

OCCASIONAL PAPER NO. 229

**RECORDS OF THE
ZOOLOGICAL SURVEY OF INDIA**

**Key to the Genera of Pteromalidae of India and the
Adjacent countries (Hymenoptera : Chalcidoidea)**

**P.M. SURESHAN
T.C. NARENDRAN**

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सत्यमेव जयते

**Zoological Survey of India
Kolkata**

CITATION

Sureshan, P.M., and Narendran, T.C. 2004. Key to the Genera of Pteromalidae of India and the Adjacent countries (Hymenoptera : Chalcidoidea). *Rec. zool. Surv. India, Occasional Paper No. 229* : 1- 56 (Published by the Director, Zool. Surv. India, Kolkata)

Published : June, 2004

ISBN 81-8171-042-8

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PRICE

Indian Rs. 100.00
Foreign \$ 7.00 £ 5.00

Published at the Publication Division, by the Director, Zoological Survey of India, 234/4 A.J.C. Bose Road, 2nd MSO Building, Nizam Palace (13th floor), Kolkata - 700 020 and printed at Krishna Printing Works, 106, Vivekanand Road, Kolkata - 700 006.

**Records of the
Zoological Survey of India
OCCASIONAL PAPER**

No. 229

2004

Pages 1 - 56

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INTRODUCTION

The family Pteromalidae is one of the largest and taxonomically difficult families of Chalcidoidea (Hymenoptera) to deal with. They are distributed in all biogeographical areas of the world and show great diversity in their morphological and biological characteristics. Majority of Pteromalidae are primary or secondary parasitoids attacking a large range of insect hosts in their various stages of development, hence of economic importance in the biological control of noxious insect pests. A few pteromalids are also phytophagous developing in seeds of plants, some make galls in plants and still others develop as inquilines in galls caused by other insects.

The family comprises over 3000 described species under 552 genera globally (Boucek & Heydon, 1997). As regards India and adjacent countries the number is too small. Though there were several scattered publications on the systematics of Pteromalidae of India and adjacent countries, it was Boucek *et al.* (1979), who provided a complete picture of the then fauna of the region. They recorded a total of 112 species of Pteromalidae under 80 genera. Later Farooqi and Subba Rao (1985, 1986) keyed out and catalogued 90 species of Pteromalidae under 78 genera from India and adjacent countries. Several new genera and species have been subsequently described under the family from the region (Ahmad, 1995, 1997, 1998, Ahmad & Agarwal, 1994 a,b, Sureshan, 1999, 2000, 2001 a, b, c, Sureshan & Narendran, 1995, 1998, 2000 a, b, Narendran & Mini, 1998). Recently Sureshan (2003), made a comprehensive revision of the subfamily Pteromalinae of the Indian subcontinent which included 131 species under 57 genera. Sureshan & Narendran (2003) have also compiled a checklist of the Pteromalidae recorded from the Indian subcontinent. The checklist deals with altogether 96 genera and 198 species. Subsequently Gibson (2003) synonymised *Riekisura keralensis* Narendran under *Soleneura*, thus reducing the number of genera known from the region to 95.

In order to facilitate the identification of 95 genera of Pteromalidae currently known from the region an updated key to genera is provided here. *Sphegigastrella* Masi, genus of the subfamily Pteromalinae as recorded by earlier authors is not included in the present key because of the suspicion of the validity of the taxon. The genus originally belongs to the African region and an indetermined species of it was recorded from the Indian subcontinent (Boucek *et al.* 1979). The geographical area covered by the key broadly includes the countries viz. India, Pakistan, Nepal, Bangladesh, Myanmar and Sri Lanka covering the Indian subcontinent. According to Boucek *et al.* (1979) pteromalid fauna of this region is not isolated from the rest of the world. Recent studies proved that many Palearctic and circumtropical genera and species are represented here.

CLASSIFICATION

The genera treated in the key are grouped under different subfamilies, based upon the subfamilial classification by Boucek (1988).

Subfamily : CLEONYMINAE : *Cleonymus, Grooca, Heydenia, Notanisus, Oodera, Parepistenia, Soleneura.*

STOREYINAE : *Storeya*

ORMOCERINAE : *Systasis, Ecrizotomorpha*

COELOCYBINAE : *Erotolepsiella*

DIPARINAE : *Dipara, Grahamisia, Netomocera, Parurios.*

CEROCEPHALINAE : *Cerocephala, Chaetospilisca, Theocolax.*

SPALANGINAE : *Spalangia.*

ASAPHINAE : *Asaphes.*

HERBERTIINAE : *Herbertia*

EUNOTINAE : *Ajanta, Cepahleta, Moralina, Ophelosia, Scutellista.*

AUSTROTEROBINAE : *Austroterobia*

PTEROMALINAE : *Acroclisoides, Agiommatius, Anisopteromalus, Callitula, Catolaccus, Cheiropachus, Chlorocytus, Conomorium, Coruna, Cryptoprymna, Cyclogastrella, Cyrtogaster, Cyrtoptyx, Delislea, Dibrachys, Dinarmus, Euneura, Eurydinotomorpha, Halticopterella, Homoporus, Inkaka, Isohyroptyx, Kumarella, Lariophagus, Manineura, Merismomorpha, Mesopolobus, Metacolus, Metastenus, Miscogasteriella, Mokrzeckia, Narendrella, Nasonia, Neotoxeumorpha, Norbanus, Notoglyptus, Oniticellobia, Oricoruna, Oxysychus, Pachycrepcideus, Pachyneuron, Paracarotomus, Paraiemea, Platecrizotes, Propicrosoytus, Psilocera, Pteromalus, Rhapsitelus, Rhopalicus, Roptrocercus, Schizonotus, Sphegigaster, Sphegigastrella, Syntomopus, Taxeumorpha, Trichomalopsis, Trichomalus, Uniclypea.*

MISCOGASTERINAE : *Halticoptera, Lamprotatus, Merismus, Miscogaster, Seladërma, Stictomischus, Thinodytes.*

PANSTENONINAE : *Panstenon*

PIRENINAE : *Trigonoderopsis, Gastrancistrus.*

MACROMESINAE : *Macromesus.*

The morphological terminology used in this work follows that of Boucek (1988) and Boucek & Rasplus (1991). Most of the terms are illustrated in figures 1-3. The key is mainly based upon characters of females since their distinguishing characters are generally more conspicuous than of males. High degree of intraspecific variations among males also affect their generic identification. In certain cases male characters are separately mentioned in the couplets. The number of known species in the treated region is also mentioned under each genus.

Key to the Genera of Pteromalidae of India and adjacent countries
(Based mainly on females)

1. Wings fully developed, reaching at least beyond two-thirds of gaster, with distinct complete venation..... 4
 - Brachypterous or apterous, i.e. nearly short winged or wingless, and then with wing stumps not reaching gaster; venation indistinct or not fully developed2
- 2(1) Mesoscutum with notauli meeting in the middle; inner part (half) of scapulae with distinct black patch (Fig. 20, 21).....*Grahamislia* Delucchi
(One species, *G. malabarensis* Narendran & Mini from India)
 - Mesoscutum with notauli not meeting in the middle, but approaching more closely towards the middle; inner part of scapulae without black patch3
- 3(2) Head almost parallel sided, longer than broad, slightly flattened; antennae with 5 or 6 funicular segments, funicular segments subglobose or subquadrate (Fig.4)
..... *Theocolax* Westwood see 8
 - Head not parallel sided, stout in lateral view, not flattened; antennae with 7 funicular segments, elongate (Fig.22)..... *Dipara* Walker see 13
- 4(1) Antennal toruli on lower margin of head, overhanging the mouth; antennal formula 1171, no anellus (Figs. 5, 6, 9, 10, 11); head prognathous or subprognathous; gaster distinctly petiolate; forewing with marginal vein very long; stigmal vein and postmarginal vein short 5
 - Toruli at least slightly above mouth margin; antennal formula usually different or venation different 6
- 5(4) Body mainly yellowish; head and thorax almost smooth; scutellum with fine outcurving sublateral lines; disc of forewing convex and almost bare, at parastigma with a tuft of black scales (Fig.5); frons without median groove (Fig.6).....*Storeya* Boucek
(One species, *S. minuta* Sureshan from India)
 - Body black or slightly metallic; head and thorax with distinct punctures or rugosity; scutellum without sublateral lines, but often with punctate frenal line (Fig.11); forewing

- disc flat, pubescent, without tuft of scales at parastigma; frons with median punctured groove (Fig.9)..... ***Spalangia*** Latreille (Eight spp. *S. cameroni* Perkins, *S. endius* Walker, *S. fuscipes* Nees, *S. gemina* Boucek, *S. nigroaenea* Curtis, *S. obscura* Boucek, *S. parfuscipes* Ahmad and *S. simplex* Perkins from India, Bangladesh and Pakistan).
- 6(4) Head subprognathous or globose with large ridge or tooth between antennae and with strong occipital carina (Fig.7, 12); body and antennae shiny, the latter without anelli; wings almost bare but with long marginal fringe (Figs. 4, 8) and sometimes with a tuft of black hairs at parastigma 7
- Head different, mostly orthognathous with mouth directed ventrad, antennae and wings different from alternate 9
- 7(6) Head subglobose, almost round in facial view and stout in lateral view (Fig.7), with a median frontal tubercle; antennae with 6 funicular segments; always macropterous ***Cerocephala*** Westwood (One species, *C. dinoderi* Gahan from India and Sri Lanka)
- Head almost parallel sided, longer than broad, slightly flattened; antennae with 5 or 6 funicular segments; wingless forms common 8
- 8(7) Flagellum strongly clavate and rather compact, stout (Fig.12); funicle only about as long as scape, most funicular segments transverse, wings without tuft of hairs at parastigma..... ***Chaetospilisca*** Hedqvist (One species, *C. indica* Mukherjee from India)
- Flagellum almost slightly clavate; funicle distinctly longer than scape, funicular segments longer, well separated (Fig.4); wings with distinct tuft of black hairs at parastigma; ***Theocolax*** Westwood (One species *T. elegans* Westwood from India)
- 9(6) Scapula produced backwards outside the rectangular outer corner of axilla; prepectus unusually small; mid tarsus 4 segmented, its first segment about as long as rest of tarsus (Fig.13) in male tarsi 5 segmented ***Macromesus*** Walker (One species, *M. harithus* Narendran from India)
- Scapula not produced backwards out side of axilla; prepectus usually larger, different; all tarsi five segmented..... 10
- 10(9) Propodeum with an elevated cross carina interrupted in the middle and a 'T' shaped median carina (Fig. 14); antenna with one very short anellus and 7 segmented funicle; wings fully developed with two well developed blackish fasciae (Fig. 15) ***Erotolepsiella*** Girault (one species *E. indica* Narendran from India)

- Propodeum with different carina; antennae with one or more anelli; wings with or without infuscations 11
- 11(10) Female antenna with one anellus, 7- segmented funicle and 1-3 segmented clava (Figs.17, 18, 20, 22); male with 9 segments and an undifferentiated clava sometimes with long erect hairs; hind coxa inserted high, the outer surface often with transverse sculpture; vertex and dorsum of thorax with paired sparse bristles; first tergite of gaster covering most of it 12
- Antennal formula variable; head and dorsum of thorax without paired bristles; hind coxa not inserted high; other characters varying 14
- 12(11) Gaster with petiole stout, wider than long (Fig. 17), sometimes sessile or subsessile; flagellum of male filiform with very short pilosity (Fig. 19); female antenna strongly clavate (Fig. 18).....*Netomocera* Boucek (One species. *N. nigra* Sureshan and Narendran from India)
- Gaster petiole longer; body of gaster slender; antennae rather weakly clavate in female; other characters different 13
- 13(12) Body usually black, head and thorax (mainly) with distinct pubescence apart from the strong bristles; mesoscutal bristles almost in the center or in lower half ; notauli rather wide apart, though converging (Figs. 24, 25, 26). (Male antenna narrowly cylindric, without long hairs, but usually with; quite conspicuous sensillae)*Parurios* Girault (One species, *P. keralensis* Narendran *et. al.* from India)
- Body usually honey yellow (Fig. 22), general pubescence on head and thorax less distinct; mesoscutal bristles in the upper half (Fig. 23) either close to pronotum or little above the middle; notauli approaching more closely towards the middle (male antenna different (Fig. 16).....*Dipara* Walker (Three spp. *D. keralensis* Narendran & Sureshan, *D. mohanae* Narendran & Sureshan and *D. miniae* Narendran & Sureshan from India)
- 14(11) Pronotum medially moderately to very long, (Figs. 32, 34) sub conical; collar not delimited by an edge; fore and hind femora usually swollen to varying degrees; thorax densely punctured and pilose 15
- Pronotum not so elongated; fore and hind femora not thus thickened, thorax mostly with different sculpture 22
- 15(14) Dorsal part of thorax with groove like sutures arranged radially (Fig. 32); pronotum long and in dorsal view separated from mesoscutum by distinct constriction; fore femur greatly enlarged on ventral edge with comb of small teeth concealed by oblique black bristles.....*Oodera* Westwood [Two spp. *O. ahoma* (Mani & Kaul) and *O. longicollis* (Cameron) from India, Pakistan, Sri Lanka and Myanmar]

- Thorax without radial arrangement of grooves; pronotum different; fore femur also different 16
- 16(15) Pronotum long and narrow with lower edges of lateral panels widening forwards (Fig. 34); fore wing with 3 dark bands, enlarged parastigma with a tuft of black bristles *Heydenia* Forster
(Two spp. *H. tuberculata* Sureshan and *H. indica* Narendran *et.al.* from India)
- Pronotum shorter or moderate, broadly adhering to mesoscutum, more or less bell shaped; forewing different 17
- 17(16) Preclava of female with long process on side of clava; (Fig. 29, 33) clava acuminate; forewing with infumation.....18
- Preclava of female simple without any process, clava not acuminate; forewing without infumation 19
- 18(17) Gaster distinctly petiolate (Fig. 43) petiole reticulate and longer than broad; basal third of forewing bare; male antenna with 5 rami (Fig. 31) *Notanisus* Walker
(One indetermined species from India.)
- Gaster sessile; forewing wholly pilose, without speculum; male antenna stout, without rami (Fig. 30)..... *Cleonymus* Latreille
(one indetermined species from India and Sri Lanka)
- 19 (17) Female gaster strongly punctate and apically produced into narrow tail comprising lengthened gastral tergites 5 and 6, the tail with median keel (Fig. 41) *Soleneura* Westwood
(Three spp. *S. ania* (Walker), *S. Keralensis* (Narendran) and *S. feretrius* (Walker) from India and Sri Lanka)
- Female gaster with tergites 5 and 6 never lengthened as above, if with a short tail that is formed only by epipygium and ovipositor sheaths, sculpture of gaster smooth or coarse20
- 20(19) Head with cheeks swollen, eyes large and elongate (Figs. 38) gaster (Fig. 42) prolonged into a tail formed of extended epipygium; forewing with double infumation..... *Thaumasura* Westwood
(one species, *T. indica* Mani & Kaul from India.)
- Head with cheeks not swollen, eyes normal; gaster not prolonged into a tail; forewing different 21
- 21(20) Gaster in female with longitudinal lateral edge or keel, fore femur with a blunt tooth (Fig. 40) *Parepistenia* Dodd
(One indetermined species from India and Sri Lanka)

- Gaster in female without longitudinal lateral keel (Figs. 35, 36, 37); fore femur without tooth)**Grooca** Sureshan & Narendran
(One species, *G.coorgensis* Sureshan & Narendran from India)
- 22(14) Body short and broad, black to testaceous; head crescentric; pronotum narrow; antennae attached lower on face with 4-5 funicle segments; scutellum mostly elongated; axillae not steep; sculpture mostly reticulate striate 23
- Body mostly elongated, black or metallic; antennae not so low on face, if low then pronotum broader, funicle 5-6 segmented; scutellum normal; axillae steep; body sculpture varying27
- 23(22) Propodeum not concealed by scutellum in dorsal view (Figs. 44, 46), medially produced between bases of coxae; sculpture on scutellum tending to be longitudinal towards middle; first tergite of gaster with a tuft of hairs on either side at extreme bases24
- Propodeum concealed (at least medially) by scutellum in dorsal view, medially not produced as above; scutellum with normal reticulate sculpture; first tergite of gaster without a tuft of hairs on sides25
- 24(23) Basal one fourth of forewing bare, with a prominent strip of larger and prominent setae obliquely running from below submarginal vein (Fig. 45); propodeal neck longer, so that medially it is only slightly shorter than scutellum (Fig. 44).....**Ophelosia** Riley
(Two spp. *O. hayati* Farooqi, and *O. indica* Farooqi from India)
- Basal half of forewing almost bare, without prominent set of larger setae as above running from below submarginal vein (Fig. 47); propodeal neck short, medially about half as long as scutellum (Fig. 46).....**Moranila** Cameron
(One species, *M. californica* (Howard) from India)
- 25(23) Forewing with basal half bare (Fig. 52); scutellum with 3 pairs of long setae (Fig. 53) rest of scutellum bare, distinctly reticulate.....**Ajantha** Narendran
(One species, *A. malabarensis* Narendran from India)
- Forewing with basal half pilose; scutellum finely and densely pilose without long setae26
- 26(25) Scutellum produced as a flat roof over the gaster (Fig. 48); gena dull with microreticulation, posteriorly edged, not carinate; dorsum of thorax with reticulation between hairs; hind corners of propodeum in side view forming a flat vertical lobe.**Scutellista** Motschulsky
(Two spp. *S. caerulea* (Fonscolombe) and *S. hayati* (Farooqi) from India)
- Scutellum convex and only moderately produced over propodeum (Figs. 49, 54); gena strongly shiny between hairs; posteriorly delimited by a distinct though fine carina;

- thorax shiny between hairs which are placed on papillae; hind corners of propodeum forming a sharp straight vertical edge with an angular tooth dorsally**Cephaleta** Motschulsky
(Four spp. *C. australiensis* (Howard),
C. brunneiventris Motschulsky, *C. habibi* Fatima & Khan and *C. nirupama* Narendran & Mini from India, Bangladesh, Sri Lanka and Pakistan)
- 27(22) Pronotum larger, transverse, somewhat semirectangular, anteriorly rounded; antennae attached near mouth margin; genae posteriorly usually carinate, which extends along temple up to some distance28
- Pronotum generally smaller, if larger then either body flattened or marginal vein abruptly thickened 29
- 28(27) Eyes densely hairy (Fig. 50) antennae with one anellus and six funicular segments (Fig. 51); gaster sessile; first tergite of gaster covering half of it**Herbertia** Howard
(One species, *H. indica* Burks from India and Sri Lanka)
- Eyes not hairy (Fig. 55); antennae with 2 anelli and 6 funicular segments (Fig. 57); gaster petiolate, petiole longer with longitudinal carina (Fig. 56). **Asaphes** Walker
(Two spp. *A. suspensus* (Nees) and *A. vulgaris* Walker from India, Pakistan and Nepal)
- 29(27) Antennae with 12 or fewer than 12 segments, very rarely 13 segmented, usually 11 or 12 segments with one or two anelli 30
- Antennae with 13 segments, clava of three segments.....33
- 30(29) Antennae inserted higher up on face, with 2 distinct anelli and 5 funicular segments; marginal vein of forewing with a row of conspicuous long hairs on underside (Figs. 58, 59) both mandibles with 3 teeth; clypeus normal, not produced and without massive teeth**Systasis** Walker
(Five spp *S. cenchrivora* Farooqi & Menon. *S. dalbergiae* Mani, *S. dasyneurae* Mani, *S. vishnu* (Motschulsky) and *S. nigra* Sureshan from India and Sri Lanka)
- Antennae inserted always below center of face, often very low, at or slightly below ventral edge of eyes; antennae in female with 5 funicular segments, sometime with 6 funicular segments, anelli absent or only one, if a second one present it is invisible in dry specimens; male antenna with 6 funicular and 2 claval segments, very rarely with 7 funicular segments; both mandibles 4 dentate; forewing without row of larger setae below marginal vein; lower clypeal margin relatively stout and often produced, sometimes with massive teeth 31
- 31(30) Antennae 10 segmented, first and third funicular segments anelliform in female, terminal segment of clava in female with 3 spines; in male, antenna with 6 funicular segments and with a nipple like prolongation bearing a long spine at apex; body black, non metallic (Figs. 60, 61, 62).....**Ecrizotomorpha** Ahmad & Mani

(Two species, *E. taskhiri* Mani and *E. tenkasiensis* Ahmad & Shafee from India).

