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THE *ENITHARES* (Hemiptera-Heteroptera: Notonectidae) OF THE ORIENTAL REGION

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Abstract: This paper redescribes most of the species recorded from the Oriental Region. Keys to both sexes are given. Fifteen species and 1 subspecies are described for the first time. Five species are placed in synonymy and three previously described species have proved unrecognisable.

This paper embodies the results of a study of the Oriental species of the genus *Enithares*. The main purpose being to collate the scattered descriptions and information concerning this genus. The geographical scope is limited to those species occurring east of the 60° of longitude. African, Mascarene and American species are excluded. No phylogenetic speculation is implied in any part of this paper.

Wherever possible types have been examined in order to fix the species. In a few cases where types are no longer extant or available for study, I have utilized 'compared' specimens or the concept of the last reviewer. Full details are given under the relevant species.

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BIOLOGY

Little is known about the biology of *Enithares*. Nowrojee (1911) for *E. ciliata* (F.) (= *indica* F. sensu Nowrojee) and Hoffmann (1931) for *E. sinica* (Stål) give some data on life histories. Both report that the eggs are laid on submerged plant tissue. Nowrojee states that the eggs are glued on, not inserted in the plant. *Enithares* thereby closely resembles some species of *Notonecta* (Hungerford 1919). The number of eggs laid is variable. *E. ciliata* in an aquarium laid 8, *E. sinica* "more than a dozen." I have a plant stem on which *E. woodwardi* Lansbury laid 19 eggs in about 90 minutes in an aquarium. Hungerford (1919) dissected a female *N. irrorata* Uhler which was found to contain 252 ova, several of which were nearly ready for laying. It is not known if *Enithares* is as prolific as this.

The egg of *E. woodwardi* is about 1.45 mm long, width viewed from above .65 mm. Color in alcohol pale yellowish white. Shape, elongate rounded at both ends, anterior pole slightly depressed around the curved, cylindrical truncated, micropylar peg. Hatching line visible as a broken linear brown line extending from micropyle to caudal end. Chorion hard, covered with hexagonal reticulations. The egg of *Enithares* is very similar in general structure to that of *Notonecta* (Hungerford 1919).

The incubation period is variable. The period for *E. sinica* varies between 9–26 days (Hoffmann 1931). Nowrojee (1911) noted eye spots appearing just before hatching. The data given by Hoffmann who includes a precis of Nowrojee's figures show that development from hatch is dependant upon temperature - *E. sinica* taking 38–49 days and *E. ciliata* 33–38 days, the period of the 5th instar being the longest. Hoffmann using isolated specimens found that the highest mortality occurred in the first and second instars. *E. sinica* took 2 or more days to become fully pigmented after the last moult. Hale (1923) stated that pale examples of *E. woodwardi* (=*E. bergrothi* Montandon sensu Hale) confined in aquaria eventually became black, other than head, part of the pronotum and legs.

There is no evidence that *Enithares* is attracted to light. Large collections of aquatic Heteroptera obtained in light traps from the Philippines and elsewhere have never included *Enithares*.

Unlike *Anisops*, *Enithares* never seems to be found in large numbers. Miller (1964) comments on the small numbers of *Enithares* found as compared to *Anisops* in East Africa. Miller found that *Enithares* normally remained at the water surface and usually fed on prey caught in the surface film. When disturbed 3 distinct reactions were noticed. a) it swam horizontally without leaving the surface; b), it dived and anchored itself to a submerged object, or c), it dived and remained poised in mid-water 10–20 cm below the surface, keeping stationary by rapid strokes of the hind legs. The third reaction was the one most commonly observed in the laboratory. Hale (1923) also noticed the habit of floating at the surface in deep water or clinging to submerged objects. Kirkaldy (1904) quoting E. E. Green in litt. refers to *Enithares* preying on *Metrocoris stali* (Dohrn), Gerridae and Gyrnidae (Coleoptera).

Laird (1947) found in New Britain that *E. alexis lairdi* Lansbury (=*E. bergrothi* sensu Laird) fed on mosquito larvae, particularly culicines. Dempwolff (1904) in New Guinea found that habitats with many notonectids harbored no mosquito larvae.

HISTORY OF *ENITHARES*

Spinola (1837) proposed the genus *Enithares* (an anagram of *Theresina*) for *Notonecta indica* F. 1803 and for a new species, *braziliensis*. The latter is no longer included in *Enithares* s.s. (Brooks 1953).

Fieber (1851) renamed the genus *Bothronotus* because he did not apparently approve of anagrams.

The only major revision has been by Kirkaldy (1904) who attempted to account for all the known species and gave a comprehensive key. In 1933, Lundblad gave a detailed resumé of the species found in the Sunda Is. and Hutchinson (1933) similarly dealt with those from India, Burma and Ceylon. Finally Brooks (1948) described 17 new species, 15 of which were Oriental; these are included in this paper.

To date, within the geographical scope of this paper, 42 species and 1 subspecies have been described. Three were synonymised by earlier workers and 5 additional species are placed in synonymy in this paper. Two species described by Fieber (1851 & 1851a) and 1 by Paiva (1918) have not proved recognisable.

Fifteen species and 1 subspecies are described for the first time bringing the number to 46 species and 2 subspecies.

TYPE SPECIES DESIGNATION

Spinola (1837) proposed the genus *Enithares* and included 2 species *Notonecta indica F.* 1803 "De Bombay, envoyée par M. Dupont" and *E. braziliensis* a new species "Du Bresil, enyoyée par M. Buquet." Kirkaldy (1897) designated by a footnote the type species of *Enithares* in the following phrase "I am not aware that any author has indicated a type

for this genus and therefore now set apart *E. indica* for that purpose." Kirkaldy on the same page in the main text made a lapsus calami in referring to Spinola's *indica* as *N. indica* L., whereas Spinola (1837) clearly referred to *N. indica* F. 1803.

I have examined the holotype ♂ of *N. indica* F. 1803, described from Sumatra and preserved in the Zoological Museum, Copenhagen and find that it is conspecific with *E. intricata* Breddin 1905. The Fabrician name is however, preoccupied by *Notonecta indica* L. 1771; therefore, Breddin's name being the next available must continue to be used. In the course of this study, it has been found that *E. intricata* is distributionally limited to Sumatra and Java. It is, therefore, clear that Spinola's *indica* from Bombay must refer to another species.

Fabricius (1798) described *Notonecta ciliata* from "Indiae aquis." Kirkaldy (1889) erroneously included *N. ciliata* in *Anisops*. Lundblad (1933) pointed out after seeing Fabricius' type that it was an *Enithares*. I have examined the holotype ♀ of *ciliata* preserved in the Zoological Museum, Copenhagen. The specimen is somewhat mutilated but there are sufficient diagnostic features left i.e. metaxyphus and nodal furrow to show that *ciliata* is conspecific with *E. abbreviata* (Kirby) 1891.

Kirkaldy (1900) on discovering that *N. indica* F. was preoccupied by *N. indica* L. took the next available name which he thought was *abbreviata*. I have compared the type of *ciliata* with that of *abbreviata* in the British Museum (Nat. Hist.) and find them conspecific. Comparison of the type of *indica* F. with the types of *ciliata* and *abbreviata* shows that *indica* is clearly distinct.

The distribution of *Enithares* in India is such that of the 5 species recorded, 3, *E. triangularis* (Guérin-Méneville), *E. hungerfordi* and *E. fusca* Brooks are all restricted to S. India; *E. lineatipes* Horváth is confined to the Punjab and Baluchistan leaving *ciliata* widespread over India and much of SE Asia. In view of the foregoing, it is therefore quite clear that Kirkaldy (1897) unwittingly based his type species designation on a misidentification of Spinola (1837).

An application was therefore put before the International Commission on Zoological Nomenclature (Lansbury 1966) asking that Kirkaldy's type designation be set aside and nominating *N. ciliata* F. 1798 as the type species of *Enithares*.

TECHNIQUE AND TERMINOLOGY

Enithares are with few exceptions rather difficult to identify. The males of some species have prominent secondary sexual features i.e. spurs on legs, irregularly-shaped fore and mid-tibiae. There are however, many species without these 'spot' characters. In these cases, it is necessary to detach the male genital capsule and clear in the usual way. The aedeagus should be partially withdrawn from the capsule as it provides good diagnostic characters. Sometimes the sex of specimens is not immediately apparent from external features: If the 7th sternum is levered up slightly, the paired stylus-like gonoplacs of the female or the genital capsule of the male will become visible.

Many species have at least 2 color forms. Lundblad (1933) was the first to comment on the baffling similarity between very pale or completely albino forms "leukokroismus." Where fairly large series of specimens have been available for study, i.e. *E. woodwardi*,

every kind of intergrade between the pale and almost melanic form has been found. Therefore, no reliance should be placed on color in naming *Enithares*. The more dominant color forms are described in the text.

The length of a specimen is measured along a median line from the tip of the vertex to the end of the elytra. To measure the anterior width of the vertex and synthlipsis etc., the specimen is placed in a horizontal position with the transverse and longitudinal axes horizontal. The synthlipsis is defined as the narrowest part of the vertex between the posterior margins of the eyes; the anterior width of vertex as the width of the vertex between the anterior margins of the eyes. To determine the position of the nodal furrow, one must view the specimen on its lateral surface with the head tilted downwards until the nodal furrow and membranal suture are at the same level. The distance between the nodal furrow and the membranal suture is measured from the inner tip of the furrow straight back to the suture along a line parallel to the lateral margins of the elytra.

Generic key to the Notonectidae (Modified from Lansbury, 1966)

1.	Hemelytral commissure without a definite hair-lined pit at anterior end (Notonectinae)	2
	Hemelytral commissure with a definite hair lined pit at anterior end (Anisopinae)	7
2 (1).	Mid-femur with an anteapical pointed protuberance	3
	Mid-femur without an anteapical pointed protuberance	4
3 (2).	Anterolateral margins of prothorax not foveate	**Notonecta**
	Anterolateral margins of prothorax foveate	**Enithares**
4 (2).	Eyes basally contiguous or forming an ocular commissure, ♂ parameres asymmetrical	5
	Eyes basally widely spaced, ♂ parameres symmetrical	**Aphelonecta**
5 (4).	Anterolateral margins of prothorax not foveate	**Neonychia**
	Anterolateral margins of prothorax foveate	6
6 (5).	Antennae 3-segmented	**Nychia**
	Antennae 4-segmented	**Martarega**
7 (1).	Ventral abdominal keel not extending onto last abdominal sternite. ♂♂ without stridulatory comb on fore tibia	**Paranisops**
	Ventral abdominal keel extending onto last abdominal sternite. ♂♂ with stridulatory combs on fore tibia	8
8 (7).	Fore tarsus of ♂ 1-segmented	**Anisops**
	Fore tarsus of ♂ 2-segmented	**Buenoa**

Genus **Enithares** Spinola 1837

Enithares Spinola, 1837, Essai Genres Ins. appartenants order Hémiptères, Lin., Genes: 60.- Kirkaldy, 1897, Trans. Ent. Soc. Lond. **1897**: (4) : 393-426 [designated type species, *N. Indica* F.] ; 1900, Entomologist **33** : 10 [*N. indica* preoc., *N. abbreviata* Kirby next available name] ; 1904, Wien. Ent. Ztg. **23**: 95-110, 133.- Jaczewski, 1926, Pr. zool. pol. państ. Muz. przgr. **5** (2) : 78-81.- Hutchinson, 1929, Ann. S. Afr. Mus. **25** (3) : 359-474.- Hungerford, 1933, Kans. Univ. Sci. Bull. **21** : 9-22.- Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 489 pp.- Truxal, 1952, J. Kans. Ent. Soc. **25** : 30-38.- Scudder, 1959, Trans. R. Ent. Soc. Lond. **111** : 405-67 (*Bothronotus*).- Fieber, 1851, Rozpr. mat.-přír. K. české Spol.

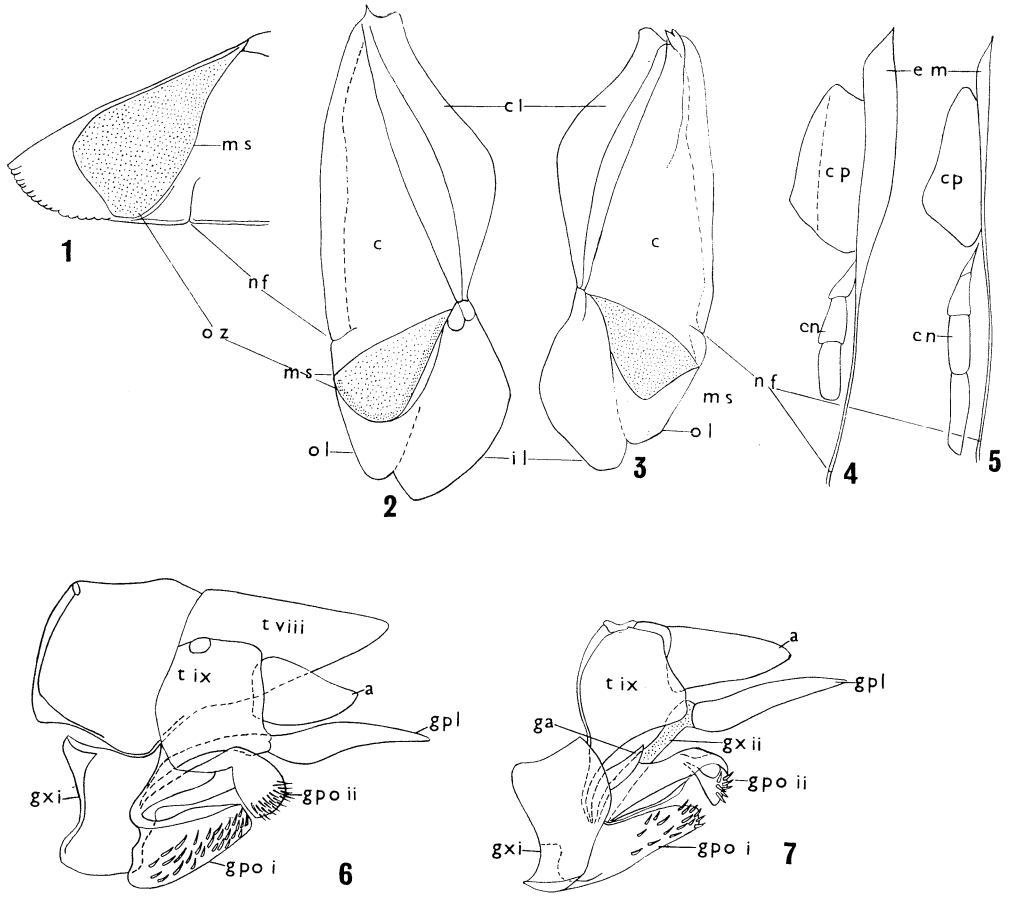


Fig. 1–7. 1, *E. stylata* n. sp. lateral view of nodal furrow and membrane; 2, *E. lineatipes* Horváth, elytron; 3, *Enithares* sp., elytron; 4, *E. hungerfordi* Brooks, ♀ ventral view of embolium and coxal plate; 5, *E. stylata* ♀, Ibid; 6, *Enithares* sp., lateral view of ♀ genitalia; 7, *E. simplex* (Kirby) ibid.

Náuk **7**: 206–7; 1851a, *ibid*: 470–72.

Body from above convex. Head narrower than pronotum. Eyes large, reniform, 2× sinuate along outer margin and dorsally occupying about 2/3 of head. Inner lateral margins of eyes converging from anterior width of vertex. Ocelli absent. Antennae 4-segmented, arising from behind eyes and lying in trough of pronotal fovea. Rostrum 4-segmented. Pronotum broader than long, lateral margins diverging, anterolateral margins foveate. Scutellum triangular. Clavus and corium coriaceous. Corium with a cleft known as the nodal furrow directed inwards from lateral margins slightly anterior to membranal suture (fig. 1–3). Membrane clearly divided into 2 zones and bilobed (fig. 1–3). Fore and median legs with 3 tarsi, middle tarsus vestigial. Hind leg with 2 tarsi. Two tarsal claws present on all legs. Mid-femur with a pointed anteapical protuberance. Infra-coxal plates bare and fringed

with hairs. Keel of abdominal venter bare and fringed with hairs along lateral margins.

♂ genitalia : Terminology modified from Truxal (1952). Genital capsule 9th segment which is cleft medianly into an anterior and posterior lobe. Posterior lobe separated dorsally and along upper 1/2 of posterior margin. Parameres symmetrical, directed dorsad, basally inflected into genital chamber through median cleft. Basal plate large, fused ventrally into a ring, lateral arms of basal plate heavily sclerotised, dorsally ring very wide, ventrally narrow. Aedeagus clearly differentiated into a phallosoma and endosoma, the latter with prominent conjunctival appendages. Basal portion of phallosoma narrow and annulated, apically more membranous. Penis valves not visible. The 9th tergum forms a broad bridge across anterior part of 9th segment. The 10th lightly sclerotised, protruding from dorsal margin of anterior lobe of 9th segment (fig. 8).

♀ genitalia : Terminology follows Scudder (1959). Sternum VII produced posteriorly, partially covering genitalia. First gonocoxa very roughly triangular, anterior margin more sclerotised than remainder, broadest part covered with long fine hairs. First gonapophysis elongate, sclerotised with stout spines. Gonangulum elongate and sclerotised. Second gonocoxa slender, only very slightly sclerotised. Second ramus heavily sclerotised. Second gonapophysis sclerotised throughout, apically bent ventrad and set with spines. Gonoplacs separate, stylus like with very many long fine hairs. Single median spermatheca present (fig. 6 & 7).

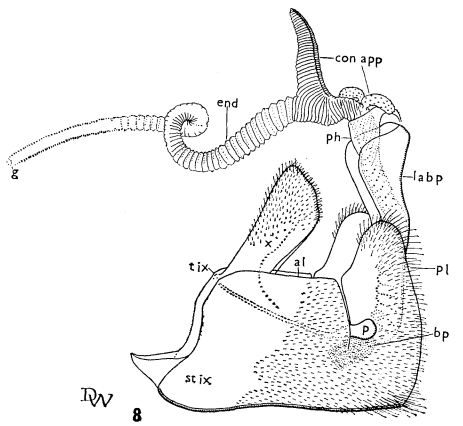


Fig. 8. *E. megalops* n. sp. lateral view of ♂ genitalia showing aedeagus partially expanded.

Key to Enithares Males

1. Embolium viewed ventrally greatly expanded towards head (fig. 4 & 27) 2
   Embolium viewed ventrally not as above (fig. 5) 5
2 (1). Apices of clavii clearly raised and roughened with many pits (fig. 12) ..... **stridulata** Brooks
   Apices of clavii not as above 3
3 (2). Nodal furrow clearly more than its own length removed from membranal suture, pronotal humeral angles produced (fig. 15) ..... **producta** n. sp.
   Nodal furrow clearly less than its own length removed from membranal suture, pronotal humeral angles not produced 4
4 (3). Mid-femoral hairs short (fig. 22); median length of metaxyphus 2× basal width (fig. 30); fore femur with triangular eminence ventrally (fig. 25) ...**triangularis** (Guérin)
   Mid-femoral hairs long and straggly (fig. 35); median length of metaxyphus equaling basal width (fig. 33); fore femur not as above ..... **hungerfordi** Brooks
5 (1). Fore trochanter with a nodule ventrad (fig. 42) ..... **hackeri** Hungerford
   Fore trochanter without a nodule ventrad 6

6 (5). Base of labrum with nodule-like projections on posterior corners (fig. 55) ..... **simplex** (Kirby)
Base of labrum not as above 7
7 (6). Head width less than or only 2× median head length 8
Head width over 2× median head length 13
8 (7). Outer claw of mid-leg conspicuously thickened and bent inwards 9
Outer claw of mid-leg not as above 11
9 (8). Hind femur with a large spur ventrad (fig. 66) ..... **sinica** (Stål)
Hind femur not as above 10
10 (9). Lateral margins of metaxyphus convergent (fig. 75) ..... **mandalayensis** Distant
Lateral margins of metaxyphus more or less parallel (fig. 82) ..... **uncata** Lundblad
11 (8). Nodal furrow less than its own length removed from membranal suture ..... **hebridiensis** n. sp.
Nodal furrow more than its own length removed from membranal suture 12
12 (11). Anterior lobe with 2 dorsal projections, posterior lobe higher than anterior lobe (fig. 93) ..... **bakeri** Brooks
Dorsal margin of anterior lobe slightly convex distally, posterior lobe about as high as anterior lobe (fig. 99) ..... **genitalis** Lundblad
13 (7). Head equaling or clearly longer than median pronotal length 14
Head clearly shorter than median pronotal length 31
14 (13). Hind femur with a large spur ventrad (fig. 66) ..... **sinica** (Stål)
Hind femur not as above 15
15 (14). Mid-femoral hairs very long, mesotrochanter spur-like at inner ventral angle 16
Mid-femoral hairs not very long, mesotrochanter not spur-like at inner ventral angle 17
16 (15). Outer lobe of mid-tibia distally rounded (fig. 104) ..... **alexis alexis** Lansbury
Outer lobe of mid-tibia distally acuminate (fig. 110) ..... **alexis lairdi** n. subsp.
17 (15). Outer claw of mid-leg conspicuously thickened and bent inwards (fig. 70); hind femur slightly expanded distally (fig. 72) ..... **mandalayensis** Distant
Outer claw of mid-leg and hind femur not as above 18
18 (17). Nodal furrow more than its own length removed from membranal suture 19
Nodal furrow equal to or less than its own length removed from membranal suture ... 22
19 (18). More than 11 mm long; lateral margins of 1st 3 and part of 4th visible ventral connexival segments minutely transversely ridged ..... **chinensis** Brooks
Not more than 9.6 mm long; ventral connexival segments not as above 20
20 (19). Over 9 mm long; lateral margins of metaxyphus concave (fig. 132.) Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 134) ..... **timorensis** Brooks
Not more than 8 mm long; lateral margins of metaxyphus straight or convex. Dorsal margin of pronotal fovea directed laterad from behind eyes 21
21 (20). Pronotum with a transverse rugose band interrupted medianly (fig. 139). Posterior lobe finger-like (fig. 137) ..... **loria** Brooks
Pronotum smooth. Posterior lobe not finger-like (fig. 99) ..... **genitalis** Lundblad
22 (18). Lateral margins of 1st 2 visible ventral abdominal segments with a series of transverse ridges (fig. 147) ..... **nigra** n. sp.
Lateral margins of 1st 2 visible ventral abdominal segments not as above 23
23 (22). Dorsal margin of pronotal fovea curving laterad from behind eyes (fig. 149) ..... **bergrothi** Montandon
Dorsal margin of pronotal fovea directed caudad from behind eyes 24
24 (23). Head width slightly greater than 3× anterior width of vertex. Chaetotaxy of mid-tibia interrupted distally (fig. 322) ..... **rogersi** Distant

Head width slightly less than 3× anterior width of vertex. Chaetotaxy of mid-tibia not interrupted distally 25

25 (24). Over 10 mm long ..... **hippokleides** Kirkaldy
Less than 9.5 mm long 26

26 (25). Posterior lobe clearly bent caudad apically (fig. 176) ..... **ripleyana** n. sp.
Posterior lobe not bent caudad apically 27

27 (26). Over 9 mm long. Head width almost 2.5x median length. ..... **timorensis** Brooks
Less than 9 mm long. Head width not more than 2.33x median length 28

28 (27). 8-9 mm long. Lateral arms of basal plate produced caudad (fig. 182) ... **vulgaris** n. sp.
7-8 mm long. Lateral arms of basal plate rounded 29

29 (28). Posterior margin of eyes directed caudad laterad, i.e. slanting from inner margin to anterolateral margins of pronotum. Outer lateral margins of eyes strongly divergent from anterolateral margins of pronotum (fig. 194 & 199) 30
Posterior margin of eyes more or less straight. Outer lateral margins of eyes convergent almost from anterolateral margins of pronotum (fig. 189) ... **intricata** Breddin

30 (29). Parameres basally constricted, apically expanded and rounded; posterior lobe evenly rounded dorsally (fig. 8) ..... **megalops** n. sp.
Parameres crescentic; posterior lobe more acuminate dorsally (fig. 198) ..... **paramegalops** n. sp.

31 (13). Hind femur either greatly expanded or with a prominent spur or nodule 32
Hind femur simple 38

32 (31). Over 11.5 mm long ..... **subparallela** n. sp.
Not more than 10 mm long 33

33 (32). Head width more than 3× anterior width of vertex. First tarsus of fore leg curved (fig. 213); hind femur greatly expanded distally (fig. 212) ..... **gibbera** Brooks
Head width less than 3× anterior width of vertex. First tarsus of fore leg not curved; hind femur with a spur or nodule 34

34 (33). Fore and mid-tibiae strongly produced (fig. 220-22). Metaxyphus evenly rounded (fig. 225) ..... **buhleri** Brooks
Fore and mid-tibiae not strongly produced. Metaxyphus not evenly rounded 35

35 (34). Outer claw of mid-leg conspicuously thickened and bent inwards (fig. 62). Hind femur with a large spur ventrad (fig. 66) ..... **sinica** (Stål)
Outer claw of mid-leg not as above. Hind femur with a nodule, not a spur 36

36 (35). Fore tibia clearly depressed distally. Mesotrochanter with a variable-sized patch of black spicules 37
Fore tibia not depressed distally. Mesotrochanter without black spicules, but with fine sparse hairs (fig. 228) ..... **fusca** Brooks

37 (36). Mesotrochanter with a large patch of black spicules (fig. 235). First mid-tarsus roughly triangular. Apex of mid-tibia bluntly produced (fig. 236) ..... **ciliata** (F.)
Mesotrochanter with a small patch of black spicules (fig. 243). Apex of mid-tibia produced and acuminate with a large spine on inner surface distally (fig. 247). First mid-tarsus elongate (fig. 245) ..... **lombokensis** n. sp.

38 (31). Median head length shorter than anterior width of vertex 39
Median head length longer than anterior width of vertex 46

39 (38). Nodal furrow more than its own length removed from membranal suture (fig. 3)..... 40
Nodal furrow less than its own length removed from membranal suture (fig. 1)..... 41

40 (39). Lateral margins of 1st 3 and part of 4th visible ventral connexival segments minutely transversely ridged ..... **chinensis** Brooks
Lateral margins of ventral connexival segments not as above ..... **lineatipes** Hórvath

41 (39). Lateral margins of 1st 3 and part of 4th visible ventral connexival segments minute-

ly transversely ridged ..... **biimpressa** (Uhler)
Lateral margins of ventral connexival segments not as above 42
42 (41). More than 10 mm long ..... **metallica** Brooks
Less than 9.5 mm long 43
43 (42). Head width slightly more than 3× anterior width of vertex 44
Head width less than 3× anterior width of vertex 45
44 (43). Inner surface of mid-tibia with a large nodule distally (fig. 264) ... **thienemanni** Lundblad
Inner surface of mid-tibia distally without a large nodule (fig. 271) ..... **atra** Brooks
45 (43). Mid-tibia with many marginal spines (fig. 277). Posterior lobe more or less upright (fig. 280) ..... **amboinensis** n. sp.
Mid-tibia with few marginal spines (fig. 174). Posterior lobe apically inclined caudad (fig. 176) ..... **ripleyana** n. sp.
46 (38). More than 11.5 mm long 47
Less than 10.5 mm long 48
47 (46). Posterior lobe apically finger-like set with spines, parameres short and rounded (fig. 332) ..... **horvathi** Kirkaldy
Posterior lobe broad and rounded, not set with spines apically, parameres very long (fig. 285) ..... **stylata** n. sp.
48 (46). Mesotrochanter forming a distinct spur at inner ventral margin 49
Mesotrochanter rounded or angulate 52
49 (48). Mid-femoral hairs very long, dorsal margin set with 5-6 stout spines (fig. 102) 50
Mid-femoral hairs short, dorsal margin not set with stout spines (fig. 288) 51
50 (49). Outer lobe of mid-tibia distally rounded (fig. 103) ..... **alexis alexis** Lansbury
Outer lobe of mid-tibia distally acuminate (fig. 110) ..... **alexis lairdi** n. subsp.
51 (49). Fore tibia curved forward (fig. 293). Mid tibia distally swollen forming a convex arch (fig. 289) ..... **malayensis** Brooks.
Fore tibia not curved forward. Mid tibia not distally swollen (fig. 295) ... **maai** n. sp.
52 (48). Lateral margins of 1st 2 visible ventral abdominal segments with a series of transverse ridges (fig. 147) ..... **nigra** n. sp.
Lateral margins of 1st 2 visible ventral abdominal segments not as above 53
53 (52). Lateral margins of pronotal fovea produced towards eyes as a spur or nodule 54
Lateral margins of pronotal fovea not as above 55
54 (53). Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 307). Apex of posterior lobe inclined caudad (fig. 305) ..... **foveatus** n. sp.
Dorsal margin of pronotal fovea directed laterad behind eyes (fig. 157). Apex of posterior lobe not inclined caudad (fig. 158). ..... **woodwardi** n. sp.
55 (53). Head width not more than 2.5× median head length 56
Head width over 2.5× median head length 61
56 (55). Dorsal margin of pronotal fovea directed laterad from behind eyes (fig. 149). Lateral margins of metaxyphus more or less straight (fig. 150) ..... **bergrothi** Montandon
Dorsal margin of pronotal fovea directed caudad from behind eyes. Lateral margins of metaxyphus not straight, usually shallowly concave distally 57
57 (56). Parameres very long (fig. 336). First mid-tarsus with 4 stout spines set close together medianly (fig. 335) ..... **freyi quadrispinosus** Lansbury
Parameres very short. First mid-tarsus with a variable number of spines; not set close together but dispersed along lateral margins 58
58 (57). Head width more than 3× anterior width of vertex 59
Head width less than 3× anterior width of vertex 60
59 (58). Inner surface of mid-tibia with chaetotaxy interrupted distally (fig. 322); mid-tibia distally concave (fig. 324). First mid-tarsus with 4 stout spines (fig. 323).

..... **rogersi** Distant
Chaetotaxy of mid-tibia not interrupted distally or concave (fig. 309). First mid-tarsus with 2 stout spines (fig. 310) ..... **vicintricata** n. sp.
60 (58). Not more than 8 mm long. Posterior lobe with dorsal margin evenly rounded (fig. 187) ..... **intricata** Breddin
At least 8.75 mm long. Posterior lobe inclined caudad apically (fig. 177) ..... **ripleyana** n. sp.
61 (55). Parameres very long, almost or surpassing dorsal margin of posterior lobe 62
Parameres short, not as above 64
62 (61). Mid-tibia with a large nodule on inner distal surface (fig. 264) ... **thienemanni** Lundblad
Mid-tibia without a large nodule on inner distal surface 63
63 (62). First mid-tarsus with 4 stout spines set close together medianly (fig. 335). Parameres acutely triangular (fig. 336) ..... **freyi quadrispinosus** Lansbury
First mid-tarsus with many very short stout setae (fig. 272). Parameres not as above (fig. 273) ..... **atra** Brooks
64 (61). Length 8.75-9.75 mm. Posterior lobe inclined caudad apically (fig. 176)... **ripleyana** n. sp.
Length 7.5-8 mm. Posterior lobe cleft on outer margin, not inclined caudad (fig. 315) ..... **martini** Kirkaldy

Key to Enithares females

1. Nodal furrow clearly more than its own length removed from membranal suture (fig. 128) 2
Nodal furrow equal to or less than its own length removed from membranal suture (fig. 124) 8
2 (1). Lateral margins of 1st 3 and part of 4th visible ventral connexival segments minutely transversely ridged ..... **chinensis** Brooks
Connexival segments not as above 3
3 (2). Pronotal humeral width more than 3× median length 4
Pronotal humeral width less than 3× median length 6
4 (3). Head longer than pronotum ..... **genitalis** Lundblad
Head shorter than pronotum 5
5 (4). Apex of metaxyphus spatulate ..... **stridulata** Brooks
Apex of metaxyphus acuminate ..... **producta** n. sp.
6 (3). Less than 7 mm long ..... **loria** Brooks
Over 7.5 mm long 7
7 (6). Between 7.75-8.25 mm long ..... **bakeri** Brooks
Over 10 mm long ..... **lineatipes** Horvath
8 (1). Lateral margins of 1st 3 and part of 4th visible ventral connexival segments minutely transversely ridged ..... **biimpressa** (Uhler)
Lateral margins of ventral connexival segments not as above 9
9 (8). Embolium viewed ventrally greatly expanded towards head (fig. 4) 10
Embolium not greatly expanded towards head (fig. 5) 11
10 (9). Basal width of metaxyphus equaling median length ..... **hungerfordi** Brooks
Basal width of metaxyphus 1/2 median length ..... **triangularis** (Guérin)
11 (9). Not more than 7 mm long ..... **megalops** n. sp.
More than 7 mm long 12
12 (11). Pronotal humeral width 3× or more median length 13
Pronotal humeral width less than 3× median length 40

13 (12). Head length less than anterior width of vertex 14
Head length greater than anterior width of vertex 22
14 (13). Metaxyphus with apex rounded ..... **buhleri** Brooks
Metaxyphus with apex acuminate 15
15 (14). Less than 10 mm long 16
10 mm or more long 18
16 (15). Head width more than 3× median length ..... **atra** Brooks & **thienemanni** Lundblad
Head width less than 3× median length 17
17 (16). Not more than 9 mm long ..... **amboinensis** n. sp.
Over 9 mm long ..... **fusca** Brooks & **ripleyana** n. sp.
18 (15). Metaxyphus centrally depressed, lateral margins raised and thickened, infuscated dark brown to black (fig. 60 &61) ..... **simplex** (Kirby)
Metaxyphus not as above 19
19 (18). Synthlipsis 2/3 anterior width of vertex ..... **subparallela** n. sp.
Synthlipsis about 1/2 anterior width of vertex 20
20 (19). Clavus and corium metallic greenish bronze ..... **metallica** Brooks
Clavus and corium not metallic 21
21 (20). Not more than 10.25 mm long ..... **atra** Brooks
At least 11.5 mm long ..... **stylata** n. sp.
22 (13). Over 12 mm long ..... **horvathi** Kirkaldy
Less than 12 mm long 23
23 (22). Lateral margins of 1st 2 visible ventral abdominal segments with a series of transverse ridges (fig. 147) ..... **nigra** n. sp.
Lateral margins of 1st 2 visible ventral abdominal segments not as above 24
24 (23). Lateral margins of pronotal fovea almost contiguous with posterior margin of eyes (fig. 306) ..... **foveatus** n. sp.
Lateral margins of pronotal fovea not as above 25
25 (24). Head shorter than pronotum 26
Head longer than pronotum 32
26 (25). Viewed laterally, margins of pronotum carinate ..... **gibbera** Brooks
Viewed laterally, margins of pronotum rounded 27
27 (26). Head width more than 3× median length ..... **thienemanni** Lundblad
Head width less than 3× median length 28
28 (27). At least 10 mm long 29
Not more than 9.75 mm long 30
29 (28). Clavus and corium metallic greenish bronze ..... **metallica** Brooks
Clavus and corium not metallic ..... **freyi quadrispinosus** Lansbury
30 (28). Viewed laterally, lower margin of pronotal fovea raised, appearing as a projection when viewed from above (fig. 320) ..... **martini** Kirkaldy
Viewed laterally, lower margin of pronotal fovea rounded, not appearing as a projection when viewed from above 31
31 (30). Not more than 8.5 mm long ..... **intricata** Breddin
Between 9-9.75 mm long ..... **ripleyana** n. sp.
32 (25). More than 10 mm long ..... **simplex** (Kirby)
Less than 9.75 mm long 33
33 (32). Tomentose area of pronotal fovea hardly visible when viewed from above 34
Tomentose area of pronotal fovea clearly visible from above 35
34 (33). Not more than 7 mm long ..... **megalops** n. sp.
About 8 mm long ..... **paramegalops** n. sp.
35 (33). Lateral margins of metaxyphus convergent from base 36

Basal lateral margins of metaxyphus parallel, apically acuminate ..... **mandalayensis** Distant & **uncata** Lundblad
36 (35). Hind femur indented adjacent to attachment with trochanter ..... **alexis** Lansbury
Hind femur not indented as above 37
37 (36). Not more than 9 mm long 38
Over 9 mm long 39
38 (37). Lateral margins of pronotum broadly rounded, dorsal margin of pronotal fovea directed caudad from posterior margin of eyes ..... **intricata** Breddin
Lateral margins of pronotum converging more or less straight from humeral angles, dorsal margin of pronotal fovea directed laterad from posterior margin of eyes ..... **vulgaris** n. sp.
39 (37). Outer posterolateral margins of eyes straight ..... **timorensis** Brooks
Outer posterolateral margins of eyes rounded ..... **ripleyana** n. sp.
40 (12). Greatest head width over 2× anterior width of vertex 41
Greatest head width less than 2× anterior width of vertex ..... **mandalayensis** Distant
41 (40). Head longer than pronotum 42
Head shorter than pronotum 50
42 (41). Lateral margins of 1st 2 visible ventral abdominal segments with a series of transverse ridges (fig. 147) ..... **nigra** n. sp.
Lateral margins of 1st 2 visible ventral abdominal segments not as above 43
43 (42). Ventral margins of pronotal fovea slightly produced towards posterior margin of eyes ..... **hackeri** Hungerford
Ventral margins of pronotal fovea rounded 44
44 (43). Dorsal margin of pronotal fovea curving laterad from posterior margin of eyes, tomentose area hardly visible 45
Dorsal margin of pronotal fovea directed caudad from posterior margin of eyes, tomentose area clearly visible 46
45 (44). Not more than 9 mm long ..... **vulgaris** n. sp.
At least 9.75 mm long ..... **bergrothi** Montandon & **hebridiensis** n. sp.
46 (44). At least 10 mm long ..... **hippokleides** Kirkaldy
Not more than 9.5 mm long 47
47 (46). Hind femur indented close to attachment with trochanter ..... **alexis** Lansbury
Hind femur not indented as above 48
48 (47). Basal lateral margins of metaxyphus divergent, raised and infuscated ..... **sinica** (Stål)
Basal lateral margins of metaxyphus not as above 49
49 (48). Anterior width of vertex clearly extending beyond anterior margin of eyes ..... **mandalayensis** Distant & **uncata** Lundblad
Anterior width of vertex not extending beyond anterior margin of eyes ..... **intricata** Breddin
50 (41). Ventrolateral margins of pronotal fovea produced towards posterior margin of eyes... 51
Ventrolateral margins of pronotal fovea rounded 53
51 (50). Lateral margins of 1st 2 visible ventral abdominal segments with a series of transverse ridges (fig. 147) ..... **nigra** n. sp.
Lateral margins of 1st 2 visible ventral abdominal segments not as above 52
52 (51). Not more than 9 mm long ..... **foveatus** n. sp.
Between 9.5-11 mm long ..... **woodwardi** n. sp.
53 (50). Mesotrochanter angulate ..... **malayensis** Brooks
Mesotrochanter rounded 54
54 (53). 10 mm or more long 55
At most 9.6 mm long 58

55 (54). Metaxyphus centrally depressed, lateral margins raised and thickened, infuscated dark brown-black (fig. 60 & 61) ..... **simplex** (Kirby)
Metaxyphus not as above 56
56 (55). Dorsal margin of pronotal fovea curving laterad from posterior margin of eyes, tomentose area hardly visible ..... **bergrothi** Montandon
Dorsal margin of pronotal fovea directed caudad from posterior margin of eyes, tomentose area clearly visible 57
57 (56). Head narrower than anterior pronotal angles ..... **maai** n. sp.
Head wider than anterior pronotal angles ..... **freyi quadrispinosus** Lansbury
58 (54). Basal lateral margins of metaxyphus divergent, raised and infuscated ..... **sinica** (Stål)
Basal lateral margins of metaxyphus not as above 59
59 (58). Dorsal margin of pronotal fovea curving laterad from posterior margin of eyes, tomentose area hardly visible ..... **bergrothi** Montandon
Dorsal margin of pronotal fovea directed caudad from posterior margin of eyes, tomentose area clearly visible 60
60 (59). Viewed laterally, lower margin of pronotal fovea raised, appearing as a projection when viewed from above (fig. 320) ..... **martini** Kirkaldy
Viewed laterally, lower margin of pronotal fovea rounded, not appearing as a projection when viewed from above 61
61 (60). Not more than 8.5 mm long ..... **intricata** Breddin
Larger, at least 8.75 mm long 62
62 (61). Head almost 3× median length ..... **rogersi** Distant
Head never more than 2.75× median length 63
63 (62). Basal lateral margins of metaxyphus parallel, apically convergent ..... **vicintricata** n. sp. & **ciliata** (F.)
Lateral margins of metaxyphus convergent from base to apex ..... **freyi quadrispinosus** Lansbury

Enithares stridulata Brooks Fig. 9–14.

Enithares stridulata Brks., 1948, J. Kans. Ent. Soc. **21** : 37–38, pl. 1, fig. 1.– Lansbury, 1964, Ann. Zool. Warsz. **22** : 210–11, fig. 4a–d.

♂♂. Length 13 mm, maximum width 5 mm ; ♀♀, length 12 mm, maximum width 4.5 mm. Brooks (1948) gives 11.4–13.2 mm long and 4.5–5.4 mm for both sexes.

