

Records of the Zoological Survey of India

REVISION OF INDIAN BLISTER BEETLES
(COLEOPTERA : MELOIDAE : MELOINAE)

by

G. N. SAHA

Issued by The Director
Zoological Survey of India, Calcutta

**RECORDS
OF THE
ZOOLOGICAL SURVEY OF INDIA**

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G. N. SAHA

Zoological Survey of India, Calcutta



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By

G. N. SAHA

Zoological Survey of India, Calcutta

(With 118 figures)

I. INTRODUCTION

(i) General

Blister beetles belonging to the family Meloidae of the order Coleoptera, owe their common name to the fact that a pharmaceutical product, cantharidin, is prepared from the dried insects. When these insects are handled, they exude a yellow fluid which contains cantharidin and causes blisters on human skin. This product has long been used as a medicine in different diseases and is also used in cosmetics, hair oil, etc. Adult Meloidae are conspicuously coloured, generally slender, soft bodied, long-legged and phytophagous insects. In the arid subtropical and tropical regions of the globe they are widely distributed and often congregate in large swarms on foliage and flowers and at times cause severe damage. Many species are harmful being pests of agricultural, horticultural and vegetable crops but some are beneficial during the larval stage, as they destroy the egg-masses of locusts (Crowson 1955). The life-history is remarkable for the occurrence of hypermetamorphosis of the larva, *i. e.*, there is an unusual variety of form in the successive larval instars. During the larval stage Meloidae is unusual among Coleoptera in having a parasitic mode of life on wild bees (Hymenoptera) and grasshoppers (Orthoptera).

The Meloidae is used as material in the various fields of biological science, *e. g.*, insect morphology, population ecology, ethology, cytology, biogeography and the species problem. Their study is therefore also useful in applied sciences. One of the main obstacles of investigation in this respect is the fact that the taxonomy of this beetle family is still largely incomplete and that revisions are lacking. No comprehensive work has been hitherto published on the Meloid fauna of India. The published information which is very scattered, hardly reflects the richness of this fauna. We have only very

inadequate picture of the distribution and scanty information on the species inhabiting this region.

This publication is the first work which attempts a revision of the major part of the blister beetles of India, namely of the subfamily Meloidae. It is based upon the very rich material, collected during the period of almost one hundred years in the subcontinent and deposited in the collections of the Zoological Survey of India, Calcutta. I have also studied a number of type specimens and other specimens preserved in the British Museum (Natural History), London; the Hungarian Natural History Museum, Budapest; the Forest Research Institute, Dehra Dun, and the Indian Agricultural Research Institute, New Delhi.

This family Meloidae comprises approximately 118 genera and 2250 species; of these the occurrence of 16 genera and 107 species have been reported from India. The present study, however deals with 12 genera, 98 species and 1 sub species, including 18 species which are being described here as new to science. Species marked with asterisks have not been included in the Keys for want of material but are reviewed from the literature. An account of the earlier work on the Indian Fauna of Meloidae is included. Keys to the tribes, genera and species are provided for the easy determination of the species. In the construction of the Keys it has sometimes been necessary to use male characteristics including the genitalia. Relevant additional characters of taxonomic importance for the known species have been incorporated in the description. Detailed description of the new species have been provided: Synonyms, wherever necessary have been provided for the genera and species. Taxonomically important characters are illustrated by 118 text figures. The types of the new species described here are deposited in the Zoological Survey of India, Calcutta.

The detailed geographical distribution of the Indian fauna of the group is recorded for the first time. In addition, whenever necessary the global distribution of the taxa has been mentioned in relation to the zoogeography of Indian representatives. Taking into consideration the distribution of different species it is noted that some species are restricted to northern India, some to peninsular India and a few to desert and semidesert parts of India, while others are found more or less all over India. It has been observed that some species are monotypic and some are polytypic. The variations under the polytypic species have been considered as geographical variations. Structural variations have also been recorded.

The name of Collector has been indicated in parenthesis under the heading 'Locality records and Specimens examined'. Abdominal sterna always refer to externally visible sterna. In describing the male genitalia, the terms basal piece, parameres and aedeagus have been used. Sometimes the term tegmen (= basal piece plus parameres) has also been used.

It is hoped that the present work will not only serve for the easy identification of Indian Meloidae but also stimulate a more widespread interest in the study of Meloidae in general.

(ii) Acknowledgements

Dr. Zoltan Kaszab, General Director, Hungarian Natural History Museum, Budapest, is remembered with gratitude for the loan of his type collection, other identified specimens; and also for the large number of reprints of his work. I express my most sincere thanks to Dr. D. N. Raychaudhuri, Reader in Zoology, Calcutta University, for his kind guidance and also for critically going through the manuscript.

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I wish to record my sincere thanks to the staff of the Coleoptera Section and Entomology Division specially to Drs. O. B. Chhotani and T. Sengupta Superintending Zoologists, Zoological Survey of India, for their manifold help. I am also indebted to my wife Mrs. U. Saha for her help in many respects.

II. MORPHOLOGICAL FEATURES

(Figs. 1 & 2)

The meloids are characterised chiefly by the following features:

Size : Variable; length 3 to 38 mm., usually 12-22 mm.

Shape : Elongate, slender, usually subcylindrical, body and elytra more or less soft.

Colouration : Generally brightly coloured, sometimes a metallic sheen is visible. The general body colouration may vary infraspecifically.

Vestiture : The term 'pubescence' is applied for fine hairs present on certain body parts. It is characteristic of members of the genera *Lytta*, *Cyaneolytta*, *Cylindrothorax*, *Sybaris* and *Eolydus*. Coarse

but long hairs are found among members of the genera *Mylabris* and *Epicauta*.

Punctation : Variable. Differs on various parts of the body and from one species to another.

Head : Vertical or strongly deflexed with a narrow neck, triangular or quadrangular, surface smooth, punctate or rugose ; mandibles curved, apices usually acute, with subapical tooth or dentate,, sometimes blunt ; labrum usually prominent, sometimes emarginate

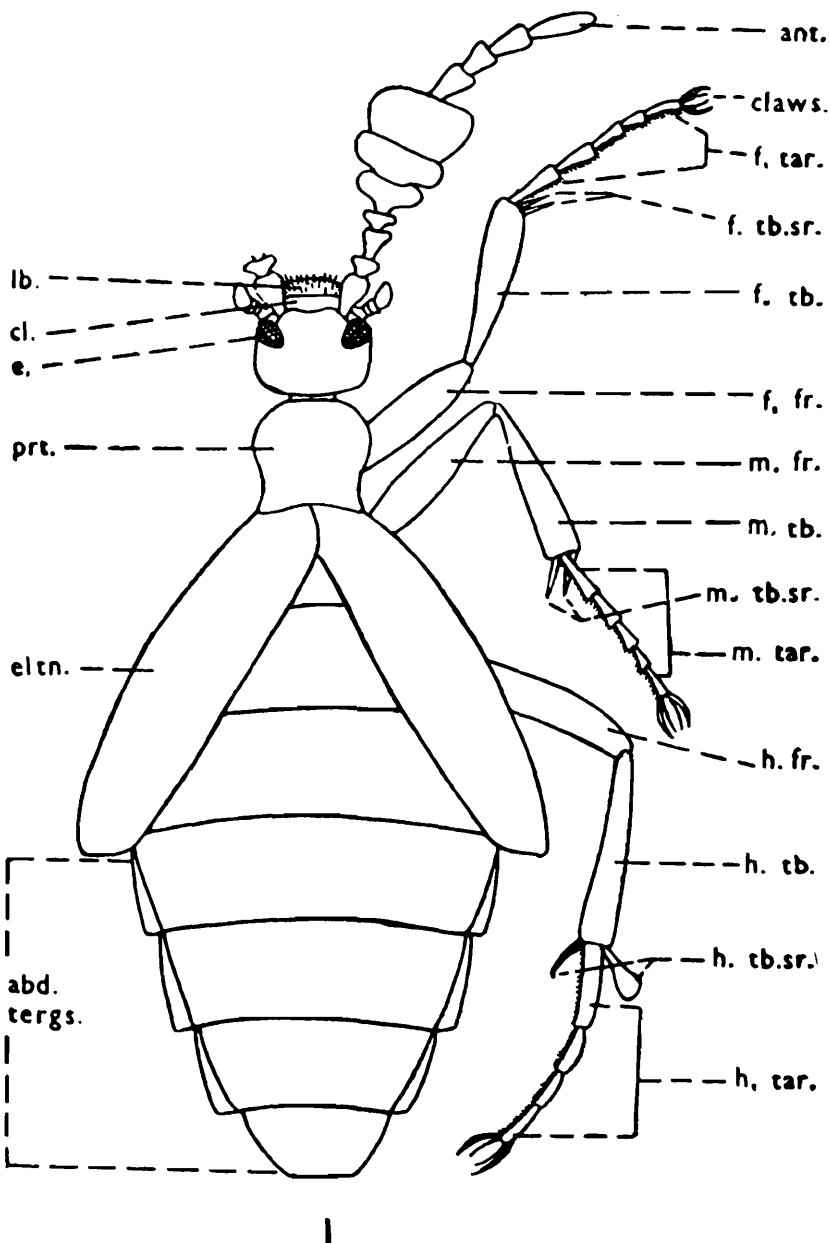


Fig. 1 *Meloe arunachalae* sp. nov., ♂ Showing external features (Dorsal view)
 ant—antenna ; abd. tergs.—abdominal tergites ; cl.—clypeus ; e.—eye ; eltn.—elytron ; f. tb. sr.—fore tibial spurs ; f. tb.—fore tibia ; f. fr.—fore femur ; h. fr.—hind femur ; h. tar.—hind tarsus ; h. tb. sr.—hind tibial spurs ; lb.—labrum ; m. fr.—mid femur ; m. tar.—mid tarsus ; m. tb.—mid tibia ; m. tb. sr.—mid tibial spurs ; prt.—pronotum.

at apex ; clypeus distinct ; frons either depressed or moderately convex ; vertex usually elevated ; occiput constricted ; basal margin of head generally straight or nearly rounded ; eyes lateral, variable in size, granulated, oval, reniform or hardly emarginate in front, occasionally greatly developed underneath ; maxillae with galeae sometimes very long and filiform, palpi four segmented, slender, the apical segment somewhat enlarged ; labium with gular process large, labial palpi three segmented, slender, with apical segment usually enlarged, mentum trapezoidal ; ligula prominent, projecting, more or less deeply sinuate, or sometimes incised.

Antennae : Inserted before eyes at the sides of frons ; usually eleven-segmented, rarely eight or nine-segmented, short to moderately long, filiform or moniliform, setaceous or clavate, sometimes with intermediate segments modified in male ; basal segment generally stout, wider apically, usually segment II small whereas segment III generally long and cylindrical, other segments fairly variable.

Pronotum : Generally campanuliform, usually narrowest at apex, generally narrower than the base of elytra, sides not margined or carinate ; pleural region large, disc depressed or convex, basal margin usually elevated, a median longitudinal line generally present.

Scutellum : Generally triangular, surface flat, concave or convex : apex broad or narrowed, rounded or truncated.

Elytra : Usually brightly coloured, entire or shortened, sometimes greatly enlarged, generally elongate, parallel, convex, sometimes depressed, well developed humerus, nearly rounded at apex, epipleural fold small.

Thoracic sternites : Three plates *viz.*, pro- meso- and metasternum ; prosternum short ; mesosternum short, triangular, surface generally flat, sometimes slightly concave, apically blunt or pointed ; metasternum long or in wingless forms short, usually convex medially.

Legs : Procoxal cavities large, confluent, open behind ; mesocoxal cavities confluent ; pro- and mesocoxae large, conical and contiguous ; metacoxae transverse, nearly contiguous ; trochanters large, triangular, sometimes modified in male ; femora generally long, stout and flattened ; generally narrowed and elongate tibiae with distinct apical spurs ; hind tibial spurs often dissimilar, the outer one usually thickened and hollowed apically ; tarsal formula 5-5-4 ; tarsi slender, almost always with narrow pads beneath segments ; claws appendiculate, sometimes serrate.

Abdomen : With six visible sternites, convex, the sutures entire, sides generally flattened, sometimes curved ; last visible sternite with an emargination in male.

Male genitalia : Basal piece large, and convex ; parameres generally elongate, parallel and pointed at apex ; aedeagus large, stout, narrowed and pointed apically with one to three hooks distally.

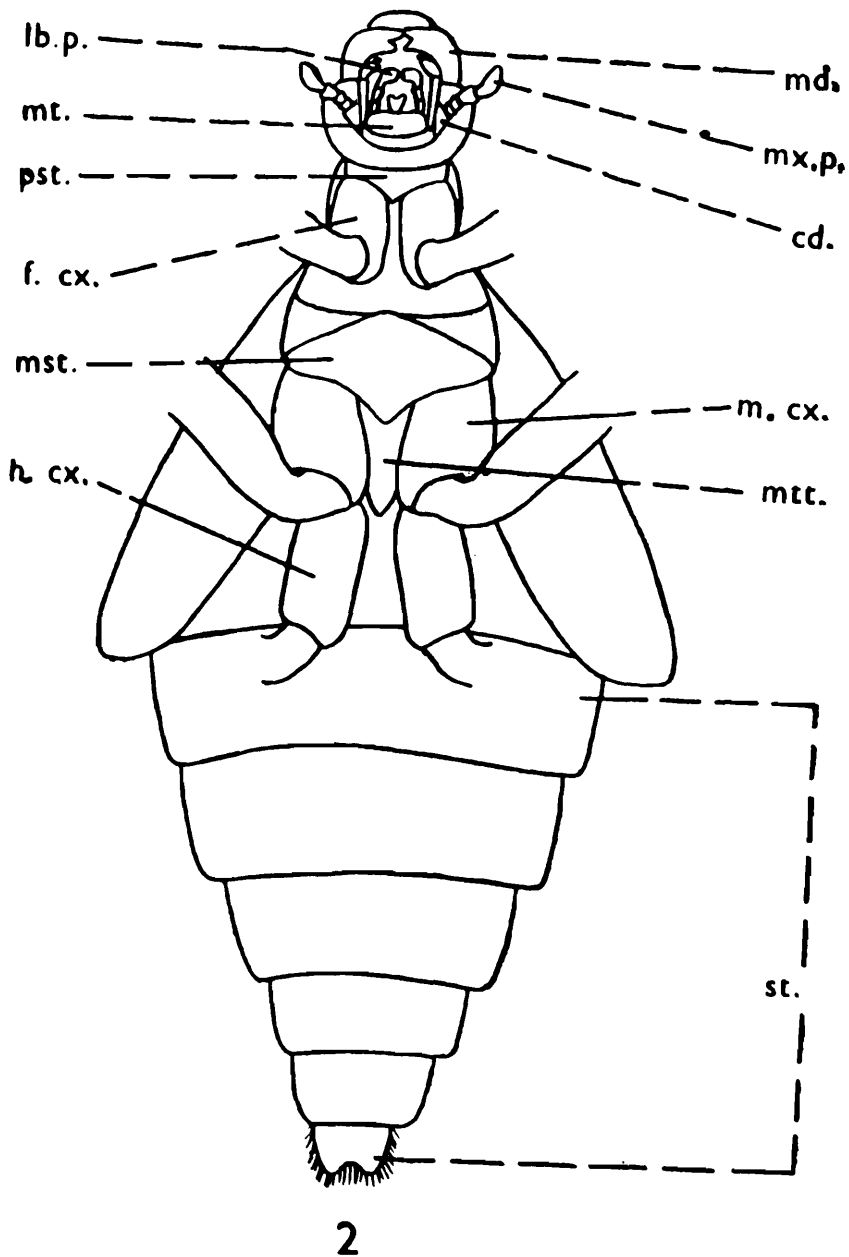


Fig. 2. *Meloe arunachalae* sp. nov., ♂, showing external features (Ventral view)
 cd.—cardo, f. ex.—fore coxa, h. cx.—hind coxa, lb. p.—labial palpus, m. cx.—mid
 coxa, md.—mandible, mst.—mesosternum, mt.—mentum, mtt.—metasternum,
 mx. p. maxillary palpus, pst.—prosternum, st.—sternites.

Sexually dimorphic characters : In males the antennae and legs are specially adapted for use in courtship activities. In some species of *Epicauta*, *Psalydolytta* and *Cyaneolytta* the intermediate antennal segments in males are enlarged. The maxillary palpi of the males are modified to some extent in some species of *Epicauta* (e.g. *E. hirticornis* Haag-Rutenberg). Enlargement of the last segment of labial palpi is also found. Modifications of the male legs are varied. In some species of *Mylabris*, *Epicauta*, *Psalydolytta* and *Cyaneolytta* the femora and tibiae of fore- and midlegs may be distorted and tarsi strongly modified. The tarsal pads of the males are larger and

more densely setose than those of the females. In some species the tibial spurs may differ from those of the opposite sex. In many species of *Mylabris*, *Epicauta*, *Cyaneolytta*, *Lytta* and *Psalydolytta* the last visible abdominal sternite is fairly emarginate in males. The presence of hooks on the aedeagus of the males provide for secure attachment within the vagina of the female.

III. TAXONOMIC ACCOUNT

Family MELOIDAE Gyllenhal

Subfamily MELOINAE Denier

Characters of the subfamily : Body form variable, globose or elongate-cylindrical, head usually wider than prothorax; maxillae modified; spurs of fore, mid and hind tibiae, often variously modified or entirely absent, in aedeagus the sclerous portion of the ejaculatory duct modified to form a recurved hook dorsally and with one or two recurved ventral hooks.

KEY TO TRIBES OF THE SUBFAMILY MELOINAE

- | | | | |
|----|---|-----|-------------------|
| 1 | Abdomen heavily sclerotized, with the basal sterna excavated for reception of hind coxa | ... | ELETICINI Kaszab |
| — | Abdomen not heavily sclerotized, without excavated basal sterna | ... | 2 |
| 2. | Forefemur beneath with a patch of dense, silky pubescence | ... | EPICAUTINI Denier |
| — | Forefemur without such character | ... | 3 |
| 3. | Metasternum short, mesocoxae partially overlapping metacoxae | ... | MELOINI Blanchard |
| — | Metasternum elongate, mesocoxae widely separated from metacoxae | ... | 4 |
| 4. | Antennae clavate; mandibles often dissimilar | ... | MYLABRINI Laporte |
| — | Antennae never clavate; mandibles similar | ... | LYTTINI Wellman |

Tribe A. ELETICINI Kaszab

Kaszab (1959) erected the tribe Eleticini on the character of wing venation. It includes the single genus *Eletica*.

Genus I. *Eletica* Lacordaire

Eletica Lacordaire, 1859. Gen. Col., 5 : 672.

Type species : *Eletica rufa* (Fabricius) designated by Wellman (1910).

Lacordaire established the genus in 1859 and placed it under *Cantharides* and group *Cantharides* varies. Peringuey (1909) included

it in the tribe Cantharini. Borchmann (1917) kept it in the tribe Mylabrini under the subfamily Lyttinae. Kaszab (1955) included 30 species from Africa, one species from India and one species from Siam in his revision of the genus and proposed the subgenus *Meteletica* to accommodate the oriental species. He placed the genus in a separate tribe Eleticini in 1959. Selander (1964) has placed the genus in a separate subfamily Eleticinae by evaluating the morphological characteristics in correlation with sexual behaviour.

Eletica is one of the least studied genera of Meloidae in India. Only a single species, namely, *Eletica testacea* Olivier had been known from India since 1795. Two species, namely, *Eletica (Meteletica) kaszabi* Saha and *E (Meteletica) pilaniensis* Saha from Gujarat and Rajasthan, respectively, have been added.

Characters of the Genus : Large in size ; mandibles very strong, robust, sickle-shaped ; antennae short, compressed, generally serrate ; eyes large, strongly granulate, feebly notched ; frons strongly narrowed ; elytra broad, generally depressed ; abdomen heavily sclerotized with five visible abdominal segments in both sexes ; tarsal segments short, very broadly triangularly incised ; male genitalia sheath type, parameres fused basally, aedeagus unarmed apically.

Distribution : Asia and Africa.

KEY TO SPECIES OF THE GENUS *Eletica* Lacordaire

- | | | |
|--|--------|----------------------------|
| 1. Mentum declivous ; scutellum entirely black | | <i>E. testacea</i> Olivier |
| — Mentum concave ; scutellum posteriorly brownish | | 2 |
| 2. Vertex with a median deep groove ; parameres fairly convergent apically | | <i>E. kaszabi</i> Saha |
| — Vertex with a shallow median line ; parameres nearly parallel apically | | <i>E. pilaniensis</i> Saha |

1 *Eletica (Meteletica) kaszabi* Saha

Eletica (Meteletica) kaszabi Saha, 1972, *Zool. Anz.*, **189** : 98-100.

Description

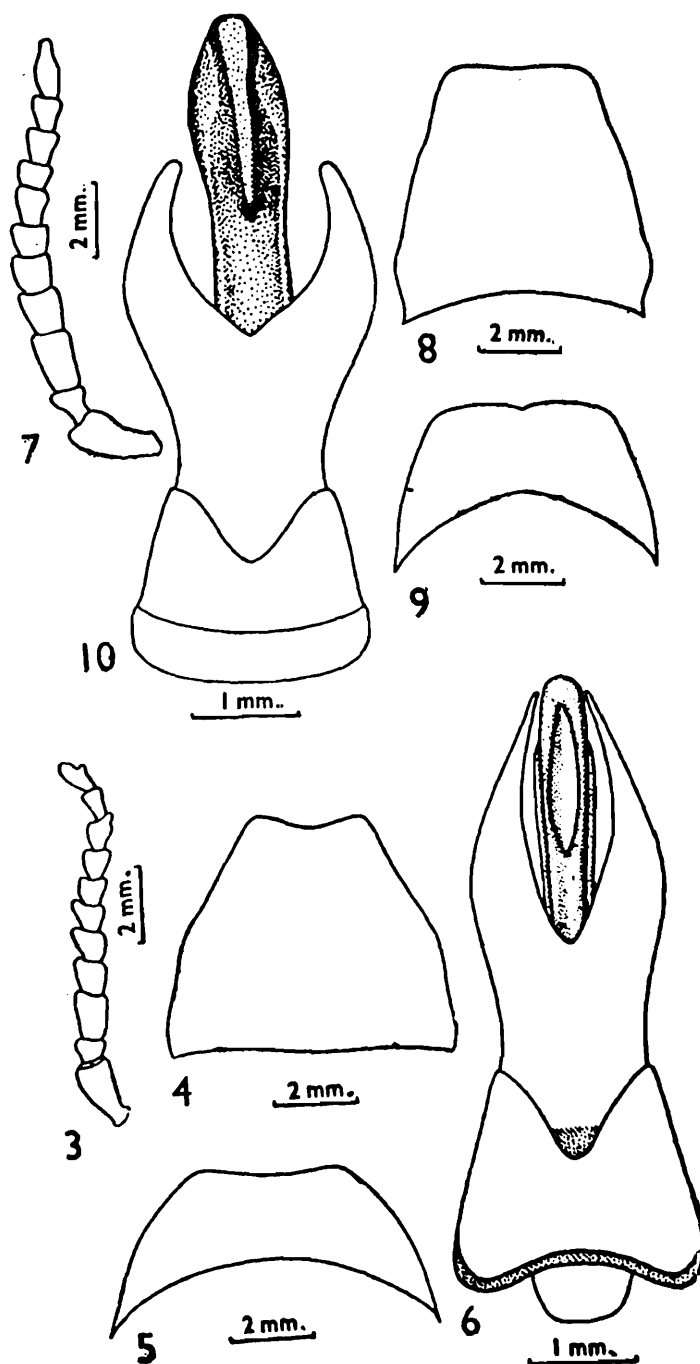
Locality record and specimen examined

Holotype : ♂, INDIA : Gujarat, Anand, without date, (V.C. Patel).

Male : Body robust, oblong, with fine pubescence, length 37 mm.

Head : Labrum brownish anteriorly, and blackish posteriorly, widest medially, and round apically with denser setiferous punctures anteriorly and a distinct deep depression at base ; clypeus transparent, impunctate, yellowish anteriorly, brownish posteriorly, with

a transverse row of setiferous punctures medially and a shallow median depression at base; vertex orange red, glabrous, highly convex, sparsely punctate, strongly bilobed with a median longitudinal deep groove and a pair of oblique deep depressed line laterally; antennae (Fig. 3) with segments I-II apically round, scape slightly larger than segment III, segment IV-VIII serrate anteriorly,



Figs. (3-6) : *Eletica kaszabi* Saha, ♂ 3. Antenna, 4. Pygidium, 5. Last visible sternite, 6. Genitalia.

Figs. (7-10) : *Eletica pilaniensis* Saha ♂ 7. Antenna, 8. Pygidium, 9. Last visible sternite, 10. Genitalia.

segments IX-X serrate posteriorly, segments IX and XI with small bud-like outgrowths near middle, segment XI round apically.

Pronotum : Glabrous, black, shiny, sparsely punctate, slightly wider posteriorly than the head, basal margin highly elevated medially.

Scutellum : Punctate, with whitish pubescence and a cavity near base, apically brownish and impunctate.

Elytra : Reddish brown, rugose, highly convex anteriorly, narrowing towards apex, apices notched triangularly, with longitudinal raised lines on the disc more well developed near the base.

Pygidium (Fig. 4) : Convex anteriorly, punctate apically, with white dense pubescence and superficial emargination at the apex.

Ventral side : Punctate with whitish pubescence ; mentum brownish, deeply punctured with long fine brownish hairs anteriorly and testaceous, concave, narrower, impunctate posteriorly, convex apically ; ligula small with two bunches of long whitish hairs ; apical segments of labial palpi small, cylindrical, impunctate, deeply brown ; apical segment of maxillary palpi small, spindle form, brownish at the apex ; submentum reddish brown, deeply punctured with long brownish hairs ; gena blackish, deeply punctured with long hairs anteriorly and reddish, finely punctate, pubescent posteriorly ; prosternum convex, finely punctate with whitish pubescence, pointed at the apex ; mesosternum elongate, triradiate, median longitudinal process highly convex in the middle, thickly punctured with dense whitish pubescence, pointed at the apex ; last visible sternite (Fig. 5) with superficial round emargination.

Genitalia (Fig. 6) : Basal piece wide, thickly margined at base with round notch and somewhat round emargination at the apex dorsally ; parameres moderately wide medially, curved and fairly convergent apically ; aedeagus with a longitudinal sub-apical median orifice dorsally.

