

THREE NEW SPECIES OF *BRACHYMERIA* WESTWOOD
(HYMENOPTERA : CHALCIDIDAE) FROM NORTH KERALA

K. J. JOSEPH, T. C. NARENDRAN and P. J. JOY

Department of Zoology, University of Calicut, India

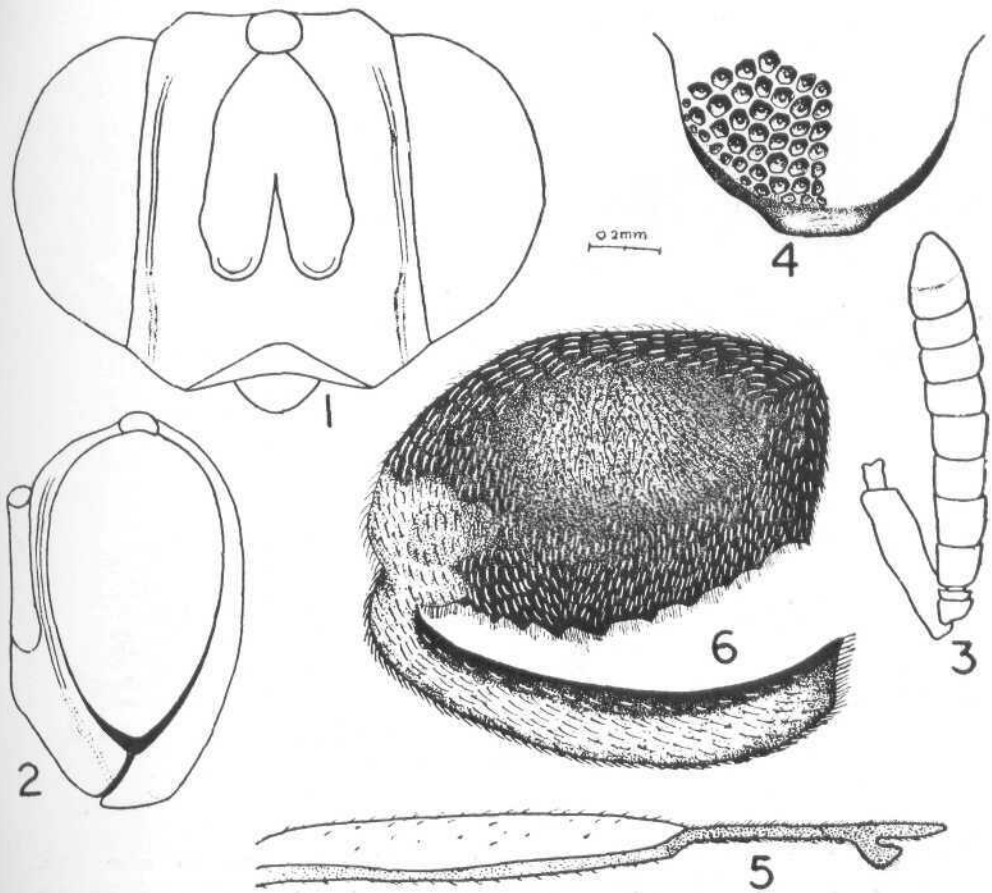
This paper contains the descriptions of three new species of *Brachymeria* Westwood, collected from different places from the northern region of Kerala. The type specimens will be deposited in the National collections of the Indian Agricultural Research Institute, New Delhi.

***Brachymeria carinata* sp. nov.**

Female: Length 4.71 mm. black; tegulae pale brownish-yellow. In the fore and mid legs, the coxae and trochanters black; femora black except the tip where they are yellow; tibiae yellowish; tarsi dull yellowish. In the hind legs, the coxa and trochanter black; femora black except the tip which is yellow; tibia and tarsi yellowish. Pubescence whitish and close.

