

SOME ASILIDAE (DIPTERA) PRESENT IN THE BRITISH MUSEUM  
(NATURAL HISTORY) FROM INDIA AND BANGLA DESH

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(With 6 text-figures)

INTRODUCTION

Through the courtesy of Dr. K. G. V. Smith of the British Museum (Natural History), London, we have received a small collection of robber flies, result of the study of this collection is given in this paper. Of the eleven genera dealt with here, it is observed that *Neoitamus* Osten-Sacken is so far restricted to Upper India and *Michotamia* Macquart and *Clephydroneura* Becker are predominant in South India.

**Laphria** Meigen

*Laphria* Meigen, 1803, *Illiger's Mag. f. Ins.* 2 : 270.

1. **Laphria nathani** Joseph and Parui

1981. *Laphria nathani* Joseph and Parui, *Ent. Scand.* 12 : 217.

*Material* : 2 ♂, India : Kerala : Travancore : Pirmed, 850 m, 4-6.v.1937, B.M.C.M. Expedition to South India.

*Distribution* : India : Kerala and Karnataka.

*Remarks* : This is the second record of the species.

**Xenomyza** Wiedemann

*Xenomyza* Wiedemann, 1817, *Zool. Mag.* 1 : 60.

2. **Xenomyza dravidica** Joseph and Parui

1984. *Xenomyza dravidica* Joseph and Parui, *Ent. Scand.* 15 : 441.

*Material* : 1 ♂, 1 ♀, India : Kerala : Travancore : Tenmalai, 12-15.v. 1937, B.M.C.M. Expedition to South India.

*Distribution* : India : Kerala and Karnataka.

*Remarks* : It is the second report of the species.

**Michotamia Macquart**

*Michotamia* Macquart, 1838, *Dipt. exot.* 1 (2) : 72.

**3. Michotamia fuscifemorata Joseph and Parui**

1984. *Michotamia fuscifemorata* Joseph and Parui, *Rec. Zool. Surv. India*, Occ. paper No. 66 : 26.

*Material* : 1 ♂, India : Kerala : Travancore : Tenmalai, 12-15.v.1937, B.M.C.M. Expedition to South India.

*Distribution* ; India : Kerala.

*Remarks* : This species is recorded for the second time.

**Astochia Becker**

*Astochia* Becker, 1913, *Ann. Mus. zool. Acad. St. Petersburg*, 17 : 538.

**4. Astochia bengalensis Joseph and Parui**

1981. *Astochia bengalensis* Joseph and Parui, *Oriental Ins.* 15 (1) : 21.

*Material* : 1 ♀, India : Uttar Pradesh ; Mussoorie, vi.1905, no other data ; 1 ♂, West Bengal : Darjeeling, 13.v.1917 ; 3 ♂, 2 ♀, Darjeeling, 20-24.v.1917 ; 3 ♂, 2 ♀, Darjeeling, 4.vi.1917 ; 1 ♀, Darjeeling, 6.vi.1917 ; 2 ♂, 2 ♀, India, no other data ; all presented by E. Brunetti, B. M. 1927-84.

*Distribution* : India : West Bengal and Uttar Pradesh.

*Remarks* : This is the first report from Uttar Pradesh.

**Clephroneura Becker**

*Clephroneura* Becker, 1925, *Ent. Mitt.* 14 : 68.

**5. Clephroneura distincta Oldroyd**

1938. *Clephroneura distincta* Oldroyd, *Ann. Mag. nat. Hist.* (11) 1 : 467.

*Material* : 1 ♂, India : Tamil Nadu : Nilgiris : Coonoor, v.1912, Coll. J.S.P.

*Distribution* : India : Tamil Nadu.

*Remarks* : It is so far recorded only from Tamil Nadu.

**6. Clephroneura karnatakaensis Joseph and Parui**

1984. *Clephroneura karnatakaensis* Joseph and Parui, *Rec. zool. Surv. India*, Occ. paper No. 66 : 9.

*Material* : 1 ♂, India, no other data, Coll. W. S. Patton.

*Distribution* : India : Karnataka.

*Remarks* : This is the second report of the species.

7. *Clephyroneura mudigorensis* Joseph and Parui

1984. *Clephyroneura mudigorensis* Joseph and Parui, *Rec. zool. Surv. India*, Occ. paper No. 66 : 14.

*Material* : 1 ♂, India, T.R. Bell, B.M. 1934-394, no other data.

*Distribution* : India : Karnataka.

*Remarks* : Comparatively a large specimen.

***Heligmoneura* Bigot**

*Heligmoneura* Bigot, 1858. *Arch. Ent.* 2 : 356.

*Heligmoneura* Bigot, *Hoplophomerus* Becker, *Neomochtherus* Osten-Sacken, and *Orophotus* Becker are generally similar and because of their close similarity in our earlier paper (1980) we had placed *Hoplophomerus armatipes* Macquart, *Neomochtherus gnava* Wulp and *Orophotus montanus* Ricardo, under *Heligmoneura*. Subsequent studies have shown the identity of these different genera because of their differences in characters of antenna, facial gibbosity, dorsoventral hairs of mesonotum, presence or absence of bristles on legs and structural details of male genitalia. The limitation of these genera has been problematic : Lal (1960) in his Catalogue has placed all the Indian species under *Heligmoneura* ; Hull (1962) suggests that the Oriental species belong to *Cinadus* Wulp and the African ones to *Heligmoneura* ; Tsacas and Oldroyd (1967) give a key for separation of these genera ; and Oldroyd (1975) follows it in the *Catalog of Oriental Diptera*. One more species included in our earlier paper (1980) is *Heligmoneura indiana* Ricardo, which actually belongs to *Neomochtherus*.

*Key to Indian species of Heligmoneura Bigot*

(After Joseph and Parui, 1984)

- |                                                                                      |     |                |                  |
|--------------------------------------------------------------------------------------|-----|----------------|------------------|
| 1. Males with epandrium trifurcate, thorax with golden yellow bristles               | ... | <i>ricardo</i> | Joseph and Parui |
| Males with epandrium bifurcate, bristles of thorax other than golden-yellow          | ... | ...            | 2                |
| 2. <i>Mystax</i> white or light yellow                                               | ... | ...            | 3                |
| <i>Mystax</i> mixed black and white or black and yellowish                           | ... | ...            | 7                |
| 3. Legs yellowish, tips of mid and hind femora may be darker                         | ... | ...            | 4                |
| Legs yellowish-brown or black, in the latter fore and mid femora ferruginous at apex | ... | ...            | 5                |

- |     |                                                                                                                                                                                                    |     |                                       |    |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------|----|
| 4.  | Epandrium shallowly furcate with the prongs curved inwards, abdomen yellow, mesonotum with two lateral spots on sides of mediolongitudinal stripes                                                 | ... | <i>yenpengensis</i> (Bromley)         |    |
|     | Epandrium distinctly bifurcate, abdomen yellowish-brown to dark brown, lateral spots of mesonotum absent                                                                                           | ... | <i>cheriani</i> Joseph & Parui        |    |
| 5.  | Abdominal tergite V with four white spines on each side                                                                                                                                            | ... | <i>congeda</i> (Walker)               |    |
|     | Abdominal tergite V with 2-3 bristles on each side                                                                                                                                                 | ... | ...                                   | 6  |
| 6.  | Wings not infuscated, posterior branch of third vein almost straight, antennal arista and third segment almost equal                                                                               | ... | <i>kumaunensis</i> Joseph and Parui   |    |
|     | Wings smoky at apex and along posterior cell, antennal style longer than third segment                                                                                                             | ... | <i>dravidica</i> Joseph and Parui     |    |
| 7.  | Mystax white with a few black bristles                                                                                                                                                             | ... | ...                                   | 8  |
|     | Mystax yellowish with a few black bristles                                                                                                                                                         | ... | ...                                   | 13 |
| 8.  | Epandrium deeply incised                                                                                                                                                                           | ... | ...                                   | 9  |
|     | Epandrium not distinctly incised                                                                                                                                                                   | ... | ...                                   | 11 |
| 9.  | Male sternite VIII ending in a rod-shaped projection bearing a fan-like row of hairs                                                                                                               | ... | <i>frommeri</i> Joseph and Parui      |    |
|     | Sternite VIII only slightly produced                                                                                                                                                               | ... | ...                                   | 10 |
| 10. | Antennae black, tibiae yellow but tip of hind pair brownish, sternite VIII only slightly produced                                                                                                  | ... | <i>anamalaiensis</i> Joseph and Parui |    |
|     | Antennal segments 1 and 2 yellow, segment 3 yellowish-brown at base, rest dark brown, tibiae yellow but tip of hind pair brownish, sternite VIII produced, apex round with a row of black bristles | ... | <i>shimogaensis</i> Joseph and Parui  |    |
| 11. | Mediolongitudinal stripe of thorax undivided and extend the entire length, disc of scutellum pale-yellow haired, epandrium and hypandrium curved downwards apically                                | ... | <i>tsacasi</i> sp. nov.               |    |
|     | Mediolongitudinal stripe of thorax divided and extends midway between transverse suture and hind border, disc of scutellum black haired, epandrium and hypandrium not so curved                    | ... | ...                                   | 12 |