Female : Unknown,

Distribution : INDIA ; Western India,

Remarks : It is close to *E. testacea* Olivier but differs in having head more deeply lobed at the vertex, a cavity on 5th antennal segment and differently shaped antennal segments IX-XI, more convex prosternum and differences in male genitalia,

2. *Eletica* (*Meteletica*) *pilaniensis* Saha

Eletica (*Meteletico*) *piloniensis* Saha 1972, *Zool. Anz.*, **189** : 100—101

Locality record and specimens examined

Holotype : ♂, INDIA : Rajasthan, Pilani, on light, 24. vii. 1957.

Paratype : 1 ♂, INDIA (other data not known).

Description

Male : Body shiny, black and brown length 33 mm.

Head : Labrum yellowish anteriorly, blackish, punctate, glabrous posteriorly, and rounded laterally ; clypeus concave medially, blackish posteriorly ; vertex reddish, sparsely punctate, highly convex with a moderately deep longitudinal median groove ; antennae (Fig. 7) extend near the base of pronotum, segments I-II subcircular apically, segment III elongate and almost equal to segment I, segments IV-V feebly serrated, segments VI-X gradually narrowed at base, more distinctly serrated and wider apically, apical segment fairly elongate and abruptly narrowed subapically,

Pronotum : Sparsely punctate, black, shiny, widest medially, sub-rectangular posteriorly.

Scutellum : Fairly wide, finely punctate, posteriorly elongate, brownish, somewhat convex, impunctate and blunt at apex.

Elytra : Fairly rugose, apices with superficial round emarginations.

Pygidium (Fig. 8) : Highly convex anteriorly and almost impunctate, lateral margin fairly folded and curved, with a reddish patch on each side subapically, thickly and finely punctate with a fine, short pubescence apically, fairly emarginated at the apex.

Ventral side : Mentum concave, brown, narrowed anteriorly ; ligula somewhat flat with a few long setae ; segment II of maxillary palpi longest, apical segment smaller than III, pyriform and testaceous at the apex ; median longitudinal process of mesosternum highly convex and narrowed, elongate, upwardly bent apically, last visible sternite (Fig. 9) narrowed and with a shallow triangular emargination at the apex ;

Genitalia (Fig. 10) : Basal piece transverse with thick somewhat straight basal margin and a semitriangular emargination dorsally at the apex, parameres fairly wide dorsally and nearly parallel apically, aedeagus fairly elongate, narrow with thickened curved lips of median orifice dorsally.

Female : Unknown.

Distribution : INDIA : North western India.

Remarks : It is distinguished from *E. kaszabi* Saha by the smaller labrum, differently shaped apical antennal segments, absence of groove on the vertex, more elongate scutellum, upwardly bent

apical mesosternal process and wider parameres which are nearly parallel apically.

3. *Eletica testacea* Olivier

Eletica testacea Olivier, 1795, *Ent. Hist. Nat.*, **3** (46) : 7 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 66.

Eletica (Meteletica) testacea : Kaszab, 1955, *Ann. Mus. Roy. Conge Belge*, **41** (8) : 18-19.

Locality record and specimen examined

INDIA : West Bengal : 1 ex., E. Himalayas, Darjeeling Dist. Reyang, 10. vi. 1930, (S. L. Hora).

Description

Female : Body large, opaque, finely pubescent, length 38 mm.

Head : Labrum small, depressed, brownish and with dense setae anteriorly, elevated medially, blackish posteriorly, rounded laterally and slightly emarginate at apex ; clypeus impunctate, and glabrous, slightly depressed centrally, brownish anteriorly and blackish posteriorly ; frons black and rugose anteriorly ; vertex dull brown, glabrous, almost impunctate, convex, with a shallow median longitudinal fine depression ; antennae short, segments progressively flattened, scape largest, segment II slightly smaller than segment IV, segment III smaller than I, segments IV-X progressively small and narrow, segments VI-VIII slightly serrated anteriorly, segment XI slightly longer than X but blunt at apex.

Pronotum : Glabrous, black, opaque, sparsely punctate, widest subapically, declivous anteriorly, with some depressions dorsally and a median longitudinal line posteriorly, basal margin elevated almost uniformly.

Scutellum : Entirely black, finely pubescent anteriorly, impunctate, slightly elevated and truncate at apex.

Elytra : Mostly blackish brown, outer and sutural margins light brown, rugose, convex anteriorly, narrowing towards apex, with longitudinal raised lines on the disk more well developed near the base, and blunt apices.

Pygidium : Convex anteriorly, more densely punctate towards apex, nearly glabrous and truncate at apex.

Ventral side : Very finely punctate with sparse, short greyish pubescence ; mentum convex centrally, impunctate and glabrous, declivous and light brown anteriorly, and black posteriorly ; ligula small, depressed, impunctate and glabrous ; apical segments of labial palpi small, cylindrical, impunctate and dark brown ; apical segment of maxillary palpi small, spindle form, brownish at the apex ;

submentum black, slightly depressed, finely punctate and pubescent ; gena black, slightly convex, sparsely punctate and hairy ; prosternum fairly elevated, with short greyish pubescence and pointed at apex ; mesosternum moderately punctate and pubescent, cylindrical and pointed apically ; last visible sternite with a distinct triangular emargination.

Male : Not examined.

Distribution : INDIA : West Bengal ; SENEGAL.

Tribe B. EPICAUTINI Denier

Denier (1935) proposed the tribe Epicautini to accommodate the genera : *Epicauta*, *Anomalonyx*, *Pleuropompha*, *Gnathospasta*, *Causima* and *Henous*. Werner (1945) synonymised the last three genera with *Epicauta*. The tribe had been defined by Denier and Werner on the basis of the presence of a patch of cinereous pubescence on the undersurface of the fore femora. The tribe had been redefined by Mac Swain (1952) to accommodate the genus *Linsleya* which has cinereous pubescence on the fore tibiae. Kaszab (1969) includes 6 genera in the tribe. 3 genera, namely, *Epicauta*, *Psalydolytta* and *Denierella* occur in India.

KEY TO GENERA OF THE TRIBE Epicautini Denier

- | | | |
|--|-----|-------------------------------|
| 1. Dorsal blade of tarsal claws smooth | ... | 2 |
| — Dorsal blade of tarsal claws pectinate | ... | <i>Denierella</i> Kaszab |
| 2. Mandibles greatly enlarged and vaulted curving posteriorly ; labrum not deeply emarginate | ... | <i>Psalydolytta</i> Peringuey |
| — Mandibles not as above ; labrum deeply, semicircularly emarginate | ... | <i>Epicauta</i> Dejean |

Genus II. *Epicauta* Dejean

Epicauta Dejean, 1833, Catalogue des Coleopteres : 224.

Causima Dejean, 1837, Catalogue des Coleopteres, 3rd Ed. : 248.

Henous Haldeman, 1825, Stausbury's Expl. and Surv. Great Salt L. Valley : 377.

Isopentra Mulsant, 1858, *Opusc. Ent.*, 8 : 106.

Macrobasis Le Conte, 1858, *J. Acad. Nat. Sci. Phila.*, (2) 4 : 39.

Apterospasta Le Conte, 1858, *J. Acad. Nat. Sci. Phila.*, (2) 4 : 39.

Nomaspis Le Conte, 1866, *Smiths. misc. Coll.* 6 no. 167, 2nd Ed. : 156.

Gnathospasta Horn, 1875, *Trans. Am. Ent. Soc.*, 5 : 154.

Type species : *Epicauta erythrocephala* (Pallas), designated by Werner, 1945.

Epicauta is a large and widely distributed genus.

The eminent workers on the genus are Dejean (1833), Laporte (1840), Redtenbacher (1845), Lecont (1853, 1858), Horn (1873, 1875), Haag-Rutenberg (1880), Champion (1892), Peringuey (1886, 1899, 1909), Fairmaire (1893, 1897), Pic (1911, 1913), Borchmann (1917), Werner (1945) and Kaszab (1952, 1953).

Horn (1873, 1875) separated the North American species of *Epicauta* proper on the basis of antennal characteristics.

Among the early authors, Haag-Rutenberg's work (1880) is a valuable contribution on the world fauna of this group. He included the species under the genus *Lytta* and used the colouration, pubescence on different parts, form and shape of antennae as the main diagnostic characteristics.

Werner (1945), in his revision of North American *Epicauta*, reduced several previously recognized genera to the synonymy which is noted above. He arranged the species in a number of groups based on foretibial spurs and a short row of stout teeth at the apex of posterior tibiae of the male.

Borchmann (1917) catalogued 246 species of *Epicauta* from different parts of the world.

Recently Kaszab (1952, 1953) has done very valuable work on the genus. In his work, he has included 46 species of oriental and palaeartic fauna and divided them into 14 groups. He has arranged 34 species of ethiopian fauna into 3 groups. These groupings are mainly based on colouration, pubescence, form and shape of antennae, metasternum and tibial spurs.

The genus *Epicauta* comprises about 300 species, distributed in the world, but only 7% of the total species are known from India. In the present study 15 species are included and a new species, namely, *E. punjabensis*, from Punjab (India) is described.

The paratypes of *E. himalayica* and *E. indica*, a topotype of *E. indiana* and also a specimen of *E. wellmani* determined by Kaszab have been made available to me through the courtesy of Miss C. M. F. von Hayek, British Museum (Natural History), London.

75% of the Indian species of *Epicauta* are confined to the Himalaya.

Characters of the Genus : Body medium to large, elongate, cylindrical, deeply black, dark brown or blackish brown, usually with long hairs; head distinctly transverse, usually punctate and shiny, occasionally with an impressed median line posteriorly; eyes, variable in size and shape; antennae filiform or setaceous, first antennal segment usually shorter, rarely equal to third segment, second segment much shorter than third, third to fifth segments generally not elongate, third segment generally longest or at least as long as the basal segment; pronotum usually longer than wide, moderately campanuliform, disk feebly convex, sometimes with a median sulcus, usually with a central basal impression or fovea; scutellum usually small, apically round; elytra granulate, elongate, never distinctly costate, apices simply rounded; wings nearly always present; maxillary and labial palpi generally elongate; mentum fairly transverse; ligula small; mesosternum small, fairly transverse; metasternum elongate; legs moderately long; metacoxae poorly developed; fore femur with patches of silky pubescence beneath near apex; fore tibial and midtibial spurs variously modified; tarsal segments may be cylindrical; abdomen elongate, narrowed; basal piece of aedeagus small; parameres strongly elongate and fairly parallel; aedeagus broad and rounded at the middle with two narrow, fine curved hooks.

Distribution : Worldwide except Australia.

KEY TO SPECIES
OF THE GENUS *Epicauta* Dejean

- | | | |
|-----|--|-----------------------------------|
| 1 | Middle antennal segments strongly flattened in males, not flattened in females... .. | <i>E. punjabensis</i> sp. nov. |
| — | Middle antennal segments not flattened and more or less similar in both males and females... .. | 2 |
| 2. | Head with a deep cavity behind frons | <i>E. himalayica</i> Kaszab |
| — | Head without a cavity behind frons | 3 |
| 3. | Fore tibial spurs very strongly developed, broad and less pointed at apex | 4 |
| — | Fore tibial spurs less strongly developed, slender and more pointed at apex... .. | 7 |
| 4. | Elytra with vittae | 5 |
| — | Elytra without vittae | 6 |
| 5. | Pronotum with greyish pubescence along posterior margin ; elytron with a median greyish vitta and greyish hairs along sutural and outer margins | <i>E. griseovittata</i> (Haag-R.) |
| — | Pronotum without greyish pubescence along posterior margin ; elytron with a wide black vitta near the outer margin but without greyish hairs along sutural and outer margins | <i>E. indica</i> Kaszab |
| 6. | Pronotum and basal antennal segments blackish ; mid and hindfemora glabrous posteriorly | <i>E. indiana</i> Kaszab |
| — | Pronotum and basal antennal segments reddish ; mid and hindfemora pubescent posteriorly | <i>E. divisa</i> (Haag-R.) |
| 7. | Body deep black ; elytra not vittate | 8 |
| — | Body dark brown or blackish brown ; elytra vittate | 10 |
| 8. | Head and pronotum sparsely punctate ; antennae and eyes fairly elongate | <i>E. wellmani</i> Kaszab |
| — | Head and pronotum thickly punctate ; antennae and eyes less elongate | 9 |
| 9. | Pronotum with long black hairs ; elytra elongate, not broader towards apex ; mid and hind tibiae thickly clothed with long black hairs | <i>E. hirtipes</i> Waterhouse |
| — | Pronotum finely pubescent ; elytra less elongate, somewhat broader towards apex ; mid and hind tibiae less hairs | <i>E. nepalensis</i> (Hope) |
| 10. | Elytron with a distinct median vitta | 11 |
| — | Elytron without a distinct median vitta | 13 |
| 11 | Pronotum with a median vitta | 12 |
| — | Pronotum without a median vitta... .. | <i>E. mannerheimi</i> (Maklin) |

12. Antennae long, extending almost upto the middle of elytra *E. waterhousei* (Haag-R.)
 — Antennae short, extending slightly beyond the base of elytra *E. atkinsoni* (Kraatz)
13. Fairly elongate antennae ; fore legs with thick, long and coarse hairs ; maxillary palpi strongly elongate *E. hirticornis* (Haag-R.)
 — Moderately elongate antennae ; fore legs without thick, long and coarse hairs ; maxillary palpi less elongate 14
14. Head densely punctate ; head, pronotum and ventral side thickly hairy *E. rubriceps* Redtenbacher
 — Head sparsely punctate ; head, pronotum and ventral side sparsely hairy *E. tibialis* (Waterhouse)

4. *Epicauta atkinsoni* (Kraatz)

Lytta atkinsoni Kraatz, 1880, *Deutsche Ent. Zeitschr.*, **24** : 16.

Lytta niveolineata Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.*, **24** : 82, 85.

Epicauta atkinsoni : Borchmann, 1917, *Junk's Col. Cat.*, **17** (60) : 71 ;

Kaszab, 1952, *Acta Biol. Hung.*, **3** (4) : 582, 595.

Locality records and specimens examined

INDIA : Uttar Pradesh : Meerut, 1.ix.1890, 12 ex., found feeding upon the leaves of pea and blossoms of gram (*Dir. S.R. and A. Bombay*).

Description

Male : Body small, elongate and generally blackish, length 11-12 mm.

Head : Subtriangular, fairly shiny ; labrum sparsely punctate and pubescent ; clypeus slightly elevated anteriorly and declivous posteriorly ; a wide median depression on frons besides a triangular dark brownish patch on frons and vertex, rest yellowish ; with a depression on either side of the median longitudinal line on vertex ; mandibles fairly wide ; antennae (Fig. 11) brownish, thickly filiform, reaching beyond the pronotum, segment I elongate, wider apically with a few long hairs dorsally, segment II small, wider apically, segment III longest, cylindrical, segments IV-VI somewhat flattened subequal, segments VII-XI progressively narrower, segment XI elongate, cylindrical with a few hairs ; eyes elongate, sinuate in front, finely granulate.

Pronotum (Fig. 12) : Narrowly campanuliform, very finely punctate, with a median, depressed, broad vitta ; lateral and basal margins also with white hairs, rest with small fine brownish hairs.

Scutellum : Elongate with white long pubescence.

Elytra (Fig. 13) : Broad, flat and rounded apically, finely granulate.

Ventral side : With sparse greyish pubescence ; mouth parts, tibiae and tarsi brownish ; apical segments of labial and maxillary palpi fairly broad ; outer tibial spur of hind leg elongate, expanded and concave apically ; last visible sternite in male with a shallow semicircular emargination.

Female : Apical sternite entire.

Distribution Northern India.

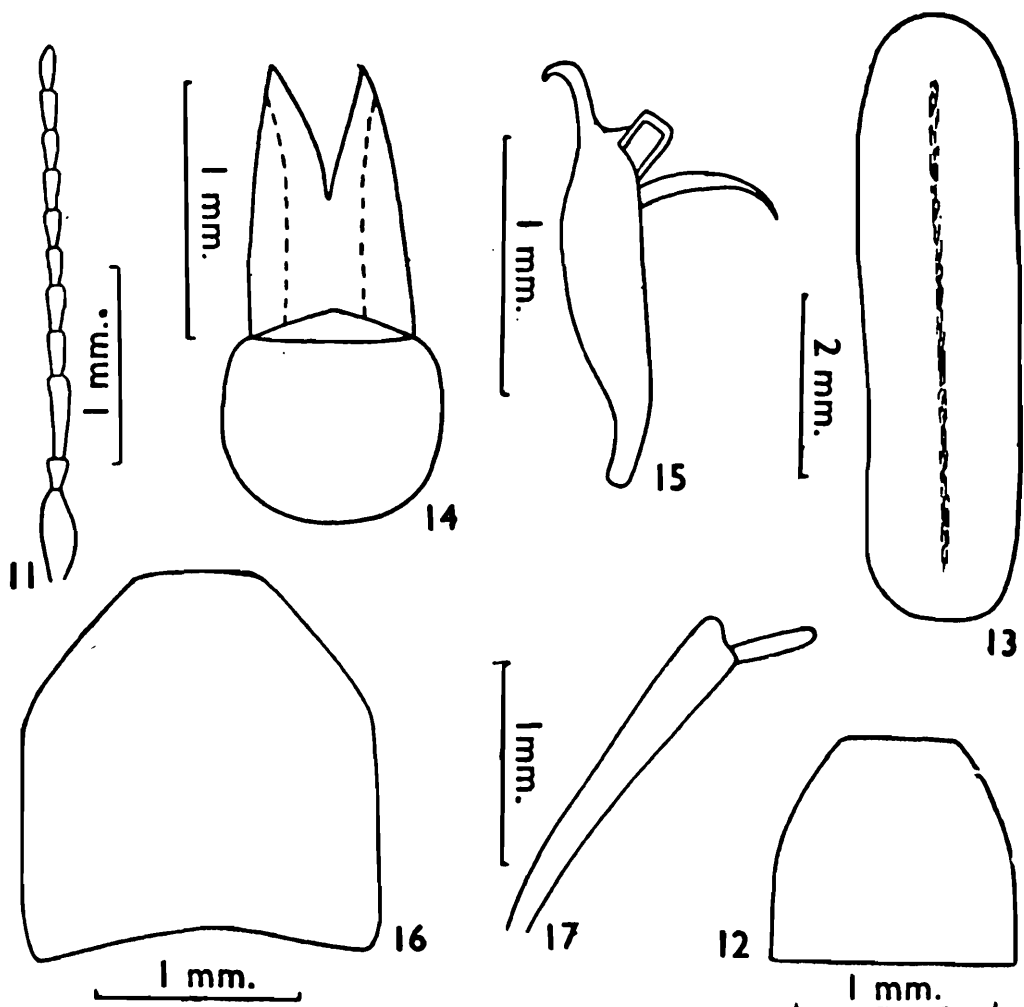
5. *Epicauta divisa* (Haag-Rutenberg)

Lytta divisa Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.*, **24** : 88.

Epicauta divisa : Borchmann, 1917, *Junk's Col. cat.*, **17** (69) : 74 ; Kaszab, 1952, *Acta Biol. Hung.*, **3** (4) : 575, 594.

Locality records and specimens examined

INDIA : Karnataka : Kanara dist. Hill stream on Jag Segar Road, 30. xi. 1928, 1 ♀ (H. S. Rao).



Figs. (11-15) : *Epicauta atkinsoni* Kraatz, ♂, 11. Antenna ; 12. Pronotum ; 13. Elytron ; 14. Tegmen ; 15. Aedeagus.

Figs. (16-17) : *Epicauta divisa* (Haag-Rutenberg), ♀, 16. Pronotum ; 17. Outer fore tibial spur.

Description

Female Body mostly blackish, moderately pubescent ; length 16 mm.

Head : Finely punctate and poorly pubescent ; mandibles, labrum and clypeus brownish, rest reddish yellow ; eyes large and strongly convex, fairly granulate ; vertex and occiput moderately depressed, with a median fine longitudinal line ; antennae small and thin, basal segments reddish, segment I fairly elongate, segment XI longer than the preceding ones.

Pronotum (Fig. 16) : Reddish yellow, finely and sparsely punctate, poorly pubescent with a median fine longitudinal line.

Scutellum Convex and truncate apically.

Elytra : Semicircular apically, blackish with fine short greyish pubescence.

Ventral side : Shiny, blackish except blackish brown mouth parts and legs with sparse greyish hairs ; mentum convex medially ; labial palpi fairly elongate ; metasternum fairly large, convex and glabrous ; abdomen poorly pubescent ; foretibiae small and fairly wide apically ; tibial spurs blunt apically ; outer foretibial spur as in figure 17 tarsal segments strongly elongate.

Male : Not examined.

Distribution South-western INDIA.

6. *Epicauta griseovittata* (Haag-Rutenberg)

Lytta griseovittata Haag-Rutenberg, 1880, *Deutsche Ent. Zeitscher.*, **24** : 85.

Epicauta griseovittata : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 76 ;

Kaszab, 1952, *Acta Biol. Hung.*, **3** (4) : 576, 595.

Locality record and specimen examined

INDIA : Western India : 1 ex.

Description

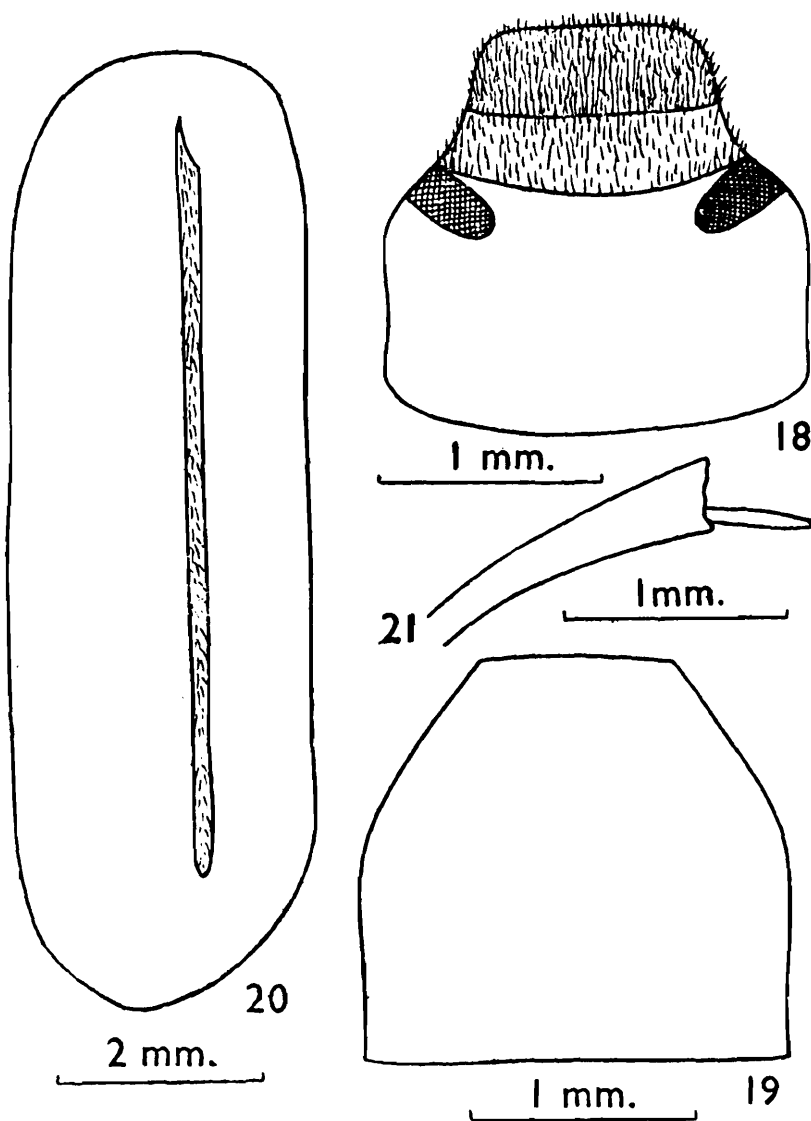
Female : Body dark brown with brownish pubescence, length 14.5 mm., width 4.5 mm.

Head (Fig. 18) : Small, reddish ; labrum and clypeus with dense long brownish hairs ; frons and vertex poorly punctate and pubescent ; vertex depressed medially, a median fine line along vertex and occiput ; mandibles large, broad, black and curved only apically ; eyes moderately wide ; convex and granulate ; (antennae broken).

Pronotum (Fig. 19) : Finely pubescent with a median longitudinal impressed line and greyish pubescence along the posterior margin.

Scutellum : Densely pubescent, rounded and narrowed apically.

Elytra (Fig. 20) : Elongate with a median vitta of greyish hairs ending subapically and with a fine line of greyish hairs along sutural and outer margins.



Figs. (18-21) : *Epicauta griseovittata* (Haag-Rutenberg), ♀, 18. Outline of head : 19. Pronotum ; 20. Elytron ; 21 Outer fore tibial spur.

Ventral side: Mentum medially depressed with long erect hairs; segment II of maxillary and labial palpi with erect hairs; apical segment of maxillary palpi fairly wide; metasternum with a narrow median reddish line; femora strongly wide; outer foretibial spur (Fig. 21) fairly elongate, reddish at base and black apically, inner one smaller, straight, reddish and more pointed.

Male Not examined.

Distribution Eastern and Western INDIA.

7. *Epicauta himalayica* Kaszab

Epicauta himalayica Kaszab, 1960, *Ent. Arb. Mus. Frey*, 11 : 283-284.

Locality record and specimen examined

Paratypes 2 ♀♀, INDIA : U.P. : Dehra Dun, 1960, 1940-45, Kumaon Himalaya (leg. Liesenfeldt), deposited in the Hungarian Natural History Museum, Budapest.

Description

Female Body small with dense greyish pubescence ; length 13-14 mm.

Head : Brownish strongly shiny; labrum fairly emarginate anteriorly ; labrum and clypeus with dense greyish long hairs; frons and vertex almost flat, finely punctate, sparsely pubescent with a deep median cavity from which a narrow median line extends over vertex and occiput ; antennae filiform, black, poorly pubescent, segment I wider apically, segment II smallest, segment III longest, segments IV-VI slightly longer than II, segments VII-XI progressively longer ; eyes fairly elongate.

Pronotum Black, finely punctate ; convex and pubescent posteriorly.

Scutellum : Rounded, densely hairy, elevated at apex.

Elytra Elongate, narrow and rounded apically with greyish yellow pubescence.

Ventral side Mouth parts strongly shiny, dark brown, sparsely pubescent, rest thickly pubescent and blackish; mentum convex with some erect hairs ; apical segment of maxillary palpi broad at tip ; last two segments of labial palpi fairly elongate ; mesosternum concave in the middle and curved upwards apically; foretibial outer spurs strongly elongate and inner one narrowed, smaller and divergent at apex; both midtibial spurs nearly similar; hindtibial spurs smallest and concave inwardly.