Color : Eyes brown flecked with black ; vertex and anterior 1/3 of pronotum light brown, pronotum medianly pale yellow, distally hyaline appearing black due to scutellar color showing through. Scutellum dark brown laterally with a central thin brown stripe, remainder pale yellowish brown. Clavus may be hyaline grayish or black with outer lateral margins grayish. Corium grayish, sometimes with a median linear blotch. Membrane hyaline with opaque zone black. Legs and abdomen ventrally brown.

Structural characters : Head in dorsal view with anterior margin almost straight with anterolateral margins rounded (fig. 13). Greatest width of head 3/4 pronotal humeral width, about 2.5× anterior width of vertex and median head length. Synthlipsis 1/2 anterior width of vertex. Head length to anterior width of vertex variable and shorter than pronotum. Pronotal humeral width over 3× median length ; lateral margins broadly rounded, 1/2 median length ; posterior margin concave. Dorsal margin of pronotal fovea slanting laterad behind eyes. Male with anterior 1/2 of embolium in ventral view greatly expanded. Nodal furrow directed dorsad, tip inclined cephalad, more than its own length removed from membranal suture. Males with apices of clavii slightly raised and pitted (fig. 12). Fore tibia of ♂ with

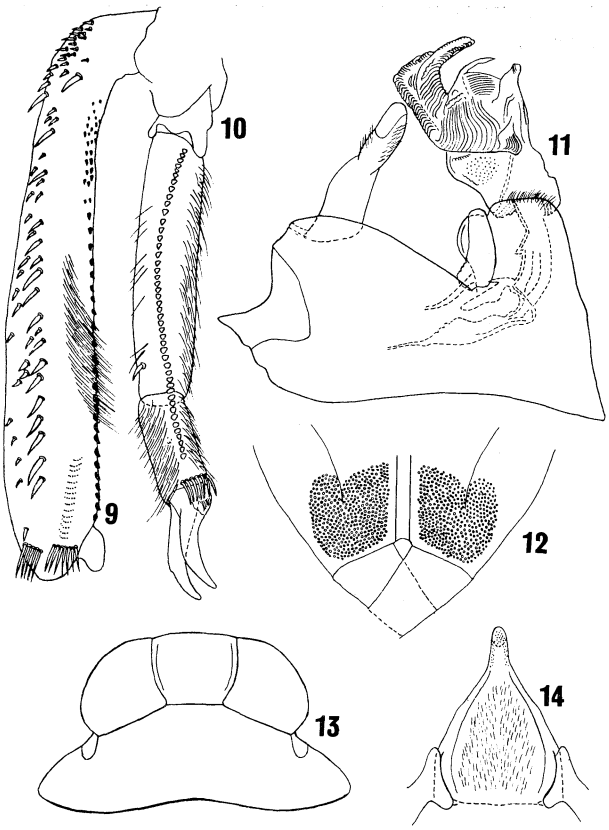


Fig. 9–14. *E. stridulata* Brooks ♂. 9, side view of mid-tibia; 10, ibid tarsi and claws; 11, genital capsule; 12, apices of clavus; 13, head and pronotum from above; 14, metaxyphus.

a slight depression on distal 1/2 of anterior margin. Mesotrochanter rounded (Brooks states that it is angulate). Male mid-tibia with many large spines (fig. 9), mid-tarsus with a series of transverse ridges (fig. 10). Apex of metaxyphus spatulate (fig. 14). Genital capsule as in fig. 11, posterior lobe with inner margin evenly rounded, parameres elongate almost reaching upper margin of posterior lobe, basally parameres transversely corrugated on inner margin.

SPECIMENS EXAMINED : Holotype ♂, 4 ♂♂ & 5 ♀♀ paratypes, Indo-China, Luang Prabang, Ban Sambang, 20.IX.1918, R. V. de Salvaza (BMNH). NW Thailand, Chiangmai Prov., Chiangdao, 450 m, 5–11.IV.1958, T.C. Maa (♯333), 1 ♂ & 2 ♀♀. Laos, Ban Van Heue, 20 km E. of Phou-Kow-Kuei, 1–15.V.1965, collectors for J. A. Rondon & J. L. Gressitt, 4 ♂♂ & 15 ♀♀ & 9 nymphs (BISHOP). Tonkin, région de Hoa-Binh, 1932, A. de Cooman, 4 ♀♀ ; Kouy-Tchéou, région de Pin Fa, 1908, Père Cavalerie, 1 ♀ (PARIS).

DISTRIBUTION (IN LITERATURE) : Brooks (1948) gives various localities in Indo-China : Tonkin (= N. Vietnam) and Laos. Lansbury (1964) records N. Viet Nam (Lao-kay, Cha Pa).

Comparative notes : *E. stridulata* is very similar in general appearance and size to *triangularis* and *hungerfordi*, but can be separated by having the nodal furrow clearly more than its own length removed from the membranal suture and the apex of the metaxyphus spatulate.

Enithares producta Lansbury, new species Fig. 15–21.

♂. Length 9 mm, maximum width 4.5 mm ; ♀, length 10 mm, maximum width 4.1 mm.

Broad robust species, tapering abruptly from base of pronotum to end of abdomen. (fig. 15 & 16).

Color : Pale form, eyes dark brown flecked with black. Vertex, pronotum and scutellum yellowish brown. Elytra hyaline appearing brown due to underlying pigmentation showing through. Membrane hyaline, very pale yellow. Dark form, eyes and vertex yellowish brown. Anterior 1/2 of pronotum, scutellum, clavus, inner angle of corium and membrane dark brown to black. Pronotum with a median transverse pale brown band, posteriorly pronotum slightly darker. Pronotal humeral angles and outer margin of corium grayish. Legs and abdomen ventrally yellowish brown.

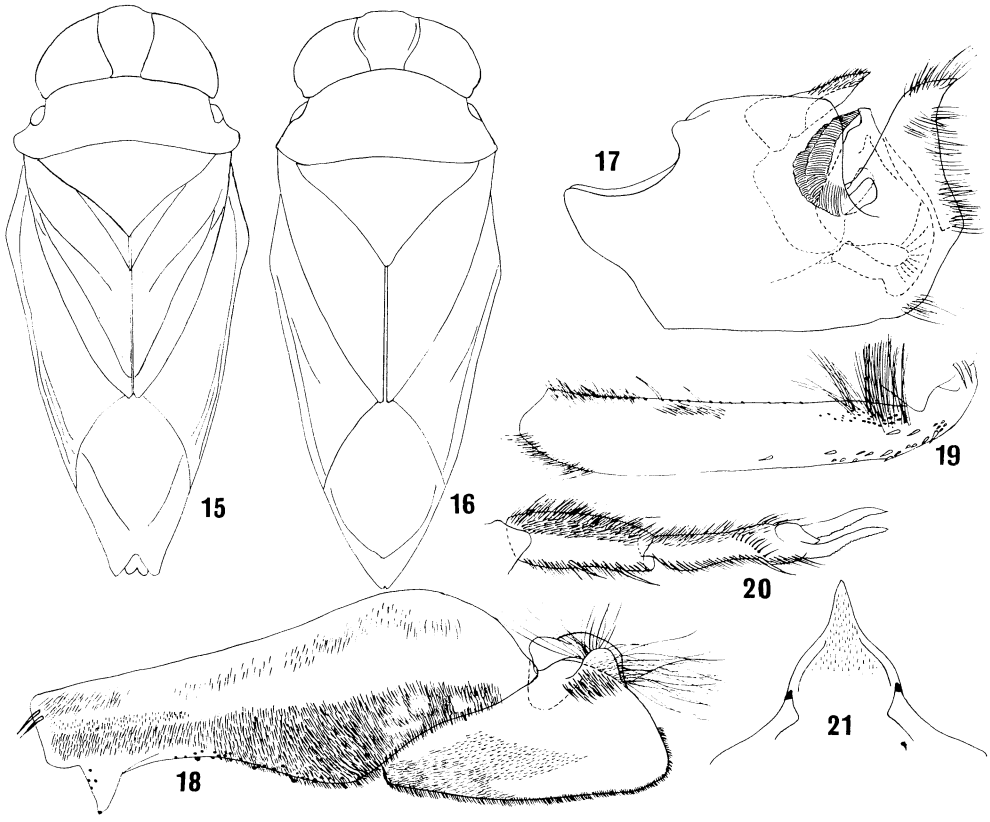


Fig. 15 21. *E. producta* n. sp. 15, ♂ dorsal aspect; 16, ♀ ibid ; 17, ♂ genital capsule; 18, ♂ mid-femur; 19, ♂ mid-tibia; 20, ♂ mid-tarsus and claws ; 21, metaxyphus.

Structural characters : ♂ with dorsal view of head rather acuminate, ♀ more rounded, anterior width of vertex extending beyond anterior margin of eyes. Greatest width of head 5/6 pronotal humeral width, just over 3× anterior width of vertex and about 3× median head length. Median head length slightly greater than anterior width of vertex and about 3/4 median pronotal length. Synthlipsis just over 1/2 anterior width of vertex. Pronotal humeral width about 3× median length, posterior margin concave, centrally emarginate. Male pronotal humeral angles clearly produced (fig. 15), ♀ not so (fig. 16). Dorsal margin of pronotal fovea directed caudad before turning laterad behind eyes. Nodal furrow directed dorsad, tip inclined cephalad, furrow more than its own length removed from membranal suture. Embolium ventrally expanded towards head. Lateral margins of elytra sinuate. Mesotrochanter rounded (fig. 18). Male mid-tibia with a dense patch of long hairs on inner proximal surface (fig. 19). Chaetotaxy of ♂ mid-tarsus and claws as in fig. 20. Metaxyphus long, apex acuminate (fig. 21). Male genital capsule as in fig. 17, posterior lobe apically bent over caudad and acuminate, parameres very short.

Holotype ♂, 1 ♂ paratype, Celebes, Minahassa (STOCKHOLM). 2 ♀, paratypes, Ziud Celebes, Nanggala, 900 m, Rantepao, VIII. 1937, F.C. Drescher (BMNH).

Comparative notes : The short nodal furrow indicates affinities with *stridulata* and the anteriorly expanded embolium of the ♂ shows affinities with *triangularis* and *hungerfordi*. The ♂ of *producta* is distinguished from all other known species by having the pronotal humeral angles produced (fig. 15), the ♀ from *stridulata* by having the apex of the metaxyphus acuminate (fig. 21).

Enithares triangularis (Guérin-Méneville) Fig. 22–31.

Notonecta triangularis G.-M. 1844, Icon. Reg. Anim. G. Cuvier : 354.- Fieber, 1851, Rozpr. mat.-přír. K. české Spol. Náuk **7** (5) : 204 ; *ibid*, **1851a** : 480.- Kirkaldy, 1900, Entomologist **33** : 10 (transferred to *Enithares*).

Enithares triangularis : Kirkaldy, 1904, Wien. Ent. Ztg. **23** : 97, 99, 133 ex parte.- Distant, 1906, Fauna Brit. India Rhynchota **3** : 44 ex parte.- Dover, 1927, J. Bombay Nat. Hist. Soc. **32** : 615.- Hutchinson, 1933, Rec. Indian Mus. **35** : 395.- Brooks, 1948, J. Kans. Ent. Soc. **21** : 42, 47.- Lansbury, 1966, Bull. Zool. Nomencl. **23** : 192.

♂♂. Length 13–14.5 mm ; maximum width 5.5–6 mm ; ♀♀, length 13.5–14.5 mm, maximum width 5.5–6 mm.

Color : Pale form, eyes, vertex, pronotum and scutellum yellowish brown. Clavus and corium partially hyaline, dorsal pigmentation showing through making elytra seem darker. Opaque zone of membrane smoky brown. Dark form, eyes black. Vertex yellowish white, suffused with red on frons. Pronotum anteriorly pale yellowish white, posteriorly hyaline, appearing black due to scutellar color showing through. Scutellum sometimes entirely black or basally black with yellowish white linear pear-shaped blotches, remainder pale yellow. Clavus mainly hyaline gray, inner angle suffused with black. Corium hyaline gray, posterior angle and basal 1/2 of lateral margins black. Membrane black. Both forms with legs and abdomen ventrally dark brown. Keel and segmental margins pale yellow.

Structural characters : Head in dorsal view rounded (fig. 29). Greatest width of head about 3/4 pronotal humeral width, nearly 3× anterior width of vertex and median head length. Synthlipsis slightly more than 1/2 anterior width of vertex. Head length equaling anterior width of vertex and just over 3/4 median pronotal length. Pronotal humeral width just over 3× median length ; lateral margins diverging, 2/3 median length ; posterior margin straight. Dorsal margin of pronotal fovea directed caudad before turning laterad behind eyes. Nodal furrow

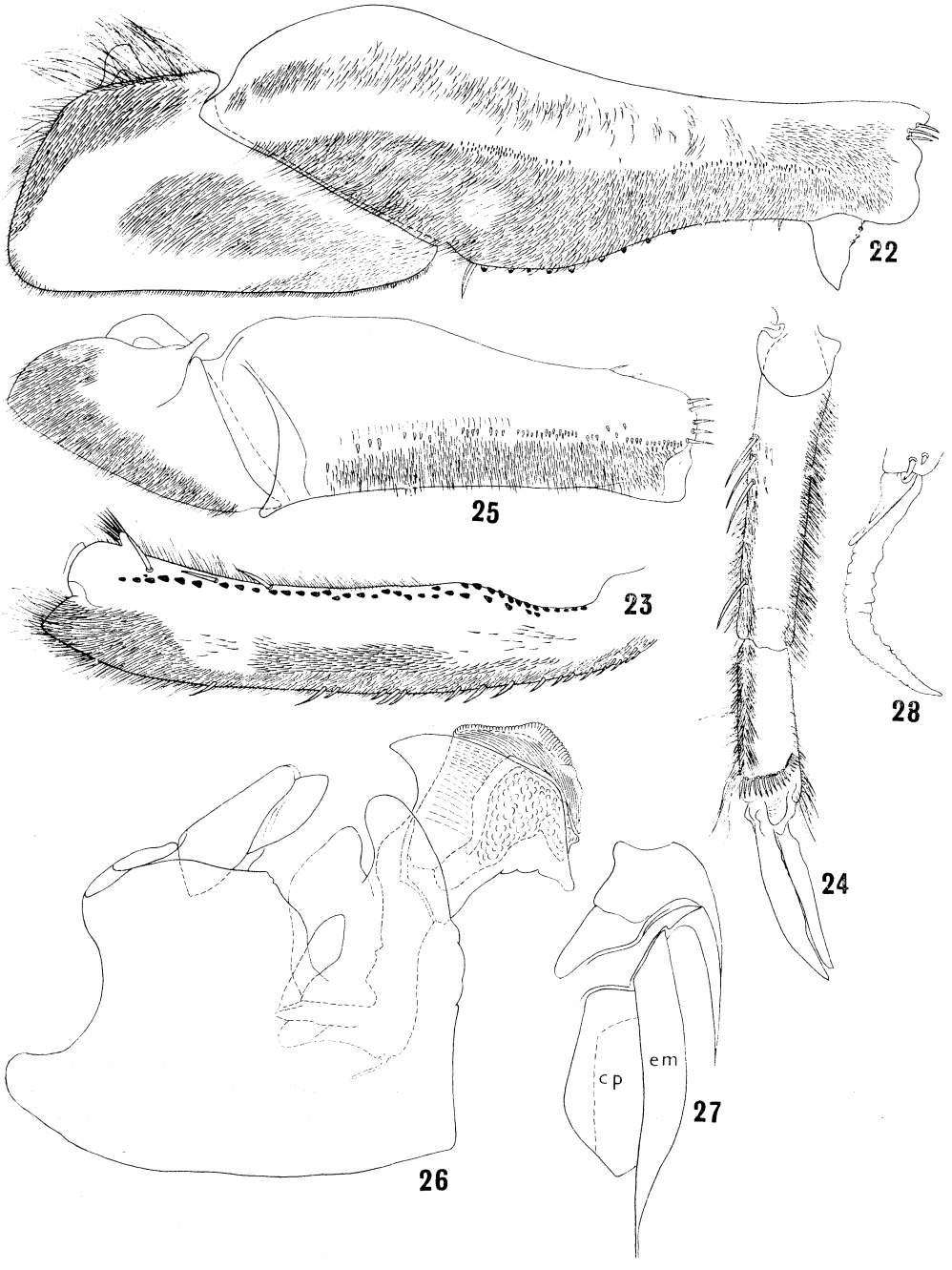


Fig. 22–28. *E. triangularis* (Guérin-Méneville) ♂. 22, mid-femur; 23, mid-tibia; 24, mid-tarsus and claws; 25, fore femur; 26, genital capsule; 27, ventral view of embolium and adjacent structures; 28, claws of hind leg.

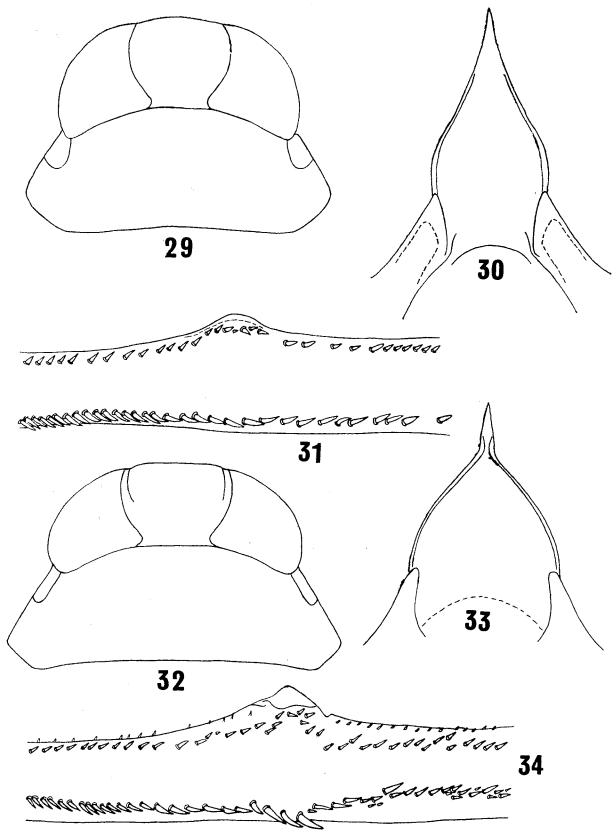


Fig. 29-31. *E. triangularis* ♂. 29. head and pronotum from above; 30, metaxyphus; 31, ventral view of hind femur. Fig. 32-34. *E. hungerfordi* Brooks ♂. 32, head and pronotum from above; 33, metaxyphus; 34, ventral view of hind femur.

more or less straight, apically inclined cephalad, less than or equal to its own length removed from membranal suture. Both sexes with embolium expanded anteriorly (fig. 27). Fore femur of ♂ (fig. 25) with a short triangular flap on ventral margin extending back over base of trochanter. Mesotrochanter acutely rounded (fig. 22). Chaetotaxy of ♂ mid-leg (fig. 22-24). Hind femur of ♂ with a nodule on lower posterior margin (fig. 31). Claws of hind leg as in fig. 28. Metaxyphus long and apically acuminate (fig. 30). Male genital capsule as in fig. 26, posterior lobe deeply cleft, lateral arms of basal plate with dorsal margin fan-like, parameres very short.

Described from "les eaux douces du plateau des Neelgherries, dans l'Inde. Decouverte par MM. Ad. Delessert et Perrotet." According to Horn & Kahle (1935 : 99) the Hemiptera types of Guérin-Méneville went to the Zoological University Museum, Naples. Brooks (Th. unpubl.) stated the type series was in the Paris Museum. I have not been able to locate any type material.

SPECIMENS EXAMINED : South India, Nilgiri Hills, Devala, 960 m (3200 ft), X.1960, P.S. Nathan, 1♀ ; West Bengal, Paresnath, 1200 m (4000 ft), 9.IV.1909, A.N. Annandale, 1♀ ; Madras, 1♀, (SECK). India, Nilgiri Hills, H.L. Andrews, 1♂ (BMNH). Inde Monts, Kodikanal, Coll. Noualhier, 2♀♀ (PARIS). India, Nilgiri Hills, Ootacamund, small pool on Pykara road beyond cemetary, c. 2×4 m, 50-80 cms deep, temp. 19.5°C, 10.XI.1932, G.E. Hutchinson, 1♂ ; India, Nilgiri Hills, Avalanche, 14.XI.1932, Hutchinson, 3♀♀(YALE). South India, Yercaud, 24.IV.1962, G.J. Spencer, 2♂♂ & 2♀♀ (OXFORD).

Comparative notes : see *E. hungerfordi.*

Enithares hungerfordi Brooks Fig. 4, 32-41.

Enithares hungerfordi Brks., 1948, J. Kans. Ent. Soc. **21** : 41-43, pl. 1, fig. 5.- Lansbury, 1966, Bull. Zool. Nomencl. **23** : 192.

♂♂. Length 14.5-15.5 mm ; maximum width 5.5-6 mm ; ♀♀, length 13.5-14 mm, maximum width 4.5-5 mm.

Color : Pale form, eyes dark brown. Dorsally appearing hyaline, suffused pale yellowish brown, posterior angles of clavus, corium and part of membrane appearing black due to dorsal pigmentation showing through. Dark form, eyes variable, light to dark brown. Vertex yellowish brown suffused with green blotches. Pronotum variable, sometimes with anterior 1/2 yellowish to dark brown, remainder hyaline appearing darker due to scutellar color showing through. Occasionally pronotum uniformly dark brown with lateral margins broadly yellow. Scutellum dark brown with lateral margins greenish yellow, pale areas sometimes as a thin line, otherwise pear-shaped blotches. Clavus dark brown adjacent to scutellum, remainder grayish green. Corium with posterior angle dark brown, remainder grayish green. Opaque zone of membrane black, anterior and posterior lobes of membrane dark brown. Legs yellowish brown. Abdomen ventrally dark brown to black with keel and segmental margins pale brown.

Structural characters : Head in dorsal view rounded (fig. 32). Greatest width of head 4/5 pronotal humeral width, nearly 3× anterior width of vertex and median head length. Synthlipsis 3/5 anterior width of vertex. Head length equaling anterior width of vertex and about 5/6 median pronotal length. Pronotal humeral width nearly 3× median length, lateral margins diverging, 2/3 median length ; posterior margin almost straight. Dorsal margin of pronotal fovea curving laterad behind eyes. Nodal furrow curved cephalad and less than its own length removed from membranal suture. Anterior 1/2 of embolium greatly expanded (fig. 4♀, 40♂). Fore femur of ♂ without a short triangular flap as in *triangularis* (fig. 38). Mesotrochanter angulate, ♂ fore femur with many long straggly hairs (fig. 35). Chaetotaxy of ♂ midleg (fig. 35-37) Hind femur of ♂ with a black nodule on posterior ventral margin (fig. 34). Claws of hind leg (fig. 41). Metaxyphus very long, apex acuminate (fig. 33). Male genital capsule (fig. 39), posterior lobe dorsally cleft, dorsal margin of lateral arms or basal plate expanded 'fan-like', parameres short, apically rounded.

Holotype ♂ (Reg. No. 6216/H7) and 1 ♀ paratype (Reg. No. 6217/H7), S. India, small stream below Jumna Cottage, Kodaikanal, Palni Hills, 7.X.1925, S. L. Hora (Zool. Survey India) ; K. S. Pradhan in litt. 7.II.1967. 1♂ & 1♀ paratype, same data in the (SECK).

SPECIMENS EXAMINED : S. India, Top Slip Camp, Nelliampathi Hills, 26.IV.1937, BM.-CM. Exped. to S. India, 5♂♂, 4♀♀ ; S. India, Naraikkádu, 750-900 m (2500-3000 ft), Tinnevelly Distr., 9.III.1936, BM.-CM. Exped. to S. India, 1♂ ; same data, 3-8.X.1938, 1♀ (BMNH). S. India, Nilgiri Hills, Devala, 960 m (3200 ft), X.1960, P.S. Nathan, 1♀

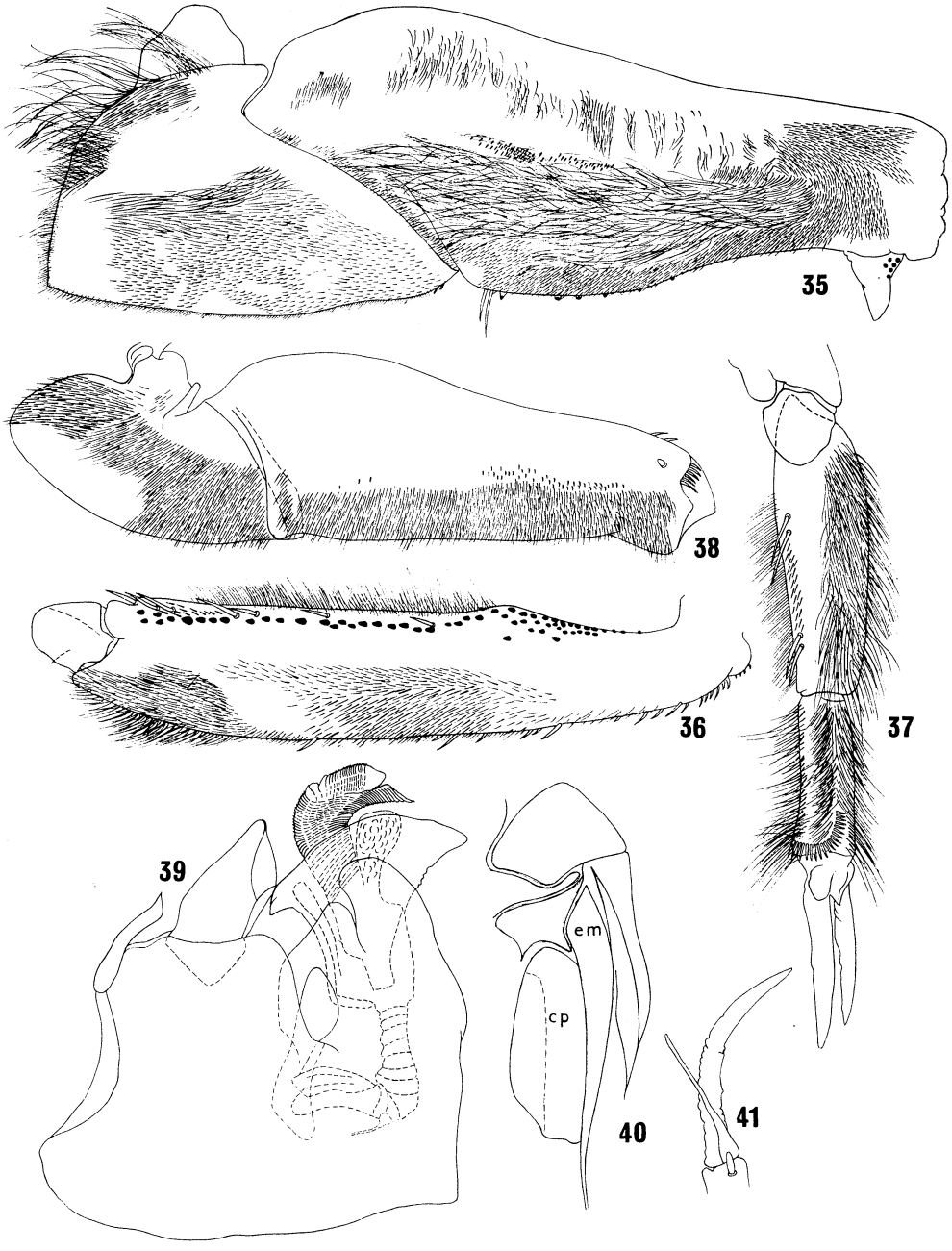


Fig. 35-41. *E. hungerfordi* ♂. 35, mid-femur; 36, mid-tibia; 37, mid-tarsus and claws; 38, fore femur; 39, genital capsule; 40, embolium and adjacent structures; 41, claws of hind leg.

(SECK). India, Shembagamur, St. Breuning, 1♂ (LENINGRAD). India, Cinchona, Anamalai Hills, XI.1959, Nathan, 2♂♂ & 5♀♀ (L.A.). S. India, Anamalai Hills, Cinchona, 1050 m (3500 ft), IV.1956, Nathan, 1♂ & 4♀♀ ; S. India, Kodaikanal (Silver Cascade), Pulney Hills, 1650 m (5500 ft), 14.IV.1953, Nathan, 2♀♀ & 3 nymphs (USNM). S. India, Anamalai Hills, Cinchona, 1050 m (3500 ft), V.1960, Nathan, 1♂ & 9♀♀ (LEIDEN).

Comparative notes : *E. hungerfordi* and *triangularis* are very similar in appearance. These are the only 2 species so far known where both ♂♂ and ♀♀ have the embolium greatly expanded anteriorly. The ♀♀ are most easily separated by the metaxyphus. The basal width of the metaxyphus of *hungerfordi* equals the median length, whereas in *triangularis* the metaxyphus is 2× longer than the basal width. The ♂♂ can be likewise separated by the metaxyphii and by *triangularis* having a flap on the fore femur extending back over the trochanter (fig. 25) which is absent on *hungerfordi* (fig. 38). The hairs on the inner surface of the mid-femur of *triangularis* are short compared to those of *hungerfordi* (fig. 22 & 35 respectively).

Enithares hackeri Hungerford Fig. 42–48.

Enithares hackeri Hgrfd., 1940, J. Kans. Ent. Soc. **13** : 130-31.- Sweeney, 1965, Proc. Linn. Soc. N. S. W. **90** (1) : 92.

♂♂. Length 9.5 mm, maximum width 3.5-3.75 mm ; ♀♀, length 9.4 mm, maximum width 3.5 mm.

Color : Eyes red to yellowish brown. Vertex and anterior 1/2 of pronotum yellowish brown, medianly slightly paler, posteriorly hyaline appearing dark brown due to scutellar color showing through. Scutellum yellow. Elytra hyaline, appearing darker (usually yellowish) due to dorsal pigmentation showing through. Legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded (fig. 47). Greatest width of head just over 4/5 pronotal humeral width, over 2× anterior width of vertex and just over 2× median head length. Synthlipsis 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and median pronotal length. Pronotal humeral width less than 3× median length ; lateral margins rounded and diverging, just over 1/2 median length ; posterior margin convex, centrally straight. Dorsal margin of pronotal fovea curving laterad behind eyes. Nodal furrow straight, slanting cephalad ; furrow equal to or slightly more than its own length removed from membranal suture. Fore trochanter of ♂ with a large nodule ventrally (fig. 42). Chaetotaxy of ♂ mid-leg (fig. 43-45). Male genital capsule as in fig. 46, anterior lobes asymmetrical, posterior lobe expanded dorsally ; lateral arms of basal plate apically elongated, parameres elongate and triangular. Metaxyphus as in fig. 48.

SPECIMENS EXAMINED : Holotype ♂, 5♂♂ & 9♀♀ paratypes, Australia, Queensland, Brisbane, XII.1932, H. Hacker (SECK). Australia, N. Queensland, Burdenbin River Delta Rita 1 pool, 27.V.1953, T.E. Woodward, 1♂ (SECK). 1♀ paratype, same data as type series ; Brisbane, XI.1955, F.C. Sweeney, 1♀ (UQ). E. Central Queensland, 10 km (30 mi) S. of Biloela, 14.VIII.1954, K.E. Stager, 3♀♀ (LA) ; Queensland, Dunwich, 11.IV.1964, G. Tudor, 1♀ (BISHOP) ; Canberra, 7.II.1957, W.J.M. Vestjens, 1♂ ; Victoria, Kooba Lagoon, 1955, Vestjens, 2♀♀ ; Queensland, Eidsvold, 25.VIII.1929, T. L. Bancroft, 4 ♀♀ (ANIC) ; Queensland, Atherton pool near Lake Barrine, 4.IX.1965, R. B. Angus, 1♂ & 2♀♀ (OXFORD) ; Australia, 1♂ (BMNH). N.S.W., Marvickville ; from old pottery pit, 30.IV.1924, F. McNeil & A. Livingstone, 1♂ & 1♀ ; N.S.W. Nepean River, Norton's

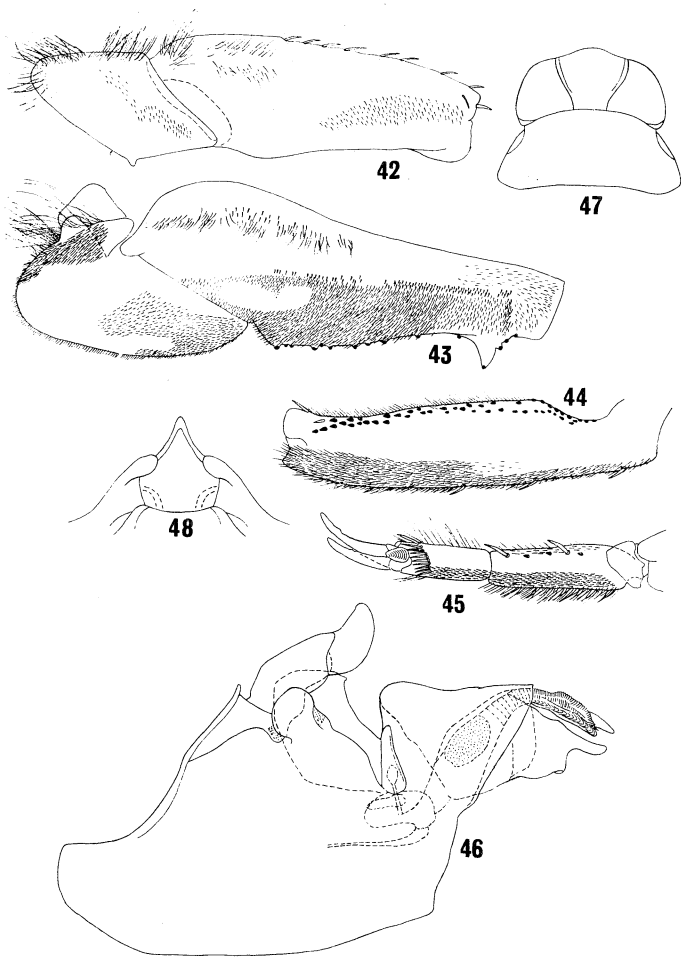


Fig. 42-48. *E. hackeri* Hungerford ♂. 42, fore femur; 43, mid-femur; 44, mid-tibia; 45, mid-tarsus and claws; 46, genital capsule; 47, head and pronotum from above; 48, metaxyphus.

Basin, 22.IV.1920, A. Musgrave, 1♂ & 3♀♀ ; Queensland, Cunamulla, 22.X.1938, N. Geary, 2♂♂ & 1♀ (AMS).

Comparative notes : Most closely allied to *E. chinai* Jaczewski described from S. Africa, both species having a tubercle on the ♂ fore trochanter. No other known Oriental species have a nodule on ♂ fore trochanter (fig. 42). *E. hackeri* also has very distinctive ♂ genitalia, the anterior lobe being distinctly asymmetrical (fig. 46).

Enithares simplex (Kirby) Fig. 7, 49-61.

Notonecta simplex Kirby, 1891, J. Linn. Soc. (Zool.) **24** : 125.—Walker, 1859, Tennent's Ceylon **2** : 292 (nomen nudum).—Motschulsky, 1863, Bull. Soc. Imp. Nat. Moscow **36**(3) : 94 (nomen

nudum).—Kirkaldy, 1900, Entomologist **33** : 10 (transferred to *Enithares*).

Notonecta templetonii Kirby, 1891, J. Linn. Soc. (zool.) **24** : 126. **New Synonymy.**

Enithares templetonii : Kirkaldy, 1900, Entomologist **33** : 10; 1904, Wien. Ent. Ztg. **23** : 97, 102 & 133.—Distant, 1906, Fauna Brit. India, Rhynchota **3** : 43-44 (ex parte). —Paiva, 1918, Rec. Indian Mus. **14** : 32 (ex parte).- *In* Annandale, 1919, Rec. Indian Mus. **16** : 156 (ex parte). —Hutchinson, 1933, Rec. Indian Mus. **35** : 394-95, fig. 2-4a (ex parte). —Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 146, listed only.

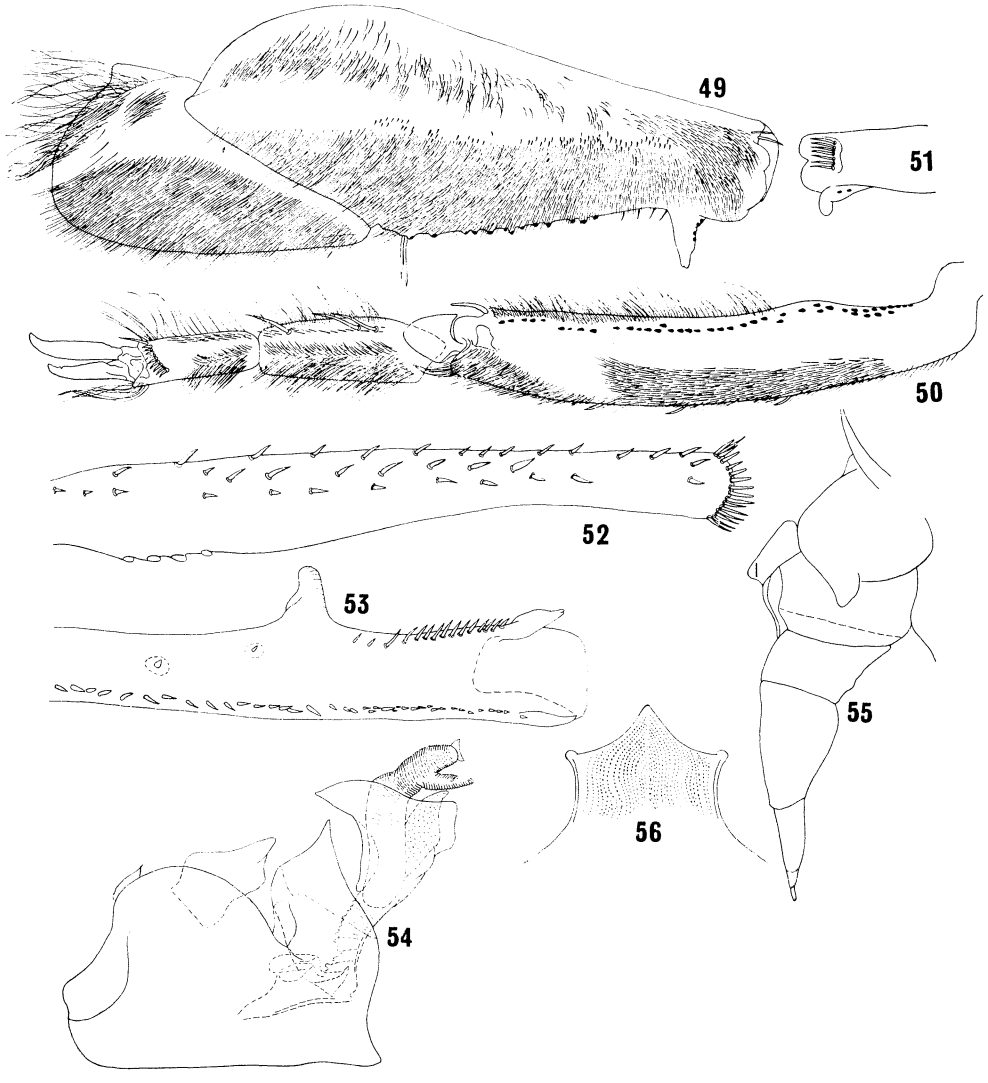


Fig. 49-56. *E. simplex* (Kirby) ♂. 49, mid-femur ; 50, mid-tibia, tarsus and claws ; 51, distal end of mid-tibia side view ; 52, hind tibia; 53, hind femur ; 54, genital capsule ; 55, rostrum side view ; 56, metaxyphus.

Enithares triangularis var *simplex* Kirkaldy, 1904, Wien. Ent. Ztg. **23** : 97, 100 & 133.—Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 146; listed only.

Enithares triangularis : Distant, 1906, Fauna Brit. India, Rhynchota **3** : 44 (ex parte).—Hutchinson, 1933, Rec. Indian Mus. **35** : 395 (ex parte).

♂♂. Length 12.5-14.5 mm, maximum width 3.5-6 mm; ♀♀, 10.5-12 mm, maximum width 4.5-5 mm.

Color : Pale form : pale yellowish brown, sometimes with anterior 1/3 grayish. Dark form : Eyes dark brown to black. Vertex yellowish brown. Anterior 1/2 of pronotum pale brown to whitish yellow, sometimes with a median brown blotch. Pronotum posteriorly hyaline grayish appearing dark brown to black due to scutellar color showing through. Scutellum black with 2 pear-shaped linear blotches. Clavus hyaline grayish, black along margins adjacent to scutellum and hemelytral commissure. Corium grayish yellow, hyaline, black along margins of membrane. Opaque zone of membrane black, anterior and posterior lobes dark smoky brown. Abdomen ventrally black with legs, keel and segmental margins dark brown.

