ; viewed in front (Fig. 28 E) length to width 77 : 100 ; eye length to head length 56 : 100 ; ocellocular space about 2.00 times ocellar diameter ; interocellar space about 4.00 times ocellar diameter ; front ocellar space

about 1.40 times ocellar diameter. *Antenna* (Fig. 28 C, D) : Segments 10, 1.1.1.5.2. Scape short, abruptly reduced apically, about 3.00 times longer than thick ; pedicel transverse, 0.18 of scape, its length about 0.55 of its thickness ; ring segment minute ; funicular segments constricted at their apices, with slender necks ; flagellar segments with whorls of very long hairs ; first funicular segment 0.82 of scape, about 2.00 times longer than thick ; second and third funicular segments subequal ; second funicular segment slightly longer than the first segment, 2.50 times longer than thick ; fourth funicular segment subequal to the first segment in its length, 2.36 times longer than thick ; fifth funicular segment slightly shorter than the preceding segment, 2.36 times longer than thick ; club indistinctly segmented, subequal to the preceding 1.20 funicular segments combined ; first club segment 0.70 of the preceding funicular segment, 1.81 times longer than thick ; second club segment shortly conical, 0.83 of the first segment, about 2.00 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows complete ; viewed dorsally length to width 100 : 59 ; viewed laterally length to height 100 : 65 ; pronotum ; mesoscutum : scutellum 6 : 11 : 9. *Fore wing* (Fig. 28 A, B) length to width 100 : 50 ; marginal fringe normal ; venation  $m : pm : st$  100 : 67 : 54 ;  $sm$  long, with 16 short setae directed forward ;  $m$  and  $pm$  with 13 setae. *Hind leg* (Fig. 28 G) : Coxa 1.60 times longer than thick ; femur thickened in the middle, 3.76 times longer than thick ; tibia slightly thickens apically, subequal to the femur, dorsally with a row of stiff bristles, 8.05 times longer than thick, tibial spurs 2, shorter one about, 0.60 of the long spur, longer spur to metatarsus 4.80 : 6.00 ; tarsus about 0.80 of tibia ; metatarsus about 0.20 of tibia and 0.26 of tarsus ; second segment 0.75 of metatarsus ; third segment 0.77 of the second segment ; fourth segment 0.85 of the third segment ; fifth tarsal segment 2.00 times the preceding segment.

*Abdomen* smooth ; petiole matt ; including petiole 0.43 of body ; viewed laterally (Fig. 28 H) length to height 100 : 74 ; petiole as long as the hind coxa, length to width 100 : 33, petiole to abdomen 43 : 100 ; third targite largest ; aedeagus exerted beyond the tip of abdomen.

*Holotype*: Male on card; *paratype* 1 male on card (wings, legs, antennae and head mounted on slide), 9. 2. Nilambur (Malabar), Coll. M. S. Mani & party, 8. iv. 1973.

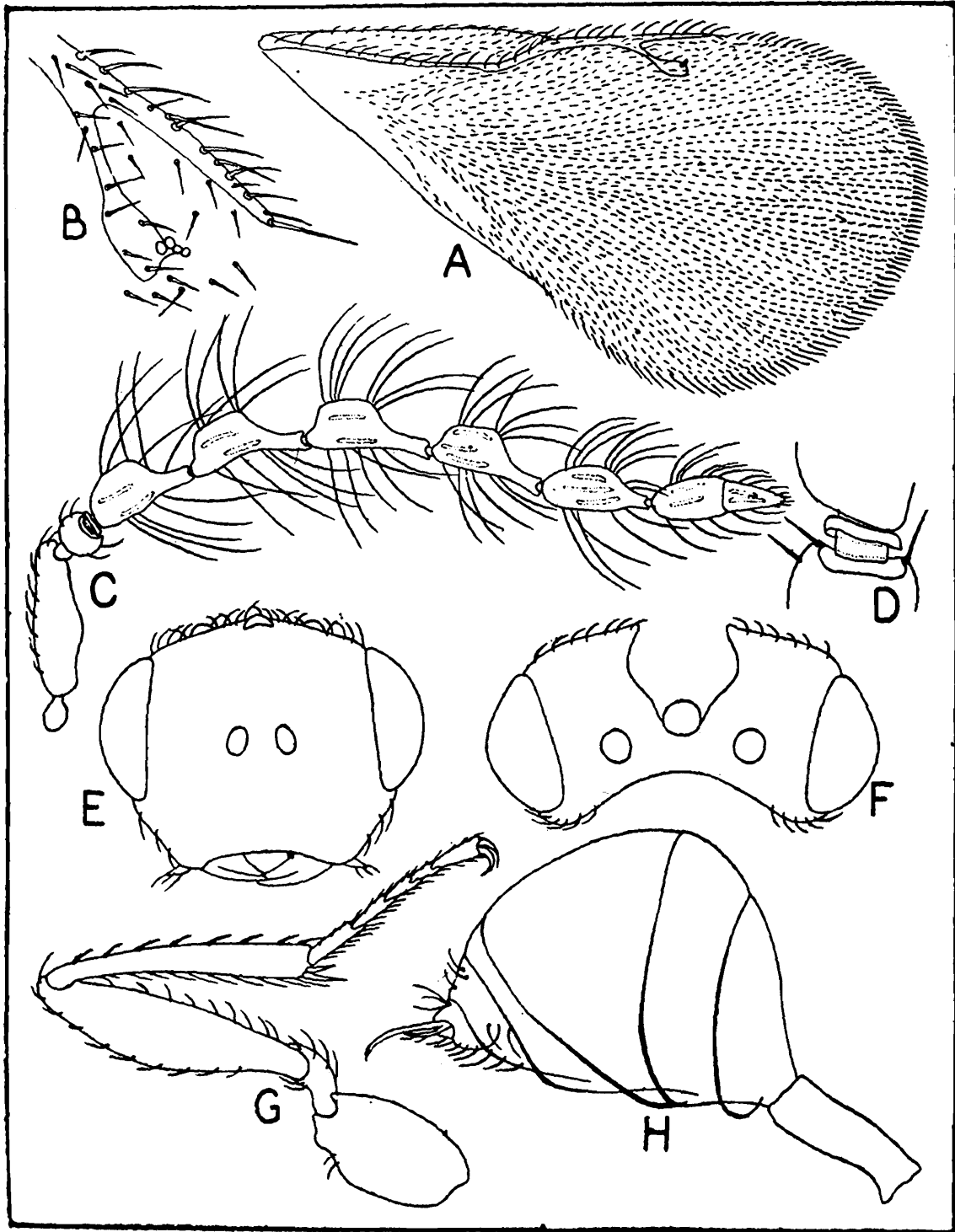


Fig. 28. *Prodecatoma fusciscapa*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus,  
E. head in front view, F. head viewed from above, G. hind leg,  
H. abdomen.

**25. *Prodecatoma hogenakalensis*, sp. nov.**

*Male* : Length 2.90 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles reddish ; antenna black except for the brownish-black pedicel and brown scape which is black apically on the dorsal half ; thorax black ; legs yellowish-brown except for the black coxae and whitish tip of femur, tibiae basally and apically, tibial spurs and tarsal segments ; wings hyaline ; veins very light brown ; abdominal petiole and abdomen black.