Male : Not examined.

Distribution : Northern INDIA.

Remarks A few differences between the two specimens were noted; one in having sparser pubescence on elytra and mesosternum, blunter mandibles and wider apical segment of maxillary palpi than the other.

8. *Epicauta hirticornis* (Haag-Rutenberg)

Lytta hirticornis Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.*, **24** : 79.

Epicauta hirticornis : Borchmann, 1917, *Junk's Col. Cat.*, **17** : 76 ; Kaszab, 1952, *Acta Biol. Hung.* **3** (4) : 585, 596.

Locality records and specimens examined

INDIA : Arunachal Pradesh : Kameng Div., Tepi, 6. v. 1966, 213 m., 7 ex. ; Subansiri div., Dejoo, 10. v. 1966, 183 m., 2 ex. (*A. N. T. Joseph*); Assam : Sibsagar, 2 ex., det. Wellman (*Mus. Collr.*); Nagaland : Mokokchung, Naga Hills, —. vii. 1935, 7 ex. ; (*E. T. D. Lambert*). Meghalaya : Khasi Hills, 2 ex. (*H. H. Godwin Austen*); West Bengal : E. Himalayas : Darjeeling dist., Rekyong, 28. v. 1930, 8 ex., Kalimpong, 1370 m., —.vi. 1934, 9 ex. (*S. L. Hora*); Darjeeling 1 ex.; Sikkim : Shishney, 1,110 m., 2. v. 1962, 6 ex. ; Rhenock, 960 m., 3. v. 1962, 9 ex.; Makaibari, 1,110 m., 1 ex., 30. iv. 1962, 1 ex.; Ligship, 840 m, 18. v. 1962, 2 ex.; Dikchu, 645 m, 15. v. 1962, 1 ex. (*G. Ramakrishna*).

Male Body elongate, mostly blackish or dark brown with long coarse blackish and sparse greyish white hairs, length 12-22 mm.

Head : Subtriangular, strongly shiny, orange red except blackish labrum and clypeus ; labrum strongly transverse, wider apically, emarginate in front with a semicircular row of long hairs ; frons finely and sparsely punctate, almost glabrous, with a pair of elevated oval spots in front of eyes ; mandibles broad, strongly bent and blunt apically, with a few teeth ; antennae fairly elongate, filiform, tapering apically, segments I-IX with strongly dense, long, coarse and blackish hairs, segment I elongate subcylindrical, straight and moderately swollen, segment II smaller and narrower than I, cylindrical, segment III longest and fairly broad at apex, slightly longer than I, segments III-VII strongly notched externally at the apex, segment XI narrowest and slightly smaller than I ; eyes oblique, strongly narrowed and sinuate in front.

Pronotum Campanuliform, finely punctate and pubescent.

Elytra : With fine black pubescence and a fine row of greyish hairs along outer and apical margins.

Ventral side : With sparse greyish hairs on femora, mesosternum, metasternum and on lateral margins of abdominal sternites ; mentum fairly transverse ; cardo with long black hairs ; maxillary palpi strongly elongate, robust, fairly punctate with long dense blackish hairs, segment II longest and slightly curved ; apical segments of labial palpi abruptly broad at apex ; fore legs with dense long hairs and with single tibial spurs ; last visible sternite with round emargination at apex.

Genitalia : Basal piece suboval ; parameres broad, short and pointed at apex ; aedeagus fairly broad and rounded in the middle, with a curved ventral spine and a dorsal hook.

Female : Antennae narrower than those of male ; long hairs on antennae and fore legs absent ; two foretibial spurs ; last visible sternite entire.

Distribution North-east INDIA ; CHINA ; VIETNAM ; (TONKIN) ; TAIWAN.

New Records : West Bengal and Sikkim states in India. Previously known only from Assam.

Remarks : Typical *hirticornis*, as described by Haag-Rutenberg, seems to be confined to Assam, Nagaland and Meghalaya. The specimens from Darjeeling district lack long black dense hairs on antennae and maxillary palpi and have shorter maxillary palpi, less expanded apical labial palpi and fewer hairs ventrally. One would have considered these specimens as a distinct species but a careful look at the structure of the genitalia shows that this is not so. At least the specimens can be looked upon as a subspecies of *hirticornis* which would be described elsewhere.

9. *Epicauta hirtipes* (Waterhouse)

Cantharis hirtipes Waterhouse, 1871, *Trans. Ent. Soc.*, **3** : 406.

Lytta hirtipes : Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.*, **24** : 82.

Epicauta hirtipes : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 76.
Kaszab, 1952, *Acta Biol. Hung.*, **3** (4) : 584, 596.

Locality records and specimens examined

INDIA : West Bengal : Darjeeling, 1 ex., det. Wellman; E. Himalaya, Kurseong, 1706 m., 12. vi. 1909, 1 ex. (*E. A. D. abreu*); Uttar Pradesh : Nainital, Bhowali orchard, 1644 m., 10. viii. 1956, 2 ex. (*L. S. Jina*); Almora dist., Manghor, 1156 m., 1.x.1958, 1 ex. (*B. S. Lamba*). Punjab : Ludhiana, 4 ex; Sikkim : Rongli, 840 m., 29.iv.1962, 1 ex.; Legship, 840 m., 18.v.1962, 1 ex. (*S. Ali*). NEPAL : Nagorkote, 1 ex.

Description

Male : Body mostly black, large and cylindrical, fairly pubescent, length 17-25 mm.

Head : Dull dark red except blackish clypeus, labrum and other mouth parts, with a smooth, medially impressed, sparingly punctured ovate spot at the base of each antenna and long black hairs posteriorly; antennae as in figure 22; eyes fairly large and convex.

Pronotum (Fig. 23) : Very thickly and strongly punctured, with long black hairs laterally.

Elytra : Elongate and narrowed at apex.

Ventral side : Shiny black, fairly pubescent; mid and hind-tibiae with long black pubescence; foretibial spurs as in figure 24.

Genitalia : Similar with that of *nepalensis* except parameres which are wider with divergent apices.

Female : More or less similar to male.

Distribution : INDIA, NEPAL; PERSIA; TRANSKASPIAN.

New Records : INDIA; Formerly known only from Uttar Pradesh (Allahabad) only. Presently it is recorded from the states of West Bengal, Punjab, and Sikkim. NEPAL.

10. *Epicauta indiana* Kaszab

Epicauta indiana Kaszab, 1956, *Ann. Mag. nat. Hist.*, **9** (12) : 635-636.

Locality record and specimen examined

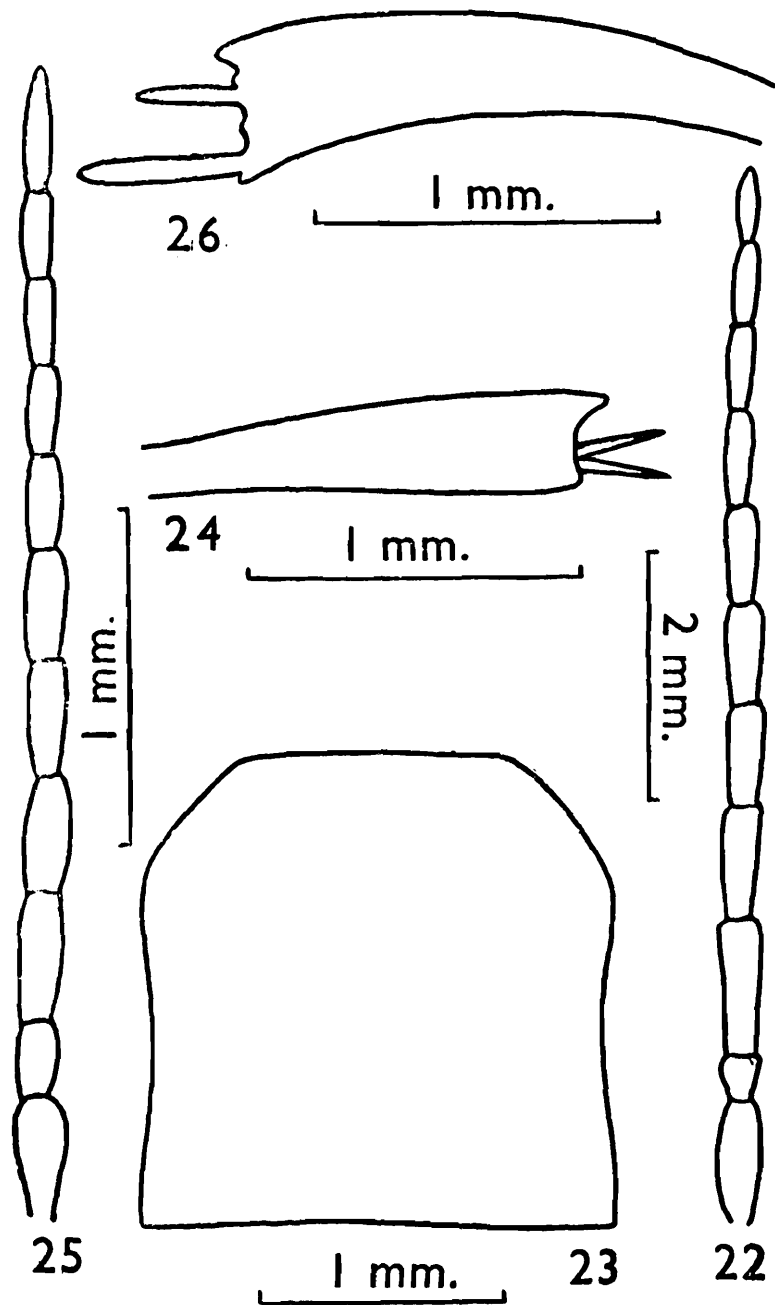
INDIA : Assam : 1 ex., Ind. Mus., compared with type by C.M.F. Von Hayek, specimen of the same type locality, deposited in the British Museum (Natural History), London.

Description

Female : Body wide, black with dense greyish yellow hairs,

mouth parts, antennae, eyes, coxae, trochanters and tarsal segments blackish, rest of head and legs light brown ; length 16 mm.

Head : Moderately large, finely and poorly punctate ; mandibles black anteriorly and reddish posteriorly ; blackish labrum and clypeus with dense greyish yellow hairs ; frons more densely hairy anteriorly ; vertex and occiput poorly pubescent ; eyes large and convex ; antennae (Fig, 25) moderately elongate, segment I widest apically, segment II smallest, segment III slightly longer than segment I, segments IV slightly smaller than segment V, segment V-X subequal, segment XI narrowed and subequal to segment III.



Figs. (22-24) : *Epicauta hirtipes* Waterhouse, ♂, 22. Antenna ; 23. Pronotum ; 24. Fore Tibial spurs,

Figs. (25-26) : *Epicauta indiana* Kaszab, ♀, 25. Antenna ; 26. Fore tibial spurs.

Pronotum : As Wide as the head, pubescent and with a median longitudinal depressed line.

Scutellum : Narrowed and concave apically.

Elytra : Black, rounded apically, with dense greyish yellow hairs and well developed humerus.

Ventral side : With dense greyish yellow hairs ; metasternum centrally and anterior four visible sternites apically glabrous ; foretibiae fairly small but wide apically, outer foretibial spur (Fig. 26) well developed and extends to the middle of first tarsal segment ; mid and hind femora glabrous posteriorly.

Male : Not examined.

Distribution : INDIA : North-Eastern India

11 *Epicauta indica* Kaszab

Epicauta indica Kaszab, 1960, *Ann. Mag. nat. Hist.*, 3 (13) : 153-154.

Locality records and specimens examined

Paratype : BURMA : Thonze Res., Tharrawaddy, 16. ix. 1935, 1 ex. Mg da coll., on folige., R. R. S., 1707, Cage No. nil, D. S. R. No. 2539, IR 2511, 3806, deposited in the British Museum (Natural History), London.

Female : Body small, black except brownish head and legs with dense shiny yellow pubescence, length 11.5 mm.

Head : Mandibles fairly developed, dentate, narrowed and blackish apically ; labrum strongly transverse, elevated in front, blackish with long greyish hairs ; clypeus brownish with long greyish hairs ; frons, vertex and occiput finely punctate, poorly pubescent and strongly transparent ; antennal segments I-II elongate and deep brown (other segments broken) ; eyes elongate, large and convex.

Pronotum : Slightly wider than head, finely and thickly punctate and densely hairy, depressed dorsally with a median longitudinal depressed line.

Elytra (Fig. 27) : Black rounded apically, with dense shiny yellow pubescence and each with a wide black vitta near the side.

Ventral side : With dense greyish yellow pubescence ; apical segments of labial and maxillary palpi moderately flattened ; metasternum fairly large with a median glabrous line ; legs brown, except tarsal segment which are blackish brown ; foretibiae fairly wide apically, with inner tibial spur (Fig. 28) longer ; all tarsal segments fairly slender.

Male : Not examined.

Distribution : BURMA.

12. *Epicauta mannerheimi* (Maklin)

Lytta mannerheimi Maklin, 1875, *Acta Soc. Fenn.*, **10** : 623.

Epicauta mannerheimi ; Borchmann, 1917, Junk's Col. Cat., **17** : 77., Kaszab, 1952, *Acta biol. hung.*, **3** : (4) : 583, 596.

Locality records and specimens examined

INDIA : Assam : 1 ex. (without any other data) ; Nagaland ; Naga hills, 2 ex. (Butler) ; West Bengal : Maldah, 1 ex., det. Wellman, (*W. H. Irvine*) ; Mursidabad, 1 ex. (Atkinson) BHUTAN : 1 ex. (without any other date).

Male : Body generally blackish brown ; length 19-25 mm.

Head : Orange red except blackish mandibles, labrum and clypeus ; mandibles well developed ; labrum strongly transverse ; clypeus truncate apically ; eyes, moderately elongate ; antennae filiform with fine pubescence.

Pronotum : With greyish hairs along posterior margin.

Elytra : With fine blackish brown pubescence, the median vitta ending subapically and a fine vitta of greyish hairs around the margin.

Ventral side : With sparse greyish pubescence on gena, bases of coxae and apices of sternites ; mentum concave with two bunches of thick long erect hairs ; mesosternum slightly concave and blunt apically with greyish hairs ; last visible sternite with a semicircular emargination.

Female : Last visible sternite entire.

Distribution : INDIA : North Eastern India, Himalayas. BHUTAN.

New Records : INDIA : Assam, Nagaland and West Bengal States. BHUTAN.

13. *Epicauta nepalensis* (Hope)

Lytta nepalensis Hope, 1831, Gray's Zool. Miscel. : 32.

Cantharis nepalensis : Waterhouse, 1871, *Trans. ent. Soc.*, **3** : 405-406.

Lytta nepalensis ; Haag-Rutenberg, 1880, *Deutsche ent. Zeitschr.*, **24** : 82.

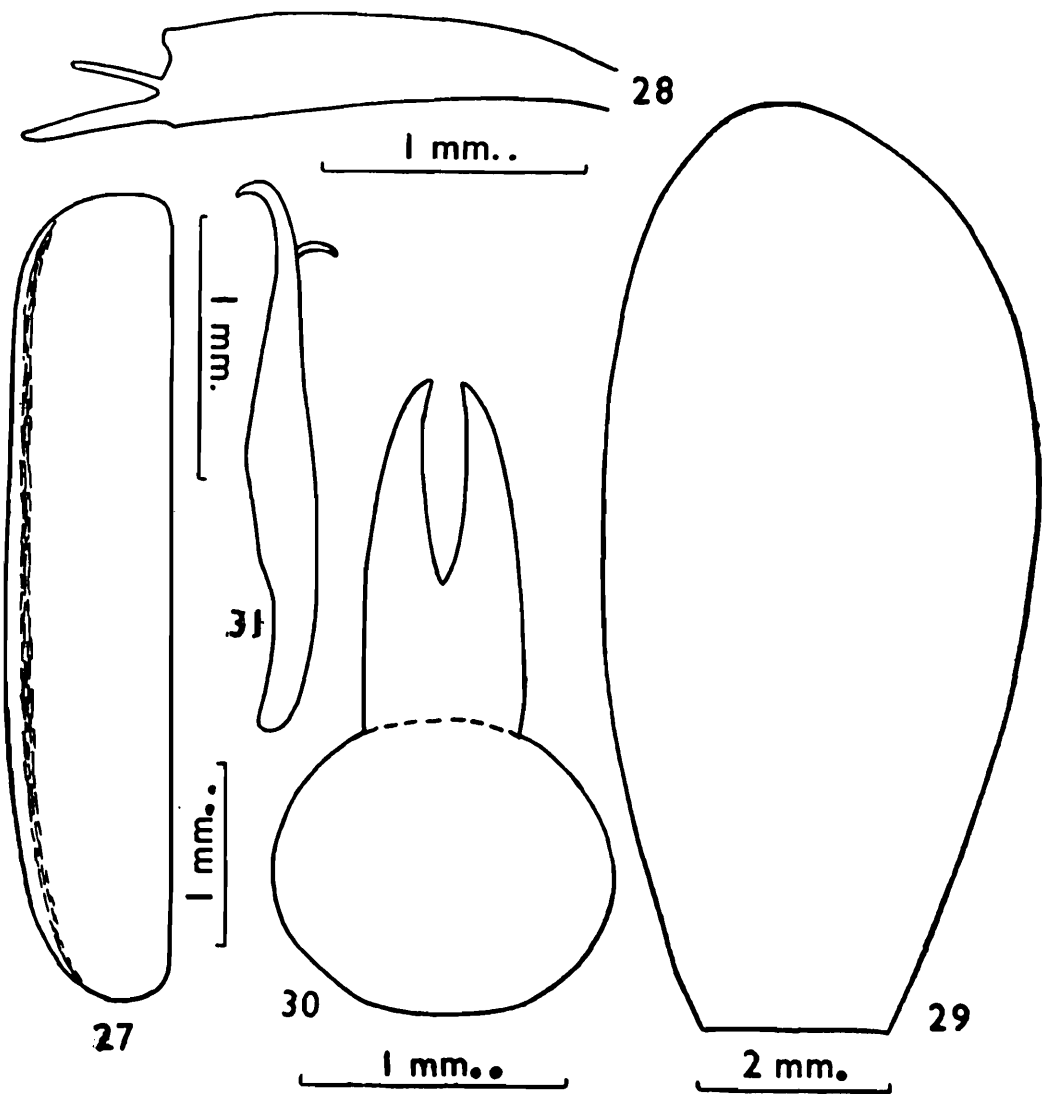
Epicauta nepalensis : Borchmann, 1917, Junk's Col. Cat., **17** (69) : 78 ; Kaszab, 1952, *Acta biol. hung.*, **3** (4) : 583, 596.

Locality records and specimens examined

INDIA : West Bengal : E. Himalayas, Darjeeling dist. : Kalimpong, 1370 m., vi. 1934, 1 ex. (*S. L. Hora*) ; Arunachal Pradesh : Kameng ; Kalaktang, 450 m., 14-30. v. 1961, 2 ex. ; Ankaling, 2000 m., 17. v. 1961, 1 ex. ; Naphra, 600 m., 25. vi. 1961, 1 ex. ; Bokhar, 3000 m., 28. v. 1961, 1 ex. ; But village, 550 m., 24. vi. 1961, 3 ex. (*K. C. Jayaram*) ; Nephra salari, 3-10. vii. 1961, 3 ex. ; Nephra, 4. vii. 1961 4 ex. ; Dirung Dzong, 4. viii. 1961, 1 ex. ; Kalaktang, 27. ix. 1961 (*S. Biswas*) ; Subansiri div. : Zero, 1585 m., 14. v. 1966, 5

ex. ; Hapoli, 1585 m., 15. v. 1966, 8 ex. ; Pamin, 564 m., 17. v. 1966, 1 ex. ; Chuknu, 1128 m., 22. v. 1966, 1 ex. (*A.N.T. Joseph*) ; Sikkim : Rongli, 810 m., 29-2. iv-v. 1962, 2 ex. ; Legship, 840 m., 18. v. 1962 (*G. Ramakrishna*) ; North Sikkim : Lachu, 2706 m., 2. vi. 1959, 1 ex. ; Yanthang, 3630 m., 15. vi. 1959, 2 ex. ; Lachung, 2727 m., 30. vi. 1959, 4 ex. ; Dikchu, 542 m., 15. viii. 1959, 2 ex. (*A. G. K. Menon*) ; West Sikkim : Gazing, 12. x. 1959, 3 ex. (*B. K. Tikader*).

Male : Body mostly deep black, shiny, moderately large, length 16-22mm.



Figs. (27-28) *Epicauta indica* Kaszab. ♀, 27. Elytron ; 28. Fore tibial spurs.

Figs. (29-31) *Epicauta nepalensis* (Hope), ♂, 29. Elytron ; 30. Tegmen ; 31. Aedeagus.

Head : Deeply red or dull dark red except black clypeus, labrum and other mouth parts not very thickly but somewhat strongly punctured, moderately pubescent ; mandibles well developed and dentate apically ; antennae elongate, filiform, moderately pubescent, segments III-XI slightly flattened, segment I strongly broad and

rounded apically, segment II shortest and segment III longest, segments IV-VII equal, segments VIII-X rather shorter than the preceding ones, segment XI a little longer than VII.

Pronotum : Subquadrate, finely pubescent, convex centrally, densely and finely punctured but disc sparsely and rather more strongly so,

Elytra (Fig. 29) Divergent, finely punctate and pubescent, wide and rounded apically.

Ventral side : With long black pubescence ; apical segments of maxillary and labial palpi fairly broad at apex ; mesosternum small, impunctate and glabrous anteriorly, narrowed and pointed at apex ; metasternum in some specimens with a median, longitudinal, impunctate and slightly reddish line ; last visible sternite with semicircular emargination in male.

Genitalia : As in figures 30 and 31

Female : Last visible sternite entire.

Distribution : INDIA ; North Eastern India ; Sikkim. NEPAL.

New Records : INDIA : West Bengal, Arunachal Pradesh, Sikkim states.

Remarks It was previously known only from its type locality Nepal. Now it is reported for the first time from Arunachal, Sikkim and West Bengal. From the available data on distribution of this species it appears that it is restricted to north east India only.

14. *Epicauta punjabensis* sp. nov.

Male Body black, moderately large ; length 20—22 mm.

Head : Triangular with coarse erect hairs, those on labrum and clypeus dense and long ; mandibles strongly curved at apex ; eyes large and moderately wide ; antennae (Fig. 32) moderately elongate, segment I fairly broad at apex, segment II shortest, segments III-VII flattened and segments III-VI strongly excavated at apex, segments X-XI cylindrical.

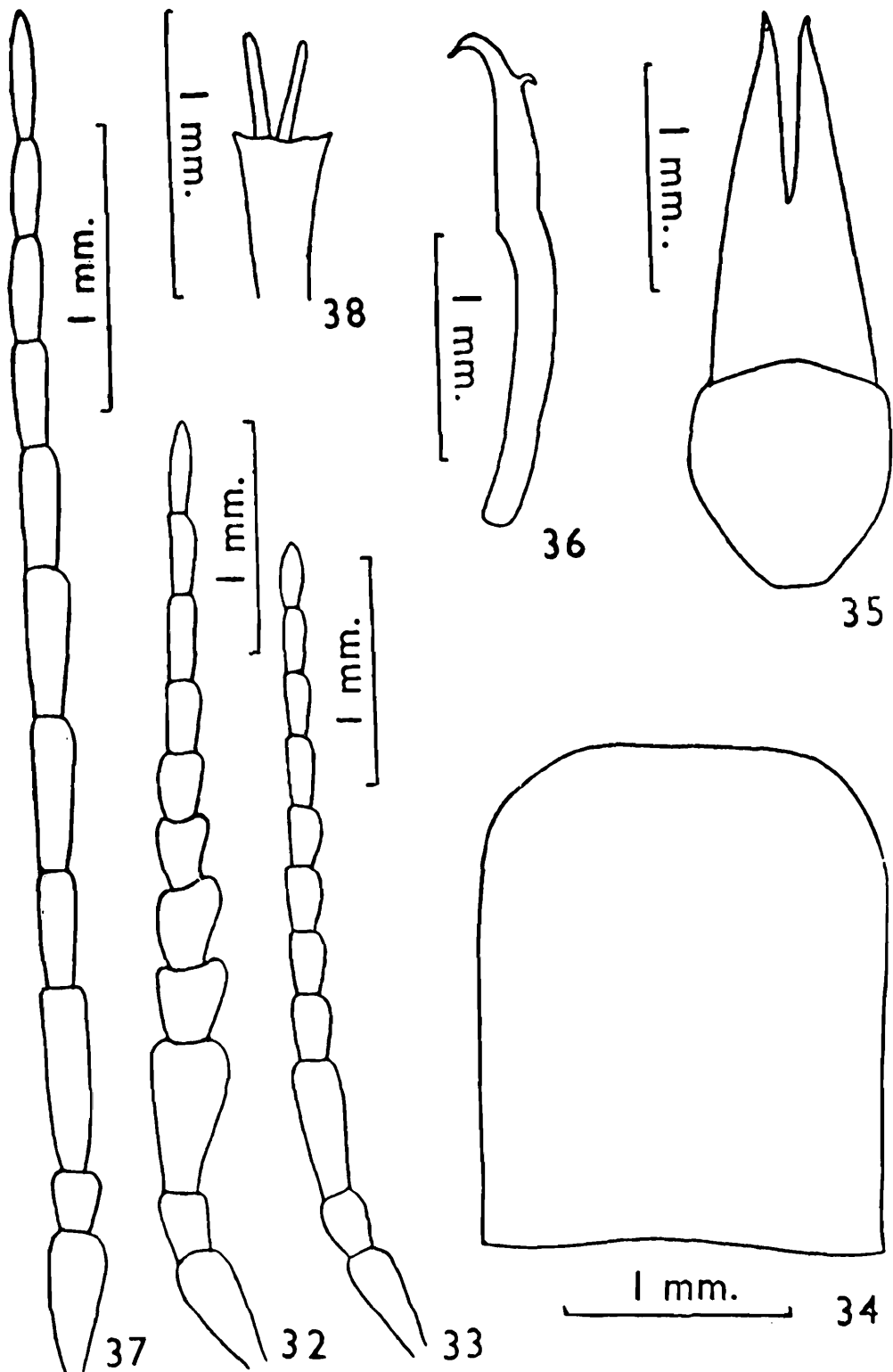
Pronotum (Fig. 34) Rectangular, with dense long fine hairs.

Elytra With fine black hairs and sometimes with a few greyish hairs along outer margin.