- Antennae at least 11 segmented, rarely 13 segmented, always with one or two anelli, clava without spines, body of various metallic colors, rarely black or bluish.32
- 32(31) Antennae with 5 funicular segments, in male usually with 6 segments; mandibles with four teeth, but sometimes bidentate or tridentate.....***Gastrancistrus*** Westwood (Four spp. *G. muneswari* Yadav, *G. agarwali* Ahmad, *G. bengalensis* Narendran and *G. cherryi* Boucek from India)
- Antennae with 6 funicular segments in female (Figs. 27, 28), in male very rarely with 7 segments, mandible usually with 4 teeth***Trigonoderopsis*** Girault (One species, *T. bouceki* Ahmad & Agarwal from India).
- 33(29) Gaster distinctly petiolate, though sometimes strongly transverse34
- Gaster sessile or subsessile.66
- 34(33) Forewing with marginal vein thickened (Figs. 66, 70), sometimes slightly and uniformly and stigma large or moderate35
- Forewing with marginal vein not thickened47
- 35(34) Notaular grooves complete36
- Notaular grooves incomplete, posteriorly indistinct42
- 36(35) Stigma of forewing moderately large (Figs. 66, 70)37
- Stigma of forewing normal or slightly enlarged45
- 37(36) Head unusually transverse (Figs. 66, 67, 68) with conspicuous occipital carina; antennae inserted high above centre of face.....***Acroclisoides*** Girault & Dodd (Two spp. *A. indicus* Ferriere and *A. maculatus* Sureshan & Narendran from India and Myanmar)
- Head of normal size, without occipital carina; antennae inserted not much above centre of face as above38
- 38(37) Marginal vein considerably thickened (Fig. 70); clypeal margin angularly produced (Fig. 69).....***Coruna*** Walker (One species, *C. clavata* Walker from India)
- Marginal vein not considerably thickened as above; clypeal margin different39
- 39(38) Gastral petiole elongate, longer than broad40
- Gastral petiole strongly transverse to quadrate.....41

- 40(39) Forewing completely pilose, speculum either reduced into a narrow bare line along basal fold or to a bare isolated oval area below parastigma, basal cell mainly or entirely hairy; gastral petiole stout, parallel sided; gaster not short, hind margin of first tergite different; prepectus anteriorly with distinct vertical carina (Figs. 71, 73).....***Stictomischus*** Thomson
(One species, *S. turneri* Sureshan from India).
- Forewing with speculum moderate to large, basal cell not entirely hairy; gastral petiole elongate and more or less tapering anteriorly; gaster rather short, hind margin of first tergite more or less excised medially; prepectus anteriorly without vertical carina (Figs. 74, 75, 76).....***Miscogaster*** Walker
(One indetermined species from India)
- 41(39) Frenum with coarse longitudinal rugae, shiny only on sides, sometimes with slight reticulation; forewing with stigma having lower margin mostly bilobed (Figs. 77, 78).....***Lamprotatus*** Westwood
(One indetermined species from Nepal)
- Frenum with much finer sculpture, mostly reticulate; forewing with stigma variable in size and shape (Figs. 79, 80, 81).....***Seladerma*** Walker
(One indetermined species from Myanmar)
- 42(35) Axillae moderately advanced (Fig. 82); pronotal collar not developed; antennae placed high above centre of long convex face with 2 anelli; face bears strong setae directed upwards..... ***Manineura*** Boucek
(One species, *M. pentatomivora* (Mani) from India)
- Axillae not advanced; pronotal collar distinct; antennae placed lower on face with 2 or rarely 3 anelli; face without setae as above43
- 43(42) Gaster with second tergite large and parallel sided (Figs. 83, 84, 85); antennae with 3 anelli; forewing with marginal vein almost parallel sided.....***Pachycrepoideus*** Ashmead
(Two spp. *P. vindemmiae* (Rondani) and *P. veerannai* Narendran & Anil from India)
- Gaster with second tergite not as above; antennae with 2 anelli (if with 3 anelli then marginal vein strongly wedge shaped (Fig. 88); forewing with marginal vein more or less broadening apically44
- 44(43) Gaster dorsally rather strongly convex (Fig. 87) antennae inserted slightly above middle of face; face almost entirely vertically striated (Fig. 86); gastral petiole transverse ***Euneura*** Walker
(One species, *E. lachni* (Ashmead) from Pakistan)
- Gaster dorsally flat, more or less caving, atmost weakly convex; antennae inserted below middle of face; face reticulate centrally, not striate; petiole transverse to elongate (Figs. 88, 89, 90); (antennae with 3 anelli in *P.aphidis* and marginal vein strongly wedge

- shaped)..... *Pachyneuron* Walker
(Seven spp. *P. aeneum* Masi, *P. ahlanese* Mani & Saraswat, *P. aphidis* (Bouche), *P. chambaense* Mani & Saraswat, *P. groenlandicum* (Holmgren), *P. leucopiscida* Mani, *P. solitarium* (Hartig) from India and Pakistan).
- 45(36) Eyes very large; head with inner orbits converging upwards (Fig. 91, 92, 93) so that frons relatively narrow; forewing with marginal vein fairly long and slightly thickened uniformly..... *Agiommatus* Crawford
(Two spp. *A. paria* (Motschulsky) and *A. geethae* Sureshan & Narendran from India and Sri Lanka)
- Eyes not usually large; inner orbits not as above; marginal vein not so long and not uniformly thickened 46
- 46(45) Forewing with marginal vein longer, abruptly and roundedly thickened at its proximal half (Fig. 94); antennae inserted near to mouth, in female with 3 and in male with 2 anelli; post marginal vein shorter than marginal vein; clypeal margin not produced; gaster as in figure 95..... *Platecrizotes* Ferriere
(One indetermined species from India)
- Forewing (Fig. 96) with marginal vein parallel sided, not or hardly longer than stigmal vein; postmarginal vein much longer than marginal vein; antennae (Fig. 97) inserted slightly above centre of face, in both sexes with 3 anelli; clypeal margin distinctly produced; more or less lobe like (Fig. 98).....*Oricoruna* Boucek
(One species, *O. arcotensis* (Mani & Kurian) from India).
- 47(34) Female gaster subcircular, shorter than mesosoma (Fig. 102); body broad, eyes rather large; antennae short, inserted low on face, flagellum with 2 or 3 anelli, clava subacuminate (Fig. 103), forewing with postmarginal vein hardly longer than stigmal vein, marginal fringe extensively short.....*Cyclogastrella* Bukowski
(One species, *C. nigra* Sureshan from India)
- Gaster ovate to elongate, not as above, body not broad as above; other characters partly or completely different 48
- 48(47) Antennae inserted very high on face (Figs. 99, 101); clypeus with a median notch anteriorly; face covered with moderately dense long white hairs; antennae in female with 3 and in male with 2 anelli; propodeum and gaster of female as in figure. 100.....*Narendrella* Sureshan
(One species, *N. nilamburensis* Sureshan from India)

- Antennae inserted not very high on face as above; other characters partly or completely different..... 49
- 49(48) Notaular grooves complete, fine or deeply impressed 50
- Notaular grooves incomplete (in some cases complete) 53
- 50(49) Head very large; gena posteriorly with strong lamina visible even from above; thorax very high and robust; fore coxa separated from mid coxa by horizontal shelf delimited by transverse carina posterior to fore coxa (Fig. 104); gaster more or less laterally compressed..... **Paracarotomus** Ashmead
(One species, *P. cephalotes* Ashmead from India)
- Head not very large; gena not carinate; thorax not very high and without carinate shelf; gaster not as above..... 51
- 51(50) Scutellum with an elongate median fovea before frenal groove (Fig. 105) gaster with first tergite covering most or whole of it **Notoglyptus** Masi
(One species, *N. scutellaris* (Dodd & Girault) from India)
- Scutellum different, without fovea; gaster with first tergite not as above 52
- 52(51) Gaster petiole always longer (Figs. 106, 107); propodeum with median area rugose to reticulate without longitudinal depressions; median carina indistinct or irregular; scutellum without deep crenulate frenal groove.....**Merismus** Walker
(One species, *M. indicus* Ahmad from India)
- Gastral petiole short, propodeum with median area feebly reticulate, polished with three longitudinal depressions or shallow grooves; median carina complete, but broken due to costae; scutellum with deep crenulate frenal groove (Figs. 108, 109).....**Miscogasteriella** Girault
(One species, *M. jayasreeae* Sureshan from India)
- 53(49) Forewing unusually long and narrow, about 3x as long as broad and hairy (Fig. 113); gastral petiole subquadrate, widening caudad, rugose; antennal toruli above centre of very convex face; appendages slender and colour mostly yellow.....**Panstenon** Walker
(One indetermined species from India)
- Forewing always broader than in alternate and in proximal part often partly bare, if extensively hairy then first gastral tergite long on sides, other characters partly or fully different..... 54
- 54(53) First tergite of gaster long on sides but dorsally broadly emarginate (Fig. 110); propodeum with coarse irregular areolation merging with rugosity; forewing extensively hairy in basal third (Fig. 111); male palpi enlarged (Fig. 112, Pl. IV. fig.44
..... **Cyrtogaster** Walker
(One species, *C. clavicornis* Walker from India)

- First tergite of gaster not as above; propodeum different; forewing not extensively hairy as above; male palpi not enlarged in males except in *Halticoptera*..... 55
- 55(54) Propodeum strongly ascending, the attachment of petiole on propodeum is peculiar as in figures 114, 120.....*Eurydinotomorpha* Girault (Two spp. *E. malabarensis* Sureshan & Narendran and *E. petiolatus* (Boucek) from India and Sri Lanka)
- Propodeum not as above, attachment of petiole different 56
- 56(55) Thorax usually flattened (Fig. 116); pronotum large, quadrangular; gaster with first tergite largest, its hind margin incised in the middle (Fig. 115)..... *Syntomopus* Walker (Three spp. *S. carinatus* Sureshan & Narendran, *S. nigrus* Sureshan & Narendran and *S. rajamalaiensis* Sureshan & Narendran from India)
- Thorax not unusually flattened as above; pronotum not quadrangular; other characters varying 57
- 57(56) Antennae with first funicular segment subconical, constricted in its proximal half; about as long as second and third together; forewing with unusually sparse pilosity (Fig. 117, 118, 119)..... *Conomorium* Masi (One indetermined species from India)
- First funicular segment not as above; forewing with pilosity not as above 58
- 58(57) Gastral petiole distinctly sinuate in profile, posteriorly on ventral side embraced by a narrow extension of first gastral sternit (Figs 121, 123), clypeal margin rounded, subconical or truncate (Figs. 122, 124)*Merismomorpha* Girault (Four spp. *M. elongata* Sureshan, *M. minuta* Sureshan, *M. truncata* Sureshan and *M. yousufi* Ahmad & Agarwal from India)
- Gastral petiole not as above (in some cases sinuate in male and embraced by a narrow extension of first gastral sternite, then clypeus and fore wing venation different and petiole shorter; clypeus not as above 59
- 59(58) First tergite of gaster covering most of it, other tergites almost completely hidden (Fig. 125); flagellum in female strongly clavate.....*Cryptoprymna* Forster (Three sp. *C. elongata* Sureshan & Narendran, *C. indiana*. Sureshan and Narendran and *C. brama* (Motschulsky) from India and Sri Lanka)
- First tergite of gaster not covering most of it, other tergites not hidden as above; flagellum different 60
- 60(59) Axillae in outer corner with a small deep pit; stigma of forewing moderately capitate; propodeum (Fig. 126) moderately long, without carina, with a pair of shallow submedian longitudinal grooves posteriorly, which converge to merge with the saddle like constriction

- before nucha, this constriction connects laterally with deep supra coxal pit; gaster dorsally collapsing (Figs. 127, 128),..... ***Paraiemea*** Sureshan & Narendran (Two spp. *P. convexa* Sureshan & Narendran and *P. vishnuae* Sureshan & Narendran from India)
- Axillae without pit; propodeum not as above; gaster dorsally not collapsing 61
- 61(60) Propodeum with a distinct subglobose nucha (Figs. 129, 130), plicae strongly curving towards median line, but disappearing before reaching middle; gaster dorsally rather convex, not collapsing..... ***Delislea*** Girault (One species, *D. rahimani* Narendran & Anil from India)
- Propodeum with or without nucha, not subglobose; plicae different; gaster different
..... 62
- 62(61) Gastral petiole anteriorly on either side with a sharp triangular tooth, seems to be composed of three parts, the median stalk is the true petiole, whilst the side parts are connected ventrally and form a stiffened ventral projection of the first gastral sternite (Figs. 131, 228) 63
- Petiole not as above 64
- 63(62) Pronotum with strong median dorsal carina; first tergite of gaster well produced posteriorly; median length of second tergite not longer than third; forewing without basal hair line; antenna with 2 anelli (Fig. 227, 228)..... ***Neotoxeumorpha*** Narendran (One species, *N. exoristae* Narendran from India)
- Pronotum without dorsal carina; first tergite of gaster not produced posteriorly; median length of second tergite longer than third (Fig. 131); forewing with a basal hair line; antenna with 2 or 3 anelli..... ***Toxeumorpha*** Girault (Two spp. *T. megacephala* (Waterston) and *T. minuta* Sureshan & Narendran from India and Sri Lanka)
- 64(62) Gaster with second tergite the largest, covering most of it (Figs. 132, 133) petiole very long and sculptured; propodeum without median carina and complete plicae; median area eticulate..... ***Sphigigaster*** Spinola (Five spp. *S. stepicola* Boucek, *S. brunneicornis* (Ferriere), *S. anamudiensis* Sureshan & Narendran, *S. reticulata* Sureshan & Narendran and *S. indica* Sureshan & Narendran from India and Sri Lanka)
- Gaster with second tergite not largest, covering most of it, petiole not very long as above and sculptured; propodeum with median carina and subparallel plicae; area between them shiny 65
- 65(64) Body squat, head more than 2.3x as broad as long; petiole hardly longer than broad, anteriorly expanded; male palpi normal (Fig. 135, 136) ***Thinodytes*** Graham (One species, *T. cyzicus* (Walker) from India)

- Body not as above; head different; petiole elongate, not expanding anteriorly; male palpi and stipites swollen (Figs. 141, 142) *Halticoptera* Spinola
(Two spp. *H. propinqua* (Waterston) and *H. agaliensis* Sureshan from India)
- 66(33) Forewing with marginal vein thickened either uniformly or at base or distally 67
- Forewing with marginal vein not thickened 72
- 67(66) Female flagellum unusual, short and clavate, clava very short and with a digitiform process (Fig. 159); antenna normal, almost filiform in male; in both sexes forewing with dark macula at marginal vein (Fig. 160) *Rhaphitelus* Walker
(One species, *R. maculatus* Walker from India)
- Antenna different in female, without digitiform process; forewing with different spot if present. 68
- 68(67) Whole head and thorax including eyes and base of wings densely pubescent; pronotum dorsally not visible, strongly reduced; antennae with 3 very short anelli (Figs. 134, 137)..... *Austroterobia* Girault
(One species, *A. maldica* Narendran from India)
- Body not densely pubescent as above, especially eyes and base of wings bare; pronotum not strongly reduced as above (if reduced then antennae with 2 or 3 anelli, short or moderate 69
- 69(68) Antennae with third anellus quadrate (Fig. 138); forewing with marginal vein only slightly thickened from base (Fig.139)..... *Ischyroptyx* Delucchi
(One indetermined species from India)
- Antennae with 2 or three anelli, if three then third not quadrate; forewing with marginal vein uniformly thickened (parallel sided) or widening distally 70
- 70(69) Forewing with marginal vein widening distally not parallel sided with a more or less vertical infumation below; all femora enlarged (Figs. 140, 145) *Metacolus* Forster
(Two spp. *M. unifasciatus* Forster and *M. beasoni* (Mani & Kaul) from India)
- Forewing with marginal vein parallel sided, without any infumation below; femora normal 71
- 71(70) Clypeal margin broad with a deep median incision (Fig. 144), female antenna with 2 anelli, inserted lower on face; pronotum barely visible dorsally and has no collar (Fig. 143); gaster sessile..... *Inkaka* Girault
(one species, *I. keralensis* Sureshan & Narendran from India)
- Clypeal margin different; female antenna with 3 very short anelli, inserted above level of lower orbital borders; pronotum with collar visible dorsally (Figs. 146,

- 147), *Metastenus* Walker
(Two spp. *M. concinnus* Walker and *M. indicus* Sureshan & Narendran from India)
- 72(66) Pronotum with collar appears in the form of two blunt lateral teeth due to a median notch; clypeus with a broad median tooth (Figs. 1, 3),) *Kumarella* Sureshan
(Two spp. *K. angulus* Sureshan and *K. sandroi* Narendran & Mohana from India)
- Pronotum without lateral teeth as above; clypeus different 73
- 73(72) Fore femur enlarged; pronotum mode.....Lrately large, but not bell shaped ..74
- Fore femur not enlarged, pronotum mostly shorter 76
- 74(73) Ovipositor sheaths in female well-protruded, exserted part longer than one fourth length of gaster (Fig. 153); forewing immaculate..... *Roptrocerus* Ratzeburg
(One species, *R.xylophagorum* (Ratzeburg) from India)
- Ovipositor sheaths not as above, normal; forewing mostly maculate 75
- 75(74) Pronotum rounded off into the neck region without carina; stigmal vein with a large capitate stigma (Figs. 148, 149)..... *Rhopalicus* Forster
(One indetermined species from India)
- Pronotum slightly ridged anteriorly, latcrally large with deep emargination along posterior border (Fig. 152); forewing with two fuscous maculae (Fig. 151) hind tibia dorsally with a row of short but conspicuous spines (Fig. 150)..... *Cheiopachus* Westwood
(One species, *C. quadrum* (Fabricius) from India.
- 76(73) Clypeus with a sharp median tooth (Fig. 154); occipital carina present; gaster dorsally convex, cylindrical, subconical with second tergite very short, with hind margin medially excised (Figs. 155, 156)..... *Uniclypea* Boucek
(Two spp. *U kumarani* Sureshan & Narendran and *U. elongata* Sureshan & Narendran from India)
- Clypeus with or without tooth, but not shaped as above; other characters partly or completely varying 77
- 77(76) Propodeum with a short, distinct neck and conspicuous plicae which define a broadly cordiform median area; plicae high, converging connected posteriorly by a weak or distinct costula; (Figs. 157, 158); notaular grooves deep but hardly traceable behind middle of mesoscutum; scutellum with extensive pilosity, except for a narrow median strip..... *Halticopterella* Girault & Dodd
(Four spp. *H. robusta* Sureshan, *H. burwelli* Sureshan, *H. longiflagellum* Sureshan and *H. rampurensis* Sureshan from India)

- Propodeum with or without nucha, but not structured as above; other characters varying 78
- 78(77) Hind tibia with two spurs; body mostly robust, reticulate punctate with white pubescence on head and thorax; pronotum as broad as mesoscutum 79
- Hind tibia with one spur; head and thorax without distinct pubescence as above; pronotum narrower than mesoscutum 86
- 79(78) Antennae slender, in female terminal segment of clava spine like at apex; in male funicular segments petiolate with whorls of long erect hairs (Figs. 161, 163, 164); pronotum very broad, hence thorax very compact; dorsum of head and thorax including most of scutellum with abundant curved hairs (Fig.162)..... *Norbanus* Walker (Seven spp. *N. birmanus* (Masi), *N. acuminatus* Dutt & Ferriere, *N. indorum* (Masi), *N. scrobatus* Sureshan, *N. thekkadiensis* Sureshan, *N. equus* Sureshan and *N. malabarensis* Sureshan from India, Pakistan, Myanmar)
- Antennae without terminal spine in female, in male funicular segments not petiolate, but with or without long erect hairs; other characters varying 80
- 80(79) Propodeum with hind margin deeply and arcuately excised (Fig. 166); pronotum dorsally very short, but sharply carinate (Fig. 167); clypeus large, well delimited, lower margin produced, bilobed with a sharp median incision (Fig. 165, 168); mesoscutum densely pubescent; antennae and legs including coxae yellow *Mokrzeckia* Mokrzecki (Two spp. *M. orientalis* Subba Rao and *M. menzeli* Subba Rao from India, Sri Lanka)
- Propodeum different, its adpetiolar margin not unusually emarginate; pronotum bluntly ridged or rounded, not sharply carinate; other characters varying 81
- 81(80) Propodeum with a short or well developed nucha 82
- Propodeum not produced to form a nucha 85
- 82(81) Propodeum with a conspicuous subglobose mucha; gaster short and cordiform (Figs. 169, 171) thorax short and very compact; female antenna with 3 and male with 2 anelli; costal cell of forewing bulged in some species (Fig. 170).....*Dinarmus* Thomson (Six spp. *D. acutus* (Thomson), *D. basalis* (Rondani), *D. colemani* (Crawford), *D. maculatus* (Masi), *D. vagabundus* (Timberlake) and *D. altifrons* (Walker) from India, Pakistan, Sri Lanka, Myanmar, Bangladesh)
- Propodeum with mucha not subglobose; gaster not cordiform, rather elongated; other characters partly or completely varying 83
- 83(82) Antenna with 2 anelli in both sexes (Fig. 172); gaster mostly yellow with one median and two lateral longitudinal brownish lines, which are sometimes incomplete or absent; hind margin of second tergite truncate; propodeum uniformly convex and finely reticulate punctate; male antenna with funicular segments long and with erect hairs

- ***Propicroscytus* Szclenyi**
 (Two spp *P. mirificus* (Girault) and *P. oryzae* (Subba Rao) from India and Sri Lanka)
- Female antenna with 3 anelli; gaster different; first tergite medially produced; propodeum mostly smooth with a cross carina or at least medially raised; male antenna different 84
- 84(83) Notauli groove like, almost complete; clypeus with two distinct teeth, propodeum with a cross carina (Fig. 173); gaster with tergites 1-3 covering half or less than half of it (Figs. 174, 175) ***Oniticellobia* Boucek**
 (One species, *O. longigastra* Sureshan & Narendran from India)
- Notauli finer, indicated only anteriorly; clypeus only shallowly emarginate; propodeum medially raised without cross carina; gaster with tergites 1-3 covering more than half of it (Figs. 176, 177) ***Anisopteromalus* Ruschka**
 (One species, *A. calandrae* (Howard) from India, Pakistan and Myanmar)
- 85(81) Pronotal collar with a complete fine carina; clava with a line of pilosity extending all along its length; propodeum between spiracles almost flat or weakly convex. (Figs. 178, 179) ***Oxysychus* Delucchi**
 (Four spp. *O. coimbatorensis* (Ferriere), *O. nupserhae* (Dutt & Ferriere), *O. sphenopterae* (Ferriere) and *O. macregaster* Sureshan & Narendran from India and Pakistan)
- Pronotal collar weakly carinate in the middle; clava with the pilosity limited to its apical segment; propodeum not so flat (Fig. 180)..... ***Cyrtoptyx* Delucchi**
 (One species *C. latipes* (Rondani) from India and Pakistan)
- 86(78) Terminal segment of clava in female narrowly pointed (Figs. 181, 182, 185) 87
- Terminal segment of clava in female not narrowly pointed 88
- 87(86) Female antenna with 3 anelli and 5 funicular segments (Figs. 181, 182) propodeum produced into a distinct reticulate and subglobose nucha (Figs. 182, 184); gaster with first tergite of sometime second also evidently enlarged..... ***Callitula* Spinola**
 (Seven spp. *C. rugosa* (Waterston), *C. keralensis* Sureshan, *C. anguloclypea* Sureshan, *C. travancorensis* Sureshan, *C. robusta* Sureshan, *C. peethapada* Narendran & Mohana and *C. bambusae* Narendran & Jobiraj from India and Sri Lanka)
- Female antenna with 2 anelli and 6 funicular segments (Fig. 185) propodeum with nucha short, not subglobose (Figs. 186, 188); gastral tergites different
 ***Homoporus* Thomson**
 (Two spp. *H. gladius* Sureshan & Narendran and *H. acuminatus* Sureshan & Narendran from India)
- 88(86) Scutellum with distinct frenal groove (Fig. 195), behind the groove scutellum evidently convex; forewing extensively bare, hairs reduced (Fig. 189); pronotal collar not well

- delimited *Schizonotus* Ratzeburg
(Two spp. *S. sieboldi* (Ratzeburg) and *S. latus* (Walker) from Pakistan)
- Scutellum without clear frenal groove; other characters different..... 90
- 90(89) Head stout behind eyes (Fig. 190); gena hollowed at mandibular base; forewing sometimes extensively hairy (Figs. 191, 192, 193, 194) *Catolaccus* Thomson
(One species, *C. crassiceps* (Masi) from India)
- Head not stout as above; forewings not so hairy 91
- 91(90) Forewing without fringe; post marginal vein as long as stigmal vein (Fig. 198); occiput margined by blunt or sharp transverse ridge (Figs. 196,197) *Dibrachys* Forster
(One species, *D.cavus* (Walker) from India)
- Forewing with marginal fringe; post marginal vein longer than stigmal vein, occiput rounded, if ridged then the ridge always near foramen 92
- 92(91) Occiput with transverse ridge placed near foramen, far behind and below lateral ocelli (Fig. 199); propodeum with distinct plicae and mostly with distinct median carina, all converging to globose reticulate nucha (Figs. 200, 201, 202)
..... *Trichomalopsis* Crawford
(Eight spp. *T. apanteloctena* (Crawford), *T. deplanata* Kamijo & Grissel, *T. thekkadiensis* Sureshan & Narendran, *T. nigra* Sureshan & Narendran, *T. acarinata* Sureshan & Narendran, *T. ovigastra* Sureshan & Narendran, *T. travancorensis* Sureshan & Narendran, and *T. neelagastra* Sureshan & Narendran from India and Bangladesh)
- Occiput without transverse ridge; other characters partly or completely different. .. 93
- 93(92) Toruli situated clearly below centre of face with 3 anelli (Figs. 203, 204, 205) pronotal collar with abrupt ridge but not carinate; propodeum smooth; plicae complete, without mucha *Mesopolobus* Westwood
(Three spp. *M. minutus* Sureshan & Narendran, *M. keralensis* Sureshan & Narendran and *M. harithus* Sureshan & Narendran from India)
- Toruli situated in about the middle of face; antenna mostly with 2 anelli; pronotal collar rounded or ridged; propodeum different 94
- 94(93) Sides of propodeum and first gastral tergite thickly set with white hairs (Figs. 206, 207, 208, 209); pronotal collar with smooth sharp margin *Trichomalus* Thomson
(Two spp. *T.keralensis* Sureshan and *T.kannurensis* Sureshan & Narendran from India)
- Sides of propodeum and first gastral tergite without dense patches of hairs; pronotal collar mostly rounded 95
- 95(94) Female antenna strongly clavate, of male with pedunculate segments, with whorls of

- erect bristles. (Figs. 210, 211, 212, 213), head much broader than mesoscutum; gaster with posterior margins of several terga usually with median indentation; in some species scutellum raised into a triangular horn with finger nail like tip
 ***Psilocera*** Walker
 (Five spp. *P. scutellata* Sureshan, *P. heydoni* Sureshan, *P. vinayaki* Sureshan & Narendran, *P. clavata* Sureshan & Narendran, *P. clavicornis* (Ashmead) and *P. ghanii* Subba Rao from India, Pakistan and Sri Lanka)
- Female antenna different, not strongly clavate as above; male antenna different; other characters varying 96
- 96(95) Hind corners of propodeum (Fig. 215) in dorsal view appearing right angled or even slightly acute; hind margin of first tergite of gaster slightly produced medially (Fig. 216) lower face swollen (Fig. 214); clypeal margin emarginate
 ***Lariophagus*** Crawford
 (One species, *L. distinguendus* (Forster) from India)
- Hind corners of propodeum rather rounded, not as above; first tergite of gaster not produced; other characters partly or completely different 97
- 97(96) Pronotal neck appears longer than collar in dorsal view (Fig. 217); prepectus regularly reticulate, thorax rather slender; propodeum without nucha (Fig. 219); forewing with marginal vein more than 1.5x as long as stigmal vein (Figs. 218, 220)
 ***Chlorocythus*** Graham
 (Three spp. *C. murriensis* Graham, *C. indicus* Sureshan and *C. xanthopus* (Cameron) from India and Pakistan)
- Pronotal neck hardly visible; prepectus small, horizontally shorter than tegula; its surface smooth or hardly sculptured, thorax not slender; propodeum with a narrow or distinct nucha; forewing with marginal vein usually 1.5x as long as stigmal vein (Figs. 221, 222, 223, 224, 225, 226) ***Pteromalus*** Swederus
 (Six spp. *P. keralensis* Sureshan, *P. nigrus* Sureshan, *P. metallicus* Sureshan, *P. puparum* (Linnaeus), *P. semotus* (Walker) and *P. sequester* Walker from India and Pakistan)

SUMMARY

An illustrated key to 95 genera of Pteromalidae (Hymenoptera: Chalcidoidca) so far reported from India and adjacent countries is given.