Head: (Fig. 1) as wide as the thorax, about one and one-third as wide as long; surface of the head with large reticulate and close pits; interspaces of pits rugose. Surface of the scrobe cavity smooth and shiny; length of the scrobe cavity about one and a half times its width. Parascrobal space slightly less than half the width of the scrobe cavity. Scrobe cavity deep, occupying about two-thirds the width of inter-ocular space, attaining the front ocellus. Length of the eye about two and a half times its width. Median ocellus larger than lateral ocellus. The distance between median and lateral ocellus is distinctly less than half the inter-ocellar distance. Inter-ocular space twice the inter-ocellar distance. Clypeus about five times as wide as long. Labrum twice as wide as long. Width of ocellar area a trifle shorter than inter-ocular space. Inter-ocellar space slightly over two and a half times the maximum diameter of lateral ocellus. Frons with pre-orbital carina distinct (Fig. 1). Post-orbital carina absent (Fig. 2). Inter-antennal projection very long and reaching almost up to the middle of the length of the scrobe cavity. Lateral ridges of scrobe cavity not produced in front. Height of malar space about one-fourth the height of eye. Front genal angle acute, hind genal angle slightly obtuse and rounded. Antenna (Fig. 3) fairly thick, increasing in thickness from segments four to ten. Scape not exceeding the front ocellus, distinctly longer than the combined length of segments four to six, contracted after the middle. Length of pedicel equal to its width. Ring segment three times as wide as long. Segment four to ten becoming wider; fourth shorter than fifth and as long as seventh; eighth shorter than seventh; ninth and tenth of equal length and

THREE NEW SPECIES OF BRACHYMERIA



Figs. 1—6. *Brachymeria carinata* sp. nov. (female). All the figures to same scale. 1. Head. 2. Head in lateral view. 3. Antenna. 4. Scutellum in dorsal view. 5. Fore wing venation. 6. Hind femur and tibia (tibia partly disarticulated).

femur (Fig. 18) a little less than one and three-fourths as long as wide, with numerous pits on the inner side and provided with close pubescence, its ventral basal region without inner tooth; ventral margin with a row of fourteen black teeth as in figure, the first tooth being the largest and fourteenth the smallest. Hind tibia a little longer than hind femur.

Abdomen: A little longer than the combined length of pronotum, mesoscutum and scutellum; highest in the middle, one and three-fourths as long as its height; first tergite smooth and shiny; second tergite shagreened and with few scattered pits and pubescence; sixth tergite shagreened, pubescent and with four rows of close pits.

Type locality: Kodengat, Gannanore District, Kerala State.

Holotype: Coll. No. 196 on pin, its antenna, fore wings and hind legs on slide Nos. 25a, 25b and 25c respectively.

Collection data: Collected by Joseph, Lal and John on 27-10-68 from Kodengat, Cannanore District, Kerala State,

Affinities: This species resembles *Brachymeria jambolana* Gahan in the following characters: (1) Pre-orbital carina absent; (2) Apex of scutellum weakly emarginate medially; (3) Hind leg colourisation similar. But *B. jambolana* Gahan differs from the new species by having the following characters: (1) Punctae on thorax coarse and contiguous; (2) Lateral ridges of scrobe cavity not produced in front of the antennal toruli; (3) Teeth on the hind femur differ in size, number and arrangement; (4) Fore and mid tibiae wholly immaculate yellow.

Key to species

The species described above can be separated as follows: (1) Pre-orbital carina present. Lateral ridges of scrobe cavity not produced in front of the antennal toruli. Base of the hind tibia not black but yellow..... 2.

Pre-orbital carina absent. Lateral ridges of scrobe cavity produced in front of the antennal toruli. Base of hind tibia black.....

.....*Brachymeria clypealis* sp. nov.

