

**A REVIEW OF THE GENUS *EUTOMOSTETHUS* ENSLIN
(HYMENOPTERA: SYMPHYTA: TENTHREDINIDAE:
BLENNOCAMPINAE) FROM INDIA**

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ABSTRACT. - The genus *Eutomostethus* is reviewed for India. Ten new species are described: *E. gibbus*, *E. pullus*, *E. innotatus*, *E. inauratus*, *E. scutopunctatus*, *E. basilimpidus*, *E. carinoelatus*, *E. falcatus*, *E. vatsi* and *E. carinatus*. The only two previously known species, *E. hirticornis* (Rohwer) and *E. assamensis* (Rohwer), are redescribed. A key for separating the twelve Indian species is provided.

INTRODUCTION

The genus *Eutomostethus* was erected by Enslin (1914) on the basis of *Tenthredo luteiventris* Klug (1814) as its type species. Only two species under this genus had been reported from India. In this article twelve species are described and illustrated, including ten which are new to science. Holotypes presently in the collections of the authors will be submitted to the Indian Agricultural Research Institute, Pusa National Collections, New Delhi, India after this work is published. The abbreviations used in the text are: AMP = anterior part of median fovea, AWMT = apical width of metatibia, COF = circumocellar furrow, EL = eye length, FR = frontal ridge, IOF = interocellar furrow, IATS = inner apical tibial spur, ICD = inter cenchri distance, IDMO = interocular distance at the level of the median ocellus, ITD = inter tegular distance, LID = lower interocular distance, OATS = outer apical tibial spur, OCL = ocellooccipital line, POF = postocellar furrow, POL = postocellar line, PPM = posterior part of median fovea, UCL = oculooccipital line, UOL = oculoocellar line.

SYSTEMATICS

***Eutomostethus* Enslin, 1914**

Tomostethus subgenus *Eutomostethus* Enslin, 1914: 286; Malaise, 1934: 472; Berland, 1947: 247. *Eutomostethus* Enslin, Ross, 1937: 97; Benson, 1938: 367; Benson, 1940: 208; Ross, 1951: 63; Benson, 1952: 99; Takeuchi, 1952: 46; Lorenz and Kraus, 1957: 115; Smith, 1969: 99.

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Type: *Tenthredo luteiventris* Klug. Original designation *Tomostethus* subgenus *Atomostethus* Enslin, 1914: 287; Berland, 1947: 249; Ross, 1951: 97 (= *Eutomostethus* Enslin).

Type: *Tomostethopsis metallicus* Sato. Original designation. *E. Forsia* Malaise, 1932: 29; Takeuchi, 1952: 46 (*Eutomostethus* Enslin).

Type: *Forsia tomostethi* Malaise. Original designation.

Diagnosis. - Adult: Antenna short and stocky; second segment as wide as long; third segment longer than fourth segment. Clypeus truncate; postgenal carina well developed. Postorbital groove indistinct; malar space linear or absent. Prepectus present as raised shoulder, separated from mesepisternum by furrow. Tarsal claw simple or with small inner tooth. Foretibial spur simple, not furcate at apex. Forewing with stub of 2A+3A curved up at apex. Hindwing with crossvein m-cu present or absent, leaving cell M open or closed.

KEY TO EUTOMOSTETHUS SPECIES

1. Thorax mainly auratus 2
- Thorax entirely black 3
2. Upper 3/4 of mesopleuron auratus; hind orbits not carinated; antennal segments 3 and 4 as 4:3; postocellar area broader than long as 3:2; postocellar furrow shallow; posterior 1/3 of median fovea uneven with some irregular longitudinal ridges *E. hirticornis* (Rohwer, 1913)
- Upper 1/2 of mesopleura auratus; hind orbits carinated; antennal segments 3 and 4 as 2:1; postocellar area broader than long as 4:3; postocellar furrow distinct; posterior 1/2 of median fovea with a rounded protuberance in its centre *E. gibbus*, new species
3. Legs entirely black or piceous 4
- Legs with some broad white or whitish yellow markings 5
4. Posterior border of mesoscutellum with deep, distinct, isolated punctures; lateral furrows excurved (bulging); circumocellar furrow absent *E. pullus*, new species
- Posterior border of mesoscutellum smooth, shining and without punctures; lateral furrows parallel; circumocellar furrow present *E. innotatus*, new species
5. Abdomen entirely black 6
- Abdomen mainly auratus except propodeum and last tergite *E. inauratus*, new species
6. Hind orbits carinated 7
- Hind orbits not carinated 8
7. Wings infumated; supraclypeal area raised; lateral furrows parallel; POL:OCL:UOL:UCL = 4:3:4:2 *E. scutopunctatus*, new species
- Only apical halves of wings infumated; supraclypeal area almost flat; lateral furrows excurved (bulging); POL:OCL:UOL:UCL = 2:2:2:1 *E. basilimpidus*, new species
8. Lateral furrows parallel 9
- Lateral furrows excurved (bulging) 11
9. Postocellar area broader than long as 3:2; supra-antennal pit almost rounded with a small protuberance in its centre; anterior part of median fovea having middle longitudinal carina; POL:OCL:UOL:UCL = 4:4:4:3 *E. assamensis* (Rohwer, 1913)
- Postocellar area broader than long as 2:1; supra-antennal pit ditch-like or crescent shaped in outline, without any protuberance; anterior part of median fovea having flat bottom; POL:OCL:UOL:UCL = 4:4:5:3 10
10. Clypeus truncate with a slight median notch; supra-antennal pit ditch-like; triangular supraclypeal area raised with blunt medial carina; circumocellar furrow sharp and distinct *E. carinoelatus*, new species

- Clypeus truncate without median notch; supraantennal pit deep, crescent-shaped in outline; triangular supra-clypeal area feebly raised without carina; circumocellar furrow shallow
..... *E. falcatus*, new species
- 11. Supraantennal pit crescent-shaped in outline; post-ocellar furrows shallow; clypeus with a shallow median notch; postocellar area broader than long as 3:2 *E. vatsi*, new species
- Supraantennal pit rounded with a central protuberance; postocellar furrow distinct; clypeus without median notch; postocellar area broader than long as 2:1 *E. carinatus*, new species

***Eutomostethus hirticornis* (Rohwer, 1913)**

(Figs. 1, 4, 10, 29, 40)

Tomostethus hirticornis Rohwer, 1913; 240.

Eutomostethus hirticornis Rohwer, 1915: 52 - 53

Material. - Specimens on gift basis: 2 females determined by D.R. Smith, USNM; bearing labels as *E. hirticornis* (Rohwer), Shillong, (Assam), 1500 m, 26 Jun.1938. - Specimens: India, Meghalaya, 2 females, Elephant Falls (Shillong), 1450 m, coll. M. S. Saini, 25 May.1986. - Nagaland, 12 females, Kohima, 1500 m, coll. V. Vasu, 13 Sep.1992; 12 females, Zunheboto, 1850 m, coll. V. Vasu, 18 Sep.1992; 7 females, coll. V. Vasu, 16 May.1993; 2 females, Pfutsero, 2000 m, coll. V. Vasu 19 May.1993. - Manipur, 45 females, Ukhrul, 1700 m, coll. V. Vasu, 22-25 Sep.1992. - Mizoram, 1 female, Aizawal, 1600 m, coll. V. Vasu, 14 May.1993; 4 females, Lungli, 1500 m, coll. V. Vasu, 17 May.1993.

Female. - Colour: Body black, auratus are: pronotum; mesonotum; tegula; mesoscutellum except posterior slope; upper 3/4 of mesopleuron. Whitish yellow with a brownish tinge are: extreme apices of all femora; broad outer sides of all tibiae except extreme apices; rest of the parts of all legs black. Wings infumated; venation including costa, subcosta and stigma piceous.

