

**ASIAN MACROCERA MEIGEN, 1803, (DIPTERA:
MYCETOPHILIDAE), WITH SOME REMARKS
ON THE STATUS OF THE GENUS
AND RELATED GENERA¹**

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ABSTRACT

Nine species of *Macrocera* (Diptera: Mycetophilidae) are discussed. Five of these are described for the first time: *M. nepalensis*, *M. trispina* and *M. vishnui* from males only; *M. simbhanjangana* from males and females and *M. femina* from a single female. The first four of these are from Nepal, the last from Thailand. *M. crassicornis* Winn., 1963, is reported from Afghanistan. The male of *M. brunnea* Brunn., 1912, and the female of *M. elegans* Brunn., 1912, are described and the description of the female of *M. elegans* Brunn. is augmented. The genus *Fenderomyia* Shaw, 1948, is synonymized under *Macrocera*. The genus *Neoditomyia* Lane and Sturm, 1958, is synonymized under *Platyura* (*Taulyrpa*) Edwards.

INTRODUCTION

Included in a collection of fungus guats made in Nepal, Thailand and Afghanistan, by myself and my co-workers, is a series of species of the genus *Macrocera*. The material includes three Nepalese forms which I consider to be conspecific with species described by Brunetti (1912). One species from Afghanistan represented by a single male is apparently conspecific with a European species. A striking new species from Thailand is represented by a single female. Four new species from Nepal are represented either by males or by males and females.

In Nepal, some of the species were collected in the Rapti Valley (520m.) which lies in the 'terai' of south central Nepal between the Siwalik and the Mahabharat Ranges.

At the higher altitude of Simbhanjang (Sim Pass, Nepal) at 8190 feet in a cloud forest of moss-covered rhododendron trees, snow and ice may be present for several months of the year and

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rain is the normal collecting hazard.

The systematic position of the genus *Macrocera* in relation to the family Mycetophilidae is now well established by the work of modern students of the group. On the basis of adult structural characters (Edwards, 1929a; Lane, 1950; Shaw and Shaw, 1951) the genus belongs within the subfamily Keroplatinae. Edwards, in discussing *Platyura* (*Isoncuromyia*) and *P. (Pyrtaula)*, wrote "This type of hypopygium is identical with that which occurs in the genera *Macrocera* and" etc. In 1949, I started a study of *Macrocera* adults which caused me to conclude that this genus was indeed a keroplatine and the material was turned over to Prof. J. Lane who concurred with the findings and described the species in his paper "Neotropical Ceroplatinae". Shaw and Shaw, commenting on the form of the pleural sclerites, wrote "*Macrocera* on the basis of thoracic sclerites is intermediate between *Palaeoplatyura* and *Platyura*. - - -. *Macrocera*, *Proceroplatus*, *Platyura* and *Ceroplatatus* all exhibit one characteristic in common—the reduction of the lower portion of the epimeron of the mesothorax. - - -. Our present opinion would be that the Macrocerinae should be included in the Ceroplatinae".

Supporting evidence for the above contention is found in a re-evaluation of earlier studies of the anatomy and the bionomics of the larval stage (Mansbridge, 1933; Madwar, 1935, 1937; Enslin, 1906). As far as I am able to determine, only the keroplatines build complicated webs with droplets of fluid [shown to be N/30 oxalic acid for some *Platyura* by Buston (1933)] in which they trap their prey.¹ The larvae have been observed attacking and feeding on live prey and thus must be predaceous rather than saprophagous (Farr, 1955; Mansbridge, 1933; Spangler (personal communication; Enslin, 1906). The retractile head, the deep emargination of the ventral portion of the head capsule, the proportion of length to width of the head capsule (as long as or longer than wide), the hood-like labrum, the presence of prominent circular areas on the head capsule rather than antennae, the absence of functional spiracles, and the papillate condition of the terminal segment all indicate the relationship of *Macrocera* to other keroplatines (Edwards, 1933).