- |     |                                                                                                                                                                                                        |                                       |                             |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------|
| 12. | Epandrium distinctly incised, hypandrium with a few long hairs, mystax white with black bristles above and below ...                                                                                   | <i>incisularis</i> sp. nov.           |                             |
|     | Epandrium slightly incised, hypandrium with long bristly hairs, mystax white surrounded by black bristles ...                                                                                          |                                       | <i>bengalensis</i> sp. nov. |
| 13. | Abdomen with a distinct series of three brown spots, superior forceps of male club-shaped ...                                                                                                          | <i>ricardo</i> i Joseph and Parui     |                             |
|     | Abdomen without such spots, superior forceps not club-shaped ...                                                                                                                                       | ...                                   | 14                          |
| 14. | Facial tubercle highly produced, epandrium complicated ...                                                                                                                                             | ...                                   | 15                          |
|     | Facial tubercle not so prominent, epandrium not complicated ...                                                                                                                                        | ...                                   | 16                          |
| 15. | Sixth tergite on sides with a bunch of short black bristles, femora yellowish-brown with an anterior black stripe extending from base to beyond the middle, proctiger of male characteristic shape ... | <i>bigoti</i> Joseph and Parui        |                             |
|     | Sixth tergite without bristles, femora yellow with dark tip, epandrium bears a few spines internally at apex ...                                                                                       | <i>andamanensis</i> Joseph and Parui  |                             |
| 16. | Femora black, tibiae pale-yellow except hind tibia being black with pale yellow base, genital cavity of male tightly enclosed ...                                                                      | <i>poonmudiensis</i> Joseph and Parui |                             |
|     | Femora yellowish, apex of mid and hind femora may be black. ...                                                                                                                                        | ...                                   | 17                          |
| 17. | Hind femur yellow with black apex and black rings, hind tibia yellow except outside being black, antennae yellow ...                                                                                   | <i>tenuicornis</i> (Walker)           |                             |
|     | Hind femur uniformly yellowish-brown ...                                                                                                                                                               | ...                                   | 18                          |
| 18. | Lower fork of superior forceps with a small protuberance, hind tibia uniformly yellowish-brown, scutellum black haired on disc and with black bristles on margin ...                                   | <i>lavignei</i> Joseph and Parui      |                             |
|     | Lower fork of superior forceps without any protuberance, hind tibia yellow on basal half while the rest black, scutellum with a sub-marginal row of erect fine black setae and marginal bristles ...   | <i>chaetoprocta</i> (Hull)            |                             |

8. *Heligmoneura bengalensis* sp. nov.

(Fig. 1)

A small black species with grey tomentum, concolourous legs, wholly white or white and black mixed mystax and distally infuscated wings. Male length 13 mm, wing 11 mm ; female length 13 mm, wing 12 mm.

*Males* : *Head* broader than thorax, black with grey and white tomentum ; mystax wholly white or white bristles surrounded by black ones, fronto-orbital plate with black hairs, ocellar bristles black, postcranium white haired, postocular bristles black. Antenna lost from segment 3 onwards, remainder black with black hairs, segment 1 ventrally also bearing a few black bristles, segment 2 longer than half of 1. Palpus and proboscis black with white hairs.

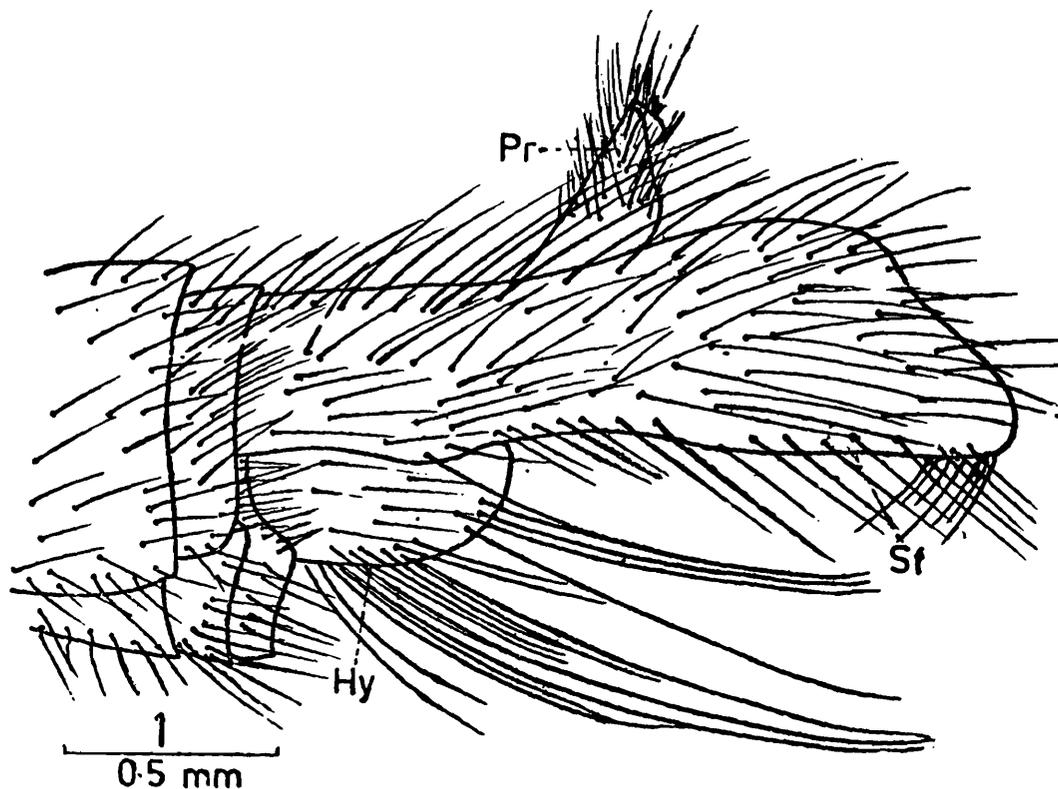


Fig. 1. *Heligmoneura bengalensis* sp. nov., lateral view of male genitalia.

*Thorax* black, grey tomentose ; pronotal hairs pale yellow with a median transverse row of four pale yellow or pale yellow and black bristles ; mesonotum with a mediolongitudinal black stripe divided by a narrow greyish-yellow stripe, the stripe extending from anterior end to midway between transverse suture and hind border, laterally with two large and one small black spots, vestiture black but for a few pale yellow hairs on humerus and posterolaterally, bristles black ; scutellum with the disc black haired, hind border bearing two black bristles. Haltere dark brown or yellowish-brown.

*Legs* uniformly black, grey tomentose ; fore femur ventrally with a row of long white hairs which gradually decrease in length from base to apex, mid and hind femora with anteroventral and posteroventral rows of bristles, mid femur also with an anterior bristle beyond middle, vestiture predominantly white with some black hairs also, bristles black and pale yellow, tibia and basitarsus bearing golden yellow pubescence anteriorly in fore leg and posteriorly in hind leg.

*Wing* infuscated, but medially and basally almost hyaline.

*Abdomen* black, sparsely grey tomentose, tomentum covering most of tergite 1 and anterior and posterior borders of tergite 2, it forms a narrow transverse hind border on tergites 3-7, tergite 1 laterally with a bunch of pale yellow and two or more black bristles, in succeeding tergites posterolaterally with about three bristles, vestiture black, bristles pale yellow and black. Male genitalia (Fig. 1) black with black hairs, distal half of epandrium bearing pale yellow hairs.