Structure: Average length 4.5 mm. Antenna 1.3x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 4:3; clypeus truncate (Fig. 1); labrum broader than long as 2:1, with slightly deflexed rounded anterior margin; supraclypeal area feebly raised; LID:IDMO:EL = 2:3:2; hind orbits not carinated; supraantennal pit broad, shallow, almost rounded; frontal area above the level of the eyes; supraantennal tubercles moderate and confluent with roundly raised distinct frontal ridges; median fovea distinct and divisible into 2 parts by a transverse horizontal ridge of height of frontal ridges (Fig. 40); anterior 1/2 of median fovea almost squarish, open anteriorly, shallow with flat bottom; posterior 1/2 of median fovea having uneven bottom, characteristically carved with some irregular longitudinal ridges; postocellar area convex, broader than long as 3:2; postocellar furrow shallow; inter- and circumocellar furrows sharp and distinct; lateral furrows quite distinct, deep, parallel and almost reaching hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:4:5:3; mesoscutellum subconvex; appendage neither carinated nor grooved; ICD:ITD = 1:6; tarsal claw (Fig. 4) with a subapical tooth distinctly shorter than apical one and a minute indisinct basal lobe closely appressed to the base; metabasitarsus longer than following 3 joints combined as 6:5; IATS:AWMT:OATS = 5:4:5. Lancet (Fig. 29) having 17 serrulae. Ovipositor sheath, Fig. 10 (lateral View).

Sculpture and pubescence: Head almost impunctate except for a few very minute punctures intermingled with insignificant longitudinal ridges on frontal area, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, shining. Body covered with silvery pubescence.

Male. - Not found.

Holotype depository. - Female, Indian Museum, Calcutta.

Population variation. - Not observed.

Distribution. - India: Meghalaya, Nagaland, Manipur, Mizoram.

***Eutomostethus gibbus*, new species**

(Figs. 5, 9, 30, 41)

Material. - Holotype: India - Arunachal Pradesh, female, Dirang, 1500m, coll.V.Vasu, 19 Sep.1992.

Paratypes: India - Arunachal Pradesh, 3 females, Dirang, 1500 m, coll.V.Vasu, 15-19 Sep.1992; 1 female, coll.V.Vasu, 27 May.1993.

Female. - Colour: Body black, auratus are: pronotum; mesonotum; tegla; mesoscutelum except posterior slope; upper 1/2 of mesopleuron. Whitish are: extreme apices of all femora; outside of protibia; meso- and metatibiae except their extreme apices; rest of parts of all legs piceous. Wings infumated; venation including costa, subcosta and stigma piceous.

Structure: Average length 6.5 mm. Antenna subincrassate in middle, 1.4x head width; scape and pedicel as long as broad; segment 3 longer than 4 as 2:1; clypeus truncate (Fig. 1); labrum broader than long as 3:2, with deflexed rounded anterior margin having a slight median notch; supraclypeal area feebly raised; LID:IDMO:EL = 3:4:3; hind orbits carinated; supraantennal pit deep, broad, pit-like; frontal area almost at the level of eyes; supraantennal tubercles moderate and confluent with similar frontal ridges; median fovea distinct and partly divisible into low lying anterior and raised posterior halves (Fig. 41); anterior 1/2 of median fovea almost circular, opened anteriorly and posteriorly, having flat bottom with distinct pit of diameter of lateral ocellus in its posterior end; posterior 1/2 of median fovea having uneven bottom, characteristically carved with a small rounded protuberance in its middle; postocellar area convex, broader than long as 4:3; post-, inter- and circumocellar furrows distinct; lateral furrows quite distinct, deep, excurved and almost reaching hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:5:4:3; mesoscutellum flat; appendage neither carinated nor grooved; ICD:ITD = 1:9; tarsal claw (Fig. 5) with a subapical tooth distinctly shorter than apical one and minute indistinct basal lobe closely appressed to base; metabasitarsus longer than following 3 joints combined as 8:7; IATS:AWMT:OATS = 4:3:5. Lancet (Fig. 30) having 22 serrulae. Ovipositor sheath, Fig. 9 (lateral view).

Sculpture and pubescence: Head almost impunctate except for a few, very minute punctures on frontal area, surface shining; thorax impunctate except for a transverse row of few isolated punctures on posterior slope of mesoscutellum, surface smooth and shining. Body covered with silvery pubescence.

Male. - Not found.

Population variation. - Not observed.

Distribution. - India: Arunachal Pradesh.

Etymology. - The name refers to a small rounded protuberance in the middle of posterior half of the median fovea.

***Eutomostethus pullus*, new species**

(Figs. 6, 11, 31, 42)

Material. - Holotype: India- West Bengal, female, Pashok, 2000 m, Coll.M.S. Saini, 22 May.1989.

Female. - Colour: Body black, legs black. Wings infumated; venation including costa, subcosta and stigma black.

Structure: Length 5.5 mm. Antenna subincrossating towards apex, 1.5x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate (Fig. 1); labrum broader than long as 2:1, with deflexed, rounded anterior margin, having a slight median notch; triangular supraclypeal area feebly raised without carina; LID:IDMO:EL = 4:5:3; hind orbits not carinated; supraantennal pit deep, ditch-like; frontal area at the level of eyes; supraantennal tubercles moderate and confluent with similarly raised frontal ridges; median fovea distinct and divisible into two parts by a transverse horizontal ridge of height of frontal ridges (Fig. 42); anterior 2/3 of median fovea almost rounded, deep, having uneven bottom with a distinct longitudinal carina; posterior 1/3 of median fovea having uneven bottom, characteristically carved with pits in front of median ocellus; postocellar area flat, broader than long as 2:1; postocellar furrow shallow; interocellar furrow sharp and distinct; circumocellar furrow absent; lateral furrows distinct, deep, excurved and abruptly ending just before hypothetical hind margin of head; head parallel behind eyes; POL:OCL:UOL:UCL = 4:3:5:2; mesoscutellum almost flat without carina; appendage neither carinated nor grooved; ICD:ITD = 1:6; tarsal claw (Fig. 6) with a subapical tooth smaller than apical one and without basal lobe; metabasitarsus shorter than following 3 joints combined as 8:9; IATS:AWMT:OATS = 1:1:1. Lancet (Fig. 31) having 24 serrulae. Ovipositor sheath, Fig. 11 (lateral view).

Sculpture and pubescence: Head almost impunctate except for a few, very minute punctures on frontal area, surface dull; thorax impunctate except for a transverse row of few, isolated punctures on posterior slope of mesoscutellum, surface smooth and shining with general oily lustre; abdomen impunctate, subshining. Body covered with a mixed blackish and silvery pubescence.

Male. - Not found.

Distribution. - India: West Bengal.

Etymology. - The species name refers to the absolute black colour of the body.

***Eutomostethus innotatus*, new species**

(Figs. 13, 21, 43)

Material. - Holotype: India - Arunachal Pradesh, 1 male, Dirang, 1500 m, coll. V. Vasu, 11 May.1992.

Paratypes: India - Arunachal Pradesh, 9 males, Dirang, 1500 m, coll.V.Vasu, 10-11 May.1992; 7 males, coll.V.Vasu, 15-19 Sep.1992; 4 males, coll.V.Vasu, 27-28 May.1993; 1 male, Tawang, 3000 m, coll.V.Vasu, 21 Sep.1992; 5 males, Sessa, 1100 m, coll. V.Vasu, 23 May.1993. - Sikkim, 8 males, Gangtok,1550 m, coll.V.Vasu, 14 May.1993; 2 males, Namchi, 1600 m, coll.V.Vasu, 18 May.1993. - West Bengal, 5 males, Kalimpong, 1100 m, coll. V.Vasu, 21 May.1993.

Male. - Colour: Body black, legs piceous. Wings infumated; venation including costa, subcosta and stigma black.