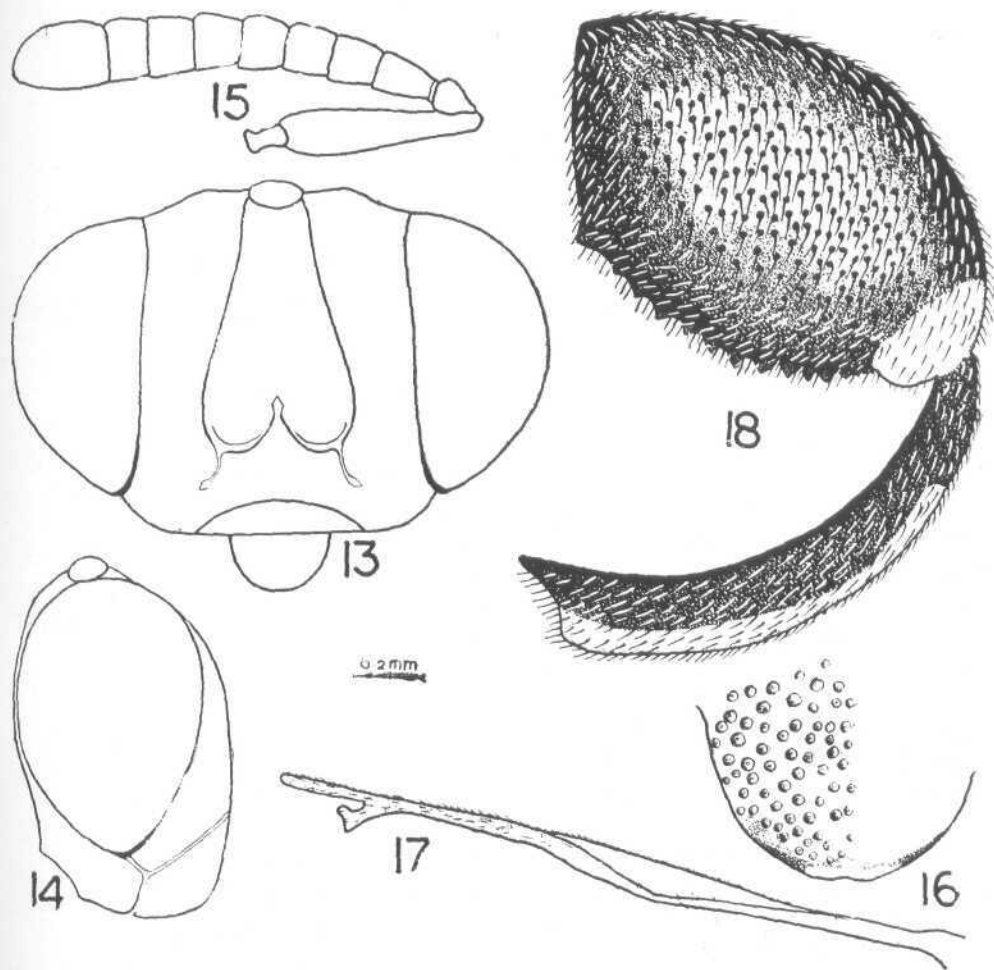
2. Post-orbital carina present.... *Brachymeria koduvalliensis* sp. nov.

Post-orbital carina absent*Brachymeria carinata* sp. nov.

Summary

The descriptions of three new species of *Brachymeria* Westwood, viz. *Brachymeria carinata* sp. nov., *B. koduvalliensis* sp. nov., *B. clypealis* sp. nov. and a key for their identification, are given.

THREE NEW SPECIES OF BRACHYMERIA



Figs. 13—18. *Brachymeria clypealis* sp. nov. (female). All figures to same scale. 13. Head. 14. Head in lateral view. 15. Antenna. 16. Scutellum in dorsal view. 17. Fore wing venation. 18. Hind femur and tibia (tibia partly disarticulated).

mostly yellowish except for a brownish-black patch in the middle part on the outer side near ventral margin, this colouration being continuous with and slightly attenuated on the inner side; tarsi yellowish. Hind coxa and trochanter black; femur black except at the tip which is clear yellow on the dorsal half and pale yellow in the ventral half; tibia mostly black leaving a long yellowish patch extending along the dorsal margin from the tip of the tibia to about three-fourths of its length to its base; tarsi brownish-yellow. Pubescence moderate and whitish.

Head. (Fig. 13) A little wider than thorax; about one and two-sevenths as wide as its own length; surface of the head with moderately sized reticulate and close pits, interspaces of the pits rugose. Surface of the scrobe cavity smooth and shiny; length of the scrobe cavity about one and four-fifths its width; parascrobal space half the width of the scrobe cavity; scrobe cavity deep, occupying a little over half the inter-ocular space, attaining the front ocellus. Length of eye a little over twice its width (Fig. 13); median ocellus slightly larger than the lateral ocellus; the distance between median and lateral ocelli a little less than half the inter-ocellar distance; inter-ocular distance equal to a little over two and a half times the inter-ocellar distance. Clypeus five times as wide as long; labrum one and four-fifths as wide as long; width of ocellar area equal to about two-thirds the inter-ocular space; inter-ocellar space a little over twice the maximum diameter of the lateral ocelli. Frons without pre-orbital carina; post-orbital carina distinct (Fig. 14) reaching the genotemporal margin; inter-antennal projection moderately developed; lateral ridges of scrobe cavity produced in front; height of malar space about one-third the height of the eye; both front genal and hind genal angles right angled. Antenna (Fig. 15) fairly thick towards apex; scape not exceeding the front ocellus; scape distinctly longer than the combined length of segments four to six, contracted after the middle; pedicel a little longer than wide; ring segment thrice as wide as long; segments four to eleven becoming wider towards the tip; segment four longer than five; fifth and sixth of equal length; seventh shorter than sixth; seventh, eighth, and ninth of equal length, tenth shorter than ninth; club a little more than two and a half times as long as the tenth; a little over one and two-thirds as long as its own width.