Structural characters : Head in dorsal view rounded (fig. 57 & 59). Greatest width of head 3/4 pronotal humeral width; just less than 3× anterior width of vertex and varying between −3× to slightly more than 3× median head length. Synthlipsis about 2/3 anterior width of vertex. Median head length less than median pronotal length. Head length to anterior width of vertex variable, can be less, equal to or longer than anterior width of vertex. Pronotal humeral width just over 3× median length; lateral margins diverging, just over 1/2 median length; posterior margin of ♂ almost straight, ♀ centrally emarginate. Dorsal margin of pronotal fovea directed caudad before turning laterad behind eyes. Nodal furrow basally straight, apical 1/3 inclined cephalad, less than its own length removed from membranal suture. Labrum of ♂ basally rectangular, posterior corners raised, nodule-like (fig. 55). Chaetotaxy of ♂ mid-leg (fig. 49-51). Mid-tibia with a prominent spine on inner distal surface (fig. 50). Hind trochanter of ♂ with a proximal elongate ridge. Male hind femur with a large nodule and 2 smaller projections on ventral surface (fig. 53). Male hind tibia expanded proximally, narrowing distally (fig. 52). Male genital capsule as in fig. 54, posterior lobe with dorsal margin acuminate, lateral arms of basal plate fan-like, parameres short and rounded. Metaxyphus of ♂ as in fig. 56 & 58, strongly convex when viewed ventrally, lateral margins concave, nodulated and infuscated medianly. Female (fig. 60 & 61) lateral margins raised, apically depressed, nodulate and infuscated medianly. Female genitalia as in fig. 7.

This is the first species of *Enithares* to be recognised with such pronounced sexual dimorphism. The general appearance of the 2 sexes is so dissimilar as to cause earlier workers to regard them as distinct species. The problem became apparent when studying collections from Ceylon in that only ♂♂ of *simplex*

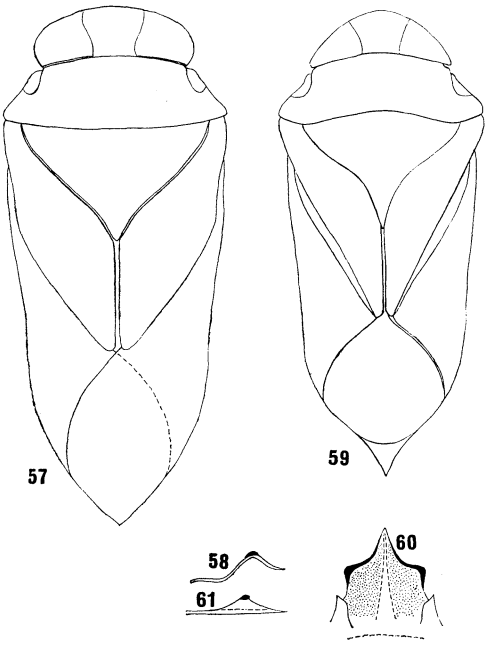


Fig. 57 & 58♂, 59-61. ♀ *E. simplex*. 57, dorsal aspect; 58, lateral view of metaxyphus; 59, dorsal aspect; 60, metaxyphus; 61, ibid, lateral view.

and ♀♀ of *templetonii* could be found. Brooks (Th. unpubl.) listed only ♂♂ of *simplex* and ♀♀ of *templetonii*. Despite their disimilar appearance, the relative measurements of head and pronotum are the same. The most striking and seemingly unique differences in *Enithares* is between the metaxyphii. The base of the metaxyphus of the ♀ is flat (fig. 61), whereas that of the ♂ is strongly convex (fig. 58).

SPECIMENS EXAMINED : Holotype ♂ of "*N. simplex*" Ceylon and lectotype ♀ & paralectotype ♀ of "*N. templetonii*" Ceylon (BMNH). Ceylon, Uinidoma, S. P., 26.I.1958, K. L. A. Perera, 2♂♂ & 2♀♀ ; Ceylon, Pundaloya, III.1897, E. E. Green, 5♀♀ ; Ceylon, Mai, 1889, H. Fruhstrofer, 2♀♀ (SECK) ; Ceylon, Haputale, IX.1907, 1♀ (LENINGRAD) ; Ceylon, Adam's Peak, S. L. Hora, 1 ♀ ; Ceylon, Diyatalawa, IX. 1925, Hora, 1 ♀ ; Ceylon, Haputale, IX. 1907, Distant Coll., 1 ♀ (AMNH) ; Ceylon, Thwaites, 1872, det. *E. triangularis* Kirk. 1897, 4♂♂ ; Ceylon, Kelani Valley near Colombo, W. Braine, 1 ♂ (OXFORD) ; Ceylon, Madugoda, C. P., 18.IV.1954, fast flowing stream, 3♂♂ & 2♀♀ ; Ceylon, Knuckle's Hills, C. P., 15-24. VIII. 1956, 1 ♂, 5 ♀♀ & 2 nymphs ; Ceylon, Nonparcial Estate, Belihuloya, 1200 m (4000 ft), 3.IX.1928, G. M. Henry, 3♀♀ & 2 nymphs; Ceylon, 'Kaneliya Jungle', Udagoma (Border of Singharaja), 5.IX.1965, slow flowing stream, P. B. Karuneratne, 6♂♂, 8♀♀ & 3 nymphs; Ceylon, Laggala (Midland Estate), 14.VIII. 1965, from fast flowing stream, Karuneratne, 2♂♂, 1♀ & 1, nymph ; Ceylon, S. P., Udagama, Homodala Estate, flowing stream, 13.III.1965, Karuneratne, 3♀♀. (COLOMBO).

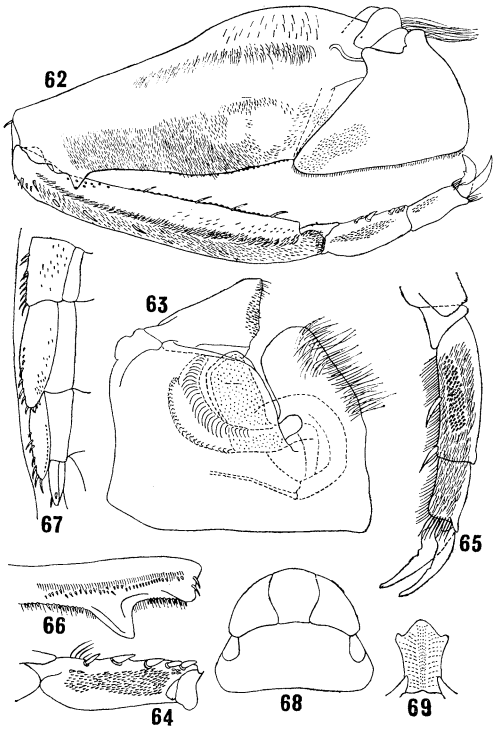


Fig. 62-69. *E. sinica* (Stål) ♂. 62, mid-leg; 63, genital capsule; 64, 1st mid-tarsus; 65, fore tarsus and claws; 66, side view of hind femur; 67, connexivum ventrally; 68, head and pronotum from above; 69, metaxyphus.

Hutchinson (1933: 394, fig. 3a) shows what purports to be the ♂ genital capsule of *templetonii*. It is clear from Hutchinson's figure that the species is either *triangularis* or *hungerfordi* by the cleft posterior lobe. Hutchinson's figure (2a) "apex of the male mid-tibia *templetonii*" is not recognisable.

Comparative notes : Although superficially similar to *triangularis*, *simplex* can be separated by not having the posterior lobe of the ♂ genital capsule cleft, metaxyphus medianly infuscated and nodulate, labrum of ♂ with posterior corners raised. Finally *simplex* is endemic to Ceylon whereas *triangularis* and *hungerfordi* are Indian species.

Enithares sinica (Stål) Fig. 62-69.

Notonecta sinica Stål, 1854, Ofvers. K. Vetens-Akad. Forh. **11** : 241

Enithares sinica : Stål, 1859, Konglia Svenska Fregatten EugeniesR esa **3** : 267. - Horváth,

1899, Természetr. Füz. **12** : 40.— Kirkaldy, 1904, Wien. Ent. Ztg. **23** : 98, 108, 133.— Oshanin, 1909, Verzeichnis der Palaearktischen Hemipteren **3** : 974.— Oshanin, 1912, Verzeichnis der Palaearktischen Hemipteren **4** : 91.— Esaki, 1926, Ann. Hist. Nat. Mus. Nat. Hung. **24** : 187 (*E. formosanus* Matsumura synonymised with *sinica*).—Hoffmann, 1931, Lingnan Sci. J. **9**(4) : 432-33.— Esaki, 1932, Bull. Biol. Soc. Japan **2** : 210 ; 1932a, Iconogr. Ins. Japan : 1692 : fig. 3343 (♂).— Lundblad, 1933, Arch. Hydobiol. Suppl. **12** : 146.—Wu, 1933, Lingnan Sci. J. **12** : 214.— Hoffmann, 1933, Lingnan Sci. J. **12** : 255.— Wu, 1935, Cat. Insect. Sinen. **2** : 576.— Esaki, 1940, Notes Ent. Chin. **7**(5) : 129-30.— Hoffmann, 1941, Lingnan Sci. J. **20** : 61.— Brooks, 1948, J. Kans. Ent. Soc. **21** : 40.— Lansbury, 1964, Ann. Zool. Warsz. **22** : 208-10, fig. 3.— Asahina et al, 1965, Icon. Insects Japon Col. Nat. Edit. **3** : 107, pl. 54, fig.7.

Enithares formosana Matsumura, 1913, Thousands Insects Japan, Addit. **1** : 97, pl. xi, fig. 7.— Esaki, 1915, Ent. Mag. Kyoto **1** : 32.— Matsumura, 1915, Ent. Mag. Kyoto **1** : 110 ; 1931, 6000 Illust. Ins. Jap. Emp. Tokyo : 1227.

♂♂ & ♀♀. Length 8.5-9.5 mm, maximum width 2.9-3.5 mm.

Boat-shaped species, broadest across abdomen closest to hind margin of pronotum.

Color : Somewhat variable, eyes gray to reddish brown. Pale form; yellowish brown. Dark form ; vertex and anterior 1/2 of pronotum yellowish brown or creamy yellow tinged with green. Posterior 1/2 of pronotum hyaline, appearing black due to scutellar color showing through. Scutellum either entirely yellowish brown or with a triangular black area basally. Clavus and corium hyaline appearing either dark gray or black due to dorsal pigmentation showing through. Opaque zone of membrane hyaline yellowish, remainder hyaline. Both forms with legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded (fig. 68). Greatest width of head 5/7 pronotal humeral width, between 2.33-2.5× anterior width of vertex and usually just over 2× median head length, occasionally just less than 2×. Synthlipsis just less than 1/2 anterior width of vertex. Head length variable, either shorter, equaling or longer than pronotum and always greater than anterior width of vertex. Pronotal humeral width nearly 3× median length, lateral margins diverging, about 1/2 median length; posterior margin almost straight. Dorsal margin of pronotal fovea directed caudad before turning laterad behind eyes (fig. 68). Nodal furrow straight, directed cephalad, less than its own length removed from membranal suture. First fore tarsus of ♂ (fig. 65) with a dense patch of black spines. Mesotrochanter short and angulate (fig. 62). Male 1st mid-leg tarsus with 5 stout spines (fig. 64), outer claw of mid-leg thickened and bent inwards (fig. 64). Chaetotaxy of ♂ mid-leg (fig. 62 & 64). Hind femur of ♂ with a stout pointed projection on ventral surface (fig. 66). Lateroventral margins of abdomen with very stout spines (fig. 67). Metaxyphus (fig. 69) basal 3/4 clearly divergent, apically rounded. Male genital capsule as in fig. 63, parameres very short and rounded, posterior lobe inclined cephalad, parallel-sided.

Lectotype ♂, China, in the Stockholm Museum, fixed by Lansbury (1964).

SPECIMENS EXAMINED : Viet Nam, Blao (Balao), 600 m, 14-21.X.1960, C. M. Yoshimoto, 1♀ ; Viet Nam, 30 km NW of Pleiku, 300 m, 10.V.1960, L. W. Quate, 1♂ ; Viet Nam, Dalat, 1500 m, 29.IV-5.V.1960, S. Quate, 2♂♂ & 1♀ ; Taiwan, Puli (Hori), VII.1954 'native collector', 1♀ ; S. China, Fukien, Shaowu, Tachulan, 15-20. IV. 1943, T. C. Maa, 2♀♀ ; S. China, Fukien, Shaowu, Shuipeikai, 21.III.1943, Maa, 3♀♀ ; same data, 16.III.1942, Maa, 1♀ ; S. China, Fukien, Changting, Hotien, 18.IV.1941, Maa, 1♂ ; same data 19.IV.1941, Maa, 1♂ ; S. China, Fukien, Chungan, Tsilichiao, 1000 m, 28.II.1943, Maa, 1♂ & 5♀♀ ; S. China, Fukien, Chungan, Upper Kuatun, 1400 m, 4-6.VIII.1945, Maa, 1♂ ; S. China, Fukien, Yungding, 11.VIII.1940, Maa, 1♀ ; S. China, Fukien, Chungan, Bohea Hills, 10. X.1939, Maa, 2♂♂ (BISHOP) ; Annam, DanKia, 26.X.1920, R. V. de Salvaza, 1♀ (LEIDEN)

China (Kinb.) 1♂ ; Sud. China, Pingshiang, Dr Kreyenberg, Coll. Breddin, det. O. Lundbland, 3♂♂ & 1♀ (STOCKHOLM) ; China, Hainan, Chenfu Wu, 1♀ ; China, Kusu, C. W. 2♀♀ ; Hong Kong, 2♀♀ ; Da-laen-Saen, Walker Coll, 1♂ (BMNH) ; Kieng Tchang, Basin du Ya-Long (Marches Thibétaines) Mienning, 2000 m, Dr Legendre, 1912, 10 ♂♂ & 7♀♀ ; Kouy-Tchéou, Kouy-Yang, P. P. Cavalérie & Fortunat, 1906, 2♂♂ & 1♀ ; Kouy-Tchéou, rĕgion de PinFa, Env. de Kouy-Yang, Cavalérie, 1909, 5♂♂ & 3 ♀♀ ; Tonkin, rĕgion de Hoa Binh, A de Cooman, various dates between 1926-35, 5♂♂ & 1♀ (PARIS). Amöy, Voy. Galatea, 2♀♀ (COPENHAGEN).

DISTRIBUTION (in literature) : Listed many times, see references.

Comparative notes : *E. sinica* is a variable species. The thickened outer claw of the ♂ mid-leg allies *sinica* with *mandalayensis* and *uncata*. The ♂♂ are easily separated by *sinica* having a large ventral projection on the hind femur (fig. 66), also the shape of the metaxyphus of *sinica* is diagnostic for both sexes.

Enithares mandalayensis Distant Fig. 70-75.

Enithares mandalayensis Dist., 1910, Fauna Brit. Ind. Rhynchota **5** : 331, fig. 192.— Hutchinson, 1933, Rec. Indian Mus. **35** : 397, fig. 3d, 4c.—Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 146, 181, fig. 67.— Brooks, 1948, J. Kans. ent. Soc. **21** : 46.—Lansbury, 1964, Ann. Zool. Warsz. **22** : 203, 206-8, fig. 2.

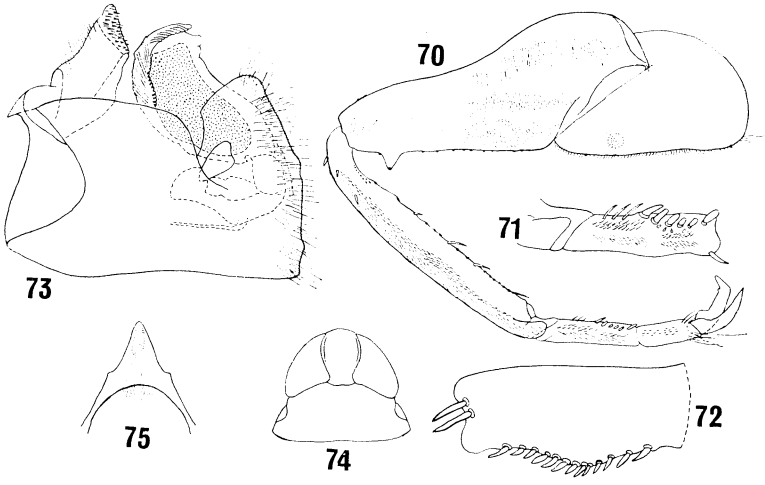


Fig. 70-75. *E. mandalayensis* Distant ♂. 70, mid-leg ; 71, 1st mid-tarsus ; 72 ; hind femur distally ; 73, genital capsule ; 74, head and pronotum above ; 75, metaxyphus.

♂♂. Length 6.75 mm, maximum width 2.75 mm ; ♀♀, 7.5-8 mm long, maximum width 2.6-2.75 mm.

Small, robust parallel-sided species, tapering near end of abdomen.

Color : Eyes reddish brown. Vertex yellowish brown. Pronotum tricolored, anterior 1/3 same as vertex, medianly with a paler transverse band, posteriorly hyaline, appearing brown

or black due to scutellar color showing through. Scutellum yellowish brown, basally darker, sometimes black. Hemelytra hyaline, appearing gray or brown depending on dorsal abdominal coloration. Legs and abdomen ventrally brown.

Structural characters : Head in dorsal view rounded, anterior width of vertex slightly produced (fig. 74). Greatest width of head variable, 60% of specimens examined less than 2×, remainder equal to or more than 2× anterior width of vertex ; likewise, head width to head length variable, can be less than 2×, equaling or slightly more than 2× head length. Synthlipsis just less than 1/2 anterior width of vertex. Head length always greater than pronotal length and anterior width of vertex. Pronotal humeral width usually less than 3 × median length, occasionally more than 3× median length. Lateral margins of pronotum diverging, 1/2 median length ; posterior margin almost straight. Dorsal margin of pronotal fovea directed caudad before turning laterad behind eyes (fig. 74). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded (fig. 70), that of ♂ with a slight prominence on caudal margin. Chaetotaxy of ♂ mid-leg (fig. 70-71). First mid-tarsus or ♂ with 6 stout spines (fig. 71). Outer claw of ♂ mid-leg thickened and curved inwards. Hind femur of ♂ with a nodule on ventral surface distally (fig. 72). Both sexes have a slight depression on anterior surface of hind femur close to attachment with trochanter. Metaxyphus (fig. 75). Male genital capsule as in fig. 73. Parameres pear-shaped, concave along outer margin.

SPECIMENS EXAMINED : Lectotype ♂ & 3 paralectotype ♀♀, Mandalay, Upper Burma, 12.III.1908, N, Annandale (BMNH). Also, Burma, Rangoon, Kermadine-Waybogi road junction, 9.II.1963, C. H. Fernando, 2♂♂ & 2♀♀ ; Malaya, 10 km (6 mi) of Mawai Sedili road, temporary pool, 3.XII.1961, Fernando, 3♂♂ ; same data, 21.VIII.1960, 1 ♂ & 1♀ (OXFORD). Thailand, Chiengmai, 15.III.1952, D. C. & E. B. Thurman, 1♀ (SECK). Tonkin, region de Hoa Binh, A. de Cooman, 1929, 2♂♂ & 2♀♀ ; Viet Nam, Nhatrang, IV, 1913, A. Krempf, 2♂♂ & 3♀♀, (PARIS).

DISTRIBUTION (in literature) : Previously recorded from HaNoi by Lansbury (1964).

Comparative notes: See *E. uncata.*

Enithares uncata Lundblad Fig. 76-82.

Enithares uncata Lund., 1933, Arch. Hydrobiol. Suppl. **12** : 179-81, fig. 66 & 69.— Lansbury, 1964, Ann. Zool. Warsz. **22** : 207-8.

♀♀. Length 7.5-8 mm, maximum width 2.5-2.75 mm ; ♀♀, length 7.75-8 mm, maximum width 2.75 mm.

Color : Pale form ; eyes pale reddish brown, vertex with a black stripe along inner margins against eyes. Vertex, scutellum, pronotum and elytra pale yellowish brown. Dark form: Eyes reddish brown, vertex yellowish brown with lateral brown to black stripes against inner margins of eyes. Pronotum anteriorly hyaline yellowish brown, posteriorly appearing dark brown to black due to scutellar color showing through. Scutellum yellowish brown, basally black. Clavus opaque gray, yellowish brown along hemelytral commissure. Corium hyaline, opaque gray distally, yellowish brown along embolium. Inner lobe of membrane grayish, remainder hyaline. Both forms with legs yellow, abdomen ventrally black and keel and segmental margins of connexivum pale yellow.

Structural characters : Head in dorsal view rounded, anterior width of vertex slightly produced (fig. 81). Greatest width of head 4/5 pronotal humeral width, about 2.5× anterior width of vertex and about 2× median head length. Synthlipsis about 1/2 anterior width of vertex.

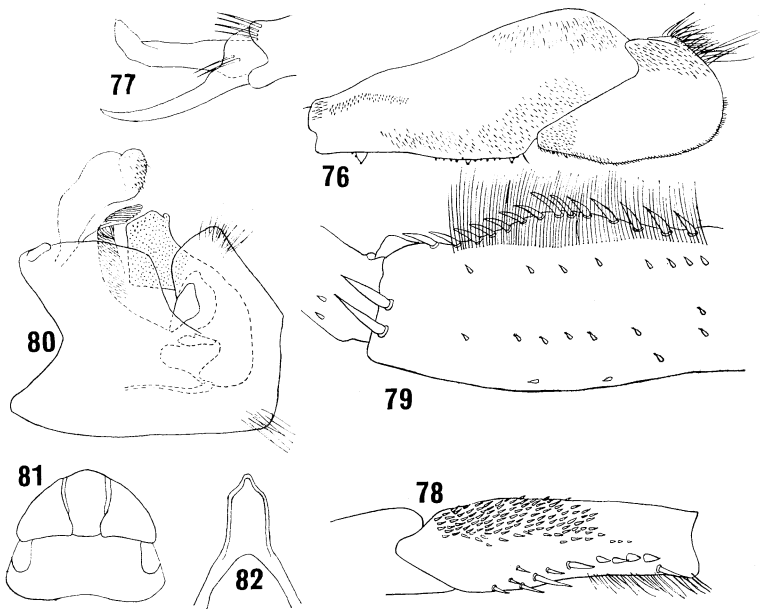


Fig. 76-82. *E. uncata* Lundblad ♂. 76, mid-femur; 77, claws of mid-leg; 78, 1st mid-tarsus; 79, hind femur distally; 80, genital capsule; 81, head and pronotum from above; 82, metaxyphus.

Head length slightly greater than anterior width of vertex and median pronotal length. Pronotal humeral width about 3× median length, lateral margins diverging, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad before turning laterad behind eyes. Nodal furrow directed cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded, ♂ mid-femur with very short sparse hairs (fig. 76). First midtarsal segment of ♂ with several stout setae (fig. 78). Outer claw of ♂ mid-tarsal leg curved and thickened (fig. 77). Hind femur of ♂ very slightly expanded distad-ventrally (fig. 79). Male genital capsule as in fig. 80, parameres short and triangular. Metaxyphus elongate, basally parallel sided, apically convergent (fig. 82).

SPECIMENS EXAMINED: Lectotype ♂, Südsumatra, Sawahs bei Ranau, I.1929, Thienemann, paralectotype ♀, Mittelsumatra, See Danau di Atas 1531 m. ü. d. m., 16.III.1929, Thienemann, paralectotype ♀, Java, Westjava, Buitenzorg Botanical Garden, Teich im neuen Gartenteil, 15.IX.1928. Thienemann (STOCKHOLM). Also, Java, Bogor Botanical Gardens, small pool with rich vegetation, bottom muddy, 23.IV.1959, B. Pisarksi & J. Proszynski, 1♂ & 1♀ (WARSAW). Java, Preanger, 1♂ & 8♀♀ (LEIDEN).

Comparative notes: *E. uncata* is almost indistinguishable from *E. mandalayensis*. Minor differences exist in the ♂ genitalia, chaetotaxy of the ♂ mid-leg and metaxyphus. It is quite possible that *uncata* is only a geographic race of *mandalayensis*. The chief difference between the 2 "species" being that *uncata* is found in Sumatra and Java whereas *mandalayensis* is found in Viet Nam, Burma and Malaya.

Enithares hebridiensis Lansbury, new species Fig. 83–90.

Enithares bergrothi : Laird, 1956, Bull. R. Soc. N. Z. **6** : 74.

♂♂. Length 10.2 mm, maximum width 3.6 mm; ♀♀, length 9.75 mm, maximum width 3.5 mm.

Color : Pale form ; eyes black, frons yellowish tinged with green. Outer margins of vertex dark brown. Vertex medianly and anterior 1/2 of pronotum yellowish brown. Posterior 1/2 of pronotum hyaline, appearing brown due to scutellar color showing through. Scutellum yellowish

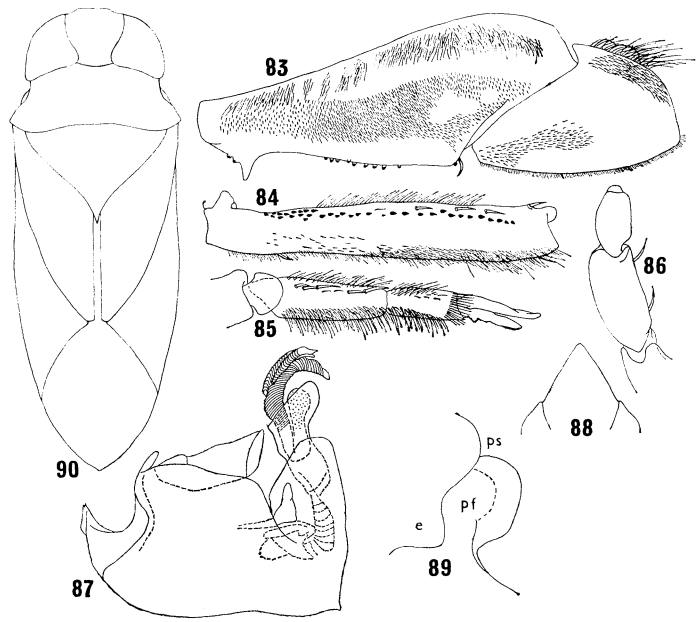


Fig. 83–90. *E. hebridiensis* n. sp. ♂. 83, mid-femur; 84, mid-tibia; 85, mid-tarsus and claws; 86, fore tarsus; 87, genital capsule; 88, metaxyphus; 89, lateral view of pronotal fovea; 90, dorsal aspect.

brown. Elytra hyaline, appearing yellow due to abdominal coloration showing through. Dark form ; eyes reddish brown flecked with black. Frons dark green often suffused with dark brown blotches. Anterior 1/2 of pronotum dark brown, posterior 1/2 hyaline, separated from anterior brown area by a transverse whitish line. Scutellum black, sometimes with yellowish pear-shaped blotches along lateral margins. Clavus black. Corium black with outer margin broadly grayish hyaline. Opaque zone of membrane black, remainder smoky hyaline. Both forms with legs pale brown, abdomen ventrally black with keel and segmental margins of the connexivum very dark brown.

Structural characters : Head in dorsal view rounded (fig. 90). Greatest width of head just over 5/6 pronotal humeral width, ♂ head width 3× anterior width of vertex, ♀ just under 3× anterior width of vertex. Male head width slightly less than 2× median head length, ♀ head width 2× or more median head length. Synthlipsis 1/2 anterior width of vertex. Head length at least 1/3 greater than anterior width of vertex and slightly longer than pronotum. Pronotal humeral width almost 3× median length, lateral margins diverging nearly 2/3 median length, posterior margin convex, centrally straight. Dorsal margin of pronotal fovea curving

laterad from behind eyes (fig. 90), viewed laterally (fig. 198). Nodal furrow slanting dorsad, less than its own length removed from membranal suture. Chaetotaxy of ♂ mid-leg (fig. 83-85). First tarsus of ♂ fore leg much wider than 2nd (fig. 86). Male genital capsule as in fig. 87, parameres triangular. Metaxyphus laterally convergent (fig. 88).

Holotype ♂ & 4 ♀♀ paratypes, New Hebrides, Aneityum, Red Crest, 360 m (1200 ft), 5 km (3 mi) NE of Anelgauht, IV-V.1955, L. E. Cheesman ; 7 ♂♂ & 18 ♀♀ paratypes, New Hebrides, Erromanga, VII-VIII.1930, L. E. C ; ♂ paratype, New Hebrides, Tanna, 16.X.1930, L. E. C ; 1♂ & 1♀ paratype, New Hebrides, Banks Is., Central lake near lake shore, Gaua, 300 m (1000 ft), 2.VI.1927. J. R. Baker (Percy Sladen Mem. Fd.) 1927 (BMNH). 6 ♂♂ & 3 ♀♀ paratypes, New Hebrides, Efate Is. (NW) Limestone Plateau N. of Maat, 1000 m, 22.VIII.1957, J. L. Gressitt (BISHOP). 1♂ paratype, New Hebrides, Espiritu Santo, near Nevaka headwaters, 3.IX.1952, M. Laird (OXFORD).

Comparative notes : *E. hebridiensis* is most closely allied to *bergrothi* and *woodwardi*. The very broad 1st tarsal segment and head width being less than 2× the median head length of the ♂♂ distinguish *hebridiensis* from *bergrothi* and *woodwardi*.

Enithares bakeri Brooks Fig. 91-95.

Enithares bakeri Brks., 1948, J. Kans. Ent. Soc. **21** : 40, pl. 1, fig. 3.

♂♂. Length 7.9 mm, maximum width 2.75 mm ; ♀♀, length 7.75-8 mm, maximum width 2.8 mm.

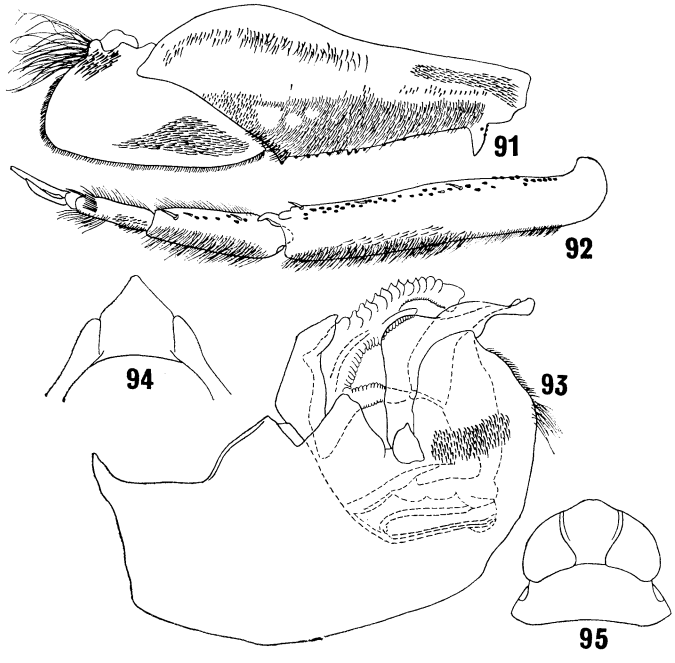


Fig. 91-95. *E. bakeri* Brooks ♂. 91, mid-femur ; 92, mid-tibia, tarsus and claws ; 93, genital capsule ; 94, metaxyphus ; 95, head and pronotum from above.

Short robust oval species, greatest width midway of body length.

Color : Eyes light to dark reddish brown, flecked with darker spots. Vertex, pronotum, scutellum and elytra light to dark brown. Legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded (fig. 95). Greatest width of head 7/9 pronotal humeral width, just over 2× anterior width of vertex and slightly less than 2× median head length. Synthlipsis just over 1/2 anterior width of vertex. Head length 1/6 greater than anterior width of vertex and median pronotal length. Pronotal humeral width just under 3× median length, lateral margins diverging, about 2/3 median length, posterior margin almost straight. Dorsal margin of pronotal fovea curving laterad behind eyes (fig. 95). Nodal furrow sinuate, directed dorsad, more than its own length removed from membranal suture. Mesotrochanter bluntly acuminate, chaetotaxy of ♂ mid-leg (fig. 91-92). Male genital capsule as in fig. 93, capsule very large and ovate, anterior lobe with 2 prominent projections dorsally, posterior lobe with a band of black spines, parameres short, apically acuminate. Metaxyphus (fig. 94) short and convergent.

Holotype ♂, 3♂♂ & ♀♀ paratypes, Philippine Is. Surigao, Mindanao, Baker (USNM) [Froeschner in litt. 13.X.1965.] 1♂ & 1♀ paratype, same data (SECK) [Byers in litt. 13. X.1965].

SPECIMENS EXAMINED : Zuid Celebes, Nanggala 900 m, Rantepao, VI.1937, F. C. Drescher, 1♂ & 1♀ (BMNH). British North Borneo, Sensuron, 9-11.I.1959, T. C. Maa, 1♂ & 2♀♀; Philippine Is., Occidental, Negros, IX.1921, F. X. Williams, 1♀ (BISHOP).

Comparative notes : See *E. genitalis*.

Enithares genitalis Lundblad Fig. 96-101.

Enithares genitalis Lund., 1933, Arch. Hydrobiol. Suppl. **12** : 182-84, fig. 68, 69b.
Enithares hippocleides Breddin, 1905, Mitt. Naturh. Mus. Hamb. **22** : 154 nec. *E. hippocleides* Kirkaldy, 1898a.

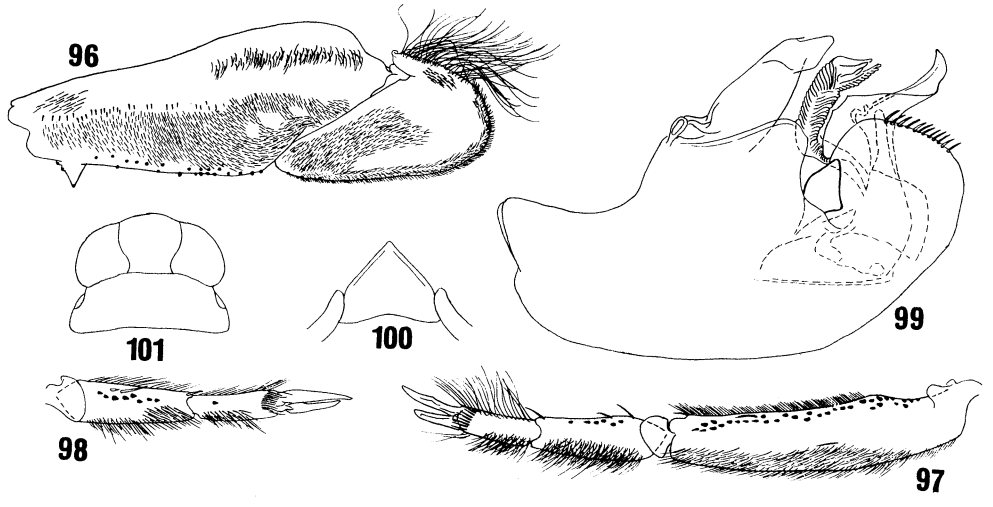


Fig. 96-101. *E. genitalis* Lundblad ♂. 96, mid-femur; 97, mid-tibia, tarsus and claws; 98, mid-tarsus showing variation in chaetotaxy; 99, genital capsule; 100, metaxyphus; 101, head and pronotum from above.

Enithares marginata Kirkaldy, 1904, Wien. Ent. Ztg. **23** : 108-109, ex parte, nec. *E. marginata* (Fieber) 1851.

♂♂. Length 7 mm, maximum width 2.75 mm ; ♀♀, length 7-8 mm, maximum width 3 mm.

Male boat-shaped, ♀ rather more parallel sided.

Color : Pale form, shining opaque yellowish brown. Dark form, vertex, anterior 1/2 of pronotum and scutellum yellowish brown, posterior 1/2 of pronotum dark brown. Inner areas of clavus and corium smudged with black, lateral margins yellowish brown. Both forms with eyes reddish brown ; inner lobe of membrane hyaline ; opaque zone, legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded (fig. 101). Greatest width of head of ♂ 6/7 pronotal humeral width, of ♀ 4/5. Head width between 2.25 and 2.50 anterior width of vertex and about 2× median head length. Synthlipsis 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and longer than pronotum. Pronotal humeral width just over 3× median length, lateral margins rounded, posterior margin almost straight. Dorsal margin of pronotal fovea curving laterad behind eyes. Nodal furrow curved cephalad, more than its own length removed from membranal suture. Mesotrochanter rounded (fig. 96) chaetotaxy of ♂ mid-leg (fig. 96-98). First tarsal segment of the ♂ mid-leg with a variable number of black spicules (fig. 97-98). Male genital capsule (fig. 99) very large and ovate ; posterior lobe with a row of stout spines along dorsal margin ; anterior lobe almost as deep dorso-ventrally as posterior lobe. Parameres broad, almost diamond shaped. Metaxyphus (fig. 100) short, lateral margins convergent.

SPECIMENS EXAMINED : Lectotype ♂ & paralectotype ♀. Ostjava, Lamongan-See (Klakah-See), 240 m, 18.XI.1928 (STOCKHOLM). Java : Bogor Botanical Gardens, small pond with vegetation, bottom muddy, 23.IV.1959, B. Pisarksi & J. Proszynski, 2♂♂ ; Java : Tjibulan, small pool in rice field, bottom mud, overgrown with grass, 16.IV.1959, Pisarksi & Proszynski, 1♂ & 1♀ ; Java : Tjibulan, 700 m, uncultivated rice field overgrown by weeds, depth 5-10 cm, bottom mud and clay, 21.IV.1959, Pisarksi & Proszynski, 1♂ & 1♀ ; Java : Tjibulan, near Bogor rice fields, 10.IV.1959, Pisarksi & Proszynski, 1♂ (WARSAW). Java : Bibibjslan, Mt Djampans, 600 m (2000 ft), 1938, M. E. Walsh, 4♀♀ (LUND). Java : Beutenzorg, 22.VII.1907, E. Brüggen, 1♀ (LENINGRAD). Java : Soekaboemie, E. Cordier, V.1908, Coll. Ctesse. de Bearn, Croisère du "Nirvana", 1♀ (PARIS). Java : Mellenborg, 1♀, Det. Kirkaldy *E. marginata* (STOCKHOLM).

Comparative notes : Very similar to *bakeri*, *genitalis* is seemingly endemic to Java whereas *bakeri* is more widely distributed in the Phillippines, Celebes and Borneo. The anterior lobe of the ♂ genital capsule of *genitalis* is almost as deep dorso-ventrally as the posterior lobe ; in *bakeri* the posterior lobe is much deeper than the anterior lobe ; also the anterior lobe of *bakeri* has 2 prominent projections on the dorsal margin which are lacking in *genitalis*.

Enithares alexis alexis Lansbury Fig. 102-108.

Enithares alexis Lans., 1967, Ent. Meddr. **35** : 90-92. fig. 1-7.

♂♂. Length 9-9.9 mm, maximum width 3.5-3.75 mm ; ♀♀, length 9.5-9.8 mm, maximum width 3.5-3.75 mm.

Color : Pale form, eyes reddish brown, remainder yellowish brown. Dark form, eyes variable

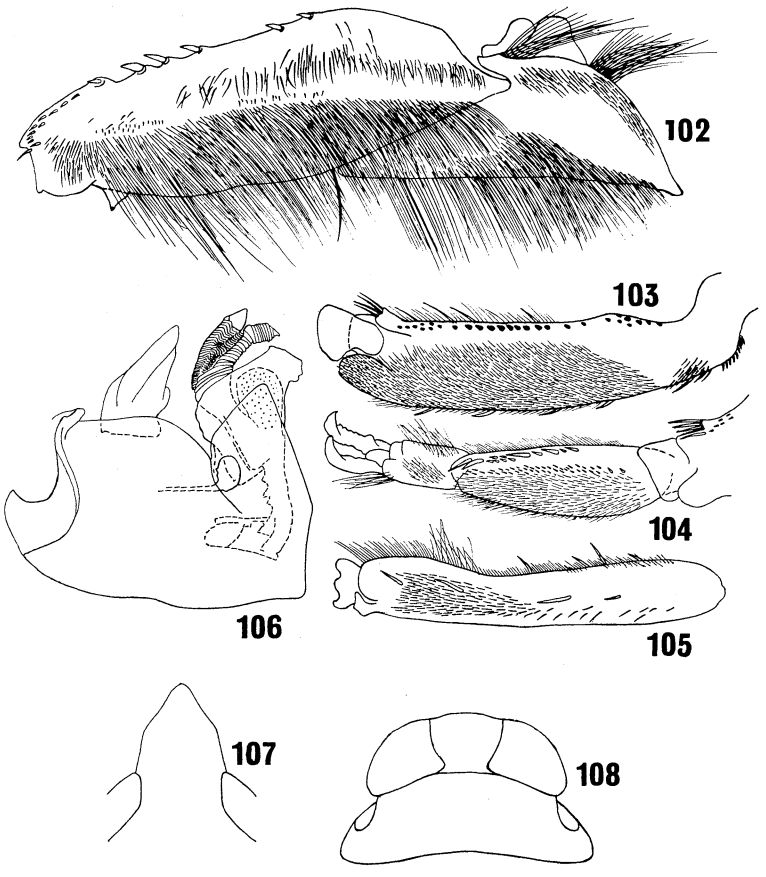


Fig. 102-108. *E. alexis* Lansbury ♂. 102, mid-femur; 103, mid-tibia; 104, mid-tarsus; 105, fore tibia; 106, genital capsule; 107, metaxyphus; 108, head and pronotum from above.

from gray to black. Vertex pale green to reddish brown with 2 lateral brown stripes on frons. Anterior 1/3-1/2 of pronotum dark brown, medianly hyaline, posteriorly grayish appearing black due to scutellar color showing through. Scutellum black, sometimes with apex yellowish green, if so scutellum dark brown. Clavus dark brown to black with outer margin grayish hyaline, sometimes grayish area extends over most of clavus with only lateral margins dark brown. Corium with inner angle and posterior margin dark brown to black with remainder grayish hyaline. Opaque zone of membrane black, anterior and posterior lobes smoky brown. Both forms with legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded (fig. 108). Greatest width of head 5/6 pronotal humeral width, usually less than 3× anterior width of vertex, occasionally equal to or more than 3 × anterior width of vertex. Synthlipsis 1/2 anterior width of vertex. Median head length slightly greater than anterior width of vertex. Head length to pronotal length variable; in ♂ equal to or less; ♀ head always longer than pronotum. Pronotal humeral width about 3× median length; lateral margins diverging, about 1/2 median length; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea curving laterad

behind eyes. Nodal furrow curved cephalad, less than its own length removed from membranal suture. Male fore tibia (fig. 105) with inner margin depressed. Mesotrochanter elongate with tip produced, mid-femur with a dense mat of long hairs and proximo-ventrally depressed, dorsal margin with several stout setae (fig. 102). Male mid-tibia with distal outer margins produced and rounded (fig. 103). Chaetotaxy of ♂ mid-tarsus and claws as in (fig. 104). ♀ hind femur slightly constricted adjacent to trochanter. ♂ genital capsule as in fig. 106, posterior lobes bluntly acuminate, parameres rounded with 2 spine-like processes on inner margin. Metaxyphus bluntly acuminate (fig. 107).