Structure: Average length 5 mm. Antenna 1.5x head width; scape as long as broad; pedicel as long as its apical width; antennal segment 3 longer than 4 as 3:2; clypeus truncate (Fig. 1); labrum broader than long as 2:1, with deflexed rounded anterior margin; supraclypeal area almost flat; LID:IDMO:EL = 2:3:2; hind orbits not carinated; supraantennal pit deep, crescent shaped in outline; frontal area at the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with low lying frontal ridges; median fovea distinct and divisible into two parts by a transverse horizontal ridge of height of frontal ridges (Fig. 43); anterior 1/2 of median fovea almost squarish, having flat bottom with a medial longitudinal carina; posterior 1/2 of median fovea shallow with uneven bottom and characteristically carved with pits in front of median ocellus; postocellar area convex, broader than long as 3:2; post-, inter- and circumocellar furrows sharp and distinct; lateral furrows quite distinct, deep, parallel and reaching hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:3:5:2; mesoscutellum almost flat; appendage neither carinated nor grooved; ICD:ITD = 1:6; tarsal claw (Fig. 4) with a subapical tooth distinctly shorter than apical one and a minute basal lobe closely appressed to the base; metabasitarsus longer than following 3 joints combined as 6:5; IATS:AWMT:OATS = 4:7:4. Male genitalia: Penis valve (Fig. 13), gonoforceps (Fig. 21).

Sculpture and pubescence: Head almost impunctate except dense, minute punctures on frontal area, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, subshining. Body covered with a mixed blackish and silvery pubescence.

Female. - Not found.

Population variation. - Not observed.

Distribution. - India: Arunachal Pradesh, Sikkim, West Bengal.

Etymology. - The species name refers to the unicolour body.

***Eutomostethus inauratus*, new species**

(Figs. 2, 12, 34, 44)

Material. - Holotype: India - Manipur, female, Ukhrul, 1700m, coll.V.Vasu, 23 Sep.1992.

Female. - Colour: Body black, stramineous are: distal tips of meso- and metacoxae; metatrochanter; apical tips of all femora; posterior sides of tibiae and basitarsi of prolegs; tibiae and basitarsi of meso- and metalegs; rest of parts of all legs light to dark brown. Aured areas: abdominal segments 2-7; lateral sides of tergite 8; sternites entirely. Wings faintly uniformly infumated; costa and subcosta black; stigma and rest of venation piceous.

Structure: Length 5.5 mm. Antenna incrassating towards apex, 1.5x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate with broad, median notch (Fig. 2); labrum broader than long as 2:1, with slightly deflexed and bluntly rounded anterior end; triangular supraclypeal area feebly raised without any carina; LID:IDMO:EL = 7:8:7; hind orbits carinated; frontal area slightly above the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with similar frontal ridges; median fovea distinct and partly divisible into low lying anterior and raised posterior parts (Fig. 44); anterior part of median fovea, almost rounded, having flat bottom; posterior part of median fovea shallow, gradually very faintly depressed towards its centre, having uneven bottom; postocellar area convex, broader than long as 2:1; post- and interocellar furrows distinct; circumocellar furrow absent; lateral furrows quite distinct, deep, almost parallel and abruptly ending just before hypothetical posterior margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:3:4:2; mesoscutellum convex; appendage neither grooved nor carinated; ICD:ITD = 1:8; tarsal claw (Fig. 6) with a subapical tooth smaller than apical one, basal lobe absent; metabasitarsus longer than following 3 joints combined as 5:4; IATS:AWMT:OATS = 1:1:1. Lancet (Fig. 34) with 22 serrulae. Ovipositor sheath, Fig. 12 (lateral view).

Sculpture and pubescence: Head impunctate, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, shining. Body covered with silvery pubescence except auratus and stramineus parts where it is golden.

Male. - Not found.

Distribution. - India: Manipur.

Etymology. - The species name refers to the extensive golden yellow colouration of the abdomen.

Eutomostethus scutopunctatus, new species

(Figs. 7, 14, 22, 45)

Material. - Holotype: India - Meghalaya, female, Elephant Falls (Shillong) 1450 m, coll. V. Vasu, 1 Sep.1993.

Paratypes: India- Arunachal Pradesh, 1 male, Bomdila, 2550 m, coll. M. S. Saini, 31 May 1989; 1 male, Dirang, 1500 m, coll. V. Vasu, 11 May.1992.

Female. - Colour: Body black, whitish yellow are: extreme apices of meso- and metacoxae; mesotrochanter more or less; metatrochanter; extreme apex of profemur; apical 1/3 of mesofemur; apical 1/2 of metafemur; broad outer side of protibia except extreme apex; meso- and metatibiae; outside of probasitarsus; mesobasitarsus and following one joint; metabasitarsus except apical ring. Wings hyaline; venation including costa, subcosta and stigma piceous.

Structure: Average length 6.5 mm. Antenna incrassating towards apex, 1.5x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate (Fig. 1); labrum broader than long as 2:1, with deflexed rounded anterior margin; triangular supraclypeal area feebly raised; LID:IDMO:EL = 3:4:3; hind orbits carinated; supraantennal pit shallow, almost rounded and with a small medial protuberance; frontal

area at the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with low lying insignificant frontal ridges; median fovea distinct and divisible into low lying anterior and raised posterior parts (Fig. 45); anterior part of median fovea almost rounded, deep, having flat bottom with a pit in its posterior end; posterior half of median fovea laterally raised and gradually very faintly depressed more or less towards its centre and having a pit in front of median ocellus; postocellar area subconvex, broader than long as 2:1; postocellar furrow shallow; interocellar furrow sharp and distinct; circumocellar furrow indistinct; lateral furrows quite distinct, deep, parallel and abruptly ending well before hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:3:4:2; mesoscutellum almost flat; appendage neither carinated nor grooved; ICD:ITD = 1:6; tarsal claw (Fig. 7) with a subapical tooth shorter than apical one and without basal lobe; metabasitarsus subequal to following 3 joints combined as 9:8; IATS:AWMT:OATS = 4:5:4. Lancet (Fig. 35) having 21 serrulae. Ovipositor sheath, Fig. 11 (lateral view).

Sculpture and pubescence: Head impunctate, surface shining; thorax impunctate except posterior slope of mesoscutellum that bears a few, isolated, shallow punctures, surface shining with general oily lustre; abdomen impunctate, shining. Body covered with silvery pubescence.

Male. - Average length 4.5 mm. Similar to female. Male genitalia: Penis valve (Fig. 14), gonoforceps (Fig. 22).

Population variation. - Not observed.

Distribution. - India: Meghalaya, Arunachal Pradesh.

Etymology. - The species name refers to the punctures on the posterior slope of mesoscutellum.

***Eutomostethus basilimpidus*, new species**

(Figs. 16, 23, 36, 46)

Material. - Holotype: India- Arunachal Pradesh, female, Dirang, 1500 m, coll. V. Vasu, 28 May.1993.

Paratypes: India - Himachal Pradesh, 2 females, Kalatop, 2400 m, coll. M.S. Saini, 9 Aug.1982.- Uttar Pradesh, 1 female, Chopta, 3000 m, coll. M.S.Saini, 19 June.1987; 1 female, Shyamkhet, 1750 m, coll. V. Vasu, 21 Jun.1991. - Arunachal Pradesh, 2 females, Bomdila, 2550 m, coll. M.S. Saini, 1 Jun.1989; 1 male, Dirang, 1500 m, coll. V. Vasu, 19 Sep.1991; 1 male, coll. V. Vasu, 11 May.1992.- West Bengal, 1 female, Darjeeling, 2250 m, coll. M.S. Saini, 31 May.1989.

Female. - Colour: Body black, whitish are: tegula; apical 1/2 of mesocoxa; apical 2/3 of metacoxa; pro- and mesotrochanters and adjacent parts of femora; apices of all femora; outer side of protibia; meso- and metatibiae; all tarsi more or less; rest of parts of all legs piceous. Wings hyaline except infumated apical halves; venation including costa, subcosta and stigma black.