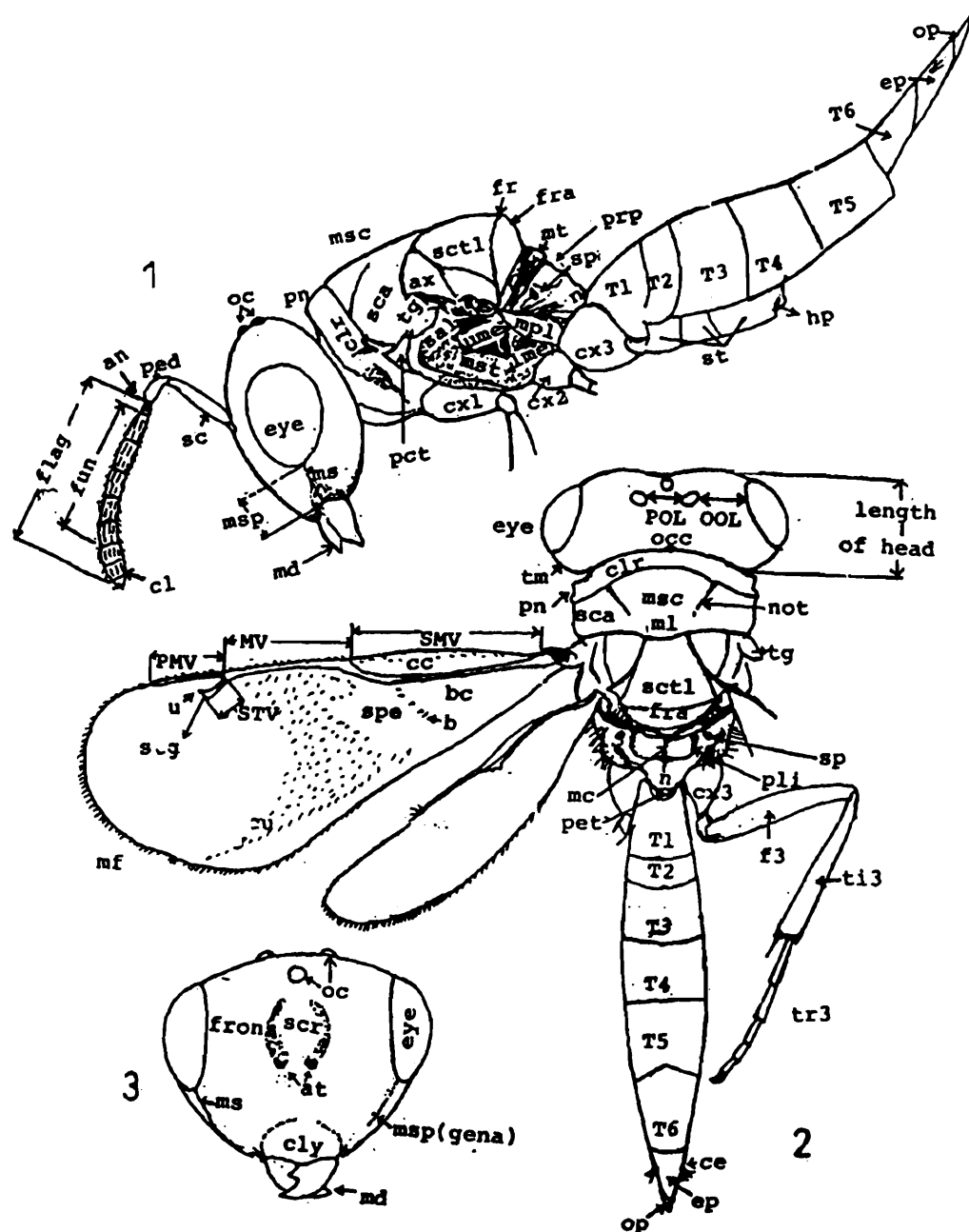
ACKNOWLEDGEMENTS

The first author is grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India, Kolkata and the Officers-in charge, Zoological Survey of India, Western Ghats Field Research Station, Calicut and Western Regional Station, Pune for providing facilities and encouragement.

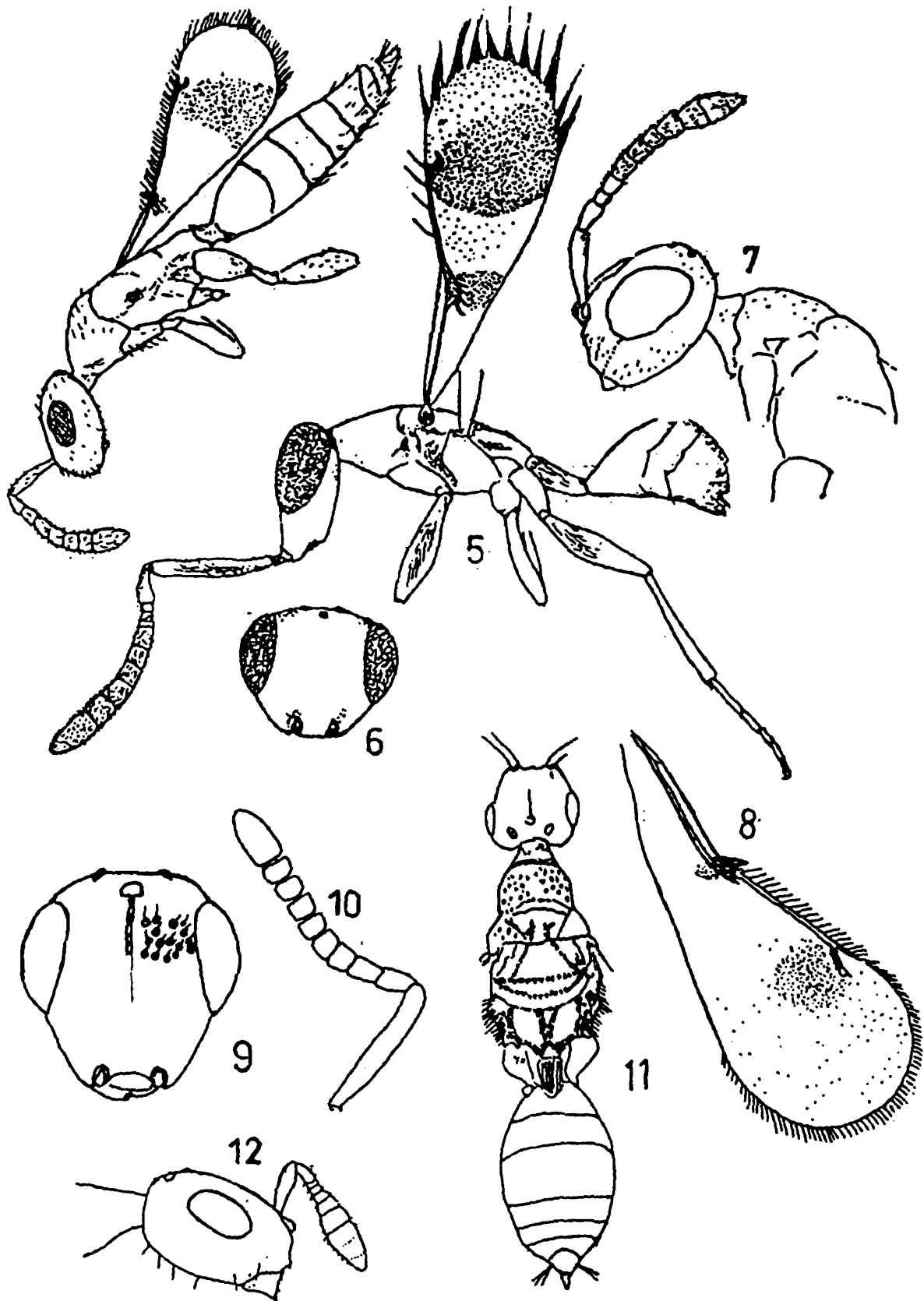
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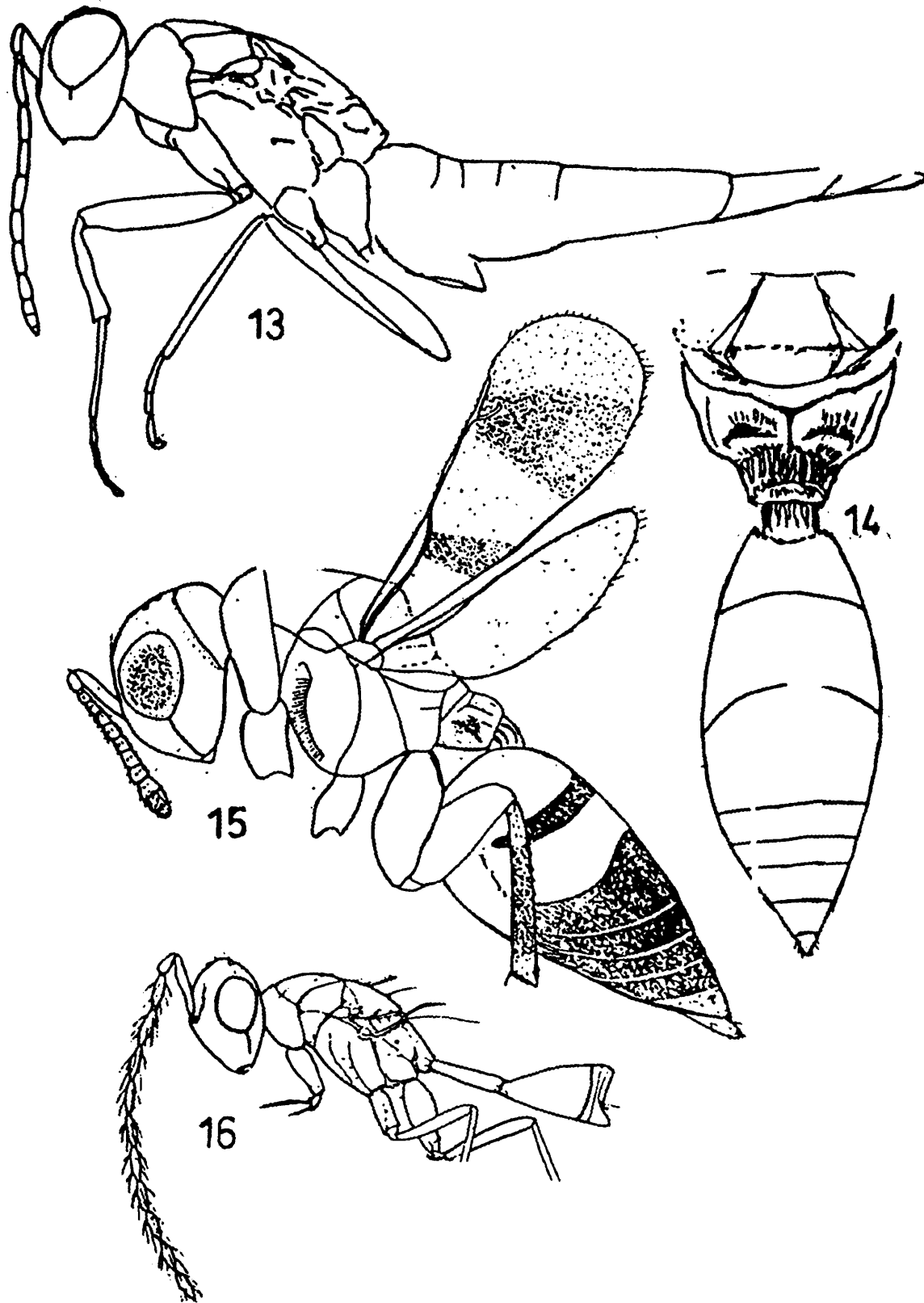
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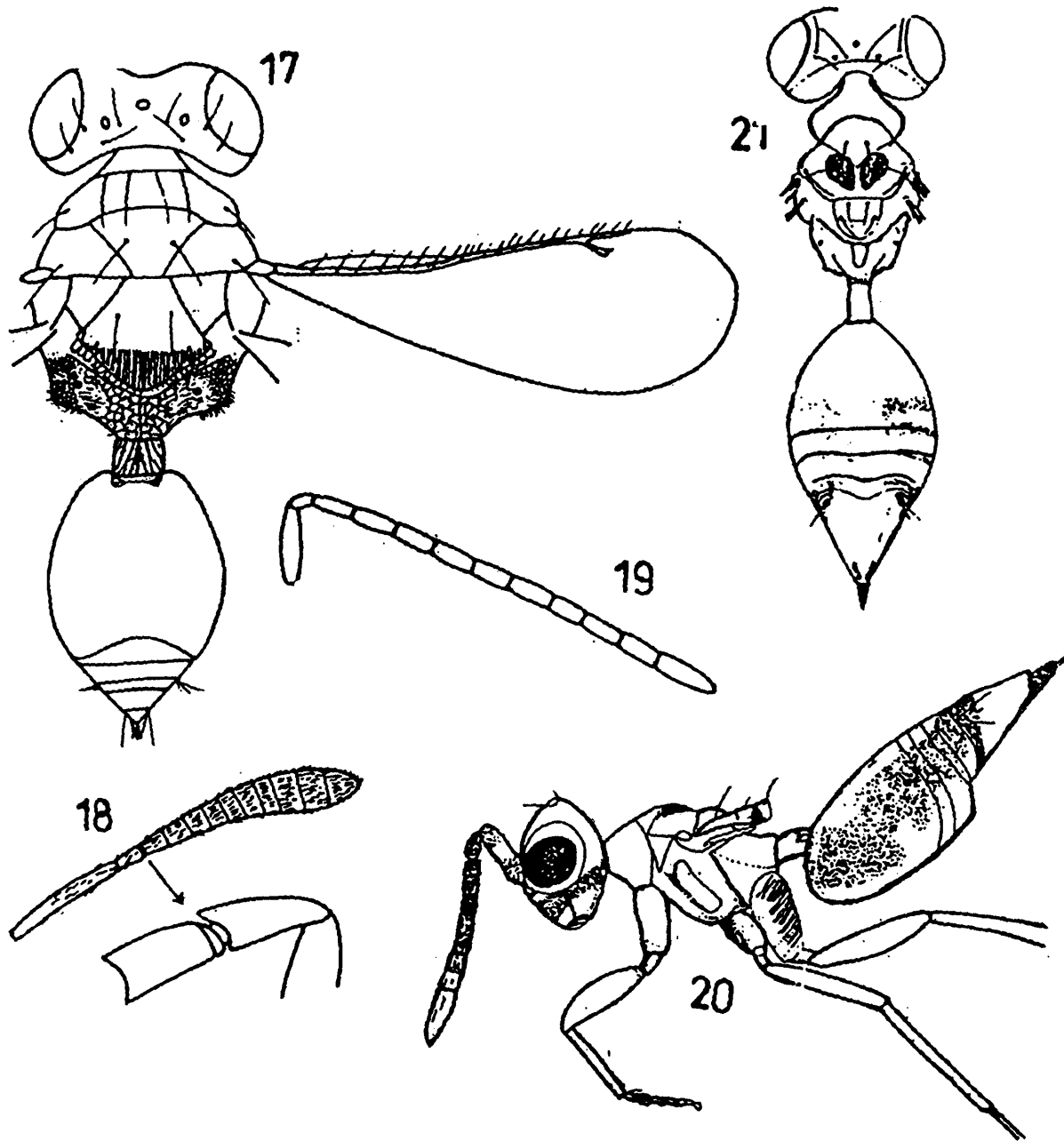
1-3. *Kumarella angulus* Sureshan- an : anelli, ax : axilla, at : antennal toruli; b: basal hairline; be; basal cell; cc: costal cell; ce: circus; cl: clava; clm: collum; clr: collar; cly: clypeus; cu: cubital vein; cx. 1-3; fore, mid and hind coxa; ep: epipygium; f 1-3; fore, mid and hind femur; flag: flagellum; fr: frenal line; fra: frenal area; fun: funicle; lme; lower epimeron; MV: marginal vein; mc: median carina; md: mandible; mf: marginal fringe; ml: mid lobe; mpl: metapleuron; ms: malar sulcus; msc: mesoscutum; msp: malar space; mst: mesepisternum; mt: metanotum; n: nucha (neck); not: notaulus; oc: ocelli; OOL: ocellocular distance; pct: prepectus; ped: pedicellus; pet: petiole; pli: plica; pll: pleural line; PMV: post marginal vein; pn: pronotum; POL: post-ocellar distance; prp: propodeum; sal: sub alar area; sc: scapus; sca: scapula (lateral lobe); scr: scrobe; sctl: scutellum; SMV: submarginal vein; sp: spiracle; spe: speculum; STV: stigmal vein; stg: stigma; T1-T6- gastral tergites 1-6; tg: tegula; ti 103: fore, mid and hind tibia; tm: temple; tr3: hind tarsus; u: uncus; ume: upper mesepimeron;



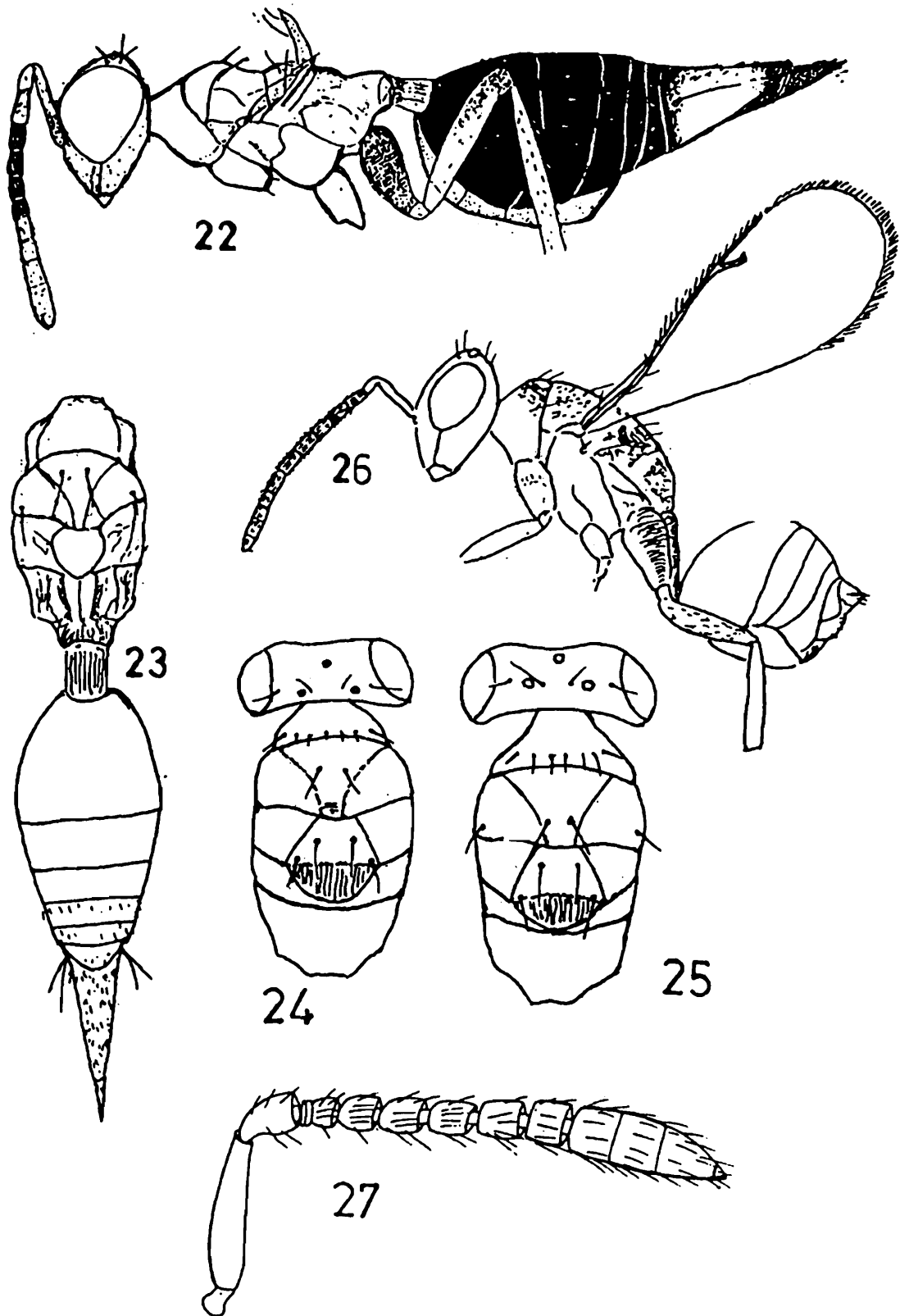
4. *Theocolax elegans* (Westwood); female body in profile; 5, 6. *Storeya minuta* Sureshan; 5, male body in profile; 6, head front view; 7, 8. *Cerocephala dinoderi* Gahan: female 7, body (part); 8, forewing; 9, 10: *Spalangia gemina* Boucek female; 9, head front view; 10, antenna; 11. *Spalangia nigroaenea* Curtis; female body; 12, *Choetospilisca tabida* (Gahan) female head and antenna.