Holotype ♂, 1♂ & 6♀♀ paratypes, New Ireland, Lemkamin, 20.IV.1962, Noona Dan Expedition ; 1 ♂ paratype, New Britain, Yalom, 1000 m, 23.V.1962, N.D.E. ; 1 ♂ & 1 ♀ paratype, same data, 9.V.1962, NDE ; 2♂♂ & 2♀♀ paratypes, New Britain, ditch at Yalom, 35 km SE of Cape Lambert, 1000 m, Sta. 20,15.V.1962, NDE ; 2♂♂ paratypes, New Britain, river W of Yalom, 35 km SE of Cape Lambert, 900 m, Sta. 23, 21.V.1962, NDE ; 1♂ & 1♀ paratype, Bismarck Archipelago, Manus I., brook in secondary forest, Lorengau, Sta. 52, 21.VI. 1962, N. D. E. ; 2♂♂ & 3♀♀ paratypes, New Britain, small river at Yalom, 35 km SE of Cape Lambert, 1000 m, 20° C, Sta. 16, 12.V.1962, NDE (COPENHAGEN) 1♂ paratype, New Britain, Gazelle Pen., Upper Warangoi, Illugi, 230 m, 8-11.XII.1962, J. Sedlacek ; 1♂ paratype, same data, 250-600 m, 28-30.XI.1962, J, S. (BISHOP). Known only by the type series.

Comparative notes : The shape of the mesotrochanter and fore tibia of the male clearly allies *alexis* with *malayensis*. *E. alexis* is easily separated by the presence of the very long mid-femoral hairs, stout setae on the dorsal margin and chaetotaxy of the mid-tibia of the ♂. The mid-tibia of *alexis* are distally roundly produced (fig. 103) Whereas in *malayensis* the ♂ mid-tibia are enlarged distally (fig. 289).

Enithares alexis lairdi Lansbury, new subspecies Fig. 109-110.

Enithares bergrothi : Laird, 1947, Trans. R. Soc. N. Z. **76** : 453-76.

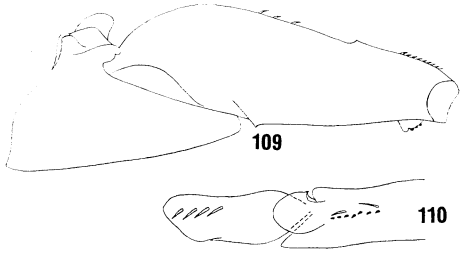


Fig. 109-110. *E. alexis lairdi* n. subsp.♂. 109, mid-femur, fine chaetotaxy omitted ; 110, distal end of mid-tibia and 1st tarsus.

Through the courtesy of Mr R. Ordish of the Dominion Museum, Wellington, N. Z., I have been able to study the series of specimens from New Britain, Jaquinot Bay, Palmalmal named as ***E. bergrothi*** in Laird (1947) and erroneously considered conspecific with the nominate form by Lansbury (1967). Comparison of the Jaquinot Bay material with those forming the type series shows that both forms are similar in size, color and most structural features including the ♂ genitalia. Males of both forms have the very long dense mat of hairs on the midfemur, but differ in the shape and structure of various secondary features of the ♂ mid-leg as tabulated below. It has not been found possible to separate the ♀♀.

alexis alexis	*alexis lairdi*
Inner ventral angle of mesotrochanter strongly produced, mid-femoral dorsal spines prominent (fig. 102)	Inner ventral angle of mesotrochanter more angulate, mid-femoral dorsal spines inconspicuous (fig. 109).

Outer lobe of mid-tibia distally rounded (fig. 103)

First mid-tarsus with the stout setae widely spaced (fig. 104)

Outer lobe of mid-tibia distally acuminate (fig.110)

First mid-tarsus with the stout setae all distal (fig. 110)

Holotype ♂ (BISHOP 7709), 1♂ & 3♀♀ paratypes, New Britain, Jaquinot Bay, Palmalmal, 1945, M. Laird. (paratypes DM).

Enithares chinensis Brooks Fig. 111-116, 127-128.

Enithares chinensis Brks., 1948, J. Kans. Ent. Soc. **21** : 43, pl. 2, fig. 1.

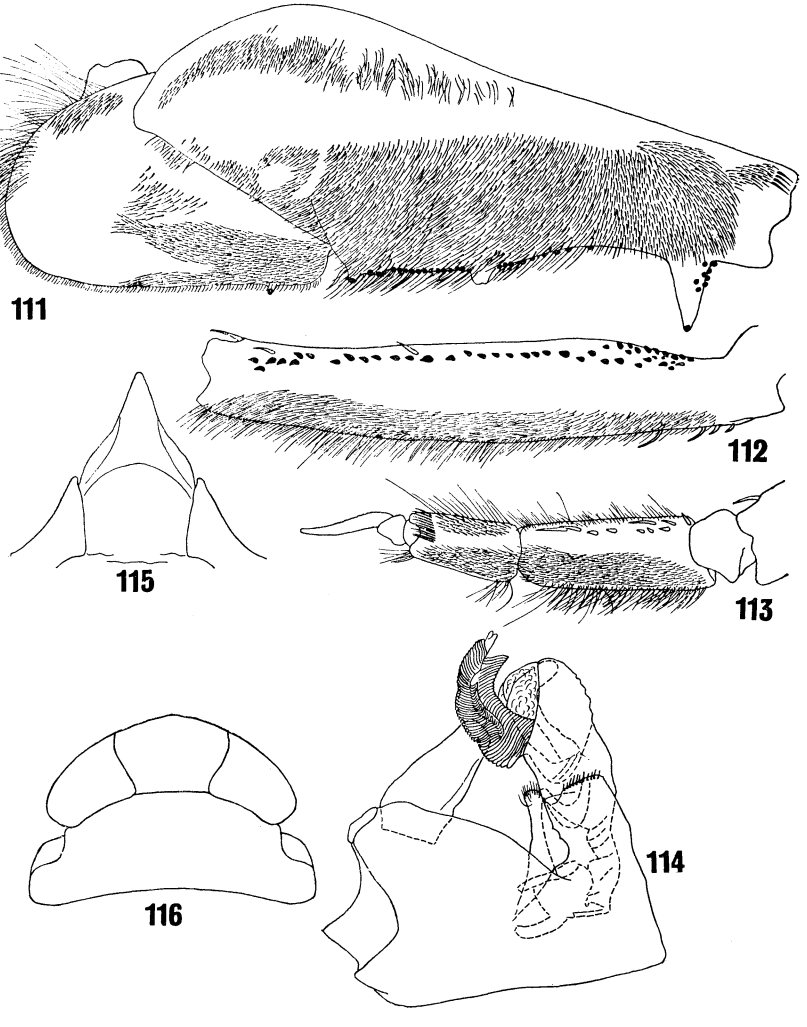


Fig. 111-116. *E. chinensis* Brooks ♂. 111, mid-femur; 112, mid-tibia; 113, mid-tarsus and claws; 114, genital capsule; 115, metaxyphus; 116, head and pronotum from above.

♂♂. Length 11 mm, maximum width 4 mm ; ♀♀, length 11.25 mm, maximum width 3.75 mm.

Color : Pale form, eyes reddish brown flecked with black. Vertex, pronotum and elytra including membrane yellowish brown and semi-hyaline. Abdomen ventrally dark brown, keel, lateral margins and legs yellowish brown. Dark form, eyes pale reddish brown. Vertex yellowish brown. Pronotum, scutellum, elytra and opaque zone of membrane very dark brown. Lateral margins of pronotum, scutellum laterally, clavus and corium with paler brown linear areas. Anterior and posterior lobes of membrane, legs, keel and lateral margins of sternites pale brown. Abdomen ventrally black.

Structural characters : Head in dorsal view rounded. Greatest width of head about 5/6 pronotal humeral width, nearly 2.25× anterior width of vertex and 2.5× median head length. Synthlipsis just over 1/2 anterior width of vertex. Median head length slightly shorter than anterior width of vertex and equaling median pronotal length in ♂ ; ♀ slightly longer. Pronotal humeral width over 3× median length in ♂ ; ♀ just less than 3× median length. Lateral margins convex, about 1/2 median length, posterior margin almost straight. Dorsal margin of pronotal fovea directed obliquely caudad before turning laterad (fig. 116). Nodal furrow short and straight, directed dorsad, more than its own length removed from membranal suture (fig. 128). Both sexes with a row of small but distinct transverse ridges along 1st 3 and part of 4th visible ventral connexival segments. These ridges are on extreme outer margin of connexivum. Mesotrochanter rounded (fig. 111) chaetotaxy of ♂ mid-leg (fig. 111-113). Male genital capsule as in fig. 114, parameres elongate with hairs at apex, posterior lobe with a distinct 'step' dorsally. Metaxyphus as in fig. 115.

Holotype ♂, China, Datchulan, 1939, T. H. Cheng (USNM), Brooks, (1948 : 43) also referred to a ♂ and ♀ paratype from China, Foochow, Chenfu F. Wu in the 'Imperial Museum in Japan' These specimens are in fact in the SECK. Through the courtesy of Dr Byers, I have been permitted to examine them. Also, I have seen the following material : Macao, J. C. K. Coll. 1♂ & 1♀ (Bishop) The ♂ from Macao was sent to Dr Froeschner, Washington for comparison with the type, he reported as follows, 10.XII.1965 "First, my comparison with the type of *chinensis*. I can report with confidence that your specimen and the type are conspecific." China, Foochow, Chenfu F. Wu, Det China 1931 as *E. biimpressa* (Uhler) 1♂ & 1♀ (BMNH). China, Yen-Ping, 21.VII.1917, Ac. 5148, 1♀ (AMNH). Laos, R. V. de Salvaza, 1♀ (Leiden).

Comparative notes : Very closely allied to *biimpressa* by the minutely serrated ventral connexival segments and the male genitalia. The nodal furrow of *chinensis* is more than its own length removed from the membranal suture (fig. 128) whereas in *biimpressa* it is equal to or less than its own length removed from the membranal suture (fig. 124). Viewed laterally, the posterior margin of the pronotal fovea of *biimpressa* (fig. 123 ♀) is produced towards the posterior margin of eye, but not so in *chinensis* (fig. 127 ♀).

Enithares biimpressa (Uhler) Fig. 117-126.

Bothronotus biimpressus Uhl., 1860, Proc. Acad. Nat. Sci. Philad. **1860** : 231.
Enithares biimpressa : Hoffmann, 1933, Lingnan Sci. J. **12** : 256.— Wu, 1935, Cat. Ins. Sin. **2** : 576, ex parte.— Hoffmann, 1941, Lingnan Sci. J. **20** : 61.

♂♂. Length 10 mm, maximum width 4.5 mm ; ♀♀, length 10-10.5 mm, maximum width 4 mm.

Color : Pale form, yellowish brown, hyaline and shining. Dark form with eyes reddish brown. Vertex and pronotum anteriorly yellowish brown, medianly almost hyaline yellowish,

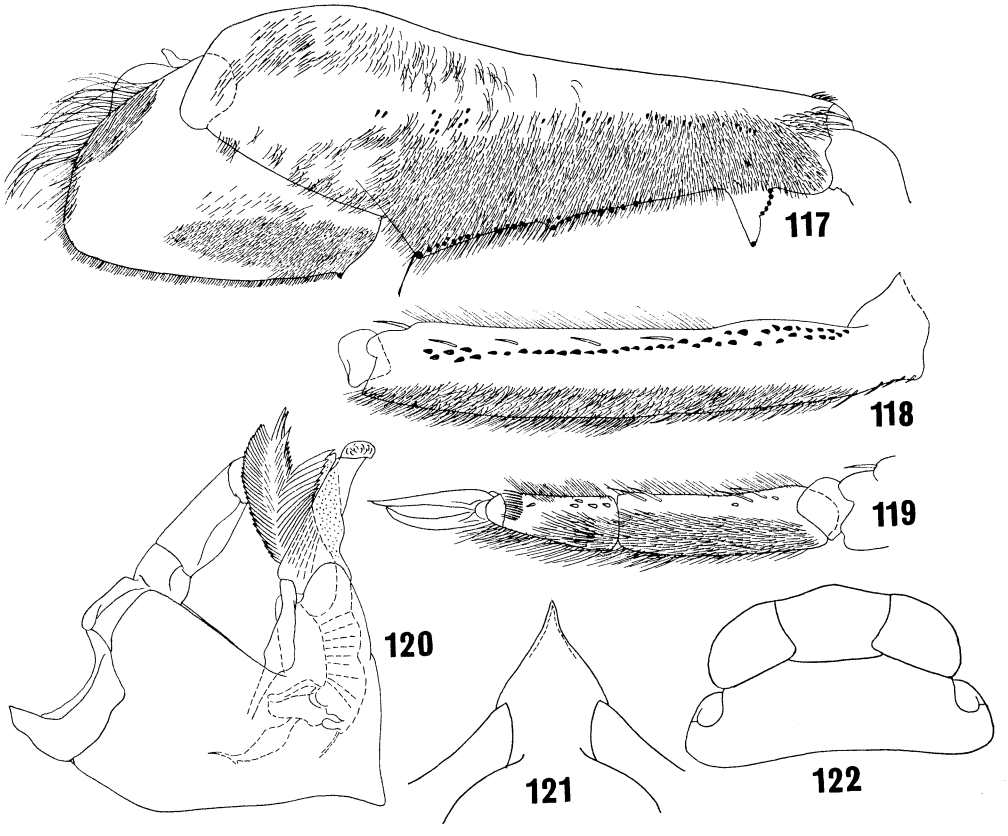


Fig. 117-122. *E. biimpressa* (Uhler) ♂. 117, mid-femur; 118, mid-tibia; 119, mid-tarsus and claws; 120, genital capsule; 121, metaxyphus; 122, head and pronotum from above.

posteriorly with lateral brown suffusions. Scutellum laterally dark yellowish brown, remainder almost black. Clavus appearing black, claval suture suffused with gray. Corium anteriorly grayish with yellowish brown vermiculate blotches along lateral margins, posteriorly corium black. Opaque zone of membrane black, anterior and posterior lobes dark smoky brown. Both forms with abdomen dorsally and ventrally smoky brown ; keel, connexivum and legs yellowish brown.

Structural characters: Head in dorsal view rounded (fig. 122 ♂ & 125 ♀). Greatest width of head 4/5 pronotal humeral width, 2.5× anterior width of vertex and 3.5× median head length. Synthlipsis about 2/3 anterior width of vertex. Head length about 2/3 anterior width of vertex and clearly shorter than pronotum. Pronotal humeral width slightly more than 3× median length, lateral margins convex, anterolateral margins broadly rounded, posterior margin almost straight. Dorsal margin of pronotal fovea of ♂ directed caudad before turning laterad behind eyes (fig. 122), ♀ obliquely laterad (fig. 125). Lateral margins of (pronotal) fovea viewed laterally produced towards posterior margin of eyes (fig. 123). Nodal furrow (fig. 124) equal to or less than its own length removed from membranal suture. The 1st 3 visible ventral outer lateral margins of connexival segments with a row of minute transverse ridges. Chaetotaxy of ♂ mid-leg (fig. 117-119). Male genital capsule as in fig. 120, parameres elongate,

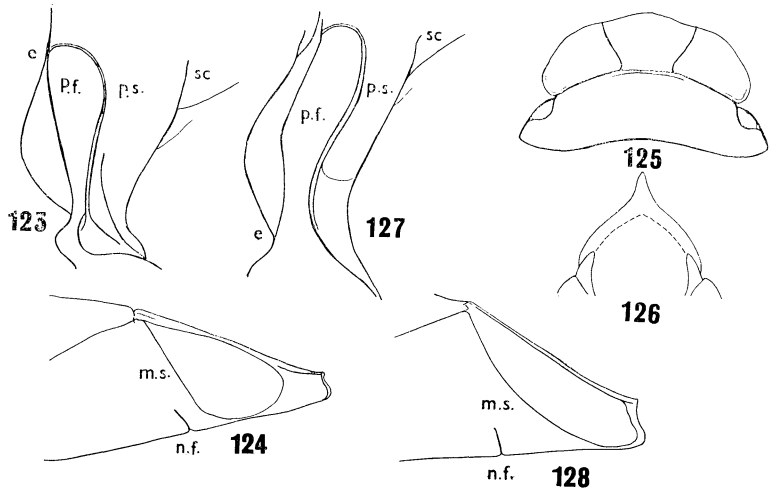


Fig. 123-126. *E. biimpressa* holotype ♀. 123, lateral view of pronotal fovea; 124, distal end of elytra; 125, head and pronotum from above; 126, metaxyphus. 127, lateral view of pronotal fovea; 128, distal end of elytra.
Fig. 127-128 *E. chinensis* ♀.

dorsal margin of posterior lobe with a distinct 'step'. Metaxyphus as in fig. 121 ♂ & 126 ♀, apex acuminate.

SPECIMENS EXAMINED : Lectotype ♀ and paralectotype ♀, Hong Kong, *Bothronotus biimpressa* Co-Types No. 2522 (USNM). Hong Kong, Saikung, Kowloon, 22.IV.1965, C. M. Yoshimoto, 3♂♂ & 2♀♀, 1 teneral (BISHOP).

Comparative notes : See *E. chinensis.*

Enithares timorensis Brooks Fig. 129-134.

Enithares timorensis Brks., 1948, J. Kans. Ent. Soc. 21 : 50-51, pl. 3, fig. 14.

♂♂. Length 9.2-9.5 mm, maximum width 3.5 mm ; ♀♀, length 9.2-9.6 mm, maximum width 3.5-3.7 mm.

Color : Pale form, eyes gray, remainder yellowish brown. Dark form with eyes brown. Vertex, pronotum medianly and anterior margins of elytra pale yellowish brown, remainder dark brown to black. Both forms with legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded, eyes very large and voluminous. Greatest width of head 5/6 pronotal humeral width, just under 3× anterior width of vertex and about 2.5× median head length. Synthlipsis just over 1/2 anterior width of vertex. Head length 1/5 greater than anterior width of vertex and either equaling or slightly longer than pronotum. Pronotal humeral width 3× or more median length ; lateral margins diverging and convex, posterior margin almost straight. Dorsal margin of pronotal fovea directed caudad before slightly turning laterad behind eyes. Nodal furrow curved cephalad, slightly more than its own length removed from membranal suture. Chaetotaxy of ♂ mid-leg as in fig. 129, 130 & 133, mesotrochanter angulate. Male genital capsule as in fig. 131, parameres reniform, lateral arms of basal plate expanded dorsally. Metaxyphus (fig. 132) laterally concave, apically acuminate.

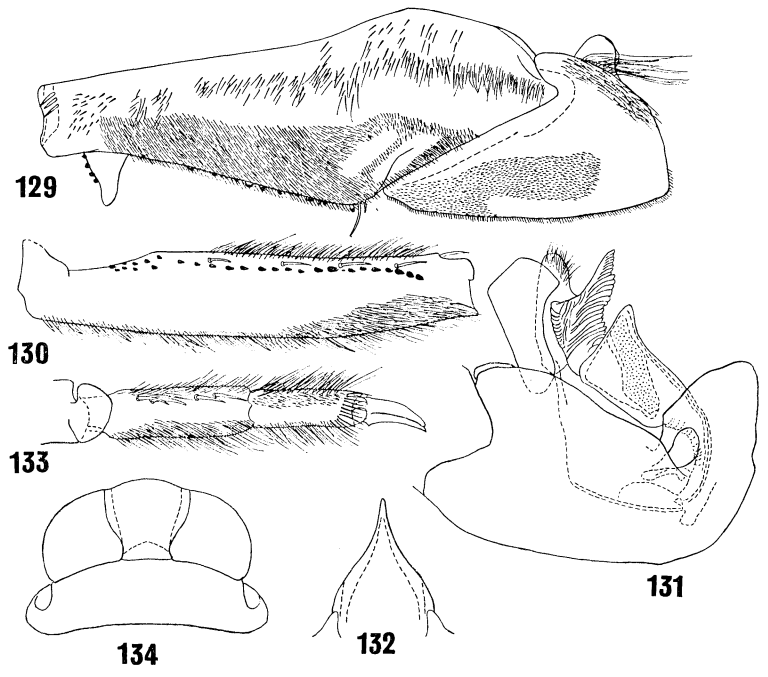


Fig. 129-134. *E. timorensis* Brooks holotype ♂. 129, mid-femur; 130, mid-tibia; 131, genital capsule; 132, metaxyphus; 133, mid-tarsus and claws; 134, head and pronotum from above.

SPECIMENS EXAMINED : Holotype ♂ & 1♀ paratype, Timor, Soe, 1935, Buhler (Basle). 1♀ paratype, Timor, Soe, 1935, C. Buhler & Meyer ; 1♂ paratype, Timor Bowo (SECK) 1♂ paratype, Timor (BMNH). Ost Soemba (Sumba or Sandlewood I.) Mao Marro, 450 m, V.1925, Dammerman, 8♂♂ ; O. Soemba, Kananggar, 700 m, V.1925, Dammerman, 3♀♀ ; N. O. Soemba, Kambera, III.1925, Dammerman, 1♀ (LEIDEN).

Comparative notes : Not clearly allied to any other known species, by having the nodal furrow more than its own length removed from the membranal suture, *timorensis* keys out with *chinenensis* from which it can be separated immediately by not having the serrations on the lateral margins of the connexivum and being rather smaller (9.6 mm compared with 11 mm or more for *chinensis*).

Enithares loria Brooks Fig. 135-139.

Enithares loria Brks., 1948, J. Kans. Ent. Soc. **21** : 45-6, pl. 2, fig. 8.— Lansbury, 1964, Ann. Zool. Warsz. **22** : 207.

♂♂ & ♀♀. Length 6-6.9 mm, maximum width 2.4-2.6 mm.

Shape : Ovate, boat-shaped, greatest width across apex of scutellum.

Color : Eyes red to reddish brown. Frons with a pair of orange spots. Vertex, pronotum, scutellum and hemelytra yellowish brown. Legs and abdomen ventrally almost black, keel and segmental margins brown.

Structural characters : Head in dorsal view rounded. Greatest width of head about 8/9 pronotal humeral width, just over 2× anterior width of vertex. Male head width just over 2× median head length, ♀ 1.75× median length. Synthlipsis about 1/2 anterior width of vertex. Median head length of ♂ equaling anterior width of vertex, ♀ 1/3 longer. Head clearly longer than pronotum in both sexes. Pronotal humeral width just over 3× median length, lateral margins diverging, 2/3-3/4 median length, posterior margin almost straight (fig. 139). Dorsal

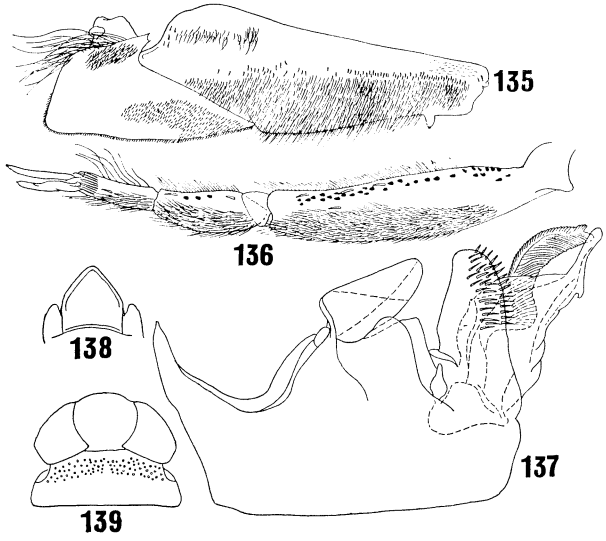


Fig. 135-139. *E. loria* Brooks ♂. 135, mid-femur; 136, mid-tibia and tarsus; 137, genital capsule; 138, metaxyphus; 139, head and pronotum from above.

margin of pronotal fovea curving laterad from behind eyes. Anterior 1/2 of pronotum with a rugose transverse band, rugose area narrowing medianly and not therefore attaining posterior margin of vertex. Nodal furrow short, more than its own length removed from membranal suture. Brooks (1948) states nodal furrow less than its own length removed from membranal suture. Frons viewed ventrally with a depression adjacent to eyes, immediately above depression, small pits either side of median line contiguous with eyes. Chaetotaxy of ♂ mid-leg (fig. 135-36). Male genital capsule as in fig. 137, parameres elongate, narrowed apically, posterior lobe fingerlike with numerous stout setae on outer margin. Metaxyphus (fig. 138) short, tip bluntly acuminate.

Holotype ♂, 2♂♂ & 2♀♀ paratypes, New Guinea, Rigo, Luglio, 1889, L. Loria in the SECK not in the USNM as stated by Brooks (1948). Brooks (1948) also listed specimens from Papua and Australia. I have also seen : Australia, Darwin, G. F. Hill, 1♂ & 3♀♀ ; Solomon Is., Russell Is., Uffa, 4.IX.1955, E. S. Brown, 1♂ (BMNH). Australia, Queensland, Barron River, 4.IX.1965, R. B. Angus 1♂ (OXFORD).

Comparative notes : The very small size allies *loria* with *genitalis* as does the short nodal furrow. The transverse rugose band on the pronotum and finger-like posterior genital lobe of *loria* are diagnostic. The pronotum of *genitalis* is smooth and the posterior lobe is short and rounded (137, 139 & 99, 101 respectively).

Enithares nigra Lansbury, new species Fig. 140–148.

♂♂. Length 9.75–10.25 mm, maximum width 3.6–3.9 mm; ♀♀, length 9.5–9.75 mm, maximum width 3.6–3.9 mm.

Shape : Broad robust species, tapering to end of abdomen from a point midway along abdomen.

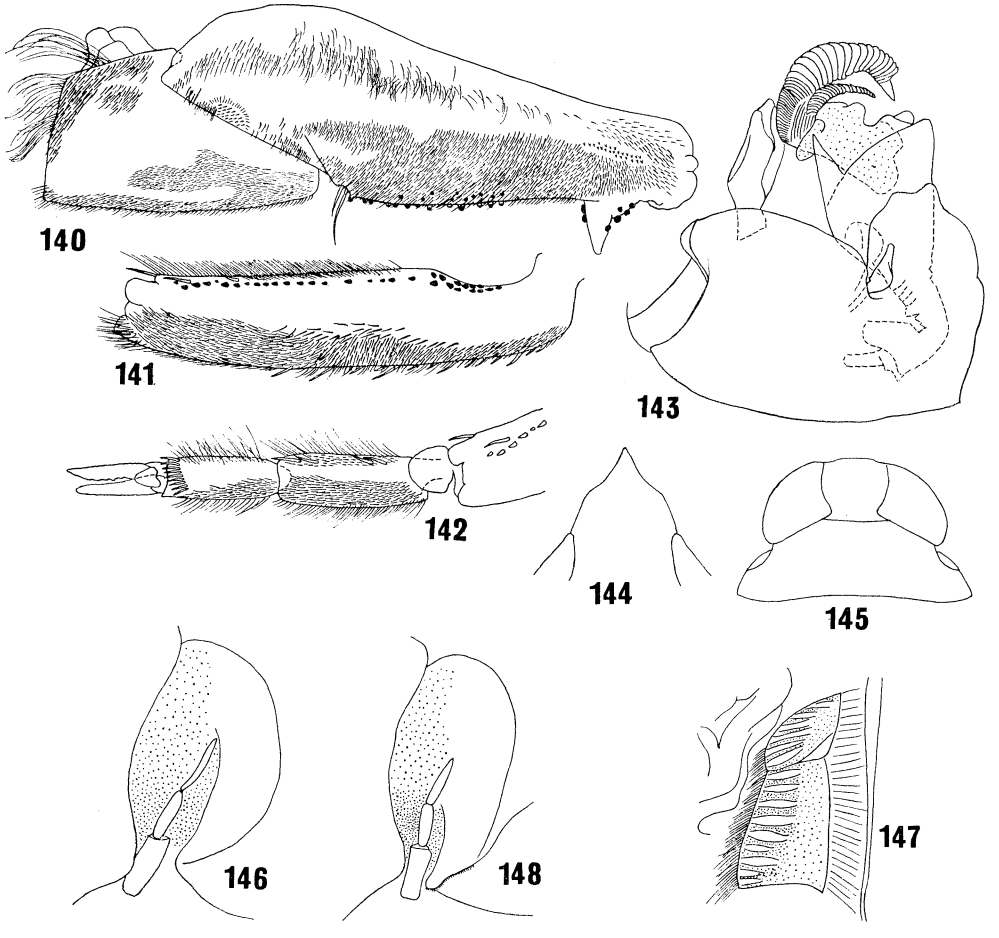


Fig. 140–147. *E. nigra* n. sp. ♂. 140, mid-femur; 141, mid-tibia; 142, mid-tarsus and claws; 143, genital capsule; 144, metaxyphus; 145, head and pronotum from above; 146, lateral view of pronotal fovea; 147, 1st 2 visible abdominal segments showing ridges; Fig. 148, *E. nigra* ♀, lateral view of pronotal fovea.

Color : Pale form : vertex, pronotum and scutellum shining hyaline yellowish brown. Clavus, corium and opaque zone of membrane dull opaque grayish brown. Anterior and posterior lobes of membrane hyaline and shining. Abdomen ventrally pale yellowish brown. Dark form : vertex pale reddish brown. Anterior 1/3 of pronotum dark brown, medianly paler, posteriorly grayish brown. Scutellum, most of clavus and inner angle of corium black. Outer margin of

clavus and median area of corium grayish. Outer margin of corium streaked with yellowish brown and black. Opaque zone of membrane black, anterior and posterior lobes hyaline. Abdomen ventrally black with lateral margins yellowish brown. Both forms with eyes black flecked with brown. Legs brown.

Structural characters : viewed dorsally head rounded. Greatest width of head about 4/5 pronotal humeral width, 3× or more anterior width of vertex in ♂ ; ♀ just less than 3× ; and about 2.5× median head length. Synthlipsis about 1/2 anterior width of vertex. Median head length slightly greater than anterior width of vertex and 6/7 median pronotal length in ♂ ; ♀ head length equaling pronotal median length. Pronotal humeral width variable, can be either less, equal to or more than 3× median length ; lateral margins diverging, about 2/3 median length ; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed laterad from behind eyes (fig. 145). Lateral margins of pronotal fovea of ♀ produced towards posterior margin of eyes (fig. 148) ♂ not so (fig. 146). Nodal furrow long, upper 1/3 clearly bent cephalad, less than its own length removed from membranal suture. Both sexes with ventral surface of connexivum of 1st 2 visible sternites with a series of transverse ridges along inner margin (fig. 147). Mesotrochanter angulate (fig. 140), chaetotaxy of ♂ mid-leg as in fig. 140-142. Male genital capsule as in fig. 143, posterior lobe with 2 small projections on dorsal margin, parameres elongate, lateral arms of basal plate dorsally fan-like. Metaxyphus (fig. 144), distally laterally concave, apex acuminate.

Holotype ♂ (BISHOP 7710), 1♂ & 5♀♀ paratypes, NW New Guinea, Vogelkop, Bomberi, 700-900 m, 4.VI.1959, T. C. Maa (BISHOP). Known only by the type series.

Comparative notes : *E. nigra* is not closely allied to any of the known species ; the 2 small projections on the posterior lobe of the male genital capsule and transverse ridges on the ventral surface of the connexivum of both sexes are diagnostic.

Enithares bergrothi Montandon Fig. 149-156.

Enithares bergrothi Mont., 1892, Rev. Ent., Caen **11** : 75-76.— Kirkaldy, 1904, Wien Ent. Ztg. 23 : 98, 105, 110, 133 ex parte.— Distant, 1914, Nova Caledonia, Zool. **1** (4) : 386.— Hale, 1923, Rec. S. Aust. Mus. **11** : 419-21, pl. 10, fig. 1, ex parte.

♂♂. Length 9.8-10.5 mm, maximum width 3.5-4 mm ; ♀♀, length 10-10.3 mm, maximum width 3.5-4 mm.

Color : Pale form dorsally uniformly opaque yellowish brown, ventrally pale brown. Dark form ; vertex yellowish brown. Anterior 1/2 of pronotum reddish brown, remainder dark brown to black, lateral margins pale yellow. Scutellum, clavus, corium and opaque zone of membrane dark reddish brown. Anterolateral margins of corium suffused with yellow. Anterior and posterior lobes of membrane hyaline suffused with brown. Abdomen ventrally yellowish brown suffused with dark brown, keel and lateral margins pale yellow. Both forms with eyes dark brown.

Structural characters : Head in dorsal view rounded. Greatest width of head just over 3/4 pronotal humeral width ; between 2.66 but less than 3× anterior width of vertex and about 2.33× median head length. Synthlipsis 1/2 anterior width of vertex. Head length about 1/4 longer than anterior width of vertex and either equal to or longer than pronotum. Pronotal humeral width just less than 3× median length ; lateral margins diverging, about 1/2 median length ; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea curving laterad from behind eyes, only just visible dorsally (fig. 149) lateral aspect (fig. 156). Nodal furrow slanting dorsad less than its own length removed from membranal suture.

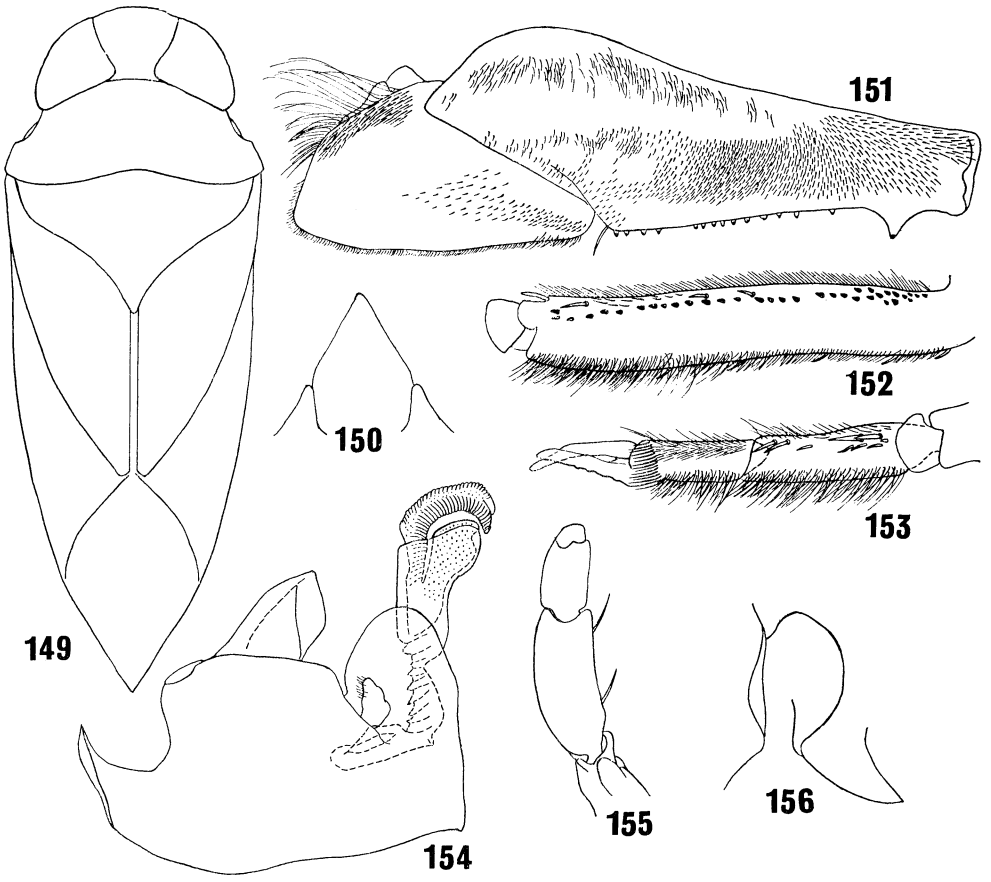


Fig. 149-156. *E. bergrothi* Montandon ♂. 149, dorsal aspect; 150, metaxyphus; 151, mid-femur; 152, mid-tibia; 153, mid-tarsus and claws; 154, genital capsule; 155, fore tarsus; 156, lateral view of pronotal fovea.

First tarsal segment of ♂ fore leg more or less parallel-sided (fig. 155). Mesotrochanter rounded, chaetotaxy of ♂ mid-leg as in (fig. 151-153). Male genital capsule as in fig. 154, parameres reniform with a fringe of fine hairs along inner margin, posterior lobe evenly rounded, lateral arms of basal plate evenly rounded. Metaxyphus as in fig. 150.

SPECIMENS EXAMINED : Lectotype ♂, N. Calédonie, A. Gamley, Coll. Montandon (BRUSSELS). Paralectotype ♀, Nouv Calédonie, A. Gamley, det. A. L. Montandon (BMNH). Two paralectotype ♀♀, N. Calédonie, A. Gamley, (USNM). Also, all following from New Caledonia unless otherwise stated) : Near Dumbea, 29.I.1914, P. D. Montague, 1♂ ; Stations um Fluss, Maré, 18.VIII.1912, 1♀ ; River Tandi, 150 m (500 ft), 31.VIII.1949, L. E. Cheesman, 1♂ & 1♀ ; Tinchialit, 600 m (2020 ft), 21.IX.-3.X.1949, Cheesman, 4♂♂ & 5♀♀ ; Puebo Coast, 450 m (1500 ft), X.1949, Cheesman, 3♂♂ ; Plum, 8.VIII.1949, Cheesman, 1♀ ; (BMNH). Tchalabel, 8.V.1911, 1♀ (LENINGRAD). La Crouen, 12.III.1961, J. Sedlacek, 2♂♂ ; Plaine de Lacs area, 6.XI.1958, C. R. Joyce, 2♂♂ & 5♀♀ ; La Foa, 4.II.1945,

H. E. Milliron, 1♂ ; Col d'Amieu, 750 m., 3.III.1960, J. L. Gressitt, 1♀ ; Tontouta River, 7.XI.1958, C. R. Joyce, 1♀; In Mts above Ouaco, 20.X.1958, C.R.J., 1♀; Oua Tom, 19.IX. 1940, F. X. Williams, 4♂♂ & 4♀♀ ; same data, 20.IX.1940, Williams, 1♂ & 1♀; Yahoue Valley, VIII.1940, Williams, 1♂ & 1♀; Nakale River, 10.X.1940, Williams, 3♀♀ ; Hills behind Noumea, 13.IX.1940, Williams, 1♀ ; Noumea, 19.X.1940, Williams, 1♀ (BISHOP). Noumea, 22.VII.1944, W. Crabbe, 2♀♀ (USNM). Isle de Ouen, Mme Pruvot, 1928, 11♂♂, 11 ♀♀, 3 nymphs (PARIS). Also in the Paris Museum, a ♀ from Iles Loyalty, Lifou, Mme Pruvot, 1928 which I have provisionally named as *bergrothi.*

Comparative notes : See *E. woodwardi*

Enithares woodwardi Lansbury, new species Fig. 157–164.