*Head* closely umbilicately punctate ; clothed with dense white hairs ; vertex finely and densely pubescent ; eyes finely and sparsely pubescent ; mandibles bidentate ; antennal sockets a little above the middle of face ; scrobe smooth and deep ; front ocellus inside the scrobe. Head viewed from above (Fig. 29 F) almost as wide as thorax ; viewed in front (Fig. 29E) length to width 73 : 100 ; eye length to head length 57 : 100 ; ocellocular space about 1.80 times ocellar diameter ; interocellar space 3.30 times ocellar diameter ; front ocellar space subequal to the ocellar diameter. *Antenna* (Fig. 29 C, D) : Segments 10, 1.1.1.5.2. Scape short, very slightly thickened subapically, 3.22 times longer than thick ; pedicel 0.24 of scape, almost as long as thick ; ring segment minute ; funicular segments constricted at their apices with short necks ; flagellar segments with whorls of long hairs ; first funicular segment about 0.69 of scape, 2.00 times longer than thick : second and third funicular segments subequal to the first segment ; fourth funicular segment subequal to the preceding segment in its length, 2.50 times longer than thick ; fifth funicular segment very slightly shorter than the preceding segment, 2.57 times longer than thick ; club segments distinctly separated from each other, subequal to the preceding 1.50 funicular segments combined ; first club segment 0.83 of the fifth funicular segment, a little more than 2.00 times longer than thick ; second club segment conical, subequal to the first segment, 2.50 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows present ; viewed dorsally length to width 100 : 65 ; viewed laterally length to height 100 : 73 ; pronotum ; mesoscutum : scutellum 6 : 9 : 9. *Fore Wing* (Fig. 29 A, B) length to width 100 : 50 ; marginal fringe very short ; venation  $m : pm : st$  100 : 111 : 89 ;  $sm$  long ;  $m$  and  $pm$  with 12 short setae directed forward. *Hind leg* (Fig. 29 G) : Coxa 1.13 times longer than thick ; femur thickened in the middle, about 4.00 times longer

than thick ; tibia slightly thickens apically, subequal to femur, dorsally with a row of stiff bristles, 5.83 times longer than thick, tibial spurs 2, shorter spur about 0.66 of the long spur, longer spur to metatarsus 7.00 : 8.00 ; tarsus 0.85 of tibia ; metatarsus about 0.23 of tibia and 0.26 of tarsus ; second segment 0.81 of metatarsus ; third segment 0.77 of the second segment ; fourth segment 0.70 of the third segment ; fifth tarsal segment 1.71 times the preceding segment.

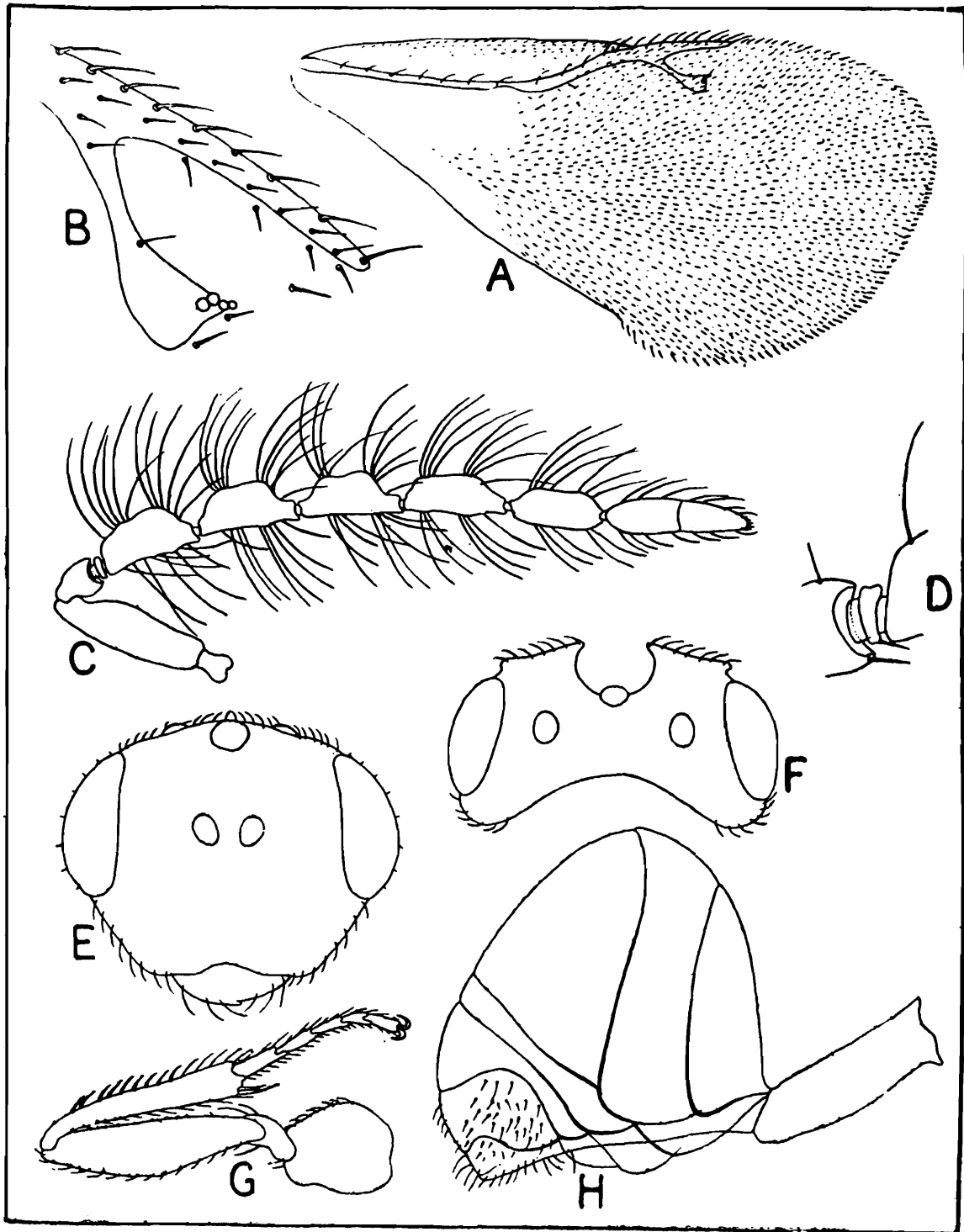


Fig. 29. *Prodecatoma hogenakalensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view. F. head viewed from above, G. hind leg, H. abdomen.

*Abdomen* smooth and shiny ; petiole matt, finely reticulate ; including petiole 0.39 of body ; viewed laterally (Fig. 29 H) length to height 87 : 100 ; petiole 1.50 times the hind coxa, length to width 100 : 29, petiole to abdomen 73 : 100 ; third tergite largest.

*Holotype* : Male on card (Wings, antennae, and hind legs on slide), 17.8. Hogenakal ( Eastern Ghats Survey), Coll. *M. S. Mani & party*, 1. 11. 1977.

25. ***Prodecatoma moozhiarensis***, sp. nov.

*Male* : Length 3.81 mm. General colour of body black ; head black ; eyes and ocelli reddish-brown ; mandibles reddish ; antenna black except for the brownish-black base of scape ; thorax black ; fore leg black except for the brown tip of femur, tibia paler apically and basally, brownish tibial spur and tarsus ; middle leg very dark brown except for the black coxa, brown tip of femur and base of tibia, brownish tibial spur and tarsal segments ; hind leg black except for the dark brown tip of femur and tibia, brownish tibial spur and tarsal segments ; wings hyaline ; veins dark brown ; abdominal petiole and abdomen black.

*Head* closely umbilicately punctate ; densely clothed with white hairs ; vertex pubescent ; eyes bare ; antennal sockets a little above the middle of face ; scrobe smooth and deep ; front ocellus inside the scrobe. Head viewed from above (Fig. 30 F) distinctly wider than thorax ; viewed in front (Fig. 30E) length to width 72 : 100 ; eye length to head length 58 : 100 ; ocellocular space 2.10 times ocellar diameter ; interocellar space 4.35 times ocellar diameter ; front ocellar space about 1.40 times ocellar diameter. *Antenna* (Fig. 30 C, D) : Segments 10, 1.1.1.5.2. Scape short, thickened basally, 3.33 times longer than thick ; pedicel 0.12 of scape, transverse, its length 0.55 of its thickness ; ring segment minute ; funicular segment constricted at their apices, with long necks ; funicular and club segments with whorls of very long hairs ; first funicular segment 0.70 of scape, 2.50 times longer than thick ; second funicular segment 1.14 times the first segment, 3.55 times longer than thick ; third funicular segment subequal to the second segment ; fourth funicular segment 1.09 times the third segment, about 4.00 times longer than thick ; fifth funicular segment 0.86 of the fourth segment, 3.75 times longer than thick ; first club segment 0.83 of the

preceding segment, 3.12 times longer than thick; second segment elongately ovate, very slightly shorter than the preceding segment, 3.00 times longer than thick.