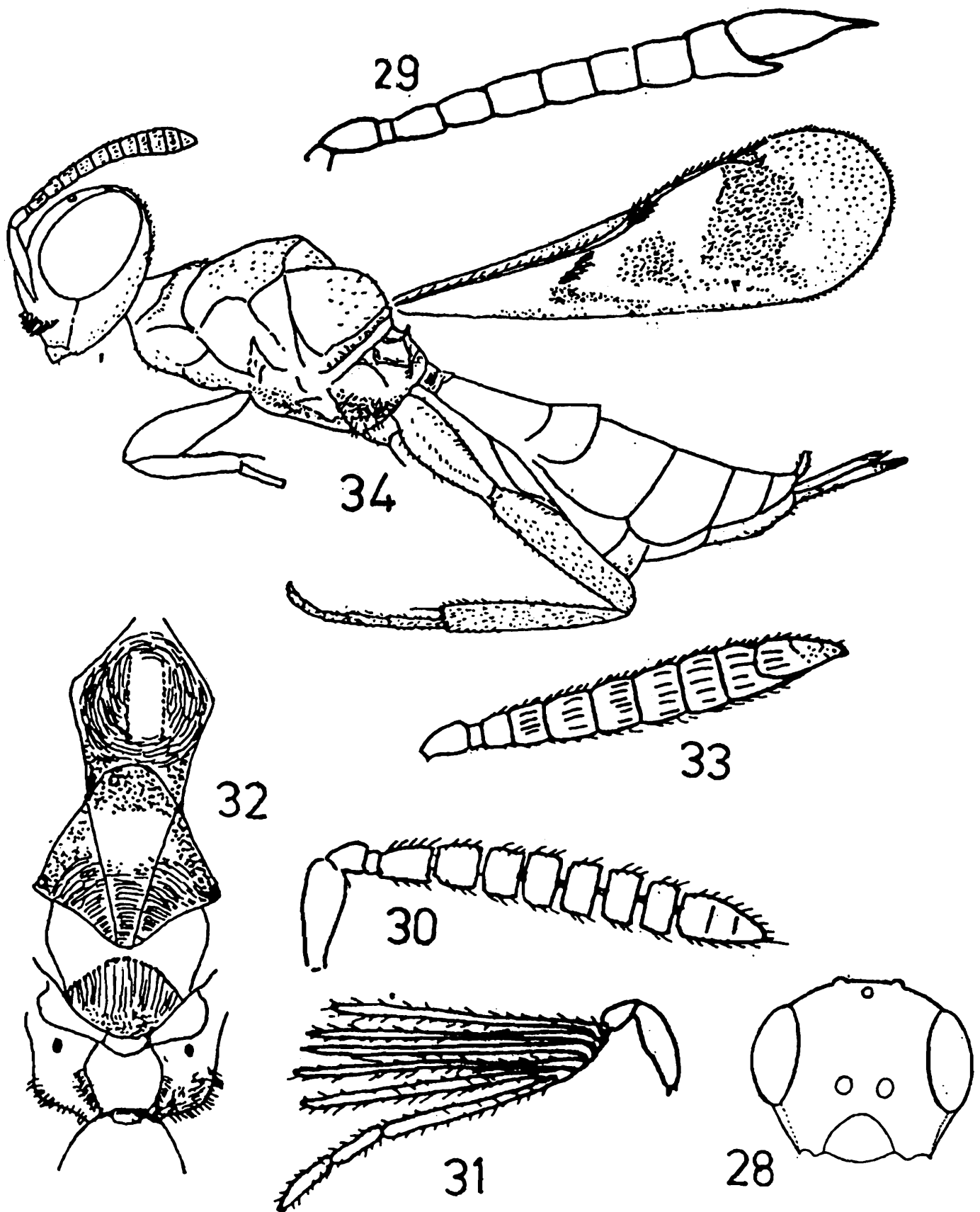
13. *Macromesus* sp. female body in profile; 14-15: *Erotolepsiella indica* Narendran, female; 14, Thorax (part) and gaster dorsal view; 15, body in profile; 16, *Dipara petiolata* Walker, male body.



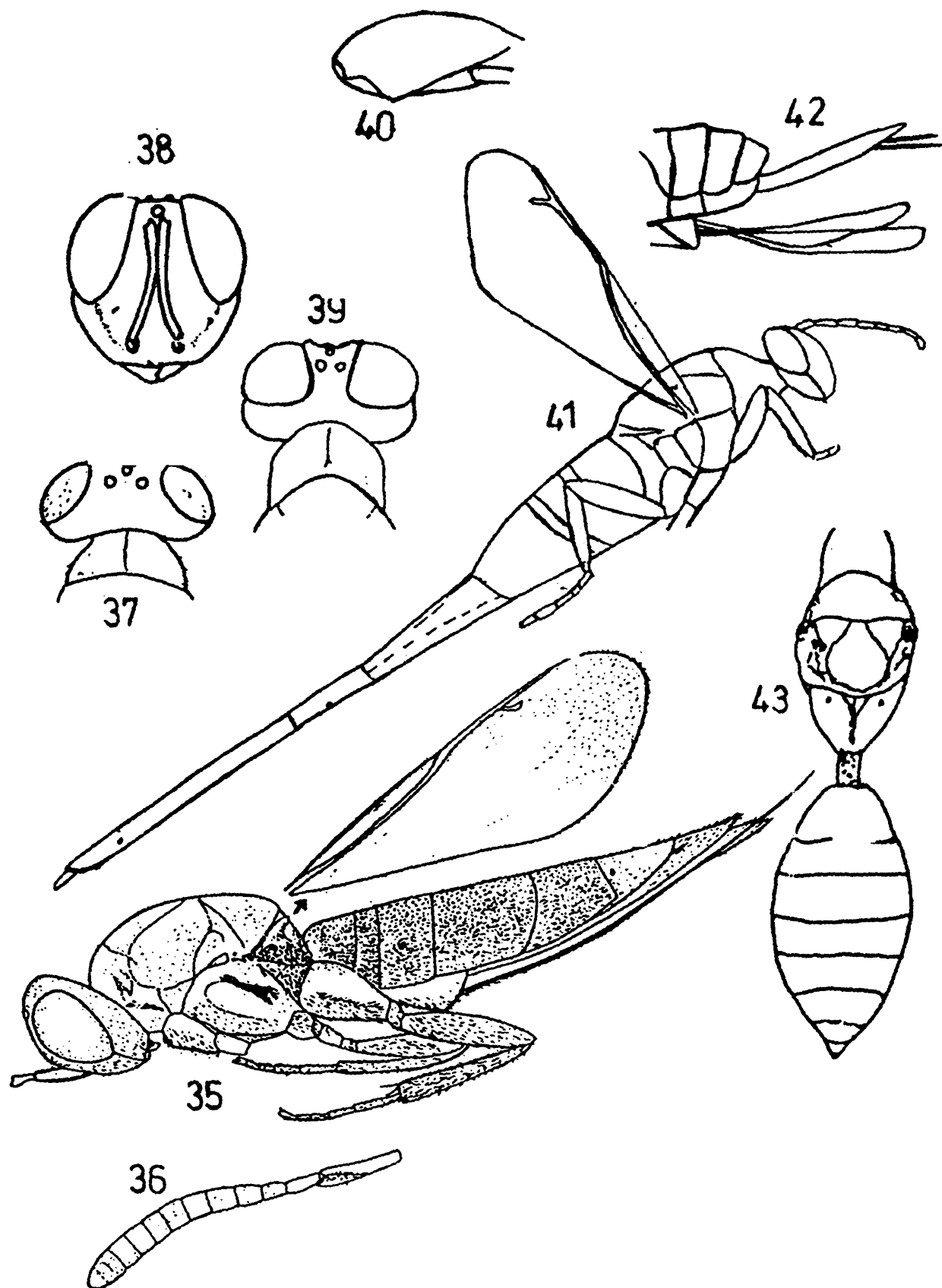
17-19. *Netomocera nigra* Sureshan & Narendran female; 17, body dorsal view; 18, antenna; 19, male antenna; 20, *Grahamisia malabarensis* Narendran & Mini; female body in profile; 21, *Grahamisia* sp. Female body dorsal view.



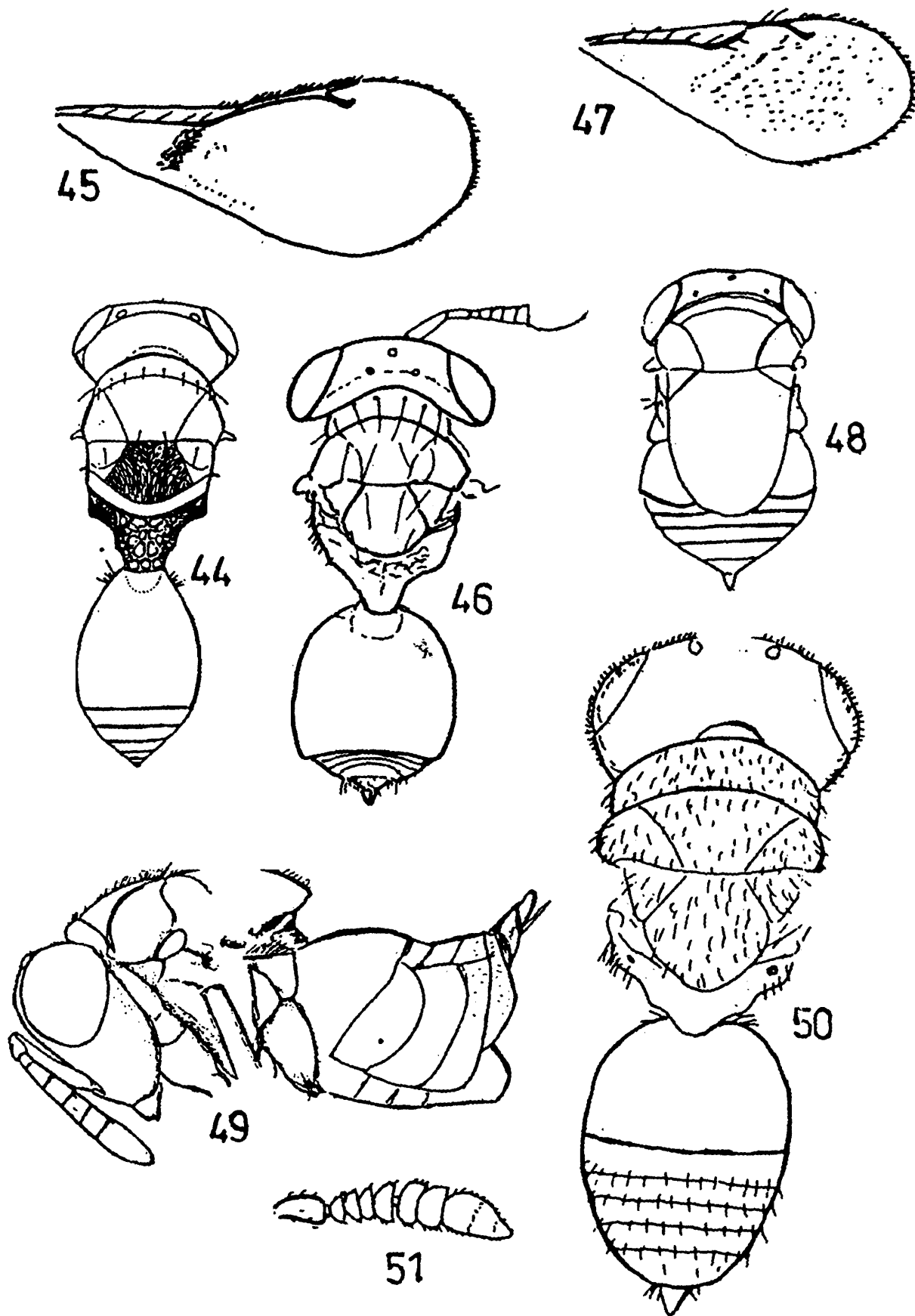
22. *Dipara keralensis* Narendra & Sureshan; female body in profile; 23, *Dipara* sp; female body (part) dorsal view; 24-25; *Parurios* sp. head and thorax dorsal view; 26. *Parurios keralensis* Narendran *et.al*; female body in profile; 27, *Trigonoderopsis bouceki* Ahamad & Agarwal, female antenna.



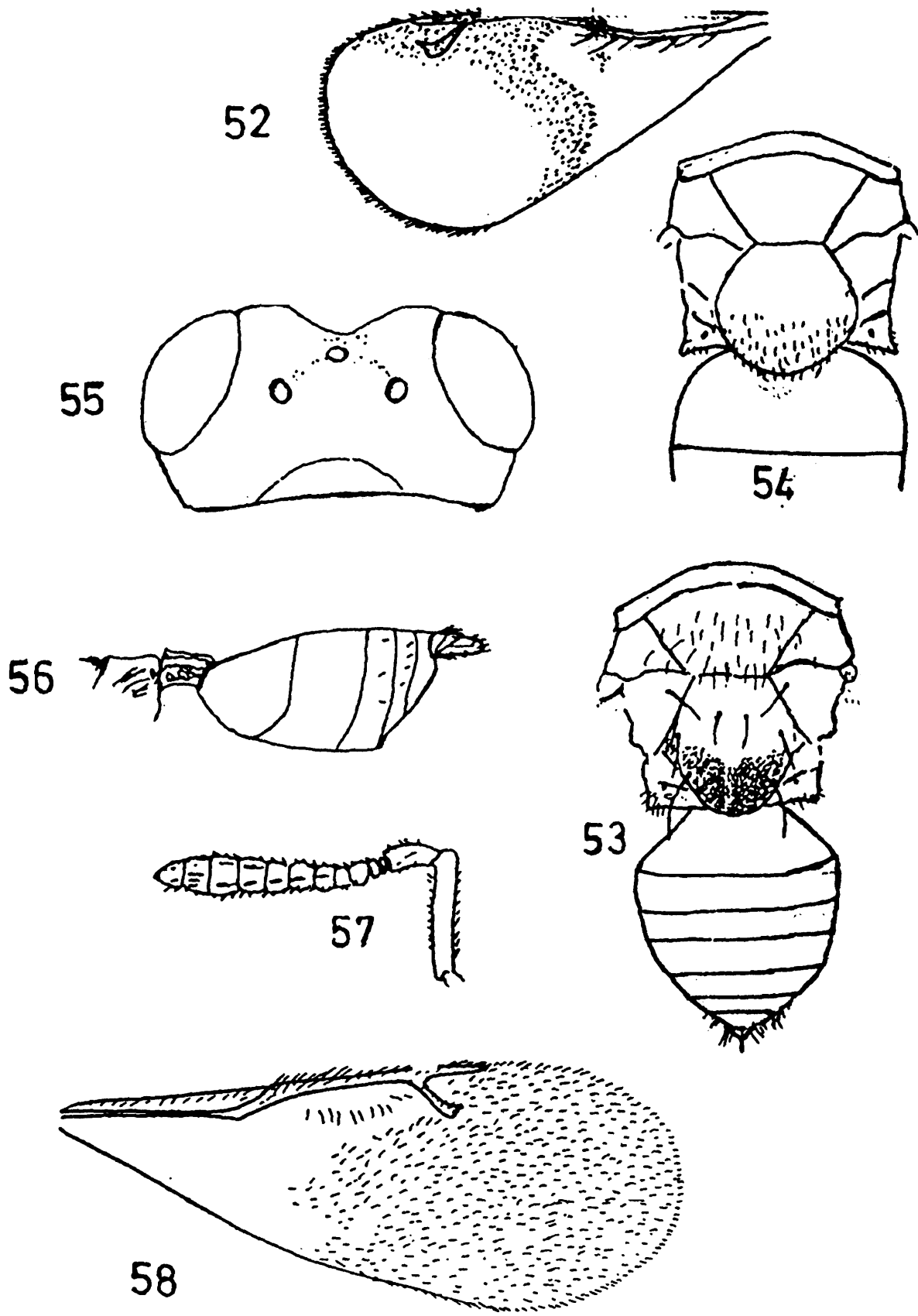
28. *Trigonoderopsis bouceki* Ahmad & Agarwal, female head front view; 29, *Notanisus versicolor* Walker; female antenna; 30, *Cleonymus* sp; male antenna; 31, *Notanisus versicolor* Walker; male antenna; 32 *Oodera* sp. part of the body dorsal view. 33, *Cleonymus* sp.; female antenna; 34, *Heydenia tuberculata* Sureshan; female body in profile.



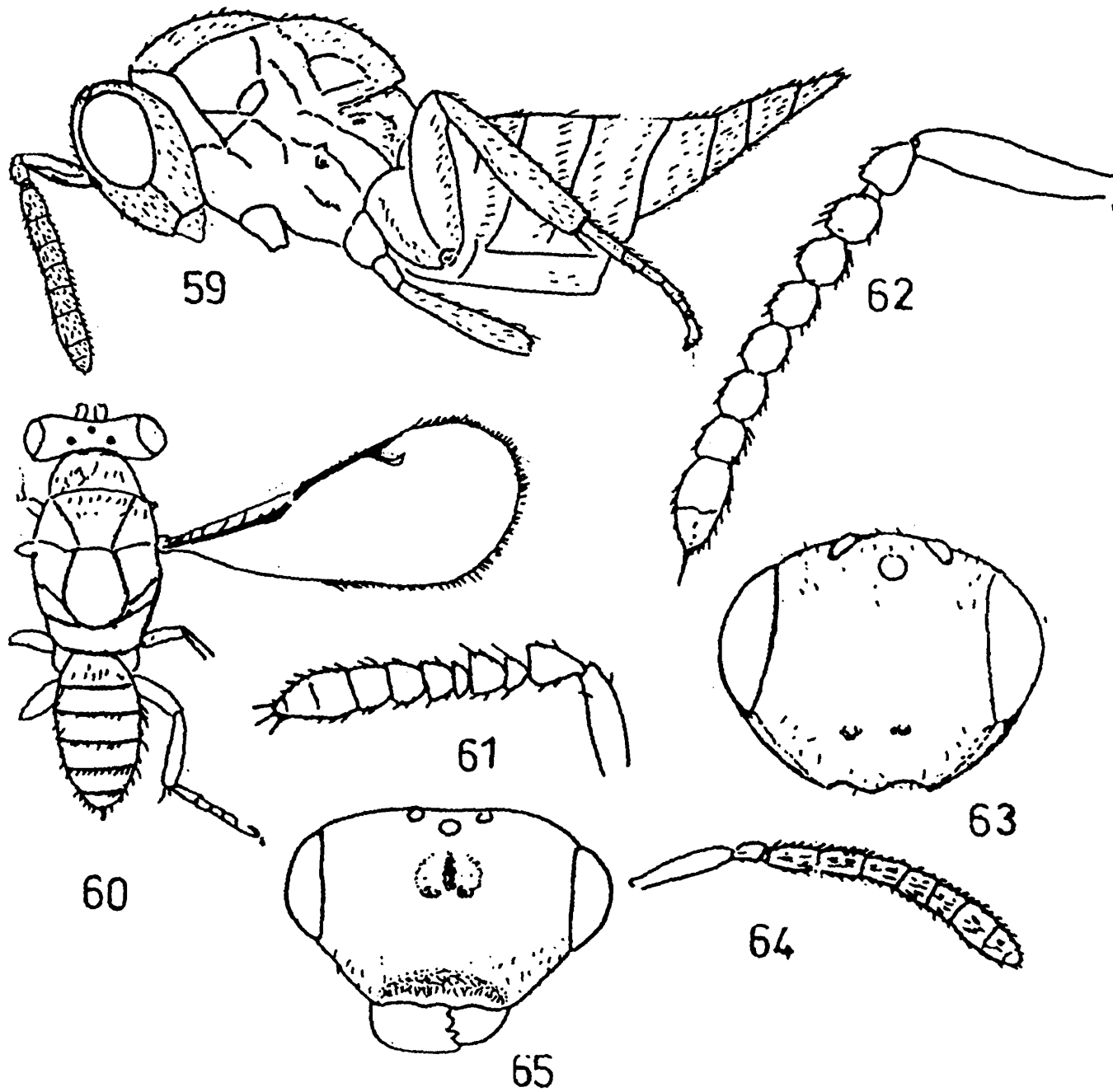
35-37. *Grooca coorgensis* Sureshan & Narendran female; 35, body in profile; 36, antenna; 37, head and pronotum dorsal view; 38, 39; *Thaumasura* sp; 38, head front view; 39, head and pronotum dorsal view; 40, *Parepistenia* sp. fore femur and tibia; 41, *Soleneura ania* (Walker); female body in profile; 42; *Thaumasura indica* Mani & Kaul female, tip of gaster; 43, *Notanisus versicolor* Walker, female body (part) dorsal view.



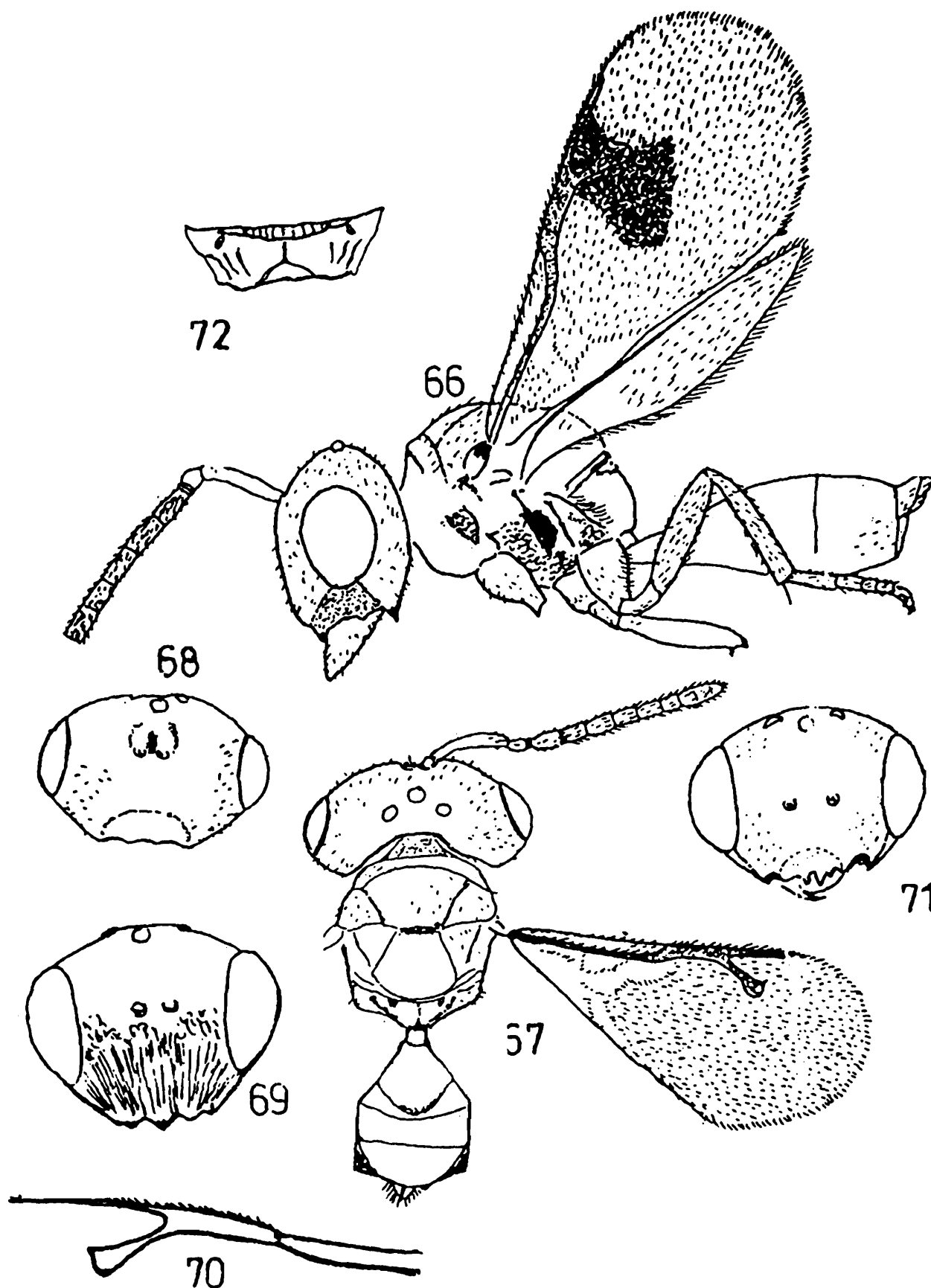
44,45. *Ophelosia indica* Farooqi, female; 44 body dorsal view; 45, forewing; 46, 47; *Moranila californica* (Howard) female; 46, body dorsal view; 47, forewing; 48, *Scutellista caerulea* (Fonscolombe), female body dorsal view; 49, *Cephaleta australiensis* (Howard); female body in profile; 50, 51, *Herbertia* sp. female; 50, body dorsal view; 51, antenna.