Enithares bergrothi Kirkaldy, 1904, Wien Ent. Ztg. **23** : 98, 105, ex parte.—Froggatt, 1907, Austral. Insects, 344-45 Sydney. — Hale, 1923, Rec. S. Austral. Mus. **11** : 419-21, pl. 10, fig. 1, ex parte.— Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 146, listed only.— Hungerford, 1934,

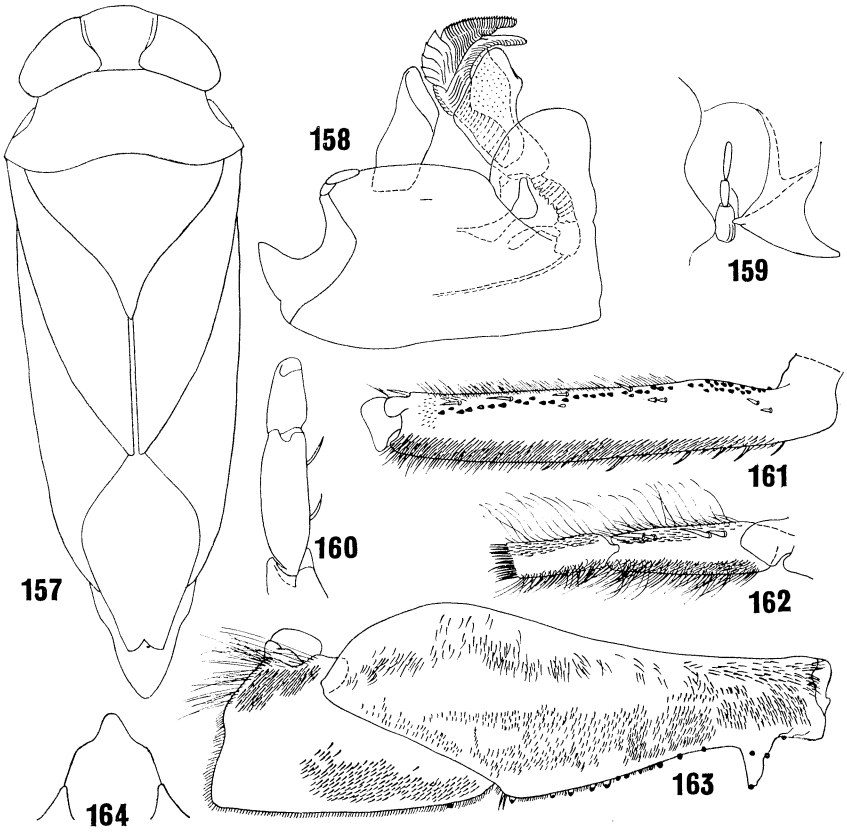


Fig. 157–164. *E. woodwardi* n. sp. ♂. 157, dorsal aspect; 158, genital capsule; 159, lateral view of pronotal fovea; 160, fore tarsus; 161, midtibia; 162, mid-tarsus; 163, mid-femur; 164, metaxyphus.

Bull. Brooklyn Ent. Soc. **29** : 68; 1940, J. Kans. Ent. Soc. **13** : 130, figs.— Sweeney, 1965, Proc. Linn. Soc. N.S.W. **90** : 92.

♂♂ & ♀♀. Length 9.5-11 mm, maximum width 3-3.5 mm.

Color : Pale form dorsally more or less uniformly opaque yellowish brown. Dark form with eyes pale reddish brown, vertex creamy white. Anterior and median 1/3 of pronotum shining black, grading to reddish brown, posteriorly with a creamy white line, basally appearing black due to scutellar color showing through. Scutellum shining black. Clavus with anterior angle yellowish grading through to black at posterior angle. Corium, anterior angles and lateral margins yellowish, remainder including opaque zone of membrane black. Membrane hyaline gray. Legs, keel and segmental margins of abdomen of both forms pale yellow, remainder blackish. There are many variants between the two extreme color forms described.

Structural characters : Head in dorsal view short, broad and rounded. Greatest width of head 4/5 pronotal humeral width, about 2.5× anterior width of vertex and between 2.25-2.5× median head length. Synthlipsis just over 1/2 anterior width of vertex. Head length equal to or slightly greater than anterior width of vertex and 4/5 median pronotal length. Pronotal humeral width about 2.5× median length; lateral marging diverging, about 1/2 median length; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea curving laterad from behind eyes, tomentose area barely visible from above (fig. 157). Lateral margins of pronotal fovea with a small nodule directed cephalad (fig. 159). Nodal furrow straight, slanting dorsad, less than its own length removed from membranal suture. Mesotrochanter angular (fig. 163). First tarsal segment of ♂ fore leg more or less parallel-sided (fig. 163). Chaetotaxy of ♂ mid-leg as in fig. 161-163. Male genital capsule as in fig. 158, posterior lobe with outer straight, lateral arms of basal plate with a distinct lobe on outer margin, parameres short, apically finger-like. Metaxyphus as in fig. 164.

Holotype ♂, Queensland, Brisbane, 30.V.1962, F.J.D. McDonald (Queensland Mus., Brisbane ; Reg. No. T. 6537). 1♂ paratype, same data and 1♂ paratype, Queensland, Highvale, 23.III.1960, A.R. Lloyd (UQ, Coll.). 4♂♂ & 2♀♀ paratypes, N. Queensland, Cardmell Range, S side of rock pool, 2.VI.1953, T. E. Woodward (SECK). 6 ♂♂ & 2♀♀ paratypes, New South Wales, Wahroonga, 23.IV.1943, A. Musgrave (AMS). 2 ♂♂ & 1♀ paratypes, South Australia, Adelaide, H. M. Hale. 1 ♂ & 1♀ paratype, S. A. Myponga, Hale & A. H. Elston (SAMA). 3 ♂♂ paratypes, Queensland, Brisbane, 30.V.1962, F. J. D. McDonald. N. Queensland, Cardmell Range, S side of rock pool, 2.VI.1953, Woodward (OXFORD).

ADDITIONAL DATA : A.C.T. Canberra, pond, VII-VIII.1965, R.B. Angus, 5♂♂ & 9♀♀. Queensland, Atherton pool near Lake Barrine, 4.IX.1965, Angus., 1♀. Queensland, Brisbane, Toowong Creek, 26.V.1962, Sweeney, 3♂♂ & 3♀♀. New South Wales, Sydney, Galston Road, 9.V.1951, Woodward, 1♀ (OXFORD). Tasmania, Hobart, 17.II.1918, C. E. Cole, 1♂ & 3♀♀. Launceston, 1♂. N.S.W., Mittagong, A.M. Lea, 2♀♀. Sydney, VI.1917, G. H. Hardy, 1♀. S.A., Kangaroo I., 1♀. Mt. Lofty, 1♀. (SAMA). New South Wales, 1.6 km (1 m) E of Yerranderie, Upper Burragorang Valley, 2.X.1954, J.L. Lawson, 12♂♂ & 14♀♀. Queensland, 14 km (9 mi) N of Tansey, 15.VIII.1954, K. E. Stager, 1♂ & 1♀. Wallaroo Gorge, Carnarvon Range, 7-9.VII.1954, Stager, 2♂♂ & 1♀. S.E.Q., Murphy's Creek, 19 km (12 mi) NNE of Toowoomba, 24.VI.1954, Stager, 3♂♂ & 2♀♀ (LA). N. Queensland, Whitsunday Is. Cid Harbour, 25.VIII.1935. G. P. Whiteley, 3♂♂ & 1♀. Coen, Co. York, 1921-22. W. McLennan, 1♂ & 1♀. Carnarvon Range, XI.1944, N. Geary, 1♂ & 2♀♀. Wiiliams River near Cutlers Pass, A. Musgrave & T. G. Campbell, 23-30.X.1926, 1♀.

NSW, Leeton, 20.XI.1936, N. Geary, 1♂ & 1♀. Como near Sydney, 1.III.1934, A. Musgrave, 1♀. East Gordon, 7.III.1943, AM, 2♀♀. Wyvern Bringagee, 25.V.1947, V. Robb, 1♂ & 1♀. Marrickville, from old pottery pit, 30.IV.1924, F. McNeil & A. Livingstone, 1♂ & 1♀. S. A. Adelaide, Sturt Creek near Blackwood, E. Troughton, 1♂ & 1♀ (AMS). NSW, Sydney, 9.V.1951, Woodwad, 1♂ & 2♀♀. Brookfield, 27.IX.1958, R. Metcalfe, 1♀. Upper Brookfield, 15.V.1956, H. J. Lavery, 1♂. Kyogle, 20.XII.1952, Talbot, 1♀. Albury, 25.XII.1953, K. L. S. Harley, 1♀. Canberra, N. Yarrow, 20.IX.1956, 1♀. Bundamba, 21.VI.1952, J. Davis, 1♀. Queensland, Cairns, 24.VIII.1952, J. R. Pollock, 1♀. Brisbane, various collectors & dates, 1♂ & 5♀♀. Theodore, 14.I.1952, J. Letchford, 1♂. Darlington, 1. XII. 1946, J. Rosser, 1♀. Samford, 2. X. 1937, 1♂. Beaudesert, 20. II. 1954, R. E. Harrison, 1♀. Hartridge, Cooyar, 11.VIII.1948, 1♀. Lawes, 28.IV.1956, G. Gibson, 1♂. Ladybrook, 25. III. 1957, D. J. T., 1♀. Mt Glorious, 16. IV. 1961, L. de Lacy, 1♀. (UQ Coll.). Victoria, Kooba Lagoon, 1955, W. J. M. Vestjens, 2♀♀. Queensland, Eidsvold, VII-IX.1929, T L. Bancroft, 1♂ & 1♀. Palm I., 20. XII-6. I. 1930-31, I. M. Mackerras, 1♀. N. S. W., Killara, 4.III.1936, M. F. Day, 1♀. Orange, 17.VIII.1949, A. Dyce, 1♂ & 1♀. Narrabeen, 15.II.1936, D.F. Waterhouse, 1♂ & 1♀. French's Forest, 9.II.1936, Waterhouse, 1♀ & 1 nymph (ANIC). Canberra. 10-11.III.1956, E. S. Brown, 14♂♂ & 18 ♀♀. N. S. W., Blackheath, 5.III.1956, Brown, 1♀ & 1 nymph (Brown). W. A. Perth, 1♀. N. Queensland, Coomooboolaroo Duaringa, Rosenberg 1♂. (USNM). Prince of Wales I., J. A. Kusche, 1♂ & 3♀♀. Queensland, Upper Cedar Creek, 3.I.1963, T. Brooks 1♂ & 1♀. (BISHOP). Victoria, Fitzroy River, 2♂♂. N. S. W. Nowra in stream, Cambewarra Range, 1925, F. A. Rodway, 1♂ & 3♀♀. Valley Heights near Katoomba, 25.V.1954, Brown, 1♀ (BMNH). Victoria, Kiarta, X.1928, F. E. Wilson, 1♀. Melbourne, 16.II.1918, 1♂. Reservoir, 28.IV.1925, J.E. Dixon, 1♂ & 1♀. Eltham District, 2.V.1925, Dixon, 1♂ & 4♀♀. Flinders I., 5.III. 1958, 1♀. Plenty River, 3♂♂ & 2♀♀. Clunes, 9.VII.1954, A. Neboiss, 1♂. Tambo Crossing, I.1935, Wilson, 1♂ & 1♀. Goulburn River, Alexandra, 7.XI.1927, J. Clark, 1♂. S. Australia, Lucindale, 3.IV.1914, C. French, 1♀. N. Queensland, Kuranda, I. 1908, R. W. Armitage, 4♂♂ & 5♀♀ (MELBOURNE).

Comparative notes : *E. woodwardi, bergrothi* and *hebridiensis* are all very similar in structure and appearance, all 3 species having very short mid-femoral hairs. The width of the ♂ 1st tarsal segment of fore leg shows a gradual reduction through *hebridiensis* (fig. 86) to *woodwardi* (fig. 160). *E. woodwardi* is the most easily recognised species by the nodule-like projection at the base of the posterior margin of the pronotal fovea (fig. 159) the development of this nodule is somewhat variable. The lateral margins of the metaxyphus of *woodwardi* are clearly concave whereas in the other 2 species, the lateral margins are more or less straight. Finally *woodwardi* has the posterior margin of the lateral arms of the basal plate clearly produced (fig. 158). *E. hebridiensis* and *bergrothi* have the posterior margin straight or rounded respectively (fig. 87 & 154). The parameres of *hebridiensis* are clearly finger-like (fig. 87) ; *bergrothi* has rather more triangular parameres (fig. 154).

Enithares hippokleides Kirkaldy Fig. 165-172.

Enithares hippokleides Kirk. 1898a, Rev. Ent. Caen **17** : 173 ; 1904, Wien. Ent. Ztg. **23** : 98, 105.— Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 182.
Enithares fruhstorferi Brooks, 1948, J. Kans. Ent. Soc. **21** : 49-50. New **Synonymy.**

♂♂ & ♀♀. Length 10-10.2 mm, maximum width 4 mm.

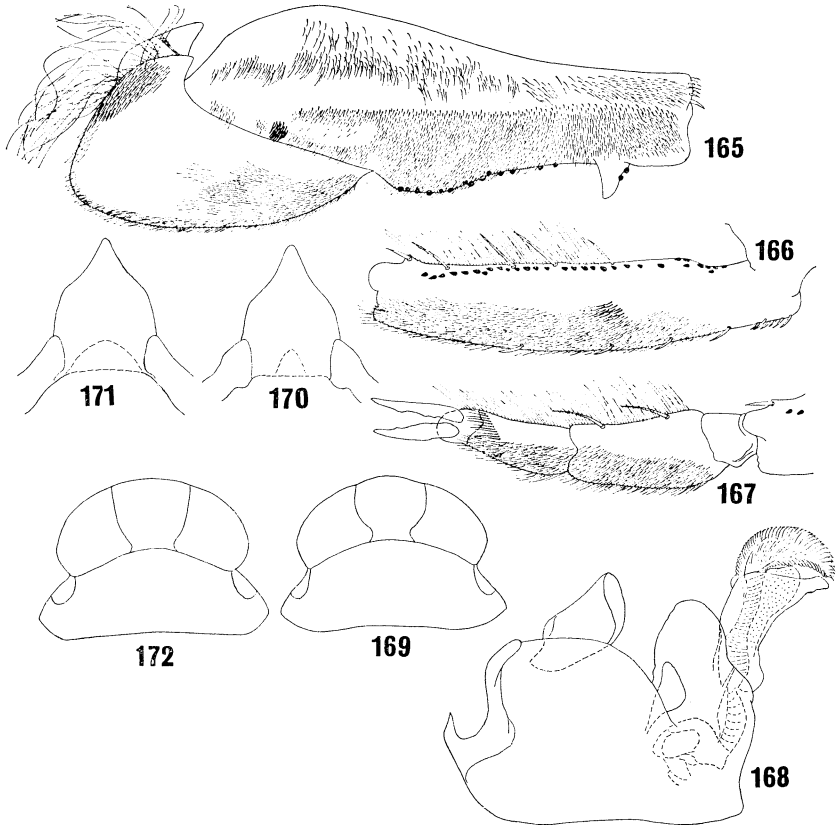


Fig. 165-172. *E. hippocleides* Kirkaldy (fig. 165-170, *E. fruhstorferi* Brooks, holotype ♂) (fig. 171-172, *E. hippocleides* lectotype ♀). 165, mid-femur; 166, mid-tibia; 167, mid-tarsus and claws; 168, genital capsule; 169, head and pronotum from above; 170, metaxyphus; 171, ibid; 172, head and pronotum from above.

Shape: Medium-sized species, greatest width across base of scutellum, tapering to end of abdomen.

Color: Pale form (♂ Holotype of *E. fruhstorferi*). Eyes dark brown. Vertex and anterior 1/3 of pronotum pale brown. Pronotum medianly with a thin transverse dark brown stripe, posteriorly hyaline appearing dark brown due to scutellar color showing through. Scutellum dark brown. Hemelytra yellowish brown. Dark form (Lectotype and paralectotype ♀ of *E. hippokleides*). Eyes reddish brown flecked with black. Vertex yellowish brown, frons with a reddish-brown spot adjacent to lower margin of eyes. Anterior 1/3 of pronotum almost black, medianly pale yellow, posteriorly hyaline appearing darker due to scutellar color showing through. Scutellum black with a pear-shaped yellowish blotch along lateral margins. Clavus hyaline, inner margin adjacent to scutellum and hemelytral commissure smoky brown to black. Corium hyaline, smoky brown to black at apical outer angle, inner angle adjacent to membrane and along embolium. Membrane, opaque zone reddish brown, remainder hyaline. Both forms with legs and abdomen ventrally yellowish brown streaked with black.

Structural characters: Head in dorsal view rounded. Greatest width of head about 5/6 pronotal humeral width, just under 3× anterior width of vertex and about 2.5× median head length. Synthlipsis about 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and same length as pronotum. Pronotal humeral width almost 3× median length; lateral margins diverging, 2/3 median length; posterior margin convex, centrally almost straight. Dorsal margin of pronotal fovea directed obliquely caudad before turning laterad behind eyes (fig. 169 & 172). Nodal furrow curved obliquely dorsad, less than its own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg (fig. 165-167). Male genital capsule as in fig. 168, parameres short and triangular. Metaxyphus (fig. 170, *E. fruhstorferi* ♂) (fig. 171, *E. hippokleides* ♀).

SPECIMENS EXAMINED: Lectotype ♀ and paralectotype ♀ of *E. hippokleides*, Java (BUDAPEST). Holotype ♂ of *E. fruhstorferi*, Ost Java, Tengger Gebirg, H. Fruhstorfer (SECK, not USNM as stated by Brooks, 1948 : 50). Ost Java, Tengger Gebirg, H. Fruhstorfer, 1♀ (SECK). Java, Idjen, Blawan, 950 m., VI.1924. Dammerman, 1♂ (LEIDEN).

Comparative notes: I have compared the 2 types and although they are not of the same sex and are dissimilar in coloration, they are the same species. *E. hippokleides* is most closely allied to *E. timorensis*. The genital capsules (fig. 131 & 168) are rather similar. *E. timorensis* may only be a subspecies of *hippokleides* since Brooks species is not confined to Timor, but also occurs on Sumba (Soemba I. W of Timor). There is some variation in the chaetotaxy of the ♂ 1st mid-tarsus; the ♂ from Idjen has 4 spines whereas the holotype of *fruhstorferi* has only 2. The dense patch of black hairs on the mid-femur close to the trochanter (fig. 165) are diagnostic for *hippokleides*.

Enithares ripleyana Lansbury, new species Fig. 173-178.

♂♂. Length 8.75-9 mm, maximum width 3.2-3.5 mm ; ♀♀, length 9-9.75 mm, maximum width 3.3-3.5 mm.

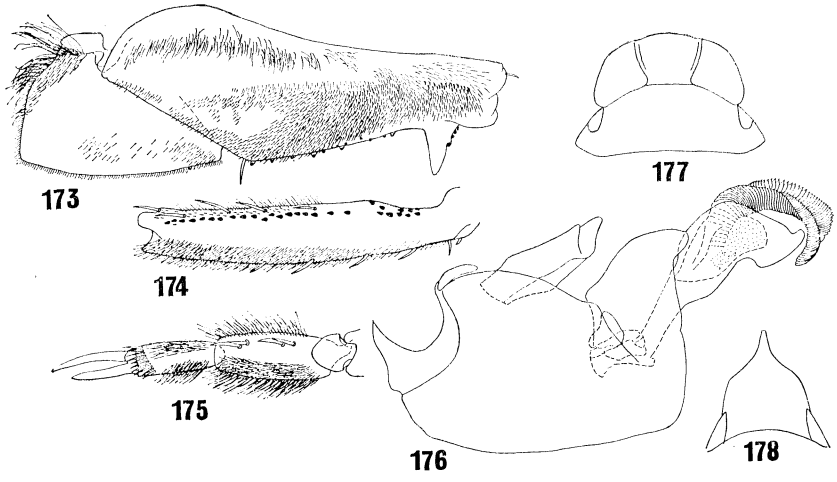


Fig. 173-178. *E. ripleyana* n. sp. ♂. 173, mid-femur; 174, mid-tibia; 175, mid-tarsus and claws; 176, genital capsule; 177, head and pronotum from above; 178, metaxyphus.

Color : Pale form, vertex dark brown. Pronotum, scutellum and hemelytra pale opaque yellowish. Dark form, vertex hyaline yellowish brown. Anterior 1/3 of pronotum marginally reddish brown, centrally yellowish, remainder hyaline, posterior 1/3 appearing black due to scutellar color showing through. Scutellum laterally yellowish, centrally reddish brown. Clavus along scutellar suture and hemelytral commissure smoky brown, remainder grayish hyaline. Corium smoky brown at inner angle and along margins of opaque zone, remainder grayish yellow. Opaque zone of membrane smoky brown, remainder smoky hyaline. Both forms with eyes reddish brown, legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded. Greatest width of head 3/4 pronotal humeral width, nearly 3× anterior width of vertex and about 2.5× median head length. Synthlipsis 1/2 anterior width of vertex. Head length variable, either shorter or longer than pronotum and anterior width of vertex. Pronotal humeral width just over 3× median length; lateral margins diverging, 1/2 median length ; posterior margin convex, centrally almost straight. Dorsal margin of pronotal fovea directed caudad from behind eyes (fig. 177). Nodal furrow basally directed dorsad, tip inclined cephalad, less than its own length removed from membranal suture. Mesotrochanter slightly angular (fig. 173), chaetotaxy of the ♂ mid-leg as in fig. 173-175. Male genital capsule as in fig. 176, posterior lobe directed caudad, parameres short and triangular, lateral arms of basal plate apically produced. Metaxyphus as in fig. 178.

Holotype ♂, 4♂♂ & 7♀♀ paratypes, Moluccas, Batjan, Sibela, 19.IX.1954, S.D. Ripley (YALE).

DISTRIBUTION: Known only by the type series.

Comparative notes: A species with rather variable geometry of head and pronotum. Can be separated from all the other known species by having the upper part of the posterior lobe inclined caudad (fig. 176).

Enithares vulgaris Lansbury, new species Fig. 179-184.

♂♂. Length 8-9 mm, maximum width 3.5 mm ; ♀♀, length 8.25-9 mm, maximum width 3.5 mm.

Color : Pale form, eyes dark brown, remainder yellowish brown. Dark form, eyes black. Vertex and posterior part of pronotum yellowish ; remainder of pronotum, scutellum, clavus and inner part of corium black. Outer margins of corium hyaline grayish. Both forms with

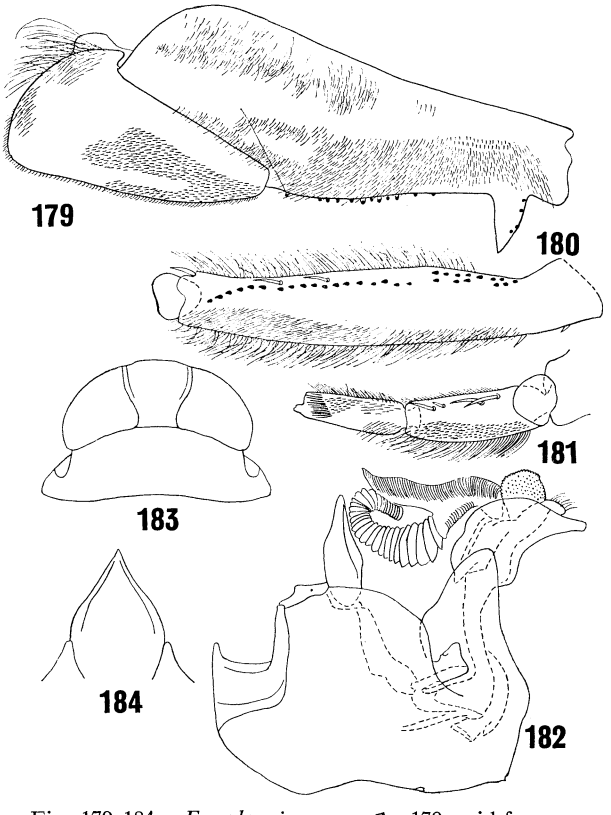


Fig. 179-184. *E. vulgaris* n. sp. ♂. 179, mid-femur; 180, mid-tibia; 181, mid-tarsus; 182, genital capsule; 183, head and pronotum from above; 184, metaxyphus.

legs and abdomen ventrally brown.

Structural characters : Head in dorsal view rounded, anterior width of vertex extending slightly beyond eyes. Greatest width of head about 3/4 pronotal humeral width, between 2.75 but less than 3× anterior width of vertex and just over 2× median head length. Synthlipsis just over 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and slightly longer than pronotum. Pronotal humeral width less than 3× median length; lateral margins diverging, 2/3 median length ; posterior margin convex, centrally slightly emarginate. Dorsal margin of pronotal fovea directed obliquely laterad from behind eyes (fig. 183). Nodal furrow directed dorsad, less than its own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg (fig. 179-181). Male genital capsule as in fig. 182. Metaxyphus as in fig. 184.

Holotype ♂ (Bishop 7711), 4♂♂ and 4♀♀ paratypes, NW New Guinea, Biak I. ; Kampong Landbouw, 50-100 m, 28.V.1959, J.L. Gressitt & T.C. Maa.

Distribution : Known only by the type series.

Comparative notes : *E. vulgaris* is rather similar to *E. intricata* Breddin, the comparative measurements of head and pronotum being much the same. *Vulgaris* is slightly larger that *intricata* (8-9 mm—7.5-8 mm respectively). The posterior lobe of *vulgaris* is bluntly acuminate whereas in *intricata* it is evenly rounded. The metaxyphus of *vulgaris* is basally slightly convex and apically slightly concave, *intricata* has the metaxyphus basally more or less straight and apically clearly concave (fig. 184 & 188).

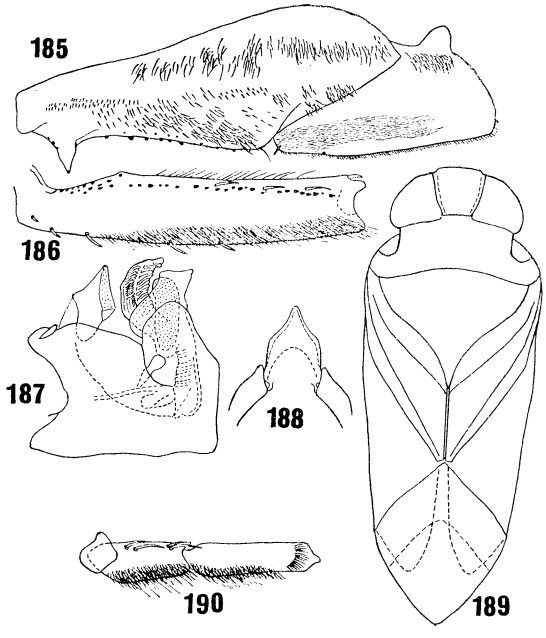


Fig. 185-190. *E. intricata* Breddin ♂. 185, mid-femur ; 186, mid-tibia ; 187, genital capsule; 188, metaxyphus ; 189, dorsal aspect ; 190, mid-tarsus.

Enithares intricata Breddin Fig. 185-190.

Enithares intricata Bred., 1905, Mitt. Naturh. Mus. Hamb. **32** : 154.— Lundblad, Arch. Hydrobiol. Suppl. **12** : 174-77, fig. 64, pl. 5 & 21. — Brooks, 1948, J. Kans. Ent. Soc. **21** : 47.—Lansbury, 1966, Bull. Zool. Nomencl. **23** (4) : 191-92.

Notonecta indica Fabricius, 1803, Syst. Rhyngotorum : 102 (see Lansbury, 1966 name preocc. by *N. indica* L. 1771).—Stål, 1868, K. svenska VetenskAkad. Handl. **7** (11) : 136-38.— Fieber, 1851a, Rozpr. mat.-přír. K. české Spol. Náuk **7** : 480.

♂♂. Length 7.5-8.25 mm, maximum width 3 mm ; ♀♀, length 8 mm, maximum width 3-3.2 mm.

Color : Pale form, eyes pale reddish brown. Vertex, pronotum and scutellum pale yellowish brown. Clavus yellowish brown, medianly hyaline. Corium hyaline gray suffused with yellowish brown along lateral margins. Membrane hyaline with opaque zone yellowish brown. Dark form, eyes gray to yellowish. Vertex pale green with lateral margins dark brown. Pronotum an-

teriorly pale yellow flecked with dark brown, medianly pale yellow and distally black. Scutellum black with 2 pear-shaped pale yellow blotches along lateral margins. Hemelytral commissure and distal 1/2 of clavus dark brown, remainder opaque gray. Corium distally dark brown, remainder opaque gray, outer margin of corium streaked with pale yellow. Opaque zone of membrane dark brown, remainder of membrane smoky brown. Both forms with legs pale brown, abdomen ventrally dark brown to black with keel and lateral margins pale green.

Structural characters : Head in dorsal view rounded. Greatest width of head 3/4 pronotal humeral width, between 2.5-3× (never more) anterior width of vertex and just over 2× median head length. Synthlipsis about 1/2 anterior width of vertex. Head length always greater than anterior width of vertex, head length to pronotal length variable, either shorter, equal to or greater. Pronotal humeral width usually less than 3× median length sometimes (about 20 %) more than 3× ; lateral margins evenly rounded, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad from behind eyes (fig. 189). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg as in fig. 185-6 & 190. Male genital capsule as in fig. 187, parameres short and rounded. Metaxyphus as in fig. 188.

SPECIMENS EXAMINED : Lectotype ♂ & paralectotype ♀ from Java, Tjibodas, 25-28.III. 1904, K. Kraeplin in the Zoologisches Staatsinstitut und Zoologisches Museum, Hamburg (both pale form). Java, Buitenzorg, 1875, G. B. Ferrari, 12♂♂ & 11♀, Java ; Tjibodas, P. Serre, 1906, 1♂ & 1♀. Java, Buitenzorg, IV-XII.1896, D. G. Fairchild, 4♂♂ & 3♀♀. Java, occident Pengalenjan, 4000 m, 1893, H. Fruhstorfer, 1♂ & 1♀ (SECK). Java, Idjen, 950 m, Blawan, VI.1924, Dammerman, 3♂♂ & 2♀♀, *ibid*, 30.V.1924, 1♂. Java, Poentjak, Meer van Telagawarna, 10.XI.1929, 1400 m, Lieftinck, 2♂♂ & (LEIDEN). Sumatra, Lombrun, Djolle, 1200 m, IX.1916, O. Hagerup, 1♂ & 1♀. Holotype ♂ of *Notonecta indica* F. Sumatra, Dom. Daldorff (COPENHAGEN). Sumatra, Medan, Mjoberg, 1♂. (STOCKHOLM). Java, Wynkoops Way, VII.1938, M.E. Walsh, 13♀♀ (LUND). East Java, Baluran savannah verging to forest, ditch 2 m wide, 30 cm deep, some grass along borders, bottom mud and water turbid, 16.V.1959, B. Pisarksi & J. Proszynski, 3♂♂ & 1♀. (WARSAW). Java, Mt. Lawoe, Sarangan, 1500 m, VI.1937. D.P. Erdbrick, 1♂ (OXFORD). Java, Preanger, N.O.I. Bandoeng, 7.VI.1936, F.C. Drescher 1♀ (BMNH).

Comparative notes : This species is endemic to Java and Sumatra. *E. intricata* is very similar to *vicintricata* (Borneo) and *rogersi* (Andaman Is.) ; also has affinities with *megalops* and *paramegalops*, the principal distinguishing features being the development of the eyes of the latter two species (see *megalops* for a full discussion).

Synonymy note : Kirkaldy (1900) erroneously synonymised *N. indica* F. under *abbreviata* = *ciliata* (F.). I have examined the holotype ♂ of *N. indica* and find that it is the same species as *intricata* ; however, since *N. indica* F., 1803 is preoccupied by *N. indica* 1771, the next available name must be used, thus *intricata*, remains the correct name for this species.

Enithares megalops Lansbury, new species Fig. 8, 191-195.

♂♂. Length 7 mm, maximum width 2.5 mm, ♀♀, length 7 mm, maximum width 2.75 mm.

Shape : Broad robust species, greatest width across abdomen at base of scutellum.

Color : Eyes reddish brown, remainder yellowish brown and shining. Elytra hyaline.

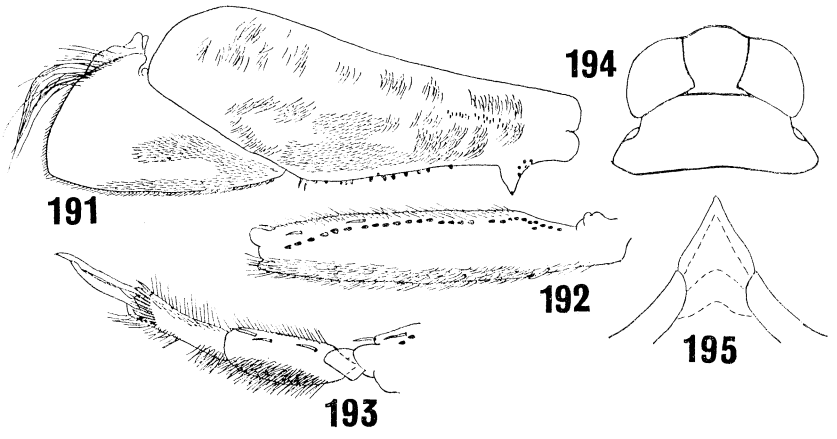


Fig. 191-195. *E. megalops* n. sp. ♂. 191, mid-femur; 192, mid-tibia; 193, mid-tarsi and claws; 194, head and pronotum from above; 195, metaxyphus.

Structural characters : Head in dorsal view rounded, anterior width of vertex extending beyond eyes. Greatest width of head 6/7 pronotal humeral width, nearly 3× anterior width of vertex and just over 2× median head length. Synthlipsis over 1/2 anterior width of vertex. Head longer than anterior width of vertex and pronotum. Pronotal humeral width just less than 3× median length; lateral margins diverging, about 1/2 median length; posterior margin convex, centrally almost straight. Dorsal margin of pronotal fovea directed obliquely caudad from behind eyes (fig. 194). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded; chaetotaxy of ♂ mid-leg (fig. 191-93). Male genital capsule as in fig. 8, parameres basally rounded, upper margin straight. Metaxyphus as in fig. 195.

Holotype ♂ (BISHOP 7712) & 1♀ paratype, NW New Guinea, Vogelkop : Fak Fak, 100-700 m, 3.VI.1959, J.L. Gressit. 1♀ paratype, NW New Guinea, Vogelkop : Bomberi, 700-900 m, 3.VI.1959, Gressitt (BISHOP). 1♂ paratype, Moluccas, Amboina, III. 1908, F. Muir (SECK).

Comparative notes : *E. megalops* is very similar to *paramegalops*, but is slightly smaller (see the latter for distinguishing characteristics). Both species are closely allied to *intricata*, all 3 being of similar size, and having almost identical comparative measurements of head and pronotum, likewise the male genitalia are all very similar. The most obvious difference between the *megalops* complex and *intricata* is in the development of the eyes, those of the former being much larger (fig. 194 & 199). The angle at which the posterior margin of the eyes is directed laterad from inner margin in *megalops* complex is about 60°, whereas in *intricata* it is almost a right angle (fig. 189). The head is much broader in relation to pronotal humeral width in the *megalops* complex and the posterolateral margins of the eyes much more divergent than in *intricata*.

Enithares paramegalops Lansbury, new species Fig. 196-200.

♂♂. Length 7.75 mm, maximum width 3 mm; ♀♀, length 8 mm, maximum width 2.8 mm.

Shape : Broad robust species, ♂♂ tapering from pronotal humeral angles to end of abdomen;

♀♀ more parallel, tapering from mid-way along abdomen.

Color : Pale form, eyes black flecked with red. Head, pronotum and scutellum yellowish brown. Elytra grayish hyaline. Dark form, eyes reddish brown. Vertex, posterior 1/2 of pronotum and lateral margins of scutellum yellowish brown. Anterior 1/2 of pronotum and most of scutellum reddish brown. Inner margin of clavus, corium and membrane black. Remainder of elytra hyaline smoky gray. Both forms with legs and abdomen ventrally yellowish brown.

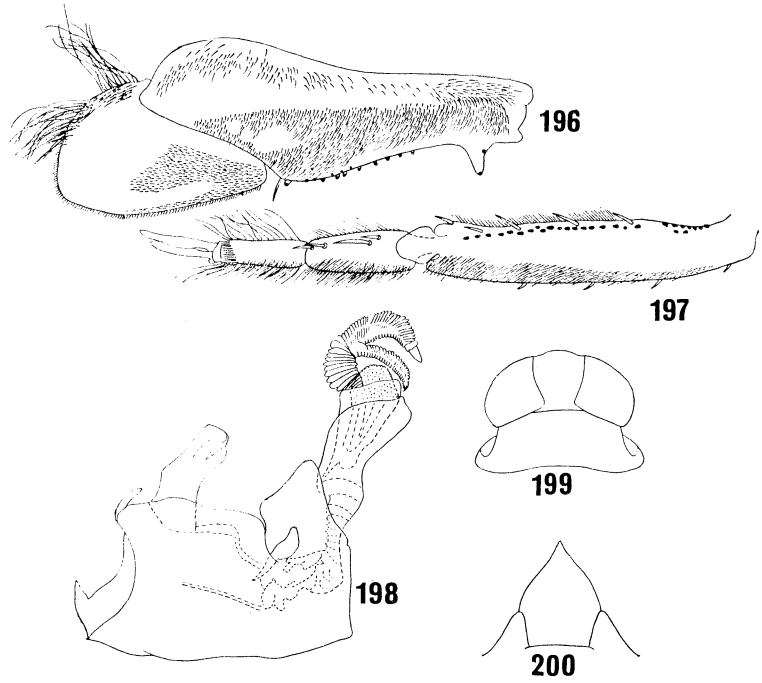


Fig. 196-200. *E. paramegalops* n. sp. ♂. 196, mid-femur; 197, mid-tibia and tarsus; 198, genital capsule; 199, head and pronotum from above; 200, metaxyphus.

Structural characters : Head in dorsal view rounded, anterior width of vertex extending beyond eyes. Greatest width of head about 5/6 pronotal humeral width, nearly 3× anterior width of vertex and about 2× median head length. Synthlipsis 3/5 anterior width of vertex. Head longer than anterior width of vertex and pronotum. Pronotal humeral width nearly 3× median length in ♂, 3× or more in ♀. Lateral margins diverging, 1/2 median length ; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed obliquely caudad from behind eyes (fig. 199). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg as in fig. 196-97. Male genital capsule as in fig. 198, posterior lobe with a rounded projection on inner margin, parameres reniform. Metaxyphus as in fig. 200.

Holotype ♂ (BISHOP 7713) NW New Guinea, Wisselmeren : 1500 m, Itouda, Kamo Vall., 13.VIII.1955, J. L. Gressitt. 1♀ paratype, same data, 12.VIII.1955. 2♀♀ paratypes, NW New Guinea. Wisselmeren, Enarotadi, 1800 m, 1.VIII.1955, Gressiit. 1♀ paratype, NW New Guinea, Wisselmeren, Enarotadi, 1500 m, 14.VII.1962, J. Sedlacek (BISHOP).

Comparative notes : As the name implies, this species is very close to *megalops* differ-

ing in being slightly larger and with slight differences in the ♂ genitalia. The inner margin of the posterior lobe of *paramegalops* is clearly produced, not so in *megalops*. The outer margin of the lateral arms of the basal plate of *paramegalops* are sinuate and hardly so in *megalops*.

Enithares subparallela Lansbury, new species Fig. 201–210.

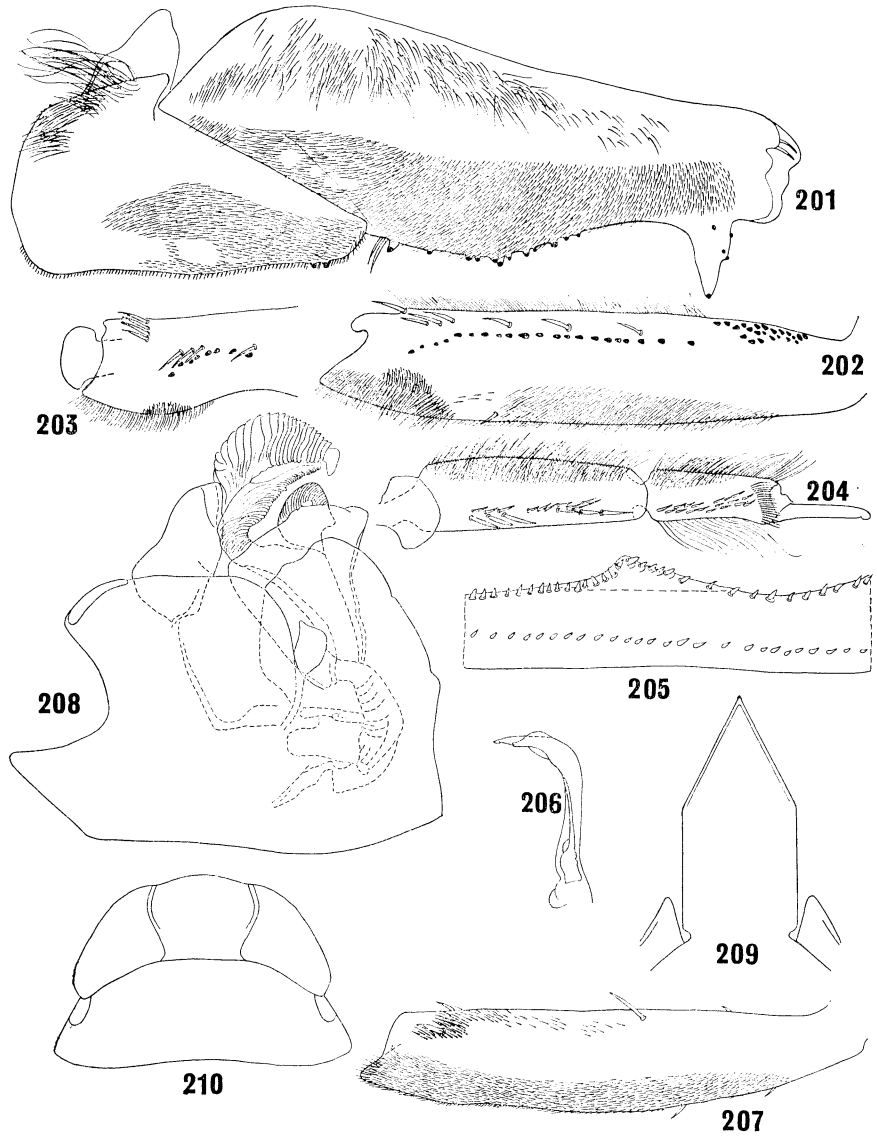


Fig. 201–210. *E. subparallela* n. sp. ♂. 201, mid-femur; 202, mid-tibia; 203, distal end of mid-tibia, lateral aspect; 204, mid-tarsus and claws; 205, middle of hind femur; 206, claws of hind leg; 207, fore tibia; 208, genital capsule; 209, metaxyphus; 210, head and pronotum from above.