¹ Study of the descriptions of two web-spinning species, *Neoditomyia andina* Lane and Sturm, 1958, and *N. colombiana* Lane and Sturm, 1958, convinces me that these are actually *Platyura (Tautlyrpa)*. Thus, the keroplatines remain the only group with a predaceous larval stage that spins webs with fluid droplets to capture prey. **New Synonymy.**

Related genera are: *Paramacrocera* Edwards, 1927, originally described from New Zealand and later recorded from Chile by Freeman, 1951; *Chiasmoncura* de Meijere, 1913, Java; *Burmacrocera* Cockerell, 1917, described from Burmese amber, and later recorded from Philippines by Edwards, 1929b; *Archaemacrocera* Meunier, 1917, Baltic amber. Meunier's illustrations of the genotype indicate that *Archaemacrocera* is a synonym of *Macrocera*. However, I have not seen the type and therefore I cannot make a final judgment. *Fenderomyia* Shaw, 1948, is based on an erroneous interpretation of the pleural sclerites, a variable condition shown by a series of *M. brunnea* Brunetti, 1912, to be a result of distortion during drying rather than of actual structure. The petiole of the media ending at the base of M_4 as in *Fenderomyia* is a condition that also occurs in *M. alternata* Brunetti, 1912, an Asian species, and also in *M. crassicornis* Winnertz, 1863, a European species. The produced costa of *Fenderomyia* occurs in several species of *Macrocera* discussed and described (see Pl. 2) in this study: **New Synonymy.**

In the following descriptions, the wing venation terminology is in accordance with Coher (1959). The dististyles which are compressed laterally are figured in broad lateral view which I presently consider to be most diagnostic for the species. The appearance of the dististyle varies greatly as it is rotated around its longitudinal axis. The term genital arch is introduced to name a sclerotized median cup-shaped sternal structure which appears broadly V-shaped from the dorsal or ventral view. Apparently it supports the basistyles and the ejaculatory duct; at present I am unable to determine its homology and it is not figured for any of the species although it is described in the text.

All specimens were collected by myself unless otherwise stated. The types are preserved in my collection.

1. *Macrocera alternata* Brunetti, 1912.

Brunetti, 1912, Fauna Brit. India: 52, pl. 1., fig. 2; male, female (Naini Tal, 6000', Mussoori).
Brunetti, 1917, Rec. Indian Mus. 13, Pt. 2: 61; female (Simla).

Diagnosis.—I have a single female specimen which agrees well with the original description of *alternata*, the following differences being noted: first flagellar segment yellow; abdominal segments one to three narrowly dark on posterior margin. In addition, the following diagnostic characters are noted for the first time: ocellar prominence black; upper anepisternum with a cluster of setae; acrostichal

setae absent; wing membrane without macrotrichiae; wing (Pl. 2) with costa barely produced beyond tip of R_5 ; Sc enters costa at level of anastomosis, R_{1+2+3} swollen apically and entering costa halfway between fM_{1+2} and fR_{4+5} , no wing fold in cell R_3 , M not fused with Rs and reaching to m-cu, M_{1+2} shorter than anastomosis, tips of M_1 and M_2 not divergent, Sc apically setose, R_{1+2+3} , R_{4+5} , R_4 , R_5 , M_1 , M_2 , M_4 and Cu_1 setose almost entire length. Male terminalia are not available for illustration.

New Record.—**Nepal**, Suna Chudi (Rapti Valley), 520m., 23 March 1957 (E. I. Coher and G. P. Joshi), 1♀.

Discussion.—I have seen the wing of the type of *M. ephemeraeformis* Alexander, 1923, from Japan. The wings are strikingly similar except for the larger size of the Japanese species, the comparatively greater distance that the costa is produced beyond the apex of R_5 , and the entry of Sc into the costa just beyond the anastomosis. It is probable that *M. ephemeraeformis* Edws. (nec Alex.) 1933, from North Borneo, is one of a series of species related to *alternata*.

Comparison of the Brunetti types with my specimen may show that different but closely related species are involved. The types were taken at high altitudes during and immediately after the rainy season while my specimen was taken at a much lower altitude during the dry season.

2. *Macrocera brunnea* Brunetti, 1912.