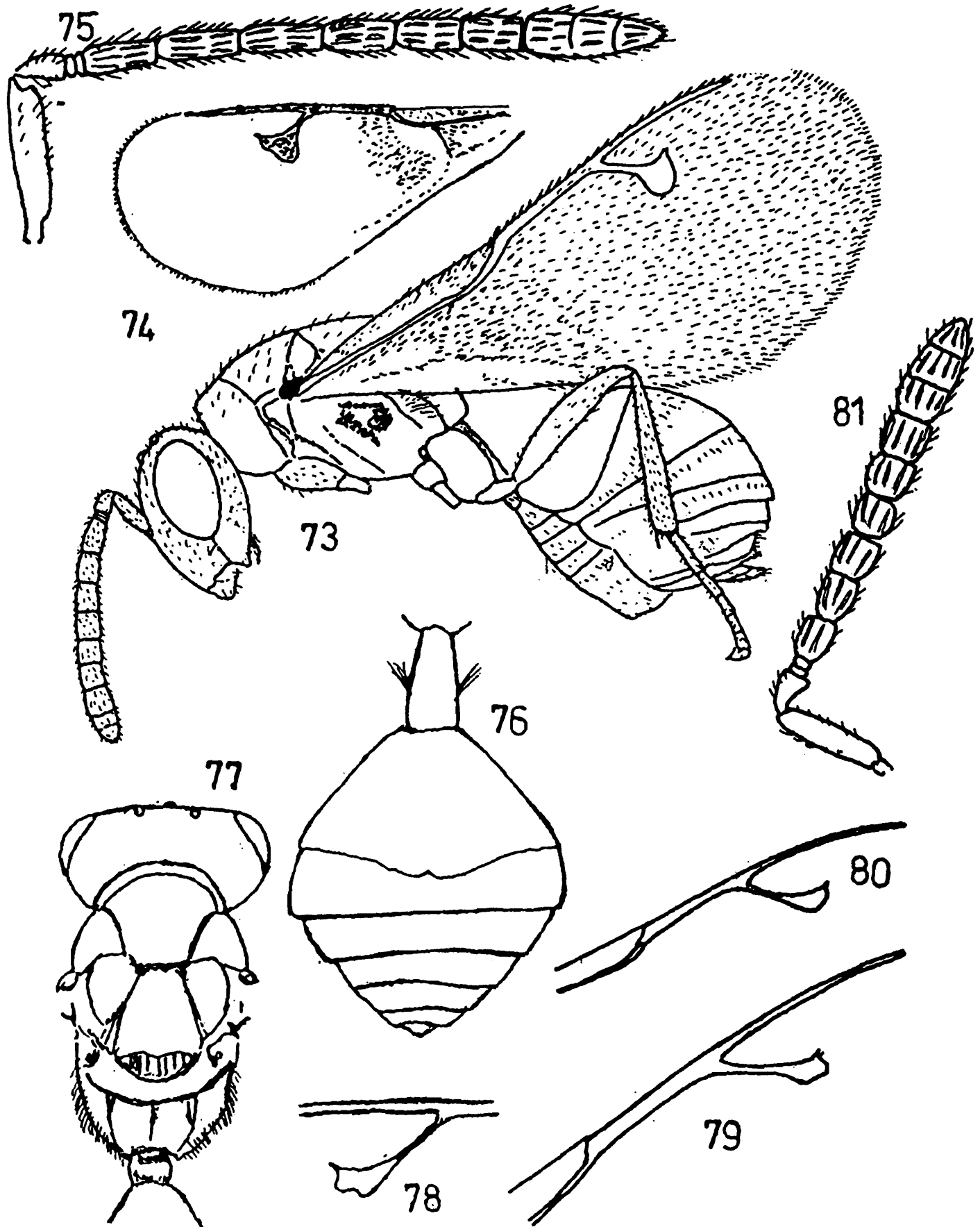
52-53: *Ajantha malabarensis* Narendran, female: 52, forewing; 53, Thorax and gaster dorsal view; 54, *Cephaleta* sp. female Thorax and part of gaster dorsal view; 55-56; *Asaphes vulgaris* Walker; 55, head dorsal view; 56, gaster in profile; 57, *Asaphes suspensus* (Nees); female antenna; 58, *Systasis nigra* Sureshan female; forewing;



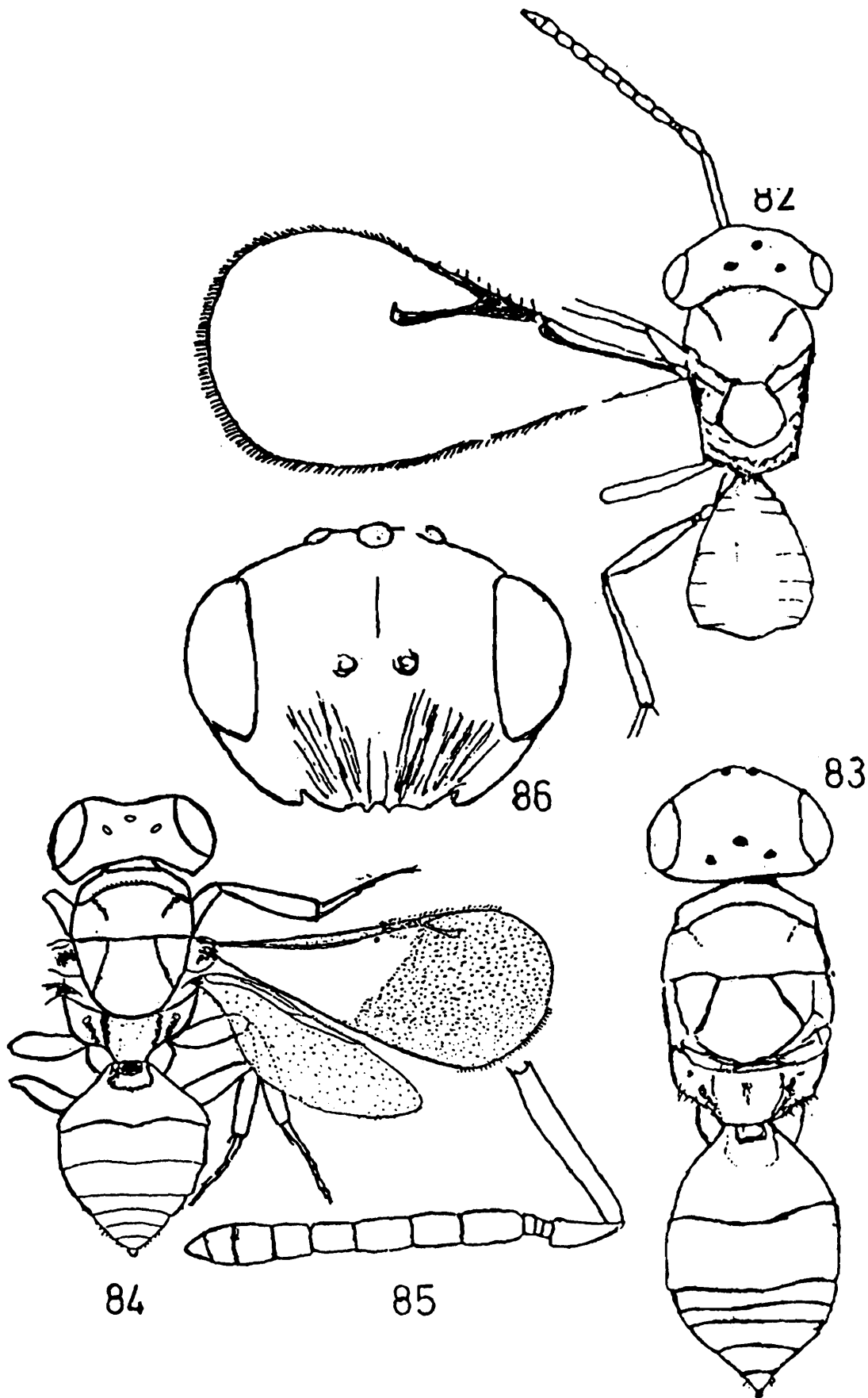
59, *Systasis nigra* Sureshan female; body in profile; 60-62. *Ecrizotomorpha tashkiri* Mani female; 60, body in profile; 61, antenna; 62, male antenna; 63-64; *Gastrancistrus muneswari* Yadav female, 63, head front view; 64, antenna; 65, *Acroclisoides maculatus* Sureshan & Narendran, female head front view.



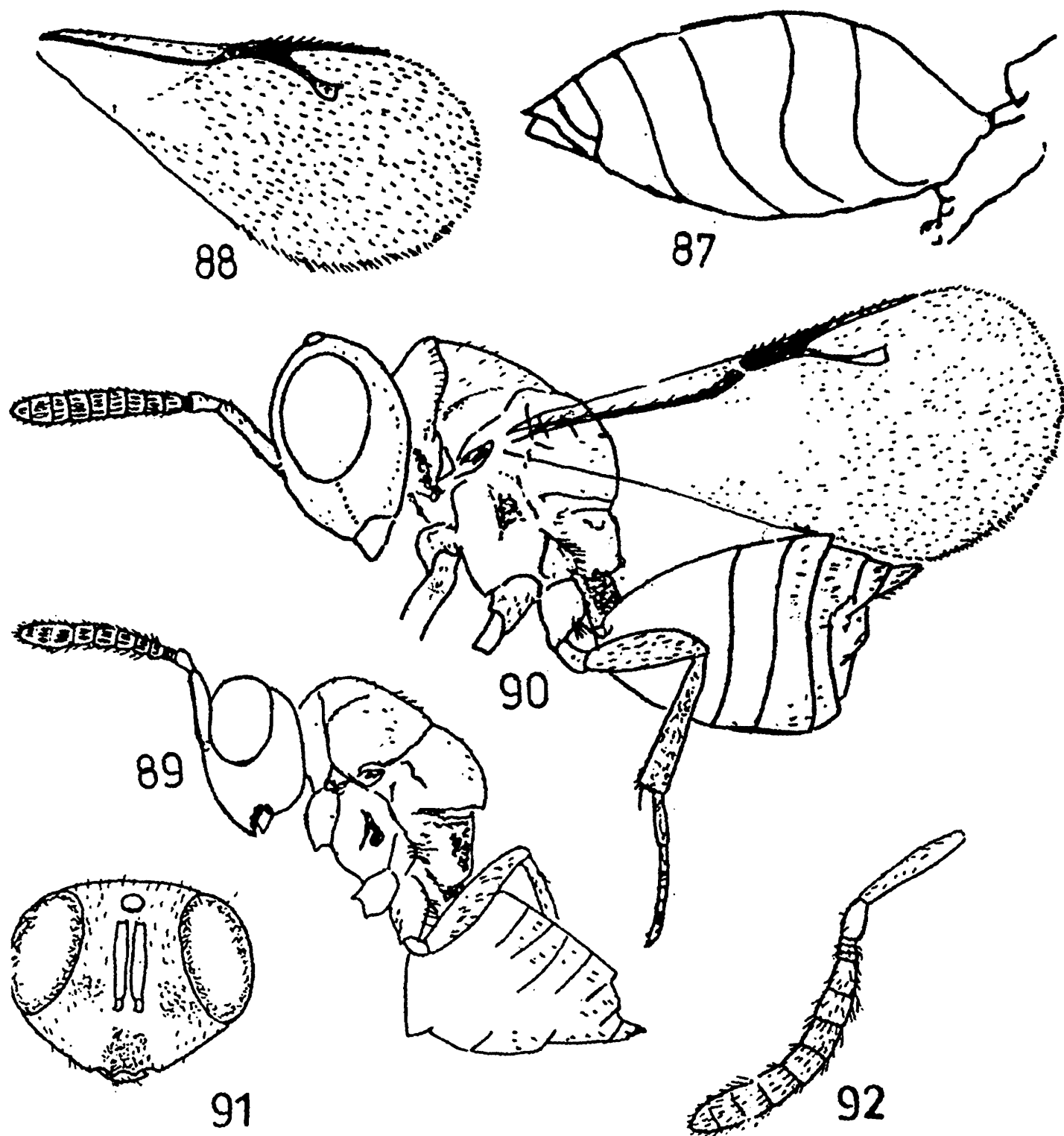
66. *Acroclisoides maculatus* Sureshan & Narendran, female body in profile; 67-68, *Acroclisoides indicus* Ferriere Female, 67, body dorsal view; 68, head front view; 69-70. *Coruna clavata* Walker female, 69, head front view; 70, forewing venation; 71-72, *Stictomischus turneri* Sureshan, Female; 71, head front view; 72, propodeum.



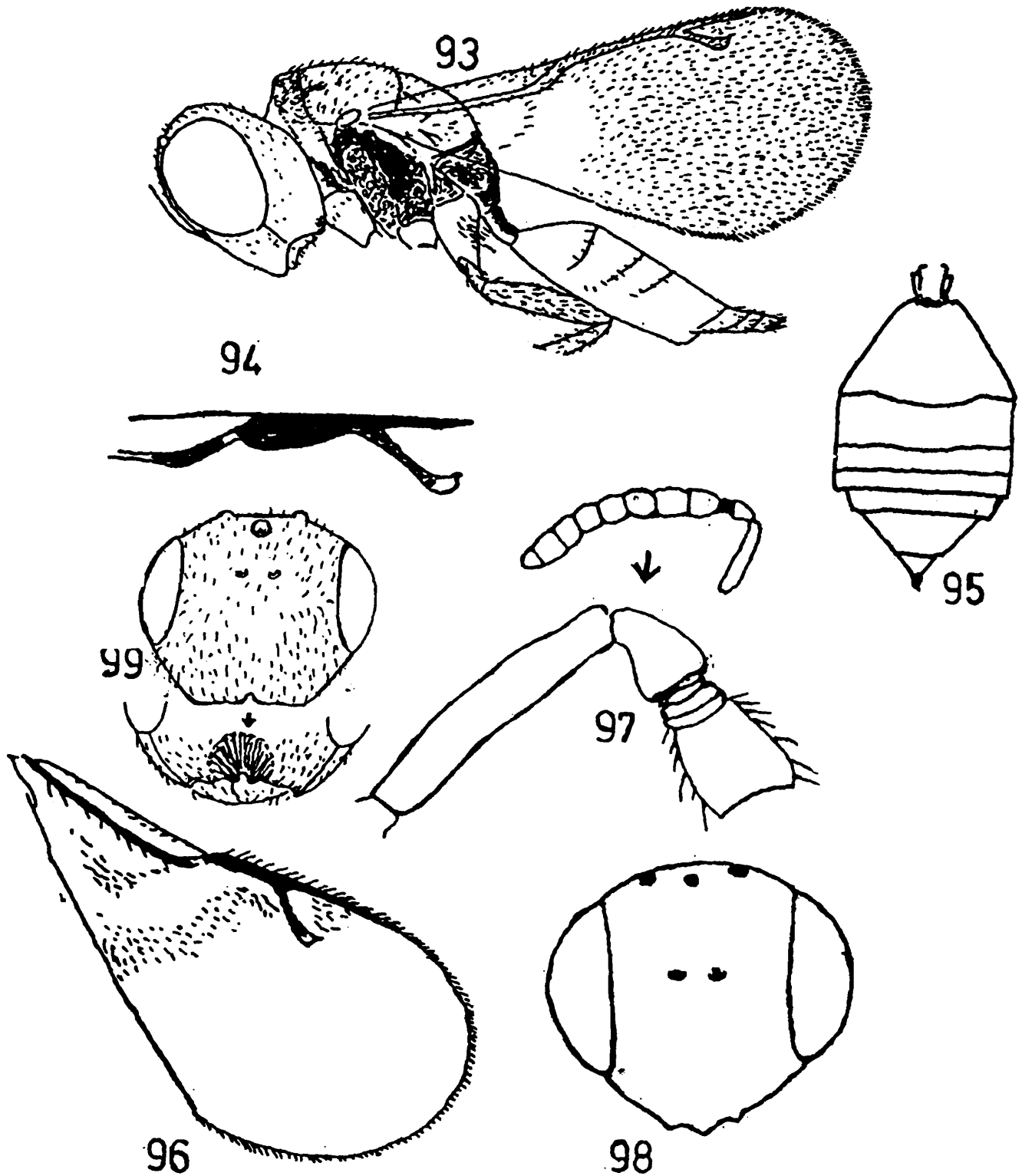
73, *Stictomischus turneri* Sureshan, female body in profile; 74-75, *Miscogaster* sp. female; 74, forewing; 75, antenna; 76, gaster dorsal view; 77-78, *Lamprotatus* sp. female, 77 body (part) dorsal view; 78, stigma of forewing; 79-81, *Seladerma* sp. 79, 80, forewing venation (part); 81, female antenna.



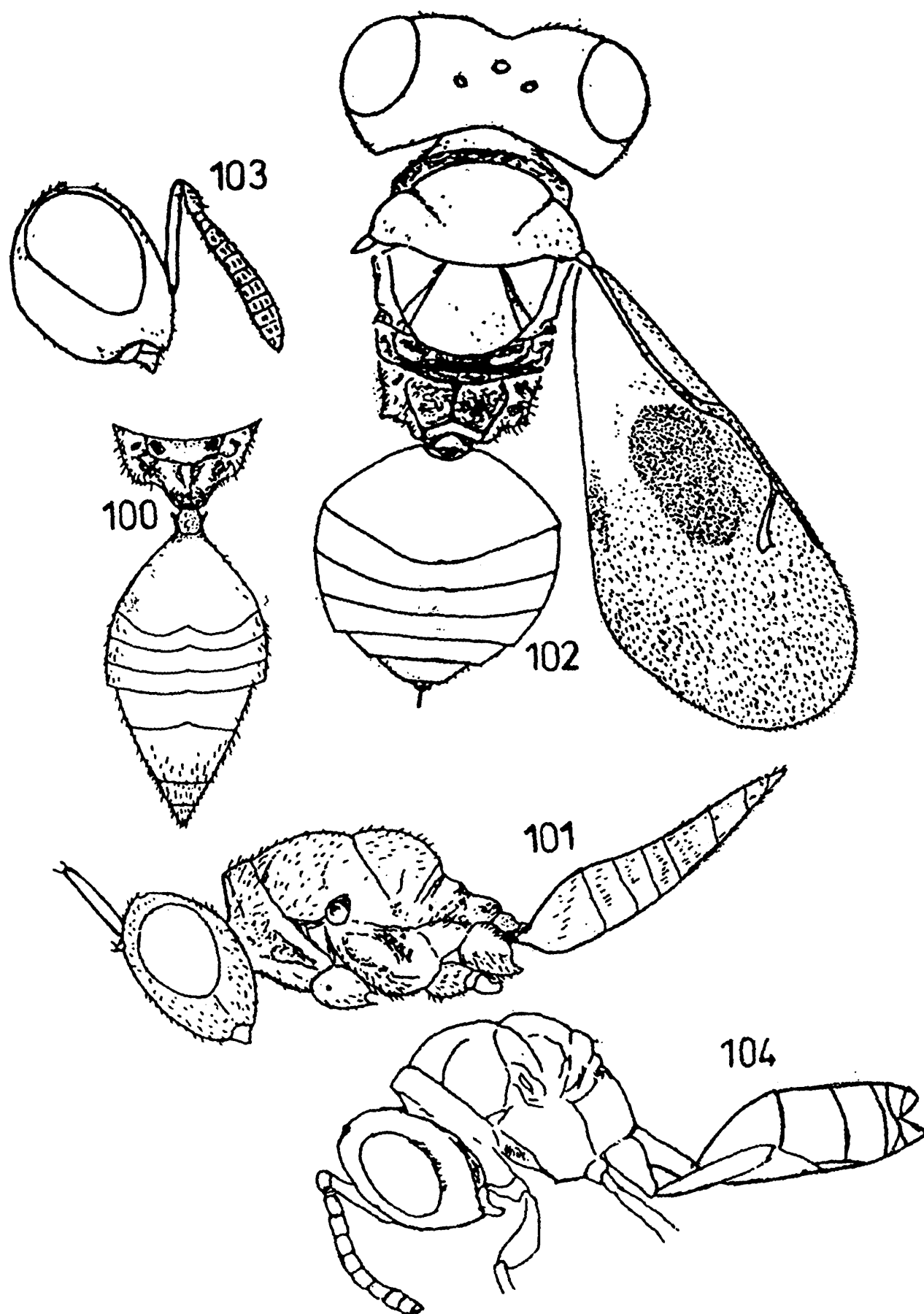
82. *Manineura pentatomivora* (Mani), female body; 83, *Pachycrepoideus vindemmiae* (Rondani), female body dorsal view; 84-85. *Pachycrepoideus veerannai* Narendran & Anil; 84, female body dorsal view; 85, antenna; 86, *Euneura* sp. Head front view.



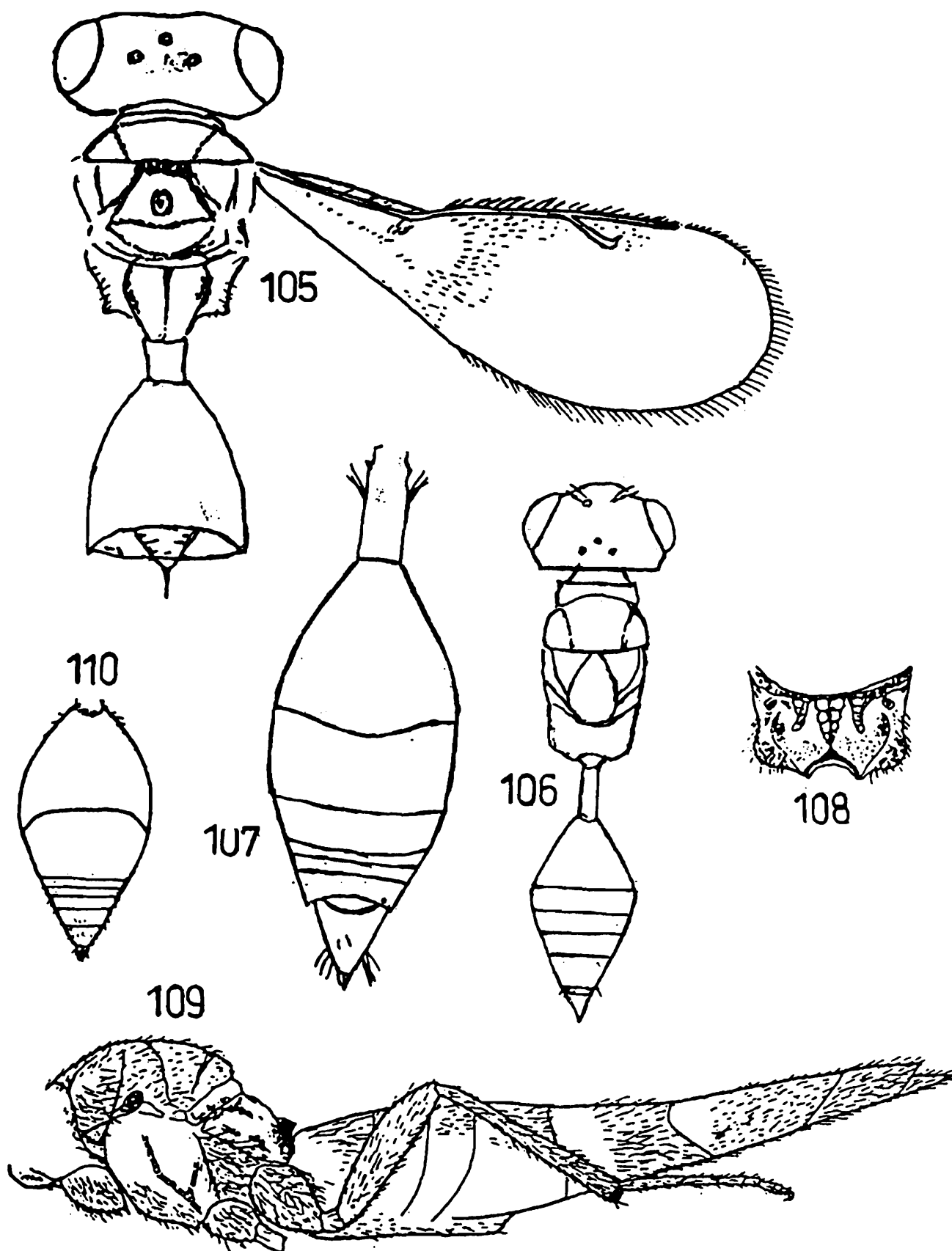
87, *Euneura lachni* (Ashmead); female gaster; 88-89, *Pachyneuron aphidis* (Bouche), Female; 88, forewing; 89, body in profile; 90, *Pachyneuron leucopiscida* Mani; female body; 91-92, *Agiommatus geethae* Sureshan & Narendran, Female; 91, head in front view; 92, antenna.