*Female* : Similar.

*Holotype* ♂, India : West Bengal : Darjeeling, 4.vi.1917, presented by E. Brunetti, B. M. 1927-184.

*Paratypes* : 1♂, 1♀, same data as holotype.

*Heligmoneura bengalensis* sp. nov. is closely similar to *H. incisularis* sp. nov., but is comparatively larger and the epandrium not as distinctly bifid.

## 9. *Heligmoneura incisularis* sp. nov.

(Fig. 2)

A small, black species with grey tomentum, concolourous legs, white and black mystax and infuscated wings. Male length 11 mm, wing 8 mm.

*Male* : *Head* broader than thorax, black with grey and white tomentum ; mystax white with black bristles above and below, fronto-orbital plate with black hairs, ocellar bristles black, postcranium white haired, postocular bristles black. Antenna black with segment 2 yellowish-brown basally and distally, segments 1 and 2 with black hairs, the former also carrying a few black bristles ventrally, segment 2 longer than half of 1, 3 and segments 1+2 nearly equal in length. Palpus and proboscis black with white hairs.

*Thorax* black, grey tomentose ; pronotal hairs white with a median transverse row of four pale yellow and black bristles ; mesonotum with a mediolongitudinal black stripe divided by a narrow grey stripe, the stripe extending from anterior end to midway between transverse suture and hind border, sides with the usual three black spots, vestiture black but for a few pale yellow hairs on humerus and posterolaterally, bristles black ; scutellum with the disc black haired, hind border with a pair of black bristles. Haltere yellowish-brown and dark brown mixed.

*Legs* uniformly black; fore femur with a ventral row of long white hairs which gradually decrease in length from base to apex, mid and hind femora with anteroventral and posteroventral rows of bristles, mid femur also with an anterior bristle beyond middle, vestiture predominantly white with some black hairs also, bristles pale yellow and pale yellow and black, tibia and basitarsus bearing golden yellow pubescence anteriorly in fore leg and posteriorly in hind leg.

*Wing* infuscated, but medially and basally lighter coloured.

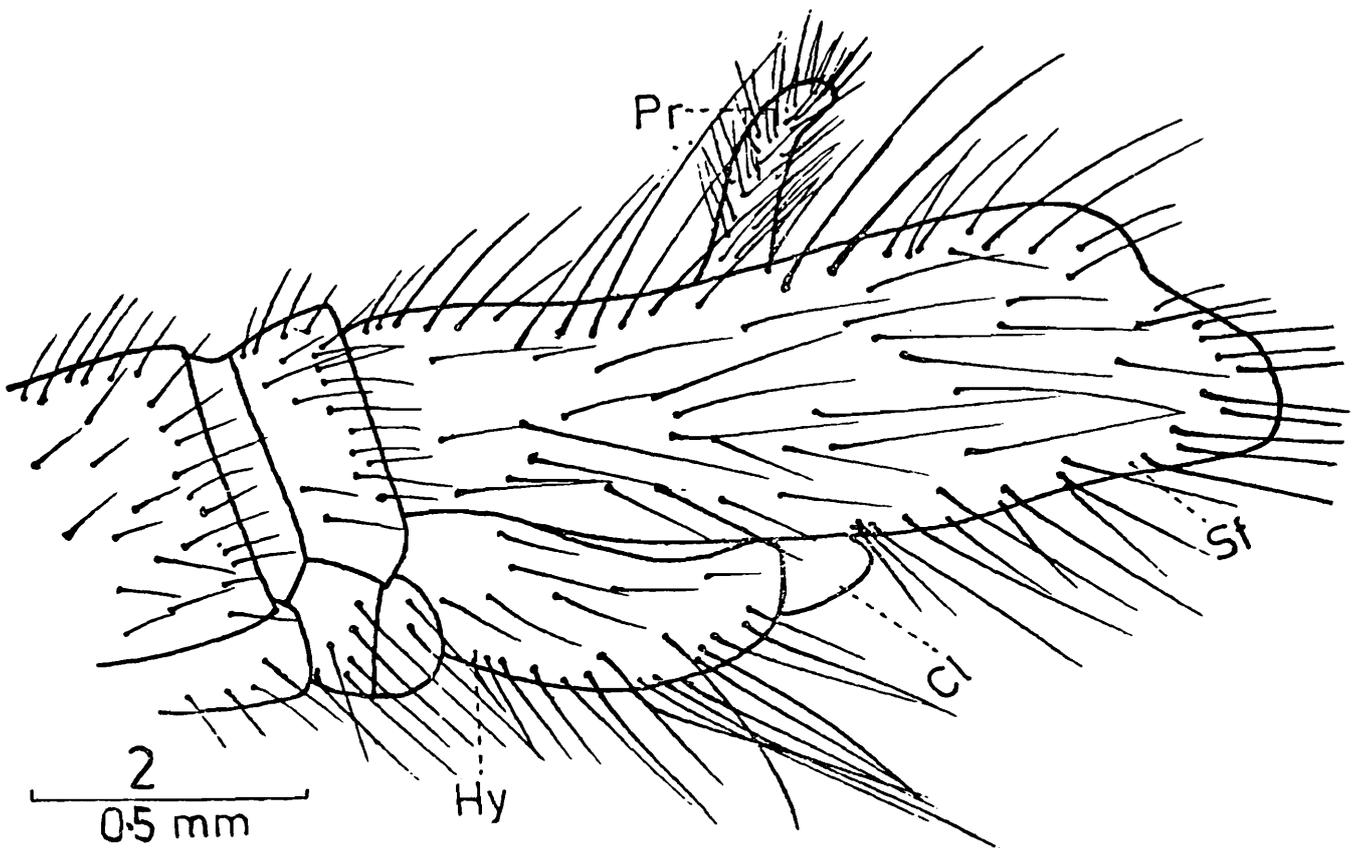


Fig. 2. *Heligmoneura incisularis* sp. nov., lateral view of male genitalia.

*Abdomen* black, sparsely grey tomentose, on tergite 2 tomentum form anterior and posterior transverse bands, on tergites 3-7 the transverse band restricted to hind border, tergite 1 on sides with a bunch of pale yellow hairs and one pair of black bristles; tergites 2-5 with a pair of pale yellow bristles posterolaterally, vestiture black, bristles pale yellow and black. Male genitalia (Fig. 2) black with black and pale yellow hairs, epandrium apically with distinct incision.

*Holotype* ♂, India: Uttar Pradesh: Mussoorie, vi. 1905, presented by E. Brunetti, B. M. 1927-184, no other data.

*Heligmoneura incisularis* sp. nov. is allied to *H. bengalensis* sp. nov., the interrelationships between them are discussed under the latter.

10. *Heligmoneura tsacasi* sp. nov.

(Fig. 3)

A small black species with greyish-yellow and grey tomentum, black legs, white and black mystax, and distally infuscated wings. Male length 11-12 mm, wing 9 mm.

*Male* : *Head* broader than thorax, black, grey or greyish-yellow tomentose ; mystax white with a few black bristles above, fronto-orbital plate with black hairs, ocellar bristles black, postcranium predominantly pale yellow haired with a few black ones also, postocular bristles black and pale yellow. Antenna black with black hairs on the basal two segments, segment I also bears a few black bristles ventrally, segment 2 more than two-thirds length of 1, segment 3 longer than combined length of 1+2. Palpus and proboscis black, former black haired while latter pale yellow haired.