♂♂. Length 13 mm, maximum width 4.5-5 mm; ♀♀, length 11.75-12 mm, maximum width 4.25-4.5 mm.

Shape : Large robust species, ♂♂ rather more boat shaped, both sexes parallel 1/2 length of abdomen, then tapering to end of abdomen, ♂♂ more so than ♀♀.

Color : Pale form with eyes dark brown, vertex slightly paler. Pronotum, scutellum and elytra yellowish brown. Dark form with eyes dark brown; vertex, anterior 1/2 of pronotum and scutellum reddish brown. Posterior 1/2 of pronotum and elytra yellowish brown. Both forms with elytra faintly iridescent; legs and abdomen ventrally pale brown.

Structural characters : Head in dorsal view rounded. Greatest width of head about 4/5 pronotal humeral width, about 3× anterior width of vertex (sometimes less) and always more than 3× median head length. Synthlipsis just over 1/2 anterior width of vertex. Median head length less than anterior width of vertex and pronotum. Pronotal humeral width more than 3× median length; lateral margins diverging, about 2/3 median length; posterior margin convex, centrally slightly emarginate. Dorsal margin of pronotal fovea diverging parallel with lateral margins of pronotum (fig. 210). Nodal furrow curving cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg as in fig. 201-204. Inner surface of mid-tibia concave distally (fig. 202-203). Fore tibia of ♂ slightly produced distally (fig. 207). Hind femur of ♂ slightly enlarged mid-way of its length (fig. 205). Large claw of hind leg bifid apically (fig. 206). Male genital capsule as in fig. 208, parameres short, apically produced. Metaxyphus (fig. 209) basally parallel, apically convergent.

Holotype ♂ (BISHOP 7714), 4♂♂ & 6♀♀ paratypes, Philippine Is., Mindanao, Bukidnon, 1480 m, Mt Katanglad, 27-31.X.1959, C. M. Yoshimoto.

Comparative notes : Not seemingly closely related to any known species. Its large size, very large metaxyphus and interrupted hair pattern on the mid-tibia are diagnostic.

Enithares gibbera Brooks Fig. 211-218.

Enithares gibbera Brks., 1948, J. Kans. Ent. Soc. 21 : 51-52, pl. 3, fig. 15.

Both sexes 9-9.5 mm long, maximum width 3.8-4.1 mm. Brooks states 8.8-9 mm long and 3-3.3 mm maximum width.

Color : Brooks describes light and dark forms; I have only seen dark forms. Light form described as "completely pale brown with eyes dark brown." Dark form with eyes light to dark brown. Vertex creamy yellow to yellowish brown, frons with 2 brownish spots either side of median line and another immediately above labrum. Anterior 1/3 of pronotum light to dark brown, remainder hyaline, posterior 1/3 appearing dark gray to black due to scutellar color showing through. Scutellum either yellowish with basal angles dark or entirely dark brown with median lateral margins faintly yellowish. Clavus and corium hyaline grayish appearing black due to dorsal pigmentation showing through. Opaque zone of membrane black, remainder smoky brown. Legs and abdomen ventrally pale yellowish brown.

Structural characters : Dorsal view of head short and broad. Greatest width of head 9/11 pronotal humeral width, just over 3× anterior width of vertex and just less than 3× median head length. Synthlipsis 2/3 anterior width of vertex. Head longer than anterior width of vertex and shorter than pronotum. Pronotal humeral width just over 3× median length; lateral margins rounded, 2/3 median length; posterior margin convex, centrally slightly emarginate. Dorsal margin of pronotal fovea directed obliquely laterad from behind eyes (fig. 218). Nodal furrow curved cephalad, less than its own length removed from membranal

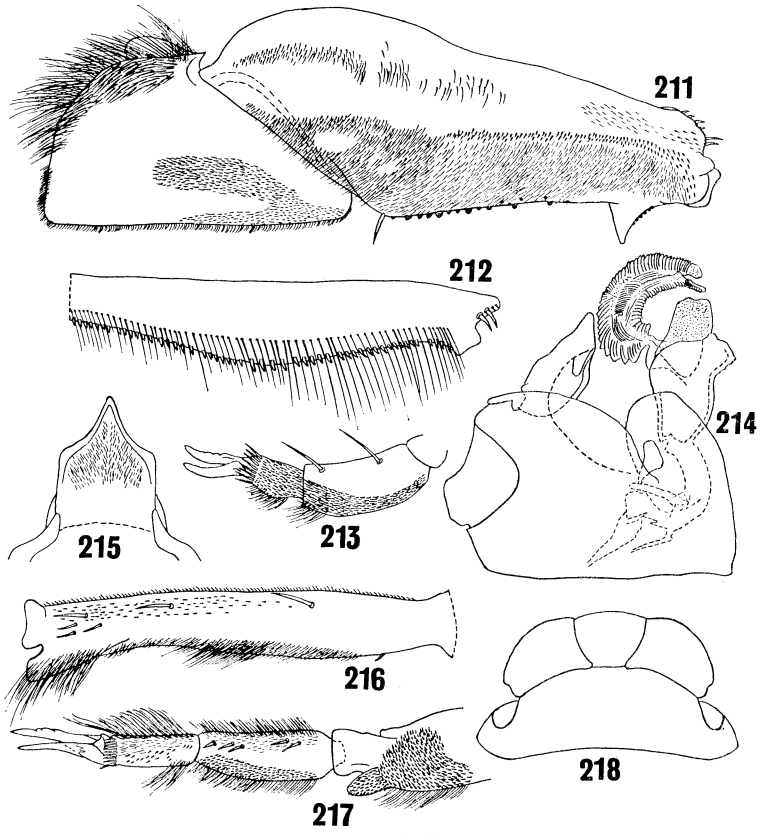


Fig. 211-218. *E. gibbera* Brooks ♂. 211, mid-femur; 212, distal 1/2 of hind femur; 213, fore tarsus; 214, genital capsule; 215, metaxyphus; 216, fore tibia; 217, distal end of mid-tibia and claws; 218, head and pronotum from above.

suture. Fore and mid-tibia of ♂ distally produced on anterior margin (fig. 216-217). First tarsal segment of ♂ fore leg curved (fig. 213). Fore tibia of ♂ concavely indented distally (fig. 216). Mesotrochanter angulate (fig. 211), chaetotaxy of ♂ mid-tarsus as in fig. 217. Male hind femur flattened, expanded, indented basally and apically (fig. 212). Female with an indentation on outer margin near base. Male genital capsule as in fig. 214. Metaxyphus as in fig. 215.

Holotype ♂, 1♂ & 4♀♀ paratypes, Solomon Is., Guadalcanal, 2.XI.1944, L. J. Lipovsky (SECK). 1♂ paratype same data (BMNH). Also, Solomon Is., Malaita, Tangtalau, 150-200 m, 25.XI.1957, J. L. Gressitt, 1♂. Solomon Is., Guadalcanal, Betikana River, VIII.1960, W. W. Brandt, 1♂ & 3♀♀. Solomon Is., San Cristobal, Wugitoga, 9.VIII.1960, C.W. O'-Brien, 1♀ (BISHOP). Solomon Is., Guadalcanal, Poha River, 10-15.XII.1953, J.D. Bradley, 1♂ & 1♀. Guadalcanal, Tapenanje, 21-23.XII.1953, Bradley, 4♀♀ (BMNH). Solomon Is., Kieta, Bougainville, 2♂♂ (LEIDEN).

Comparative notes: *E. gibbera* is endemic to the Solomon Is. The curved 1st tarsal segment of the fore leg, anteriorly produced fore and mid-tibiae and flattened hind femur are diagnostic for this species.

Enithares buhleri Brooks Fig. 219-227.

Enithares buhleri Brks., 1948, J. Kans. Ent. Soc. **21** : 43-45, pl. 2, fig. 7.

♂♂. Length 10.5 mm, maximum width 4.4 mm ; ♀♀, length 10 mm, maximum width 4 mm.

Shape : Very broad robust species.

Color : Eyes gray. Vertex and most of pronotum very pale yellowish, pronotum anteriorly light brown. Scutellum centrally black, ♂ with a pair of pale yellowish stripes along margins ; basal angle brown ; ♀ much darker. Clavus pale yellowish with brown to black linear blotches. Distal 1/2 of corium brown to black. Embolium pale yellow. Membrane dark brown to black. Keel and connexivum yellowish, legs and abdomen ventrally slightly darker.

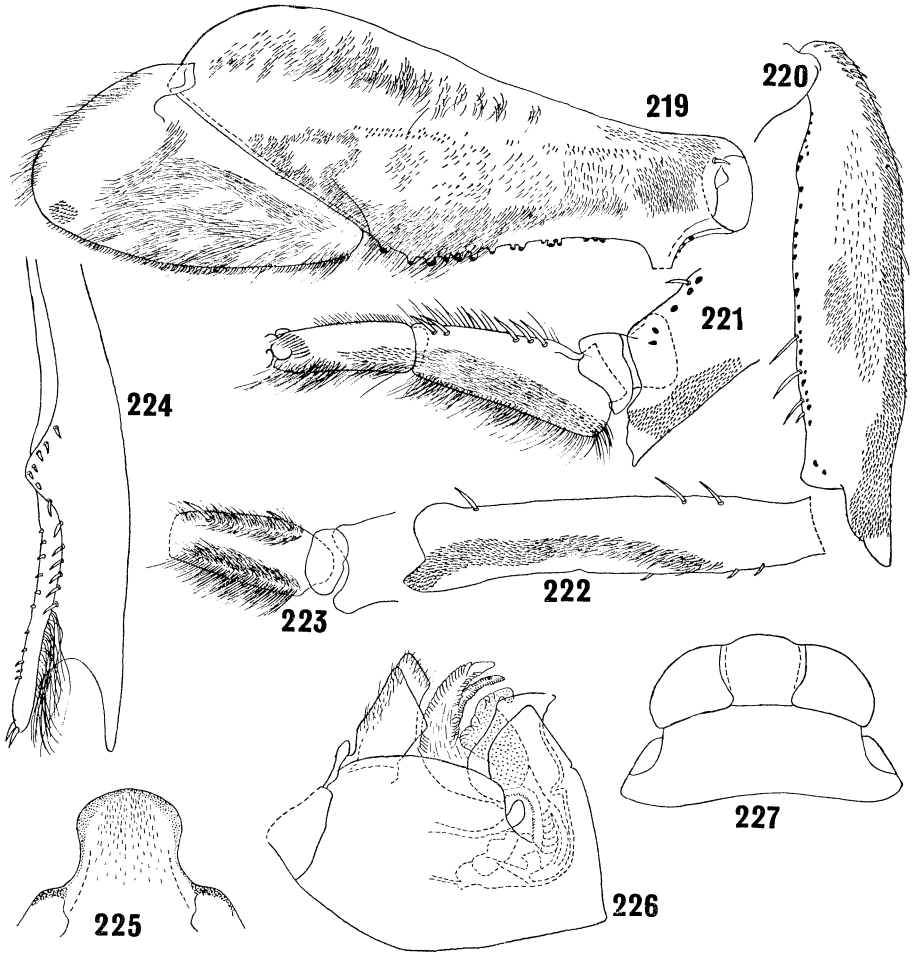


Fig. 219-227. *E. buhleri* Brooks holotype ♂. 219, mid-femur; 220, mid-tibia; 221, distal end of mid-tibia; 222, fore tibia ; 223, 1st fore tarsus ; 224, distal 1/2 of hind femur, ventrally ; 225, metaxyphus; 226, genital capsule; 227, head and pronotum from above.

Structural characteristics : Dorsal view of head rounded. Greatest width of head 3/4 pronotal humeral width, just under 3× anterior width of vertex and median head length. Synthlipsis just over 1/2 anterior width of vertex. Median head length shorter than anterior width of vertex and pronotum. Pronotal humeral width just over 3× median length ; lateral margins diverging, 1/2 median length ; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed obliquely laterad from behind eyes (fig. 227). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Base of labrum with margins thickened. Fore-tibia of ♂ (fig. 222) slightly concave along anterior margin and distally produced. Chaetotaxy of ♂ 1st fore tarsus as in fig. 223. Mesotrochanter rounded with a patch of black spicules anteriorly (fig. 219). Mid-tibia of ♂ distally produced (fig. 220-21). Prolongations present on ♀♀ fore and mid-tibiae but much reduced. First mid-tarsus of ♂ (fig. 221) basally almost 2× apical width. Hind trochanter of ♂ with a nodule at base close to attachment to femur. Femora of both sexes with a depression on anterior surface near base, deeper in ♂♂ than ♀♀. Male hind femur (fig. 224) with a nodule on ventral surface and distally with a patch of long hairs. Male genital capsule as in fig. 226, parameres very short, reniform. Apex of metaxyphus rounded (fig. 225).

Holotype ♂, 1♂ & 2♀♀ paratypes, Timor, Soe, VI.1935, C. Buhler & Meyer. 1♂ paratype, Timor, Baaguia, VIII.1935, Buhler & Meyer (Basle). 1♂ paratype, Timor, Baaguia, VIII.1935, Buhler & Meyer. 2♀♀ paratypes, Timor, Soe, VI.1935, Buhler & Meyer. 1♂ paratype, Timor, Molle, 1935, Buhler (SECK).

The above description is based on holotype ♂ and ♀ paratype from Soe. In addition to these specimens I have a damaged ♂ which is almost certainly referable to this species from East Ind. [i] a. det. *E. lineatipes* Kirkaldy, 1897 (OXFORD).

Comparative notes : See *E. lombokensis*.

Enithares fusca Brooks Fig. 228-234.

Enithares fusca Brooks, 1948, J. Kans. Ent. Soc. **21** : 46-47, pl. 2, fig. 9. — Lansbury, 1966, Bull. Zool. Nomencl. **23** (4) : 192.

Both sexes 9.2-9.3 mm long, maximum width 3.5-3.6 mm. Brooks states 8.7-9 mm long.

Color : Pale form with eyes dark brown, vertex, pronotum, scutellum, elytra and opaque zone of membrane yellowish brown, remainder of membrane smoky brown. Dark form with eyes dark brown. Vertex light brown. Pronotum anteriorly dark brown, medianly pale yellowish brown, posteriorly hyaline appearing black due to scutellar color showing through. Scutellum reddish brown with apex and most of lateral margins yellowish. Clavus brown tinged with gray along margins. Corium with inner angle brown, remainder grayish. Opaque zone of membrane smoky brown with outer margin grayish, remainder of membrane slightly paler than opaque zone. Both forms have brown spots on frons. Legs dark brown and abdomen ventrally smoky brown.

Structural characters : Head in dorsal view rounded. Greatest width of head 3/4 pronotal humeral width, nearly 3× anterior width of vertex and median head length. Synthlipsis just over 1/2 anterior width of vertex. Median head length equaling anterior width of vertex and clearly shorter than pronotum. Pronotal humeral width just over 3× median length ; lateral margins diverging, just over 1/2 median length ; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad from behind eyes (fig. 234). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Mesotrochanter angulate (fig. 228). Male mid-tibia with a large nodule on inner surface distally (fig. 229).

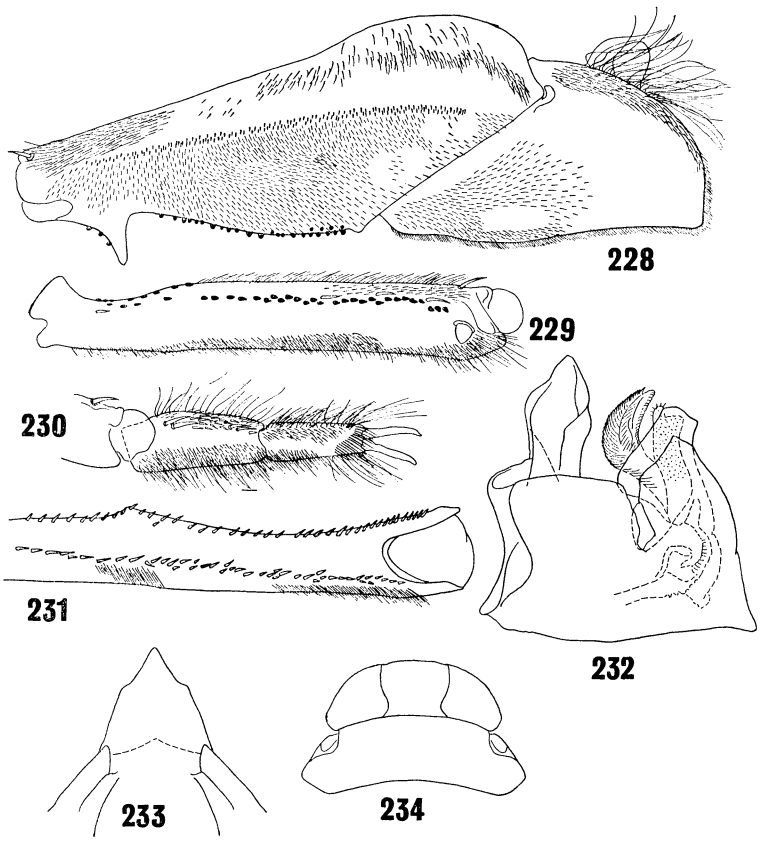


Fig. 228-234. *E. fusca* Brooks holotype♂. 228, mid-femur; 229, mid-tibia; 230, mid-tarsus and claws; 231, ventral view of hind femur; 232, genital capsule; 233, metaxyphus; 234, head and pronotum from above.

Chaetotaxy of ♂ mid-leg (fig. 228-230). Male hind femur with a small nodule on ventral surface (fig. 231). Male genital capsule as in fig. 232, parameres reniform. Metaxyphus as in fig. 233.

Holotype ♂ (Reg. No. 6213/H7) & 1♀ paratype (Reg. No. 6214/H7), Cochin State, Parambikulam, 510-960 m (1700-3200 ft), 16-24.IX.1914, F.H. Gravely (Zool. Surv. India, Calcutta ; K. S. Pradhan in litt. 7.II.1967). 1♂ & 1♀ paratype same data in (SECK). Description based on Kansas material.

Comparative notes : Allied to *E. ciliata*, differing by not having black spicules on the mesotrochanter and by the large nodule on the inner surface of the mid-tibia distally (fig. 229) not present in *ciliata*.

Enithares ciliata (Fabricius) Fig. 235-242.

Notonecta ciliata F., 1798, Suppl. Ent. Syst. : 524-25.— Fieber, 1851a, Rozp. Mat.-Prir. K. Ceske Spol. Náuk **7** : 480.

Enithares indica sensu Spinola, 1837, Essai sur les Genres.—Kirkaldy, 1897, Trans. Ent. Soc. Lond. **1897** : 393 (designates *indica* as type species of *Enithares*) ; 1900, Entomologist 33 : 10 (*indica* F. preooc. by *indica* L., takes next available name *abbreviata*).— Distant, 1906, Fauna Brit. India, Rhynchota **3** : 42, fig. 26.— Nowrojee, 1912, Mem. Dept. Agric. India Ent. 2, **9** : 168-70.— Torre Bueno, 1925, Spolia Zelan. **13** (2) : 224.— Dover, 1927, J. Bombay Nat. Hist. Soc. **32** : 615 ; 1928, Treubia **10** (1) : 70.— Hoffmann, 1931, Lingnan Sci. J. **9** (4) : 432-33.— Hungerford, 1933, Misc. Zool. Sumatrana **75** : 1.—Wu, 1933, Lingnan Sci. J. **12** : 214 ex parte.

Notonecta abbreviata Walker, 1859, Tennent's Ceylon **2** : 292.— Motschulsky, 1863, Bull. Soc. Imp. Nat. Moscow **36** (3) : 94.— Kirby, 1891, J. Linn. Soc. (Zool.) 24 : 126.

Enithares abbreviata : Kirkaldy, 1904, Wien. Ent. Ztg. **23** : 97, 109, 133.— Hutchinson, 1933, Rec. Indian Mus. **35** : 394-95, fig. 2b, 3c & 4d (*E. lactea* and *E. paivana* both synonyms of abbreviata).— Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 146.— Brooks, 1948, J. Kans. Ent. Soc. **21** : 41, 48.— Truxal, 1952, ibid. **25**(1) : 30-38, pl. 1, fig. 2.— Lansbury, 1964, Ann. Zool. Warsz. **22** : 204-06, fig. 1.

Enithares paivana Distant, 1910, ibid **5** : 329, fig. 190.

Enithares lactea Paiva, *In* Annandale, 1919, Rec. Indian Mus. **16** : 155, pl. 3, fig. 7.

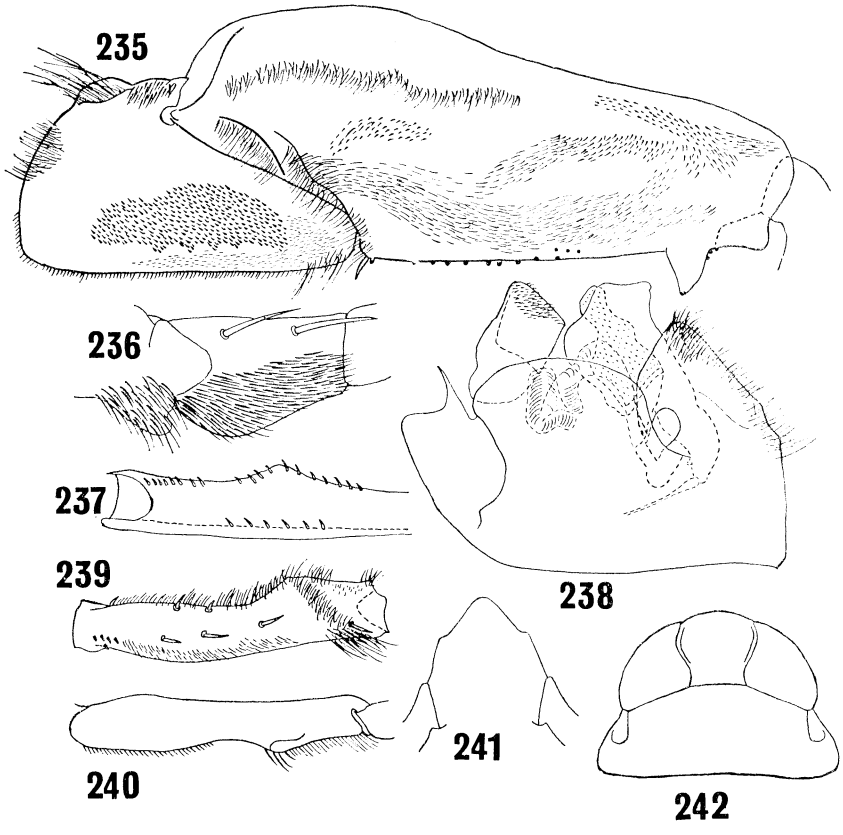


Fig. 235-242. *E. ciliata* (F.) ♂. 235, mid-femur; 236, distal end of mid-tibia and 1st tarsus; 237, ventral view of part of hind femur; 238, genital capsule; 239, fore tibia; 240, ibid, side view; 241, metaxyphus; 242, head and pronotum from above.

Both sexes 9-9.6 mm long, maximum width 3-3.6 mm.

Color : Exceedingly variable with some overlap between forms. Extreme pale form uniformly pale yellowish brown. Intermediate form; vertex and anterior 1/2 of pronotum pale yellow, posterior 1/2 of pronotum hyaline appearing dark brown due to scutellar color showing through. Scutellum basally reddish brown, centrally with a darker wedge-shaped area, remainder yellowish. Clavus and corium with posterior angles dark brown, remainder yellowish. Membrane hyaline appearing darker due to abdominal color showing through. Dark form; vertex yellowish tinged with green. Anterior 1/3 of pronotum yellowish with brown spots, remainder hyaline, posterior 1/3 appearing darker due to scutellar color showing through. Scutellum black, lateral margins yellow. Clavus and corium mostly grayish hyaline with posterior angles black. Opaque zone of membrane black, remainder hyaline with margins smoky brown. All forms generally with eyes reddish brown, legs and abdomen ventrally yellowish brown.

Structural characters : Head in dorsal view rounded. Greatest width of head about 3/4 pronotal humeral width, over 2.5 but less than 3× anterior width of vertex and 2-2.25× median head length. Synthlipsis about 1/2 anterior width of vertex. Head length equal to or slightly greater than anterior width of vertex and shorter than pronotum. Pronotal humeral width less than 3× median length, lateral margins diverging, just over 1/2 median length; posterior margin convex, centrally almost straight. Dorsal margin of pronotal fovea directed caudad from behind eyes (fig. 242). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Fore tibia of ♂ (fig. 239-240) concave along inner margin and convex along outer margin; distally with a triangular extension, inner surface with a dense band of long hairs. Mesotrochanter rounded with a patch of black spicules along ventral margin (fig. 235). First mid-tarsal segment of ♂ shorter than 2nd, flattened and triangular (fig. 236). Male hind femur with a small nodule distad ventrally (fig. 237). Male genital capsule (fig. 238) posterior lobe triangular, parameres short and rounded. Metaxyphus (fig. 241).

Holotype ♀, "in Indiae aquis" (COPENHAGEN). Holotype ♀ of *N. abbreviata* Ceylon (damaged, no head) (BMNH). Holotype ♀ of *E. paivana*, Madhurpur, Bengal, 16.X.1909, C. Paiva (BMNH). Holotype ♀ of *E. lactea*, Bombay Presidency, Medha ca. 660 m (2200 ft), Yenna Valley, Satara Distr., 27.II.-4.III.1918, A. N. Annandale (Reg. No. 6216/H7 ; Zool. Surv. India) K. S. Pradhan (in litt. 7.II.1967). Examined : Sumatra, Medan, 1♂. India, Madras, Westerm. 1♂ & 1♀. Ceylon, Bandarawella, Hom. 2♂♂. Ceylon, Kandy, 7.IV.1897, E. E. Green, 2♀♀ (STOCKHOLM). Ceylon, III.1900, A. Toplov, 1♀. S. India, Chikkaballapura, T.V. Campbell, 1♀ (LENINGRAD). N. Viet Nam, Laokay, 19-28.II.1961, small pools in valley, grassy and muddy, K. Galewski, 4♂♂ & 8♀♀ (WARSAW). Indochine Francaise (Vitalis de Salvaza) Mme A. Vuillet, 1920, 1 ♂. Bhoutan, R. Oberthür, 1900, 3♂♂ & 1♀. Bhoutan, Maria Basti, R. O., 1900, 1♂. Tonkin, rég. de Hoa-Binh, A. de Cooman, (1928-35.) 17 ♂♂ & 16 ♀♀ (PARIS). Isle de France (Mauritius), Mus. Westermann det. *N. ciliata*, 1♂. Tranquebar, Ceylon, 1♂ & 2♀♀. Pulo Penang, 1♀. Nangkovi, Voy. Galatea 1♀ (COPENHAGEN). Ceylon, Laggala (Midland Estate) 14.VIII.1965, from fast flowing stream, P.B. Karuneratne, 1♀. Colombo, 16.I.1934, 1♀. Ceylon, Central Province, Knuckle's Hills, 15-24.VIII.1956, 5♀♀ (COLOMBO). Viet Nam, 30 km NW of Pleiku, 300 m, 20.V.1950, L.W. Quate, 2♂♂ &1♀. Viet Nam, 18 km Dalat, 1500 m, 29.IV-5.V.1960, Quate, 4♂♂ & 1♀, Thailand, NW Chiangmai, Prov. Chiangdao, 450 m, 5-11.IV.1958, T. C. Maa (no. 325), 2♂♂ & 1♀. Thailand, (C.), Pakchong, 160 km, NE of Bangkok, 3.XII.1957, J. L. Gressitt, 1♂ (BISHOP). Malaya, Pulau, Langkawi Is., N. of Kwah, 135 m (c. 450 ft), reservoir, 6.VIII.1957, C.H. Fernando, 1♂. Sumatra, Enggano Is., V-VIII.1936, Boreal Boreal, J. K.

de Jong, 1♂ (OXF.).

Comparative notes : This species is rather similar to *lombokensis*. *E. ciliata* is slightly smaller (9–9.6 mm compared with 10 mm). The patch of black spicules on the mesotrochanter cover a much larger area than those of *lombokensis*. The ♂ 1st mid-tarsal segment of *ciliata* is more or less triangular, but not so in *lombokensis*. Finally, *ciliata* lacks the large nodule on the inner surface of the ♂ mid-tibia distally of *lombokensis*.

As outlined in earlier part of this paper *E. ciliata* is the correct name for this species. The most difficult problem to solve has always been the identity of *N. ciliata* F. 1798. Kirkaldy (1899) placed *N. ciliata* in synonymy with *Anisops niveus* (F.) (1775). Later, Kirkaldy (1904) stated that *N. ciliata* was a small variety of *A. nivea* (F.) and that the type of *nivea* was in the BMNH. Esaki (1928) correctly pointed out that the types of *nivea* were at that time in the Zoological Museum of the University of Kiel, they have since been moved to the Universitetets Zoologiske Museum, Copenhagen (Zimsen 1964). Lundblad (1933) described how in Kiel he found 2 specimens standing under the name *N. ciliata*, 1 a damaged ♀ *Enithares* labelled '*ciliata*' by Fabricius and an *Anisops* without a label. I have made the specimen labelled '*ciliata*' Type Species of *Enithares* (see Type Species Designation).

Stål (1868) redescribed the Fabrician species placing *ciliata* in *Anisops*. In addition to the type locality "in Indiae aquis" Stål included material from the Isle de France=Mauritius. I have before me a pale yellowish brown ♂ *Enithares* labelled "Isle de France *N. ciliata*" from 'Mus. Westerm.' (COPENHAGEN) which is clearly conspecific with *ciliata*. Lundblad (1933) was unable to find Stål's type of *A. ciliata* and thought it destroyed. Unfortunately there are no grounds for supposing that the specimen I have before me is Stål's type. Pale *Enithares* do superficially resemble the larger species of *Anisops*. It is possible that Stål did make a mistake although in the same paper on the preceding pages there is a description of *E. indica* (F.) which is clearly referable to *E. intricata*.

Hutchinson (1933) concluded after studying the types of *paivana* and *lactea* that both were merely color forms of "*abbreviata*" a view which has since been supported by my own investigations.

Enithares lombokensis Lansbury, new species Fig. 243–250.

♂. Length 10 mm, maximum width 4.3 mm.

Shape : Broad robust species, parallel sided to midway of body length, tapering towards base of abdomen.

Color : Shining dark species. Eyes yellowish brown, flecked with darker spots. Vertex partially hyaline, distally with yellowish blotches, lateral margins reddish brown against inner margins of eyes. Anterior 1/2 of pronotum yellowish brown flecked with black, remainder black. Scutellum dark smoky brown, lateral margins yellowish brown. Hemelytral commissure and distal 1/3 of clavus dark smoky brown, remainder dark smoky gray. Corium distally dark smoky brown, remainder dark smoky gray. Opaque zone of membrane dark brown, remainder brownish hyaline. Abdomen ventrally black with keel, lateral margins and legs yellowish brown.

Structural characters : Head in dorsal view rounded. Greatest width of head 5/6 pronotal humeral width, just under 3× anterior width of vertex and just over 2.5 median head length.

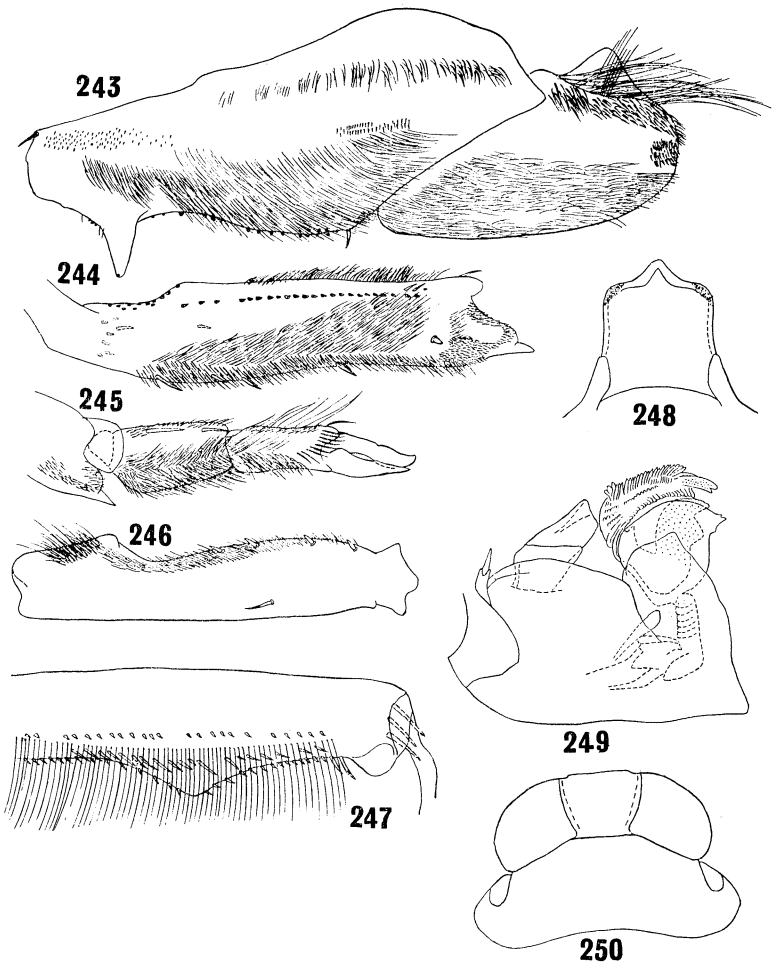


Fig. 243–250. *E. lombokensis* n. sp. ♂. 243, mid-femur; 244, mid-tibia; 245, distal end of mid-tibia, tarsus and claws; 246, fore tibia; 247, hind femur; 248, metaxyphus; 249, genital capsule; 250, head and pronotum from above.

Synthlipsis 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and shorter than median pronotal length. Pronotal humeral width less than 3× median length, lateral margins diverging, 1/2 median length; posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed laterad behind eyes (fig. 250). Nodal furrow directed obliquely dorsad, less than its own length removed from membranal suture. Base of labrum with margins thickened. Mesotrochanter rounded with a small patch of black spicules on inner margin; dorsal margin of mid-femur of ♂ with a prominent 'step' (fig. 243). Male mid-tibia with a stout spine and prolonged on outer margin distally (fig. 244). Chaetotaxy of ♂ meso-tarsus (fig. 245). Inner distal 1/3 of ♂ fore tibia strongly concave (fig. 246). Hind femur of ♂ produced distad ventrally (fig. 247). Male genital capsule as in fig. 249, parameres very short, lateral arms of basal plate dorsally fanlike, outer margins acuminate. Metaxyphus bluntly acuminate (fig. 248).

Holotype ♂, Lombok, Sapit, 600m (2000 ft), H. Fruhstorfer (VIENNA). Known only by type.

Comparative notes: Very similar to *buhleri* and has affinities with *ciliata*, all three species having variable-sized patches of black spicules on the mesotrochanter; those of *ciliata* cover a larger area than *buhleri* and *lombokensis*. *E. lombokensis* is the only known species of the complex with a large spine distally on the mid-tibia of the ♂; also the metaxyphus of *buhleri* is rounded whereas that of *lombokensis* is bluntly acuminate.

The fore tibia of *buhleri* is prolonged distally and slightly concave medianly (fig. 222) whereas the fore tibia of *lombokensis* is not prolonged distally and deeply concave along inner margin distally (fig. 246). The mid-tibia of both species are distally prolonged; the 1st mid-tarsus of *buhleri* has 5 stout spines (fig. 221), that of *lombokensis* 2 spines (fig. 245). Distad-ventral surface of hind femur of *buhleri* with a series of long straggly hairs (fig. 224), hind femur of *lombokensis* with long hairs most of length (fig. 247).

Enithares lineatipes Horváth Fig. 2, 251-256.

Enithares lineatipes Horv., 1889, Termész. Füz. **12**: 39.— Kirkaldy, 1904, Wien. Ent. Ztg. **23**: 98, 103 & 133.— Distant, 1906, Fauna Brit. India, Rhynchota **3**: 43.— Hutchinson, 1933, Rec. Indian Mus. **35** (4): 395, fig. 1a 3b & 4b. Lundblad, 1933, Arch. Hydrobiol. Suppl. **12**: 146; listed only.— Hoffmann, 1941, Lingnan Sci. J. **20**: 61.— Brooks, 1948, J. Kans. Ent. Soc. **21**: 38, 43 & 49.— Brown, 1950, Ann. Mag. Nat. Hist. (12) **3**: 475-476, fig. 1.— Ghauri, 1964, ibid, (13) **7**: 687; listed only.— Lansbury, 1966a ibid (13) **9**: 42.

Enithares templetonii Kirby ex parte; Paiva *In* Annandale, 1919, Rec. Indian Mus. **16**: 156.

Enithares indica var. Distant, 1879, Sci. Res. Second Yarkand Mission: 13; (Jhelam Valley, see distribution data).

Both sexes 10.5-12 mm long, 4-4.5 mm maximum width.

Color: An extremely variable species. Very pale form (teneral?); vertex, pronotum, scutellum and elytra including opaque zone of membrane creamy white, remainder of membrane smoky brown. Gray form; vertex and anterior 1/3 of pronotum pale yellow, median 1/3 creamy white, posterior 1/3 hyaline appearing dark gray due to scutellar color showing through. Basal angles and median triangular area of scutellum dark reddish brown, remainder pale yellow. Elytra and opaque zone of membrane grayish yellow with yellow streaks along embolium and outer margins of corium, remainder of membrane hyaline pale brown. Dark form; vertex yellowish brown sometimes tinged with green. Pronotum anteriorly yellowish brown, posteriorly hyaline appearing greenish black due to scutellar color showing through. Scutellum black with 2 linear pear-shaped yellowish bands laterally. Clavus and corium black with anterior angles grayish. Opaque zone of membrane black, remainder dark brown to black. Legs and abdomen ventrally yellowish brown to almost black in all forms.

Structural characters: Head in dorsal view short and broad. Greatest width of head about 3/4 pronotal humeral width, 2.33-2.5× anterior width of vertex and between 2.33-2.5× median head length. Synthlipsis just over 1/2 anterior width of vertex. Median head length shorter than anterior width of vertex and between 2/3-3/4 median pronotal length. Pronotal humeral width 2.5-2.66 median length, lateral margins diverging, just over 1/2 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed obliquely laterad behind eyes (fig. 255). Nodal furrow straight, more than its own length removed from membranal suture (fig. 2). Mesotrochanter rounded, chaetotaxy of ♂ mid-leg (fig. 251-253). Male genital capsule (fig. 254) dorsal margin of posterior lobe cleft on inner margin forming

a distinct 'step'. Lateral arms of basal plate elongate, apically acuminate, parameres elongate. Metaxyphus acuminate (fig. 256).

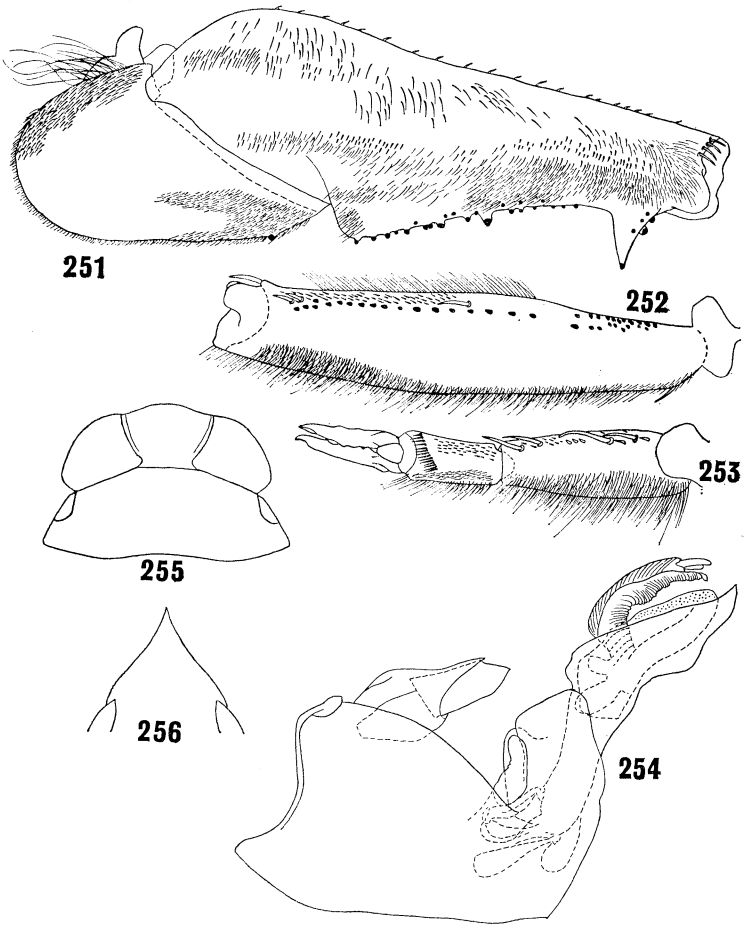


Fig. 251–256. *E. lineatipes* Horváth ♂. 251, mid-femur; 252, midtibia; 253, mid-tarsus and claws; 254, genital capsule; 255, head and pronotum from above; 256, metaxyphus.