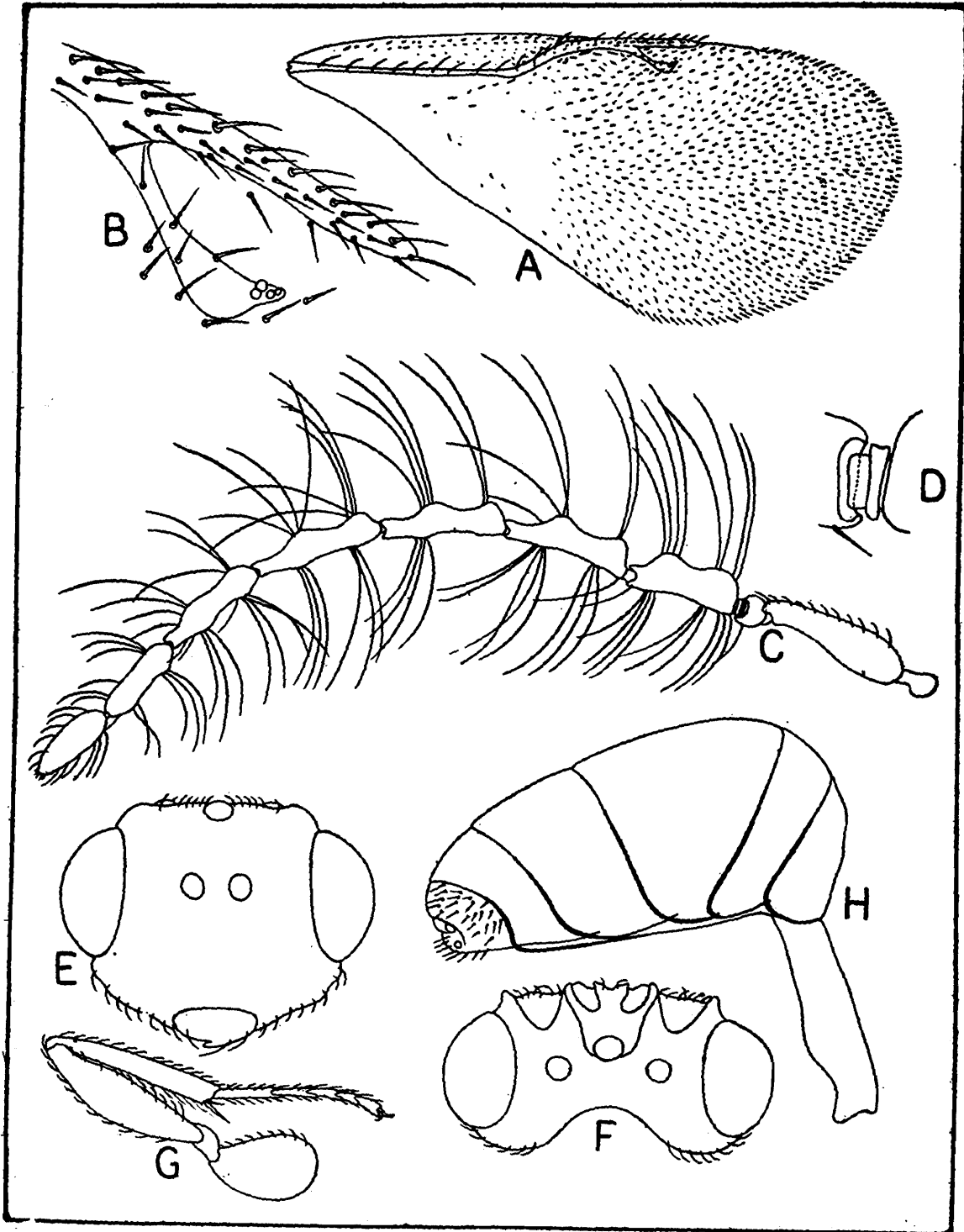


Fig. 30. *Prodecatoma moozhiarensis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen,

*Thorax* closely umbilicately punctate; parapsidal furrows complete; viewed dorsally length to width 100 : 56; viewed laterally

length to height 100 : 60 ; pronotum : mesoscutum : scutellum 6 : 11 : 9. *Fore wing* (Fig. 30A, B) length to width 100 : 45 ; marginal fringe almost absent ; venation *m* : *pm* : *st* 100 : 79 : 50 ; *sm* long ; *sm*, *m* and *pm* with a series of short setae. *Hind leg* (Fig. 30 G) : Coxa 1.46 times longer than thick ; femur thickened in the middle, 3.80 times longer than thick ; tibia more or less slender, cylindrical, subequal to femur, 7.80 times longer than thick, tibial spurs 2, shorter one about 0.50 of the long spur, longer spur to metatarsus 8.00 ; 13.00 ; tarsus 0.94 of tibia ; metatarsus 0.33 of tibia and 0.35 of tarsus ; second segment 0.61 of metatarsus ; third segment 0.75 of the second segment ; fourth segment 0.75 of the third segment ; fifth tarsal segment slightly longer than the third segment.

*Abdomen* smooth ; petiole closely punctate ; including petiole about 0.50 of body ; abdomen viewed laterally (Fig. 30 H) length to height 100 : 58 ; petiole nearly twice the hind coxa, 3.20 times longer than thick ; third tergite largest.

*Holotype* : Male on card ; *paratype* 1 male on card (one pair of wings, legs and antennae on slide), 9. 11. Moozhiaar-Tekkady Rd. (Cardomam Hills), Coll. *M. S. Mani & party*, 19-20. iv. 1973.

## 27. *Prodecatoma nilamburensis*, sp. nov.

*Female* : Length 3.28 mm. General colour of body black ; head black ; eyes and ocelli brownish-black ; mandibles black except for the reddish-brown teeth ; antenna brownish-black except for dark brown club, black scape and pedicel ; thorax black ; fore leg dark brown except for the black coxa and femur except for its tip ; middle leg brownish-black except for the black coxa, dark brown base and tip of femur and tibia, and brownish tarsus ; hind leg black except for the dark brown base and tip of tibia, and brown tarsus ; wings hyaline : veins brown ; abdomen black.

*Head* closely shallowly umbilicately punctate ; gena and face longitudinally striate ; vertex hairy ; eyes bare ; mandibles bidentate ; antennal sockets very slightly above the lower orbital border ; scrobe deep and shiny ; front ocellus inside the scrobe. Head viewed from above (Fig. 31F) a little wider than thorax ; length to width 44 : 100 ; viewed in front (Fig. 31E) length to width 74 : 100 ; eye

length to head length 55 : 100 ; ocellular space 1.25 times ocellar diameter ; interocellar space about 4.00 times ocellar diameter ; front ocellar space equal to the diameter of median ocellus. *Antenna* (Fig. 31 C, D) ; Segments 10, 1.1.1.5.2. Scape long, slender slightly reduced apically, 4.75 times longer than thick pedicel short, 0.21 of scape, 1.11 times longer than thick ; first funicular segment longest 1.75 times the pedicel, 1.40 times longer than thick ; 2-5 funicular segments subequal, each about 0.92 of the first segment, 1.30 times longer than thick ; club subequal to the preceding 2.15 funicular segments combined ; first club segment 0.76 of the preceding funicular segment, as long as thick ; second club segment conically pointed, almost 2.00 times the first segment and 2.00 times longer than thick.