Ventral side With long hairs ; mentum fairly wide with median impressed line and a few long erect hairs ; apical segment of labial palpi strongly elongate ; segments II-III of maxillary palpi subequal, apical segments longest and widest at apex ; gena with long erect hairs ; mesosternum with greyish hairs, fairly tri-radiate, slightly concave medially and elevated at apex ; fore legs with greyish hairs anteriorly except tarsi, foretibia wider and strongly notched at apex with two small spurs, segment I of foretarsi strongly broad ; last visible sternite with shallow emargination.

Genitalia Parameres fairly wide at apex, other characters as in figures 35 and 36.

Female : Middle segments of antennae (Fig. 33) not as in males ; foretibiae not notched at apex and with two longer, more



Figs. (32-36). *Epicauta punjabensis* sp. nov., (32, 34-36, ♂) 32. Antenna ; 34. Pronotum ; 35. Tegmen ; 36. Aedeagus ; 33. (♀) Antenna.

Figs. (37-38) *Epicauta wellmani* Kaszab, ♂, 37. Antenna ; 38. Hind tibial spurs.

sharply pointed spurs than those of males ; segment I of foretarsi elongate.

Holotype ♂, INDIA : Punjab : Dalhousie, Waterworks Catchment area,—v. 1927 (S. L. Hora).

Paratypes ♂, 4 ♀ ♀, with the same data as for the holotype.

Remarks The species apparently seems near to *E. rubriceps* but it is readily separated by its strongly flattened middle antennal segment, broad first segment of foretarsi and notched apex of foretibiae in males,

15. *Epicauta rubriceps* Kollar and Redtenbacher

Epicauta rubriceps Kollar and Redtenbacher, 1842, in Hugel, Kashmir, 4 (2) : 535.

Epicauta haagi Bates 1875, Cist. ent., 2 : 483 (Type locality : Murree) ; Borchmann, 1917, Junk's Col. Cat., 17 (69) : 76.

Epicauta rubriceps : Kaszab, ab. haagi Bates, ab. *kashmirensis* Kaszab, 1952, *acta biol. hung.*, 3 (4) : 583, 597.

Locality record and specimen examined

PAKISTAN : Murree, 1 ex. (damaged), exp. to Yarkand in 1873-1874, March, type specimen of *Epicauta haagi* Bates deposited in Z. S. I.

Description

Body elongate, shining, black with long grey white hairs.

Head Rectangular ; labrum strongly transverse, rounded laterally, with erect long black hairs ; clypeus impunctate anteriorly, elevated centrally with long black erect hairs posteriorly ; fronto-clypeal suture semicircular ; frons reddish brown with black erect setiferous punctures ; in front of each eye with an impunctate, shiny ovate spot ; mandibles broad, blackish brown, toothed apically ; antennae filiform, scape fairly broad at apex, segment II smallest, segment III longest, segments IV-VIII slightly serrated, segments IX-X cylindrical, apical one flattened at apex, eyes fairly elongate and distinctly sinuate in front.

Pronotum : Shiny black, fairly broad, finely but closely punctate, concave posteriorly in the middle, with blackish and greyish white hairs.

Scutellum Elongate, triangular with fine greyish pubescence.

Elytra Black, apices narrowed obliquely ; each elytron with a broad depression at base, a broad lateral vitta and a very fine sutural vitta of shiny, greyish white pubescence.

Ventral side : Mentum transverse, brownish anteriorly, concave medially ; ligula brownish, distinctly bilobed with a few setae ; labial palpi deep brown, segment II elongate, strongly broad at apex ; apical segment of labial and maxillary palpi longest, strongly

swollen but flattened apically ; sub-mentum with long blackish setae posteriorly ; gena with short greyish hairs anteriorly and longer blackish hairs posteriorly.

Sex : Not known.

Distribution : INDIA : North-west India. PAKISTAN.

Remarks : The above description is based on a badly damaged specimen and the sex could not be determined. Borchmann (1917) placed *rubriceps* Redt. under *reversa* Harold. As the species *rubriceps* was described in the year 1842, it has precedence on *reversa* which was described in 1870. *E. reversa* is probably a synonymy of *rubriceps* but as I do not have the types of *reversa* I can not give any opinion with definiteness.

16. *Epicauta tibialis* (Waterhouse)

Cantharis tibialis Waterhouse, 1871, *Trans. ent. Soc.*, 3 : 406-407.

Lytta tibialis : Haag-Rutenberg, 1880, *Deutsche ent. Zeitschr.*, 24 : 81.

Epicauta tibialis : Borchmann, 1917, *Junk's Col. Cat.*, 17 (69) : 84 ; Kaszab, 1952, *Acta Biol. Hung.*, 3 (4) : 584, 596.

Locality record and specimen examined

INDIA : Assam : Nazeerah, 1 ex., det. Wellman (*H. H. Mann*).

Female Body dark brown, length 18 mm. (damaged).

Head Faintly and sparsely punctate, rounded posteriorly ; labrum distinctly emarginated in front ; eyes moderately wide ; antennal segments I-II elongate, fairly hairy (other segments broken).

Pronotum Small, broad, finely punctate and hairy.

Elytra Brownish black : lateral and apical margins with greyish pubescence.

Ventral side : Brownish ; forecoxae, forefemora, prosternum, metasternum and visible abdominal sternites with sparse greyish hairs ; cardo and mentum with long hairs ; apical segment of labial palpi strongly flattened and broad ; mesosternum slightly concave and moderately narrowed at apex ; abdominal sternites blackish.

Male : Not examined.

Distribution : INDIA : North-Eastern India, CHINA.

New Record : INDIA : Assam state.

17. *Epicauta waterhousei* (Haag-Rutenberg)

Lytta waterhousei Haag-Rutenberg, 1880, *Deutsche ent. Zeitschr.*, 24 : 79, 81.

Epicauta waterhousei : Borchmann, 1917, *Junk's Col. Cat.*, 17 : 85 ; Kaszab, 1952, *Acta biol. hung.*, 3 (4) : 585, 597.

Locality records and specimens examined

INDIA : Bihar : Dist. Purnea, Katihar, 3 ex., 7-31 viii. 1910, det. Wellman (*C. Paiva*).

Description

Male Body dark brown ; length 15-17 mm.

Head With setiferous punctures ; labrum strongly transverse and punctate ; antennae elongate, segment I slightly wider apically, segments I-II hairy, segment III cylindrical, segments IVI-X rounded at apex and subequal, segment XI slightly narrower and longer than the preceding ones ; eyes very large, convex and granulate.

Pronotum : Elongate, finely pubescent with greyish hairs along middle and outer margins.

Elytra With greyish pubescence along middle and around entire margin.

Ventral side : Segments of maxillary palpi moderately elongate ; apical segment of labial palpi strongly flattened and broad at apex ; prosternum, fore legs, mesosternum and margin of abdominal sternites with greyish hairs.

Genitalia Basal piece narrowed ; parameres moderately elongate and divergent apically ; aedeagus with erect small spine like dorsal hook and curved apical hook.

Female : Not examined.

Distribution : INDIA. FORMOSA.

New Record : INDIA : Bihar. No specific localities from India mentioned in earlier contributions.

18. *Epicauta wellmani* Kaszab

Epicauta lefroyi Wellman, nov. sp. in litt. (as cited by Kaszab, 1956).

Epicauta wellmani Kaszab, 1956, *Ann. Mag. nat. Hist.*, **9** (12) : 636-637.

Locality records and specimens examined

S. TIBET : Yrgrang valley, 2438 m., 4. vii. 1935, F. Kingdon ward, B. M. 1936-91, 1 ♂ det. Dr. Z. Kaszab, 1956, deposited in the British Museum (Natural History), London.

Description

Male Body moderately large, almost black, shiny with black hairs, length of the body 17.5 mm., length of head 4.5 mm. (damaged).

Head : Mandibles, labrum and clypeus almost completely black ; frons, vertex and occiput red ; labrum and clypeus with thick setiferous punctures ; frons, vertex and occiput sparsely hairy and punctate ; eyes fairly elongate and moderately convex ; antennae (Fig. 37) fairly long, segment I fairly rounded and blackish brown, segments II-VI blackish and flattened, segments VII-XI brownish and more narrowed than the preceding ones, segment II small, segment III longest, segment XI apically flattened and moderately pointed.

Pronotum : (Not found).

Scutellum : With a median longitudinal depressed line and rounded apically.

Elytra : With black fine, short pubescence, slightly convex and widest at the middle, rounded at apex.

Ventral side : With sparse long black hairs ; mentum fairly elevated, strongly transverse with a few setiferous punctures ; apical segment of labial palpi fairly wide at apex ; gena with long blackish brown hairs ; mesosternum mostly glabrous and impunctate, blunt at apex with a few setiferous punctures ; metasternum small with long black hairs ; abdomen fairly wide, apical visible sternite with a shallow emargination, (fore legs not found) ; midtibiae narrowed and slightly curved with two long, pointed spurs ; both hindtibial spurs (Fig. 38) elongate and poorly wide ; last hindtarsal segment curved apically.

Female : Not examined.

Distribution : INDIA : North India. TIBET.

19. **Epicauta assamensis* (Waterhouse)

Cantharis assamensis Waterhouse, 1871, *Trans. ent. Soc. Lond.*, (3) : 407.

Lytta assamensis : Haag-Rutenberg, 1880, *Deutsche ent. Zeitschr.*, **24** : 81

Epicauta assamensis : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 70 ; Kaszab, 1952, *Acta biol. hung.*, **3** : 583, 596.

Distinctive characters : Body mostly with black hairs ; length 19-30 mm. ; head distinctly and thickly punctured ; pronotum sparsely punctate ; antennae nearly without hairs in male ; mesothoracic epimera black in male ; mid and hind legs with long hairs in male.

Distribution : INDIA : Assam

20. **Epicauta cognata* (Haag-Rutenberg)

Lytta cognata Haag-Rutenberg, 1880, *Deutsche ent. Zeitschr.*, **24** : 87.

Epicauta cognata : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 73 ; Kaszab, 1952, *Acta biol. hung.*, **3** : 576, 595.

Distinctive characters : Long (14-16 mm.), covered with a thick grey covering ; basal parts of antennae and head brown ; fore tibiae strongly hairy.

Distribution INDIA : (Bombay)

21 **Epicauta haag-rutenbergi* Kaszab

Epicauta haag-rutenbergi Kaszab, 1952, *Acta biol. hung.*, **3** : 576, 585-587, 595.

Distinctive characters : Head reddish yellow ; labrum, mandible blackish ; antennae, palpi, legs and body black ; eyes very broad and convex ; mentum very broad.

Distribution : INDIA : (Ramandroog)

22. *Epicauta quadraticollis Fairmaire

Epicauta quadraticollis Fairmaire, 1891, *Compt. rend. Soc. Ent. Belg.* : Cl ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 80 ; Kaszab, 1952, *Acta biol. hung.*, **3** : 580, 598.

Distinctive characters : Head reddish ; antennae glabrous, segments IV-IX moderately dilated, last two segments thinner ; pronotum broad ; elytra slightly broader posteriorly.

Remarks : The species is very allied in size (15-19 mm.) and colour to *E. chinensis* Laporte (1840)

Distribution INDIA (Kashmir).

Genus III Psalydolytta Peringuey

Psalydolytta Peringuey, 1909, *Trans. R. Soc. S. Africa*, **1** (1) : 254.

Type species : *Psalydolytta lorigera* (Gerst.)

The genus was established by Peringuey (1909) on the basis of extremely slender, elongate antennae and vaulted mandibles. It was proposed for *Lytta lorigera* Gerst., and other species with vaulted mandibles (*flavicornis prieuri*, *pilipes*, etc). Lacordaire (1859) previously indicated that their species, then undescribed, and also *Lytta fuscicornis* Klug, would form a genus distinct from *Cantharis-Lytta*. There were according to Catalogue (Borchmann, 1917), 26 known species of the genus *Psalydolytta* in the world. In the work on the genus, Kaszab (1954) placed 44 species of the genus into 10 groups. The Indian species *villipes*, *fasciculata tetragrama* and *rouxi* belong to the "rouxi" group, whereas *atricollis* and *diversipes* were included in the "vestita" group, which does not occur in India but is available in Senegal (Africa). Kaszab (1960) described two new species, namely, *meridionalis* and *wellmani* from India. Only 8 Indian species of the genus have been known so far. A new species namely, *antennalis*, is described by me in the present work.

Characters of the Genus Body elongate, fairly pubescent ; enormously developed and vaulted mandibles ; labrum incised ; extremely slender and elongated antennae, segments subcylindrical, usually flattened ; ultimate segment subequal to penultimate one ; maxillae short but robust, the inner lobe thickly set by curved hairs at apex ; the labial palps very long, the penultimate segment slightly longer than the ultimate one which is sub-fusiform but obtuse at apex ; mentum fairly broad and very strongly acuminate laterally at the middle ; ligula only moderately ampliate at the anterior part and the margin set with a few setae ; elytra subcylindrical and subrounded at apex ; legs and tarsi very long, the latter with long hairs underneath ; inner spur of hind tibiae irregularly spatulate.

Distribution Asia and Africa.

KEY TO SPECIES OF THE GENUS *Psalydolytta* Peringuey

- | | | | | |
|----|--|-----|-----|--|
| 1 | Intermediate antennal segments strongly flattened in male | ... | ... | 2 |
| — | Intermediate antennal segments not or moderately flattened in both sexes | ... | ... | 3 |
| 2. | Apical antennal segments dark brown ; antennal segments III-VI strongly flattened and serrated in male ; mesosternum with moderately pointed apex | ... | ... | <i>P. atricollis</i> (Pic) |
| — | Apical antennal segments reddish brown ; antennal segments III-IX strongly flattened and serrated in male ; mesosternum with more pointed apex | ... | ... | <i>P. antennata</i> sp. nov. |
| 3. | Elytra with vittae (longitudinal coloured stripe) | ... | ... | 4 |
| — | Elytra without vittae | ... | ... | 5 |
| 4. | Maxillary and labial palpi, legs dark brown ; eyes small and poorly convex ; pronotum with a median longitudinal vitta | ... | ... | <i>P. tetragramma</i> (Haag-Rutenberg) |
| — | Maxillary and labial palpi, legs reddish brown ; eyes large and fairly convex ; pronotum without a longitudinal vitta | ... | ... | <i>P. wellmani</i> Kaszab |
| 5. | Fore femora densely pubescent in male ; fore tibiae with long greyish and black hairs specially at base in male ; mid and hind tibiae with sparse long black hairs | ... | ... | <i>P. villipes</i> (Haag-Rutenberg) |
| — | Fore femora less pubescent and entirely glabrous ventrally in male ; fore tibiae without long hairs in both sexes ; mid and hind tibiae without long black hair... | ... | ... | <i>P. rouxi</i> (Laporte) |

23. *Psalydolytta antennata* sp. nov.

Male : Apical half of mandibles, eyes, pro-, meso- and meta-thorax, base of elytra, apices of femora and tibiae, tarsi black or dark brown ; head, antennae and femora generally reddish brown ; elytra, tibiae yellowish ; with dense greyish yellow pubescence ; length 14-22 mm.

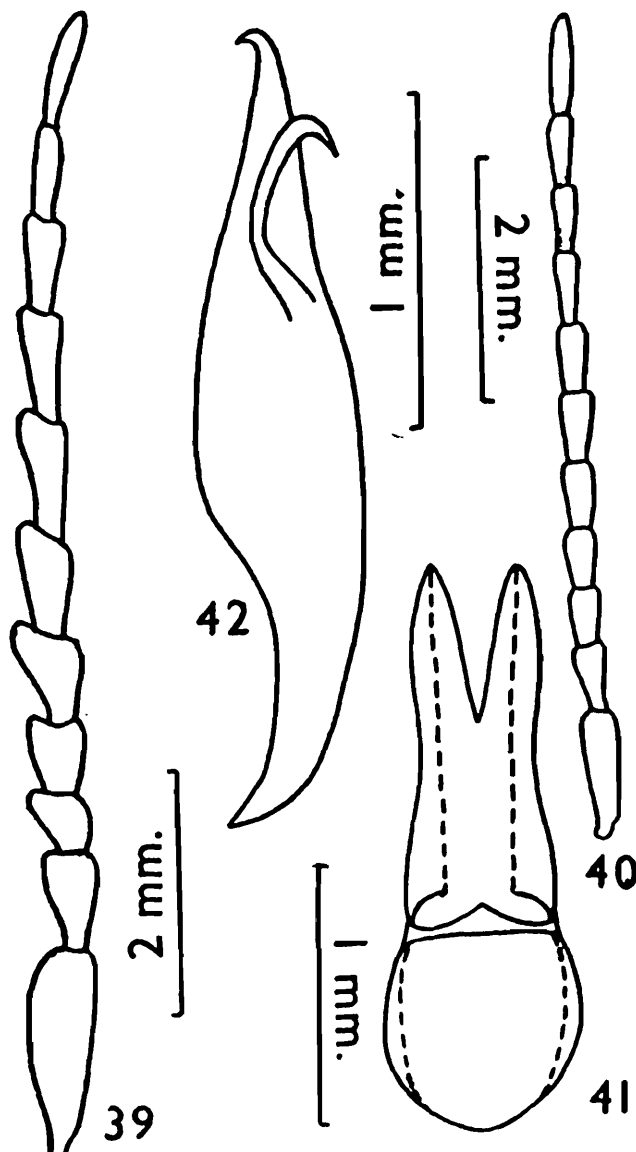
Head : Subrectangular, rounded posteriorly ; mandibles depressed and flat dorsally ; labrum moderately large, slightly emarginated in front and entirely covered with dense long greyish yellow hairs ; clypeus truncate anteriorly, semicircular posteriorly and with long hairs ; frons fairly elevated, glabrous and impunctate anteriorly, depressed centrally ; vertex and occiput with fine short setiferous punctures and a fine median longitudinal line ; eyes large, elongate convex, finely granulate and slightly sinuate anteriorly ; antennae, (Fig. 39) long, reaching near the middle of elytra, segment I longest,

flattened, widest subapically, and slightly curved towards apex, segment II wider apically, flattened and longer than segments II and IV segments III-IX strongly flattened, and serrated at apex, segments III and IV nearly transeverse and triangular, segments V-IX progressively longer and narrowed, segments X-XI narrowest, segment XI slightly longer than X.

Pronotum : Subrectangular, with dense greyish yellow pubescence.

Scutellum : With greyish pubescence, narrowed and rounded apically.

Elytra Elongate, parallel, with dense, greyish yellow pubescence, rounded apically.



Figs. (39-42) *Psalydolytta antennata* sp. nov. (39, 41, 42, ♂) 39, Antenna
41, Tegmen ; 42, Aedeagus ; 40, ♀ Antenna.

Ventral side Mostly with long greyish yellow pubescence; cardo dark brown with hairs; maxillary palpi long, segment II longest, segments III and IV subequal but segment IV much flattened and fan-shaped apically; labial palpi moderately long, last two segments elongate and cylindrical; mentum small, elevated medially, declivous anteriorly, concave centrally; both palpi, mentum reddish or light brown; mesosternum moderately pointed at apex; metasternum depressed, less pubescent and reddish brown centrally; all femora more or less curved; fore and hindtibial spurs moderately slender; hindtibial outer spur more broad, rounded apically and excavated inwardly than the inner one; segment I of fore tarsi strongly flattened laterally; abdomen elongate, sometimes last two sternites less pubescent, last visible sternite with a shallow rounded emargination.

Genitalia (Fig. 41 & 42): Basal piece broad and convex dorsally; parameres very wide, blunt and slightly pubescent at apex, aedeagus flattened at base, wider and oval in outline at the middle and narrowed at apex, with a small ventral apical hook and a stouter curved dorsal hook.

Female: Antennae (Fig. 40) smaller, narrower, and middle antennal segments not serrated like those of male; segment I of fore tarsi less flattened; last visible sternite with a slight emargination at apex.

Holotype: Male, INDIA: Haryana, Dist. Karnal, Vill. Baros, Kaithal road, 18.ix.1963 (*R. K. Bhatnagar*).

Paratypes. 3 ♀♀, 1 ♂ with the same data as for the holotype; Gujarat; Visavadar, 3-5.ix.1969, 2 ♂♂, 2 ♀♀ (*T. G. Vazirani & G. N. Saha*); Anand, 1 ♀ (*V. C. Patel*); Kuliya, x.1949, 1 ♀ (*T. G. Vazirani*); Tamil Nadu (Madras): 1 ♂, Uttar Pradesh: Varanasi, 1 ♀, viii.1970; Allahabad 1 ♀, 20.vii.1927.

Remarks This new species comes near to *atricollis* (Pic) and *meridionalis* Kaszab. From the former it differs by the serrated antennal segments vii-ix, reddish brown apical antennal segments and mesosternum with more pointed apex and from the latter it can be distinguished by the fairly serrated antennae. Further, the new species is readily recognised by the slender fore tibial spurs.

24. *Psalydolytta atricollis* (Pic)

Epicauta atricollis Pic, 1920, *Mel. Exot. Ent.*, **32**: 18.

Psalydolytta atricollis: Kaszab, 1952, *Acta biol. hung.*, **3**: 574; 1954, *Acta zool. hung.*, **1**: 89-90.

Locality records and specimens examined

INDIA: Karnataka: Gokak, xi. 1928, 11 ex., at light; Bhupdal, 16.xi. 1928, 1 ex., at light; Neighbourhood of Bhupdal, xi. 1928, at light, 3 ex. (*B. P. & H. S. R.*); Maharashtra: Bombay, Poona, Dhond, 2-3.x. 1933, 1 ex., at light (*P. Banerji*); W. Ghats, Panchgani, 1219-1234 m., 6 ex. (*E. Blatter, S. J. & J. Fernandez*);

Madhya Pradesh : Jabalpur, 456 m., ix. 1957, 2 ex. (*P. S. Nathan*) ; Sagar, 2 ex. ; Uttar Pradesh : Allahabad dist., Shahzadpur, 29, viii. 1910, 1 ex. (det. Wellman as *Gnathospastida rouxi* cast.) ; Bihar, Katihar, 1-24. ix. 1910, 1 ex. (*C. Paiva*) ; Gujarat : Visavadar, 3 5. ix. 1969, 17 ex. ; Surendranagar, 19.ix. 1969, 6 ex. (*T. G. Vazirani & G. N. Saha*).

Description

Male : Head : Mandibles without dentation ; labrum small with silky-white long hair, round laterally, strongly emarginated anteriorly ; frons strongly elevated anteriorly ; antennae moderately elongate, first two segments testaceous, segments III-IV partly blackish and the rest completely black, segment I elongate, strongly swollen sub-apically, segment II smallest and wider apically, segment III-VI strongly flattened and serrated anteriorly, segment VII slightly wider, segments VIII-XI gradually narrowed ; frons, vertex and occiput sparsely hairy.

Pronotum Completely covered with silky-white pubescence.

Scutellum : Strongly narrowed at apex.

Elytra With dark brown pubescence at base in some specimens.

Ventral side Blackish and moderately pubescent ; mentum small, excavated posteriorly ; ligula very small ; labial palpi, fairly elongate, segment I very small, segments III-IV strongly elongate and testaceous ; last segment of maxillary palpi black and strongly wide apically ; mesosternum rectangular, impunctate and glabrous at base ; metasternum with a longitudinal impunctate, glabrous line ; forefemora more strongly flattened, impunctate glabrous ventrally ; foretibiae concave ventrally ; foretibial spurs subequal, strongly flattened and concave inwardly ; midtibial spurs elongate and narrowed at apex ; hindtibial spurs more elongate and concave inwardly than the first ones ; all the pairs of tibial spurs almost of equal size and shape.

Genitalia Parameres short ; ventral aedeagal hook moderately elongate, dorsal hook fairly curved.

Female Antennal segment I less swollen apically than that of male and segments III-VI elongate, forefemora and foretibiae less flattened than those in male ; foretibial spurs more elongate than those in male.

Distribution INDIA.

New Records INDIA : Recorded from Karnataka, Maharashtra, Madhya Pradesh, Uttar Pradesh, Bihar and Gujarat states for the first time.

25. *Psalydolytta rouxi* (Laporte)

? *Cantharis rouxi* Laporte, 1840, *Hist. Nat. Col.*, 2 : 274.

Cantharis rouxi : Fairmaire, 1894, *Ann. Soc. Ent. Belg.*, 34 : 1896.

- I. c. 40 : 8 ; Coleman, 1911, *Journ. Bombay Soc.*, 20 : 1168 ;
 Maxwell-Lefroy, 1906 : *Mem. Dep. Agr.*, India, 1 : 136.
Psalydolytta rouxi : Borchmann, 1917, *Junk's Col. Cat.* 17 (69) : 103 ;
 Kaszab, 1954, *Acta zool. hung.*, 1 (1-2) : 79, 102.

Locality records and specimens examined

INDIA : Bihar : Madhupur, 22.vii.1953, 1 ex. (A. P. K. & J. M.) ;
 Madhya Pradesh Jabalpur, 488 m., ix.1957, 1 ex. (P. S. Nathan) ;
 Gujarat : Visavadar, 3-4.ix.1969, 9 ex., at light ; Sasangir, 7-9, ix.
 1969, 11 ex., at light (T. G. Vazirani & G. N. Saha).

Description

Male Mandibles, labrum, clypeus, eyes, apical antennal segments, maxillary and labial palpi, mentum, submentum, gula, pronotum, thorax, femora, tarsi and abdomen black or blackish brown ; frons, vertex, occiput and basal antennal segments reddish brown ; elytra and tibiae yellowish ; length 15-20 mm.

Head : Labrum large, convex and emarginate at apex, with fine long greyish hairs ; clypeus moderately large, with greyish pubescence ; frons, vertex and occiput sparsely hairy and punctate ; vertex and occiput with a fine median longitudinal blackish line ; eyes very large and fairly convex ; antennae long, antennal segments narrowed and flattened, segment I elongate, moderately wide at apex, segment II smallest, segment III longest, segments IV-VI subequal, segments VII-IX subequal, segment X, slightly smaller than the preceding ones, segment XI slightly longer than the preceding ones and narrowed but rounded at apex.

Pronotum : Black, shiny, moderately punctate and pubescent.

Scutellum With greyish yellow pubescence, narrowed and rounded at apex.

Elytra : Elongate, parallel with greyish yellow pubescence, rounded at apex.

Ventral side Mostly with dense greyish yellow pubescence, cardo sparsely pubescent ; maxillary palpi long, segment II longest, apical segment flattened and rounded apically ; mentum fairly transverse, elevated, declivous anteriorly and concave posteriorly ; labial palpi fairly long, segments II and III subequal, elongate, cylindrical, moderately wide apically ; mesosternum moderately large, usually sparsely pubescent, pointed apically ; metasternum large, moderately convex with a median longitudinal impunctate line ; fore femora smallest, but widest, concave outwardly, glabrous and brownish ventrally ; mid and hind femora almost glabrous inwardly ; foretibial spurs fairly slender and pointed at apex ; midtibial spurs slightly wider than foretibial ones ; hind tibial spurs widest and inwardly excavated, outer one smaller and wider than the inner one ; segment I of foretarsi with most well developed pad ventrally ; abdomen long, last visible sternite with mostly black pubescence and a small round emargination at apex.