Brunetti, 1912, Fauna Brit. India: 53, pl. 1, fig. 5; 2 females (Phagu, 9000').

Brunetti, 1917, Rec. Indian Mus. 13: 61.

Edwards, 1924, Rec. Indian Mus. 26: 291.

I have a series of seven specimens taken in the low-lying jungle bordering India (terai), five males and two females. The male is here described and illustrated for the first time.

Male.—*Head*: reddish brown; antenna brown, about four times body length, scape and pedicel yellow brown. *Thorax*: yellowish, anepisternum and katepisternum a little darker; acrostichal and dorsocentral setae absent; upper anepisternum with a couple of setae. *Wings*: (Pl. 2); apex faintly suffused from just beyond apex of R_4 ; dark cloud from costa through apex of R_{1+2+3} reaching R_{4+5} , lightly suffused through anastomosis and into base of cell R_5 through M_4 to bend in Cu_1 ; membrane with macrotrichiae in cells R_4 and apically in R_5 , M_1 and M_2 ; costa not produced beyond tip of R_5 ; Sc enters costa at level of anastomosis; R_{1+2+3} swollen api-

cally and entering costa at apex of R_4 ; slight suggestion of a fold in cell R_3 ; M ending in R_5 ; M_{1+2} longer than anastomosis; tips of M_1 and M_2 diverging slightly; Sc, R_{1+2+3} and R_4 setose; M_1 and Cu_1 with more than distal half setose and M_2 and M_4 with less than distal half setose; length 4.75mm. *Haltere*: yellowish. *Legs*: yellowish, tibial spurs subequal, apical comb on foretibia. *Abdomen*: yellowish; SVIII shaped like a papal miter. *Terminalia*: TIX subrectangular; genital arch broadly V-shaped, lightly pigmented; dististyle as in Plate 1.

Female.—Similar to male. In addition to the original description, the following characters are noted: acrostichal setae absent, dorso-central setae present; wing membrane with macrotrichiae in apical half of cell R_3 and all of cell R_4 , along a median line in basal portion of cells R_3 , M_1 and M_2 , and scattered distally in cells M_4 , Cu_1 , Cu_2 and 1st A.

Allotype male.—**Nepal**, Suna Chudi, 520m., 23 March 1957.

Additional records.—**Nepal**, Parewavir, 570m., 28 March 1957, 2♂♂ 1♀; Parewavir, 570m., 3 April 1957 (E. I. Coher and G. P. Joshi), 1♂ 2♀♀.

Discussion.—The anal angle of the wing is normally 'squared' in my specimens, not as figured by Brunetti.

3. *Macrocera elegans* Brunetti, 1912.

Brunetti, 1912, *Fauna Brit. India*: 54, pl. 1, fig. 4; male (Darjiling).
Edwards, 1924, *Rec. Indian Mus.* 26: 291.

A male and female of this species were taken in the Mahabharat Range. The female is described and the male terminalia figured for the first time.

Female.—*Head*: red brown; antenna yellowish. *Thorax*: yellow brown; anepisternum, katapisternum, posterior pleurotergite, median area of scutellum and the postnotum red brown; mesonotum with median dark triangular area the apex of which nearly attains the posterior margin, with two lateral dark stripes from scutellum not reaching humeral angle; acrostichal setae absent; upper anepisternum with a cluster of setae. *Wing*: (Pl. 2); apex suffused from halfway in cell R_4 to midway in cell M_1 and caudad along wing margin to apex of vein M_2 , and from costa through apex of R_{1+2+3} and through anastomosis and fM_{1+2} , narrowing to reach bend of Cu_1 ; base of wing suffused; membrane without macrotrichiae; costa produced one-third length of margin of cell R_5 beyond tip of R_5 ; Sc enters costa almost at level of distal part of m-cu; R_{1+2+3} swollen apically and entering costa the length of M_{1+2} beyond fM_{1+2} ; a

short fold in cell R_3 ; M ending free at level of bend in R_s ; M_{1+2} longer than anastomosis; tips of M_1 and M_2 slightly divergent; Sc , R_{1+2+3} , R_4 , R_5 , M_1 , M_2 , M_4 , Cu and Cu_1 setose; length 5.5mm. *Haltere*: yellowish. *Legs*: yellow; midcoxa and apex of hind coxa suffused; apical comb on foretibia; tibial spurs subequal.