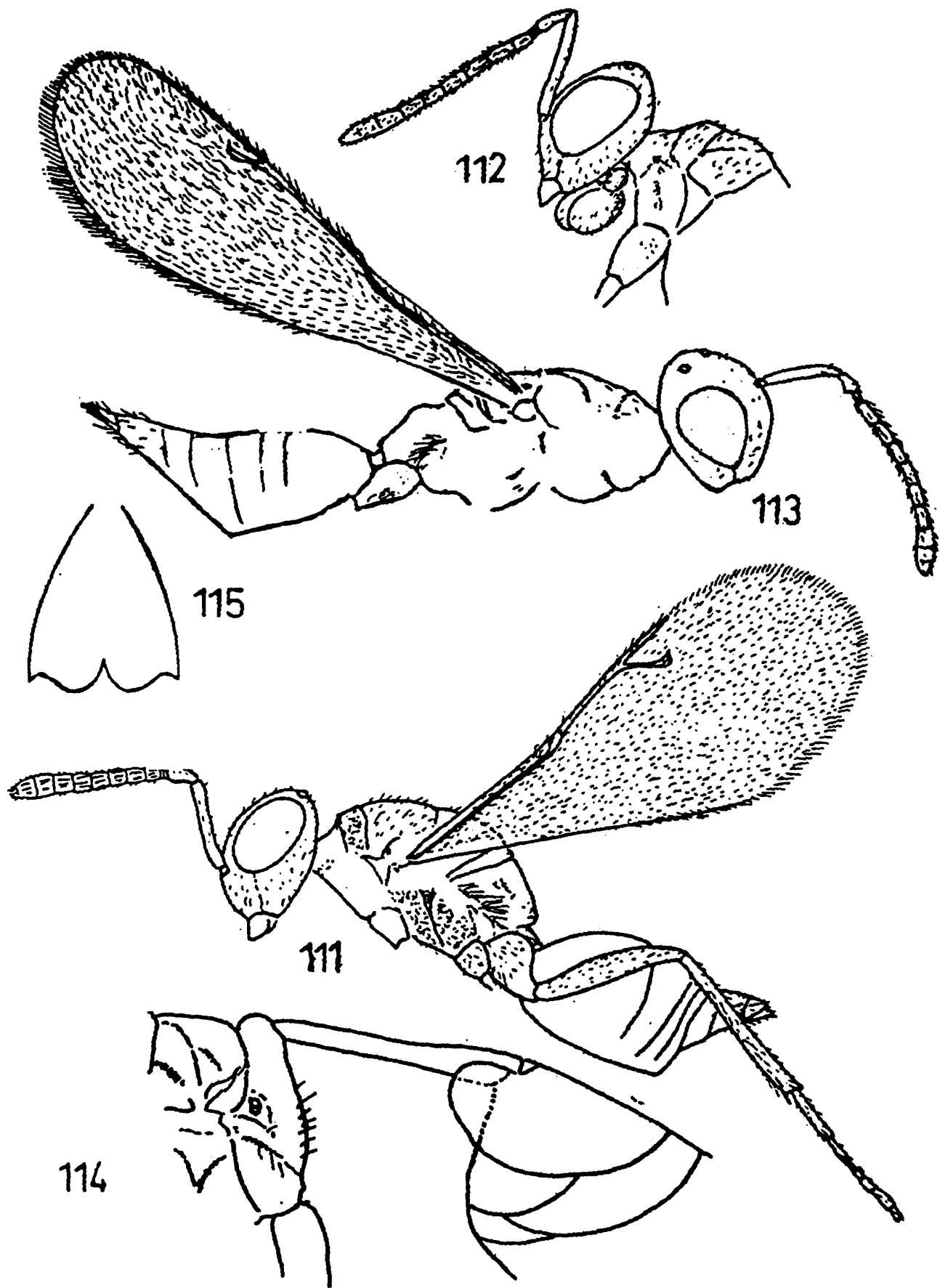
93, *Agiommatius geethae* Sureshan & Narendran, Female body in profile; 94, *Platecrizotes* sp. female forewing venation; 95, *Platecrizotes sudanensis* Ferriere, female gaster; 96-98. *Oricoruna arcotensis* (Mani & Kurian), 96, forewing; 97 antenna; 98, head front view; 99, *Narendrella nilamburensis* Sureshan, female, head front view.



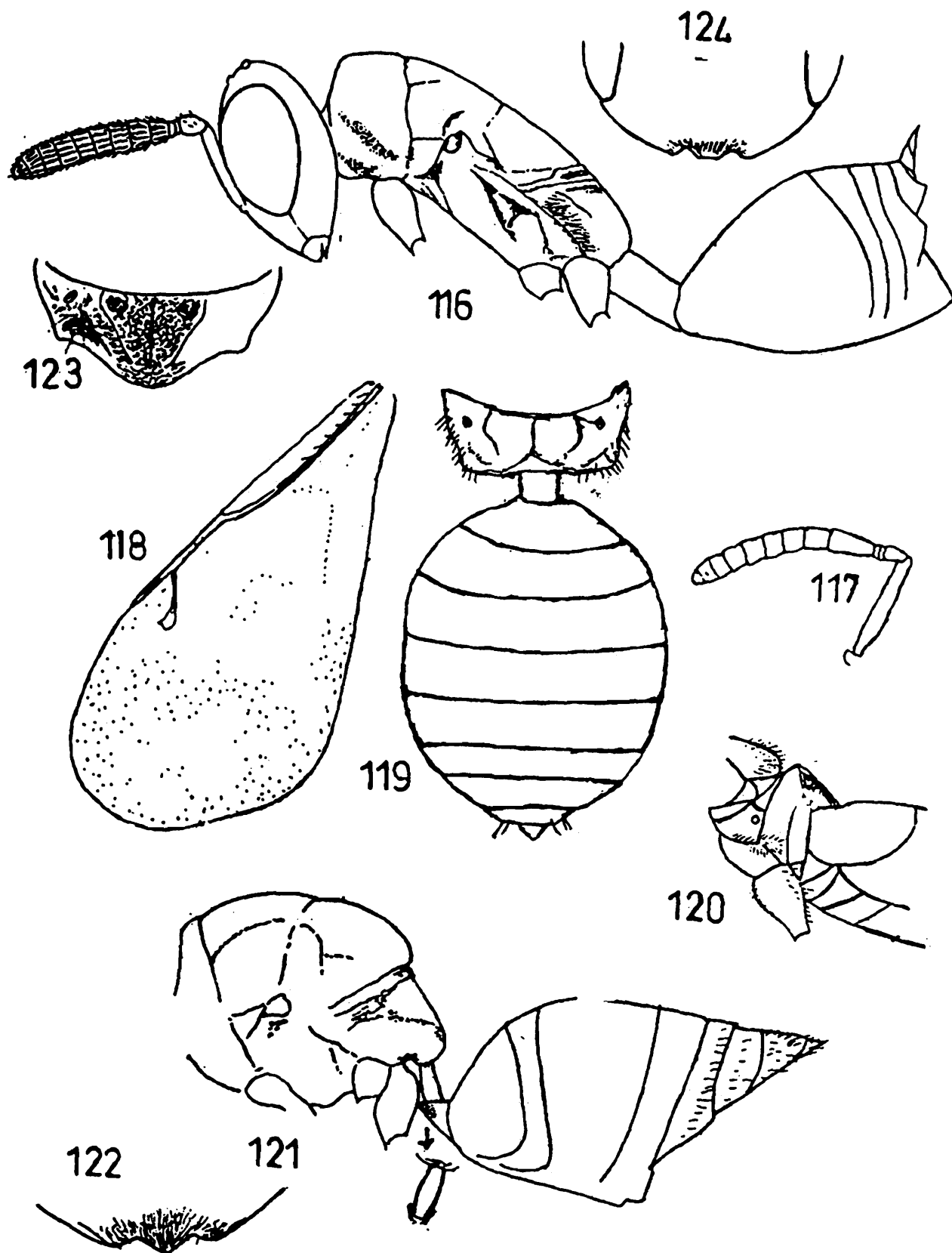
100-101, *Narendrella nilamburensis* Sureshan, female 100, propodeum and gaster dorsal view; 101, body in profile; 102-103, *Cyclogastrella nigra* Sureshan, Female; 102, body dorsal view; 103, head in profile; 104, *Paracarotomus cephalotes* Ashmead, female body in profile.



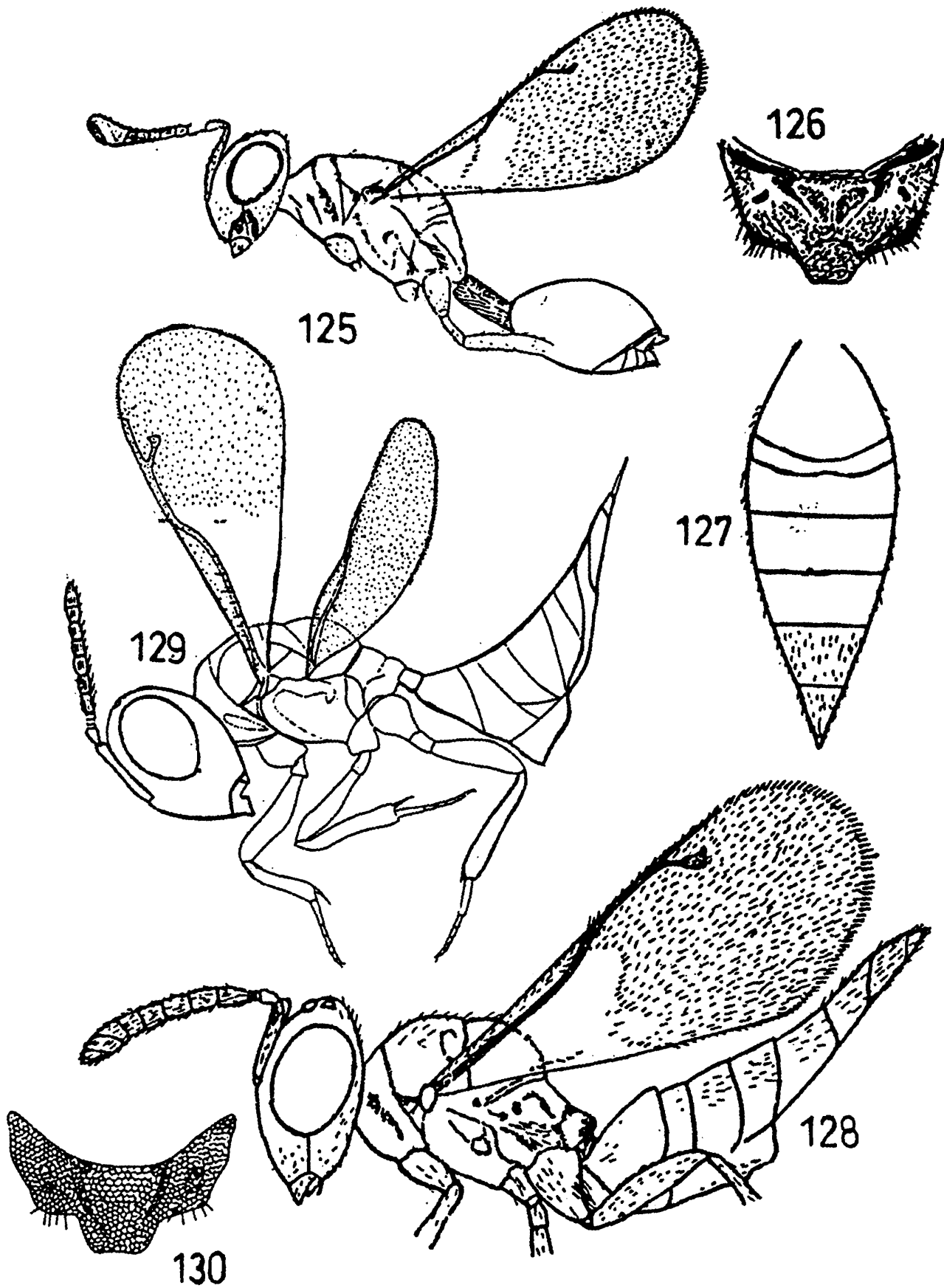
105, *Notoglyptus scutellaris* (Dodd & Girault); female body dorsal view; 106, 107, *Merismus* sp. female; 106, body dorsal view; 107, gaster dorsal view; 108-109, *Miscogasteriella jayasreeae* Sureshan, female; 108, propodeum dorsal view; 109, female body (part) in profile; 110, *Cyrtogaster clavicornis* Walker, Female gaster dorsal view.



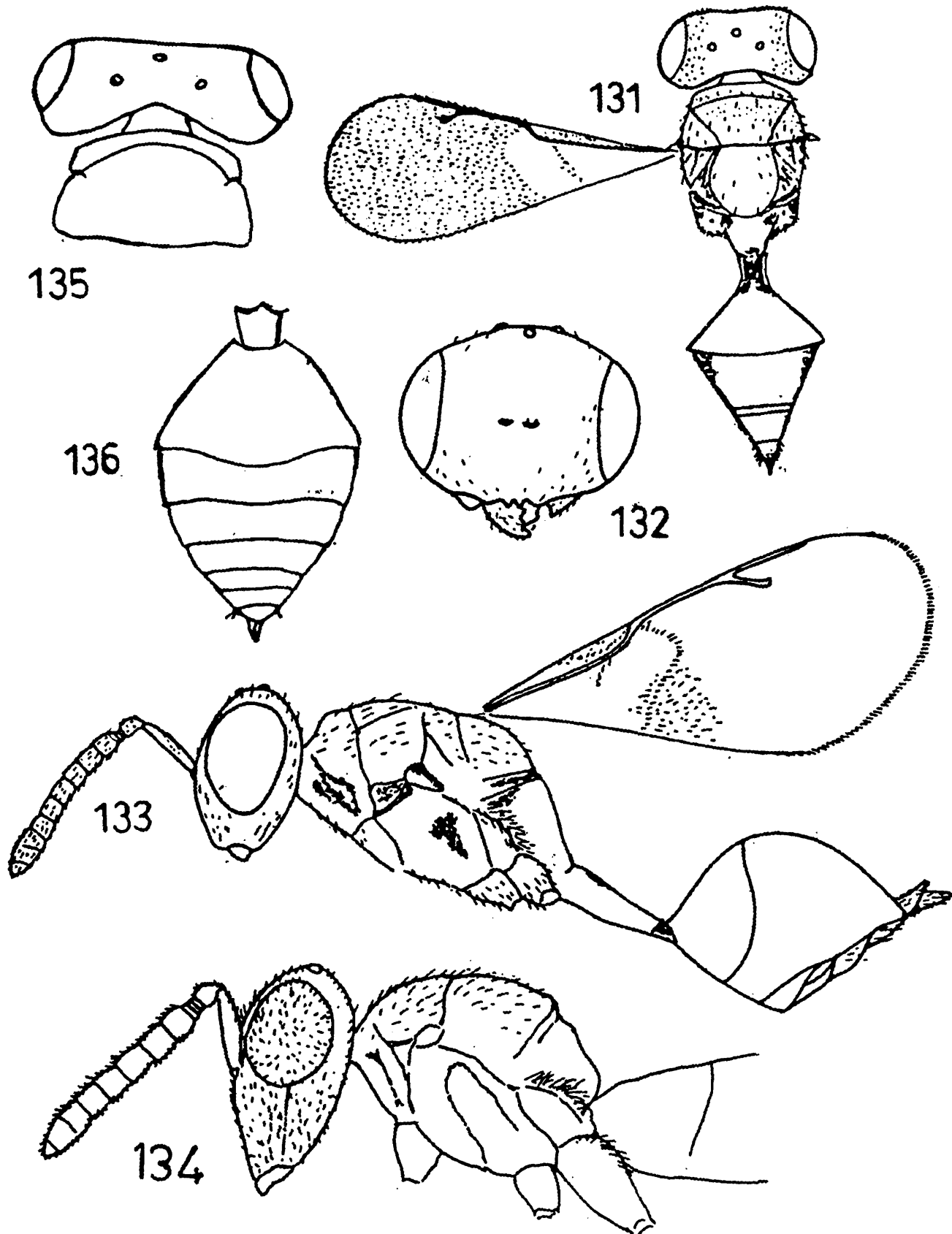
111, *Cyrtogaster clavicornis* Walker, Female body in profile; 112, male head and Thorax (part) in profile; 113, *Panstenon* sp. Female body in profile; 114, *Eurydinotomorpha petiolatus* (Boucek); female propodeum and part of gaster in profile; 115, *Syntomopus rajamalaiensis* Sureshan & Narendran, female, T1 of gaster dorsal view.



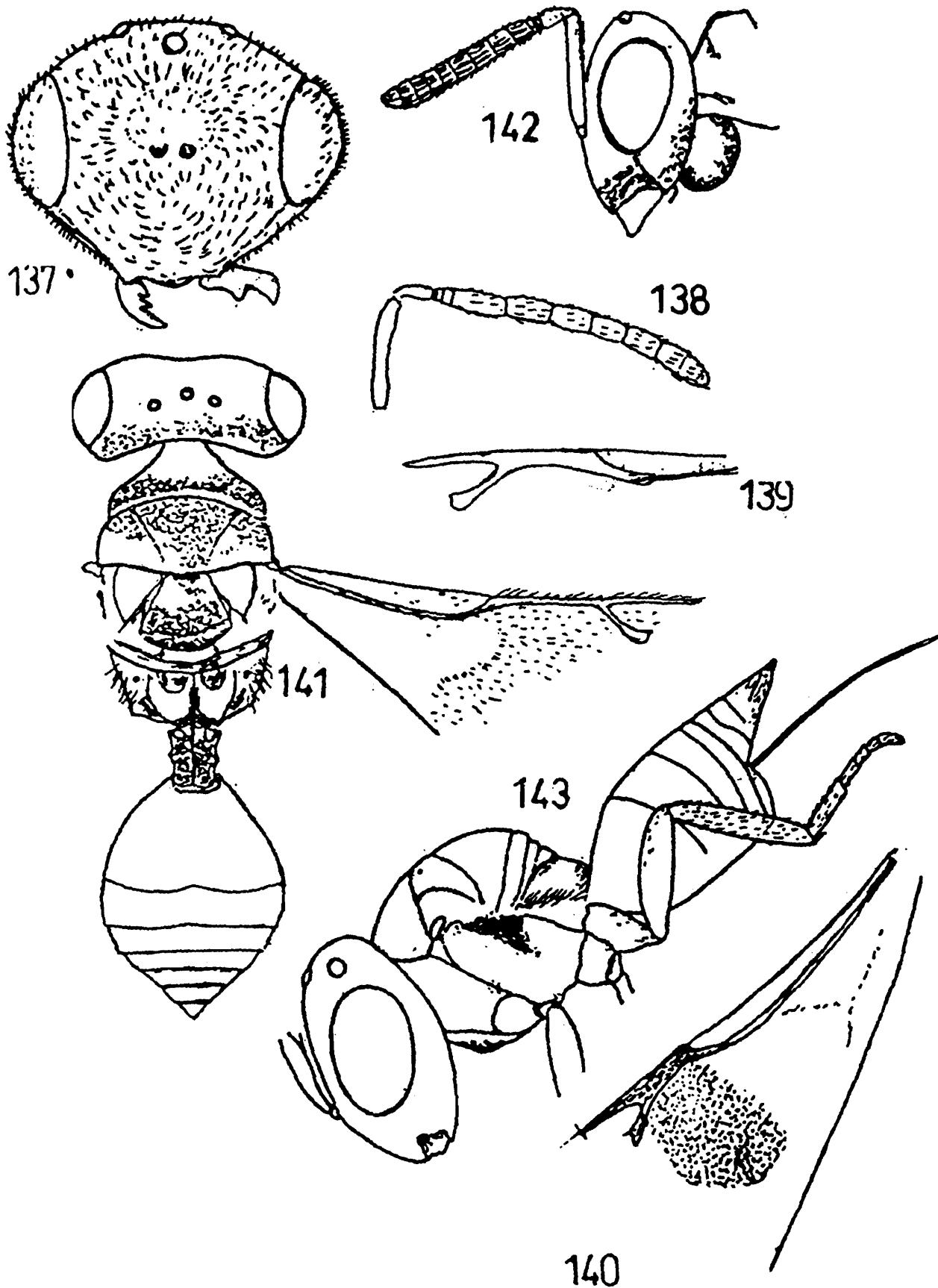
116, *Syntomopus carinatus* Sureshan & Narendran; female body in profile; 117, *Conomorium* sp. Female antenna; 118-119, *Conomorium patulum* (Walker): 118, forewing; 119, female propodeum and gaster; 120, *Eurydinotomorpha malabarensis* Sureshan & Narendran, female, attachment of petiole on propodeum in profile; 121, *Merismomorpha minuta* Sureshan, female body (without head); 122-123, *Merismomorpha elongata* Sureshan, 122, clypeus; 123, propodeum dorsal view; 124, *Merismomorpha truncata* Sureshan, female, clypeus.