Structure: Average length 6.0 mm. Antenna incrassating towards tip, 1.4x head width; scape 1/2 of its apical width; pedicel slightly longer than its apical width; segment 3 longer than 4 as 4:3 clypeus truncate (Fig. 1); labrum broader than long as 3:1, with deflexed rounded

anterior margin; supraclypeal area almost flat, without carina; LID:IDMO:EL : 3:4:3; hind orbits carinated; supraantennal pit broad and oval with a small protuberance in its centre; frontal area almost at the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with low lying frontal ridges; median fovea distinct, divisible into two parts by a horizontal transverse ridge of height of frontal ridges (Fig. 46); anterior 1/2 of median fovea almost rounded, shallow with flat bottom; posterior 1/2 of median fovea shallow, gradually very faintly depressed towards its centre, having a small pit in front of median ocellus; postocellar area convex, broader than long as 2:1; postocellar furrow shallow; interocellar furrow sharp and distinct; circumocellar furrow indistinct; lateral furrows distinct, deep, excurved and abruptly ending just before hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 2:2:2:1; mesoscutellum subconvex; appendage with faint middle longitudinal carina; ICD:ITD = 1:7; tarsal claw (Fig. 5) with a subapical tooth distinctly shorter than apical one and a minute basal lobe closely appressed to base; metabasitarsus longer than following 3 joints combined as 6:5; IATS:AWMT:OATS = 1:1:1. Lancet (Fig. 36) having 21 serrulae. Ovipositor sheath, Fig. 12 (lateral view).

Sculpture and pubescence: Head and thorax impunctate, except posterolateral slope of mesoscutellum that bears a few, shallow isolated punctures, surface smooth and shining with general oily lustre; abdomen impunctate, shining. Body covered with silvery pubescence.

Male. - Average length 5 mm. Similar to female except: tegula black. Male genitalia: Penis valve (Fig. 16), gonoforceps (Fig. 23).

Population variations. - Parapterum may be whitish yellow to piceous; tarsi of all legs may be whitish yellow to light brownish.

Distribution. - India: Arunachal Pradesh, Himachal Pradesh, Uttar Pradesh, West Bengal.

Etymology. - The species name refers to the hyaline basal half of forewing.

Eutomostethus assamensis (Rohwer, 1913)

(Figs. 8, 17, 24, 37, 47)

Tomostethus assamensis Rohwer, 1913: 241.

Eutomostethus assamensis Rohwer, 1915: 52.

Material. - Specimens on loan basis: 1 male, labelled as *Tomostethus (Eutomostethus) assamensis* Rohwer, Kurseong, 5000 ft., East Himalaya, 8 Jul.1908, Ind. Mus. 4622/19; 1 female determined by Dr. D. R. Smith and labelled as *Eutomostethus assamensis* Rohwer, Darjeeling, 7000 ft., 26 May.1910, Ind. Mus. Calcutta; 1 female, labelled as *Tomostethus (Eutomostethus) assamensis* Rohwer, Darjeeling, 7000 ft., 25 May.1919, Ind. Mus. Calcutta, 4073/9. Specimens collected: India - Arunachal Pradesh, 1 male, Old Zero, 1500 m, coll. V. Vasu, 16 May.1992; '70 males, Hapoli, 1500 m, coll. V. Vasu, 14-19 May.1992; 35 males, Jorum Top, 2000 m, coll. V. Vasu, 29 May.1992. - West Bengal, 4 females, 1 male, Darjeeling, 2250 m, coll. V. Vasu, 7 May.1993; 1 female, Ghoom, 2100 m, coll. V. Vasu, 8 May.1993. - Meghalaya, 1 female, Smit, 1500 m, coll. V. Vasu, 5 Sep. 1993. - Sikkim, 5 females, Gangtok, 1550 m, coll. V. Vasu, 18 Sep.1993.

Female. - Colour: Body black, whitish yellow are: extreme apices of all femora; outer side of protibia except extreme apex; meso- and metatibiae except their apical tips; basal 2/3 of metabasitarsus more or less; rest of parts of all legs piceous. Wings infumated; venation including costa, subcosta and stigma piceous.

Structure: Average length 5.0 mm. Antenna incrassating before apex, 1.3x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate with shallow median notch (Fig. 2); labrum broader than long as 3:2, with deflexed rounded anterior margin; triangular supraclapeal area feebly raised; LID:IDMO:EL = 3:4:3; hind orbits not carinated; supraantennal pit shallow, broad, rounded with a small central protuberance; frontal area at the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with low lying frontal ridges; median fovea distinct and divisible into low lying anterior and raised posterior parts (Fig. 47); anterior 1/2 of median fovea almost rounded, having flat bottom with a median longitudinal carina; posterior 1/2 of median fovea having uneven bottom, characteristically carved with pits in front of median ocellus; postocellar area convex, broader than long as 3:2; post- and circumocellar furrows shallow; interocellar furrow sharp and distinct; lateral furrows quite distinct, deep, parallel and abruptly ending just before hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:4:4:3; mesoscutellum subconvex; appendage neither carinated nor grooved; ICD:ITD: = 1:6; tarsal claw (Fig. 8) with a subapical tooth shorter than apical one and an indistinct basal lobe closely appressed to base; metabasitarsus equal to following 3 joints combined; IATS:AWMT:OATS = 1:1:1. Lancet (Fig. 37) having 17 serrulae. Ovipositor sheath, Fig. 10 (lateral view).

Sculpture and pubescence: Head and thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, shining. Body covered with silvery pubescence.

Male. - Average length 4.0 mm. Similar to female except: inner aspects of mesotibia and metabasitarsus which are piceous. Male genitalia: Penis valve (Fig. 17), gonoforceps (Fig. 24).

Holotype depository. - Male, Indian Museum, Calcutta.

Paratype depository. - No.

Population variation. - Not observed.

Distribution. - India: Arunachal Pradesh, West Bengal, Meghalaya, Sikkim.

***Eutomostethus carinoelatus*, new species**

(Figs. 3, 18, 25, 38, 48)

Material. - Holotype: India - Meghalaya, Female, Shillong, 1500 m, coll. V. Vasu, 30 Aug.1993.

Paratypes: India - Arunachal Pradesh, 5 females, Bomdila, 2550 m, coll. V. Vasu, 8 May.1992; 2 females, 1 male, Dirang, 1500 m, coll. V. Vasu, 10 May.1992. - Manipur, 3 females, 3 males, Ukhrul, 1700 m, coll. V. Vasu, 22 Sep.1992. - West Bengal, 2 females, Tiger Hills, (Darjeeling), 2700 m, coll. V. Vasu, 8 May.1993.- Meghalaya, 4 males, Shillong, 1500 m, coll. V. Vasu, 13 Sep.1993; 2 females, Smit, 1500 m, coll. V. Vasu, 15 Sep.1993. - Sikkim, 3 females, Gangtok, 1550 m, coll. V. Vasu, 18 Sep.1993.

Female. - Colour: Body black, whitish yellow are: extreme apices of all femora; outer side of pro- and mesotibiae more or less except their extreme apices; metatibia except apex; rest of parts of all legs piceous. Wings infumated; venation including costa, subcosta and stigma piceous.

Structure: Average length 5 mm. Antenna subincrassate in middle, 1.4x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate with a slight median notch (Fig. 3); labrum broader than long as 3:2, with deflexed rounded anterior margin; triangular supraclypeal area feebly raised without carina; LID:IDMO:EL = 3:4:3; hind orbits not carinate; supraantennal pit shallow and ditch-like; frontal area almost at the level of eyes; supraantennal tubercles moderate and confluent with roundly raised frontal ridges; median fovea distinct, divisible into two part by a transverse horizontal ridge of height of frontal ridges (Fig. 48); anterior 1/2 of median fovea almost rounded, shallow, having flat bottom; posterior 1/2 of median fovea having uneven bottom, with a small pit encircling median ocellus; postocellar area broader than long as 2:1; post-, inter- and circumocellar furrows sharp and distinct; lateral furrows quite distinct, deep, parallel and ending abruptly just before hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:4:5:3; mesoscutellum subconvex; appendage neither carinated nor grooved; ICD:ITD = 1:8; tarsal claw (Fig. 4) with a subapical tooth distinctly shorter than apical one and a minute indistinct basal lobe closely appressed to base; metabasitarsus equal to following 3 joints combined; IATS:AWMT:OATS = 4:5:4. Lancet (Fig. 38) having 17 serrulae. Ovipositor sheath, Fig. 12 (lateral view).