Genitalia Basal piece small, parameres elongate, united upto basal half, moderately narrowed apically; aedeagus strongly flattened at base, widest and rounded at the middle, narrowed apically, dorsal hook strongly elongate but ventral hook small.

Female : Fore femora pubescent; last visible sternite entire.

Distribution INDIA.

New Records INDIA : Bihar, Madhya Pradesh and Gujarat states. Previously it was only known from Bombay (Maharashtra).

26. *Psalydolytta tetragramma* (Haag-Rutenberg)

Lytta tetragramma Haag-Rutenberg, 1880, *Dt. ent. Z.* : 82, 85.

Epicauta tetragramma : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 84.

Psalydolyttu tetragramma : Kaszab, 1954, *Acta. zool. hung.*, **1** : 102.

Locality records and specimens examined

INDIA : Assam : 1 ex., Ind. Mus.

Description

Female Mandibles, labrum, clypeus maxillary and labial palpi, cardo, mentum, pro-, meso-, and metathorax, legs and abdomen mostly dark brown; frons, vertex, occiput and basal antennal segments reddish brown; with greyish and dark brown pubescence length 20 mm.

Head Rectangular; labrum transverse, rectangular, with long sparse, greyish hairs but without any emargination in front; clypeus truncate anteriorly, semicircular posteriorly with long, sparse, greyish hairs; frons, vertex and occiput very finely pubescent; frons slightly elevated in front; vertex slightly convex anteriorly but emarginate posteriorly at the middle; vertex and occiput with a median longitudinal fine dark brown line; eyes black, moderately large and convex; antennal segment I moderately elongate and wider apically, segment II very small and narrower than I, segment III fairly elongate, moderately flattened and longer than segment I, segments IV and V subequal, slightly flattened and longer than II, other segments broken.

Pronotum : Subrectangular, broad, less narrowed apically, with greyish pubescence anteriorly, posteriorly, laterally and medially and the rest with dark brown pubescence.

Scutellum With greyish pubescence, narrowed and rounded at apex.

Elytra Elongate, parallel, with greyish hairs along base, outer and sutural margins and apex, besides a wide median vitta of greyish hairs on each elytron, rest with dark brown pubescence.

Ventral side Mostly with greyish pubescence; segments I and II of maxillary palpi subequal and wider apically, other segments

broken, labial palpi fairly elongate, segment II sub-cylindrical, slightly longer than apical one, which is fairly broad and flattened at apex; mesosternum small, slightly pointed apically with greyish hairs; metasternum large, slightly convex, blackish, with greyish pubescence and a median longitudinal light brownish line; foretibiae strongly emarginated at apex outwardly; fore and midtibial outer spurs longer and thicker than the inner ones; hind tibial outer spur more broad, excavated inwardly than the inner one and rounded apically; segment I of fore tarsi smallest, widest, with highly developed pad ventrally, abdomen long, mostly with dark brown pubescence, but visible sternites I-V with long greyish pubescence apically, last sternite with dark brown pubescence.

Male Not examined.

Distribution INDIA.

New Record INDIA : Assam. Previously known from Maharashtra (Bombay) State only.

27 *Psalydolytta villipes* Haag-Rutenberg)

Lytta villipes Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.* : 87.

Epicauta villipes : Borchmann, 1917 *Junk's Col. Cat.*, **17** (69) : 85.

Psalydolytta villipes : Kaszab, 1954, *Acta zool. hung.*, **1** : 78. 102.

Locality records and specimens examined

INDIA : Gujarat, Sansangir, 7.ix. 1969, 5 ex., at light; same locality, 11 ix. 1959, 1 ex., at light (*T. G. Vazirani & G. N. Saha*).

Description

Male : Body elongate; mostly with dense golden yellow or greyish pubescence; head mostly reddish brown; pronotum, meso and metathorax, femora blackish; elytra yellow; tibiae yellow or light brown; tarsi and apical antennal segments dark brown; length 17-20 mm.

Head Rectangular; labrum convex and truncate at apex mostly with long yellowish hairs except a few dark brown hairs at the centre; mandibles dark brown, shiny; clypeus very small, more elevated than labrum, with long yellowish hairs; frons more elevated than clypeus, slightly depressed centrally, poorly punctate and pubescent; vertex and occiput very finely pubescent and hairy; eyes black, large, longer than the ocular width, fairly convex and finely granulate; antennae long, flattened, segments I-IV reddish or light brown, rest progressively dark brown and narrowed, segment I subequal to segment IV and widest apically, segment II, smallest, segment III longest and three times as long as segment II, segment V-VI subequal, segments VII-VIII subequal, segments IX-X subequal, segment XI longer than the preceding ones and rounded apically.

Pronotum : Narrower than the head and elytra, densely covered with fine yellowish pubescence, finely marginate along the base and with a fine median longitudinal line.

Scutellum : Apically narrowed and rounded, with pubescence.

Elytra Elongate, parallel, rounded at apex, with yellowish or greyish pubescence.

Ventral side : Mostly with dense pubescence, except less pubescent mid-, hind femora and last visible sternite : cardo small, densely pubescent ; maxillary palpi long, segment II longest, apical segment subtriangular and flattened ; mentum small, sparsely pubescent, strongly transverse, sometimes excavated in front ; labial palpi long, segments II and III elongate, fairly wide and excavated at apex ; mesosternum very small, pubescent, strongly transverse and finely pointed at apex ; metasternum very large, pubescent, with a median longitudinal impunctate line ; fore femora more densely pubescent than other femora ; mid and hind femora with sparse long black hairs, the ventral side of foretibiae with long greyish and black hairs specially at base ; midtibial spurs more elongate inwardly than foretibial spurs ; hindtibial spurs slightly excavated, less elongate but slightly wider than those of fore and mid ones ; segment I of fore tarsi less elongate but slightly wider than those of mid and hind tarsi ; abdomen long, with yellowish or greyish pubescence except black hairs on the last visible sternite which is with shallow subtriangular or roundish emargination at apex.

Genitalia Basal piece small ; parameres very wide, moderately elongate, poorly narrowed at apex ; aedeagus strongly flattened basally, fairly wide and rounded at the middle and narrowed at apex, with a slender, elongate dorsal hook and a small ventral hook.

Female : Antennae smaller and narrower than those of males ; fore legs, mid and hind femora differently pubescent ; last visible sternite entire.

Distribution INDIA.

New Record INDIA : Gujarat. Previously known only from Maharashtra (Bombay).

28. *Psalydolytta wellmani* Kaszab

Psalydolytta wellmani Kaszab, 1960, *Ann. Mag. nat. Hist.*, **3** (13) : 156.

Locality record and specimen examined

INDIA : West Bengal : Maldah, 1 ♂, Indian Museum (*W. H. Irvine*).

Description

Male : Body dark brown ; head, antennae, legs and palpi reddish brown ; length 17.5 mm.

Head : Rectangular ; labrum and clypeus with dense long greyish hairs ; frons, vertex and occiput very finely punctate with sparse short greyish pubescence ; basal half of mandibles reddish, rest blackish, laterally with dense long greyish hairs ; eyes fairly elongate and convex ; antennae fairly long, basal segments with fine sparse pubescence, segment I smaller than segment III and wider than segment II, segment III fairly elongate, segments III - VI slightly emarginate apically, segments IV - VI smaller and wider than the following segments, segments VII - XI progressively narrowed, segment XI slightly longer than the preceding ones.

Pronotum : Small, narrower than the head, mostly covered with greyish hairs.

Elytra : Each elytron with three vittae of greyish hairs and the one along sutural margin narrowest and median one widest ; intermediate portion dark brown.

Ventral side : With dense greyish hairs, but such hairs are more dense over the apices of abdominal sternites ; a few apical segments of maxillary and labial palpi fairly wide ; metasternum with a median longitudinal impunctate brownish line ; mesosternum small and concave ; hind femora with a few long black hairs ; foretibial spurs unequal ; midtibial spurs equal ; segment I of fore tarsi fairly wide ; last visible sternite with deep triangular emargination.

Genitalia : Tegmen short and wide ; aedeagus strongly wide medially, dorsal aedeagal hook raised perpendicularly, ventral hook small.

Distribution INDIA : West Bengal.

Remarks The present material examined by me probably belongs to the same lot of collection from which Kaszab (1960) described the species, because the data of the types and the present material are the same.

29. **Psalydolytta diversipes* (Pic)

Epicauta diversipes Pic. 1920, *Melang. exot.-ent.* 32 : 18.

Psalydolytta diversipes : Kaszab, 1952, *Acta biol. hung.*, 1 (1-2) : 77, 101.

Distinctive characters : Head, antennae, elytra and legs yellowish red ; length 23 mm. ; antennae slightly broad ; fore femur emarginated inwardly at apex.

Distribution : INDIA : Assam.

30. **Psalydolytta fasciculata* (Pic)

Epicauta fasciculata Pic. 1920, *Melang. exot.-ent.*, 32 : 18.

Psalydolytta fasciculata : Kaszab, 1952, *Acta biol. hung.*, 3 : 574 ; Kaszab, 1954, *Acta zool. hung.*, 1 (1-2) : 78, 102.

Distinctive characters : Basal portion of the tibiae dark black.

Remarks It seems very near to *P. Villipes* (Haag-Rutenberg, 1880) except for dark base of tibiae.

Distribution INDIA

31 **Psalydolytta meridionalis* Kaszab

Psalydolytta meridionalis Kaszab, 1960, *Ann. Mag. nat. Hist.*, **3** (13): 154-155.

Distinctive characters : Head and elytra yellowish red, pronotum, ventral side and legs black or brown, antennae brown, palpi brownish red; length 9-13 mm.; head large and roundish; eyes convex; antennae small and slender, segment I large and thick, segment II bigger than III, longer than broad and flat in male, from segment V gradually slender and parallel towards apex; pronotum so long as broad, narrower than the head, thickly punctate, glazey, yellow and densely hairy; scutellum small, with black hairs; elytra parallel with thick yellowish hairs; ventral side with thick greyish yellow hairs; last visible abdominal sternite with a small emargination and black hairs at apex; both spurs of fore tibiae very wide and flat.

Distribution Southern India.

Genus IV. *Denierella* Kaszab

Denierella Kaszab, 1952, *Ent. Arb.*, **3**: 81.

Type species: *Denierella incompleta* (Fairmaire, 1896).

The genus *Denierella* is very close to the genus *Epicauta* and both genera belong to the tribe *Epicautini*. This genus had been defined on the basis of denticulate dorsal blades of tarsal claws. Only 8 species of the genus had been known so far from Burma, China and India (Kaszab 1952, 1956). These are *D. brimanic*, *D. brunneopaca*, *D. freyi* from Burma, *D. serrata* from China and *D. incompleta* (Fairmaire), *D. venerabilis*, *D. mimos*, *D. stockleini* from India. In the present work, I have described a new species, *D. kaszabi* sp. nov. from Tamil Nadu (South India), and figured for the first time *D. venerabilis*, *D. mimos* from the paratypes and also *D. stockleini* from a specimen determined by the author. These specimens had been made available to me through the courtesy of Dr. Z. Kaszab (Budapest).

Characters of the Genus Elytral pubescence simple, composed of short, recumbent setae only; antennal segments not modified in male; dorsal blade of tarsal claws denticulate.

Distribution INDIA; BURMA; CHINA.

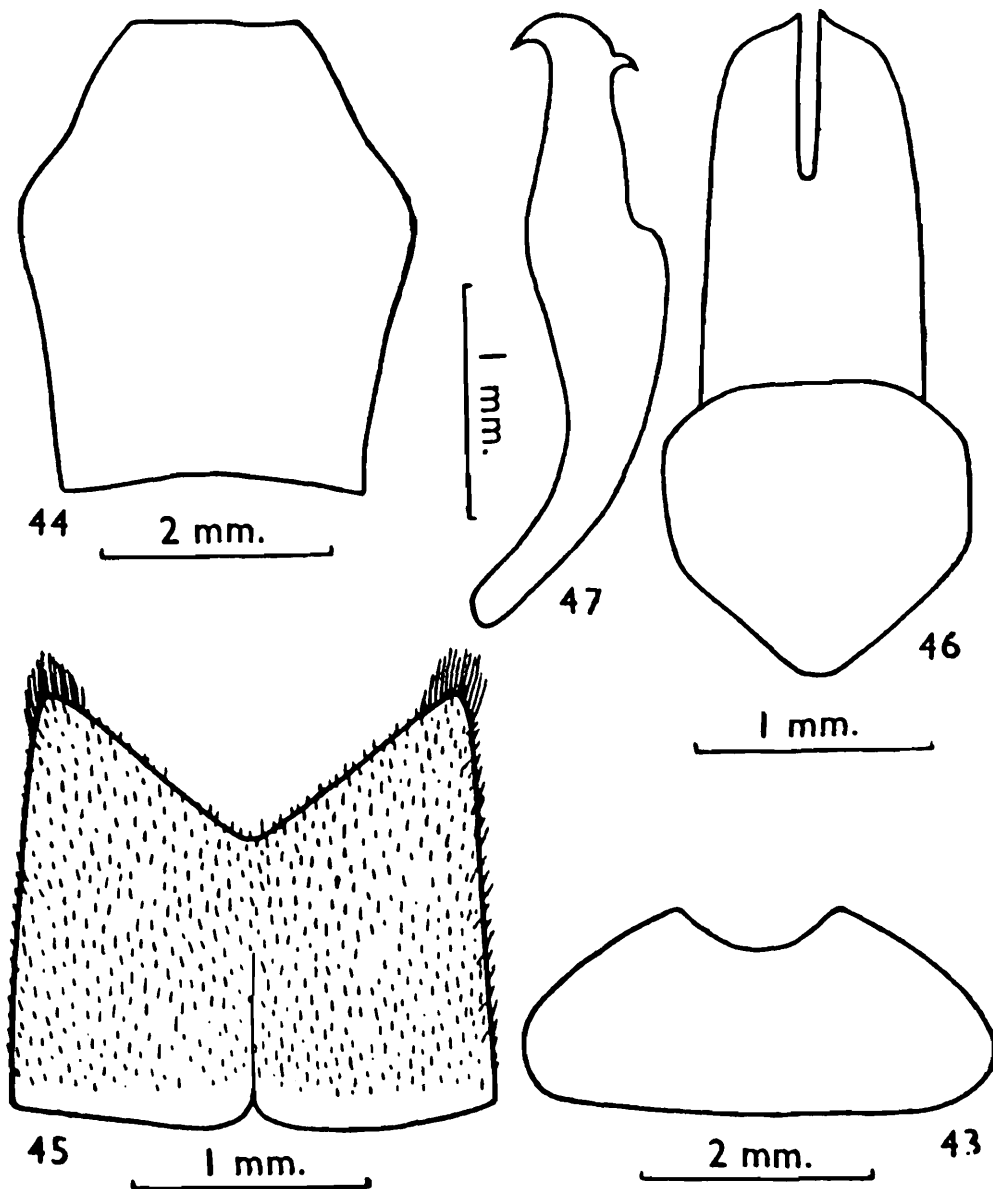
KEY TO SPECIES OF THE GENUS *Denierella* Kaszab

- | | | | | |
|----|--|-----|-----|------------------------------|
| 1 | Presence of Elytral vittae | ... | ... | 2 |
| — | Absence of Elytral vittae | ... | ... | 3 |
| 2. | Each elytron with a pair of vittae, longer one along the outer margin, smaller median one extends froms base to middle | ... | ... | <i>D. venerabilis</i> Kaszab |

- Each elytron with three complete vittae *D. mimos* Kaszab
3. Body deeply black and shiny; labrum less transverse and metasternum with three impressed *D. stockleini* Kaszab
- Body dark brown and opaque; labrum more transverse and Metasternum without any impressed line *D. kaszabi* sp. nov.

32. *Denierella kaszabi* sp. nov.

Male: Dark brown, opaque with fine dark brown pubescence, length 17-18 mm.



Figs. (43-47) *Denierella kaszabi* sp. nov., ♂ 43. Labrum; 44. Pronotum; 45. Last visible sternite; 46. Tegmen; Aedeagus.

Head: Labrum (Fig. 43) and clypeus dark brown, rest yellowish, labrum strongly transverse, medially convex, impunctate anteriorly;

mandibles strongly developed with fine teeth; antennae nearly filiform, tapering, segments I-III brown, rest dark brown, segment I strongly swollen, segment II smallest, segment III longest, segments IV-IX subequal, apical segments narrower and flattened.

Pronotum (Fig. 44) Finely punctate and pubescent, fairly convex anteriorly, concave sub-anteriorly with a fairly deep median depression at base.

Scutellum With fine pubescence, blunt apically.

Elytra With dark brown short fine pubescence, wider sub-apically.

Ventral side Mesosternum strongly transverse, rectangular, finely punctate, glabrous with a small convex distinct knob at the apex; first three visible sternites compressed and highly elevated medially, last visible sternite (Fig. 45) with deep triangular bilobed emargination with erect long hairs.

Genitalia (Fig. 46 & 47): Highly sclerotized, basal piece fairly large, round, flat dorsally; parameres strongly wide, short, slightly pointed at the apex; aedeagus short, swollen medially, narrowed at both ends, apex curved with a ventral hook, below the apex the dorsal hook raised almost horizontally.

Female Scape less swollen; segments of maxillary and labial palpi smaller; tarsal pads of fore leg less developed; mesosternum pubescent; last sternite with faint apical emargination.

Holotype ♂, INDIA: Tamil Nadu (Manras): Salem dist., Kambali, 457 m., 16 k. m. S. E. of Harur, foot of Chitteri hills, 18. vi. 1929 (*H. S. Pruthi*).

Paratypes (8 ♂♂, 1 ♀), with the same data as for the holotype, 2 ♂♂, 1 ♀, Tamil Nadu: Palni hills, 1914 (without any other data).

Remarks This new species comes close to *D. stockleini* Kaszab but differs in having dark brown colour, opaque, more strongly transverse labrum, pronotum with more deep depression at base truncated scutellar apex, yellowish head and metasternum without any impressed line.

33. *Denierella mimos* Kaszab

Hypocauta mimos Wellman, nov. gen., nov. sp. in litt.

Denierella mimos Kaszab, 1956, *Ann. Mag. nat. Hist.*, 9 (12): 634-635.

Locality records and specimen examined

Paratype: Male, INDIA: Manipur, Doherty (1905-100 *Fry* coll.), deposited in the Hungarian Nat. Hist. Museum, Budapest.

Description

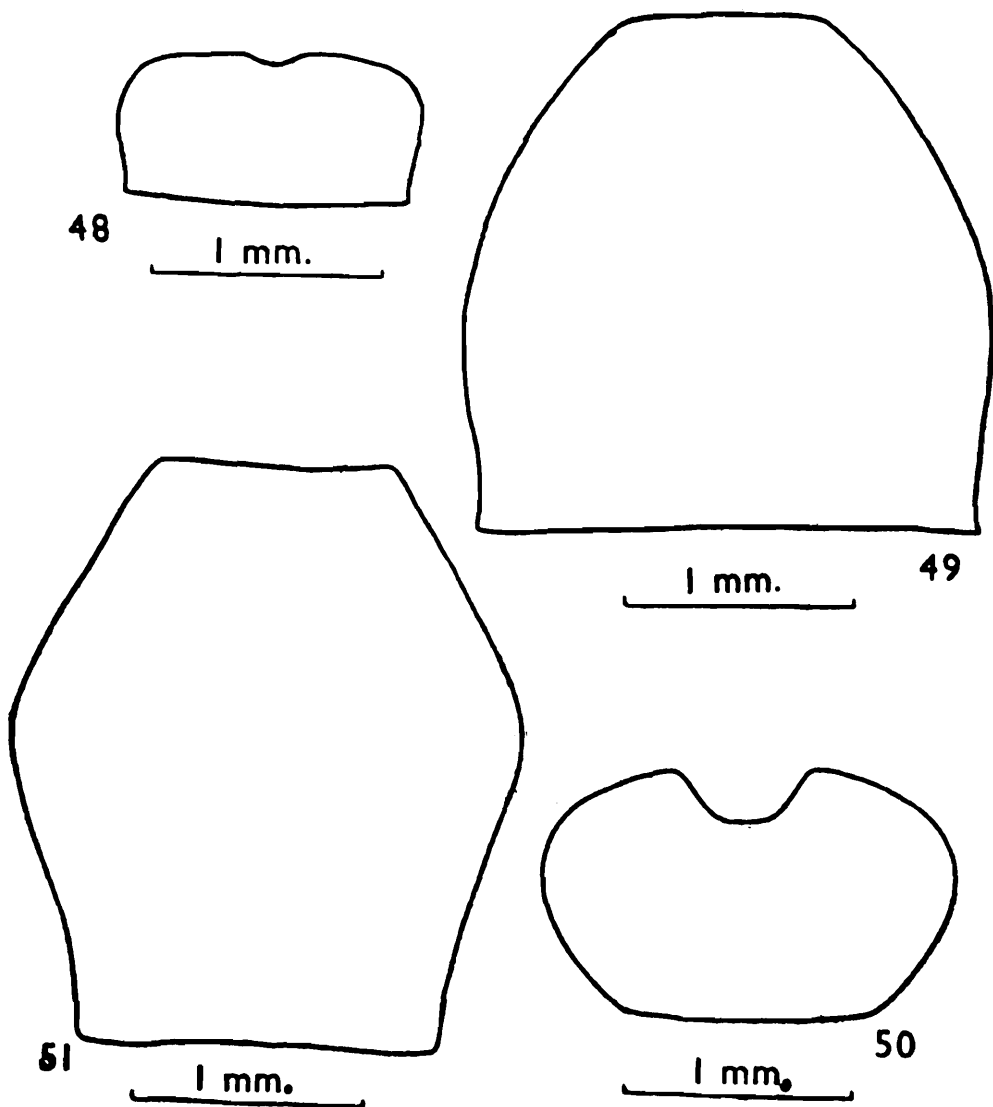
Male Blackish brown, finely pubescent, shiny, length 15 mm.

Head : Brownish, almost glabrous, very finely and sparsely punctate ; labrum (Fig. 48) strongly transverse, medially punctate ; clypeus highly elevated but straight anteriorly, slightly depressed and semicircular posteriorly with a bunch of setae on each side ; front strongly declivous anteriorly ; mandibles poorly developed ; antennae filiform, segments I-II brownish black, fairly swollen anteriorly, segment III longest and wider apically, segments IV-VIII flattened and fairly wide, segments IX-X narrower and cylindrical, segment XI strongly cylindrical and narrowed apically ; eye moderately bisinuate.

Pronotum : (Fig. 49) : Black, finely punctate, with small, fine, brownish pubescence, declivous anteriorly, widest sub-anteriorly, with a broad median depression posteriorly.

Scutellum : Elongate, rectangular, finely punctate, depressed.

Elytra : Each with fine small brownish pubescence, tapered sub-apically with two wider vittae and a narrower vitta of whitish hairs, of the two wider vittae one along outer margin, the other along the



Figs. (48-49) *Denierella mimos* Kaszab, ♂ 48. Labrum ; 49. Pronotum.

Figs. (50-51) *Denierella stockleini* Kaszab, ♀ 50. Labrum ; 51. Pronotum.

middle while narrower fine one along the suture.

Ventral side : With whitish pubescence ; mentum strongly transverse, elevated, impunctate with a median longitudinal depression and a few small hairs ; ligula small, depressed ; segment II of labial palpi wide and round apically, apical segment strongly flattened and wider apically, apical segment of maxillary palpi longest and strongly flattened ; gena sparsely punctate with a few whitish pubescence ; mesosternum slightly concave, blunt apically ; metasternum elevated, emarginated superficially at the apex ; last visible sternite almost without apical emargination ; fore femora with dense whitish pubescence anteriorly, segment I of foretarsi strongly enlarged and asymmetrical.

Female : Not examined.

Distribution INDIA : North-eastern India.

34. *Denierella stockleini* Kaszab

Denierella stockleini Kaszab, 1952, *Ent. Arb* 3 : 80-81

Locality record and specimen examined

INDIA : Nilgiri hills, Devala, x, 1960, 1 ♂ (*P. Nathan*), determined by Dr. Z. Kaszab, deposited in the Hungarian Nat. Hist. Museum, Budapest.

Description

Female Deep black, shiny with fine black pubescence, length 20 mm., breadth 5 mm.

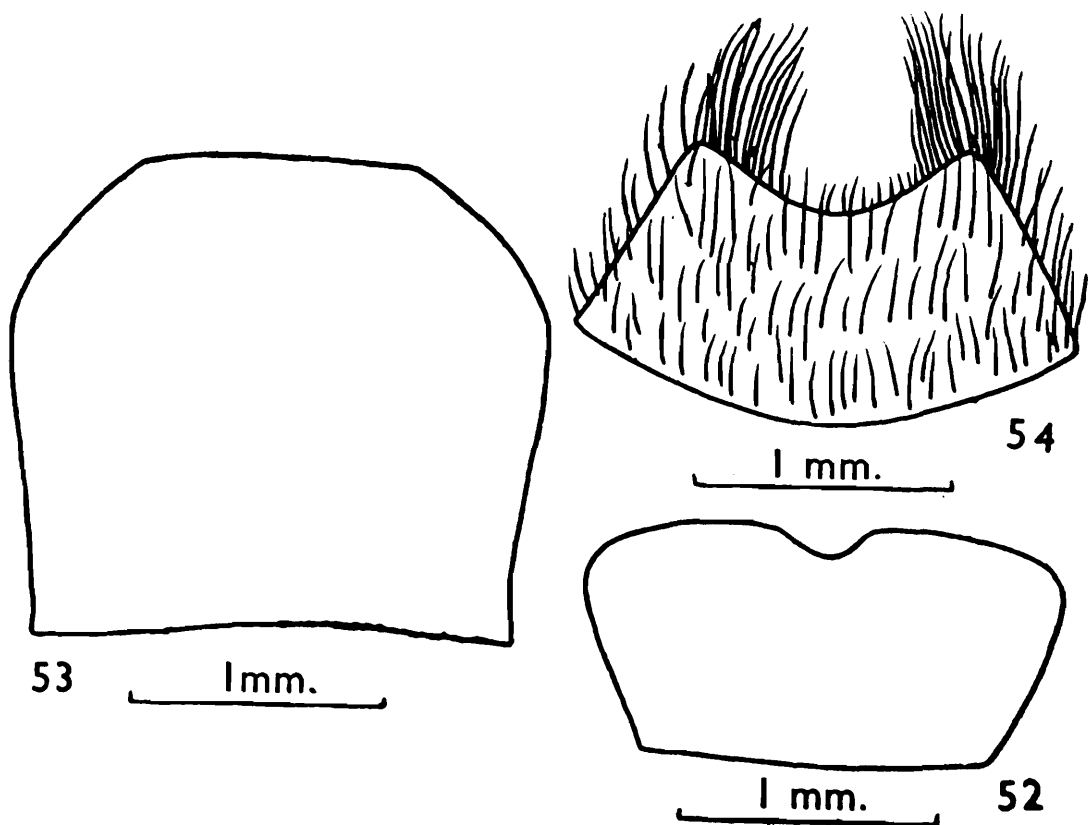
Head Labrum (Fig. 50) and clypeus blackish brown, rest reddish brown, labrum well developed, moderately transverse, semicircular with a few rows of setiferous punctures and deep emargination at the apex ; clypeus anteriorly, fairly elevated, impunctate, brownish with setiferous punctures and posteriorly rounded ; frons mostly impunctate anteriorly ; frons, posterior portion of vertex and occiput with fine punctures and erect small hairs ; vertex moderately convex ; a median longitudinal fine line extends from occiput ; each mandible with a few teeth at apex ; antennae filiform, gradually tapering, segment I, base of segments II and III brown, rest black, segment I fairly elongate, slightly curved, wider apically with erect small black hairs, segment III longest, segments I-V wider apically, segments VI-XI gradually flattened and thin, segment XI narrower apically ; eye moderately convex and sinuate.