*Thorax* closely umbilicately punctate ; propodeum with a faint longitudinal carina on either side of the median line ; parapsidal furrows present ; viewed dorsally length to width 100 : 64 ; pronotum : mesoscutum : scutellum 6 : 9 : 9. *Fore wing* (Fig. 31 A, B) length to width about 100 : 50 ; venation  $m : pm : st$  100 : 100 : 75 ;  $sm$  long with 12 setae directed forward ;  $m$  with 8 and  $pm$  also with 8 setae ; marginal fringe very short. *Hind wing* to fore wing 78 : 100 ; length to width 100 : 28. *Fore leg* : Coxa 1.33 times longer than thick ; femur 1.50 times coxa, 3.00 times longer than thick : tibia slender, subequal to the femur, 6.00 times longer than thick, tibial spur bifurcated, tibial spur to metatarsus 10.00 : 8.50 ; tarsus subequal to the tibia ; metatarsus 0.28 of tibia or tarsus. *Middle leg* : Coxa 1.18 times longer than thick ; femur 2.53 times coxa, 4.12 times longer than thick ; tibia slender, 1.24 times femur, 8.94 times longer than thick, tibial spur to metatarsus 9.00 : 12.00 ; tarsus about 0.83 of tibia ; metatarsus 0.29 of tibia and 0.35 of tarsus. *Hind leg* (Fig. 31 G) : Coxa about 1.30 times longer than thick ; femur thickened in the middle, 1.81 times coxa, 3.63 times longer than thick ; tibia thickens apically, 1.12 times femur, 6.92 times longer than thick, tibial spurs 2, shorter one about 0.45 of the long spur, longer spur to metatarsus 8.00 : 10.00 ; tarsus 0.75 of tibia ; metatarsus 0.22 of tibia and 0.29 of tarsus.

*Abdomen* smooth and shiny ; 0.50 of body ; viewed laterally (Fig. 31 H) length to height 100 : 62 ; petiole short and transverse ; fourth tergite (sixth of bugbee) longest, fifth and sixth subequal ; ovipositor slightly exerted,

*Holotype* : Female on card (antennae, wings and one set of legs on slide), *paratype* 1 female (genitalia mounted on slide), 9.2. Nilambur (Malabar); Coll, M. S. Mani & party, 11. iv. 1973.

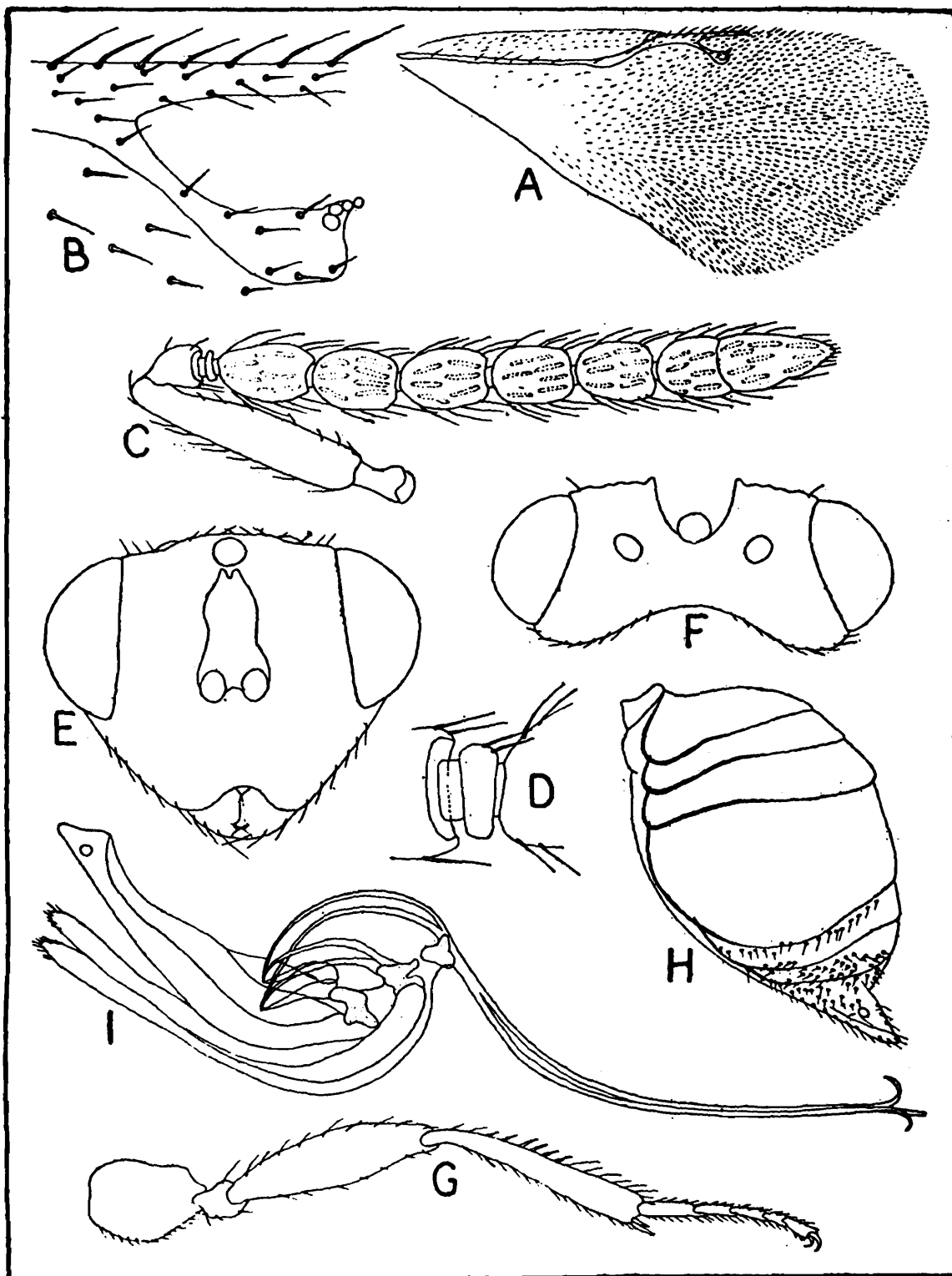


Fig. 31. *Prodecatoma nilamburensis*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna. D. anellus, E. head in front view, F. head viewed from above, G. hind leg. H. abdomen. I. genitalia.

**28. Prodecatoma postmarginalis, sp. nov.**

*Male* : length 3.24 mm. General colour of body black ; head black ; eyes and ocelli brown ; mandibles reddish except for the black teeth ; antenna black except for the brown scape ; thorax black ; fore leg brown except for the black coxa and yellowish-brown tip of femur, base and tip of tibia, tibial spur and tarsal segments ; middle and hind legs dark brown except for the black coxae, and yellowish tip of femur, tibiae basally and apically, tibial spurs and tarsal segments ; wings hyaline ; veins brownish ; abdominal petiole and abdomen black.

*Head* closely umbilicately punctate ; densely clothed with white hairs ; vertex densely pubescent ; eyes very finely and sparsely pubescent ; antennal sockets in the middle of face ; scrobe shiny ; front ocellus inside the scrobe. Head viewed from above (Fig. 32 F) slightly wider than thorax ; viewed in front (Fig. 32 E) length to width 75 : 100 ; eye length to head length 62 : 100 ; ocellular space 1.50 times ocellar diameter ; interocellar space 3.00 times ocellar diameter ; front ocellar space equal to the ocellar diameter. *Antenna* (Fig. 32, C, D) : Segments 10, 1.1.1.5.2. Scape uniformly slender, 3.45 times longer than thick ; pedicel short, subglobose, about 0.16 of scape, its length about 0.75 of its thickness ; ring segment transverse ; flagellar segments with whorls of long hairs ; first funicular segment 0.65 of scape, 2.17 times longer than thick ; second and third funicular segments subequal ; second funicular segment very slightly longer than the first segment, 2.60 times longer than thick ; fourth funicular segment subequal to the first segment in its length, 2.95 times longer than thick ; fifth funicular segment 0.80 of the preceding segment, 2.38 times longer than thick ; club subequal to the preceding 1.33 funicular segments combined ; segments distinctly separated from each other ; first club segment 0.70 of the preceding funicular segment, 1.70 times longer than thick ; second club segment ovate, 1.14 times the first segment, 2.16 times longer than thick.