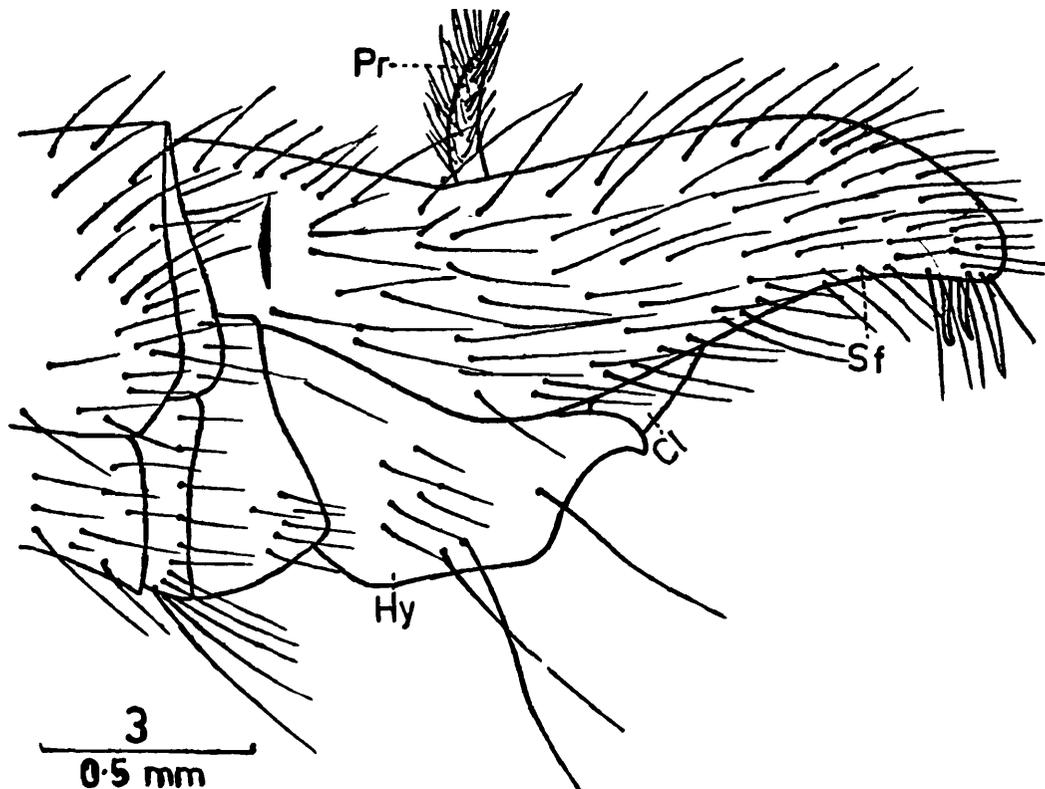


Fig. 3. *Heligmoneura tsacasi* sp. nov., lateral view of male genitalia.

*Thorax* black, grey and greyish-yellow tomentose ; pronotal hairs pale yellow ; mesonotum with a mediolongitudinal black stripe extending the entire length but without the dividing narrow line, lateral black spots confluent and form a stripe, vestiture black but for a few pale yellow hairs on humerus and posterolaterally, bristles black ; scutellum with the disc pale yellow haired, hind border bearing a pair of pale yellow bristles. Haltere yellowish-brown.

*Legs* uniformly black, fore femur ventrally with a row of thin long pale yellow hairs which decrease in length from base to apex, mid

and hind femora with anteroventral and posteroventral rows of bristles, the latter also with one anterior bristle beyond middle; vestiture pale yellow with some black hairs also, bristles pale yellow and black, tibia and besitarsus of fore and hind legs with golden yellow pubescence, anteriorly in fore leg and posteriorly in hind leg.

*Wing* infuscated, but medially and basally hyaline.

*Abdomen* black, yellowish-grey tomentose, tomentum more or less covering the entire tergites, tergite 1 and sides with pale yellow bristles posterolaterally, vestiture and bristles pale yellow. Male genitalia (Fig. 3) black with black hairs, epandrium apically with a few pale yellow hairs and hypandrium wholly pale yellow haired.

*Holotype* ♂, India, presented by E. Brunetti, B. M. 1927-184, no other details.

*Paratype* ♂ (wings separately attached), same data as holotype.

It is generally similar to *Heligmoneura bengalensis* sp. nov. and *H. incisularis* sp. nov., but can be recognised by the differences in the shape of epandrium and hypandrium and the fewer number of pale yellow apical hairs of epandrium. This species is named in honour of L. Tsacas, the well known worker on Palaearctic Asilidae.

### Machimus Loew

*Machimus* Loew, 1849, *Linn. ent.* 4 : 1.

#### 11. *Machimus hirtipes* Ricardo

1919. *Machimus hirtipes* Ricardo, *Ann. Mag. nat. Hist.* (9) 3 : 49.

*Material* : 1 ♂, 1 ♀, India : West Bengal : Kalimpong, 1000 m, 27.iii.1924, Coll. Maj. R. W. G. Hingston ; 3 ♀, 26.iii.1924, rest data as in preceding.

*Distribution* : India : Meghalaya, West Bengal and Tamil Nadu.

*Remarks* : This is the first record from West Bengal.

#### 12. *Machimus indianus* Ricardo

1919. *Machimus indianus* Ricardo, *Ann. Mag. nat. Hist.* (9) 3 : 50.

*Material* : 1 ♂, India : Uttar Pradesh : Mussoorie, vi.1905, no other data, presented by E. Brunetti, B. M. 1927-184.

*Distribution* : India : Uttar Pradesh.

*Remarks* : So far this species is reported only from Uttar Pradesh.

**13. *Machimus inutilis* Bromley**

1935. *Machimus inutilis* Bromley, *Rec. Indian Mus.* 37 : 222.

*Material* : 4♂, 4♀, India : Uttar Pradesh : Mussoorie, 20-26.v.1905, coll. Brunetti ; 1♂, Himachal Pradesh : Simla Hills : Theog, 2000 m, 2.v.1907, coll. N. Annandale.

*Distribution* : India : Punjab and Uttar Pradesh ; Nepal.

*Remarks* : This is first time reported from Uttar Pradesh.

**14. *Machimus nigrinus* Ricardo**

1919. *Machimus nigrinus* Ricardo, *Ann. Mag. nat. Hist.* (9) 3 : 53.

*Material* : 1♂, India : Uttar Pradesh : Mussoorie, vi.1905, no other data, presented by E. Brunetti, B. M. 1927-184.

*Distribution* : India : Uttar Pradesh.

*Remarks* : So far the species is known to occur in Uttar Pradesh.

**15. *Machimus pallipes* Ricardo**

1922. *Machimus pallipes* Ricardo, *Ann. Mag. nat. Hist.* (9) 10 : 65.

1960. *Asilus (Machimus) pallipes* (Ricardo) : Lal, *Catalogue of Indian Insects Part 29-Asilidae : Diptera*, : 19.

1975. *Machimus pallipes* Ricardo : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 145.

*Material* : 1♂, India, no other data, presented by E. Brunetti, B. M. 1927-184.

*Distribution* : India : Uttar Pradesh ; Nepal.

*Remarks* : As far as known the distribution of this species is restricted to the Himalaya.

**16. *Machimus punjabensis* Bromley**

1935. *Machimus punjabensis* Bromley, *Rec. Indian Mus.* 37 : 220.

*Material* : 1♂, 3♀, India : Uttar Pradesh : Mussoorie, 20-25.vi.1905, coll. Brunetti ; 1♂, Mussoorie, vi.1905, no other data ; presented by E. Brunetti, B. M. 1927-184.

*Distribution* : India : Punjab and Uttar Pradesh.

*Remarks* : It is the first report of the species from Uttar Pradesh.

**17. *Machimus ricardoi* (Bromley)**

1935. *Asilus ricardoi* Bromley, *Rec. Indian Mus.* 37 : 219.

1975. *Machimus ricardoi* (Bromley) : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 146.

*Material* : 1 ♂, India : Himachal Pradesh : Simla, 14.viii.1916, no other details ; 1 ♂, 1 ♀, India, no other data ; both presented by E. Brunetti, B. M. 1927-184.

*Distribution* : India : Uttar Pradesh, Himachal Pradesh and Sikkim.

*Remarks* : Widely distributed in Uttar Pradesh.

### Neoitamus Osten-Sacken

*Neoitamus* Osten-Sacken, 1878, *Smithson Misc. Colls.* 16 : 82, 235.