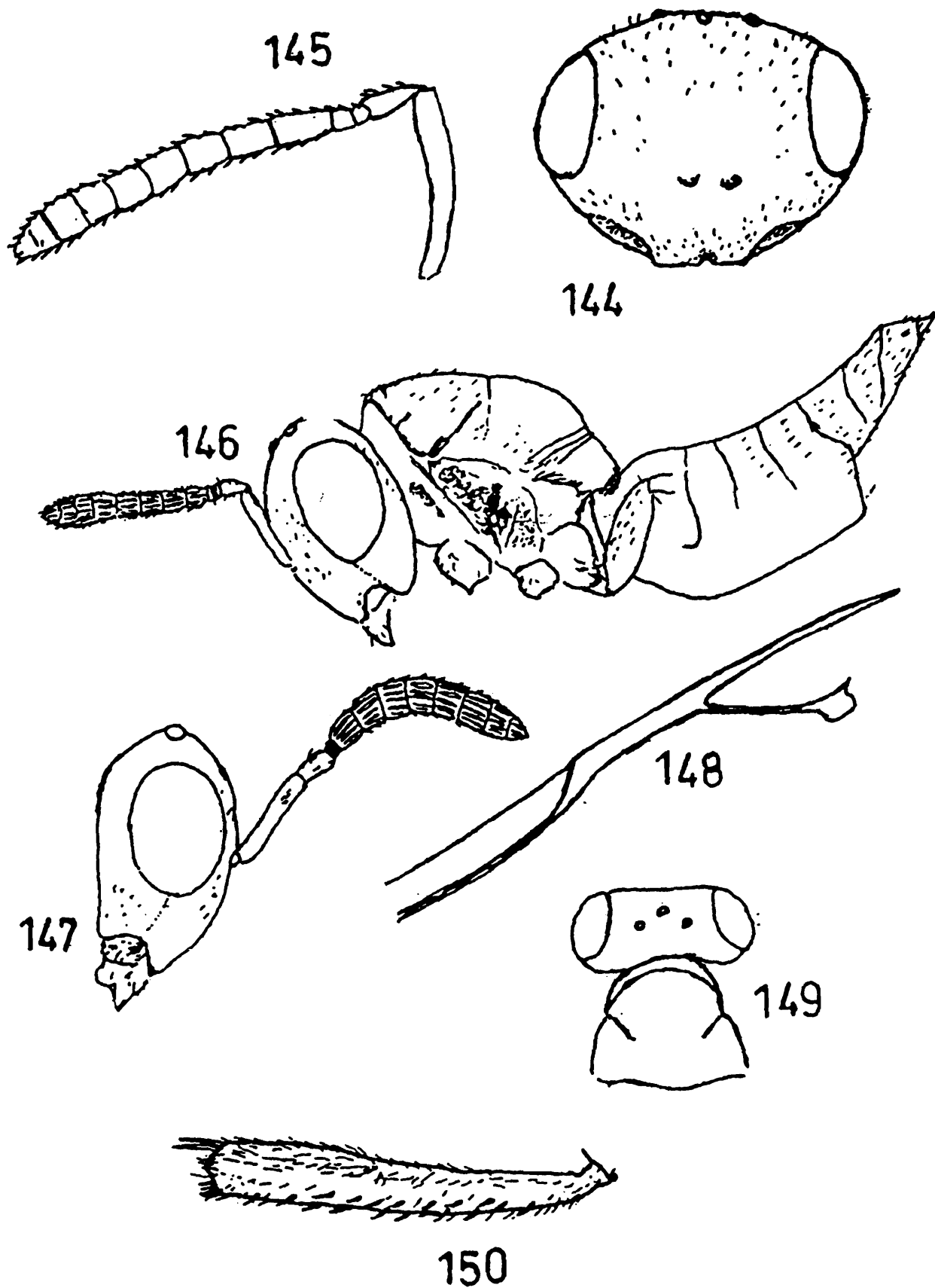
125, *Cryptoprymna elongata* Sureshan & Narendran, female body in profile; 126-127, *Paraiemea convexa* Sureshan & Narendran, female, 126, propodeum; 127, gaster dorsal view; 128, *Paraiemea vishnuae* Sureshan & Narendran, female body in profile; 129-130, *Delislea rahimani* Narendran *et. al.* 129, female body in profile; 130, propodeum



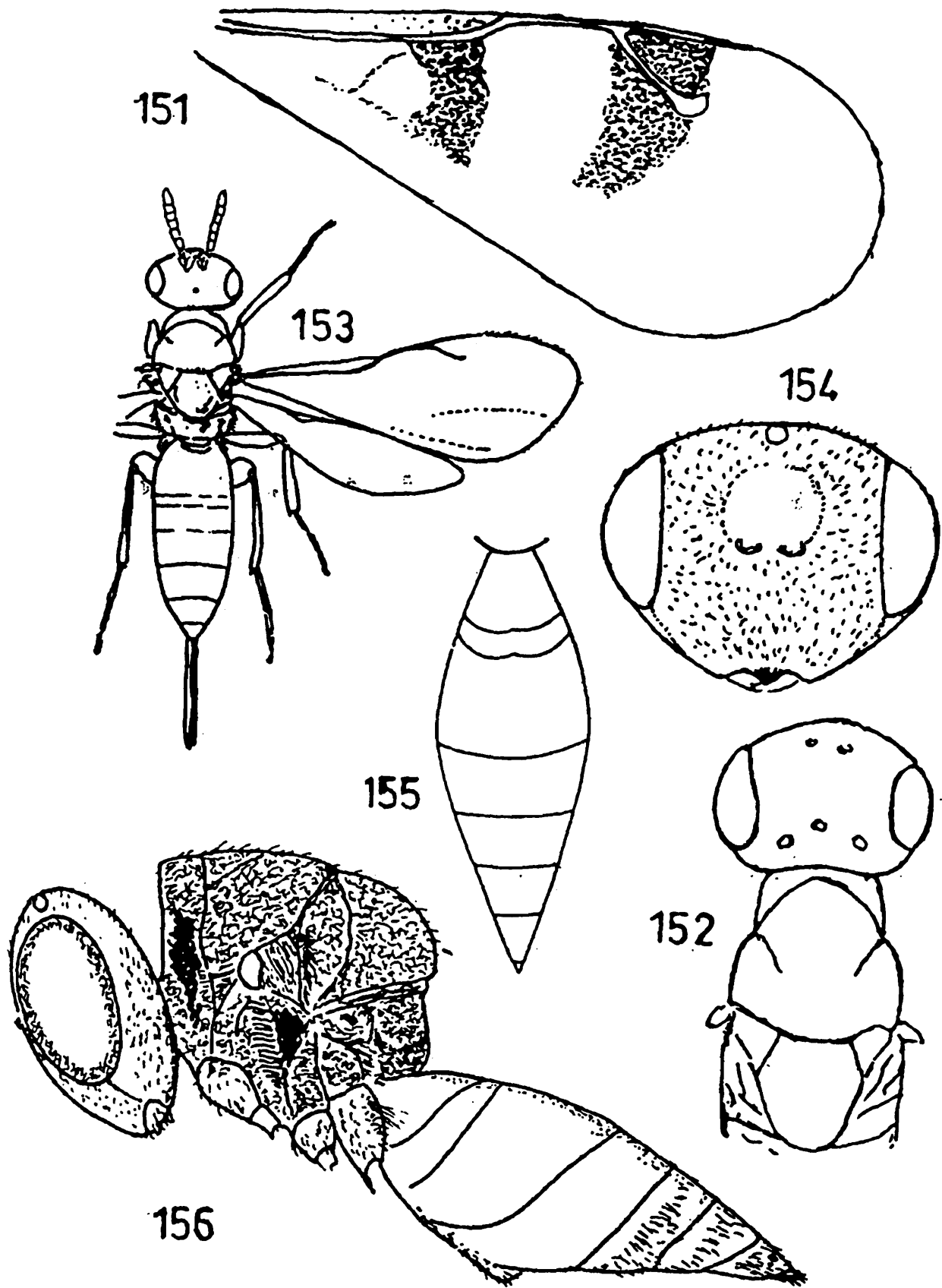
131, *Taxcumorpha minuta* Sureshan & Narendran, female body dorsal view; 132, *Sphigigaster anamudiensis* Sureshan & Narendran, female, head front view; 133, *Sphigigaster reticulata* Sureshan & Narendran, female, body in profile; 134, *Austroterobia maldica* Narendran & Das, female part of the body in profile; 135-136, *Thinodytes cyzicus* (Walker), 135, female head and part of Thorax; 136, gaster dorsal view.



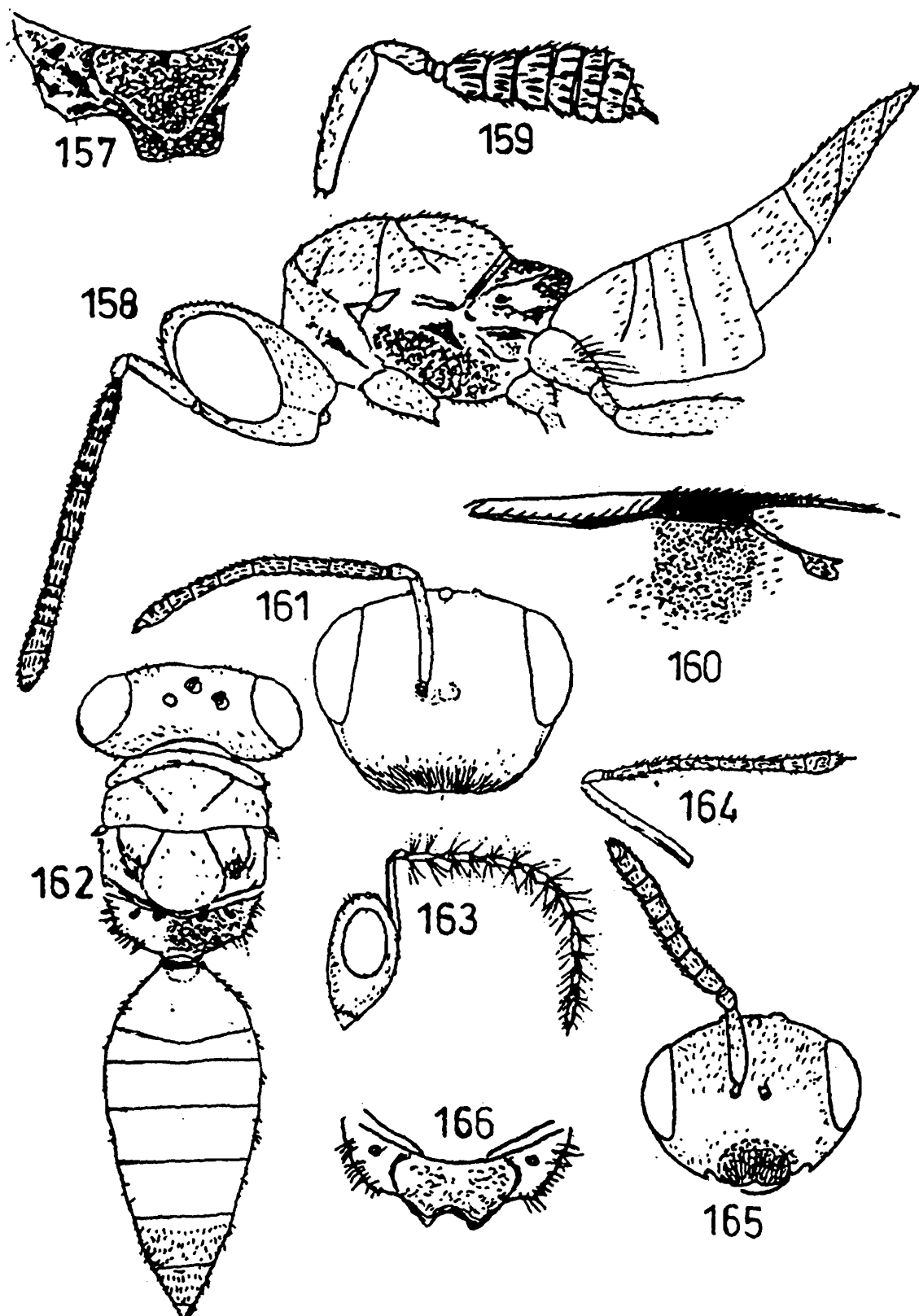
137, *Austroterobia maldica* Narendran & Das, female head front view; 138-139, *Ischyroptyx* sp. 138, female antenna; 139, forewing venation; 140, *Metacolus unifasciatus* Forster, forewing venation, 141, *Halticoptera propinqua* (Waterston), female body dorsal view; 142, *Halticoptera agaliensis* Sureshan & Narendran, male head in profile; 143, *Inkaka keralensis* Sureshan & Narendran, female body in profile.



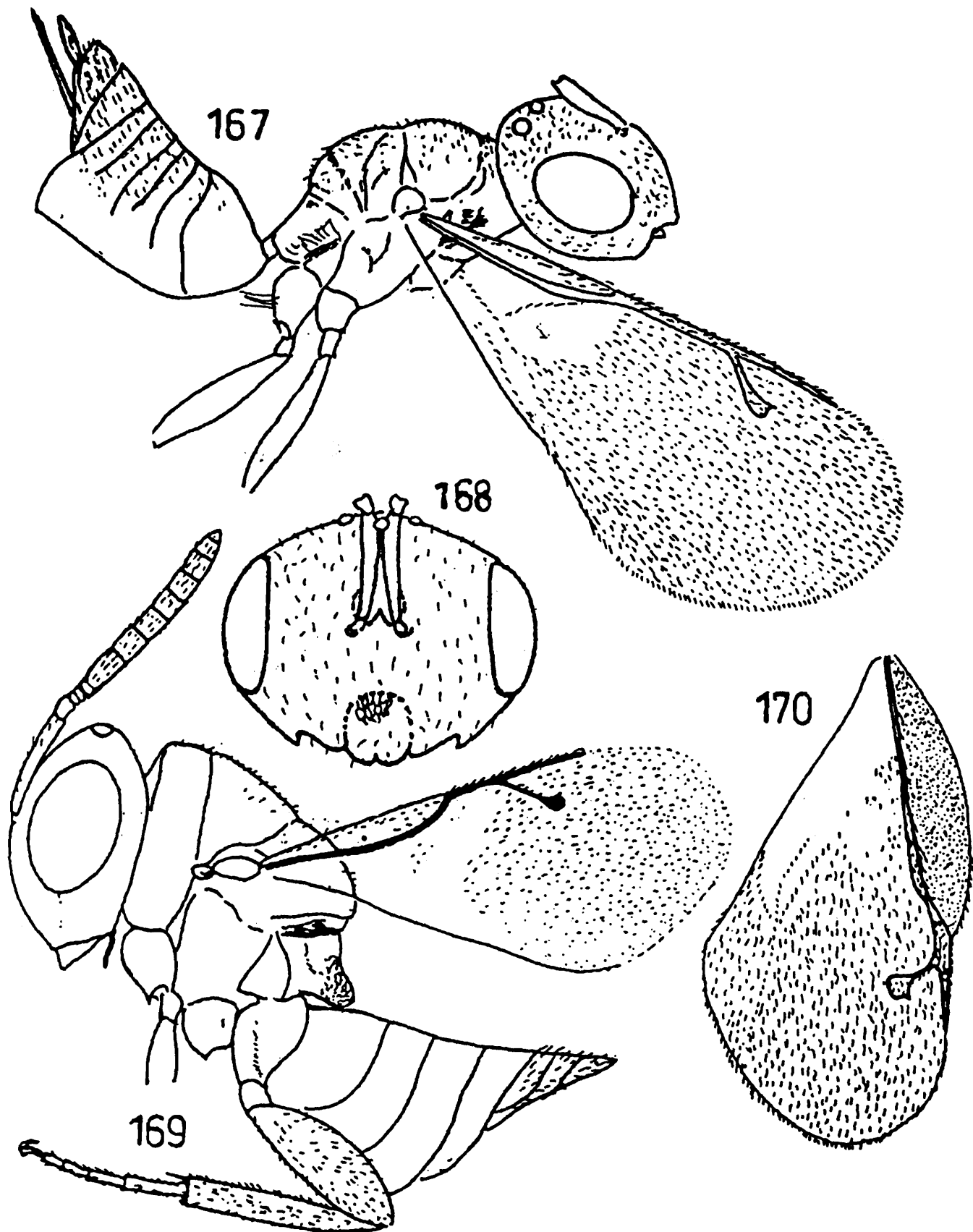
144, *Inkaka keralensis* Sureshan & Narendran, female head front view; 145, *Metacolus beelsoni* (Mani & Kaul), female antenna; 146, *Metastenus indicus* Sureshan & Narendran, female, body in profile; 147, *Metastenus concinnus* Walker, female head in oprofile; 148-149, *Rhopalicus* sp. 148, forewing venation; 149, head and Thorax (part) dorsal view; 150, *Cheiopachus quadrum* (Fabricius), female hind tibia.



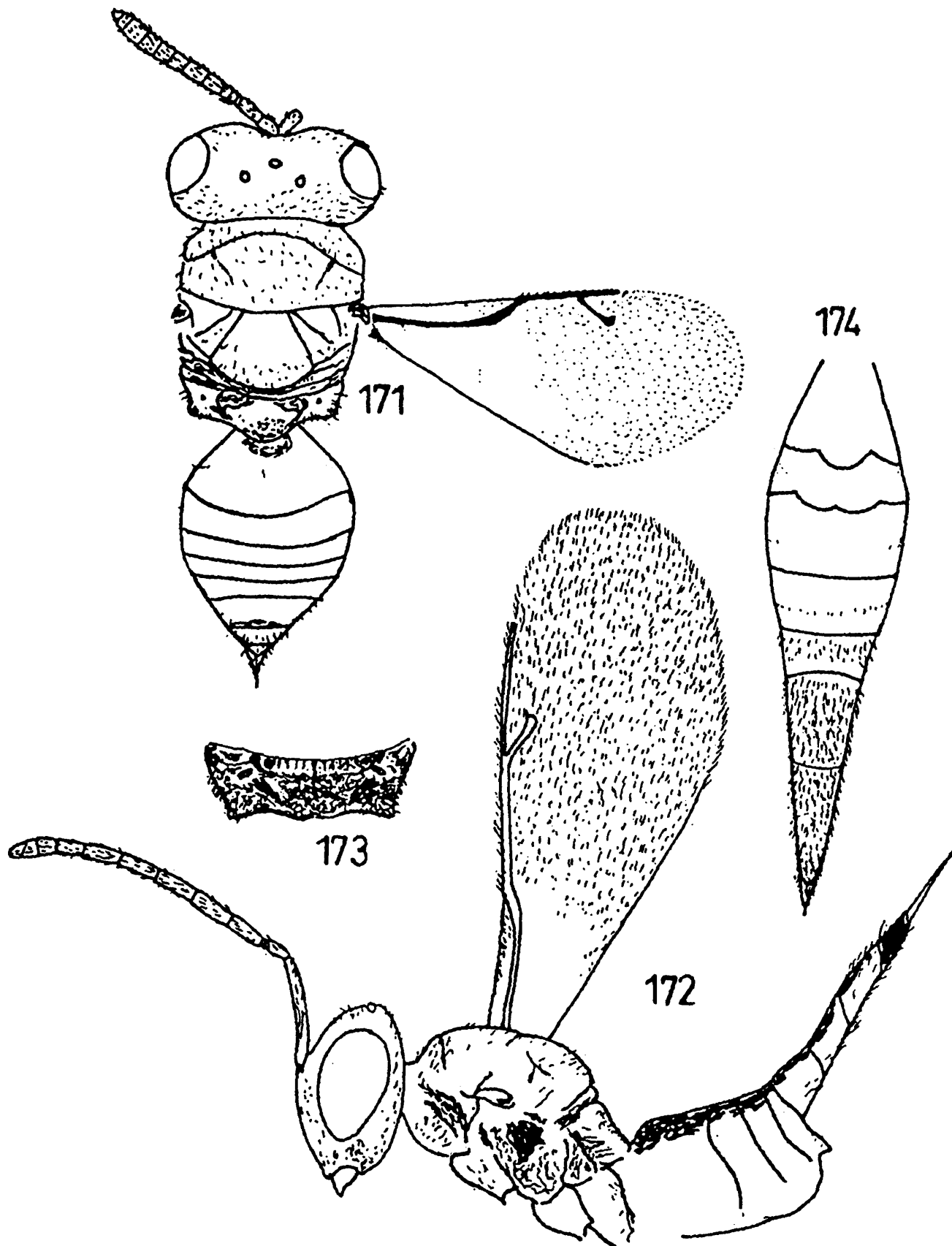
151-152, *Cheiropachus quadrum* (Fabricius), female, 151, forewing; 152, head and Thorax (part) dorsal view; 153, *Roptroceros xylophagorum* (Ratzeburg), female body dorsal view; 154, *Unicylpea elongata* Sureshan & Narendran, female, head front view, 155-156, *Unicylpea kumarani* Sureshan & Narendran, female, 155, gaster dorsal view; 156, body in profile.



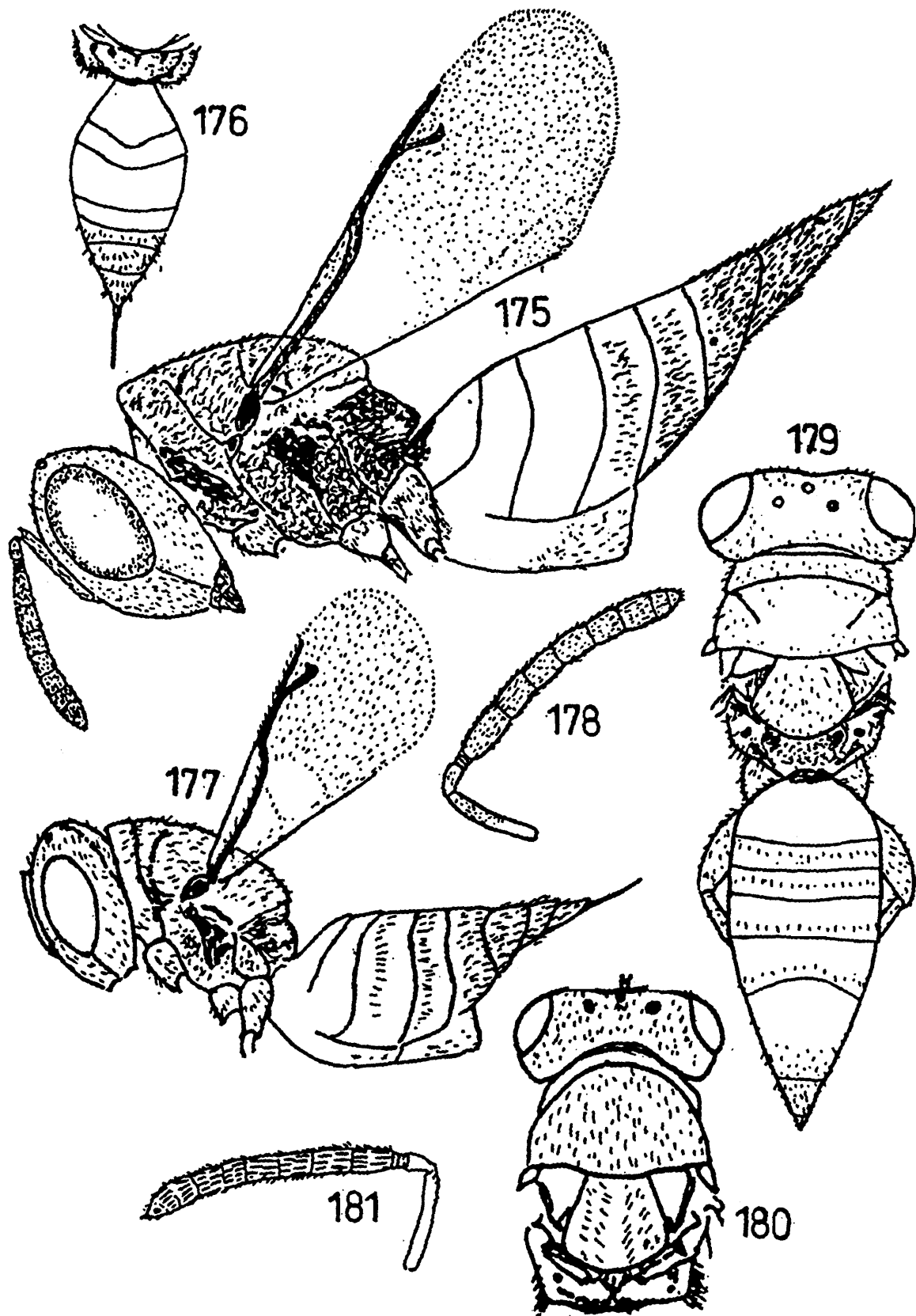
157, *Halticopterella burwelli* Sureshan, female, propodeum (part) dorsal view; 158, *Halticopterella longiflagellum* Sureshan, female body in profile; 159-160, *Rhaphitelus maculatus* Walker, Female, 159, antenna; 160, forewing venation; 161, *Norbanus birmanus* (Masi), female head front view; 162, *Norbanus acuminatus* (Dutt & Ferriere), female body dorsal view; 163-164, *Norbanus equus* Sureshan, 163, male head in profile; 164, female antenna; 165-166, *Mokrzeckia menzeli* Subba Rao, female; 165, head front view; 166, propodeum dorsal view.