*Thorax* closely umbilicately punctate ; parapsidal furrows distinct ; viewed dorsally length to width 100 : 67 ; viewed laterally length to height 100 : 64 ; pronotum ; mesoscutum ; scutellum

6:9:12. Fore wing (Fig. 32 A, B) length to width 100:49; marginal fringe very short; venation  $m:pm:st$  100:140:80;  $sm$  long, with 23 short setae directed forward;  $m$

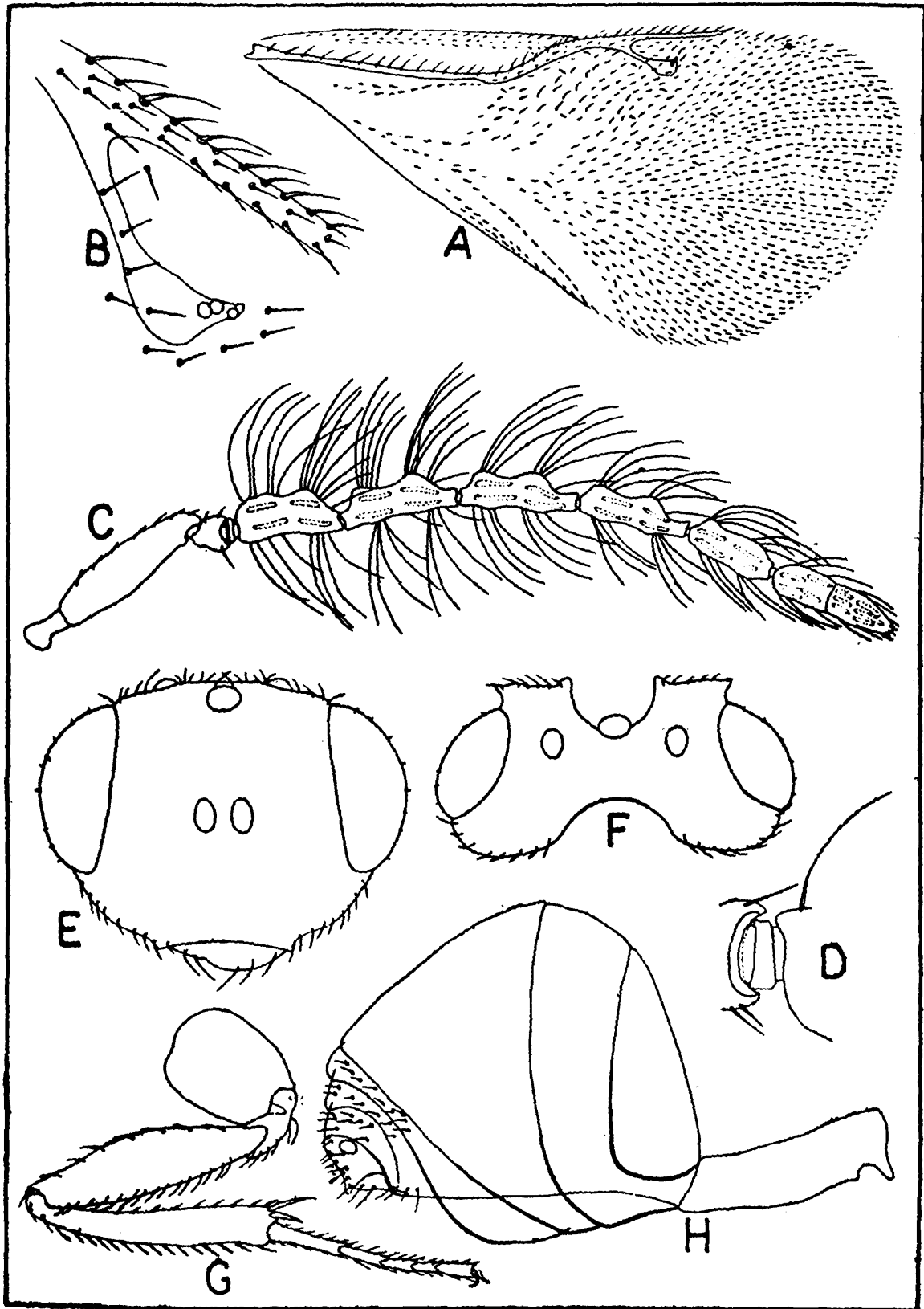


Fig. 32. *Prodecatoma postmarginalis*, sp. nov. Male.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. hind leg, H. abdomen.

and *pm* with a series of setae. *Hind leg* (Fig. 32 G): Coxa 1.21 times longer than thick; femur thickened in the middle, 3.71 times longer than thick; tibia slightly thickens apically, dorsally, and ventrally with a row of stiff bristly, very slightly longer than femur, 6.30 times longer than thick, tibial spurs 2, shorter one about 0.66 of the long spur, longer spur to metatarsus 9.00 : 12.00; tarsus 0.85 of tibia; metatarsus 0.29 of tibia and 0.34 of tarsus; second segment 0.62 of metatarsus; third segment 0.66 of the second segment; fourth segment 0.80 of the third segment; fifth tarsal segment 1.20 times the third segment.

*Abdomen* smooth and shiny petiole matt, finely reticulate; including petiole 0.43 of body; viewed laterally (Fig. 32 H) length to height 100 : 82; petiole slightly longer than the hind coxa, length to width 100 : 30; petiole to abdomen 56 : 100; tergite largest.

*Holotype*: Male on card (one fore leg, one fore wing, hind legs, and antennae mounted on slide); *paratype* 1 male on card (one pair of wings, legs and antennae on slide), 17.8 Hogenakal (Eastern Ghats Survey), Coll. M.S. Mani & party, 1.ii. 1977; *Other material examined* 2 males on cards, 9.2. Nilambur (Malabar) Coll. M.S. Mani & party, 11.iv. 1973.

#### KEY TO SPECIES OF *PRODECATOMA*

- |  |   |
|--|---|
| 1. Males,  | .....2                                    |
| Females.   | .....10                                   |
| 2. Head not wholly umbilicate punctate ;<br>gena and clypeus striate | ..... <i>P. bengalensis</i> , sp. nov.    |
| Head wholly unbilicately punctate                                    | .....3                                    |
| 3. Small species, less than 3 mm long                                | .....4                                    |
| Large species ; 3 mm or more   | .....8                                    |
| 4. <i>pm</i> longer than <i>m</i>                                    | .....5                                    |
| <i>pm</i> equal or shorter than <i>m</i>                             | .....6                                    |
| 5. Funicular segments with long slender necks                        | ..... <i>P. hogenakalensis</i> , sp. nov. |

- Funicular segments with short necks  
 .....*P. brachynerva*, sp. nov.
6. *pm* equal to *m* .....*P. pongamiae* (Mani & Kurian)  
*pm* much shorter than *m* .....7
7. Scape 3 times longer than thick  
 .....*P. fusciscapna*, sp. nov.  
 Scape 5 times longer than thick  
 .....*P. mangicola* (Bhatnagar)
8. Scape 5 times as long as thick .....*P. bhatiai* Mani & Kaul  
 Scape shorter .....9
9. *pm* longer than *m* ; *pm* : *st* 100 : 57  
 .....*P. postmarginalis*, sp. nov.  
*pm* shorter than *m* ; *pm* : *st* 160 : 100  
 .....*P. moozhiarensis*, sp. nov.
10. Head uniformly umbilicately punctate .....11  
 Clypeus and gena striate ; otherwise head umbilicately  
 punctate .....*P. nilamburensis*, sp. nov.
11. Large species ; length over 3 mm .....12  
 Smaller species ; not exceeding 3 mm .....13
12. *pm* and *st* subequal .....*P. pongamiae* (Mani & Kurian)  
*pm* much shorter than *st* .....*P. sabiae* Mani
13. *pm* and *st* subequal .....*P. beesoni* Mani & Kaul  
*pm* longer than *st* .....*P. ahlaensis*, sp. nov.

## Tribe : DECATOMINI

29. *Decatoma karnatakensis*, sp. nov.

*Female* : Length 2.40 mm. General colour of body black, with dark reddish-brown ; vertex and gena black ; face below antennal sockets reddish-brown ; eyes and ocelli brown ; mandibles brown with reddish teeth ; antenna brownish except for the yellowish-brown scape and pedicel. Thorax black with pronotum laterally, mesopleura and propodeum reddish-brown ; legs reddish-brown except for the lighter tibiae, tibial spurs and tarsal segments ; wings hyaline with the usual brown spot at the junction of *pm*, *st* and *m* ; veins brownish. Abdomen brownish-black ; petiole very dark brown to black.