Male.—A single specimen agrees well with the original description and Edwards' correction (1924) except that R_{1+2+3} enters the costa the length of M_{1+2} beyond fM_{1+2} . Also, the anterior as well as the posterior margins of the abdominal tergites are darkened irregularly. In addition to the original description, the following diagnostic characters are noted: acrostichal setae absent; R_{1+2+3} , R_5 and M_1 setose while R_4 , M_2 , M_4 and Cu_1 have a couple of apical setae; SVIII shaped like a papal mitre; TIX subrectangular; genital arch almost bracket-shaped with deep median posterior emargination; dististyle as in Plate 1.

Allotype female.—**Nepal**, Mahabharat Range, Simbhanjang 8190', 1 Oct. 1956 (E. I. Coher and G. P. Joshi).

Additional specimen.—One male with same data as allotype (E. I. Coher and Pratap Singh).

Discussion.—The Brunetti specimen apparently differs only in the length of R_{1+2+3} which enters the costa basad of M_{1+2} . The allotype was taken in an unbaited Shannon trap.

4. *Macrocera nepalensis*, n. sp.

Male.—*Head*: yellowish except for brownish vertex and black ocellar prominence; palpus brownish; antenna yellow brown, about four times body length, with basal flagellar segments, scape and pedicel yellow, with the first three flagellar segments shorter than the following nine and the last two short. *Thorax*: yellow brown; an elongate brown mark on edge of mesonotum in front of wing and at humeral angle; acrostichal setae absent; anepisternum with a couple of setae at upper margin. *Wing*: (Pl. 2); apex suffused; suffused at tip of R_{1+2+3} , at base of R_s and from base of R_{4+5} caudad through fM_{1+2} , narrowing and reaching bend of Cu_1 ; membrane without macrotrichiae; costa produced well beyond R_5 ; Sc meets costa barely beyond base of R_s ; R_{1+2+3} swollen apically and meeting costa about the length of M_{1+2} before the apex of R_4 ; no fold in cell R_3 ; M fused with R_s at bend; M_{1+2} longer than anastomosis; tips of M_1 and M_2 curving in the same direction; Sc bare; R_{1+2+3} , R_{4+5} , R_4 apically, R_5 , M_1 , M_2 , M_4 and Cu_1 setose; length 4.25mm. *Haltere*: yellow. *Legs*: yellow; mid and hind coxae slightly darkened; tibial spurs subequal; apical comb on foretibia. *Abdomen*: yellow

brown; SVIII shaped like a papal miter. *Terminalia*: TIX subrectangular; genital arch apparently broadly V-shaped with a deep median posterior emargination; dististyle as in Plate 1.

Holotype male.—**Nepal**, Suparitar, 650m., 8 Dec. 1956.

Discussion.—This species has a superficial resemblance to *M. brunnea* but differs in the form of the terminalia and a number of characters of the wing.

5. *Macrocera trispina*, n. sp.

Male.—*Head*: reddish brown, blackish around ocelli; palpus reddish brown; antenna brown, with first flagellar segment, scape and pedicel yellowish; antenna broken, at least three times length of body, segments increasing in length through the tenth flagellar segment. *Thorax*: yellowish brown except for yellow humerus, anterior and posterior pronotum, scutellum and postnotum; acrostichal setae absent; upper anepisternum apparently bare. *Wing*: (Pl. 2); apex suffused from rR_{4+5} , dark area extending basad along M_4 a short distance; suffused at tip of R_{1+2+3} , base of R_{4+5} along anastomosis and along M_{1+2} and at bend of Cu_1 in cell M_4 ; suffused below apex of Sc and below humeral vein; membrane with numerous macrotrichiae in cell R_4 , a few distally in cell R_3 ; costa barely produced beyond R_5 ; Sc ends in costa at level of apex of m-cu; R_{1+2+3} swollen apically, broadly joining costa basad of the apex of R_4 ; fold in cell R_3 ; M fused with Rs at bend; M_{1+2} about one half as long as anastomosis; tips of M_1 and M_2 noticeably divergent; Sc, R_{1+2+3} , R_4 , R_5 setose and M_1 setose apically; M_2 , M_4 and Cu_1 bare; length 4.25mm. *Haltere*: yellow. *Legs*: yellow; mid and hind coxae slightly reddened; tibial spurs subequal; apical comb on foretibia. *Abdomen*: yellowish; SVIII shaped like a papal miter. *Terminalia*: TIX subtrapezoidal, anterior margin deeply emarginate; genital arch broadly V-shaped, pigmented laterally and with a median V-shaped notch on the posterior margin; dististyle as in Plate 1.