Lectotype ♀ and paralectotype ♀ Himalaya in Budapest. Also, I have seen: Baluchistan, Quetta, XI.1933, 1♂. Arabia, Oman, Ras-al-khaima, 16.V.1949, G.V. Popov, 2♂♂. Punjab, Jhelam Valley, 1♂. (BMNH). Kumaon, Bhim Tal, 1350 m (4500 ft), 27. IX.1907, 1♂ (AMNH). Punjab, Simla Hills, Kandaghat, 1050–1380 m (3500–4600 ft), ponds, sta. 2.VIII.1925, B. Chopra, 3♂♂ & 3♀♀. Simla Hills, Ghuma (ponds) 1100 m (3700 ft), 6–8. IX.1925, Chopra, 1♂. Simla, Hills, Kalka, 520 m (2400 ft), 19.VII.1911, 1♂ & 2♀♀. Simla Hills, Barogh, 1500 m (5000 ft), small stream, 10.V.1910, Annandale, 1♂. W. Himalayas, Dharampur. Phaku Ram, 1500 m (5000 ft), 14.V.1913, 5♂♂ & 4♀♀. W. Himalayas, valley of Sutlej below Simla, 6.V.1910, Annandale, 1♂. Punjab, Sandreh Khewra, Salt Range,

5.VII.1922, S.L. Hora, 3♂♂ & 3♀♀. Simla Hills, Sta. 6, 26.VII.1923, Hora, 2♂♂. (SECK). Garhwal District, Rannee, 20.X.1907, 2♀♀ (SAMA).

Comparative notes : *E. lineatipes* is rather similar to ***chinensis***. The various comparative measurements of the head and pronotum being much the same except head to pronotal length. Unlike *chinensis*, *lineatipes* does not have the ventral lateral margins of the connexivum serrated. The ♂ genital capsules are basically of the same type, both having a 'step' on the dorsal margin of the posterior lobe. The lateral arms or the basal plate of *lineatipes* are distally acuminate whereas *chinensis* has them distally rounded.

Enithares metallica Brooks Fig. 257-262.

Enithares metallica Brks., 1948, J. Kans. Ent. Soc. **21** : 38-40, pl. 1, fig. 2.- Lansbury, 1964, Ann. Zool. Warsz. **22** : 208 listed only.

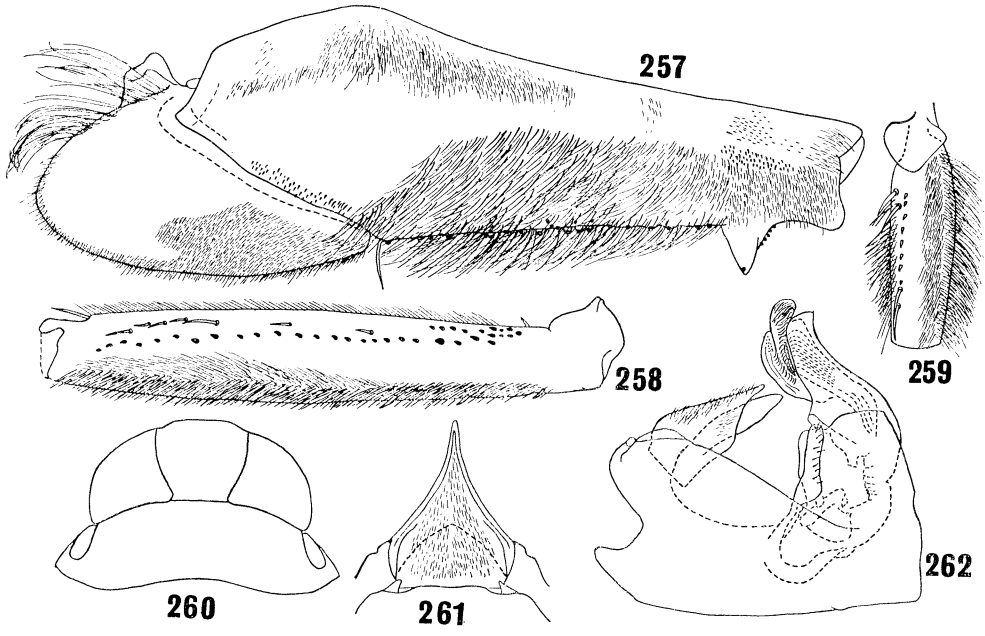


Fig. 257-262. *E. metallica* Brooks ♂. 257, mid-femur; 258, mid-tibia; 259, 1st mid-tarsus; 260, head and pronotum from above; 261, metaxyphus; 262, genital capsule.

Both sexes 10.2-12 mm long, 3.9-5.5 maximum width.

Shape: ♂♂ tapering from posterior margin of pronotum to end of abdomen, lateral margins of abdomen more or less straight, ♀♀ lateral margins of abdomen more rounded.

Color : A variable species. Pale form, vertex, pronotum and scutellum yellowish brown. Clavus and corium hyaline grayish appearing gray to black due to underlying dorsal pigmentation. Opaque zone of membrane grayish yellow, remainder of membrane smoky brown. Dark form, vertex yellowish brown, frons with a pair of reddish-brown spots. Pronotum tricolored, anteriorly yellowish white, medianly brown and posteriorly hyaline appearing black due to scutellar color showing through. Scutellum black with variable yellowish areas lateral-

ly. Clavus dark brown to metallic black, anterior angles grayish hyaline. Posterior angles of corium reddish brown to metallic black, remainder grayish hyaline. Opaque zone of membrane greenish black and metallic, remainder of membrane smoky hyaline. Both forms have eyes dark reddish brown. Legs, keel and lateral margins of abdomen yellowish, remainder dark brown.

Structural characters : Head in dorsal view short and rounded. Greatest width of head about 4/5 pronotal humeral width, over 2.5× but less than 3× anterior width of vertex and varying between 2.5× to just over 3× median head length. Synthlipsis more than 1/2 anterior width of vertex. Head length usually just less than anterior width of vertex, occasionally slightly greater and always shorter than median pronotal length. Pronotal humeral width 3× or more median length, lateral margins diverging, 2/3 median length, posterior margin convex, centrally emarginate. Pronotum with a transverse row of coarse punctures across anterior 1/3. Dorsal margin of pronotal fovea directed laterad behind eyes (fig. 260). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded, mid femur depressed on inner surface and covered with long hairs (fig. 257). ♀ mid-femur with fewer and finer hairs and not depressed on inner surface. Chaetotaxy of ♂ mid-leg (fig. 257-259). Male genital capsule as in fig. 262, dorsal margin of posterior lobe with a distinct 'step', parameres finger-like, almost reaching dorsal margin of posterior lobe. Metaxyphus (fig. 261).

Holotype ♂, 1♂ and 1♀ paratypes, Siam, 1924, Hugh Smith (USNM) [Froeschner in litt. 13.X.1965.] 1♂ and 1♀ paratypes, same data (SECK) [Byers in litt. 8.X.1965.] In addition to part of type series I have seen : Viet Nam, 18 km NW Dalat, 1300 m, 4-5.V. 1960, C. M. Yoshimoto, 2♀♀. Viet Nam, 15 km NW Dalat, 1850 m, 5.V.1960, Yoshimoto, 1♂. Viet Nam, 15-35 km NW Phan Rang, 16-18.XI.1960, Yoshimoto, 3♂♂ & 2♀♀. Viet Nam, 45 km W of Dalat, 850 m, 5.V.1960, L. W. Quate, 1♀ & 2 nymphs. (BISHOP). Siam Malay States, Bulsit Besar, 1♀ (BMNH). Malaya, Surager, Batay Padang near Jor Peak, 13.III.1963, C. H. Fernando, 2♂♂ & 1♀. Malaya, Perak, Gunong...3.III.1963, Fernando., 4♂♂ & 3♀♀. Malaya, Selangor stream at 32 km (20 mls) Gimbok, forest reserve, 15.III. 1964, Fernando. 1♂ & 1♀. Malaya, Kedah Peak, Gunong Jerai, 990 m (3300 ft) semi-stagnant stream, 27.II.1961, Fernando, 1♂ (OXFORD).

Brooks (1948) lists Malay Peninsula and Indo-China (Tonkin, Hoabinh).

Comparative notes: Rather similar to *lineatipes* both species having a 'step' on dorsal margin of posterior lobe and elongate parameres. *E. metallica* can be separated from *lineatipes* by having the nodal furrow less than its own length removed from the membranal suture ; the ♂♂ by *metallica* having very long mid-femoral hairs (fig. 257), lastly the head width of *metallica* is always more than 2.5× anterior width of vertex, in *lineatipes* it is always less than 2.5× anterior width of vertex.

Enithares thienemanni Lundblad Fig. 263-269.

Enithares thienemanni Lund., 1933, Arch. Hydrobiol. Suppl. **12** : 178-79, fig. 65, pl. 5 & 21.

♂♂. Length 9.5 mm, maximum width 3.75 mm ; ♀♀, length 8.5-9.5 mm, maximum width 3.5 mm.

Shape : Greatest width across pronotal humeral angles tapering to end of abdomen.

Color : Pale form, eyes reddish brown. Vertex gray with brown flecks on frons. Elytra including opaque zone of membrane grayish white, remainder of membrane smoky brown.

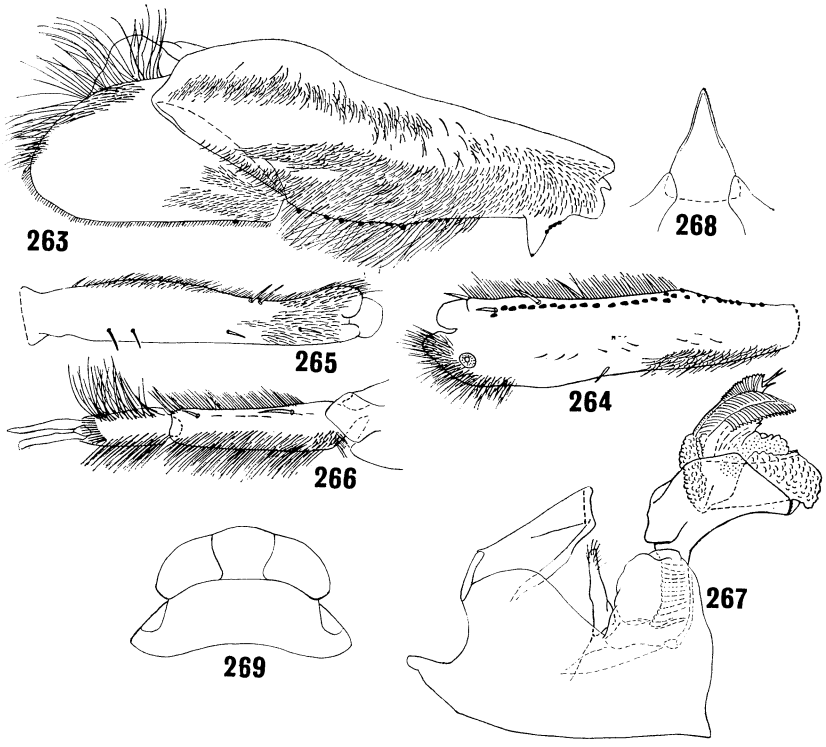


Fig. 263-264. *E. thienemanni* Lundblad lectotype ♂. 263, mid-femur; 264, mid-tibia; 265, fore tibia; 266, mid-tarsus and claws; 267, genital capsule; 268, metaxyphus; 269, head and pronotum from above.

Dark form, eyes gray. Vertex yellowish white, brown spot on frons. Pronotum anteriorly yellowish white, irregularly suffused with brown, remainder hyaline appearing dark brown to black due to scutellar color showing through. Scutellum brown with lateral yellowish-white blotches. Inner angle of clavus, corium and outer lateral margins of corium dark brown to black, remainder opaque gray. Opaque zone of membrane dark brown, remainder smoky brown. Both forms with legs yellowish brown. Abdomen ventrally dark brown with keel and lateral margins yellow.

Structural characters: Head in dorsal view rounded. Greatest width of head 5/6 pronotal humeral width, about 3×, (sometimes slightly less) anterior width of vertex and more than 3× median head length. Synthlipsis about 1/2 anterior width of vertex. Median head length to anterior width of vertex variable, either slightly more or less than anterior width of vertex and clearly shorter than pronotum. Pronotal humeral width over 3× median length, lateral margins diverging, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 269). Nodal furrow curved cephalad, about equal to its own length removed from membranal suture. Fore tibia of ♂ concave distally (fig. 265). Mid-femur of ♂ as in fig. 263, mesotrochanter rounded. Chaetotaxy of ♂ mid-tibia as is fig. 264, anterior distal margin slightly produced with a large nodule on inner surface. Tarsi of ♂ mid-leg (fig. 266). Male genital capsule as in fig. 267, parameres elongate with fine hairs

apically. Dorsal margin of posterior lobe cleft, lateral arms of basal plate bluntly acuminate distally. Metaxyphus acuminate (fig. 269).

Lectotype ♂ Sumatra, Mittelsumatra, Subang-Prabhöhe, Bach im Urwalde 1000 m, 4.III. 1929, Thienemann. 3 paralectotype ♀♀ Südsumatra, Urwaldebach bei Ranau, zwischen laub etwa 600 m, 29.I.1929, Thienemann. (STOCKHOLM). Known only by type series.

Comparative notes : This species is rather similar to *atra* ; the latter does not have the fore tibia of the ♂ concave distally or the large nodule on the inner surface of the mid-tibia of the ♂,

Enithares atra Brooks Fig. 270–275.

Enithares atra Brks., 1948, J. Kans. Ent. Soc. **21** : 48, pl. 3, fig. 11.

Both sexes 9–10 mm, long, 3.75 mm maximum width.

Shape : Very broad across pronotal humeral angles tapering to end of abdomen.

Color : Pale form, eyes gray, frons with a brown bifid blotch. Vertex, pronotum, scutellum, inner claval margins and outer margin of corium creamy yellow. Remainder of clavus, corium and membrane excluding opaque zone hyaline suffused with gray. Opaque zone of membrane black. Dark form, eyes grayish brown. Vertex pale yellow, frons with an irregular dark brown spot. Anterior 1/3 of pronotum yellow suffused with reddish brown, remainder hyaline appearing darker due to scutellar color showing through. Pigmented part of pronotum separated from hyaline zone by a transverse pale yellow band. Scutellum black or yellow with anterior margin black. Clavus dark reddish brown suffused with black at angles. Outer margins of corium pale greenish yellow, remainder suffused with black. Opaque zone of membrane black, remainder yellowish brown. Legs and abdomen ventrally of both forms yellowish brown.

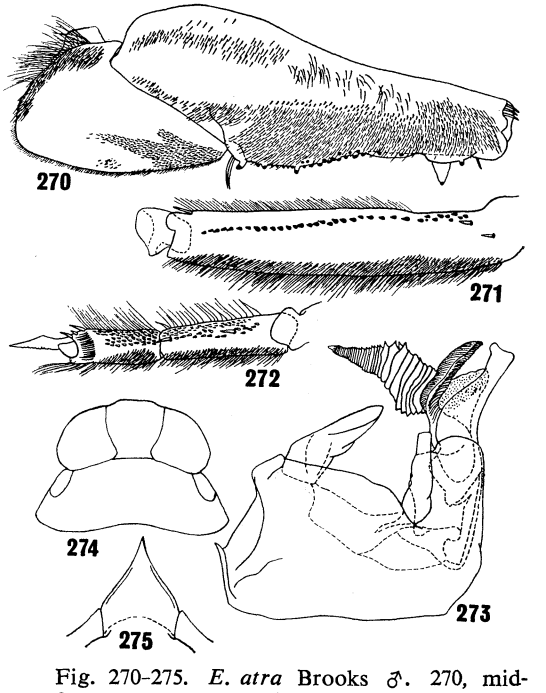


Fig. 270–275. *E. atra* Brooks ♂. 270, mid-femur; 271, mid-tibia; 272, mid-tarsus and claws; 273, genital capsule; 274, head and pronotum from above; 275, metaxyphus.

Structural characters : Head in dorsal view rounded. Greatest width of head just over 3× anterior width of vertex and 3/4 pronotal humeral width. Head width to head length variable, either more or less than 3×. Synthlipsis just over 1/2 anterior width of vertex. Median head length usually more than anterior width of vertex, occasionally less, but always shorter than pronotum. Pronotal humeral width over 3× median length, lateral margins diverging, 2/3 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea running parallel with lateral margins behind eyes (fig. 274). Nodal furrow less than its

own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg (fig. 270-272). Male genital capsule as in fig. 273; posterior lobe with a distinct 'step' dorsally, parameres surpassing dorsal margin of posterior lobe, apically truncate. Metaxyphus apically acuminate (fig. 275).

Holotype ♂, 2♂♂ & 7♀♀ paratypes, New Guinea, Rigo, Luglio, 1889, L. Loria (SECK) [Byers in litt. 8.X.1965] not in USNM as stated by Brooks (1948). 1♂ paratype, same data as type series (BMNH). New Guinea, Lae, 9.I.1957, A. C. Hartley, 1 ♂ & 1 ♀ (OXFORD). New Guinea, Wareo, Finsch Haven, Rev. L. Wagner, 5♂♂ & 9♀♀ (SAMA).

Comparative notes :The ♂ genitalia shows affinities with *stylata*, however, *atra* is much smaller and does not have the numerous small stout setae on the dorsal margin of the mid-femur as in *stylata* (fig. 270 & 282).

Enithares amboinensis Lansbury, new species Fig. 276-281.

♂♂. Length 8.75-9 mm, maximum width 3.75 mm; ♀ length 8.5 mm, maximum width 3.75 mm.

Shape : Short robust species, greatest width across pronotal humeral angles.

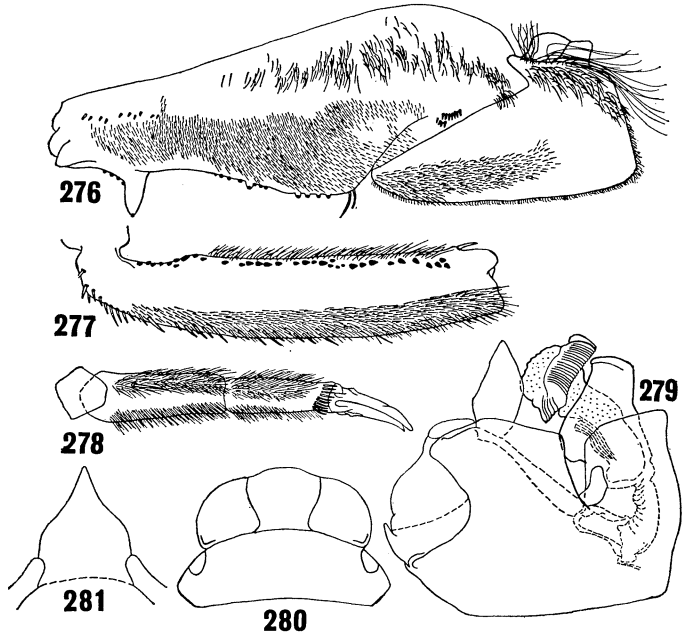


Fig. 276-281. *E. amboinensis* n. sp. ♂. 276, mid-femur; 277, mid-tibia; 278, mid-tarsus and claws; 279, genital capsule; 280, head and pronotum from above; 281, metaxyphus.

Color : Pale form, vertex and pronotum anteriorly yellowish brown, posteriorly pronotum grayish hyaline. Scutellum reddish brown, lateral margins and apex dark brown. Clavus and corium grayish with hemelytral commissure dark reddish brown. Embolium dark brown. Opaque zone of membrane dark smoky brown, remainder hyaline smoky brown. Dark form, ver-

tex yellowish brown. Pronotum dark brown, humeral angles yellowish. Scutellum black with basal angles yellowish. Clavus dark brown with a gray streak along outer margin. Corium dark brown with gray areas apically and medianly. Opaque zone of membrane dark brown, remainder smoky brown. Both forms with eyes gray to black flecked with brown. Abdomen ventrally brown with keel, lateral margins and legs yellowish brown.

Structural characters : Head in dorsal view rounded. Greatest width of head 9/11 pronotal humeral width, 2.5× anterior width of vertex and median head length. Synthlipsis about 1/2 anterior width of vertex. Median head length slightly shorter than anterior width of vertex and median pronotal length. Pronotal humeral width just over 3× median length, lateral margins rounded, posterior margin almost straight. Dorsal margin of pronotal fovea directed obliquely caudad behind eyes (fig. 280). Mesotrochanter rounded, ♂ mid-femur with a small number of black spicules close to attachment with trochanter (fig. 276). Male mid-tibia with many stout spines along outer margin (fig. 277). Chaetotaxy of ♂ mid-leg as in fig. 276-278. Male genital capsule as in fig. 279, posterior lobe dorsally rectangular, parameres reniform. Metaxyphus apically concave and acuminate (fig. 281).

Holotype ♂, Amboina [Dr Doleschal 1859, det. Mayr as *E. luniger* (Fieber).] 1♂ & 1♀ paratype same data, det. Kirkaldy as *E. bergrothi* (VIENNA). Known only by the type series.

Comparative notes : The ♂ genitalia shows affinities with the "bergrothi" group, but the pronotal fovea is quite distinctive of *amboinensis*. Keys out with *ripleyana*, the spinose ♂ mid-tibia and rectangular posterior lobe easily distinguish *amboinensis* from *ripleyana*.

Enithares stylata Lansbury, new species Fig. 282–287.

♂♂. Length 12.75-13 mm, maximum width 4.5-4.75 mm ; ♀♀. length 11.75-12.5 mm, maximum width 4.5-4.75 mm.

Shape : Large robust species, greatest width across pronotal humeral angles ; ♂♂ tapering from humeral angles to end of abdomen : ♀♀ more parallel.

Color : Pale form, eyes light to dark gray. Vertex, pronotum and scutellum yellowish brown. Elytra grayish brown. Dark form, eyes reddish brown. Vertex and lateral margins of pronotum yellowish brown, remainder of pronotum, scutellum and elytra including membrane black with greenish irridescence. Both forms with legs brown and abdomen ventrally dark brown.

Structural characters : Viewed dorsally head rounded. Greatest width of head 3/4 pronotal humeral width, nearly 3× anterior width of vertex and median head length. Synthlipsis about 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and either equal to or slightly greater than median pronotal length. Female head length equal to or slightly shorter than median pronotal length. Pronotal humeral width always more than 3× median length, lateral margins diverging, almost 2/3 median length, posterior margin concave. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 287). Nodal furrow directed dorsad, less than its own length removed from membranal suture. Mesotrochanter rounded, dorsal margin of mid-femur with many short stout setae (fig. 282). Chaetotaxy of ♂ mid-leg (fig. 282-284). Male genital capsule as in fig. 285, parameres elongate, surpassing dorsal margin of posterior lobe and covered with hairs on outer margin. Posterior lobe with a distinct 'step'. Lateral arms of basal plate long and sinuate, apically tapering and rounded. Metaxyphus long and apically acuminate (fig. 286).

Holotype ♂ (BISHOP 7715), 6♂♂ & 15 ♀♀ paratypes, NE New Guinea Kassam, 1350

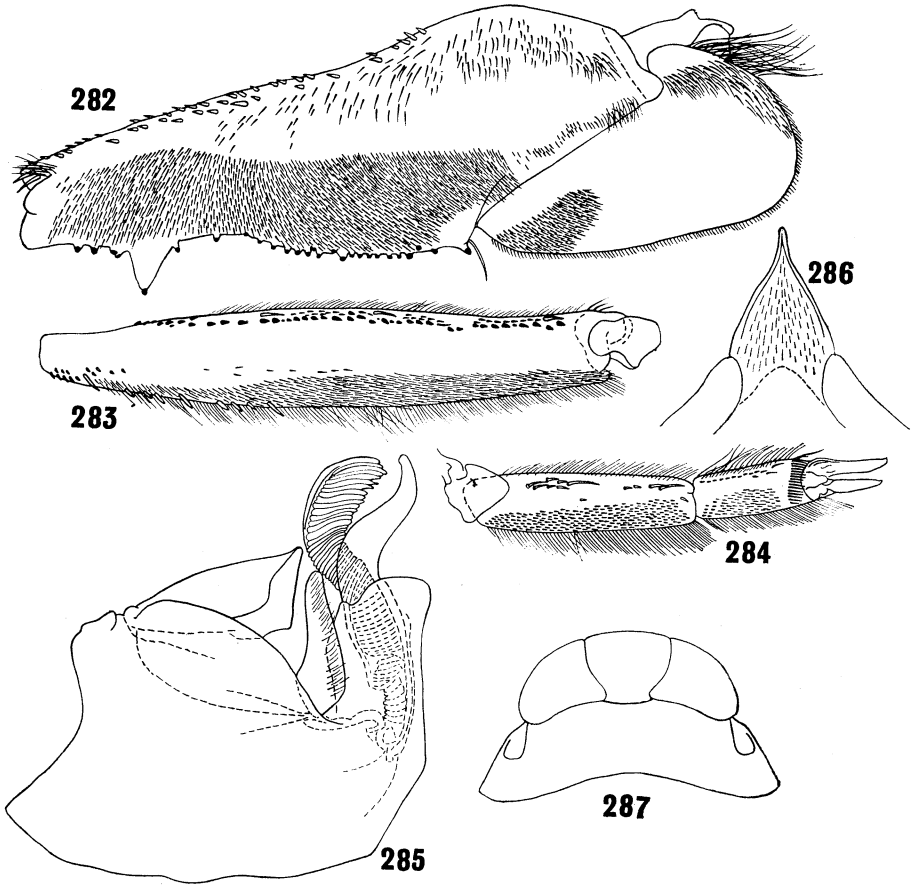


Fig. 282-287. *E. stylata* n. sp. ♂. 282, mid-femur; 282, mid-tibia; 284, mid-tarsus and claws; 285, genital capsule; 286, metaxyphus; 287, head and pronotum from above.

m, 48 km E of Kainantu, 28.X.1959, T.C. Maa. 4♂♂ & 2♀♀ paratypes, NE New Guinea Tapo (=Tapu), 1650 m, 3 km W of Kainantu, 22.X.1959, Maa. NE New Guinea, Minj, W. Highlands, 8-13.IX.1959, Maa, 3 ♀♀. NE New Guinea, Bulolo, 1067 m, 15.VIII.1956, E. J. Ford, Jr. 2♀♀. NE New Guinea, Wau, Morobe Distr., 1100 m, 9.IX.1961, J. Sedlacek, 1♂ & 1♀; same data, 1200 m, 26.VII.1961, Sedlacek 1♂ & 2♀♀ ; same data, 1250 m, 15. VIII.1963, Sedlacek, 2♂♂ ; same data, 1300 m, 14.VIII.1963, Sedlacek, 1♂ ; same data, 1400 m, 27.VIII.1961, Sedlacek, 1 teneral ♂ ; same data. 1700-1800 m, 17.XI.1961, Sedlacek, 3♀♀ ; same data, 1300 m, 22.XII.1961, Sedlacek, 1♀ ; same data, 1000-1200 m, 27-28. III.1964, Sedlacek, 1♀.

Comparative notes : Largest known species from New Guinea. The spinose mid-femur, ♂ genital capsule and very large metaxyphus are diagnostic for this species.

Enithares malayensis Brooks Fig. 288–293.

Enithares malayensis Brks., 1948, J. Kans. Ent. Soc. **21** : 41, pl. 1, fig. 4.

Both sexes 9–9.4 mm long, maximum width 3.2–3.6 mm.

Shape : ♂♂ tapering gradually from pronotal humeral angles to end of abdomen, ♀♀ rather more parallel, end of abdomen rounded.

Color : Eyes reddish brown to gray. Vertex and anterior 1/3 of pronotum brown. Pronotum medianly yellowish, posteriorly hyaline appearing darker due to scutellar color showing through. Scutellum with a yellowish "V" shaped area, remainder black. Clavus and corium shining hyaline appearing black due to dorsal pigmentation showing through. Opaque zone of membrane black, remainder hyaline with margins smoky brown. Legs and abdomen ventrally yellowish brown.

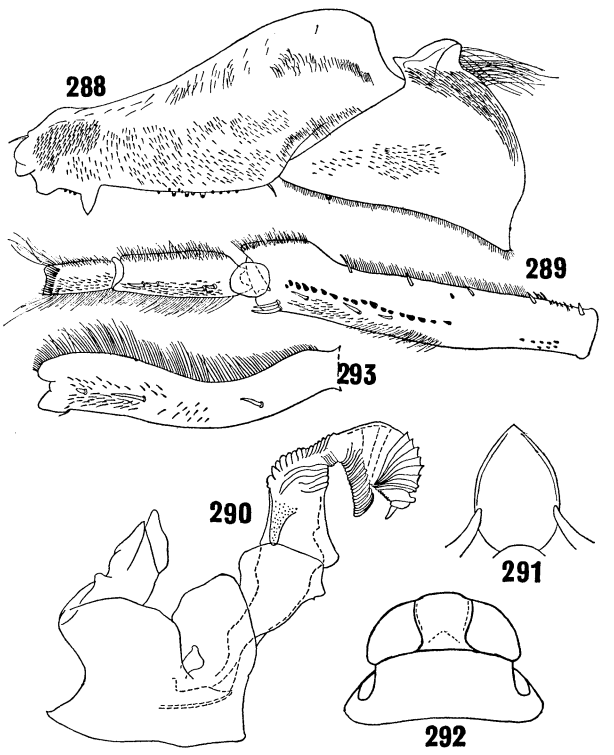


Fig. 288–293. *E. malayensis* Brooks ♂. 288, mid-femur; 289, mid-tibia, tarsus and claws; 290, genital capsule; 291, metaxyphus; 292, head and pronotum from above; 292, fore tibia.

Structural characters : Head in dorsal view short with anterior margin rounded. Greatest width of head 4/5 pronotal humeral width, 3× or more anterior width of vertex and about 2.5 × median head length. Synthlipsis 1/2 anterior width of vertex. Head length greater than anterior width of vertex and 3/4 median pronotal length; ♀ head length almost equals median pronotal length. Pronotal humeral width 2.5× median length, lateral margins diverging, 1/2 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 292). Nodal furrow curved cephalad, less than its own length removed from membranal suture. Fore tibia of ♂ curved forward, concave on anterior margin with many long hairs and convex on posterior margin (fig. 293). Male mesotrochanter with inner ventral angle produced (fig. 288). Male mid-tibia swollen forming a convex arch along dorsal surface and expanded distally (fig. 289). Female hind femur indented proximally at attachment with trochanter. Male genital capsule as in fig. 290, parameres short, apically slightly produced. Metaxyphus convex, apically acuminate (fig. 291).

Holotype ♂, Malay Peninsula, Kedah Peak, 870 m (2900ft), 2.XII.1915 (BMNH). 1♂ paratype, same data (SECK). In addition to the holotype, I have seen : Malaya, Kahang, temporary pool near Sunga River, 16.IX.1960, C. H. Fernando, 1♂ & 2♀♀ (SECK).

Same data, 18.IX.1960, Fernando, 1♂ & 3♀♀. Singapore, Templars Park, 19.III.1960, Fernando, 2♀♀ (OXFORD). Riouw Archipelago, Doerian, XI.1923, Dammerman, 1♂ (LEIDEN).

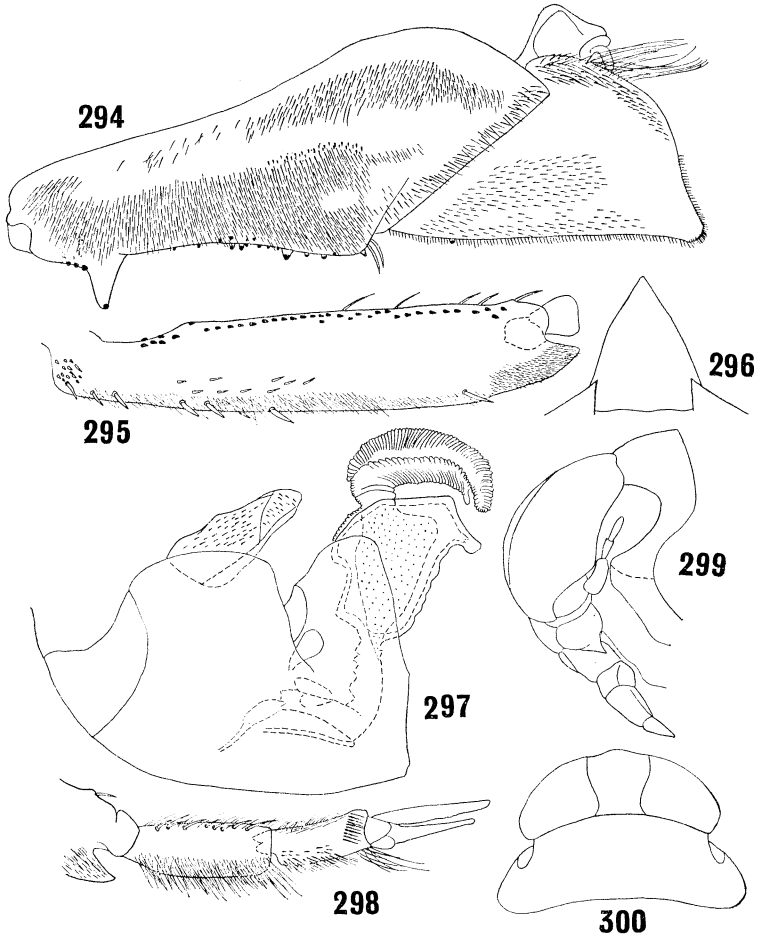
Comparative notes: See *E. maai*.

Enithares maai Lansbury, new species Fig. 294–300.

♂♂. Length 9.5–10 mm, maximum width 4 mm; ♀♀ length, 10 mm, maximum width 4 mm.

Shape: Greatest width across pronotal humeral angles, tapering to end of abdomen, sides straight not curved.

Color: Pale form, eyes dark brown. Vertex, pronotum, scutellum, inner margin of clavus



Figs. 294-300. *E. maai* n. sp. ♂. 294, mid-femur; 295, mid-tibia; 296, metaxyphus; 297, genital capsule; 298, mid-tarsus and claws; 299, side view of head and pronotum; 300, head and pronotum from above.

and corium yellowish brown. Margin of clavus adjoining scutellum black. Dark form, eyes grayish brown. Vertex, anterior and posterior margins of pronotum and lateral margins of scutellum yellowish gray. Pronotum medianly, base of scutellum, clavus and inner angle of corium shining dark smoky brown. Outer angle of corium hyaline grayish. Both forms with legs and abdomen ventrally brown.

Structural characters : Head in dorsal view rounded. Greatest width of head just over 3/4 pronotal humeral width, about 3× anterior width of vertex, occasionally slightly less and just over 2.5× median head length. Synthlipsis 1/2 anterior width of vertex. Median head length slightly longer than anterior width of vertex and 3/4 median pronotal length. Pronotal humeral width nearly 3× median length, lateral margins diverging, just over 1/2 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 300). Viewed laterally, the lateral margins of pronotal fovea produced towards posterior margin of eyes (fig. 299). Nodal furrow directed dorsad, about equal to or less than its own length removed from membranal suture. Mesotrochanter angulate, tip curved inwards (fig. 294). Chaetotaxy of ♂ mid-leg (fig. 294-95 & 298). Male mid-tibia produced on outer margin distally (fig. 295 & 298). Male genital capsule as in fig. 297, outer lateral margins of lateral arms of basal plate apically produced, parameres short and rounded. Lateral margins of metaxyphus convex, apically acuminate (fig. 296).

Holotype ♂ (BISHOP 7716) & 2♀♀ paratypes, Borneo : Sarawak, Kampong Pueh, Lundu District, 690-1500 m, 25-31.V.1958, T. C. Maa. 2♂♂ paratypes North Borneo, Kambaranga-Tenompok, 2.XI.1958, Maa. (BISHOP). 3♂♂ & 2♀♀ paratypes, North Borneo, Mt Kinabalu, Pinosuk Plateau, small streams, 17.III.1964, Roy. Soc. Exp., S. Kueh. (BMNH).

Comparative notes : This species is very much like *malayensis*. The mesotrochanter is not quite so produced as in *malayensis* (fig. 294 & 288). The fore tibia of *maai* is not sinuate as in *malayensis* (fig. 293) neither is the mid-tibia distally swollen as in *malayensis* (fig. 295 & 289).

Enithares foveatus Lansbury, new species Fig. 301-307.

♂. Length 9.25 mm, maximum width 3.5 mm ; ♀ length, 8.75 mm, maximum width 3.5 mm.

Shape : Broad boat shaped species.

Color : Pale form, eyes dark brown. Vertex, pronotum and scutellum yellowish brown. Elytra grayish hyaline. Dark form, eyes reddish gray. Vertex, pronotum medianly and most of scutellum yellowish brown. Remainder of pronotum and scutellum dark reddish brown. Elytra hyaline appearing almost black due to underlying dorsal pigmentation. Both forms with legs and abdomen ventrally yellowish brown.

Structural Characters : Head in dorsal view rounded. Greatest width of head 9/10 pronotal humeral width, just under 3× anterior width of vertex and 2.5-2.75× median head length. Synthlipsis just under 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and slightly shorter than median pronotal length. Pronotal humeral width slightly less than 3× median length, lateral margins diverging, just over 2/3 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 307). Lateral margin of pronotal fovea projected towards head and almost contiguous with posterior margin of eyes (fig. 306). Nodal furrow basally straight, tip inclined cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded, chaetotaxy of ♂ mid-leg (fig. 301, 303-04). Male genital capsule as in fig. 305, posterior lobe elongate, cleft on outer dorsal margin. Lateral arms of basal plate apically bluntly

acuminate, parameres with fine hairs. Lateral margins of metaxyphus concave and converging, tip acuminate (fig. 302).

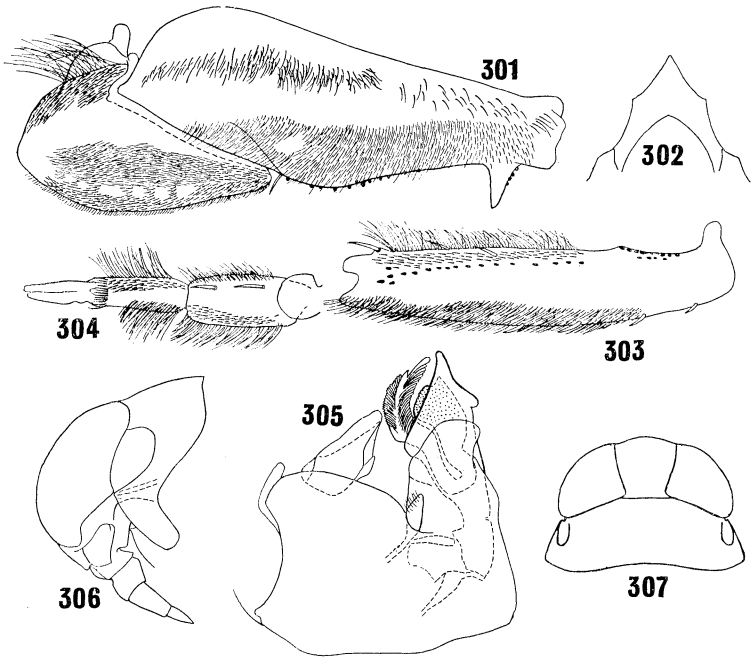


Fig. 301-307. *E. foveatus* n. sp. ♂. 301, mid-femur; 302, metaxyphus; 303, midtibia; 304, mid-tarsus and claws; 305, genital capsule; 306, side view of head and pronotum; 307, head and pronotum from above.

Holotype ♂ (BISHOP 7717) & 1♀ paratype, Philippine Is., Leyte, Tigbao, 22.VIII.1957 (BISHOP). Known only by type series.

Comparative notes: Keys out with *woodwardi*; differs in that dorsal margin of pronotal fovea of *foveatus* is directed caudad behind eyes (fig. 307) in *woodwardi*, the dorsal margin of pronotal fovea is directed laterad behind eyes (fig. 157). The lateral arms of the basal plate of *foveatus* are bluntly acuminate and the posterior lobe dorso-laterally cleft (fig. 305); *woodwardi* has the lateral arms of the basal plate rounded and the posterior lobe is not dorso-laterally cleft (fig. 158).

Enithares vicintricata Lansbury, new species Fig. 308-313.

♂♂. Length 9 mm, maximum width 3.25 mm; ♀ length, 9.75 mm, maximum width 3.75 mm.

Color: General appearance bright shining species. Eyes reddish brown flecked with black. Vertex and anterior 1/2 of pronotum yellowish brown, posterior 1/2 of pronotum hyaline appearing black due to scutellar color showing through. Scutellum dark brown with 2 pear-shaped yellowish blotches laterally. Clavus, inner angle of corium and margins of opaque zone dark brown to black. Remainder of corium and opaque zone hyaline yellowish. Remain-

der of membrane smoky brown. Legs and abdomen ventrally pale yellowish brown.

Structural characters : Head in dorsal view rounded. Greatest width of head about 5/6 pronotal humeral width, just over 3× anterior width of vertex and 2.3 × median head length.