*Head* closely umbilicately punctate ; the punctate well separated from each other ; vertex hairy ; eyes finely and sparsely pubescent ; mandibles bidentate ; labial palpi biarticulate ; antennal sockets a little below the middle of face ; scrobe smooth and shiny, without conspicuous carinate margin ; median ocellus just outside the scrobe. Head viewed from above (Fig. 33 F) slightly wider than thorax ; viewed in front (Fig. 33 E) length to width 77 : 100 ; eye length to head length 57 : 100 ; ocellocular space 1.50 times ocellar diameter ; interocellar space 3.50 times ocellar diameter ; front ocellar space 1.17 times ocellar diameter. *Antenna* (Fig. 33 C, D) : Segments 9, 1. 1. 1. 5. 1. Scape long, slightly reduced apically, 5.17 times longer than thick ; pedicel 0.37 of scape, 2.20 times longer than thick ; ring segment minute ; first funicular segment about 0.50 of pedicel, 1.17 times longer than thick ; second funicular segment 0.92 of the first segment, transverse, its length 0.96 of its thickness ; third funicular segment 1.20 times the second segment, 1.07 times longer than thick ; fourth funicular segment subequal to the preceding segment in its length, almost as long as thick ; fifth funicular segment subequal to the preceding segment ; club subequal to the preceding 2.87 funicular segments combined ; club about 3.00 times longer than thick.

*Thorax* closely umbilicately punctate ; propodeum deeply reticulately umbilicately punctate, without a median carina ; parapsidal furrows complete ; thorax viewed dorsally length to width 100 : 68 ; viewed laterally length to height 100 : 62 ; pronotum : mesoscutum : scutellum 7 : 8 : 10. *Fore wing* (Fig. 33 A, B) length to width 100 : 45 ; marginal fringe moderate ; venation *m* : *pm* : *st* 100 : 57 : 64 ; *sm* long, with 11 setae directed forward ; *m* and *pm* with 8 setae. *Hind leg* (Fig. 33 G) : Coxa 1.33 times longer than thick ; femur thickened in the middle, 3.00 times longer than thick ; tibia very slightly thickens apically, dorsally with a row of 12 stiff bristles, 1.19 times femur, about 7.00 times longer than thick, tibial spurs 2, shorter one about 0.50 of the long spur, longer spur to metatarsus 4.50 : 7.00 ; tarsus 0.80 of tibia ; metatarsus 0.28 of tibia and 0.35 of tarsus ; second segment 0.64 of metatarsus ; third segment 0.66 of the second segment ; fourth segment 0.83 of the third segment ; fifth tarsal segment subequal to the third segment.

*Abdomen* smooth ; including petiole 0.47 of body ; viewed laterally (Fig. 33 H) length to height 100 : 65 ; petiole length to width 100 : 45, petiole to abdomen 24 : 100 ; fourth tergite longest ; ovipositor very slightly exserted.

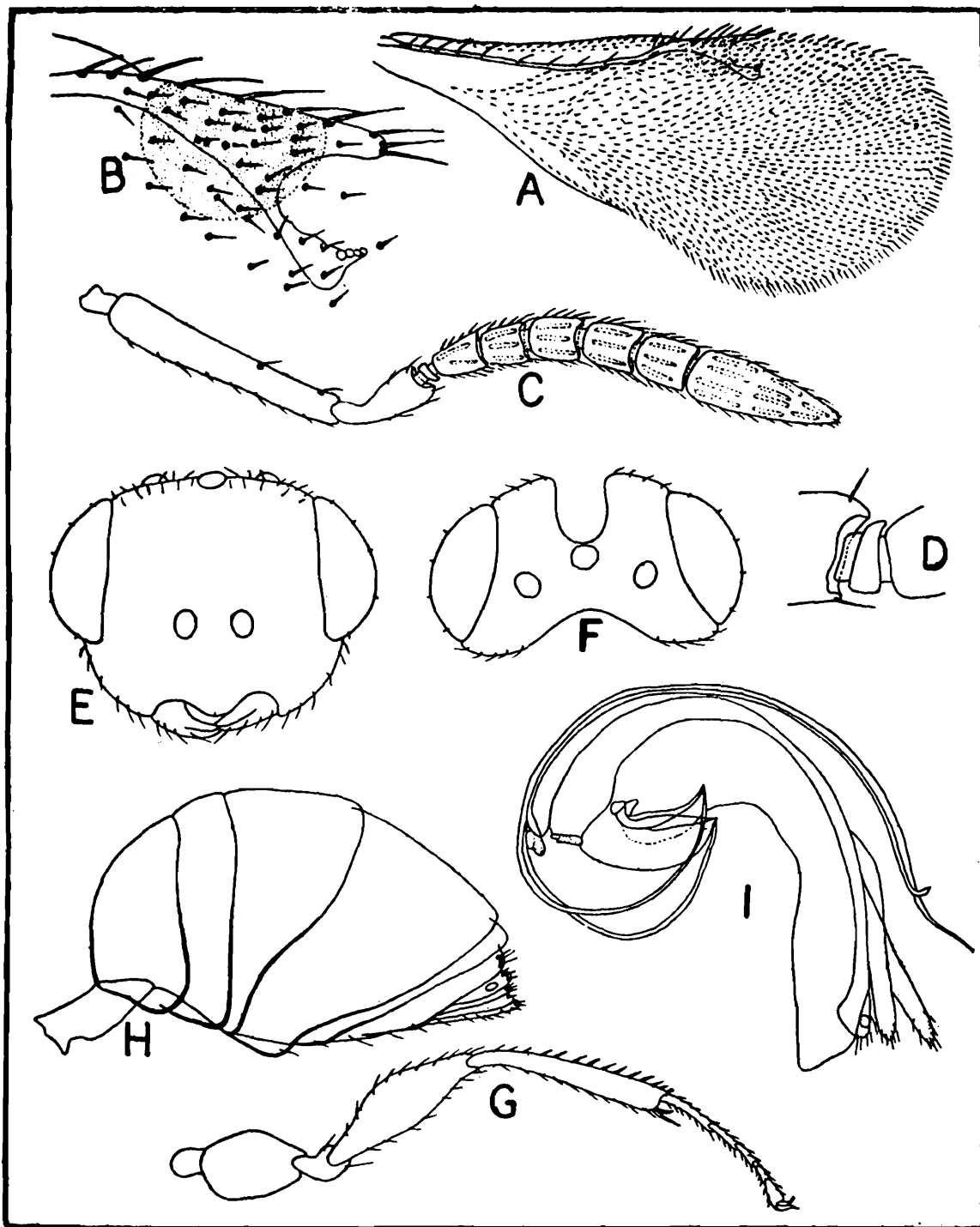


Fig. 33. *Decatoma karnatakensis*, sp. nov. Female.

- A. fore wing, B. stigmal vein, C. antenna, D. anellus,  
 E. head in front view, F. head viewed from above,  
 G. hind leg, H. abdomen, I. genitalia.

*Holotype* : Female on card (legs, wings and antenna mounted on slide), 14.5. Sullia (Western Ghats Survey), Coll. M.S. Mani & party, 14. iii. 1975. *Other material examined* : 1 female on card (genitalia on slide), 12.3. Kallar (Kerala Survey), Coll. M.S. Mani & party, 23, 24, 29. viii. 1974.

This species differs from the related Madagascar species in the different size of the body, unsegmented club and absence of carina on propodeum.

### 30. *Decatoma kollimaliana*, sp. nov.

*Female* : Length about 2.56 mm. General colour of body dark brown ; eyes black ; ocelli yellowish-brown. Antenna brown except for the yellowish-brown scape ; pronotum yellowish-brown, rest of the thorax dark brown ; legs brownish-yellow ; fore wings hyaline with a nearly circular dark brown spot at the *m* ; hind wings hyaline ; veins brownish ; abdominal petiole black ; first, second and third abdominal tergites slightly darker dorsally, rest dark brown.