Sculpture and pubescence: Head almost impunctate, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, subshining. Body covered with silvery pubescence.

Male. - Average length 4 mm. Similar to female. Male genitalia: Penis valve (Fig. 18), gonoforceps (Fig. 25).

Population variation. - Not observed.

Distribution. - India: Meghalaya, Arunachal Pradesh, Manipur, West Bengal, Sikkim.

Etymology. - The species name refers to a peculiar carina on the raised supraclypeal area.

***Eutomostethus falcatus*, new species**

(Figs. 15, 26, 39, 49)

Material. - Holotype: India - West Bengal, female, Darjeeling, 2200 m, coll. V. Vasu, 7 May.1993.

Paratypes: India - Meghalaya, 3 females, 3 males, Smit, 1500 m, coll. V. Vasu, 20 May.1989; 2 females, 12 males, Shillong, 1450 m, coll. V. Vasu., 25 May.1992; 2 females, 4 males, Elephant Falls (Shillong), 1450 m, coll. V. Vasu, 26 May.1992. - Arunachal Pradesh, 1 female, Bomdila, 2550 m, coll. M. S. Saini, 31 May.1989; 2 females, 6 males, Hapoli, 1500 m, coll. V. Vasu, 17 May.1992; 2 males, Jorum Top, 2000 m, coll. V. Vasu, 25 May.1992. - Manipur, 3 males, Ukhrul, 1700 m, coll. V. Vasu, 22 Sep.1992. - West Bengal, 9 females, 12 males, Darjeeling, 2200 m, coll. V. Vasu, 7 May.1993, 3 males, coll. V. Vasu, 11 Sep.1993; 1 female, 1 male, Tiger Hills, 2700 m, coll. V. Vasu, 8 May.1993; 1 female, 1 male, Ghoom, 2200 m, coll. V. Vasu, 9 May. 1993; 8 females, 18 males, Mirik, 1700 m, coll. V. Vasu, 10-11 May.1993. - Sikkim, 1 male, Gangtok, 1550 m, coll. V. Vasu, 18 Sep.1993.

Female. - Colour: Body black, whitish yellow are: extreme apices of all femora; outer side of protibia except extreme apex; basal 2/3 of mesotibia; metatibia except extreme apex; rest of parts of all legs piceous. Wings infumated, venation including costa, subcosta and stigma piceous.

Structure: Average length 4.5 mm. Antenna subincrassate in the middle, 1.5x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate (Fig. 1); labrum broader than long as 2:1, with deflexed rounded anterior margin; triangular supraclypeal area feebly raised; LID:IDMO:EL = 3:4:3; hind orbits not carinate; supraantennal pit well marked, deep, crescent shaped in outline; frontal area at the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with low lying frontal ridges; median fovea distinct, partly divisible into low lying anterior and raised posterior parts (Fig. 49); anterior 1/2 of median fovea almost rounded, shallow, having flat bottom; posterior part of median fovea having raised uneven bottom, characteristically carved with pits in its anterior and posterior ends; postocellar area subconvex, broader than long as 2:1; post- and circumocellar furrows shallow; interocellar furrow sharp and distinct; lateral furrows quite distinct, deep, parallel and ending abruptly just before hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:4:5:3; mesoscutellum subconvex; appendage neither carinated nor grooved; ICD:ITD = 1:6; tarsal claw (Fig. 4) with a subapical tooth distinctly shorter than apical one and a minute basal lobe closely appressed to base; metabasitarsus longer than following 3 joints combined as 6:5; IATS:AWMT:OATS = 1:1:1. Lancet (Fig. 39) having 16 serrulae. Ovipositor sheath, Fig. 12 (lateral view).

Sculpture and pubescence: Head almost impunctate, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, subshining. Body covered with silvery pubescence.

Male. - Average length 4 mm. Similar to female. Male genitalia: Penis valve (Fig. 15), gonoforceps (Fig. 26).

Population variation. - Not observed.

Distribution. - India: West Bengal, Sikkim, Meghalaya, Arunachal Pradesh.

Etymology. - The species name refers to the characteristic crescent shape of supraantennal pit.

***Eutomostethus vatsi*, new species**

(Figs. 19, 27, 32, 50)

Material. - Holotype: India - West Bengal, female, Darjeeling, 2300 m, coll. V. Vasu, 7 May.1993.

Paratypes: India- Arunachal Pradesh, 3 females, Bomdila, 2550 m, coll. M.S. Saini, 31 May.1989; 2 males, Dirang, 1500 m, coll. V. Vasu, 11 May.1992; 1 male, Hapoli, 1500 m, coll. V. Vasu, 19 May.1992. - West Bengal, 4 females, 13 males, Darjeeling, 2250 m, coll. V. Vasu, 7 May.1993; 5 males, Tiger Hills (Darjeeling), 2700 m, coll. V. Vasu, 8 May.1993; 7 males, Ghoom, 2200 m, coll. V. Vasu, 8 May.1993; 4 males, Mirik, 1700 m, coll. V. Vasu, 10 May.1993.

Female. - Colour: Body black, whitish yellow are: extreme apices of all femora; outer side of protibia more or less, meso- and metatibiae except their extreme apices; rest of parts of all legs piceous. Wings infumated; venation including costa, subcosta and stigma piceous.

Structure: Average length 4.5 mm. Antenna 1.2x head width; scape and pedicel as long as their apical widths; segment 3 longer than 4 as 3:2; clypeus truncate with a shallow median notch (Fig. 2); labrum broader than long as 2:1, with deflexed rounded anterior margin;

triangular supraclypeal area feebly raised without carina; LID:IDMO:EL = 3:4:3; hind orbits not carinate; supraantennal pit deep, crescent shaped in outline; frontal area almost at the level of eyes; supraantennal tubercles moderate, sloping backwards and confluent with low lying frontal ridges; median fovea distinct, partly divided into low lying anterior and raised posterior parts (Fig. 50); anterior 1/2 of median fovea almost rounded, shallow with uneven bottom; posterior 1/2 of median fovea having uneven bottom, characteristically carved with a pit in front of median ocellus; postocellar area broader than long as 3:2; post- and circumocellar furrows shallow; interocellar furrow sharp and distinct; lateral furrows quite distinct, deep, excurved and reaching hypothetical hind margin of head; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:4:5:3; mesoscutellum subconvex; appendage neither carinated nor grooved; ICD:ITD = 1:6; tarsal claw (Fig. 4) with a subapical tooth distinctly shorter than apical one and a minute indistinct basal lobe closely appressed to base; metabasitarsus equal to following 3 joints combined; IATS:AWMT:OATS = 4:5:4. Lancet (Fig. 32) having 17 serrulae. Ovipositor sheath, Fig. 12 (lateral view).

Sculpture and pubescence: Head with few, scattered, minute punctures on frontal area, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, subshining. Body covered with silvery pubescence.

Male. - Average length 4 mm. Similar to female. Male genitalia: Penis valve (Fig. 19), gonoforceps (Fig. 27).

Population variation. - Not observed.

Distribution. - India: West Bengal, Arunachal Pradesh.

Etymology. - The species has been named in honour of Dr. L.K. Vats of the Kurukshetra University, Kurukshetra, a renowned Indian Professor of Zoology (Entomology).