#### Key to Indian species of *Neoitamus* Osten-Sacken

- |    |                                                                                                                                                                                                      |     |                                       |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------|
| 1. | Hind femur uniformly reddish or black                                                                                                                                                                | ... | 2                                     |
|    | Hind femur not uniformly coloured                                                                                                                                                                    | ... | 7                                     |
| 2. | Fore femur reddish-yellow with a broad black stripe, scutellar disc yellow haired, basal five abdominal segments yellowish, mystax yellowish white                                                   | ... | <i>grandis</i> Ricardo                |
|    | Fore femur black, may be yellowish striped                                                                                                                                                           | ... | 3                                     |
| 3. | Thorax with mediolongitudinal stripe and three lateral spots which form lateral stripes ; femora black with yellow apex and tibiae yellow with black apex, mystax white surrounded by black bristles | ... | <i>inornatus</i> Ricardo              |
|    | Thorax with or without mediolongitudinal stripe but no lateral spots or stripes                                                                                                                      | ... | 4                                     |
| 4. | Epanthrium deeply cleft, wings infuscated at tip which extends posteriorly into the fifth posterior cell                                                                                             | ... | <i>barsilensis</i> Joseph and Parui   |
|    | Epanthrium without cleft                                                                                                                                                                             | ... | 5                                     |
| 5. | Fore and mid femora with a ventral row of pale yellow hairs, scutellum on disc pale yellow haired, wings infuscated distally which extends upto axillary cell                                        | ... | <i>calcuttaensis</i> sp. nov.         |
|    | Fore femur with a ventral row of black hairs and middle one with bristles of similar colour                                                                                                          | ... | 6                                     |
| 6. | Clasper obtuse with toothed apex, wings infuscated from base along the border upto axillary cell leaving medially hyaline, mystax straw coloured with some black bristles above                      | ... | <i>himalayensis</i> Joseph and Parui  |
|    | Clasper with a row of spines, wings infuscated distally and along hind border upto axillary cell, mystax golden yellow                                                                               | ... | <i>mussooriensis</i> Joseph and Parui |

- |    |                                                                                                                                                          |     |                                     |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------|
| 7. | Wings wholly infuscated, hind femur yellowish-brown with brown stripe on distal half, mystax uniformly pale yellow, clasper apically bears minute spines | ... | <i>grahami</i> sp. nov.             |
|    | Wings smoky towards tip which continues upto axillary cell or falls short of it                                                                          | ... | 8                                   |
| 8. | Tibia yellow except hind pair being black distally, abdominal tergites 1 to 3 yellow haired on sides and 4 to 5 with yellow bristles                     | ... | <i>bengalensis</i> Joseph and Parui |
|    | Tip of tibiae of different colour than the remainder                                                                                                     | ... | 9                                   |
| 9. | Femora and tibiae black with reddish-yellow apex, mystax dirty white with some black ones above                                                          | ... | <i>tropicus</i> Ricardo             |
|    | Femora yellowish with a black line anterodorsally, tibiae yellow with black tip, mystax black with some white bristles below                             | ... | <i>khasiensis</i> Bromley           |

18. *Neoitamus grahami* sp. nov.

(Fig. 4)

A medium sized black and grey species with yellowish-brown and brown legs, and completely infuscated wings. Male length 17 mm, wing 12 mm.

*Male* : *Head* broader than thorax, black with dense grey tomentum ; mystax pale yellow, fronto-orbital plate with pale yellow and black hairs, ocellar bristles black, postcranium pale yellow haired. Antennal segments 1 and 2 yellowish brown, remainder black, basal two segments with pale yellow and black bristles, segment 2 longer than two-thirds of 1, segment 3 longer than combined length of segments 1+2, style much longer than segment 3. Palpus dark brown whereas proboscis black, hairs of both pale yellow.

*Thorax* black, densely grey tomentose ; pronotal hairs pale yellow with a pair of black bristles laterally ; mesonotum with a faint medio-longitudinal black stripe divided by a narrow grey stripe, the stripe extends from the anterior end to midway between transverse suture and hind border, vestiture black but for a few pale yellow hairs on humerus, bristles black except for one or two pale yellow ones posterolaterally ; scutellum pale yellow haired, a large number of pale yellow bristles present on hind border and just anterior to it. Haltere pale yellow.

*Legs* yellowish brown and brown ; coxa, trochanter and tarsus brown, remainder yellowish brown with a broad brown stripe on femur, the stripe extends the entire length and is situated anteriorly and anterodorsally in fore and mid femora whereas it is restricted to slightly more than distal half and is present dorsally in hind femur, fore femur with a ventral row of bristles, mid and hind femora with anterior, anteroventral and posteroventral rows of bristles, vestiture predominantly pale yellow with some black hairs also, bristles black and pale yellow.

*Wing* almost wholly infuscated.

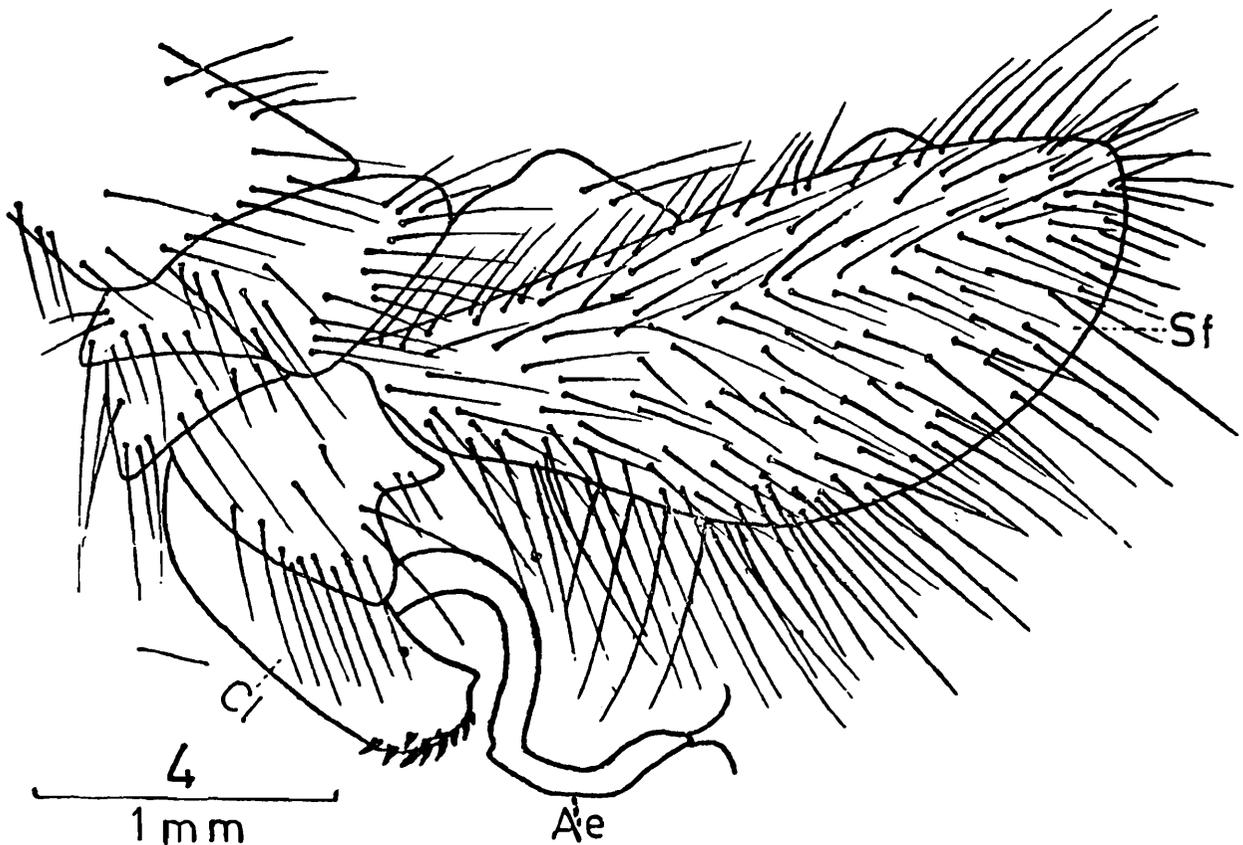


Fig. 4. *Neoitamus grahamsi* sp. nov., lateral view of male genitalia.

*Abdomen* black, sides grey and greyish-yellow tomentose, tergites 1-4 laterally with white hairs and bristles. Male genitalia (Fig. 4) black with golden yellow and black hairs, clasper apically with minute spines.

*Holotype* ♂, India : Uttar Pradesh : Naini Tal, 1920 m, 28.iii.1934, coll. J. A. Graham.