Thorax: Mesoscutum and scutellum with large umbilicate pits (Fig. 16) which are mostly wide apart with the inter-spaces generally larger than the diameter of the pits; mesoscutum and scapulae fairly rugose; mesoscutum about one and three-fifths as wide as long; notaulices distinct. Scutellum wider than long, high in lateral view and gently declined posteriorly, apical margin slightly explanate and fairly emarginate in the middle with sparse pubescence. Fore wings about two and three-fourths as long as wide; pubescence sparse in the basal one-fourth and close in the rest of the wing membrane; marginal vein (Fig. 17) about half the submarginal vein; post-marginal vein about half the marginal vein, slightly less than three times the stigmal vein. The outer side of hind coxa punctuate and pubescent. Hind

and two-thirds as long as wide ; pubescence sparse in the basal one-fourth and close in the rest of the wing membrane. Marginal vein (Fig. 11) slightly less than half the submarginal vein ; postmarginal a little over one-third the marginal and a little over thrice the stigmal. The outer side of the hind coxa with large, close punctures and pubescence. Hind femur (Fig. 12) about one and three-fifths as long as wide ; its outer side with close punctures and pubescence ; its inner basal region without inner tooth ; ventral basal margin with a row of fourteen teeth as in figure ; the first tooth being largest, second, third, thirteenth and fourteenth small, fourth to twelfth large. Hind tibia hardly a little longer than hind femur.

Abdomen: A little longer than the combined length of pronotum, mesoscutum and scutellum ; highest in the middle ; length one and one-third its height. First tergite large and extending to half of the abdomen ; surface shiny and shagreened, second tergite with microsculptures and moderate pubescence ; sixth tergite with seven rows of punctures, each row with about ten pits and close pubescence.

Type locality: Koduvally, Calicut District, Kerala State.

Holotype: Coll. No. 176 female on pin, its antenna, forewings and hind leg on slides 28a, 28b and 28c respectively.

Collection data: Collected by Joseph from Koduvally, Calicut District on 31-5-1968.

Affinities: This species resembles *Brachymeria nursei* Cameron in the following characters:—(1) Colouration of legs ; (2) Nature of thoracic punctures ; (3) Presence of silvery-white pubescence on the sides of the face and apex of the scutellum ; (4) Basal half of mandibles closely punctured. But it differs from *B. nursei* Cameron in the following characters:—(1) Preorbital carina present ; (2) Clypeus not depressed ; (3) Hind femora with fourteen teeth.

This species also resembles *Brachymeria intermedia* Nees in many characters but differs from it in the following:—(1) Hind coxa without scopae in the new species ; (2) Scutellum not bidentate ; (3) Pre-orbital carina present ; (4) Post-orbital carina more prominent in the new species.

***Brachymeria clypealis* sp. nov.**

Male. Length 3.39 mm. Black ; tegulae pale yellowish. Fore coxa black ; trochanter blackish-brown ; femur brownish-black except the tip which is yellow ; dorsal margin of tibia yellowish along its whole length, the basal and the distal region of the tibia also yellowish, the intervening outer and inner sides being blackish-yellow ; tarsi yellowish. Mid-coxa black ; trochanter blackish-brown ; femur black except the tip which is yellow ; tibia

***Brachymeria koduvalliensis* sp. nov.**

Female: Length 3.58 mm. Black; tegulae yellowish with blackish-brown basal margin. Fore legs with coxae and trochanters black; femora black except at the distal two-fifths which is immaculate yellow; tibiae immaculate yellow and tarsi yellowish. Mid leg similar in colouration to that of fore leg except that the yellowish colouration of the femur is reduced to one-fifth of its distal region. Hind leg with coxae and trochanters black; femora black except for one-fourth of its portion at its tip which is yellowish; tibiae yellowish except the area along the ventral carina which is blackish; tarsi dull yellowish. Pubescence whitish and moderate.