***Eutomostethus carinatus*, new species**

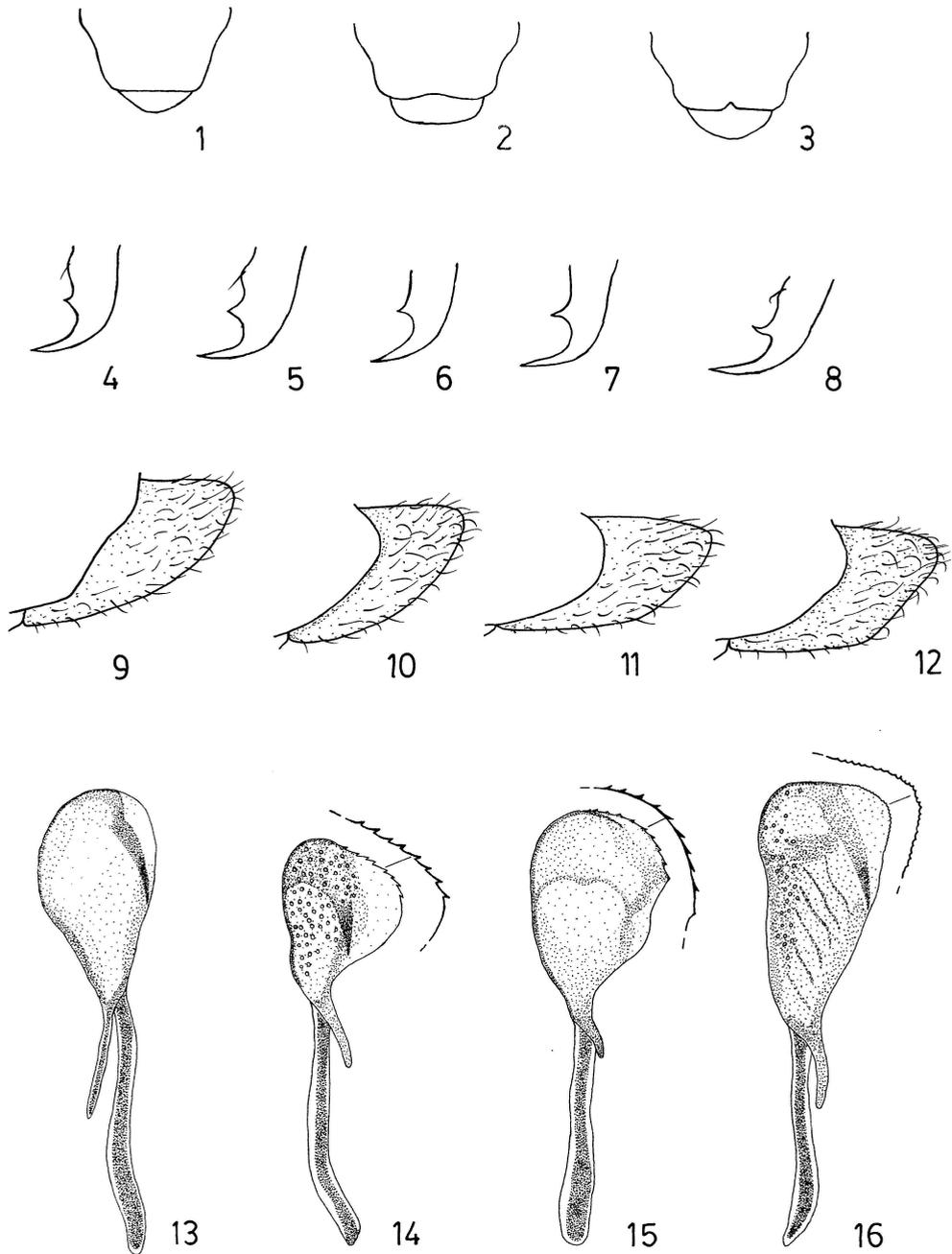
(Figs. 20, 28, 33, 51)

Material. - Holotype: India - Meghalaya, female, Cheerapunji, 1470 m, coll. V. Vasu, 2 Jun.1992.

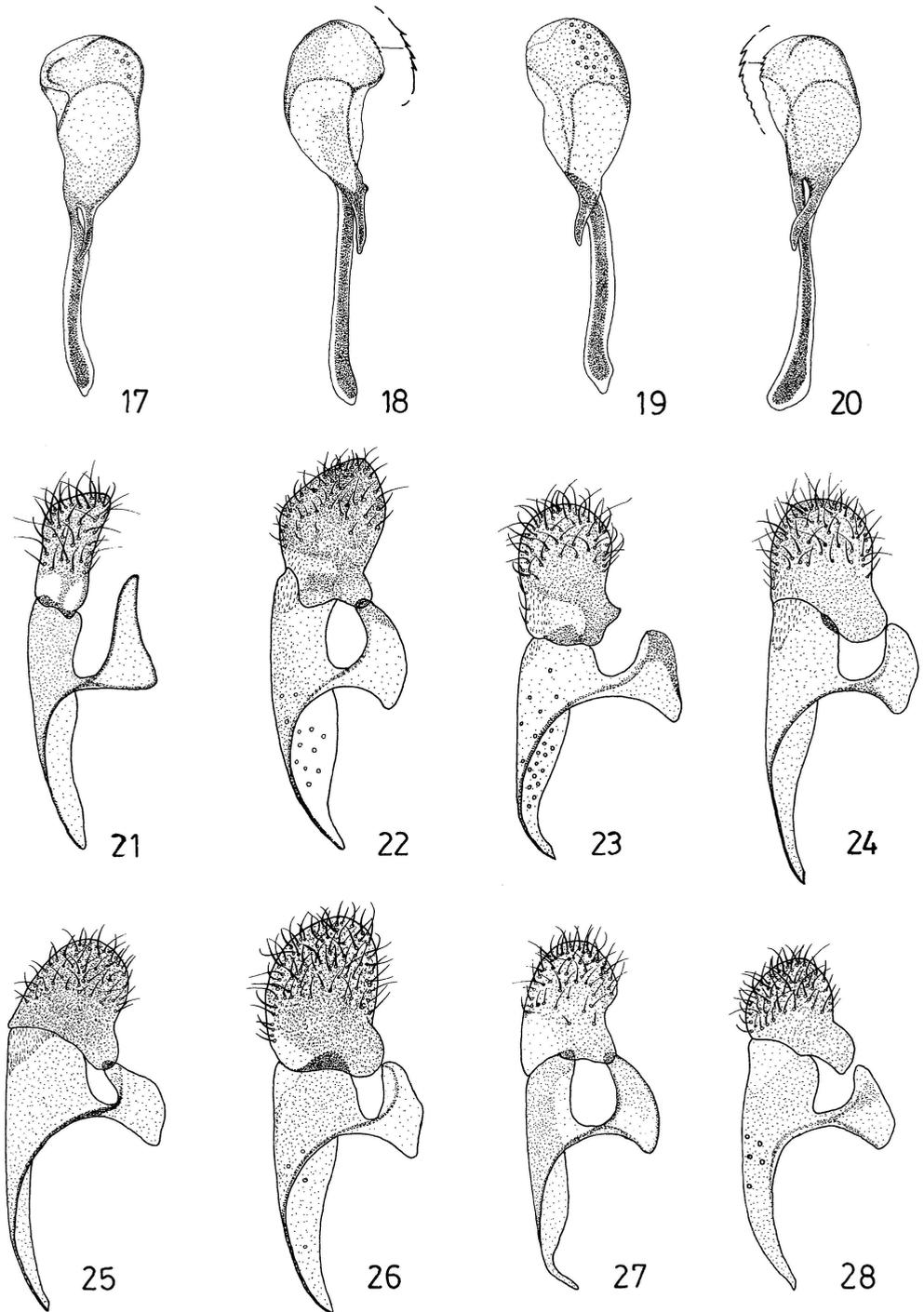
Paratypes: India - Arunachal Pradesh, 13 males, Bomdila, 2550 m, coll. M. S. Saini, 31 May.1989; 1 male, Tawang, 3000 m, coll. V. Vasu, 21 Sep.1992. - Meghalaya, 1 female, 10 males, Elephant Falls (Shillong), 1450 m, coll. V. Vasu, 14 May.1992; 10 males, Shillong, 1450 m, coll. V. Vasu, 25 May.1992; 2 males, Smit, 1500 m, coll. V. Vasu, 5 Sep.1993.