Holotype male.—**Nepal**, Suna Chudi, 520m., 23 March 1957.

Discussion.—If the anepisternal setae are actually not present, *trispina* is the only species in the genus that I have been able to study which does not have these setae. *M. pusilla* Mg., 1830, is the only other species in the genus to have a trifold dististyle but that species has no wing pattern. This new species does not seem to be closely related to any species yet described.

6. *Macrocera simbhanjangana*, n. sp.

Represented by a series of nine males and three females from Simbhanjang which were taken along a stream in the rhododendron forest.

Male.—*Head*: yellowish, with vertex brown; antenna brown, about twice the body length, with first flagellar segment, scape and pedicel yellowish and eighth and ninth flagellar segments lengthened. *Thorax*: yellowish, anepisternum, katepisternum and pleurotergite suffused; mesonotum with median dark triangle with apex at level of wing base and the two lateral dark stripes from scutellum not reaching humeral angle; scutellum and postnotum suffused medianly; acrostichal setae absent; upper anepisternum with several setae. *Wing*: (Pl. 2); apex lightly suffused from about halfway in cell R_4 ; membrane with abundant macrotrichiae, densest apically, absent in basal area and absent or sparse basally in cells R_3 , R_5 , M_2 , M_4 , Cu_1 , Cu_2 and 1st A; costa produced one-fourth length of margin of cell R_5 beyond R_5 ; Sc ending in costa at base of or at the level of the anastomosis; R_{1+2+3} swollen apically and meeting costa widely just basad of the apex of R_4 ; fold in cell R_3 ; M ending in bend of R_5 , sometimes with a small spur ending free; M_{1+2} about twice as long as anastomosis; tips of M_1 and M_2 curving in the same direction; Sc, R_{1+2+3} , R_{4+5} , R_4 , R_5 , M_{1+2} , M_1 , M_2 , M_4 , Cu, Cu_1 , and 1st A setose, the setae hair-like; anal angle not excessively squared; length 5.00 to 5.25mm. *Halterc*: yellow, or yellow with brown knob. *Legs*: yellow; tibial spurs subequal; apical comb on foretibia. *Abdomen*: brown, TI with posterolateral angles light, TII and TIII with light posterior margin, TIV posterolateral angle light; SVIII shaped like a papal miter with a low peak. *Terminalia*: TIX shaped like a flattened hemisphere; genital arch broadly V-shaped; basistyle appearing subrectangular from a dorsal view; dististyle with two apical spines situated so that the interior one is almost hidden in lateral view (Pl. 1).

Female.—Similar to male. Wing length 5.00 to 6.20mm. *Abdomen*: TIV with light posterior margin, TV and TVI with posterolateral angles light.

Types.—*Holotype* male, *allotopotype* female: **Nepal**, Mahabharat Range, Simbhanjang 8190', 1 Oct. 1956. *Paratopotypes*: 5♂♂ and 1♀ with same data as the holotype; 1♂ (E. I. Coher and G. P. Joshi); 2♂♂ and 1♀ (E. I. Coher and Pratap Singh).

Discussion.—The anal angle of the wing is quite rounded in this species, a condition also found in *M. trinubila* Edws., 1933, and *M. smithi* (Shaw), 1948, and approaching the shape of the wing found

in *Archaeomacrocera* which is probably a synonym of *Macrocera*. The shape of the basistyle, the position of the terminal spines of the dististyle and the shape of the ninth tergite separate *simbhanjangana* from all other *Macrocera* I have studied, and this species does not seem to be closely related to any yet described.