Head: (Fig. 7) A little wider than the width of thorax, a little less than one and a half times as wide as long. Surface of head with large reticulate and close pits; the inter-spaces of the pits rugose. Scrobe cavity somewhat smooth, length about one and one-third times its own width. Parascrobal space a little over one-fourth the width of the scrobe cavity. Scrobe cavity moderately deep, occupying two-thirds the inter-ocular space, attaining the front ocellus. Length of eye twice its width. Median ocellus only slightly larger than lateral ocellus. The distance between median and lateral ocellus distinctly less than half the inter-ocellar distance. Inter-ocular space twice the inter-ocellar distance. Width of clypeus a little over four times its length. Width of labrum two and two-fifths its length. Width of ocellar area a little less than the inter-ocular space. Inter-ocellar distance distinctly more than twice the maximum diameter of lateral ocellus. Frons with pre-orbital carina becoming less distinct near the malar ridge (Fig. 7); post-orbital carina present and joins the geno-temporal margin (Fig. 8). Inter-antennal projection long, almost reaching the middle of the scrobe cavity. Lateral ridges of scrobe cavity not produced in front. Height of malar space about one-fifth the height of eye. Front genal angle acute; hind genal angle slightly obtuse and rounded. Antenna (Fig. 9) fairly thick, increasing in thickness from segments four to ten. Scape not exceeding the front ocellus, a little shorter than the combined length of segments four to six, contracted after the middle. Pedicel as long as wide. Ring segment about three times as wide as long. Segments four to ten becoming wider; segments four to eight of equal length; segment nine a little longer than eight; segment ten shorter than segment nine; club a little over thrice the length of segment ten, a little less than one and three-fourths as long as its own width.

Thorax: (Fig. 10) The whole of the surface of the pronotum, mesoscutum, scapulae and scutellum provided with moderately sized, umbilicate, reticulate, rounded and close pits, with a seta arising from each pit; the interspaces of pits rugose. Mesoscutum a little more than one and two-thirds as wide as its length; notaulices distinct. Scutellum one and one-fifth as wide as long, high in lateral view, gently declined posteriorly, its apical margin slightly explanate and rounded off with close pubescence. Forewings about two

shorter than eighth; club a little more than two times as long as tenth; about one and one-third as long as its own width.

Thorax: (Fig. 4) Provided with umbilicate, moderately sized, reticulate, rounded and close pits, each pit provided with a seta. The umbilicate nature of pits is a little more pronounced than in *Brachymeria koduvalliensis* sp. nov. and the interspaces of pits are rugose and narrow. Mesoscutum about one and one-third as wide as its length; nataulices distinct. Scutellum one and one-third as wide as long; high in lateral view, gently declined posteriorly, apical margin slightly explanate and rounded off with sparse pubescence. Fore wings about two and three-fourths as long as wide; pubescence sparse in the basal one-fourth and close in the rest of the wing membrane; marginal vein (Fig. 5) slightly less than half the submarginal vein; postmarginal a little over one-third the marginal vein, a little over twice the stigmal vein. The outer side of the hind coxa with large and close punctures and pubescence. Hind femora (Fig. 6) about one and two-thirds as long as wide; its outer side with close punctures and pubescence; ventral basal region without an inner tooth; ventral margin with a row of 11 teeth as in figure, the first tooth being the largest and 11th the smallest. Length of hind tibia about equal to the length of hind femur.

Abdomen: About one and a half times the combined length of pronotum, mesoscutum and scutellum; highest slightly before the middle; length a little less than twice its height. First tergite large, extending to less than half of the abdomen; surface shiny with small punctures; lateral regions with sparse pubescence. Second tergite with large punctures all over and with pubescence restricted to the dorso-lateral region proximally and to the lateral region distally. Sixth tergite with about six rows of large close punctures and pubescence.