Pronotum (Fig. 51) : Elongate, thickly punctate, convex dorsally at middle with fine short pubescence and a moderate deep depression at base.

Scutellum Narrowed and rounded apically with a fine median elevated line.

Elytra Deeply black with fine pubescence, narrowed along the sutural margin at apex.

Ventral side Strongly shining with black pubescence ; mentum deeply brown, thick, impunctate, glabrous, strongly transverse, slightly depressed centrally, rounded laterally ; -ligula entire, triangular with setiferous punctures ; labial pulpi strongly elongate, segment II strongly swollen, rounded apically with long setae, apical segment strongly flattened ; maxillary palpi strongly elongate, segment II longest, segments II-IV with small setae, segment IV fairly flattened ; mesosternum rectangular, strongly transverse, moderately concave at the centre ; metasternum elevated with three impressed lines, one median longitudinal, two oblique and superficial emargination at the apex ; abdomen gradually narrowed towards apex ; tibial spines of fore and mid legs slender, spiniform ; tibial spines on the hind leg slightly flattened and concave internally ; segment I of hind tarsus strongly elongate.



Figs. (52-54) *Denierella venerabilis* Kaszab, ♂, 52. Labrum ; 53. Pronotum ; 54. Last visible sternite.

Male : Not examined.

Distribution : INDIA : Southern India.

35. *Denierella venerabilis* Kaszab*Hypocausta venerabilis* Wellman, gen. nov. sp. in litt.*Denierella venerabilis* Kaszab, 1956, *Ann. Mag. nat. Hist.*, **9** (12) : 633-634.*Locality record and specimen examined**Paratype* : 1 ♂ INDIA : Assam : Naga hills (*Butler*) deposited in the Hungarian Nat. Hist. Museum, Budapest.*Description**Wale* : Dark brown, length 21 mm., breadth 5 mm.*Head* Shiny; labrum (Fig. 52) impunctate, testaceous and convex anteriorly but posteriorly blackish, punctate with a few long setae; front and vertex yellowish, strongly shiny, sparsely punctate, almost glabrous, front with a pair of shallow depressions above the eyes; vertex and occiput with a median longitudinal brownish fine line; mandibles strongly wide, without distinct apical teeth; antennae filiform, segment I fairly swollen at the apex, segments I-V with dense long hairs; eye elongate, oblique, finely granulate, light brownish, convex moderately, strongly bisinuate in front.*Pronotum* (Fig. 53) : Wide, rectangular, thickly punctate, declivous and pubescent anteriorly, widest subanteriorly, with a deep depression medially at base.*Scutellum* : Black, concave at base, round at apex with long hairs.*Elytra* : Parallel, blackish, finely granulate, sparsely pubescent anteriorly, each with a pair of vittae — longer one along the outer margin, smaller median one extends from base to middle.*Ventral side* : Blackish brown with a few whitish hairs; mentum strongly transverse, concave medially with a bunch of long black hairs on each side; ligula moderately large, triangular with a few black hairs; segment II of labial palpi elongate, and thickly punctate with long black hairs, apical segment strongly flattened and almost impunctate; segment II of maxillary palpi elongate, thickened and round apically with long dense hairs, segment III smaller, subcylindrical with long hairs; gena with long black hairs; mesosternum small with whitish hairs; thorax and legs brownish; abdomen black, anterior four visible sternites with a transverse row of whitish hairs on the apical margin, last visible sternite (Fig. 54) with superficial round emargination apically; fore legs with dense long dark brown hairs; hindtibiae with long dark brown hairs besides a row of whitish hairs externally.*Female* Not examined.*Distribution* INDIA : North-eastern India (Assam)**36. **Denierella incompleta* (Fairmaire)***Cantharis incompleta* Fairmaire, 1896, *Ann. Soc. Ent. Belg.*, **40** : 52-53.*Epicauta incompleta* : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 76*Denierella incompleta* : Kaszab, 1952, *Ent. Arb.*, **3** : 82*Distinctive characters* Length 18-19 mm.; elongate, convex, black and dorsally opaque; head yellow; pronotum with greyish hairs in the middle and on the sides; elytra with a very narrow band;

antennae thin, longer than the half the body, reddish yellow.

Distribution : INDIA : Southern India.

Tribe C. Mylabrini wellman

The tribe Mylabrini, which is an old world group and one of the largest tribe of the family Meloidae, was proposed by wellman (1910) to accomodate the following 5 groups : Sybarides, Cordylospastides, Cerocomides, Mylabrides and Eleticides. Wellman defined the tribe on the basis of usually clavate antennae and dissimilar mandibles. Recently Kaszab (1969) includes 12 genera in this tribe, out of which only two genera, namely, *Mylabris* and *Decapotoma* are represented from India.

KEY TO GENERA

Of the Tribe Mylabrini Wellman

- | | | |
|-------------|--------------|-------------------------------|
| 1. Antennae | 11 segmented | ... <i>Mylabris</i> Fabricius |
| Antennae | 10 segmented | <i>Decapotoma</i> Voigts |

Genus V. *Mylabris* Fabricius

Meloe Linnaeus 1758, *Systema Naturae* : 419.

Mylabris Fabricius 1775, *Systema entomologiae*, no. 78 : 26.

Zonabris Harold 1879, *Coleopterol.* 26 : 1-124.

Type species : *Meloe ? floralis* (Pallas 1781) designated by Wellman in 1910.

The genus Mylabris established by Fabricius in 1775 is one of the largest in the family Meloidae. It consists more than 400 species from the world. Some of the insects which are now included in the genus *Mylabris* previously were placed in the genus *Meloe* by Linnaeus (1767), Pallas (1782), Thunberg (1791) and majority of other earlier authors.

Among the early authors, Marseul's monograph (1872) on the genus is one of the most remarkable contribution on the world fauna of this group. He included 230 species of the genus in his work. He laid stress mainly on the character of antennae and elytral colour pattern. He was unable to see any external differences between the sexes.

Recently Kuzin (1954), Kaszab (1953, 1955, 1957, 1958, 1959, 1960, 1964, 1968) and Pardo (1949, 1961, 1963, 1965, 1966, 1968, 1969) have made some contributions on the genus. Kuzin has divided the genus *Mylabris* into 16 subgenera including three of the previously known genera as subgenera, of the tribe Mylabrini as follows : 1 *Chalcabris*, 2 *Chrysabris*, 3 *Glaucabris*, 4 *Micrabris*, 5 *Lachanabris*, 6 *Mylabris* (S. str.), 7 *Eumylabris*, 8 *Euzonabris*, 9 *Decapotoma* (Voigts) sensu novo, 10 *Ammabris*, 11 *Monabris*, 12 *Spherabris*, 13 *Argabris*, 14 *Tigrabris*, 15 *Ceroctis* Mars. and 16 *Mimesthes* Mars. These subgeneric groupings are mainly based on the characters of antenna, pronotum, and genitalia etc., and about 200 species of the genus *Mylabris* have been placed in the above subgenera. From amongst the Indian species he has included *cichorii* (Linnaeus), *phalerata* (Pallas) and

pustulata Thunberg under *Euzonabris* Kuzin and *balteata* (Pallas) under *Sphenabris*

The distribution of the different species of *Mylabris* is interesting and in some cases it is also very significant. *M. phalerata* is found all over India. *M. cichorii*, *M. macilenta*, *M. himalayaensis* are confined in the Himalaya. *M. horai*, *M. dohrni*, *M. tiflensis*, *M. belli* which have got the affinities with Afghanistan fauna, are found only in the North West India and Pakistan. Though *M. thunbergi* occurs in West Bengal and Bihar, it is more widely distributed in the South India. *M. pardoi*, *M. gonostylus*, *M. rajasthanicus*, and *M. kapuri* are confined to Rajasthan, North West India. The distribution of *M. pustulata*, *M. orientalis*, *M. batesi*, *M. balteata*, *M. goaensis*, *M. ajantaensis*, *M. nilgiriensis*, *M. mandibularis* and *M. nathi* is limited to peninsular India.

Most of the earlier authors did not record the type localities of the species described by them. As the type depositories are also unknown, an effort has been made to get information regarding types in different Museums of India and abroad. Recently, information was received from Dr. A. Villiers, Sous directeur, Muséum National, D' Histoire Naturelle, Paris, (personal communication) that the type specimens of *M. orientalis*, *M. batesi*, *M. macilenta*, *M. dohrni*, *M. rajah* and *M. rutilipubes* are deposited there. Unfortunately he was unable to send these types on loan because the specimens appeared fragile. At the present time there is no information available regarding other type specimens.

The paratypes of *M. brevetarsalis* Kaszab, cotypes of *M. belli* Borchmann and also specimens of *M. trigonalis* Lichtenstein and *M. nilgiriensis* Borchmann had been made available to me through the courtesy of C. M. F. von Hayek, British Museum (National History), London.

Characters of the Genus : Body elongate-oblong, generally blackish, sometimes brownish with coarse or thick and long black hairs ; head large, broad, generally round posteriorly, fairly punctate and hairy ; mandibles strongly developed, broad, narrowed towards apex ; eyes large, oval, slightly reniform behind the antennae ; antennae moderately elongate, clavate apically, segment I slightly arched usually, segment II globular and smallest, other segments moderately variable in shape and length ; pronotum distinctly campanuliform, punctate and with long hairs ; slightly concave dorsally with a small longitudinal impression, scutellum large, oval, elongate, generally truncate apically and with long hairs ; elytra fairly convex, subparallel, yellowish, reddish or orange red with blackish transverse bands and blackish or yellowish spots or patches ; maxillary and labial palpi moderately elongate ; mentum moderately transverse and concave centrally ; ligula large, bilobed ; mesosternum large, strongly shiny, less hairy and generally with a ridge anteriorly ; legs moderately elongate, tarsal segments usually cylindrical ; abdomen moderately elongate ; last visible sternite with a semicircular or triangular emargination at apex ; basal piece large, tegmen thick, para-

meres moderately elongate, penis mostly dorso-ventrally flattened with two ventral and a dorsal hooks which are generally flattened, recurved and pointed at apex.

Distribution EUROPE, ASIA and AFRICA.

KEY TO SPECIES OF THE GENUS *Mylabris* Fabricius

- | | |
|--|-----------------------------------|
| 1. Head with a pair of reddish spots on frons | <i>M. tiftensis</i> Billberg |
| — Head without a pair of reddish spots on frons | 2 |
| 2. Scape narrow ; eyes very small and slightly convex | <i>M. Kapuri</i> Saha |
| — Scape broad ; eyes large and fairly convex | 3 |
| 3. Elytron with a triangular or subtriangular black macula anteriorly | <i>M. trigonalis</i> Lichtenstein |
| — Elytron without such macula | 4 |
| 4. Elytron with two black maculae behind humerus and a black spot at sutural apex | <i>M. belli</i> Borchmann |
| — Elytron lacking such character | 5 |
| 5. Elytral base mostly yellowish or brownish | 6 |
| — Elytral base mostly black | 9 |
| 6. Base of elytra yellowish or brownish and with short longitudinal bands | 7 |
| — Base of elytra yellowish or brownish without any longitudinal bands | 8 |
| 7. Elytron with two strongly sinuated transverse black bands | <i>M. dohrni</i> Marseul |
| — Elytron with one moderately sinuated transverse black band | <i>M. thunbergi</i> Billberg |
| 8. Elytra completely yellow apically | <i>M. rajasthanicus</i> Saha |
| — Elytra completely black apically | <i>M. macilenta</i> Marseul |
| 9. Elytral black base without any yellowish or brownish macula on disk | 10 |
| — Elytral black base with a yellowish or brownish macula on disk | 14 |
| 10. Elytron with two transverse black bands | 11 |
| — Elytron with one transverse black band | 12 |
| 11. Elytral transverse black bands strongly sinuated ; parameres and aedeagus wide apically | <i>M. orientalis</i> Marseul |
| — Elytral transverse black band moderately sinuated ; parameres and aedeagus strongly narrowed apically | <i>M. nathi</i> sp. nov. |
| 12. Elytron with one or more black spots in front of transverse black band | 13 |
| — Elytron without any such character | <i>M. nilgiriensis</i> Borchmann |

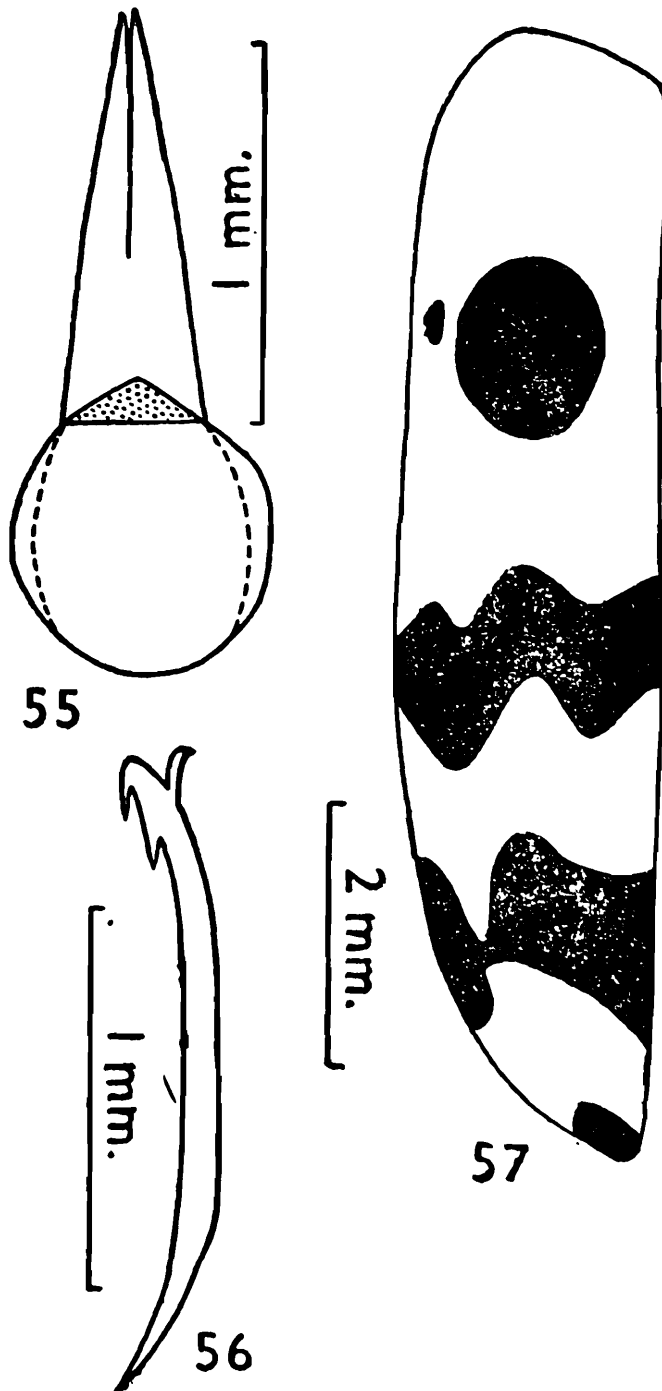
13. Elytron with one black spot in front of transverse black band *M. balteata* (Pallas)
 — Elytron with three black spots in front of transverse black band *M. damohensis* sp. nov.
14. Elytral black bands very wide, yellow bands very narrow and the yellow spot near base very small *M. batesi* Marseul
 — Elytral black bands narrower, yellow bands wider and the yellow spot near base larger 15
15. Elytral black bands strongly sinuated ... 16
 — Elytral black bands moderately sinuated 17
16. Apical elytral black band oblique ; mandibles moderately developed ; labrum large ; apical antennal segment conical ; ligula convex *M. pustulata* Thunberg
 — Apical elytral black band nearly straight ; apical antennal segment fusiform ; ligula concave *M. mandibularis* sp. nov.
17. Cardo anteriorly with an elongate spoon-shaped, shallow excavation *M. himalayaensis* sp. nov.
 — Cardo without such excavation 18
18. Fore tarsal segments (I-IV) strongly transverse *M. brevetarsalis* Kaszab
 — Fore tarsal segments (I-IV) less transverse or elongate 19
19. Aedeagus strongly narrowed apically ... 20
 — Aedeagus wider apically 21
20. Antennae strongly clubbed apically ; parameres moderately elongate, convex dorsally in the middle and parallel apically *M. cichorii* (Linnaeus)
 — Antennae poorly clubbed apically ; parameres fairly elongate, concave dorsally in the middle and divergent apically *M. gonostylus* Saha
21. Apical antennal segment conical ... 22
 — Apical antennal segment fusiform ... 24
22. Body shiny ; dorsal hook on aedeagus elongate and raised a little above the apex *M. ajantaensis* sp. nov.
 — Body opaque ; dorsal hook on aedeagus less elongate and not raised above the apex 23
23. Pronotum elongate ; aedeagus with closely placed ventral hooks *M. pardoii* Saha
 — Pronotum subrounded ; aedeagus with ventral hooks placed apart *M. horai* Saha
24. Cardo with a elevated ridge anteriorly *M. phalerata* (Pallas)
 — Cardo without such ridge 25
25. Larger in size (16-21 mm.) ; highly raised dorsal hook of aedeagus *M. goaensis* sp. nov.
 — Smaller in size (10-11 mm.) ; dorsal hook perpendicularly placed on aedeagus *M. solanensis* sp. nov.

37. *Mylabris ajantaensis* sp. nov.

Male : Body small, strongly punctured, shiny, densely hairy, length 15-16 mm.

Head : Antennae with conical apical segment extending beyond the end of pronotum.

Elytra : Each black basally with two yellowish spots, a middle transverse black band and completely black apically, and the rest of it yellowish with strongly shiny greyish hairs.



Figs. (55-56) *Mylabris ajantaensis* sp. nov., ♂, 55. Tegmen ; 56. Aedeagus.
Figs. (57) *Mylabris belli* Borchmann, ♂, 57. Elytron.

Ventral side : Segment II of labial palpi strongly swollen, with long hairs, apical segment smaller and narrower than segment II ; cardo concave and divided anteriorly ; last visible sternite with round emargination ; anterior legs with greyish hairs inwardly.

Genitalia (Fig. 55 & 56) : Basal piece elongate ; parameres short and more or less straight ; aedeagus fairly wide apically, dorsal hook raised a little above the apex, ventral hooks flattened and acute apically.

Female : Segment II of labial palpi less swollen, cardo without any cavity anteriorly, apical visible sternite entire.

Holotype : ♂, INDIA : Andhra Pradesh, Nagarjunkunda Dam, Raya Varam, 20. x. 1963 (*B. Nath*).

Paratypes : (1 ♂, 2 ♀♀) with the same data as for the holotype ; 1 ♀ Andhra Pradesh, Nagarjunkunda dam, Nidigal, 22. x. 1963 (*B. Nath*) ; (7 ♀♀, 3 ♂♂), Maharashtra, Aurangabad, Ajanta caves, 15. ix. 1964 (*R. N. Chopra*) ; 2 ♀♀, Gujarat, Sasangir, 10. ix. 1969 (*T. G. Vazirani & G. N. Saha*).

Remarks : The new species seems near to both *M. phalerata* (Pallas 1782) and *M. cichorii* (Linn. 1758). It differs from the former by smaller size, conical apical antennal segment, strongly shiny greyish hairs on yellowish elytral areas, differently divided cardo, more well developed segment II of labial palpus and genitalic characters and from the latter by strongly shiny greyish pubescence on yellowish areas of elytra, divided cardo, more well developed segment II of labial palpus, wider aedeagus and parameres.

38. *Mylabris balteata* (Pallas)

Meloe balteata Pallas, 1782, *Icones Insectorum* Ross. Sibir : 88.

Meloe bicolor Thunberg, 1791, *Diss. nov. Ins. spec.*, 6 : 111

Mylabris punctum Fabricius, 1792, *Ent. Syst.*, 11 : 89.

Mylabris balteata : Marseul, 1872, *Mem. Soc. Liege.* : 474 ; Borchmann, 1917, *Junk's Col. Cat.*, 17 (69) : 26.

Mylabris (Sphenabris) balteata : Kuzin, 1954, *Trudi Ent. Obs.*, 44 : 362.

Locality records and specimens examined

INDIA : Andhra Pradesh : Cuddapah dist, Kodar Ca. 182 m., 15-18. vii. 1929, 2 ex. ; Vempali, 5. viii. 1929, 4 ex. (*H. S. Pruthi*) ; Tamil Nadu (Madras) : Rameswaram, iii. 1901, 1 ex. (*E. E. Grean*) ; Tuticorin, Pearl Bank Fisheries, 2. ii. 1926, 11 ex. (*R. B. S. Sewell*) ; Salem Town, 16. vi. 1929, 1 ex. ; Salem dist., Harur, 576 m., 17. vi. 1929, 1 ex. ; Kambalai, 456 m., 10 miles S. E of Harur, foot of Chitteri Hills, 18. vi. 1929, 1 ex. ; Kattur, 642 m., Yelagiri Hills, 1-10. vii. 1929, 1 ex. ; Palni, foot of Palni Hills, 6-8. vii. 1929, 7 ex. ; Bapatla, 24. ii. 1958, 1 ex. ; Host, *Hibiscus canalinus* (*K. V. L. N.*) ; Tirunelveli, ii. 1969, 1 ex. (*O. B. Chhotani*) ; Pamben, 2 ex., feeding on leaves of *Spinifex squarrosa* (*N. Annandale*).

Description

Male Elongate - oblong, shiny black, with small black erect hairs, length 7-15 mm.

Head Transverse, shiny, densely punctured with hairs ; antennae long, segment I elongate, segment II longitudinal, segments III-V slightly wider apically, segments VI-VII slightly serrated, segments VIII-X roundish, segment XI elongate, fusiform, tapering from the middle towards apex.

Pronotum With a deep longitudinal impression in the middle.

Scutellum Semicircular with dense fine small hairs.

Elytra Straight laterally, wider apically ; elytral base black from the humeral angle upto the suture below the scutellum ; middle transverse black band widest but narrower near the suture and slightly sinuate posteriorly ; apical black part concave in front ; a small black spot before the middle black band on each elytron ; intermediate yellow parts with very scanty pubescence.

Ventral side : Moderately pubescent, shiny black ; mentum concave ; mesosternum without any transverse carina anteriorly and posteriorly with setiferous punctures on flat surface ; metasternum with a pair of large distinct yellowish patch laterally ; apical visible sternite with a deep triangular emargination ; tarsal pads cylindrical and narrowed, with dense hairs.

Genitalia Basal piece strongly wide and convex dorsally ; parameres strongly thin towards apex ; aedeagus fairly curved ventrally and strongly narrowed apically with three minute hooks.

Distribution INDIA and SRILANKA.

New Records : Andhra Pradesh and Tamil Nadu states in India. No specific localities from India mentioned in earlier works.

Remarks : The species is confined to two states of southern India, *ie.* Andhra Pradesh and Tamil Nadu. No marked variation is observed among the population of these two areas. The shape and size of the antennal segments II, VI, and male genital structures are the most diagnostic characters which easily separate it from its allied species *thunbergi*. Kuzin (1954) erected a new subgenus *Sphenabris* which had been established on the characters of *balteata*.

39. Mylabris batesi Marseul

Mylabris batesi Marseul, 1872. *Mem. Soc. Hiege.* : 455 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** : (69) : 26.

Locality records and specimens examined

INDIA : Karnataka : 3 ex. Bangalore, 28. viii, 1916, ; Andhra Pradesh ; Cuddapah dist., Gazulapalli F. B., foot of Nallamallai Hills, 10-12. viii. 1929, 3 ex. ; Forest around Rekalakunta Ca. 304 m., Lankamalai Hills, 7-9. viii. 1929, 1 ex. (*H. S. Pruthi*) ; Nalgonda dist., Nagarjun sagar, 1962, 2 ex. (*B. Nath*).

Description

Male : Small, oblong, sub-parallel, convex, shiny black, length 9-16 mm.

Head : Roughly triangular and almost straight posteriorly, finely punctate with some black and a few white hairs; antennae short and slender, segment I longest and moderately swollen, segments II-V small and narrow, segments VI-X roundish and fairly swollen, segments VII-X more or less of equal length and shape, not forming a club, segment XI conical and blunt apically.

Pronotum : Oblong, fairly wide posteriorly; with brown and silky white long hairs; posterior margin moderately raised.

Scutellum : Elongate, oblong, with close hairs.

Elytra : Colour pattern similar to that of *cichorii* with the following differences: the upper basal yellow spot smaller and rectangular; yellow areas narrower; black bands wider; the bands moderately sinuate, with a few small silky white hairs at the apex.

Ventral side : Moderately pubescent, with some silky white hairs sparsely distributed; apical segments of maxillary and labial palpi narrowed and elongate; anteriorly in male, the transverse mesosternal carina very highly raised in the middle and in female moderately raised; fore and midtarsal segments wider apically with well developed pads.

Genitalia : Basal piece moderately large; parameres strongly elongate and narrowed apically; aedeagus moderately massive, with two very closely placed ventral hooks at the apex and one small dorsal hook.

Distribution : INDIA.