*Head* : Vertex finely reticulate ; eyes and vertex bare : mandibles bidentate ; antennal sockets a little below the lower orbital border ; scrobe smooth and shiny ; front ocellus outside the scrobe. Head viewed from above (Fig. 34 F) a little wider than thorax ; length to width 57 : 100 ; viewed in front (Fig. 34 E) length to width 79 : 100 ; eye length to head length 55 : 100 ; ocellocular space 1.50 times ocellar diameter ; interocellar space 3.00 times ocellar diameter ; front ocellar space almost equal to the ocellar diameter. *Antenna* (Fig. 34 C, D) : Segments 11. 1.1.1.5.3. Scape slightly thickened basally, 3.70 times longer than thick ; pedicel 0.40 of scape, 1.33 times longer than thick ; first funicular segment longest 1.37 times the pedicel, 1.83 times longer than thick ; 2-5 funicular segments subequal, each about 0.72 of the first segment and 1.33 times longer than thick ; club subequal to the preceding 2.30 funicular segments combined ; club indistinctly 3 segmented ; first club segment slightly shorter than the preceding funicular segment and only very slightly longer than its thickness ; second and third club segments combined about 2.00 times the first segment, a little more than 2.00 times longer than thick ; terminal segment incompletely separated, shortly conic-ovate.

*Thorax*: Pronotum with widely separated shallow punctae; scutellum transversely rugose; propodeum with minute, close, shallow punctae; parapsidal furrows present and complete; thorax viewed dorsally length to width 100 : 67. Propodeum with a medium carina; pronotum; mesoscutum : scutellum 5 : 10 : 9. *Fore wing* (Fig. 34 A, B)

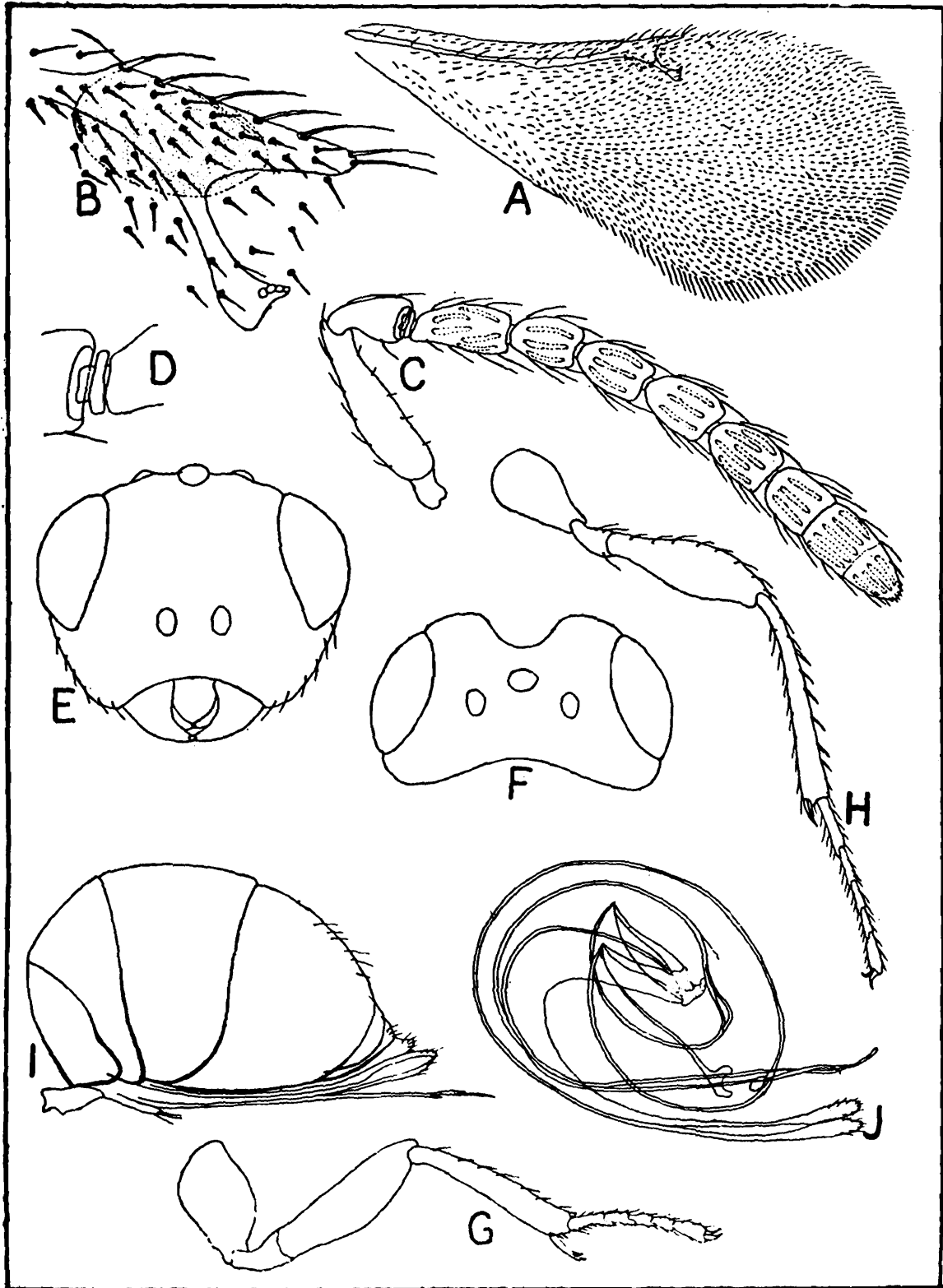


Fig. 4. *Decatoma kollimaliana*, sp. nov. Female.

A. fore wing, B. stigmal vein, C. antenna, D. anellus, E. head in front view, F. head viewed from above, G. fore leg, H. Hind leg, I. abdomen, J. genitalia.

length to width 100 : 45 ; venation  $m : pm : st$  100 : 100 : 100 ;  $sm$  long, with 12 setae directed forward ;  $m$  and  $pm$  with 8 setae ; marginal fringe moderately long. *Hind wing* to fore wing 73 : 100 ; length to width 100 : 25. *Fore leg* (Fig. 34 G) : Coxa 1.46 times longer than thick ; femur thickened in the middle, 3.16 times longer than thick ; 1.72 times coxa ; tibia slender, very slightly longer than femur, 6.66 times longer than thick, tibial spur trifurcated, tibial spur to metatarsus 100 : 80 ; tarsus 0.80 of tibia ; metatarsus 0.20 of tibia and 0.25 of tarsus. *Middle leg* : Coxa 1.07 times longer than thick ; femur 4.20 times longer than thick, 3.00 times coxa ; tibia slender, 1.33 times femur, 10.00 times longer than thick, tibial spur to metatarsus 4.00:6.00; tarsus 0.75 of tibia and subequal to femur ; metatarsus 0.21 of tibia and 0.28 of tarsus. *Hind leg* (Fig. 34 H) : Coxa 1.87 times longer than thick ; femur thickened in the middle, 1.66 times coxa, 3.33 times longer than thick ; tibia slender, 1.20 times femur, 10.00 times longer than thick, tibial spurs unequal, shorter one about 0.60 of the long spur, longer spur to metatarsus 5.00 : 8.00 ; tarsus 0.86 of tibia ; metatarsus 0.26 of tibia and 0.30 of tarsus.

*Abdomen* smooth ; 0.42 of body ; viewed laterally (Fig. 34 I) Somewhat oval, length to height 100 : 74 ; petiole short, slightly shorter than the hind coxa, 2.50 times longer than thick ; ovipositor well exerted beyond the tip of abdomen.

*Holotype* : Female on slide ; *paratypes* 3 females (two on slides and one on card, genitalia mounted on slide), 5.6. Kollimalai : Salem, Coll. M. S. Mani & party, 20. iii. 1972

This species differs from *D. karnatakensis* Mukerjee in the general brown colour of body, finer sculpture of head and thorax, indistinctly 3 segmented club, and in the median longitudinal carina on propodeum.

### 31. *Eudecatoma coorgensis*, sp. nov.

*Male* : Length about 3.00 mm. Body moderately densely pubescent. General colour of body black, with yellowish-brown ; head yellowish brown ; vertex black ; eyes and ocelli dark brown ; mandibles brown with reddish brown teeth. Antenna dark brown except for the yellowish-brown basal 0.50 of scape ventrally. Thorax black ; pronotum yellowish-brown at the sides and with an oblique, longitudinal, narrow, yellowish band on either side of the median line

diverging behind ; scapula with a narrow yellow band at the side ; scutellum with a semicircular spot anterolaterally ; mesopleura yellowish-brown ; legs brown except for the dark brown coxa of hind legs ; wings hyaline ; veins dark brown ; abdominal petiole and abdomen black ; aedeagus brown.