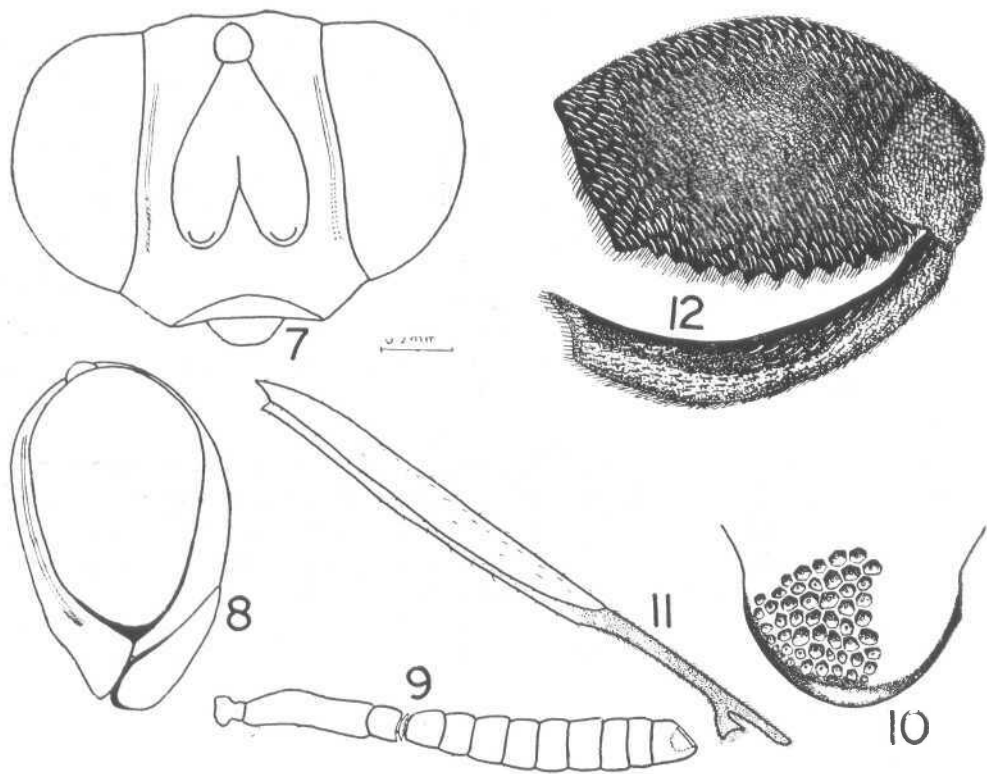
Type locality: Medical College Campus, Calicut, Kerala State.

Holotype: Female, Coll. No. 169 on pin; its antenna, forewing and hind leg on slides Nos. 27a, 27b & 27c respectively.

Collection data: Collected by Joseph & Lal from Medical College Campus, Calicut, on 8-1-1968.

Affinities: This species shows the following resemblances to *Brachymeria nursei* Cameron: (1) Colouration of legs; (2) Nature of punctures on the thorax; (3) Presence of white pubescence on flagellum; (4) Presence of silvery-white pubescence on the sides of the face and apex of the scutellum. It differs from *Brachymeria nursei* in the following characters: (1) Hind tarsi not rufous but concolourous with the tibia; (2) Pre-orbital carina present; (3) Post-orbital carina absent; (4) Clypeus not depressed; (5) Abdomen with microsculptures on the first tergite.

THREE NEW SPECIES OF BRACHYMERIA



Figs. 7—12. *Brachymeria koduvalliensis* sp. nov. (female). All figures to same scale.
7. Head. 8. Head in lateral view. 9. Antenna. 10. Scutellum in dorsal view.
11. Fore wing venation. 12. Hind femur and tibia (tibia partly disarticulated.)

Acknowledgements

This research has been financed in part by a grant made by the United States Department of Agriculture under P. L. 480. We are greatly indebted to Dr. B. D. Burks of the U. S. National Museum, Washington, the Sponsoring Scientist of the Project for helping us in various ways. We sincerely thank Dr. T. Huddleston, Department of Entomology, British Museum (Natural History), London, for supplying useful taxonomic notes on type specimens of certain *Brachymeria* species related to two species described in this paper.

Papers consulted

- Burks, B. D. 1960. A Revision of the Genus *Brachymeria* Westwood in America North of Mexico (Hymenoptera: Chalcididae). *Trans. American Ent. Soc.* 86: 225—237
- Cameron, P. 1907. On the Parasitic Hymenoptera collected by C. G. Nurse in the Bombay Presidency. *Journ. Bombay. Nat. Hist. Soc.* 17: 580
- Habu, A. 1960. A Revision of the Chalcididae (Hymenoptera) of Japan with the descriptions of sixteen new species. *Bull. Nat. Inst. Agri. Sci. (Japan) Series C. No. 11*: 132-206
- Masi, I. and Gahan, A. B. Key to Oriental and Palaearctic (in part) species of *Brachymeria* (unpublished)
- Schneider, F. 1940. Schadinoekten and ihre Bekämpfung in Ostinischen Gambirkulturen *Mitt. Schweiz. Ent. Ges.* 18: 70

(Accepted: 3-10-70)