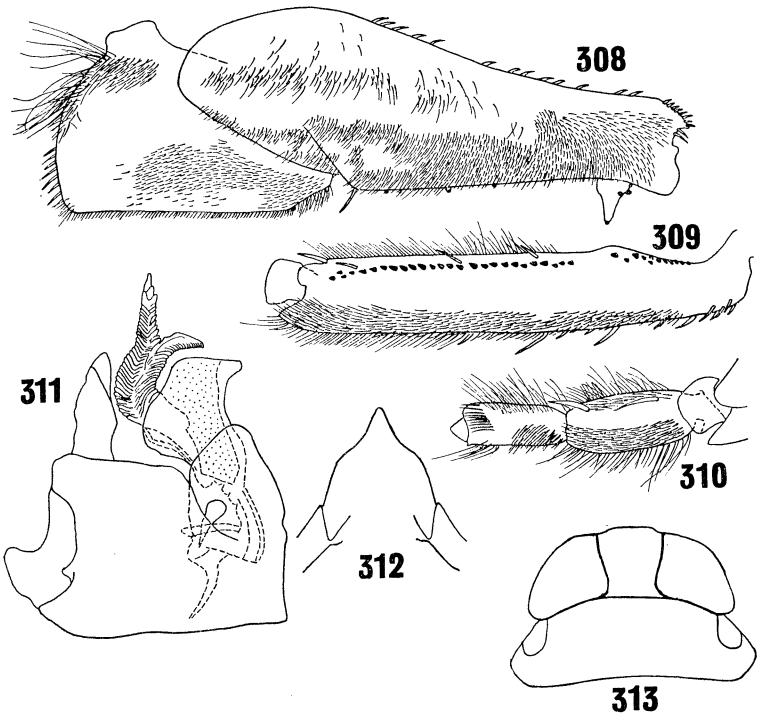


Fig. 308-313. *E. vicintricata* n. sp. ♂. 308, mid-femur; 309, mid-tibia; 310, mid-tarsus; 311, genital capsule; 312, metaxyphus; 313, head and pronotum from above.

Synthlipsis 5/8 anterior width of vertex. Head 1/5 longer than anterior width of vertex and almost as long as median pronotal length. Pronotal humeral width nearly 3× median length, lateral margins diverging, 1/2 median length, posterior almost straight. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 313). Tip of nodal furrow inclined cephalad, less than its own length removed from membranal suture. Mesotrochanter angular, ♂ mid-femur with stout setae along dorsal margin (fig. 308). Male mid-tibia slightly produced distally (fig. 309). Chaetotaxy of ♂ mid-leg (fig. 308-310). Male genital capsule as in fig. 311, lateral arms of basal plate dorsolaterally produced, parameres short and apically rounded. Metaxyphus apically concave and acuminate (fig. 312).

Holotype ♂ (BISHOP 7718) & 1♂ paratype, Borneo : Sarawak, Kampong Pueh, Lundu District, 690-1500 m, 25-31.V.1958, T. C. Maa (BISHOP). 1♀ paratype, Borneo, Sarawak, Mt Penrissen, 1320 m (4,400 ft), Dr E. Mjoberg (BMNH). Known only by type series.

Comparative notes : As the name implies this species is very much like *intricata* and with *rogersi* forms part of a group of very closely related species. *E. vicintricata* differs from the others by the spinose mid-femur ; by only having 2 large spines on the ♂ 1st

midtarsus, the others have 4. Slight differences exist in the shape of the phallosomas, the parameres of all three species are very similar.

Enithares martini Kirkaldy Fig. 314-320.

Enithares martini Kirk., 1898, Bull. Mus. Natn. Hist. Nat. Paris **1898**: 151; 1904, Wien. Ent. Ztg. **23**: 98, 107-8, 133.— Lundblad, 1933, Arch. Hydrobiol. Suppl. **12**: 146; listed only.

♂♂. Length 7.5-8 mm, maximum width 3.3-3.5 mm; ♀♀ length, 8-9 mm, maximum width 3.5-3.75 mm.

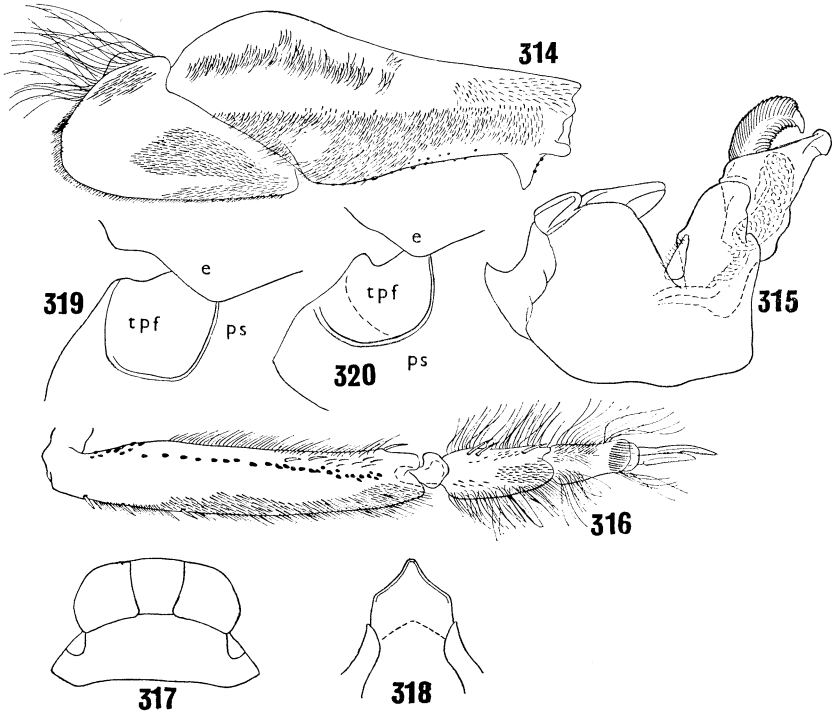


Fig. 314-319. *E. martini* Kirkaldy ♂; 320 ♀. 314, mid-femur; 315, genital capsule; 316, mid-tibia, tarsus and claws; 317, head and pronotum from above; 318, metaxyphus; 319, pronotal fovea viewed dorso-obliquely; 320, ibid.

Shape: Very broad robust species, greatest width across pronotal humeral angles, tapering rather abruptly from humeral angles to end of abdomen.

Color: Pale form, yellowish brown with membranal sutures darker and eyes brown with black flecks. Dark form, eyes gray or reddish brown. Vertex yellowish brown, frons reddish brown. Anterior 1/2 of pronotum dark brown flecked with yellow medianly and adjacent to pronotal fovea. Posteriorly pronotum black. Scutellum black with pale yellow blotches along lateral margins. Hemelytral commissure dark smoky brown. Clavus grayish hyaline. Inner margins of corium smoky brown, remainder grayish hyaline. Embolium smoky brown, pro-

ximally with yellow stripe. Opaque zone of membrane dark brown, remainder of membrane pale brown. Both forms with legs brown ; abdomen ventrally dark brown with keel and lateral margins slightly paler.

Structural characters : Head in dorsal view rounded. Greatest width of head 5/6 pronotal humeral width, between 2.75-3.25 anterior width of vertex and between 2.5-3× median head length. Synthlipsis just over 1/2 anterior width of vertex. Median head length slightly greater than anterior width of vertex and slightly shorter than pronotum. Pronotal humeral width variable, either slightly less, equal to or more than 3× median length. Lateral margins diverging, 1/2 median length, posterior margin convex, centrally straight. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 317). Viewed dorso-obliquely, ♂ tomentose area of pronotal fovea simple (fig. 319) ♀ has a prominent nodule (fig. 320). Nodal furrow curving dorsad, less than its own length removed from membranal suture. Mesotrochanter rounded (fig. 314), chaetotaxy of ♂ mid-leg (fig. 314 & 316). Male genital capsule as in fig. 315, posterior lobe cleft laterally on outer margin, parameres short and triangular. Metaxyphus apically concave and acuminate (fig. 318).

Lectotype ♀, Philippine Is., Manila, Coll. Fallou 259-95 (PARIS). 1 paralectotype ♂, Manila, Coll. Signoret ; det. *biimpressa* Uhler by Signoret (VIENNA). In addition to the type series, I have seen the following material : Ins. Phillipp. (Semper) det. *sinica* 2♀♀ (STOCKHOLM). N. Luzon, Balbalasan, 120-150 m (4-500 ft), G. Böttcher, III.1918, Taeuber, 1♂ & 1♀, same data, 25.III.1914, 1♀. Luzon, Pt. Rizal, Montalban, Böttcher, 25.III. 1914, Taeuber Collection, 1♂ & 1♀. Philippine Is., C. S. Banks, 2♂♂ & 1♀ (BMNH). P. I., Mindanao, Sulu, Jolo I., 8-10 km S of Taglibi, 120 m, 1.IX.1958, H. E. Milliron, 1♂. Mindanao, Zamboanga del Norte, Manucan, 20 km S, 400 m, 16.X.1959, L. W. Quate, 1♂ & 1♀. Mindanao, Agusan Esperanza, 4-11.XI.1959, C. M. Yoshimoto, 2♂♂ & 1♀. Mindanao, Zamboanga del Norte, Manucan, 15 km S, 680 m, 14-15.X.1959, primary forest, L. W. Quate, 1♀. Mindanao, Zamboanga del Norte, 11 km E of Sindangan, 20.VII.1958, H. E. Milliron, 2♀♀. Mindanao, Zamboanga del Sur, Lemesahan, 600 m., 7.IX.1958 in jungle, Milliron, 2♀♀. P. I., Misamis Or. Mt. Kimbungol, 20 km SE of Gingoog, 700-800 m, 9-18. IV.1960, H. Torrevillas, 2♂♂. (BISHOP).

Comparative notes : Although *martini* keys out with *ripleyana*, it seems in no way related to the latter. The very prominent cleft on the posterior lobe (fig. 315) is diagnostic for *martini*.

Enithares rogersi Distant Fig. 321-327.

Enithares indica Dist, 1906, Fauna Brit. India Rhynchota **3** : 42, ex parte.
Enithares rogersi Dist, 1910, *Ibid*, **5** : 330-31, fig. 191.—Hutchinson, 1933, Rec. Indian Mus. **35**(4) : 395.— Lundblad, 1933, Arch. Hydrobiol. Suppl. **12** : 146-47.

♂♂. Length 8.6-9 mm, maximum width 3.25-3.5 mm ; ♀♀ length, 8.75 mm, maximum width 3.25 mm.

Shape : Greatest width across pronotal humeral angles : ♂♂ tapering from pronotal humeral angles, ♀♀ more parallel sided, abdomen converging from a point just before nodal furrow.

Color : General appearance shining. Eyes gray to reddish brown. Vertex pale yellow to dark reddish brown. Pronotum variable, sometimes black with dorsal margins of fovea pale yellow, otherwise anterior 1/2 of pronotum dark brown, posteriorly paler with lateral margins yellowish. Scutellum dark reddish brown to black, lateral margins yellowish. Clavus dark brown to black,

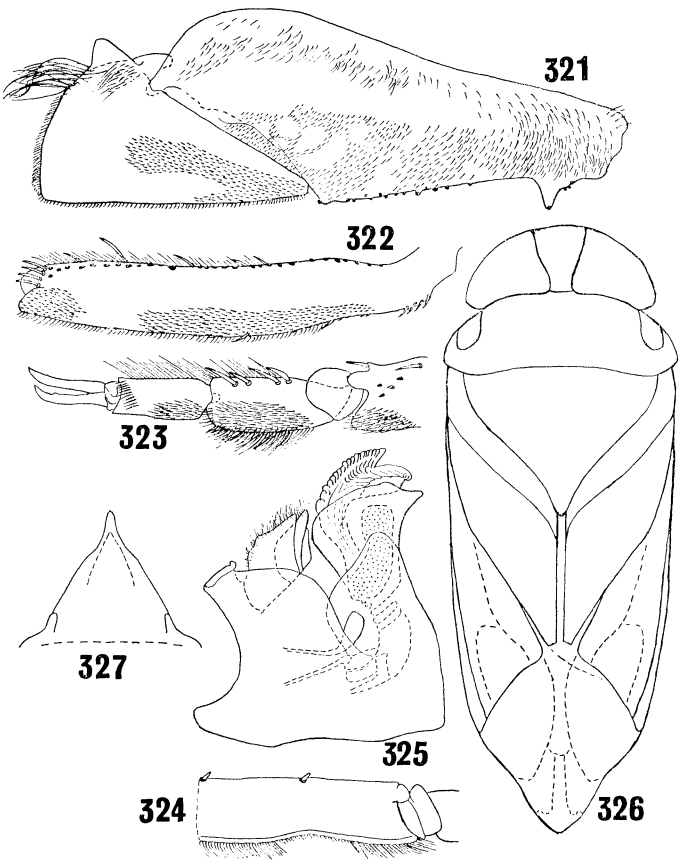


Fig. 321-327. *E. rogersi* Distant ♂. 321, mid-femur; 322, mid-tibia; 323, mid-tarsus and claws; 324, side view of mid-tibia distally; 325, genital capsule; 326, dorsal aspect; 327, metaxyphus.

outer margins gray to yellowish brown. Corium, inner margin and membranal suture dark brown to black, remainder gray to yellowish brown. Opaque zone of membrane smoky brown to black, remainder of membrane rather paler. Legs and abdomen ventrally yellowish brown.

Structural characters: Head in dorsal view rounded. Greatest width of head 5/6 pronotal humeral width, about 3× anterior width of vertex and between 2.5× but always less than 3× median head length. Synthlipsis just over 1/2 anterior width of vertex. Head longer than anterior width of vertex and clearly shorter than pronotum. Pronotal humeral width nearly 3× median length, lateral margins diverging, slightly more than 1/2 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed caudad behind eyes (fig. 326). Nodal furrow curving cephalad, less than its own length removed from membranal suture. Mesotrochanter slightly angulate (fig. 321). Male mid-tibia with pilose area interrupted distally and concave on inner surface (fig. 322-24). Chaetotaxy of ♂ mid-leg as in fig. 321-24. Male genital capsule as in fig. 325, parameres short and rounded. Metaxyphus apically concave (fig. 327).

Holotype ♀, Nicobars, Rogers (BMNH). In addition to the type I have seen the following material from the Andaman Is. which seems to be conspecific with *rogersi*. Port Blair, Roepstorff, 1♂ & 1♀ (COPENHAGEN). Andaman Is. Atkinson Coll., 1♂ & 2♀♀ (OXFORD). Andaman Is., Roepstorff, 2♂♂ (BMNH).

Comparative notes: The male genitalia and general appearance of *rogersi* shows that it is closely allied to *intricata* and *vicintricata*. The males of *rogersi* are easily separated from the other two species by the interrupted hair pattern on the inner surface of the mid-tibia. Also the posterior lobe of *rogersi* is distally concave (fig. 325) and convex in *intricata* (fig. 187).

Enithares horvathi Kirkaldy Fig. 328-333.

Enithares horvathi Kirk., 1898a, Rev. Ent., Caen **17** : 72.— Breddin, 1901, Abh. Naturforsch. Ges. Halle **24** : 24.— Kirkaldy, 1904, Wien. Ent. Ztg. **23** : 98, 104, 133.—Lundblad, 1933, Arch. Hy-

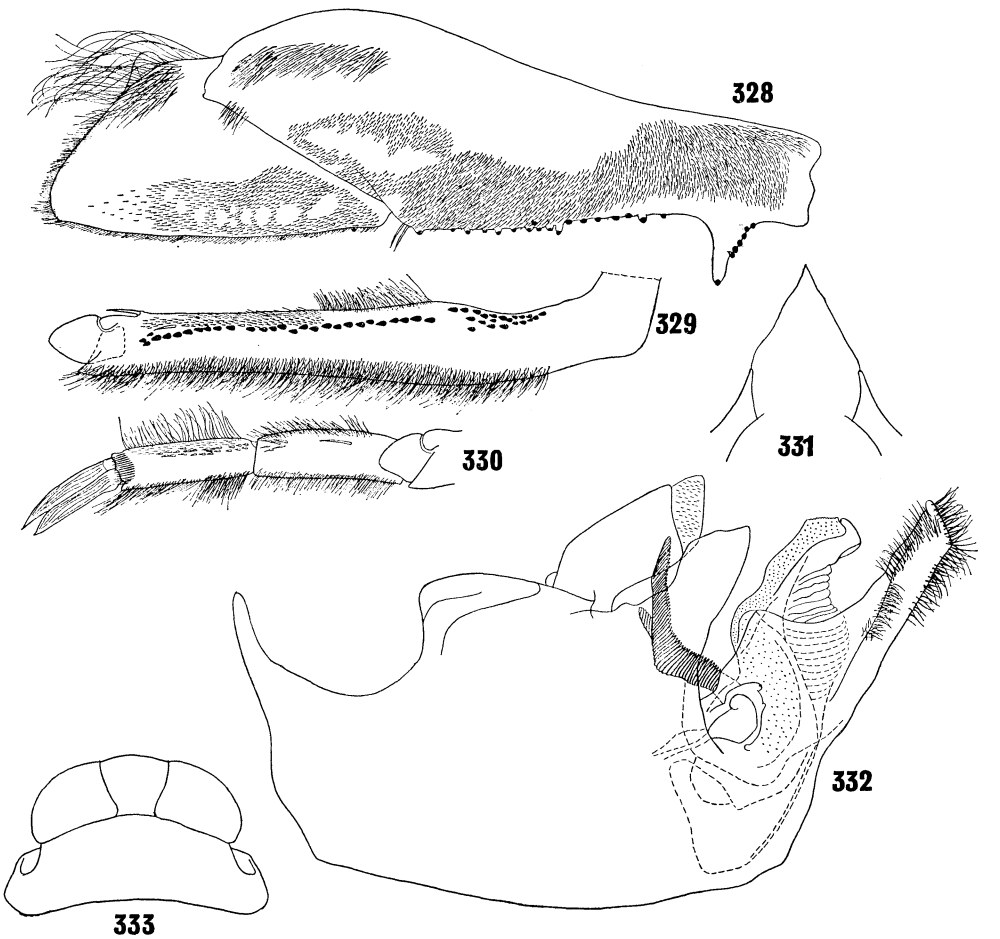


Fig. 328-333. *E. horvathi* Kirkaldy lectotype ♂. 328, mid-femur; 329, midtibia; 330, mid-tarsus and claws; 331, metaxyphus; 332, genital capsule; 333, head and pronotum from above.

drobiol. Suppl. **12** : 146 (listed only).
Enithares wallacei Brooks, 1948, J. Kans. Ent. Soc. **21** : 47, pl. 2, fig. 10. **New Synonymy.**

♂♂. Length 12.6 mm, maximum width, 4.2 mm ; ♀♀ length, 12.5 mm, maximum width 4.75 mm.

Shape : Large boat-shaped species, greatest width across pronotal humeral angles.

Color : Eyes pale brown to black. Vertex light brown. Pronotum variable, anterior 1/3-1/2 reddish to dark brown, medianly paler, posteriorly pronotum hyaline appearing gray to black due to scutellar color showing through. Lateral margins of pronotum pale yellowish brown. Scutellum black with rather indistinct paler pear-shaped blotches either side of median line. Inner margins of clavus suffused with black. Distal angle of corium and opaque zone of membrane dark brown to black. Remainder of clavus and corium semi-hyaline grayish brown. Membrane smoky brown. Abdomen ventrally dark brown with keel, lateral margins and legs slightly paler.

Structural characters : Head in dorsal view rounded. Greatest width of head 4/5 pronotal humeral width, nearly 3× anterior width of vertex and about 2.5× median head length. Synthlipsis nearly 2/3 anterior width of vertex. Median head length greater than anterior width of vertex and slightly shorter than pronotum. Pronotal humeral width over 3× median length, lateral margins diverging, anteriorly straight ; posterior margin convex, centrally slightly emarginate. Dorsal margin of pronotal fovea directed obliquely caudad behind eyes (fig. 333). Nodal furrow straight with tip inclined cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded (fig. 328). Male mid-tibia slightly concave along anterior distal margin (fig. 329). Chaetotaxy of ♂ mid-leg (fig. 328-330). Male genital capsule as in fig. 332, posterior lobe very heavily sclerotised, long and stylus-like with many stout hairs and spines distally. Base of posterior lobe internally heavily pigmented and transversely ridged. Anterior lobe more membranous and dorsally produced. Parameres very small, set in depressions in sides of capsule. Metaxyphus as in fig. 331.

SPECIMENS EXAMINED : Lectotype ♂ & paralectotype ♀ of *horvathi*, S. Celebes, Bua-Kraeng, 5000, II.1896, H. Fruhstorfer (BUDAPEST). Holotype ♂ of *wallacei*, Celebes, Makassar, Wallace (Saunders Coll.) (BMNH). S. Celebes, Bua-Kraeng, 5000, II.1896, H. Fruhstorfer, 1 ♀ (VIENNA). Zuid Celebes, Nanggala, 900 m, Rantepao, VI.1937, F. C. Drescher, 1♀ (BMNH).

Comparative notes : Its large size, restricted distribution and very distinctive male genital capsule make this species unique in the genus.

I have compared the types of *horvathi* with the type of *wallacei* and they agree in size, shape, coloration and ♂ genitalia.

Enithares freyi quadrispinosus Lansbury Fig. 334-338.

Enithares freyi quadrispinosus Lans., 1967, Ent. Meddr. **35** : 94-96, fig. 11-15.

♂♂. Length 9-9.75 mm, maximum width 3.5-3.75 mm ; ♀♀ length 8.75-9.5 mm, maximum width 3.5-3.75 mm.

Shape : Greatest width across pronotal humeral angles, tapering from pronotal humeral angles to end of abdomen.

Color : Eyes gray to dark brown. Vertex, anterior 1/2 of pronotum and most of scutellum yellowish brown. Posterior 1/2 of pronotum and elyta excluding membrane hyaline shining gray appearing black due to dorsal pigmentation showing through. Membrane dark smoky brown. Legs and abdomen ventrally yellowish brown.

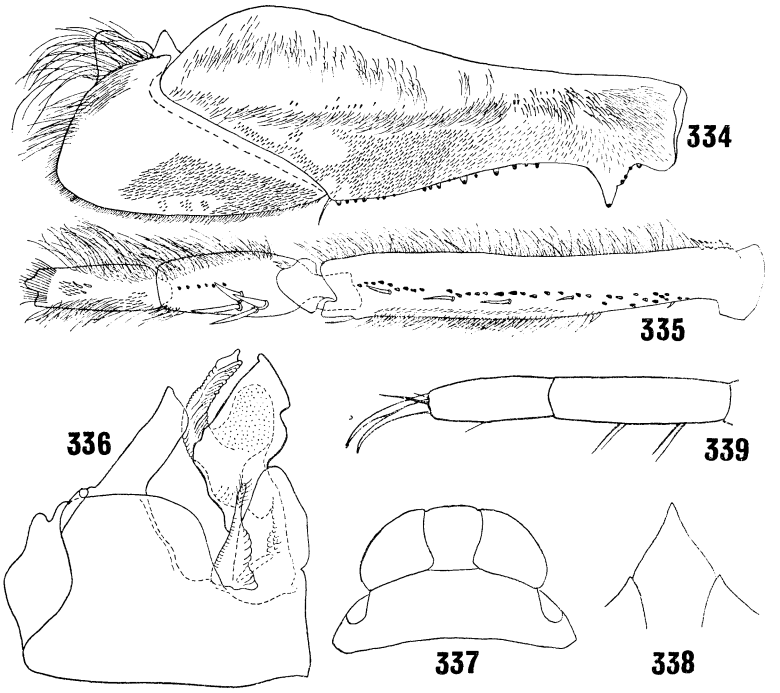


Fig. 334-338. *E. freyi quadrispinosus* Lansbury ♂. 334, mid-femur; 335, mid-tibia and tarsus; 336, genital capsule; 337, head and pronotum from above; 338, metaxyphus. Fig. 339. *E. f. freyi* Brooks holotype ♂. Mid-tarsus and claws (Froeschner original).

Structural characters : Head in dorsal view rounded. Greatest width of head 4/5 pronotal humeral width. Head width to anterior width of vertex variable, at most just over 3× anterior width of vertex, sometimes less than 3× and between 2.25-2.75× median head length. Synthlipsis just over 1/2 anterior width of vertex. Head length slightly greater than anterior width of vertex and slightly shorter than pronotum. Pronotal humeral width variable, slightly more or less than 3× median length ; lateral margins diverging, just over 1/2 median length, posterior margin convex, centrally emarginate. Dorsal margin of pronotal fovea directed obliquely laterad behind eyes (fig. 337). Nodal furrow basally straight, tip curved cephalad, less than its own length removed from membranal suture. Mesotrochanter rounded (fig. 334). Male 1st mid-tarsus with 4 very stout long spines (fig. 335) and several black spicules. Chaetotaxy of ♂ mid-leg (fig. 334-5). Male genital capsule as in fig. 336, parameres elongate, apically rounded with many hairs. Metaxyphus as in fig. 338.

Holotype ♂, 5♂♂ & 5♀♀ paratypes, Philippines, Palawan, Mantalingagan, Pinigisan : 600 m, 14.IX.1961, Noona Dan Exp. 1961-62. 1♂ paratype, same data, 12.IX.1961. 1♀ paratype, same data, 1.IX.1961. (COPENHAGEN).

Comparative notes : Most closely allied to *thienemanni* by the male genitalia. Can easily be separated from *thienemanni* by the absence of a nodule on the inner surface of the mid-tibia distally (fig. 264 & 335) and by having 4 large spines set close together on

1st ♂ mid-tarsus (fig. 335) ; *thienemanni* has spines widely separated (fig. 266).

Enithares freyi freyi Brooks Fig. 339.

Enithares freyi Brks., 1948, J. Kans. Ent. Soc. **21**: 48-49, pl. 3, fig. 12.
Enithares freyi freyi : Lansbury 1967, Ent. Meddr. **35**: 95-96, fig. 16.

It has not been possible to examine the unique type of *freyi* in the USNM, not as stated by Brooks in BMNH. Comparison between the description of the nominate form and the subspecies shows that the ♂ genitalia seem reasonably similar. The nominate form is larger ; 11 mm long and 4.2 mm wide and the chaetotaxy of the ♂ 1st mid-tarsus seem to differ considerably. Dr Froeschner compared a ♂ of *freyi quadrispinosus* with the nominate form and stated on the 10.XII.1965 "To summarize on *quadrispinosus* and *freyi*, they appear extremely close and show only the difference of chaetotaxy on the ventral side of middle tarsus."

The long spines on the 1st mid-tarsus of *freyi freyi* are grouped in pairs (fig. 339) whereas of *freyi quadrispinosus* they are all grouped together (fig. 335).

Holotype ♂ of *freyi freyi* described from Mt. (Mountain) Prov. (Province) Philippine Is., Benguet, 15.VII.1946, G. Frey.

UNRECOGNISED SPECIES

Three Oriental species of *Enithares* remain unrecognised.

E. intha Paiva 1918 described from Inlé Lake, Shan States, Upper Burma seems remarkably like *ciliata* although it is fractionally smaller (8.5 mm long compared with 9-9.6 mm long). The shape of the male fore tibia is very much like that of *ciliata*. The types are in the collections of the Zoological Survey of India according to Dr Pradhan, 17.II.1967. I have not been able to see them so far.

Fieber 1851a described *Bothronotus luniger* and *B. marginatus* from "Lower India." Kirkaldy (1904) redescribed *marginatus*, basing the description on a syntype in Noualhier's Collection in the Paris Museum. I have been unable to verify the existence of this specimen. It is noteworthy that the Java specimen in Stockholm identified by Kirkaldy (1904) as *marginatus* is *genitalis*. It is possible, therefore, that *marginatus* and *genitalis* are the same although *genitalis* has not been recorded from anywhere but Java as yet. Kirkaldy (1904) was unable to locate any type material of *luniger* ; Fieber's description is not recognisable. In the Signoret Collection in Vienna there is a female from N. Holland, Thorey ; det. Fieber as *luniger*: this specimen is *woodwardi*. Kirkaldy (1904 : 110) refers in detail to this specimen pointing out that *luniger* was described from " Lower India " whereas *bergrothi* sensu Kirkaldy=*woodwardi* is Australian and therefore most unlikely to refer to the same species.

KEY TO TEXT FIGURE ABBREVIATIONS

a	anal cone
al	anterior lobe
bp	basal plate
con. app.	conjunctival appendages
end	endosoma
g	gonopore
ga	gonangulum
gpl	gonoplac
gpo i	1st gonapophysis
gpo ii	2nd gonapophysis
gx i	1st gonocoxa
gx ii	2nd gonocoxa
labp	lateral arms of basal plate
p	paramere
ph	phallosoma
pl	posterior lobe
st ix	9th sternite
t viii & t ix	8th & 9th tergites
x	10th segment
c	corium
cl	clavus
cn	connexivum
cp	coxal plate
e	eye
em	embolium
il	inner lobe of membrane
l	labrum
ms	membranal suture
nf	nodal furrow
ol	outer lobe of membrane
oz	opaque zone of membrane
pf	pronotal fovea
ps	pronotal shield
sc	scutellum
tpf	tomentose area of pronotal fovea

REFERENCES

Asahina, S. et al. 1965. Iconographia Insectorum Japonicorum Colore Naturali Edita **3**: 107, pl. 54, fig. 7. Tokyo

Breddin, G. 1901. Die Hemipteren von Celebes ein Beitrage zur Faunistik der Insel. *Abh. naturf. Ges. Halle* **24**: 24.

1905. Rhynchota Heteroptera aus Java gesammelt von Prof. K. Kraepelin 1904. *Mitt. naturh. Mus. Hamb.* **32**: 154.

Brooks, G. T. 1948. New species of *Enithares* (Hemiptera, Notonectidae). *J. Kans. Ent. Soc.* **21** (2) : 37-54, 3 pl.

1953. A new subgenus and species of *Enithares*. *Ibid* **26** (2) : 74-75.

Brown, E. S. 1950. A small collection of Hemiptera, mostly aquatic, from Oman. *Ann. Mag. Nat. Hist. ser* 12, **3** : 475-476.

Dempwolff, O. 1904. Bericht über eine Malaria-Expedition nach Deutsch Neu-Guinea. *Zeitschr. Hyg. Infectionskrankh* **47** : 81-132 (not seen).

Distant, W. L. 1879. *Scientific results of the Second Yarkand Mission. Rhynchota*: *Calcutta* 15 p, 1 pl.

1906. *Fauna British India*: *Rhynchota* **3** : 42-44.

1910. *Ibid* **5**: 329-331.

1914. Rhynchota from New Caledonia and surrounding islands. *In* F. Sarasin & J. Roux *Nova Caledonia, Zool.* **1** (4) : 369-390.

Dover, C. 1927. Aquatic Rhynchota in the collection of the Agricultural College, Coimbatore, S. India. *J. Bombay Nat. Hist. Soc.* **32** : 614-15.

1928. Notes on a collection of aquatic Rhynchota from the Buitenzorg Museum. *Treubia* **10** (bk. 1) : 65-72.

Esaki, T. 1915. On the Notonectidae of Japan, Loochoo (Okinawa), and Formosa. *Ent. Mag.*, Kyoto **1** (1) : 27-34.

1926. Verzeichniss der Hemiptera-Heteroptera der Insel Formosa. *Annls. Hist.-Nat. Mus. Natn. Hung.* **24** : 136-89.

1928. *Insects* of *Samoa*, part 2 (fasc. 2) : 47-80 British Museum (Natural-History).

1932. Hemiptera-Heteroptera von der Insel Botol-Tobago (Kôtôsho) sud Formosa. *Bull. Biol. Soc. Japan* **2** : 210.

1932a. Iconographia, Insects of Japan: 1692, fig. 3343.

1940. Some aquatic and semi-aquatic Heteroptera from China. *Notes Ent. Chin.* **7** (5) : 123-30.

Fabricius, J. C. 1775. Systema Entomologiae, Flensburg et Lipsiae : 690.

1798. Supplementum Entomologiae Systematicae Hafniae.

1803. Systema Rhyngotorum, Brunsvigae.

Fieber, F. X. 1851. Genera Hydrocoridium secundum ordinem naturalem in familias disposita *Rozpr. mat.- přír k. české Spol.* Náuk **7** : 181-210, 4 pl.

1851a. Rhynchotographieen. *Ibid* **7** (5) : 470-72.

Froggatt, W. W. 1907. *Australian Insects*, Sydney, pp. 1-449. *E. bergrothi* p. 344-345

Ghauri, M. S. K. 1964. Notes on the Hemiptera from Pakistan and adjoining areas *Ann. Mag. Nat. Hist.* ser. 13, **7** : 673-88.

Guérin-Méneville, F. E. 1844. *Iconographie du Regne Animal* de G. Cuvier : 354.

Hale, H. M. 1923. Studies in Australian aquatic Hemiptera No. 2. *Rec. S. Aust. Mus.* **11**: 397-424, pl. 10 & 11.

Hoffmann, W. E. 1931. Life history notes on *Enithares sinica* Stål (Hemiptera Notonectidae). *Lingnan Sci. J.* **9** (4) : 432-33.

1933. A preliminary list of the aquatic and semi-aquatic Hemiptera of China, Chosen (Korea) and Indo-China. *Ibid* **12** : 255-56.

1941. Catalogue of aquatic Hemiptera of China, Indo-China, Formosa and Korea. *Ibid* **20** : 61.

Horváth, G. 1889. Analecta ad cognitionem Heteroptorum Himalayensium. *Természz. Füz.* **12** : 29-40.

Hungerford, H. B. 1919. The biology and ecology of aquatic and semi-aquatic Hemiptera. *Kans. Univ. Sci. Bull.* **11** : 1-268, 30 pl.

1933. The genus *Notonecta* of the World. *Ibid* **21** : 9-22.

1933a. Some aquatic and semi-aquatic Hemiptera from Sumatra. *Misc. Zool. sumatrana* **75** : 1-5.

1934. Concerning some aquatic and semi-aquatic Hemiptera from Australia. *Bull. Brooklyn ent. Soc.* **29** (2) : 68-73.

1940. A new *Enithares* for Australia (Notonectidae-Hemiptera). *J. Kans. Ent. Soc.* **13** : 130-31.

1958. Some interesting aspects of the world distribution of aquatic and semi-aquatic Hemiptera. *Proc. 10th int. Congr. Ent.* (1956) **1** : 337-48.

Hutchinson, G. E. 1929. A revision of the Notonectidae and Corixidae of South Africa. *Ann. S. Afr. Mus.* **25** (3) : 359-474, pl. 27-41.

1933. A revision of the Distantian and Paivian types of Notonectidae and Corixidae in the Indian Museum. *Rec. Indian Mus.* **35** (4) : 393-408.

Jaczewski, T. 1926. Notes on some West-African Heteroptera. *Pr. zool. pol. państ. Muz. przyr* **5** (2) : 62-106, pl. 2 & 3.

Kirby, W. F. 1891. Catalogue of the described Hemiptera Heteroptera and Homoptera of Ceylon, based on the collection formed (chiefly at Pundaloya) by Mr. E. E. Green. *J. Linn. Soc. (Zool.)* **24** : 72-176, pl. 4-6.

Kirkaldy, G. W. 1889. Missons de M. Ch. Alluad aux iles de région Malagache. *Ann. Ent. Soc. Fr.* **68** : 101-9.

1897. Revision of the Notonectidae. Part 1. Introduction and systematic revision of the genus *Notonecta*. *Trans. Ent. Soc. Lond.* **1897** : 393-426.

1898. Description d'une espéce nouvelle de Notonectidae (Hemiptera) de la collection du Muséum d'histoire naturelle de Paris. *Bull. Mus. Natn. Hist. Nat. Paris* **1898** : 151.

1898a. Deux espèces nouvelles du genre *Enithares* Spin. et notes hémiptérologues diveres. *Rev. Ent., Caen* **17** : 72-73.

1900. Synonymy : Rhynchota. *Entomologist* **33** : 10.

1904. Über Notonectiden. *Wien. Ent. Ztg.* **23** : 93-110, 133.

Laird, M. 1947. Some natural enemies of mosquitoes in the vicinity of Palmalmal, New Britain. *Trans. Proc. R. Soc. N. Z.* **76** (3) 453-76, 10 fig.

1956. Studies of mosquitoes and freshwater ecology in the South Pacific. *Bull. R. Soc. N. Z.* **6** : 1-213.

Lansbury, I. 1964. Some observations on the Notonectidae (Hemiptera-Heteroptera of Viêt-Nam and adjacent regions. *Ann. Zool. Warsz.* **22** (10) : 203-19.

1965. A new tribe and genus of Notonectidae (Hemiptera-Heteroptera) from Borneo. *Pacif. Ins.* **7** (2) 327-32.

1966. *Enithares* Spinola 1837 (Insecta, Hemiptera) : Proposed use of the plenary powers to designate a Type-species Z. N. (S.) 1762. *Bull. Zool. Nomencl.* **23** (4) : 191-192.

1966a. Notes on the Notonectidae (Hemiptera-Heteroptera) of Aden and the Yemen. *Ann. Mag. Nat. Hist.* ser. 13, **9** : 37-43.

1967. Aquatic Hemiptera-Heteroptera of the Noona Dan Expedition to the Philippine and Bismark Islands. *Ent. Meddr.* **35** : 89-98. 16 fig.

Lundblad, O. 1933. Zur Kenntnis der aquatilen und semi-aquatilen Hemipteren von Sumatra, Java und Bali. *Arch. Hydrobiol.* Suppl. **12** : 1-489, 21 pl.

Linnaeus, C. 1771. Mantissa Plantarum altera Generum editionis vi & Specierum editionis ii Holmiae.

Matsumura, S. 1913. Thousands Insects of Japan, Addit. 1.

1915. Uebersicht der Wasser Hemipteren von Japan und Formosa. *Ent Mag.* Kyoto **1** (3) : 103-19.

1931. 6000 Illustrated Insects of Japanese Empire, Tokyo : 1227.

Miller, P. 1964. The possible rôle of haemoglobin in *Anisops* and *Buenoa* (Hemiptera : Notonectidae). *Proc. R. Ent. Soc. Lond.* (A) **39** (10-12) : 166-75.

Montandon, A. 1892. Deux Hémiptères nouveaux. *Rev. Ent., Caen.* **11** : 75-76.

Mut'chulsky, V. 1863. Essai d'un catalogue des insectes de l'Ile Ceylan. *Bull. Soc. Imp. Nat. Moscow* **36** (3) : 1-153.

Nowrojee, D. 1912. Life histories of Indian Insects ii. Some aquatic Rhynchota. *Mem. Dep. Agric. India Ent. Ser.* **2** (9) : 168-70.

Oshanin, B. 1909. Verzeichnis der Palaearktischen Hemipteren. *Ezheg. zool. Mus.* **14** : 974.

Paiva, C. A. 1918. Aquatic Rhynchota from the Southern Shan States. *Rec. Indian Mus.* **14** : 19-32, pls. 8 & 9.

1919. *In* N. Annandale, Bombay stream fauna vii : Aquatic and semiaquatic Rhynchota from the Satara and Poona Districts. *Ibid* **16** : 152-56, pl. 3, fig. 7.

Scudder, G. G. E. 1959. The female genitalia of the Heteroptera : Morphology and bearing on classification. *Trans. R. Ent. Soc. Lond.* **111** : 405-67.

Singh-Pruthi, H. 1925. The morphology of the male genitalia in Rhynchota. *Trans. Ent. Soc. Lond.* **1925** : 127-267, 32 pl.

Spinola, M. M. 1837. Essai sur les genres d'insectes appartenants à l'order des Hémiptères, Lin. ou Rhyngotes, Fab. et à la section des Hétéroptères Dufour. Gênes.

Stål, C. 1858. Nya Hemiptera-Följande af studenten Carl Stål forfattade uppsata meddelades af Hr. Boheman. *Öfvers. K. Vetensk Akad Förh.* **11** : 241.

1858. Konglia Svenska Fregatten Eugenies Resa Stockholm.

1868. Hemiptera Fabriciana. *K. Svenska Vetensk Akad. Handl.* **7** (11) : 135-38.

Sweeney, A.W. 1965. The distribution of the Notonectidae (Hemiptera) in South Eastern Australia. *Proc. Linn. Soc. N. S. W.* **90** (1) 87-94.

Torre-Bueno, J. R. de la. 1925. On some aquatic Hemiptera from Ceylon with descriptions of new forms. *Spolia Zelan.* **13** (2) : 223-234.

Truxal, F. S. 1952. The comparative morphology of the male genitalia of the Notonectidae (Hemiptera). *J. Kans. Ent. Soc.* **25** : 30-38.

1953. A revision of the genus *Buenoa* (Hemiptera-Notonectidae). *Kans. Univ. Sci. Bull.* 35 : 1351-1523.

Uhler, P. R. 1860. Hemiptera of the North Pacific Exploring Expedition under Com'rs. Rogers and Ringgold. *Proc. Acad. Nat. Sci. Philad.* **1860** : 221-31.

Walker, F. 1859. In Tennent's Ceylon, London.

Wu, Chenfu F. 1933. A preliminary check list of Hemiptera heretofore recorded from Kwangtung Province, S. China. *Lingnan Sci. J.* **12** : 214.

1935. *Catalogus Insectorum Sinensium* **2** : 576.

Zimsen, E. 1964. The Type Material of I. C. Fabricius, Copenhagen pp. 1-656.