*Head* closely umbilicately punctate ; the punctation on gena and clypeus in longitudinal rows ; vertex hairy ; eyes bare ; mandibles bidentate ; antennal sockets well above the lower orbital border ; scrobe smooth and shiny, front ocellus inside it. Head viewed from above (Fig. 35 F) as wide as the maximum width of thorax ; length to width 49 : 100 ; viewed in front (Fig. 35 E) length to width 76 : 100 ; eye length to head length 57 : 100 ; ocellular space 1.60 time ocellar diameter , interocellar space 1.80 times ocellar diameter ; front ocellar diameter ; front ocellar space about 0.60 of the ocellar diameter. *Antenna* (Fig. 35 C, D) : Segments 10, 1. 1. 1. 6. 1. Scape slender, 4.25 times longer than thick ; pedicel short, 0.26 of scape, 1.12 times longer than thick ; ring segment minute ; funicular and club segments with whorls of moderately long setae ; funicular segments slender ; first and second funicular segments subequal, each about 2.88 times the pedicel, and 3.25 times longer than thick ; third funicular segment 0.84 of the second segment, about 3.00 times longer than thick ; fourth funicular segment only very slightly longer than the third segment, 3.28 times longer than thick ; fifth and sixth funicular segments subequal, each about 0.86 of the fourth segment, about 3.00 times longer than thick ; club subequal to the preceding 1.40 funicular segments combined ; slightly reduced apically, 1.40 times the preceding funicular segment, about 4.25 times longer than thick.

*Thorax* closely umbilicately punctate, the punctae separated from each other by a distance equal to the diameter of the puncture ; parapsidal furrows complete ; viewed dorsally length to width 100 : 21 : 18. *Fore wing* (Fig. 35 A, B) length to width 100 : 46 ; venation *m* : *pm* : *st* ratio 100 : 100 : 75 ; marginal fringe short ; *sm* long with 16 setae directed forward ; *m* with 6 and *pm* also with 6 setae. *Hind wing* to fore wing 70 : 100 ; length to width 100 : 31 *Fore leg* (Fig. 35 G, H) : Coxa 1.23 times longer than thick ; femur thickened in the middle, 2.69 times longer than thick ; tibia more or less slender, slightly shorter than femur, 5.50 times longer than thick, tibial spur bifurcated, tibial spur to metatarsus 8.00 : 6.00 ; tarsus

0.72 of tibia; metatarsus 0.18 of tibia and 0.25 of tarsus. *Middle leg*: Coxa slightly longer than its thickness; femur 3.50 times longer than thick; tibia slender, 1.25 times femur, 8.80 times longer than thick,

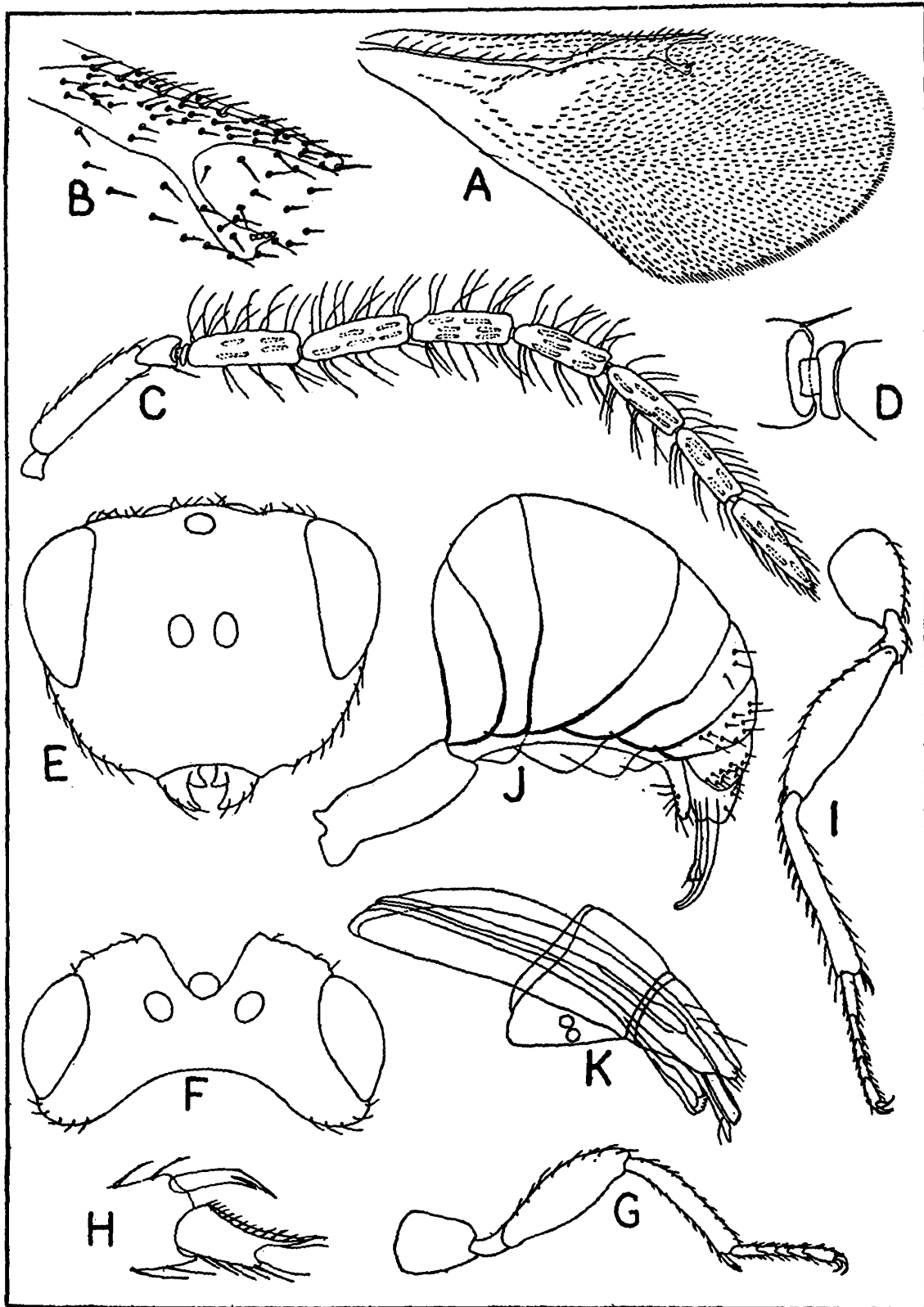


Fig 35. *Eudecatoma coorgensis*, sp. Male.

A. fore wing, B. stigmatal vein, C. antenna, D. anellus. E. head in front view, F. head viewed from above, G. fore leg, H. tip of fore tibia and metatarsus enlarged, I. hind leg, J. abdomen, K. genitalia.

tibial spur to metatarsus 7.50 : 8.00 ; tarsus 0.63 of tibia ; metatarsus 0.18 of tibia and 0.28 of tarsus. *Hind leg* (Fig. 35 I) : Coxa 1.22 times longer than thick ; femur stout, 1.90 times coxa, 3.00 times longer than thick ; tibia more or less slender, 1.11 times femur, dorsally with a row of 8 stiff bristles, 6.26 times longer than thick, tibial spurs unequal, shorter spur about 0.75 of the long spur, longer tibial spur to metatarsus 9.00 : 10.00 ; tarsus 0.74 of tibia ; metatarsus 0.21 of tibia and 0.28 of tarsus.

*Abdomen* smooth ; 0.41 of body ; viewed laterally (Fig. 35 J) length to height 100 : 90 ; petiole long, much longer than the hind coxa, about 3.00 times longer than thick, 0.56 of abdomen ; aedeagus well exerted beyond the tip of abdomen ; third tergite longest.

*Holotype* : Male on card (one set of legs, wings and antenna on slide), *paratype* 1 male on card (genitalia on slide), 14.3. Mercara (Western Ghat Survey) Coll. M.S. Mani & party, 11.iii. 1975.