Five males and two females were taken in an unbaited Shannon trap. A single female was attracted to a light in the Shannon trap.

7. *Macrocera vishnui*, n. sp.

A single damaged male from Simbhanjang is characteristic enough to describe despite its poor condition.

Male.—*Head*: red brown; antenna yellow. *Thorax*: red brown; acrostichal and dorsocentral setae absent; upper anepisternum with two setae. *Wing*: (Pl. 2); badly damaged but with remaining portion showing the veins edged in brown with a hyaline membrane; suffused at fR_{4+5} and below apex of R_{1+2+3} into cell R_5 ; Sc ending in costa before anastomosis; R_{1+2+3} swollen apically and ending in costa about halfway between anastomosis and fR_{4+5} ; Sc apically setose; R_{1+2+3} , R_{4+5} and R_5 setose; R_4 bare; estimated length 6.5mm. *Legs*: yellow; apical comb on foretibia. *Abdomen*: yellowish; SVIII shaped like a papal miter. *Terminalia*: TIX subrectangular; genital arch broadly V-shaped, deeply pigmented and with a broad, shallow emarginate median posterior margin; dististyle with a peculiar basal invagination on the median surface seen best in lateral view (Pl. 1).

Holotype male.—**Nepal**. Mahabharat Range, Simbhanjang, 8190', 17 April 1957.

Discussion.—This species is distinctive and does not seem to be closely related to any other species in the genus known to me. The invaginated structure on the dististyle is unique in the genus as far as I can determine.

8. *Macrocera femina*, n. sp.

Represented by a single female taken from the Malay Peninsula, southern Thailand.

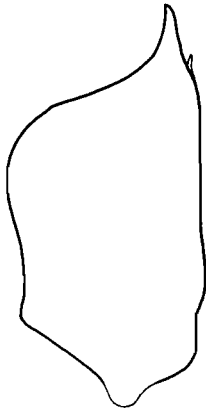
Female.—*Head*: red brown; antenna yellow, slightly longer than the body. *Thorax*: yellow brown; anepisternum brownish; katepisternum and mesepimeron with a horizontal suffused band mid-way; pleurotergite suffused dorsally and along posterior margin; mesonotum dark brown except for extreme humeral corner; postnotum suffused dorsolaterally; upper anepisternal and mesonotal setae not visible on mounted specimen. *Wing*: (Pl. 2); suffused

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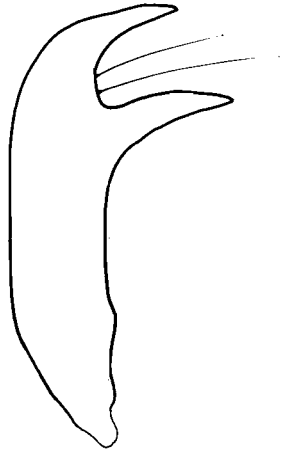
PLATE I