New Records : INDIA; Karnataka, Andhra Pradesh states. No specific localities from India mentioned in earlier contributions.

Remarks The distribution of the species is found in two states of South India, namely, Karnataka and Andhra Pradesh. In some smaller examples from Andhra Pradesh the middle elytral black transverse bands are wider and confluent with black base by fine, black, longitudinal lines.

40. *Mylabris belli* Borchmann

Mylabris belli Borchmann, 1940, *Mitt. munchn. ent. Ges.* **30** : 616-617

Locality records and specimens examined

Cotypes : PAKISTAN : Karachi 1 ♂ & 1 ♀ (*T. R. Bell*) deposited in the British Museum (Natural History), London.

Description

Male : Body small, mostly black except light brown antennae, legs and yellow elytra, strongly shiny, length 10-11 mm.

Head : Finely punctate and hairy, fairly flat dorsally and wide posteriorly; labrum small; antennae small, fairly elevated, segment

I-II narrowed, fairly blackish brown, segments III-VI strongly shiny and light brown, segments VII-XI opaque, brown, segment XI very swollen and conical; eyes fairly large, convex, blackish and finely granulate.

Pronotum : Fairly punctate and finely hairy, flat and wide posteriorly with poorly elevated basal margin.

Scutellum : Black, fairly wide and round apically.

Elytra (Fig 57) : Finely punctate with deep yellow colour, sparsely brownish hairs; each elytron with two black spots behind humerus, two narrowed curved transverse black bands and a black spot at sutural apex.

Ventral side : With shiny fine whitish hairs; labial and maxillary palpi dark brown and narrowed, segments cylindrical; last visible sternite slightly notched; legs elongated, narrowed; tarsal segments strongly narrowed and cylindrical.

Female : Last visible sternite entire.

Distribution : PAKISTAN : Karachi.

41. *Mylabris brevetarsalis* Kaszab

Mylabris brevetarsalis Kaszab, 1960, *Ann. Hist. Nat. Mus. Nat. Hung.*, 52 : 260-261.

Locality records and specimens examined

Paratypes : With data labels as follows : 1959, 1 ♂, Shaowu-Fukien (500 m.), 1937 (6. 8.), J. Klapperich (with an additional det. label as '*Mylabris phalerata* Pall. det. Dr. Kaszab); 1959, 1 ex., male, Tonkin, Than-Moi, Juni-Juli (H. Fruhstorfer), deposited in the Hungarian Natural History Museum, Budapest.

INDIA : Nagaland : Naga hills, 2 ex. (*Capt. Butler*), Sikkim : 1 ex.

BURMA : Tavoy, 1 ex.

Description

Male : Body small, shiny black, moderately pubescent, length 18-19 mm.

Head : Fairly punctate and pubescent, strongly depressed dorsally; frons and vertex with a few depressions; apical antennal segments forming a distinct club, apical segment fairly conical; eyes strongly large and convex, faintly granulate.

Pronotum : Widest in the middle, strongly punctate, moderately pubescent, depressed dorsally.

Elytra : Colour pattern as in *M. cichorii*.

Ventral side : With a few whitish hairs along with black hairs; mouth parts brownish; ligula strongly developed; mentum strongly

transverse and slightly convex anteriorly ; segments of labial and maxillary palpi moderately elongate ; cardo almost flat ; mesosternum small, convex with anterior transverse carina, apex directed downwards ; metasternum fairly convex with a median longitudinal impunctate narrow line ; last visible sternite with a wide round emargination ; foretarsal segments I-IV strongly transverse with a bunch of greyish setae ventrally.

Female : Not examined.

Distribution : INDIA : Assam, Sikkim ; SOUTH CHINA ; TAIWAN ; BURMA.

New Records : INDIA : Nagaland and Sikkim states ; BURMA.

42. *Mylabris cichorii* (Linnaeus)

Meloe Cichorii Linnaeus, 1757. *Iter Hasselquist*, : 410,

Mylabris cichorii Billberg, 1813, *Mon Mylabr.* : 11.

Mylabris cichorii Marseul, 1872. *Mem. Soc. Liege* : 448 ; Borchmann, 1917, *Junk's Col. Cat.*, 17 (69) : 29.

Mylabris (Euzonabris) cichorii : Kuzin, 1954. *Trudi Ent. Ob.*, 44 : 358.

Locality records and specimens examined

INDIA : Arunachal Pradesh : Kameng div., Salari, alt. 400 M., 22-23. vi. 1961, 32 ex. (*K. C. Jayaram*) ; Dirang Drong road side Camp, alt. 1220 M., 2. viii. 1961, 1 ex. ; Nephra Salani, 3. vii. 1961, 6 ex. ; Nephra Salani, 10. vi. 1961, 3 ex. (*S. Biswas*) ; Nephra, 11 x. 1961, 1 ex. ; Subansiri Div., Dejoo, 183 M., 10. v. 1966, 1 ex. (*A. N. T Joseph*) ; Cherrapunjee, 3. x. 1961, 22 ex. (*R. N. Katiyar*) ; 1-3. x. 1926, 1 ex. (*R. B. S. Sewell*) ; Manipur : 16 miles N. of Imphal on Dimapur Rd., Ca. 1066 m., 2-22. x. 1945, 15 ex. ; Below Modbung near Imphal, Ca. 1066 m., 1. xi. 1945, 6 ex. (*Maj. M. L. Roonwal*) ; Meghalaya : Shillong, Khasi Hills, 15. xi. 1930, 3 ex. (*H. R. Rao*) ; Motinagar, 27. vii. 1961, 6 ex. (*S. N. Prasad*) ; K. & J. Hills, Umshing, 13. viii. 1963, 10 ex. (*M. Rynth*) ; Mauphlong, 22. viii. 1963, 4 ex. (*S. Biswas*) Umphyrna, 25. viii. 1964 3 ex ; 31 x. 1964, 8 ex. (*R. P. Ghosal*) ; Shillong peak, 10. viii. 1967, 2 ex. ; K. & J. Hills, Uviran, 28. vii. 1967, 1 ex. (*R. K. Varshney*) ; West Bengal : Darjeeling dist., E. Himalayas, Munghu, below 1524 m., 1 ex. ; gopaldhara, Rungbong valley, 1 ex. (*W. K. Weff*) ; Kalimpong, 1521 m., vi. 1934, 9 ex. (*S. L. Hora*) ; Bihar : Pusa, 13. xi. 1961, 1 ex. (*R. N. Katiyar*) ; Himachal Pradesh : Simla Hills, Kandaghat, alt. 1004-1400 m., viii. 1925, 3 ex. (*B. Chopra*) ; Solan Bajdet, alt. 1500 m., 1 ix. 1969, 13 ex. (*Chhotani & Arora*).

NEPAL : Kathmandu, Chovar vill., 7 ex. (*R. N. Katiyar*).

Description

Male : Small, elongate, subparallel, little convex shiny, length 13-18 mm.

Head : Transverse, widest in the middle and posteriorly narrowed ; distinctly punctured with long hairs ; surface moderately flat ; labrum faintly notched anteriorly and with long hairs at the middle ; antennae long, scape arched and quite long, with dense hairs, segment II round, segment III elongate, segment IV shorter than V, segments VI-VIII transverse and slightly serrated, segments IX-XI enlarged somewhat round and forming a distinct club, apical segment strongly conical.

Pronotum Punctured, with long hairs, oblong, slightly convex laterally at its middle, with a pair of small depressions in the middle dorsally.

Scutellum : Rectangular, with small hairs.

Elytra : Each black basally with two large yellowish maculae, a middle transverse black band and completely black apically, and the rest yellow with small fine yellow hairs.

Ventral side : With black and silver-white pubescence anteriorly ; cardo slightly convex, without any division anteriorly ; mesosternum raised centrally and declivous posteriorly with long hairs, the anterior transverse carina protruded posteriorly like a flat small tongue with a little depression and pointed at the apex ; the last visible sternite with dense hairs and triangular emargination at apex.

Genitalia : Basal piece elongate, much concave dorsally ; parameres wide but abruptly narrowed and pointed at the apex ; aedeagus strongly narrowed apically with a ventral apical hook and two minute subapical hooks.

Female Antennae more clubbed and slightly shorter, meso-sternal end less pointed, abdomen narrower than that of male ; the last visible sternite entire.

Distribution : INDIA ; NEPAL ; SOUTH CHINA ; THAILAND ; FORMOSA ; VIETNAM ; JAPAN.

New Records : INDIA : Assam, Meghalaya, N. Bengal, Bihar and Himachal Pradesh states. No specific localities from India given in earlier works.

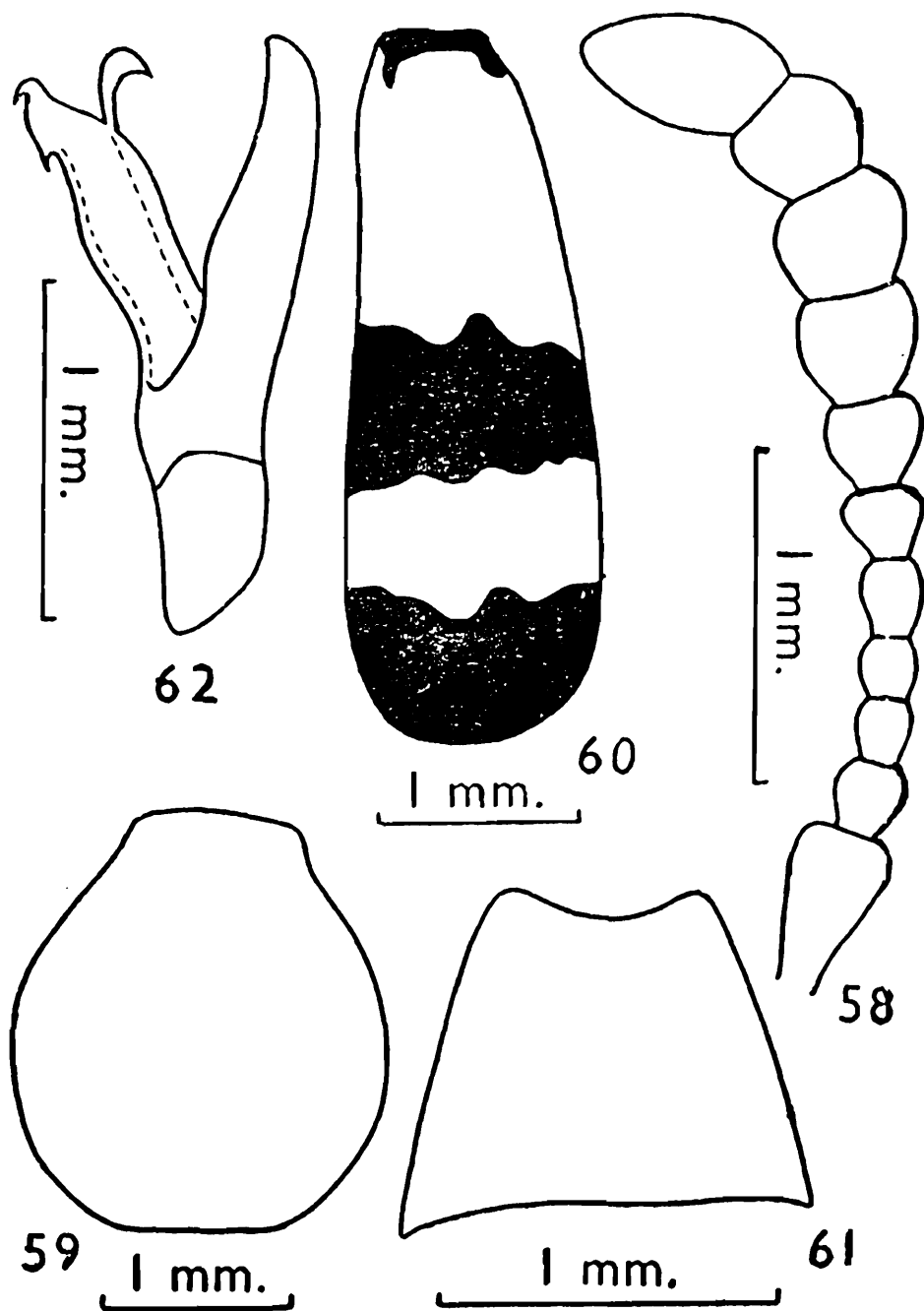
Remarks : Now detailed distribution of the species has been recorded and the variations among the populations of different regions have been observed. It is interesting to note that the distribution of the species is generally confined along the Himalayan region. A notable elytral colour variation, viz, wider black bands and highly reduced basal yellowish spots are observed in the populations from Assam, Meghalaya and Nepal. The male genital organ of the species is one of the most dependable specific character.

43. *Mylabris damohensis* sp. nov.

Male : Body elongate, slightly convex, length 12-12.5 mm. (Holotype 12 mm.).

Head : Transverse, rectangular, shiny black ; labrum strongly transverse ; clypeus fairly convex in the middle ; frons somewhat flat with sparse punctures ; mandibles brown, triangular ; antennae (Fig. 58) small, thick, reaching the end of pronotum, segment III small, elongate, segments IV-VII swollen apically and progressively rounded, segments VIII-X distinctly transverse, segment XI fusiform, all segments brown except scape which is shiny black ; eyes large, fairly convex, finely granulate, slightly sinuate.

Pronotum (Fig. 59) Brownish, shiny, finely and sparsely punctate and hairy.



Figs. (58-62) *Mylabris damohensis* sp. nov. ♂, 58. Antenna ; 59. Pronotum ; 60. Elytron ; 61. Last visible sternite ; 62, Genitalia.

Elytra : As in figure 60.

Ventral side : With sparse silky white hairs ; mentum testaceous anteriorly but black posteriorly and median rectangular area concave ; mesosternum more or less flat, with an elevated keel along anterior margin ; last visible sternite (Fig. 61) emarginated triangularly ; legs brown ; tarsal segments of the first two legs with well developed pads.

Genitalia (Fig. 62) : Basal piece moderately elongate ; parameres strongly thick and short, blunt and slightly bent at apex bearing a pair of sulci ; aedeagus short, robust, mostly cylindrical with an elongate dorsal hook and two minute ventral hooks.

Holotype : ♂, INDIA, Madhya Pradesh, Damoh, 30. vi. 1962 (R. S. Gokulpure).

Paratypes : 1 ♂, with the same data as for the holotype ; 1 ♂, Madhya Pradesh, Jabalpur, 5. vi. 1967 (V. S. Durve) ; 3 ex. Uttar Pradesh, Dehra Dun, 13. v. 1913, on grass.

Remarks : This species comes near to *M. balteata* (Pallas 1782) but it differs from it in having less hairy, thick apical antennal segment, three black spots on each elytron, thickly developed tegmen and aedeagus.

44. *Mylabris dohrni* Marseul

Mylabris dohrni Marseul, Mem. Soc. Liege. : 506 ; Borchmann, 1917, Junk's Col. Cat., 17 (69) : 33.

Locality records and specimens examined

INDIA : Bihar : Sahibganj, 6. x. 1916, 2 ex.

PAKISTAN : Murree Sub-divn., country round about Gharial, ca. 1822 m., 19. ix. 1928, 3. ex. (H. S. Pruthi).

Description

Male : Body moderately elongate, slightly wider posteriorly, with yellow shiny hairs, length 10-11 mm.

Head : Rounded posteriorly with closely placed setiferous fine punctures ; labrum testaceous, obcordate, anteriorly more densely punctured with long hairs ; clypeus anteriorly impunctate and testaceous, posteriorly black with setiferous punctures ; antennae long, testaceous, basal segments narrowed, distal ones swollen and distinctly forming a club, apical one conical ; mandibles testaceous ; eyes very large.

Pronotum : Wider with uniform width posteriorly, slightly convex dorsally with yellowish dense long hairs.

Scutellum : Flat, posteriorly narrower and end bluntly, finely punctate with long hairs.

Elytra : Finely punctate with blackish and yellowish pubescence ; each elytron with a black semicircular marking near base extending from the humeral angle upto suture below the scutellum ; next to it each elytron with three oblique, strongly sinuated transverse black bands, the first and last ones not touching the margins and the latter distinctly 'S' shaped ; sutural margin apically with a small oblique black patch.

Ventral side : Mouthparts and legs testaceous, other parts black with dense shiny yellow long hairs ; terminal segment of the maxillary and labial palpi flattened at apex ; mentum concave anteriorly ; foretibial spines concave inwardly ; outer midtibial spines swollen, rounded and truncated apically, the inner one ends sharply ; tarsal segments cylindrical with weak pads.

Genitalia : Basal piece elongate oblong ; parameres narrowed apically and pointed ; aedeagus with two small ventral hooks placed widely apart and the fairly wide apex with a small, sharp dorsal hook.

Distribution : INDIA ; PAKISTAN.

Remarks : The examples from Pakistan are smaller. It is found in one example from Sahibganj that the basal semicircular black marking on the elytra is joined with the first transverse black band along with the humeral region. The examples from the later place represented in the collection of Zoological Survey of India, had been determined by Wellman.

45. *Mylabris goaensis* sp. nov.

Male : Body moderately large, deeply punctate, densely hairy, moderately shiny ; length 16-21 mm.

Head : Strongly punctured with long hairs ; eyes coarsely granulate ; antennae ; (Fig. 63) elongate, segments V-VII serrate, segments VIII-X cup-shaped apically, segment XI fusiform.

Elytra (Fig. 64) : Each black basally with two yellowish spots, a middle transverse black band and completely black apically, and the rest of it yellowish.

Ventral side : Mesosternum concave apically, with flat transverse carina anteriorly ; metasternum with emargination at apex ; foretibiae with greyish hairs inwardly ; both hindtibial spurs wide and concave inwardly ; last visible sternite (Fig. 67) with long erect hairs and with shallow, round emargination apically.

Genitalia : (Fig. 65 & 66) : Basal piece round and concave dorsally at base ; parameres strongly elongate ; aedeagus flattened apically with two finely pointed ventral hooks and a highly raised dorsal hook.

Female : Apical antennal segment conical ; apical visible sternite entire.

Holotype : ♂ INDIA : Goa, Dudh Sagar, 27. xi. 1970 (T.D.Soota).

Paratypes : 13 ♂ ♂ , 9 ♀ ♀ , with the same data as for the holotype.

Remarks : It is near to *M. phalerata* (Pallas) but it differs in having cardo without anterior division and punctures, foretibiae with greyish pubescence inwardly, strongly elongate parameres and highly raised dorsal hook of aedeagus.

46. *Mylabris gonostylus* Saha

Mylabris gonostylus Saha 1972. *Oriental insects*, 6 (3) : 275-277.

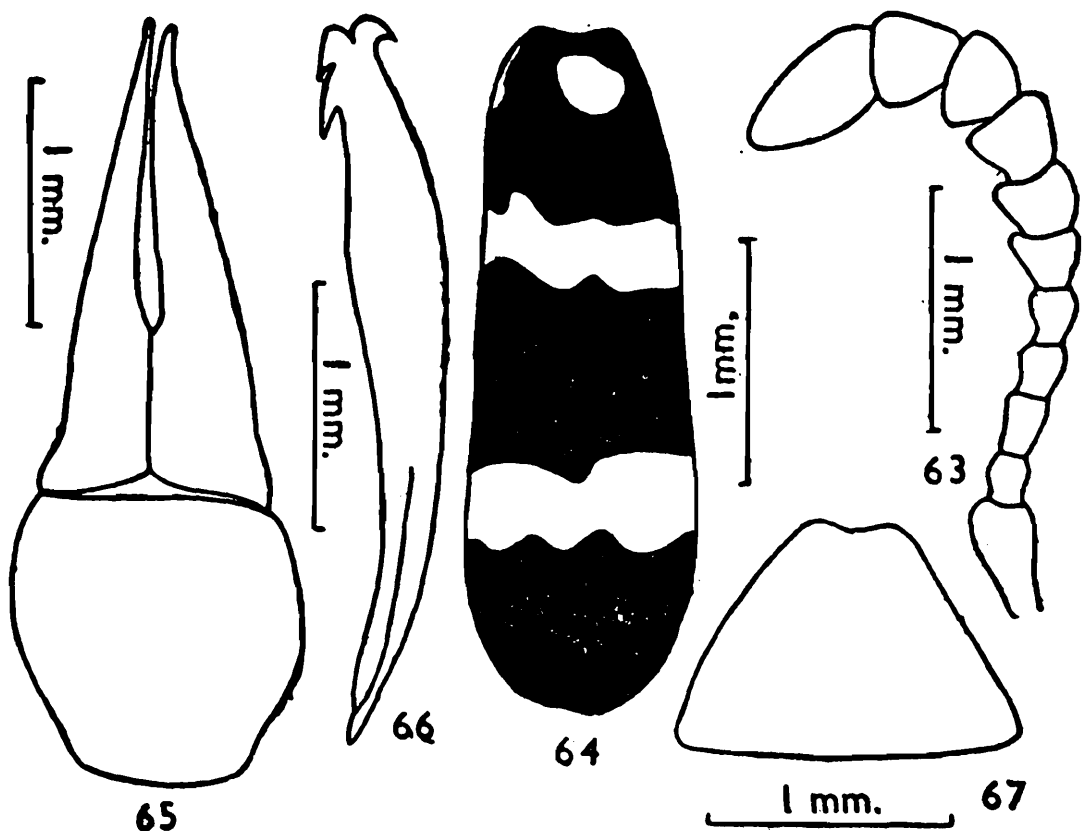
Locality records and specimens examined

Holotype : ♂ INDIA : Rajasthan, x. 1941 (B. N. Chopra and M. L. Roonwal). **Paratypes** : 2 ♀ ♀ , 1 ♂ , with the same date as for the holotype.

Description

Male : Body elongate-oblong, black ; length 17-18 mm.

Head : With erect hairs, round posteriorly ; labrum fairly elongate, wider anteriorly, emarginated in front with brownish hairs and long black hairs dorsally ; clypeus fairly declivous



Figs. (63-67) *Mylabris goaensis* sp. nov., ♂ , 53. Antenna, 64. Elytron 65. Tegmen ; 66. Aedeagus ; 67. Last visible sternite.

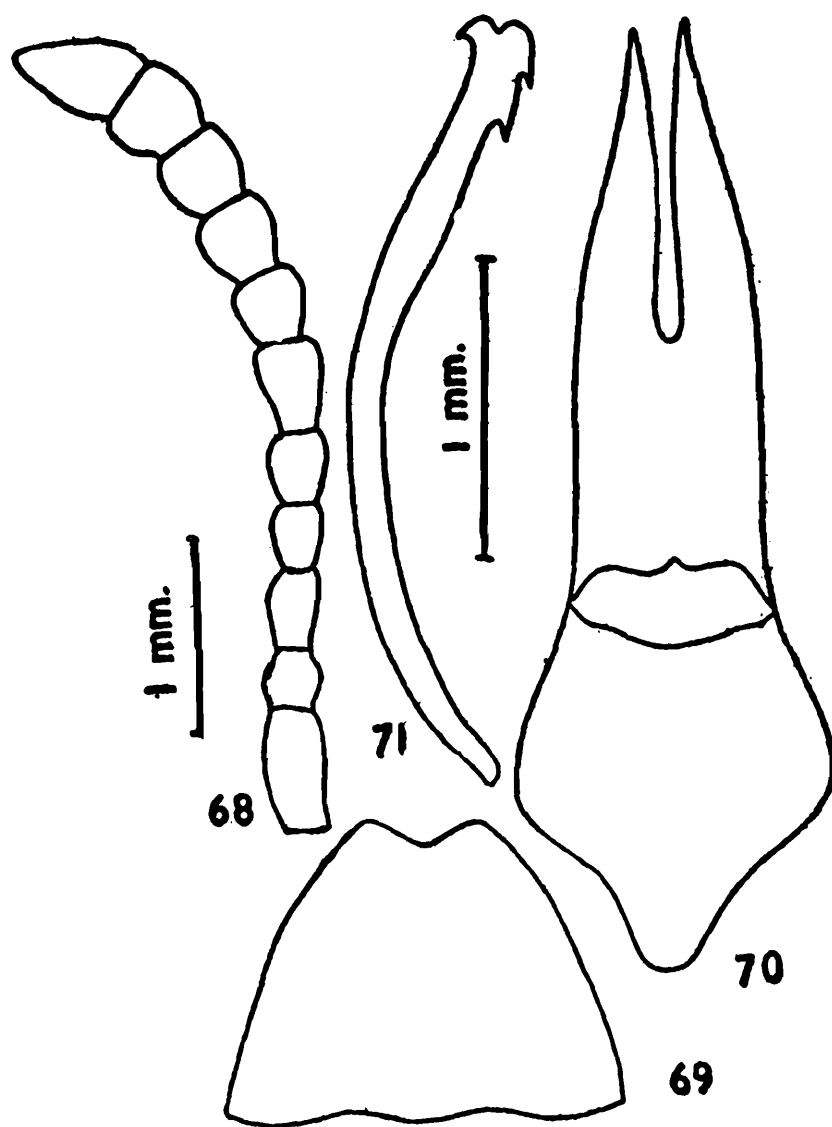
anteriorly; frons somewhat flat; antennae (Fig. 68) elongate, segments I-IV black, the rest brown, segment II slightly elongate, segment IV swollen and smaller than III, segments V-IX progressively swollen apically, segment XI fusiform with blunt apex.

Pronotum Elongate, moderately convex, thickly punctured with long hairs and a faint longitudinal median line.

Scutellum : Round apically with black hairs.

Elytra Each black basally with two yellow maculae, and with a middle black transverse band and completely black apically, the rest yellow.

Ventral side With long black hairs; mentum deeply brown, impunctate, moderately depressed anteriorly; ligula elongate, moderately convex; segment II of labial palpi highly elongate and wider apically; segment II-IV of maxillary palpi fairly elongate and wider apically; mesosternum highly convex medially, margined laterally, with a transverse semicircular carina anteriorly; last visible sternite (Fig. 69) deeply brown apically, impunctate, shiny with triangular emargination; tibial spines elongate and pointed apically;



Figs. (68-71) *Mylabris gonostylus* Saha, ♂, 68. Antenna; 69. Last visible sternite; 70. Tegmen; 71. Aedeagus.

tarsal segments elongate, cylindrical with long hairs, appendages smaller than claws.

Genitalia (Fig. 70 & 71) : Basal piece strongly narrowed at base, widest subposteriorly, convex dorsally ; parameres elongate, strongly concave dorsally in the middle, pointed and divergent apically ; aedeagus (Fig. d) curved, narrowed, moderately wide apex with three small hooks.

Female : Apical visible sternite without emargination.