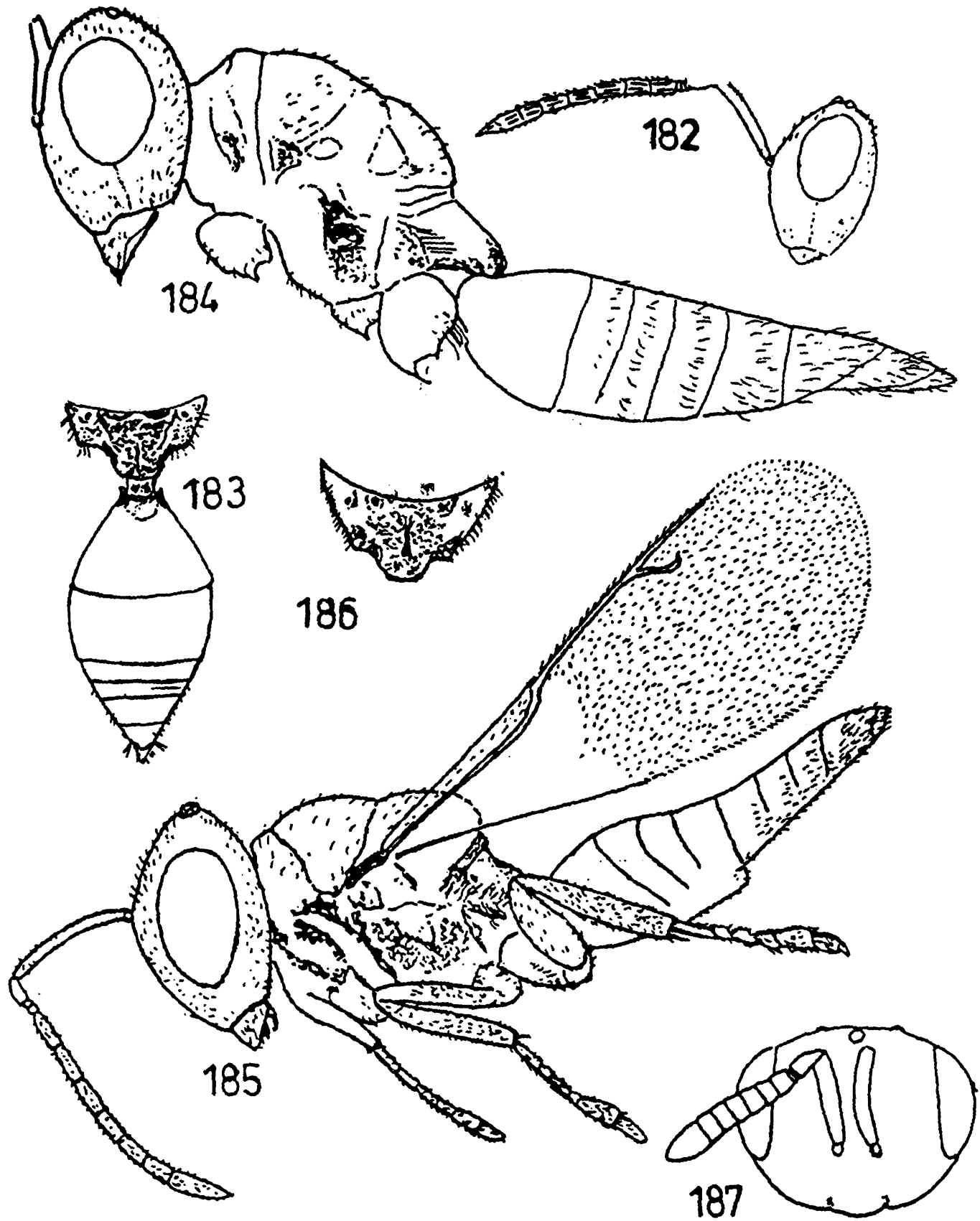
167, *Makrzeckia menzeli* Subba Rao, female body in profile; 168, *Mokrzeckia orientalis* Subba Rao, Female : head front view. 169, *Dianarmus basalis* (Rondani), female body in profile; 170, *Dianarmus altifrons* (Walker) male forewing.



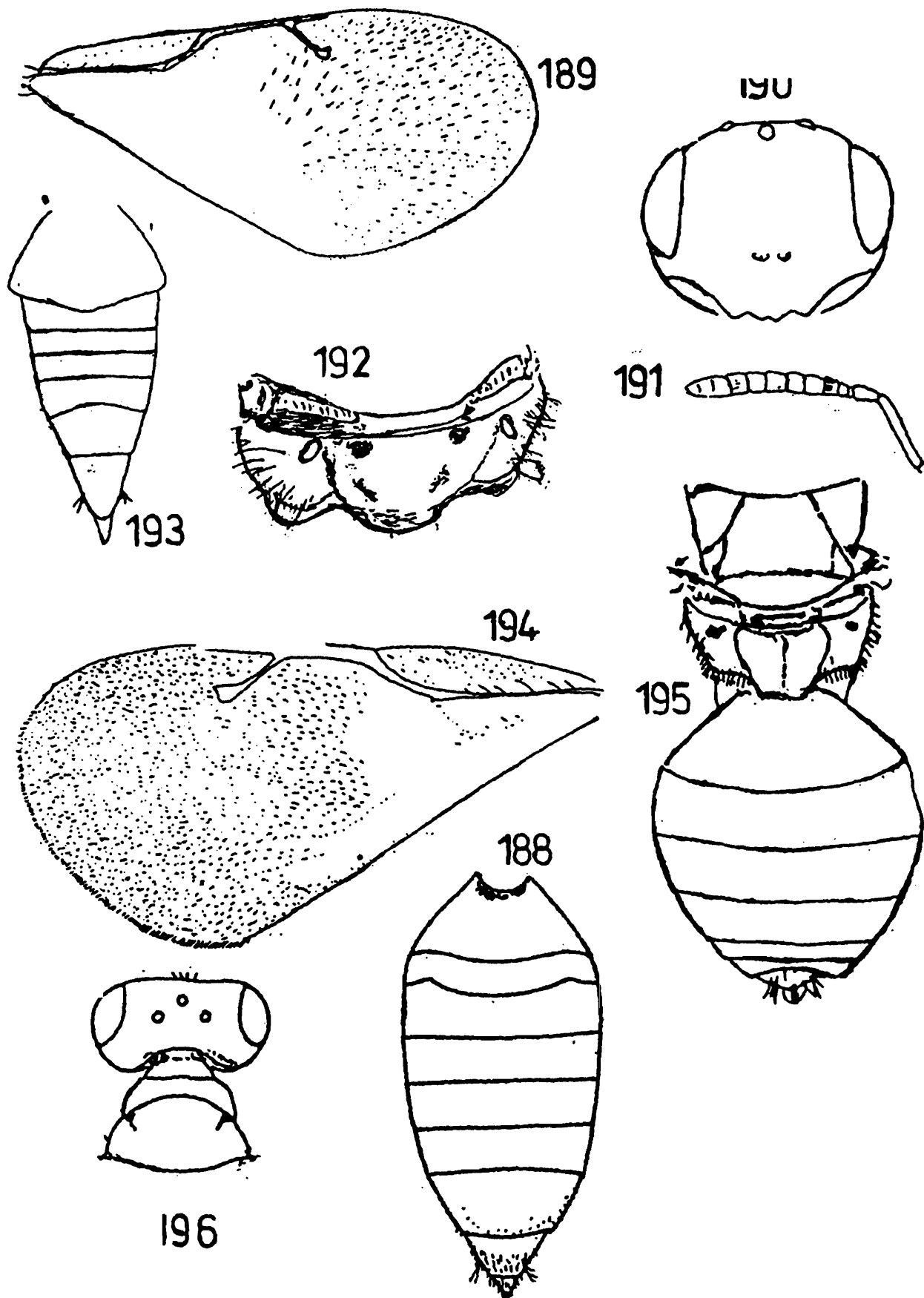
171, *Dinarmus vagabundus* Timberlake female, body dorsal view; 172, *Propicroscytus oryzae* (Subba Rao), female body in profile; 173-174, *Oniticellobia longigastrea* Sureshan and Narendran, female; 173, propodeum dorsal view; 174, gaster dorsal view.



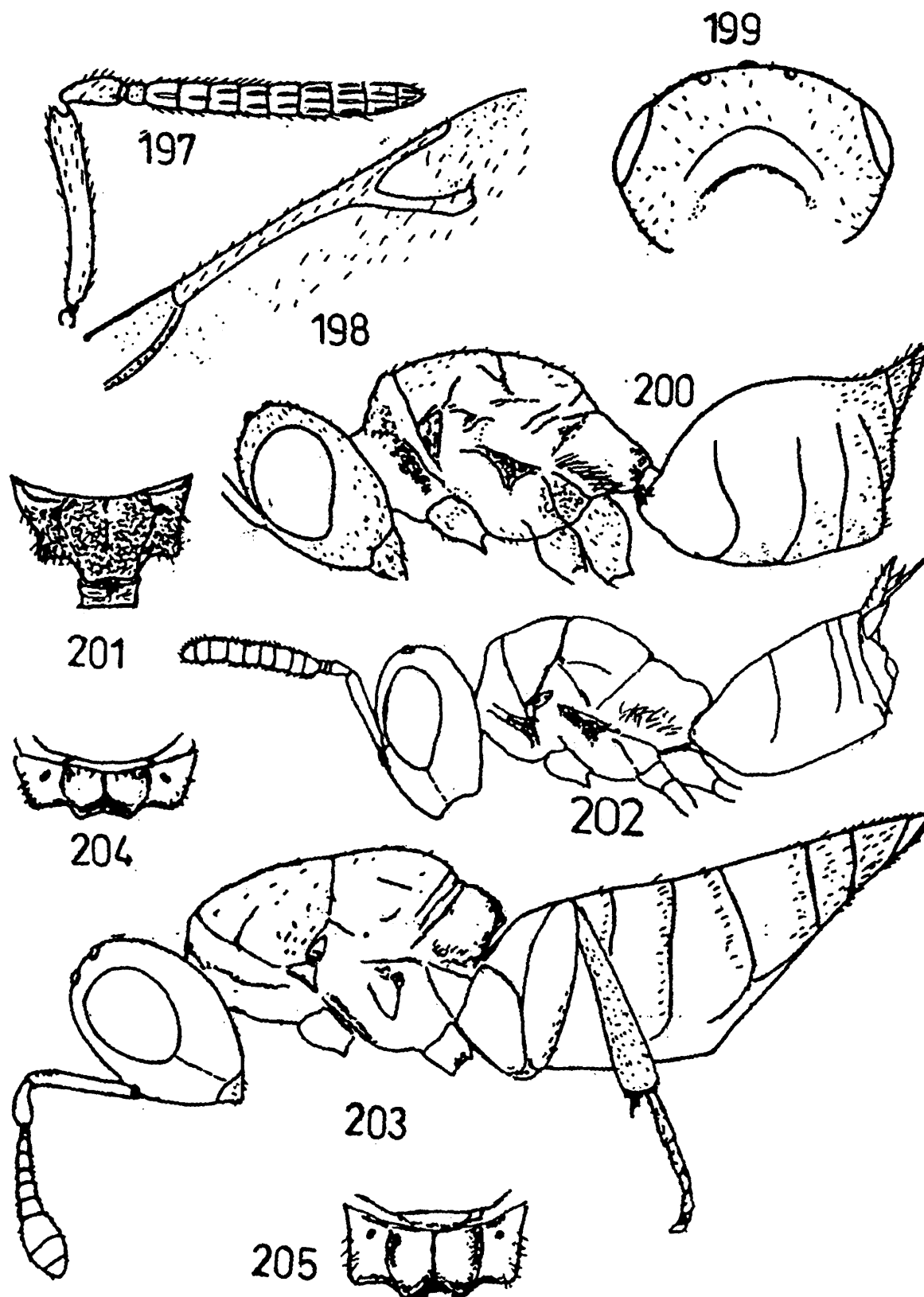
175, *Oniticellobia longigastrea* Sureshan & Narendran, female body in profile; 176-177, *Anisopteromalus calandrae* (Howard), 176, propodeum and gaster dorsal view; 177, female body, 178, *Oxysychnus coimbatorensis* (Ferriere); female antenna; 179, *Oxysychnus nupserhae* (Dutt & Ferriere), female body dorsal view; 180, *Cyrtoptyx latipes* (Rondani), female head and Thorax dorsal view; 181, *Callitula robusta* Sureshan, female antenna.



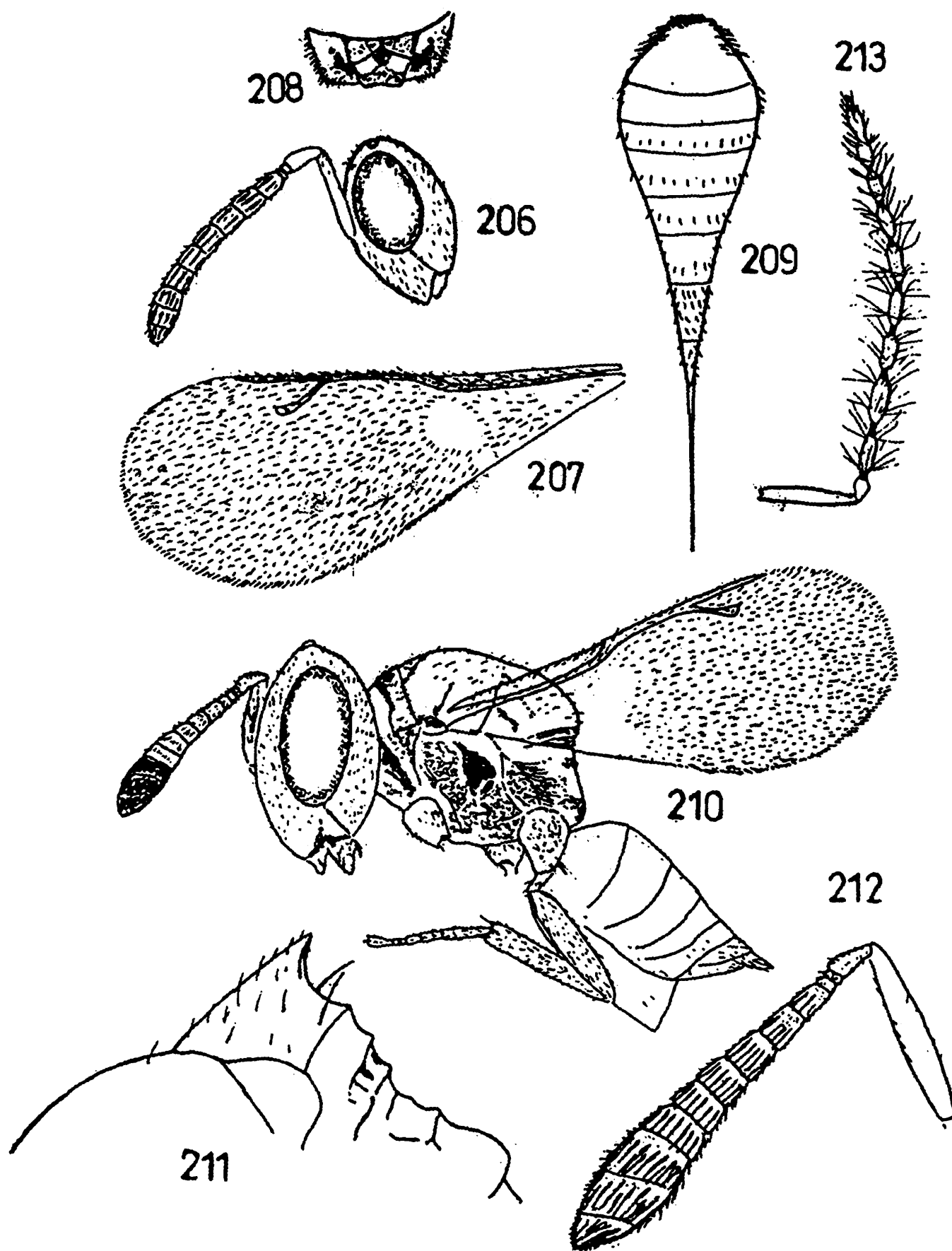
182-183, *Callitula rugosa* (Waterston), Female; 182, head in profile; 183, propodeum and gaster dorsal view; 184, *Callitula robusta* Sureshan, female body in profile; 185-186, *Homoporus gladius* Sureshan & Narendran, female; 185, female body in profile; 186, propodeum dorsal view; 187, *Nasonia vitripennis* (Walker) female head front view.



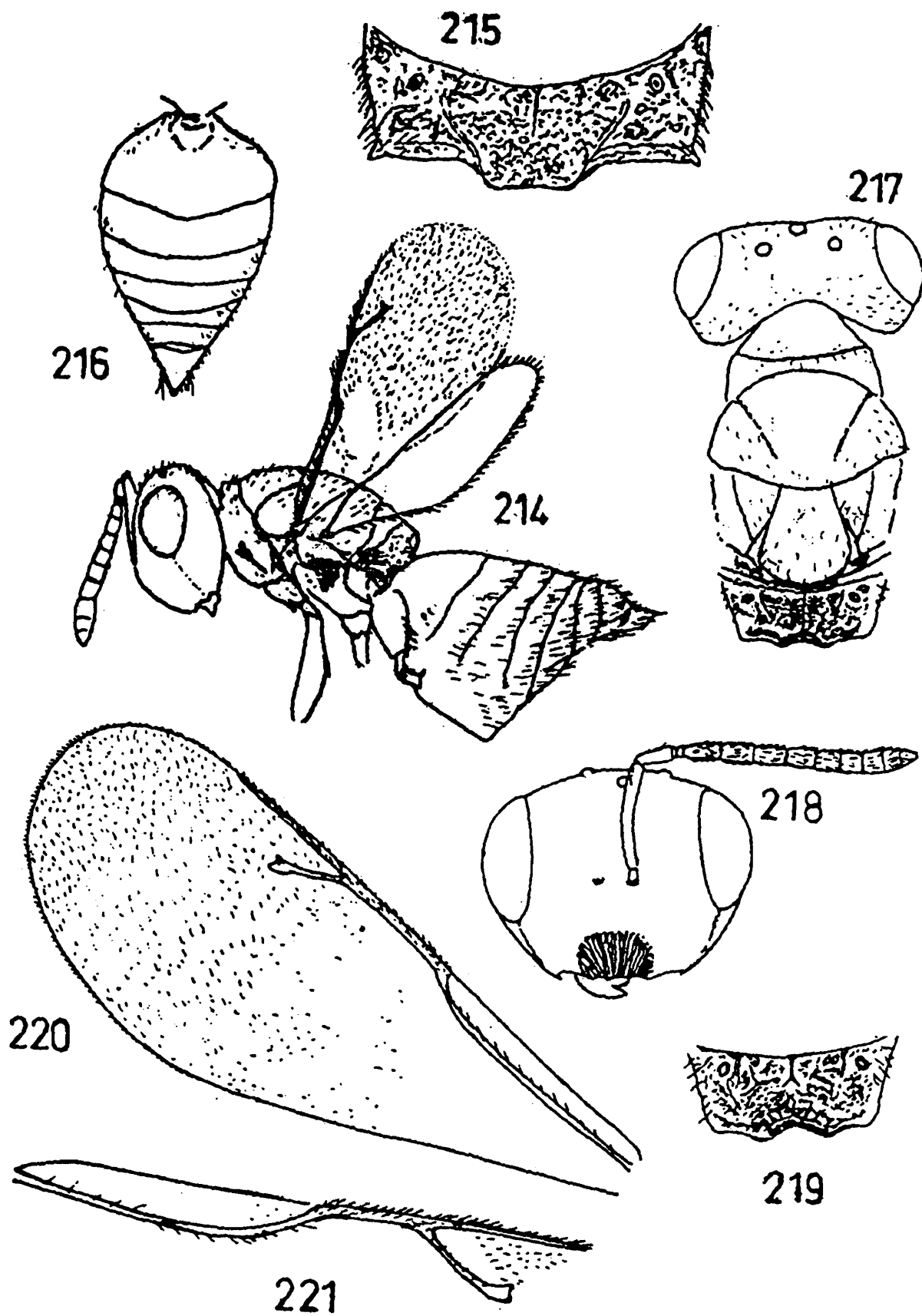
188, *Homoporus gladius* Sureshan & Narendran, female, gaster dorsal view; 189, *Schizonotus latus* (Walker); female forewing; 190-194, *Catolaccus crassiceps* (Masi) female; 190, head front view; 191, antenna; 192, propodeum; 193, gaster; 194, forewing; 195, *Schizonotus latus* (Walker); female Thorax (part) and gaster dorsal view; 196, *Dibrachys cavus* (Walker); female head and Thorax (part).



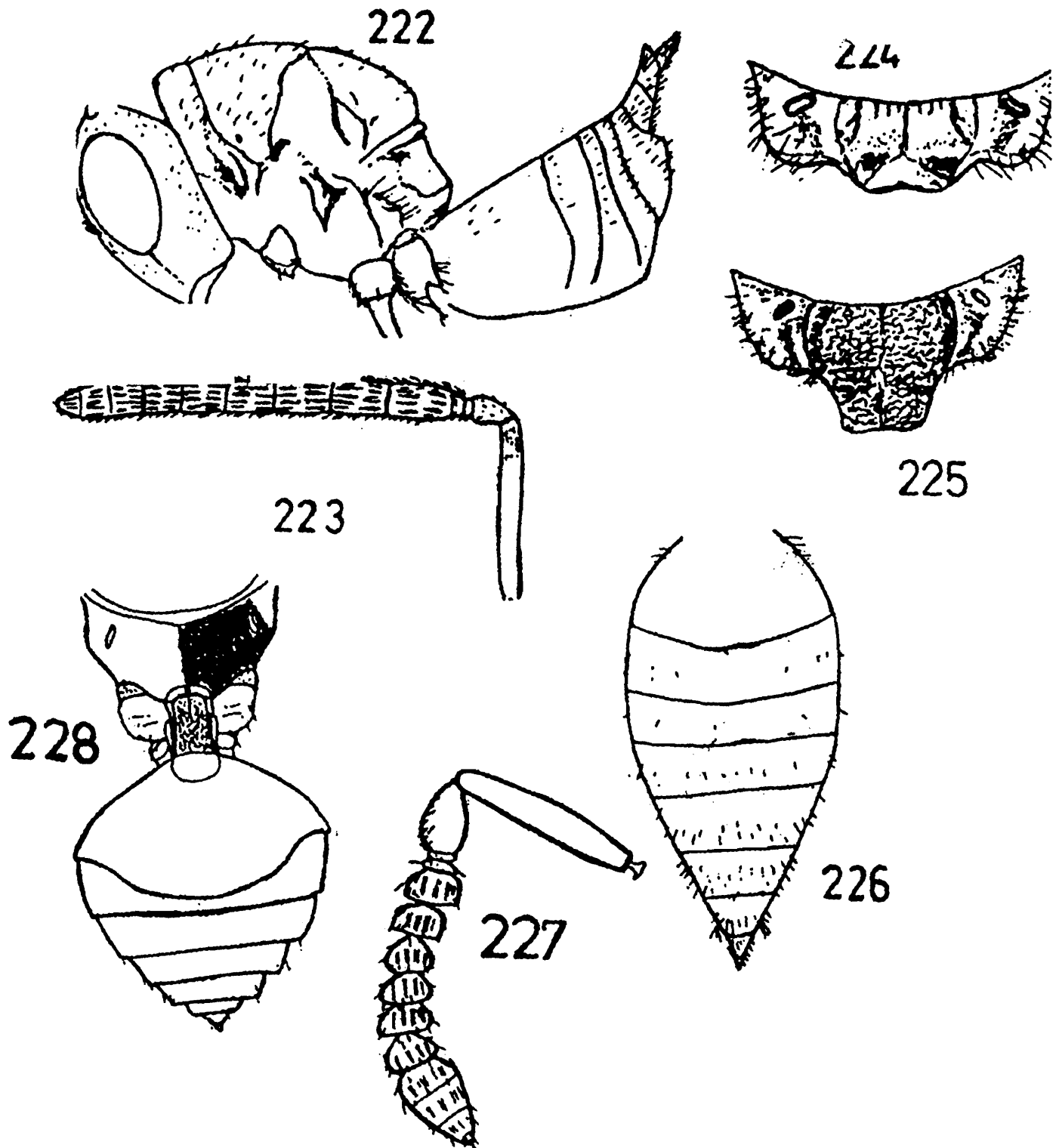
197-198, *Dibrachys cavus* (Walker) female; 197, antenna; 198, forewing venation; 199, *Trichomalopsis apanteloctena* (Crawford); female head postero-dorsal view; 200-201, *Trichomalopsis acarinata* Sureshan & Narendran, female; 200, body in profile; 201, propodeum and gastral petiole in dorsal view; 202, *Trichomalopsis depalanta* Kamijo & Grissell, female body; 203, *Mesopolobus harithus* Sureshan & Narendran; female body in profile; 204, *Mesopolobus minutus* Sureshan & Narendran, female, propodeum in dorsal view; 205, *Mesopolobus keralensis* Sureshan & Narendran, female, propodeum in dorsal view.



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