Of the various Indian species of *Neoitamus*, the present one is generally similar to *N. grandis* Ricardo from which it differs in the lighter colouration, wholly pale yellow mystax and the shape of epan-drium. This species is named after the collector.

#### ***Neoitamus bengalensis* (Joseph and Parui)**

*Astochia bengalensis* Joseph and Parui, 1981, *Oriental Ins.*, 15 (1) : 21.

*Neoitamus bengalensis* (Joseph and Parui), New Comb.

19. *Neoitamus calcuttaensis* sp. nov.

(Fig. 5)

A medium sized black species with grey tomentum, black and yellowish-brown legs and distally infuscated wings. Male : length 14 mm, wing 11 mm.

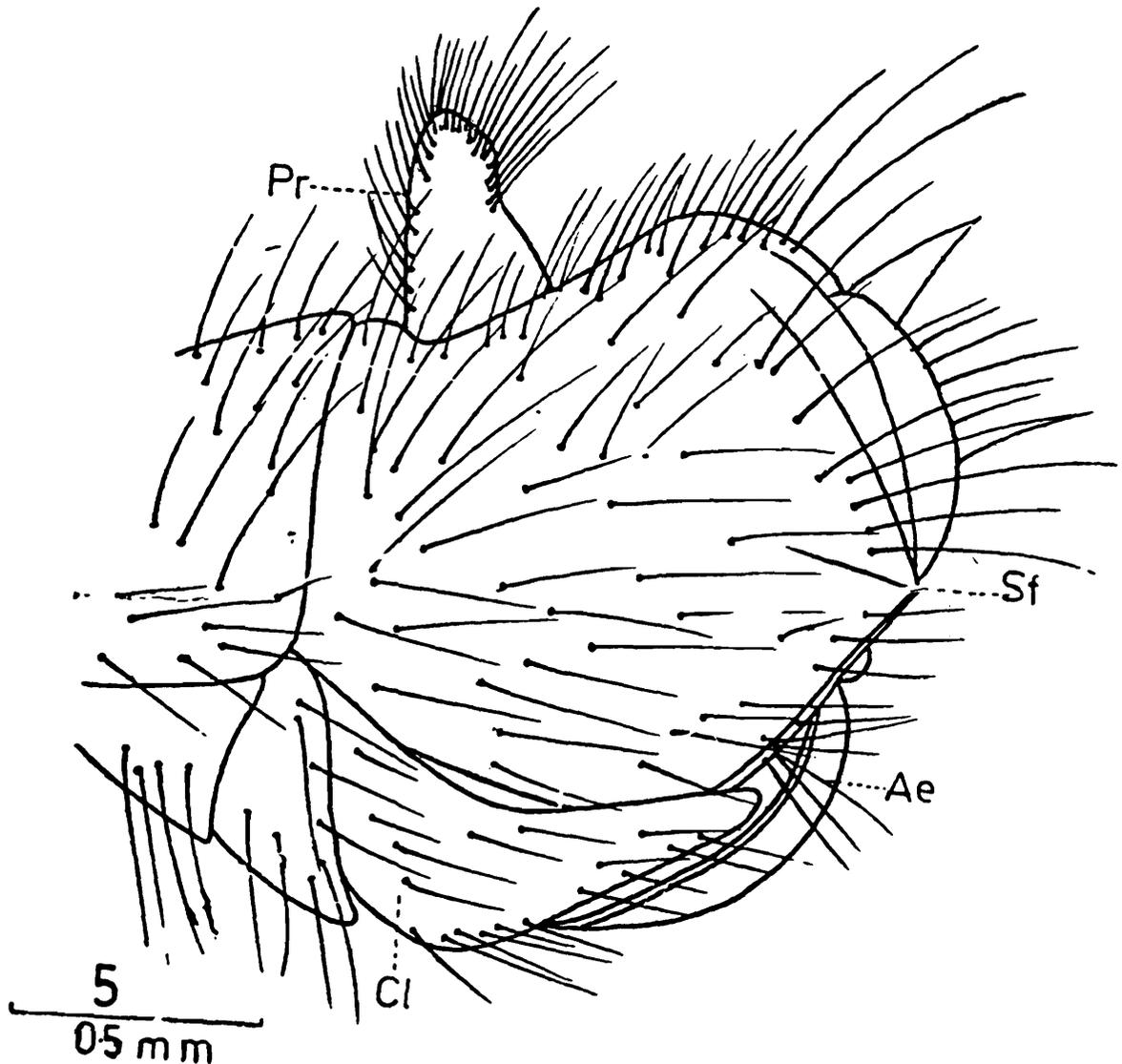


Fig. 5. *Neoitamus calcuttaensis* sp. nov., lateral view of male genitalia.

*Male* : *Head* broader than thorax, black, grey tomentose ; mystax white with a few black bristles above, fronto-orbital plate bearing black bristles, ocellar bristles black, postcranium black haired, postocular bristles black, postgena pale yellow haired. Antennae lost. Palpus and proboscis black, former black haired whereas latter pale yellow haired.

*Thorax* black, sparsely grey tomentose ; pronotal hairs pale yellow with a median transverse row of black bristles ; mesonotum with a mediolongitudinal black stripe divided by a narrow grey stripe, the stripe extending from anterior end to almost hind border, vestiture black but for some pale yellow hairs on humerus and on side, bristles

black ; scutellum with the disc pale yellow haired and hind border bearing four black bristles. Haltere yellowish-brown.

*Legs* black and yellowish-brown ; coxa, trochanter and femur black except tip of fore femur being yellowish-brown, tibia and tarsus yellowish-brown with a gradual deepening of colouration at the apex of tibia and tarsus from fore to hind legs so much so they are wholly dark brown in hind legs, fore and mid femora with a ventral row of pale yellow hairs, hind femur with anterior, anteroventral and posteroventral rows of bristles, vestiture and bristles pale yellow and black.

*Wings* infuscated distally, which extends posteriorly to the axillary cell.

*Abdomen* black, sparsely grey tomentose, tomentum forms a narrow hind border on tergites 3-5, tergites 1-5 laterally with white hairs and bristles, which decrease in number and size in posterior segments. Male genitalia (Fig. 5) black with a few pale yellow hairs.

*Holotype* ♂, India : West Bengal : Calcutta, 6.xi.1913, presented by E. Brunetti, B. M. 1927-184, no other details.

*Neoitamus calcuttaensis* sp. nov. is closely similar to *N. bengalensis* (Joseph and Parui) but differs that in the former the femora black except for an apical yellowish-brown marking of fore femur, and in the shape of epandrium.

## 20. *Neoitamus grandis* Ricardo

1919. *Neoitamus grandis* Ricardo, *Ann. Mag. nat. Hist.* (9) 3 : 61.

1960. *Cerdistus grandis* (Ricardo) : Lal, *Catalogue of Indian Insects Part 29-Asilidae : Diptera*, : 27.

1975. *Neoitamus grandis* Ricardo : Oldroyd, *A Catalog of Diptera of the Oriental Region 2* : 146.

*Material* : 1 ♂, India : Sikkim : Rangli Chu, 750 m, 29.iii.1924, coll. Maj. R. W. G. Hingston ; 1 ♂, Gangtok, 1600 m, 22.iv.1924, coll. Maj. R. W. G. Hingston.

*Distribution* : India : Uttar Pradesh and Sikkim ; Nepal.

*Remarks* : This is the first report of it from Sikkim.

## 21. *Neoitamus himalayensis* Joseph and Parui

1984. *Neoitamus himalayensis* Joseph and Parui, *Oriental Ins.* 18 : 64.

*Material* : 1 ♂, India : Himachal Pradesh : Simla, 7.vii.1918, coll. Brunetti, *Brit. Mus.* 1927-184.

*Distribution* : India : Himachal Pradesh.

*Remarks* : This is the second report of the species.

**22. *Neoitamus inornatus* Ricardo**

1919. *Neoitamus inornatus* Ricardo, *Ann. Mag. nat. Hist.* (9) 3 : 63.  
 1960. *Cerdistus inornatus* (Ricardo) : Lal, *Catalog of Indian Insects*, Part 29-Asilidae : Diptera, : 27.  
 1975. *Neoitamus inornatus* Ricardo : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 146.