Female. - Colour: Body black, whitish are: extreme apices of all femora; outer side of protibia except extreme apex; meso- and metatibiae except their apices. Wings infumated; venation including costa, subcosta and stigma piceous.

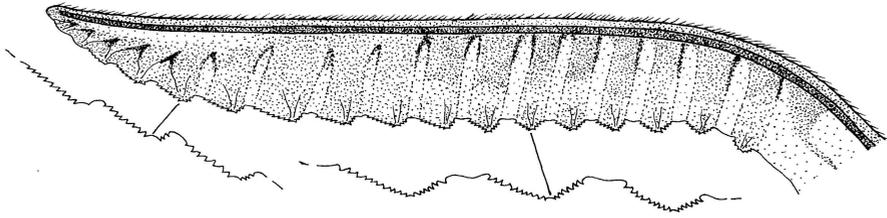
Structure: Average length 5 mm. Antenna subincrassate in the middle, 1.3x head width; scape 1/2 of its apical width; pedicel slightly longer than its apical width; segment 3 longer than 4 as 3:2; clypeus truncate (Fig. 1); labrum broader than long as 2:1, with deflexed rounded anterior margin; triangular supraclypeal area raised with blunt medial longitudinal carina; LID:IDMO:EL = 3:4:3; hind orbits not carinated; supraantennal pit shallow, broad and oval with a small protuberance in its centre; frontal area almost at the level of eyes; supraantennal tubercles and frontal ridges insignificant; median fovea distinct, divisible into



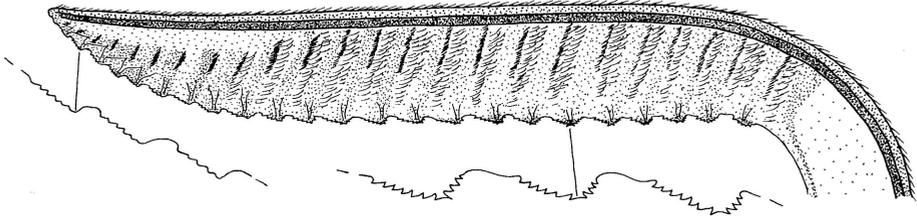
Figs. 1-16: Figs. 1-3. Clypeus & labrum: 1. *E. hirticornis*, 2. *E. inauratus*, 3. *E. carinoelatus*; (4-8) Tarsal claw: 4. *E. hirticornis*, 5. *E. gibbus*, 6. *E. pullus*, 7. *E. scutopunctatus*, 8. *E. assamensis*; Figs. 9-12. Ovipositor sheath (lateral view): 9. *E. gibbus*, 10. *E. hirticornis*, 11. *E. pullus*, 12. *E. inauratus*; (13-16) Penis valve: 13. *E. innotatus*, 14. *E. scutopunctatus*, 15. *E. falcatus*, 16. *E. basilimpidus*.



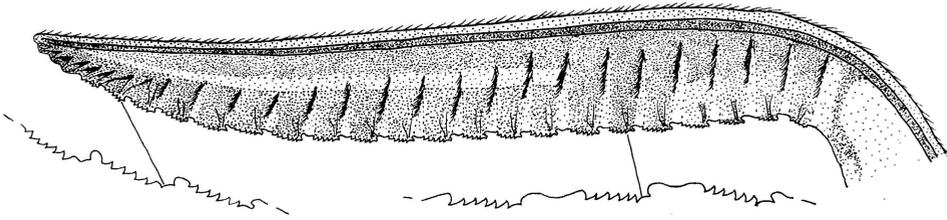
Figs. 17-28: Figs. 17-20. Penis valve: 17. *E. assamensis*, 18. *E. carinoelatus*, 19. *E. vatsi*, 20. *E. carinatus*; Figs. 21-28. Gonoforceps: 21. *E. innotatus*, 22. *E. scutopunctatus*, 23. *E. basilimpidus*, 24. *E. assamensis*, 25. *E. carinoelatus*, 26. *E. falcatus*, 27. *E. vatsi*, 28. *E. carinatus*.



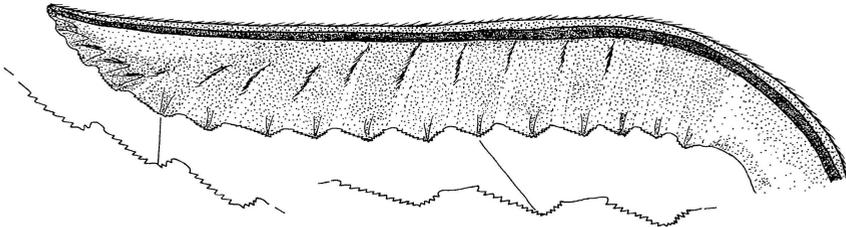
29



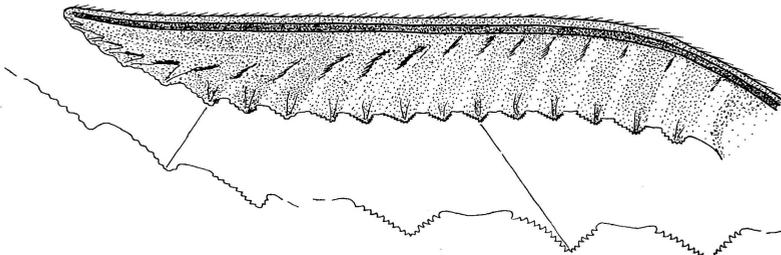
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31