vishnui



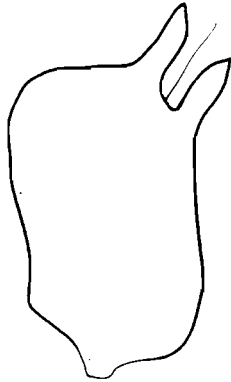
simbhanjangana



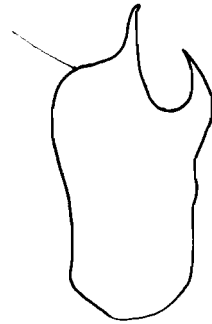
elegans



trispina



brunnea

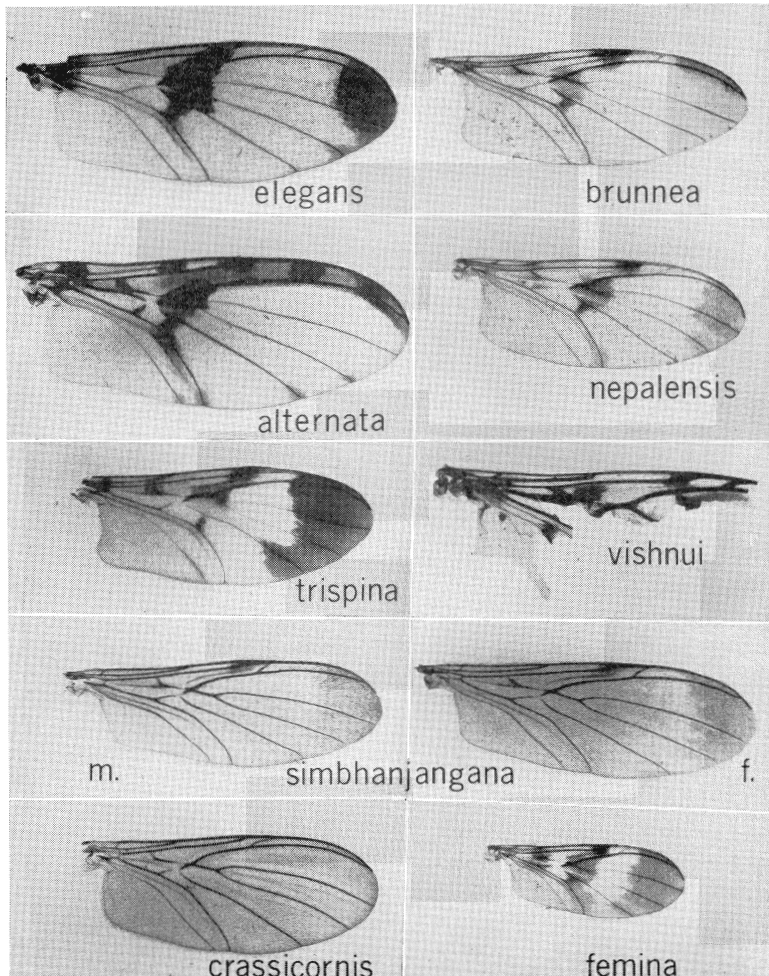


nepalensis

Macrocera: dististyles of males. Setae omitted.

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PLATE II



Macrocera: wings. Male: *brunnea*, *nepalensis*, *trispina*, *vishnui*, *simbhanjangana*(m.), *crassicornis*. Female: *elegans*, *alternata*, *simbhanjangana*(f.), *femina*.

except for a small light band basad of anastomosis and a larger one from R_4 barely to cell M_4 ; membrane without macrotrichiae; costa produced well beyond R_3 ; Sc ending in costa just beyond base of m-cu; R_{1-2+3} swollen apically and meeting the costa the length of R_4 before the base of R_4 ; fold in cell R_3 ; Rs weakly developed; M ending free; M_{1+2} twice as long as anastomosis; tips of M_1 and M_2 slightly divergent; M_4 obsolete at bend; Sc with a few apical setae, R_{1+2+3} , R_{4+5} , R_5 setose, R_4 and M_{1+2} bare, M_1 and M_2 sparsely setose on apical half, M_4 apically setose and Cu_1 setose distad of bend; length 3.00mm. *Legs*: yellow; tibial spurs subequal; apical comb on foretibia. *Abdomen*: shiny brown; TI to TIV with a posterior yellow margin, TV with posterolateral yellow area.

Holotype female.—**Thailand**, Trang Province, Chong, 29 June 1960.

Discussion.—Taken in an unbaited Shannon trap. This species does not seem to be closely related to any yet described, although it has a superficial resemblance to the European *M. fascipennis* Staeger, 1840.

9. *Macrocera crassicornis* Winnertz, 1863.

Winnertz, 1863, Verh. Zool.-Bot. Ges. Wien 13: 678, male.

A single male taken in Kabul, **Afghanistan**, 27 Oct. 1958 (P. F. Beales). The folding between the veins, which shows slightly in other species, appears almost vein-like in this species, particularly in photographs (Pl. 2). The banded appearance of the antennae is due to narrow light-colored bands apically and basally on the segments involved.

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