**Material** : 1 ♂, India : Uttar Pradesh : Mussoorie, 4.v.1905, no other data, presented by *E. Brunetti*, B. N. 1927-184; 5 ♂, 3 ♀, Mussoorie, 1750 m, 20-26.v.1905, coll. *E. Brunetti*. 1 ♀, Mussoorie, 10.vi.1905, coll. *Brunetti*.

**Distribution** : India : Uttar Pradesh and Punjab.

**Remarks** : It is of common occurrence in Mussoorie.

**23. *Neoitamus mussooriensis* Joseph and Parui**

1984. *Neoitamus mussooriensis* Joseph and Parui, *Rec. zool. Surv. India*, Occ. paper No. 66 : 21.

**Material** : 1 ♂, India : Uttar Pradesh : Mussoorie, 1750 m, 20-24.vi.1905, coll. *Brunetti*.

**Distribution** : India : Uttar Pradesh.

**Remarks** : It is also from the type locality.

***Orophotus* Becker**

*Orophotus* Becker, 1925, *Ent. Mitt.* 14 : 137.

**24. *Orophotus montanus* (Ricardo)**

1922. *Asilus montanus* Ricardo, *Ann. Mag. nat. Hist.* (9) 10 : 47.  
 1960. *Heligmoneura montana* (Ricardo) : Lal, *Catalogue of Indian Insects* Part 29-Asilidae : Diptera, : 34.  
 1975. *Orophotus montanus* (Ricardo) : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 148.

**Material** : 1 ♂, India : Sikkim : Gangtok, 1250 m, 9.v.1924, coll. *B. W. G. Hingston*.

**Distribution** : India : Meghalaya, Sikkim and West Bengal.

**Remarks** : This is the first report from Sikkim.

***Philodicus* Loew**

*Philodicus* Loew, 1848, *Linn. Ent.* 3 : 391.

### 25. *Philodicus femoralis* Ricardo

1921. *Philodicus femoralis* Ricardo, *Ann. Mag. nat. Hist.* (9) 8 : 190.

1975. *Philodicus femoralis* Ricardo : Oldroyd, A catalog of Diptera of the Oriental Region, 2 : 149.

*Material* : 1 ♂, Calcutta, slaughter house, 6.xi.1913, no other data, presented by *E. Brunetti* to *B. M.* 1927-184 ; 1 ♂, 1 ♀, Bangla Desh : Dacca, 1.vii.1945, coll. *D. Liston*, *B. M.* 1945-86 ; 1 ♂, India, coll. *H. M. Parish*, no other data, *Brit. Mus.* 1923-247.

*Distribution* : India : Meghalaya, West Bengal, Bihar and Uttar Pradesh ; Burma.

*Remarks* : A very common species of the genus.

### 26. *Philodicus javanus* (Wiedemann)

1819. *Asilus javanus* Wiedemann, *Zool. Mag.* (Wied.). 1 (3) : 4.

1975. *Philodicus javanus* (Wiedemann) : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 149.

*Material* : 1 ♀, India : West Bengal : Calcutta, 30.v.1907 ; 1 ♀, Calcutta, 12.vi.1907 ; 1 ♂, Calcutta, 20.vi.1907 ; 1 ♀, Calcutta, 27.vi.1907 ; 1 ♂ Calcutta, 11.vii.1907 ; on other data. 1 ♂, Calcutta, 12.vi.1908, coll. *Brunetti*, *Brit. Mus.* 1927-184 ; 2 ♂, 2 ♀, Calcutta, 1-10.viii.1908 ; 1 ♂, Calcutta, presented by *E. Brunetti*, *B. M.* 1927-184 ; 1 ♂, Calcutta, Indian Mus. Calcutta colln ; no other data. 1 ♂, Bangla Desh : Dacca, 17.v.1945 ; 1 ♀, Dacca, 28.v.1945 ; 1 ♂, Dacca, 20.vii.1945 ; 1 ♀ Dacca, 13.viii.1945 ; all collected by *D. Leston*.

*Distribution* : It is the most common species of the genus in India.

### 27. *Philodicus pruthii* Bromley

1935. *Philodicus pruthii* Bromley, *Rec. Indian Mus.* 37 : 224.

1975. *Philodicus pruthii* Bromley : Oldroyd, A catalog of Diptera of the Oriental Region, 2 : 150.

*Material* : 1 ♂, India : Madhya Pradesh : Jabalpur, 4.vii.1907 ; 2 ♂, 1 ♀, Jabalpur, iv.1908, all collected by *C. G. Nurse*. 1 ♀, Tamil Nadu : Tinnevely : Dohnavur, 90 m, 4-7.iii.1936 ; 1 ♀, Tamil Nadu : Coonoor, 1500 m, 22-23.iv.1937 ; both collected by *B. M. C. M.* Expedition to South India.

*Distribution* : India : Madhya Pradesh and Tamil Nadu.

*Remarks* : This is the first record from Madhya Pradesh.

### *Promachus* Loew

*Promachus* Loew, 1848, *Linn. ent.* 3 : 390.

Key to Indian species of *Promachus* Loew  
(After Joseph and Parui, 1981)

- |     |                                                                                                                                                                             |     |                                       |    |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------|----|
| 1.  | Legs wholly black                                                                                                                                                           | ... | ...                                   | 2  |
|     | Legs not wholly black                                                                                                                                                       | ... | ...                                   | 9  |
| 2.  | Male genitalia with a tuft of white hairs, abdomen yellow haired, legs brownish, darker at apex and ventrally                                                               | ... | <i>nicobarensis</i> Schiner           |    |
|     | Tuft of hairs absent on male genitalia                                                                                                                                      | ... | ...                                   | 3  |
| 3.  | Each abdominal tergite with two black spots                                                                                                                                 | ... | ...                                   | 4  |
|     | Abdominal tergites with or without the usual black marking                                                                                                                  | ... | ...                                   | 5  |
| 4.  | Legs black with black bristles                                                                                                                                              | ... | <i>leucotrichodes</i> Bigot           |    |
|     | Legs black with white bristles                                                                                                                                              | ... | <i>tristis</i> Bigot                  |    |
| 5.  | Basal three or more abdominal tergites with tuft of reddish hairs                                                                                                           | ... | ...                                   | 6  |
|     | Similar tufts absent or restricted to first tergum                                                                                                                          | ... | ...                                   | 7  |
| 6.  | Eighth sternite produced with short black bristles on its border, an obscure streak present in the marginal and first submarginal cell                                      | ... | <i>duvaucelii</i> (Macquart)          |    |
|     | Eighth sternite not produced but with a tuft of black hairs, wings clear, femora and tibiae with long yellow hairs on underside                                             | ... | <i>binghamensis</i> Ricardo           |    |
| 7.  | Wings yellowish with brownish extremities, abdomen black with whitish segmentations, moustache yellowish                                                                    | ... | <i>westermanni</i> (Macquart)         |    |
|     | Wings uniformly yellowish                                                                                                                                                   | ... | ...                                   | 8  |
| 8.  | First posterior cell open, scutellum with pale yellow hairs and bristles on disc and a row of yellow bristles on margin, first abdominal tergum with tufts of reddish hairs | ... | <i>jabalpurensis</i> Joseph and Parui |    |
|     | First posterior cell closed, scutellum white haired, abdominal tergites without tufts of reddish hairs                                                                      | ... | <i>heteropterus</i> (Macquart)        |    |
| 9.  | Male genitalia with a tuft of white hairs                                                                                                                                   | ... | ...                                   | 10 |
|     | Male genitalia without such hairs                                                                                                                                           | ... | ...                                   | 17 |
| 10. | Femora entirely black                                                                                                                                                       | ... | ...                                   | 11 |
|     | Femora not entirely black                                                                                                                                                   | ... | ...                                   | 13 |
| 11. | Tibiae entirely reddish yellow, scutellum with orange red pubescence, the tuft of white hairs at the base of male genitalia                                                 | ... | <i>leoninus</i> Loew                  |    |
|     | Tibiae yellow to yellowish brown with black tip, scutellar pubescence not orange red, the tuft of white hairs at tip of male genitalia                                      | ... | ...                                   | 12 |