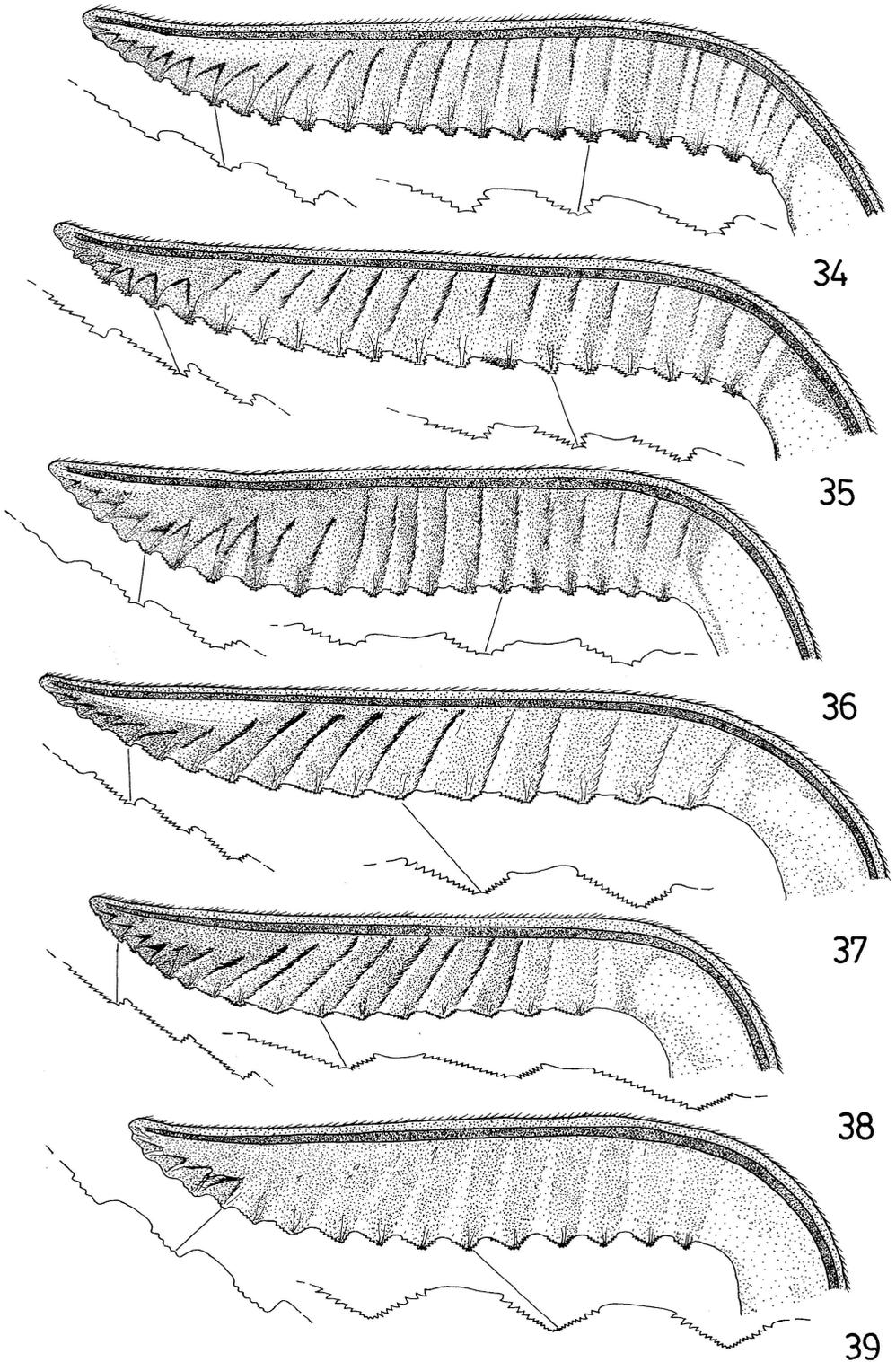


32

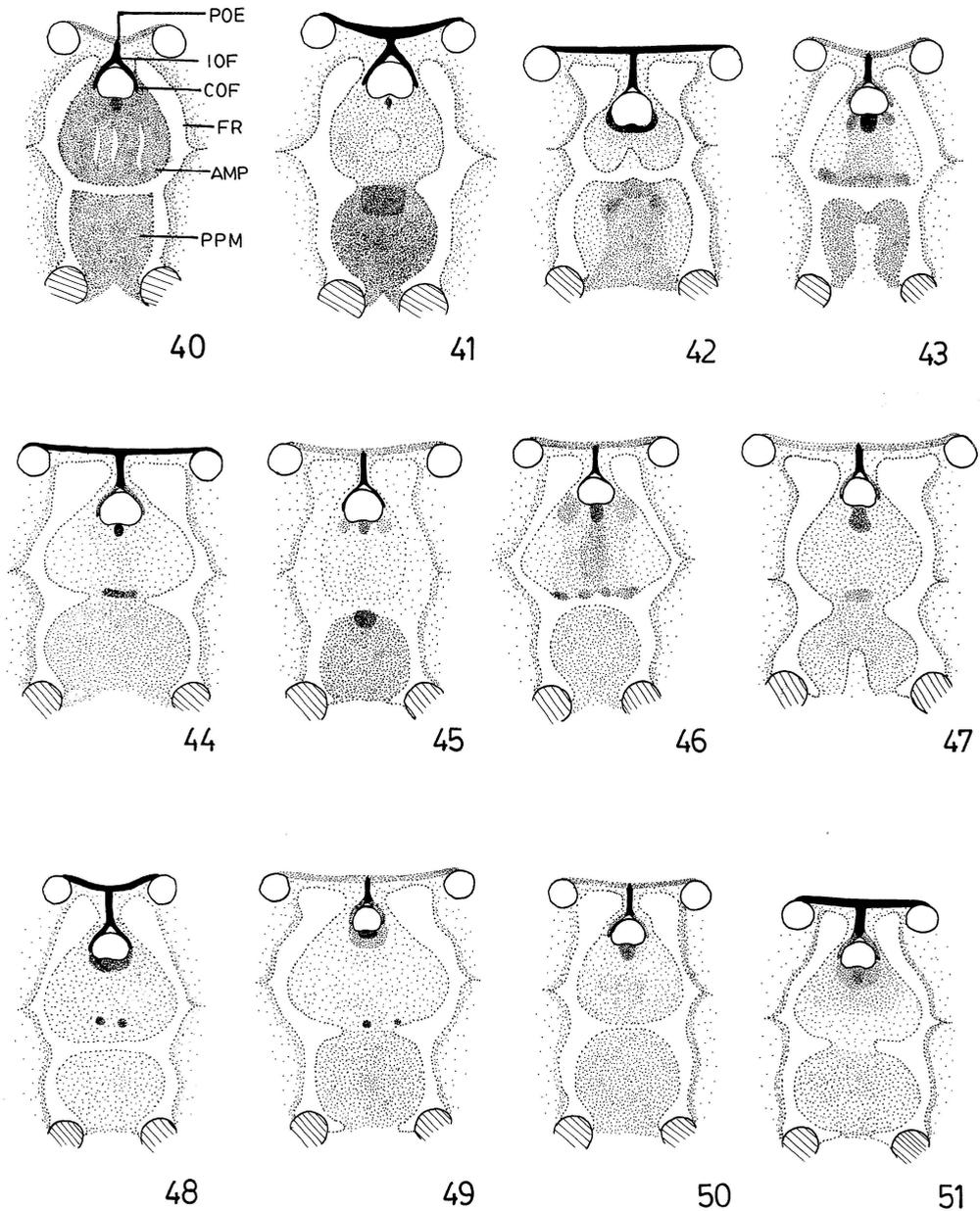


33

Figs. 29-33: Lancelet: 29. *E. hirticornis*, 30. *E. gibbus*, 31. *E. pullus*, 32. *E. vatsi*, 33. *E. carinatus*.



Figs. 34-39: Lancet: 34. *E. inauratus*, 35. *E. scutopunctatus*, 36. *E. basilimpidus*, 37. *E. assamensis*, 38. *E. carinoelatus*, 39. *E. falcatus*.



Figs. 40-51: Frontal area showing median fovea (front view): 40. *E. hirticornis*, 41. *E. gibbus*, 42. *E. pullus*, 43. *E. innotatus*, 44. *E. inauratus*, 45. *E. scutopunctatus*, 46. *E. basilimpidus*, 47. *E. assamensis*, 48. *E. carinoelatus*, 49. *E. falcatus*, 50. *E. vatsi*, 51. *E. carinatus*.

low lying anterior and raised posterior parts (Fig. 51); anterior 1/2 of median fovea almost rounded, opened posteriorly, shallow having flat bottom; posterior 1/2 of median fovea having raised uneven bottom, characteristically carved with pits in its anterior and posterior ends; postocellar area subconvex, broader than long as 2:1; post- and interocellar furrows sharp and distinct; circumocellar furrow shallow; lateral furrows distinct, deep, excurved and abruptly ending just before hypothetical hind margin of hind; head narrowing behind eyes; POL:OCL:UOL:UCL = 4:4:5:3; mesoscutellum almost flat; appendage neither carinated nor grooved; ICD:ITD = 1:5; tarsal claw (Fig. 4) with a subapical tooth distinctly shorter than apical one and a minute basal lobe closely appressed to base; metabasitarsus equal to following 3 joints combined; IATS:AWMT:OATS = 4:5:4. Lancet (Fig. 33) having 18 serrulae. Ovipositor sheath, Fig. 10 (lateral view).

Sculpture and pubescence: Head almost impunctate except a few, minute, scattered punctures on the frontal area, surface shining; thorax impunctate, smooth and shining with general oily lustre; abdomen impunctate, subshining. Body covered with silvery pubescence.

Male. - Average length 4 mm. Similar to female. Male genitalia: Penis valve (Fig. 20), gonoforceps (Fig. 28).

Population variation. - Not observed.

Distribution. - India: Arunachal Pradesh, Meghalaya.

Etymology. - The species has been named after the presence of a medial longitudinal carina on supraclapeal area.

ACKNOWLEDGEMENTS

The authors are deeply thankful to Dr. D. R. Smith of USNM, Washington for his valuable suggestions and to curator cum incharge ZSI, Calcutta for lending paratypes/determined specimens of already reported two species of this genus. Financial assistance rendered by US, PL - 480 in collaboration with ICAR, New Delhi, is also acknowledged.

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Received 20 Jan 1995
Accepted 01 Aug 1995