12. Eighth sternite of male genitalia well produced, scutellum on the disc pale yellow and black haired and on sides with a pair of black bristles ... *indicus* sp. nov.
- Eighth sternite of male genitalia not so produced, scutellum on the disc with only pale hairs and without bristles on sides ... *ramakrishnai* Bromley
13. Fore tibia reddish-yellow with black apex, moustache yellow, white hairs present on frons below antennae, mesonotum with four brown stripes ... *contractus* (Walker)
- Fore tibia entirely reddish-yellow ... 14
14. Fore femur red dorsally and black ventrally, palpi yellow haired, male genitalia with a tuft of white hairs ... *varipes* (Macquart)
- Fore femur uniformly reddish or with black apex ... 15
15. Scutellum reddish with white hairs, moustache yellow and black, first and second antennal segments red ... *calanus* (Walker)
- Scutellum brownish with pale hairs and black bristles, moustache wholly yellow ... 16
16. Eighth sternite distinctly produced, hind femur with an anterodorsal black stripe ... *fuscifemoratus* Joseph and Parui
- Eighth sternite not produced, hind femur uniformly reddish ... *maculatus* (Fabricius)
17. Oral aperture with some black bristles, mystax predominantly yellowish with a few black bristles, femora bearing long white hairs ventrally except for the hind pair with mixed black and white hairs ... *yerburiensis* Ricardo
- Oral aperture without black bristles, mystax predominantly black with a few yellow bristles, femora with thick yellowish pile and some black bristles and hairs ... *ghumtiensis* Bromley

## 28. *Promachus indicus* sp. nov.

(Fig. 6)

A large black species with grey and greyish-yellow tomentum, black and yellowish-brown legs and infuscated wings. Male length 28 mm, wing 15 mm ; female length 27 mm, wing 15 mm.

*Male* : *Head* broader than thorax, black, densely greyish-yellow and grey tomentose ; mystax pale yellow, fronto-orbital hairs pale yellow and black, ocellar bristles black, postcranium pale yellow, yellow and black haired, postocular bristles black above and pale yellow below. Antennae

lost from segment 3 onwards, remainder black with black bristles, segment 2 slightly more than half of 1. Palpi and proboscis black with pale yellow hairs.

*Thorax* black with grey and greyish-yellow tomentum; pronotum pale yellow haired but for a few black ones in middle, medially with a transverse row of black bristles; mesonotum with a black medio-longitudinal stripe extending from anterior end to midway between transverse suture and hind border, the stripe divided by a longitudinal narrow stripe which is faint medially, on either side with two black spots, bristles black; scutellum on the disc pale yellow and black haired, laterally with a pair of and on hind border with a row of black bristles, pleura moderately tomentose with pale yellow hairs. Haltere with brown head and pale yellow stalk.

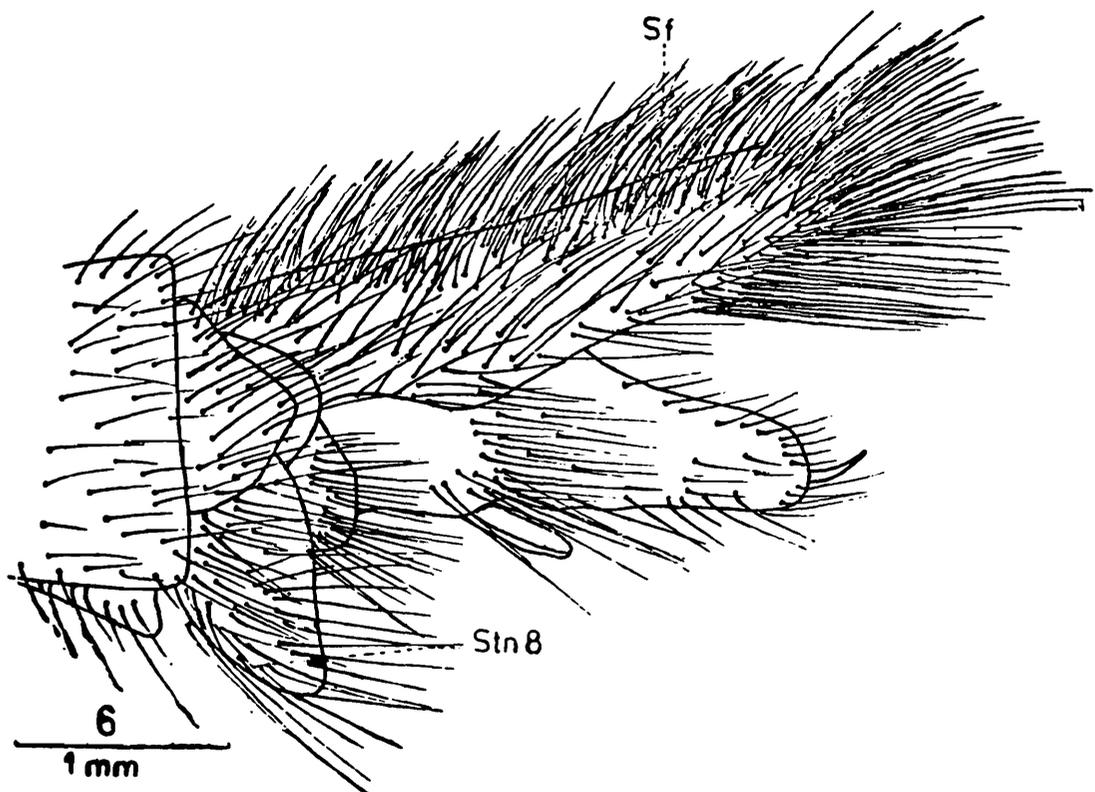


Fig. 6. *Promachus indicus* sp. nov., lateral view of male genitalia.

*Legs* black except for tibia which is yellowish-brown with apical black marking, fore femur with a ventral row of black bristles from base to beyond middle, mid femur with anteroventral and posteroventral rows of bristles, hind femur with anterior and anteroventral rows of bristles and ventrally bearing a row of thin long black hairs, vestiture black and pale yellow, bristles black.

*Wing* lightly infuscated, but medially and basally still lighter coloured, first submarginal cell with a grey streak.

*Abdomen* black with grey and greyish-yellow tomentum, each tergite medially black and laterally and posteriorly tomentose, tergite 1

laterally with dense golden yellow hairs, vestiture golden yellow and black, more or less in confirmity with the background of their origin. Male genitalia (Fig. 6) shining black, eighth sternite produced, hairs black, also with an apical tuft of white hairs.

*Female* : Similar.

*Holotype* ♂, India, B. M. 1934-394, coll. T. R. Bell, no other data.

*Paratype* ♀, data as in holotype.

It is closely similar to *Promachus ramakrishnai* Bromley from which it can be easily distinguished by the lack of paired, stout, elongate bristles on epandrium.

### 29. *Promachus duvaucelii* (Macquart)

1830. *Trupanea duvaucelii* Macquart, *Ditp. exot.*, 1 (2) : 97.

1975. *Promachus duvaucelii* (Macquart) : Oldroyd, *A Catalog of Diptera of the Oriental Region*, 2 : 152.

*Material* : 1 ♂, India : Uttar Pradesh : Dehra Dun, 30.ix.1913 ; 1 ♀, Dehra Dun, 1.x.1913 ; no other data.

*Distribution* : India : Gujarat, Punjab, Delhi, Uttar Pradesh, Madhya Pradesh and West Bengal.

*Remarks* : Most widely distributed species of the genus.

### SUMMARY

This paper deals with 29 species of Asilidae under 11 genera, of which 6 are new species : *Heligmoneura bengalensis* sp. nov., *H. incisularis* sp. nov., *H. tsacasi* sp. nov., *Neoitamus grahami* sp. nov., *N. calcuttaensis* sp. nov., and *Promachus indicus* sp. nov., *Astochia bengalensis* Joseph and Parui has been brought under *Neoitamus* Osten-Sacken. Key to species of genus is included under three genera, viz., *Heligmoneura* Bigot, *Neoitamus* Osten-Sacken and *Promachus* Loew, wherein new species are described.

Types are deposited in British Museum (Natural History) and Zoological Survey of India, Calcutta.

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## Abbreviations used in figures

Ae, aedeagus ; Cl, clasper ; Hy, hypandrium ; Pr, proctiger ; Sf, superior forceps (epandrium) ; Stn<sub>8</sub>, eighth sternite.

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