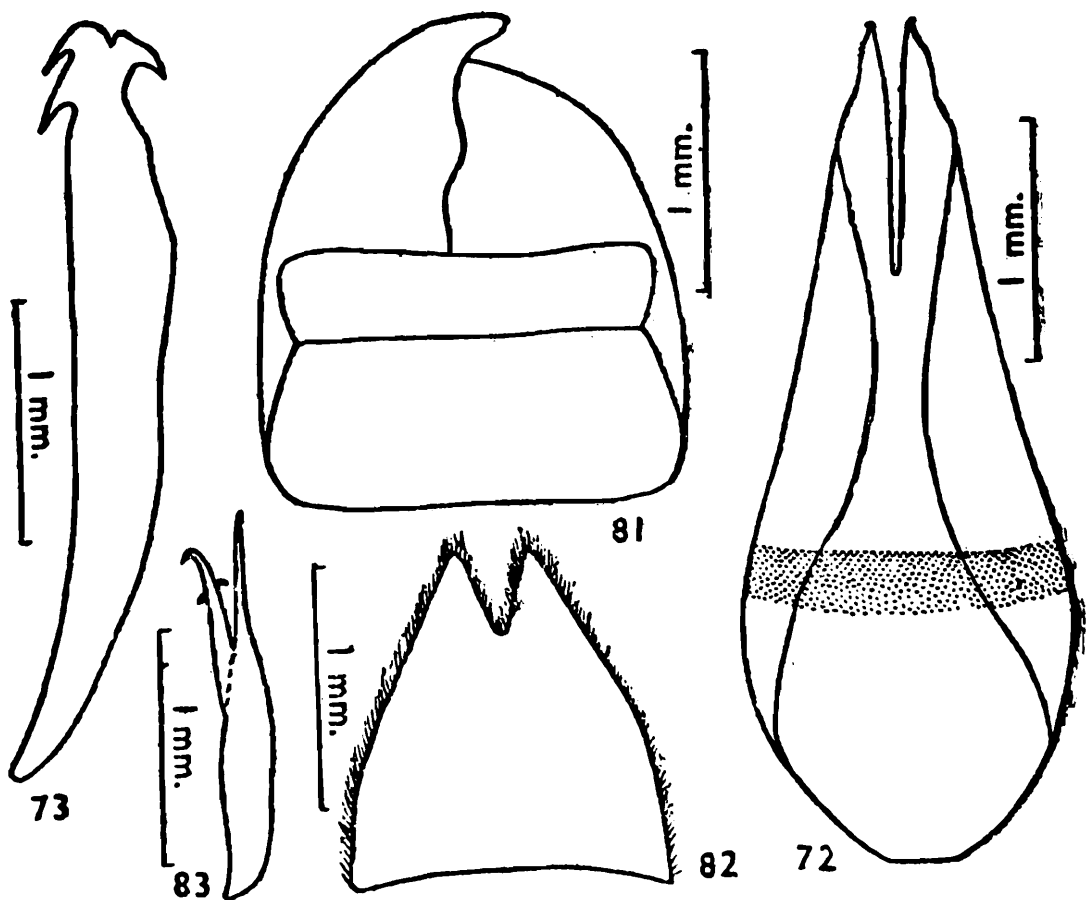
Distribution INDIA (Rajasthan).

Remarks : This species is allied to *M. pardoii* Saha but it is distinguishable from it by the presence of black and dark brown antennal segments, fusiform apical antennal segment, more thickly punctured and densely hairy pronotum, narrower basal piece, more elongate, concave, pointed and divergent parameres.

47. *Mylabris himalayaensis* sp. nov.

Male : Large, deeply punctured, with long dense hairs ; length 25-32 mm.

Head : Labrum strongly transverse, poorly emarginated anteriorly ; clypeus declivous anteriorly and truncated at apex ; frons fairly depressed centrally ; mandibles short ; apical antennal



Figs. (72-73) *Mylabris himalayaensis* sp. nov. ♂, 72. Tegmen ; 73. Aedeagus ;
 Fig. (81) *Mylabris mandibularis* sp. nov. ♂, Mandibles & labrum
 Figs. (82-83) *Mylabris nathi* sp. nov. ♂, 82. Last visible sternite ; 83. Genitalia.

segment elongate, pointed and slightly narrower than the preceding one.

Pronotum : Strongly wide and with two dorsal depressions posteriorly.

Elytra : Each black basally with two yellowish maculae, a wide transverse black band in the middle and completely black apically, and the rest of it yellowish.

Ventral side Ligula concave medially ; segment II of labial palpi abruptly swollen with rounded apex, segment III very small and narrow ; segment II of maxillary palpi elongate with rounded apex ; cardo with a shallow elongate spoon-like excavation anteriorly ; gena with a few long golden hairs ; prosternum fairly elongate ; mesosternum strongly convex centrally and acuminate apically with a few golden hairs at the centre ; metasternum with dense, long, erect hairs and a longitudinal median impressed line ; emargination on last visible sternite triangular ; fore legs with a few golden hairs inwardly.

Genitalia : (Figs. 72 & 73) : Tegmen short and wide ; aedeagus also short and flattened apically, with strongly wide dorsal hook.

Holotype : ♂, INDIA : Assam, N. Lakhimpur, Officers' Mess., 3.x.1966 (*S. K. Tandon*).

Paratypes : 2 ex. (females), with the same data as for the holotype ; Arunachal, Kameng Div., 20 ex., Salari, 4000 M. 23.vi.1961 ; 1 ex., Bairab Kunda, 20.v.1961 (*K. C. Jayaram*) ; 2 ex., Nephra Salari, 1220 M., 3.vii.1961 ; 1 ex., Dirong Dzong, Milan Khang Valley, 2135 M., 4.viii.1961 (*S. Biswas*) ; 1 ex., Subansiri Div., Tamen, 20.v.1966, 457 M. (*A. N. T Joseph*) ; Uttar Pradesh, 7 ex., Ghat, Garhwal dist., 1156 m., 17.viii.1958 (*B. S. Lamba*) ; 1 ex., Almorah dist., Yacham, 2375., 10.ix.1958 (*B. S. Lamba*) ; 2 ex., Saharanpur dist. Rajaji Sanctuary, 26.iv.1962 (*T. D. Soota*) ; 1 ex., Haryana, Karnal, Baras, Kaithal Rd., 18.ix.1963 (*R. K. Bhatnagar*) ; 1 ex., Panjab, Hoshiarpur, Old Nangal, 23.ix.1962 (*R. K. Bhatnagar*) ; 4 ex., Jammu & Kashmir, Udhampur, Shalimar Park and its surroundings, Katrach, 13-14.viii.1965 (*T. D. Soota*) ; Jammu, 1 ex., Dhanodi Nala, 10.ix.1964 ; Jammu ; 2 ex., Tawi, River Bank, 16.x.1964 ; 3 ex., on bank of a branch of Tawi river, 24.x.1964 (*Raj Tilak*).

Remarks This new species is allied to *M. phalerata* (Pallas, 1782) and can be distinguished by a shallow elongate spoon-like excavation on cardo and long golden hairs on the ventral side. Its distribution is generally confined to higher altitudes of India.

48. *Mylabris horai* Saha

Mylabris horai Saha, 1972, *Proc. zool. Soc.*, **25** : 20-22.

Locality records and specimens examined

Holotype ♂, PAKISTAN : Salt Range, Choa, 15-20.x.1930 (*S. L. Hora & H. S. Pruthi*). *Paratypes* : 90 ex., with the same

data as for the holotype ; 23 ex., Abootabad dist., Chhangla Gali, 2568 m., 3.x.1928 ; 3 ex., Muree Subdivn., Kachhut, 1341 m., 7.ix.1928 ; 2 ex., Ban, 1611 m., 9.ix.1928 (H. S. Pruthi).

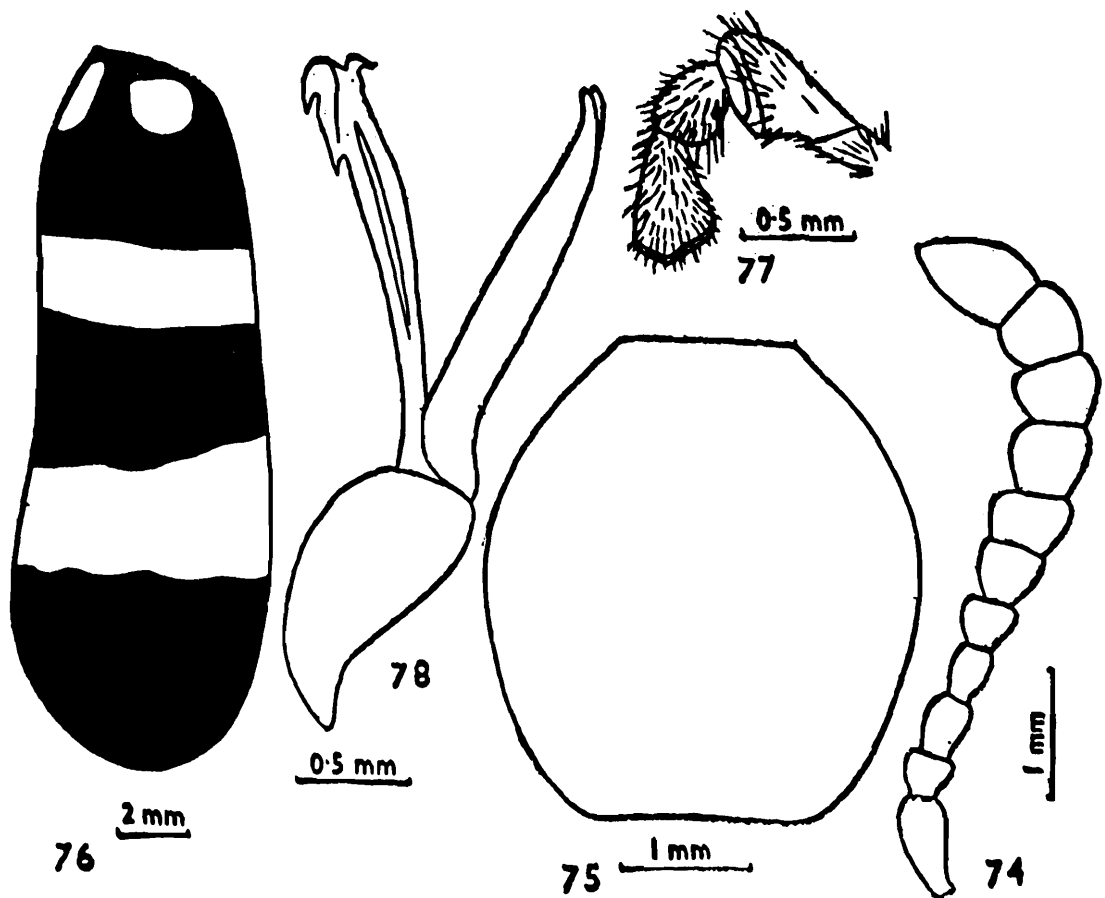
Description

Male : Body opaque and mostly with long black hairs ; length 20-22 mm.

Head Antennae (Fig. 74) moderately thick, two basal segments with erect setae, the remaining nine segments brownish with very fine pubescence, scape swollen apically, segment II moderately globular, segment III fairly elongate, segments IV-X rounded apically, segment XI short, compressed, conical, pointed at apex.

Pronotum (Fig. 75) : Subrounded, widest medially, convex apically with a distinct rounded depression in the middle dorsally.

Elytra : (Fig. 76) : With closer and longer hairs anteriorly, median transverse black band narrowest and reduced in width towards suture, a pair of distinct, fine, transverse elevated lines along both margins of anterior yellow parts.



Figs. *Mylabris horai* Saha, ♂, 74. Antenna : 75. Pronotum : 76. Elytron : 77. Maxillary palpus : 78. Genitalia.

Ventral side With dense, long hairs ; segments I-II of labial palpi with long setae, segment II strongly elongate and globular with big oval truncated apex, segment III small, somewhat cylindrical

without setae, cardo with a longitudinal ridge anteriorly and a few minute punctures externally; segment I-III of maxillary palpus (Fig. 77) with setae, segment II elongate, wider and round apically, segment IV flattened, wider at apex; gena with very long, brownish and close hairs; mesosternum highly raised medially with a small brownish, convex tongue-like carina; foretibiae with longitudinal rows of greyish hairs; sixth visible abdominal sternite with superficial round emargination at apex.

Genitalia (Fig. 78): Aedeagus with two apical sharply bent, fairly apart ventral hooks and a recurved dorsal hook,

Female Cardo without any ridge and punctures anteriorly; apical sternite entire; antennal segments IV-VI narrower; mentum smaller; segment II of labial palpus less swollen than that of male.

Distribution PAKISTAN.

Remarks This species is closely allied to *M. phalerata* (Pallas) but can be easily distinguished by its opaque body, conical apical antennal segment, more swollen II segment of labial palpus, superficial round emargination on the sixth sternite, convex mesosternal carina and aedeagus.

49. *Mylabris kapuri* Saha

Mylabris kapuri Saha, 1972, *Oriental Insects*, 6 (3) : 278-279.

Description

Holotype ♀, INDIA : Rajasthan, Jodhpur, Salawasvell, 17. vii 1961 (Z. S. I. Party). *Paratype* ♀, with the same data as for the holotype.

Female. Body elongate-oblong, black with white pubescence, length 9.5-10.5 mm. (Holotype 10.5 mm.).

Head Labrum strongly transverse, convex, sinuate slightly in front with setiferous punctures; clypeus declivous, brownish, impunctate anteriorly; frons and vertex with white pubescence, frons with a longitudinal slightly elevated ridge medially; antennae (Fig. 79) reaching nearly the end of pronotum, scape elongate, black and narrow, segments II-IV small, narrow and light brown, segment III slightly longer than II, segments IV-VII wider apically, segments VIII-X roundish, apical segment elongate, conical; eyes small, slightly convex.

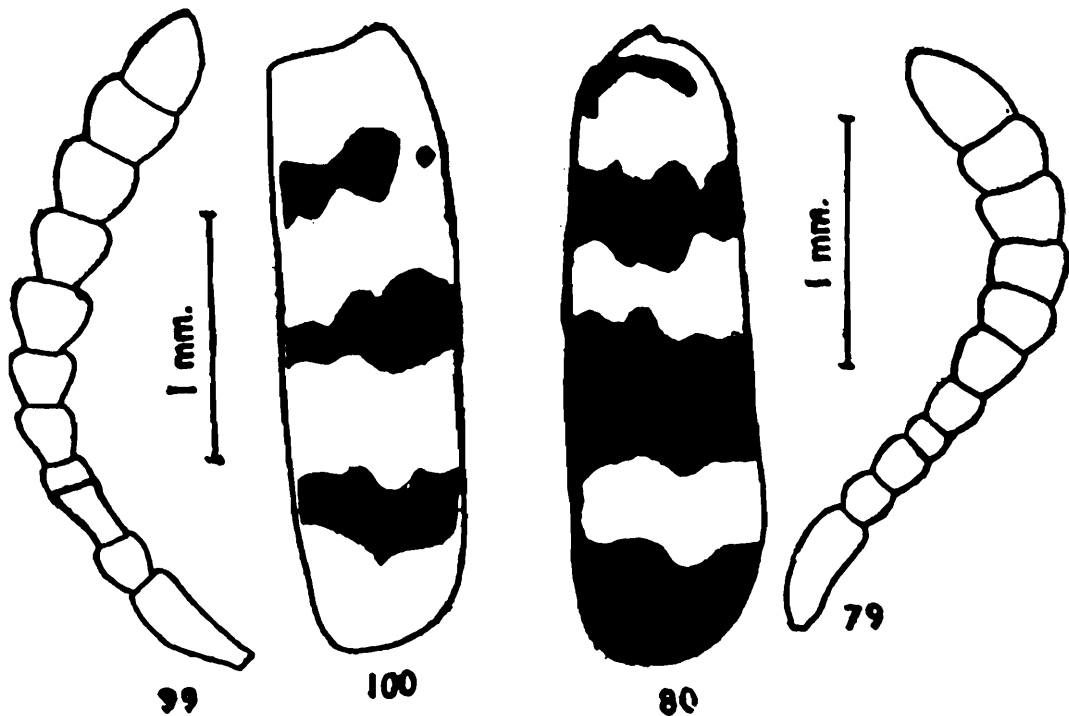
Pronotum : Short, widest medially, with a faint longitudinal median line.

Scutellum Elongate-oblong.

Elytra (Fig: 80) : Parallel, black bands with white pubescence, yellow portion with sparse brownish pubescence.

Ventral side Mentum widest medially, impressed centrally with

a small depression on each side; segment II of labial palpi elongate and fairly wider at the apex, apical segment elongate and narrow; segment II of maxillary palpi wider at the apex, apical segment dumbbell shaped and fairly elongate; mesosternal transverse carina triangular, impunctate, moderately convex medially.



Figs. (79-80) *Mylabris kapuri* Saha, ♀, 79. Antenna; 80. Elytron.

Figs. (99-100) *Mylabris rajasthanicus* Saha, ♀, 99. Antenna; 100. Elytron.

Male : Unknown.

Distribution : INDIA (Rajasthan).

Remarks : This species can be easily distinguished from other species of the genus by the presence of white pubescence on elytral black bands, elongate and narrow scape, small and slightly convex eye, elytral colour pattern.

50. *Mylabris macilenta* Marseul

Mylabris macilenta Marseul, 1872, *Mem. Soc. Liege* : 489; Borchmann, 1917, *Junk's Col. Cat.*, 17 (69) : 41.

Locality records and specimens examined

INDIA : Uttar Pradesh : Nainital, v-vi. 1893, 5 ex. ; Kumaun Hills, 1676-2438 m., 1-9. v. 1930, 24 ex. (*H. S. Pruthi*) ; 2 ex., 1967 ; Mussoori, 2138 m., 2 ex. ; Forest area nr. Municipal

garden Mussourii, 5. xi. 1966, 50 ex., (*Asket Singh*); Dehra Dun dist., Motla, alt. 2133-2438 m., 10-16. v. 1956, 6 ex. (*K.K. Tiwari*); Tehri dist., Maikhandi, alt. 914 m., 24. iv. 1958, 3 ex.; Garhwal dist., Khari Pass, alt. 364 m., 10. viii. 1958, 5 ex.; Almora dist., Nail alt. 1524 m., 4. x. 1958, 10 ex. (*B. S. Lamba*). Himachal Pradesh: Simla hills (jungle), Kufri, Ca. 2133 m., ix. 1925, 9 ex., (*B. N. Chopra*); 1927, 1 ex. (*I. M. Puri*); Panjab: Kareii Lake. 3048 m. (hill sides), 1. vi. 1926, 1 ex.; Kalatope hill, Dalhousie, 2. vi. 1927, 2 ex.; Dayan Nund, 2742m., Dalhousie, 10. v. 1927, 1 ex. (*S. L. Hora*); Kashmir: on the way from Chandanwari to Vavjan, May-Aug, 1955, 11 ex. (in spirit);

NEPAL: Karnasa, Dadhkosi valley, ca. 4420 m., ca. 27° 52' N. 86° 45' E., 15. v. 1954, 1 ex. (*B. Biswas*).

PAKISTAN: N. W. F. Prov., Chiniksan stream, a little below Kunisht, Rambhur valley, Chitral, 4. vii. 1929, 1 ex.; Ustui Gol, Rambhur valley, Chitral, 8. vii. 1929, 10 ex. (*B. N. Chopra*).

PAMIR EXP.: Between Karagbul and Chavawny, Gilgit Rd., 546 m., 23. vi. 1895, 12 ex. (*A. W. Alcock*).

Description

Male: Body slender, elongate, shiny black, hairy, length 13 mm.

Head Subtriangular, thickly punctured and hairy, almost flat dorsally; labrum obcordate with close setiferous punctures in the middle; clypeus short, transverse; antennae long and slender, segment I short, and swollen, segment II smallest and round, segment III longer than IV and V which are narrowed and subcylindrical, segments VI to X gradually transverse, segment XI fusiform and pointed at apex.

Pronotum Narrowed, oblong, closely punctured and pubescent.

Scutellum Triangular, rounded apically, punctured with less pubescence.

Elytra Elongate, wider apically, yellow at base, first black band triangular; middle black band strongly sinuate and narrower towards suture; broadly black apically, surface not distinctly punctured, somewhat rugose and sparsely hairy.

Ventral side Moderately pubescent, mesosternum with sharply elevated keel medially, apical visible sternite with a triangular emargination; tibiae very long and slender; tarsal segments long and cylindrical; claws with narrowed, elongate appendages.

Distribution INDIA; PAKISTAN; NEPAL; TIBET; BURMA.

Remarks It is confined to North India and occurs all along the southern slopes of the Himalayas from Kashmir to Burma. The species appears monotypic.

51. *Mylabris mandibularis* sp. nov.

Male: Large, shiny black, moderately hairy, length 24-27 mm.

Head Mandibles (Fig. 81) strongly developed and elongate ; labrum (Fig. 81) very small and transverse ; clypeus truncated and depressed posteriorly ; apical antennal segment fusiform.

Pronotum Widest medially with long erect hairs.

Elytra : Each basally brownish black with two yellowish maculae, a middle wide brownish black band and apically brownish black which is oblique and sinuate and the rest of it yellowish ; apices of the black areas strongly sinuate.

Ventral side : Mentum concave medially ; ligula widest medially and concave ; apical segments of labial and maxillary palpi fairly elongate and wider apically ; mesosternum with flattened transverse carina ; metasternum with a depressed impunctate longitudinal wide line medially ; last visible sternite with round emargination and dense long erect hairs ; fore femora and tibiae with greyish hairs.

Genitalia : Parameres pointed and curved apically ; aedeagus narrowed apically with three hooks.

Holotype : ♂, INDIA : Andhra Pradesh, Nalgonda dist., Lake view N. S. Dam, 22. viii. 1962 (*N. Maligi*).

Paratypes : (4 ♂♂, 1 ♀) with the same data as for the holotype.

Remarks : It is allied to *M. phalerata* (Pallas, 1782) and *M. pustulata* Thunberg, 1791, but it differs from both in having more well developed mandibles, smaller labrum, and concave ligula.

52. *Mylabris nathi* sp. nov.

Male : Body moderately large, shiny black. moderately pubescent, length 19 mm.

Head : Labrum almost glabrous, depressed medially, round laterally with a few punctures ; clypeus less punctate medially, thickly punctate laterally, mandibles blunt apically ; eyes strongly convex ; antennal segment I fairly elongate, segment VII-VII fairly serrated, segment XI obtuse.

Pronotum : Short, compressed and feebly punctate, with a deep median depression dorsally.

Elytra : On each elytron basal black band smallest extending from below the scutellum up to humeral angle ; second transverse black band more sinuate anteriorly. third band wider towards margin, apical black band distinctly bidentate.

Ventral side : Mentum strongly transverse, rounded except anteriorly ; ligula wide with minute punctures ; apical segment of labial palpi widest ; maxillary palpi strongly elongate ; mesosternum without transverse carina, convex at the centre anteriorly, with a row of hairs subapically, blunt apically ; metasternum with a median longitudinal impunctate line ; last visible sternite (Fig. 82) deeply emarginated.

Genitalia (Fig. 83) : Basal piece elongate ; parameres acicular apically ; aedeagus also progressively narrowed at the apex, with three small hooks placed wide apart.

Holotype ♂, INDIA : Andhra Pradesh, Guntur dist., Nagarjunkonda, 5.ix.1962 (*B. Nath*).

Remarks It is very near to *M. orientalis* Marseul but it differs in having less pubescence, strongly elongate maxillary palpi, metasternum with a median longitudinal line, acicular parameres and strongly narrowed aedeagus.

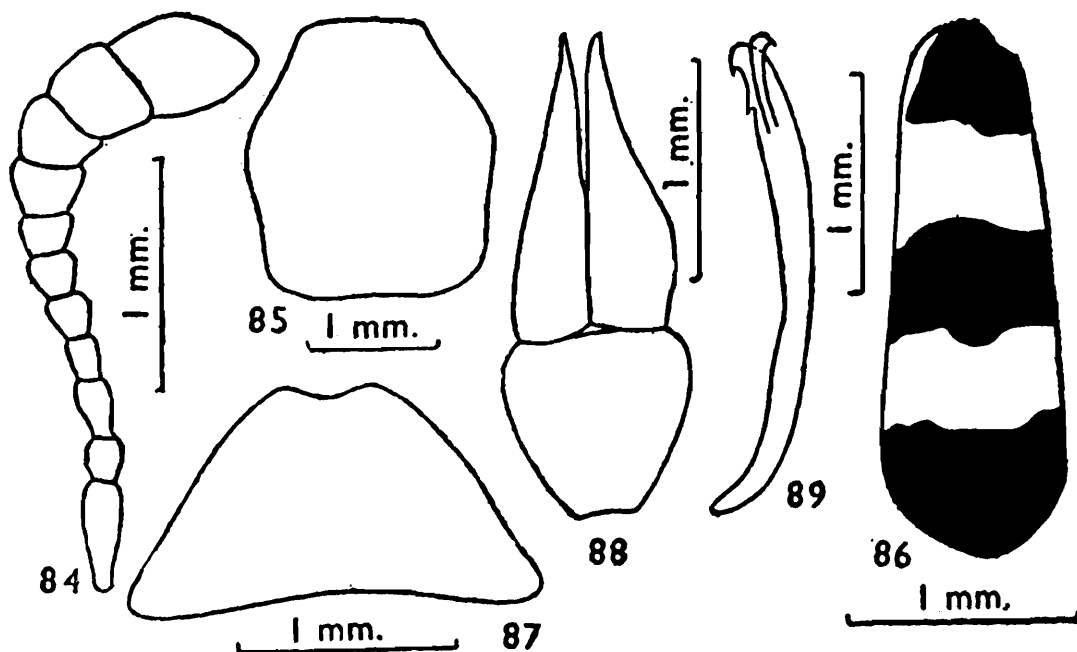
53. *Mylabris nilgiriensis* Borchmann

Mylabris nilgiriensis Borchmann, 1940, *Mitt. munchn. ent. Ges.*, **30** : 606-607.

Locality records and specimens examined

INDIA : Goa : Callam, 29.xi.1970, 7 ex. ; Kordal, 1 ex. (Female), 21.xii.1970 (*T D. Soota*).

Karnataka : N. Kanara, 2 ex., 27.xi.1928 ; Shimoga, Sagar-Shimoga Road near Sagar, 7 ex., 5.xii.1928, *H. S. Rao* coll. ; Kanara dist., Talewadi nr. Castle Rock, 3-10.x.1916, 1 ex. (*S. Kemp*), deposited in the British Museum (Natural History), London.



Figs. (84-89) *Mylabris nilgiriensis* Borchmann, ♂, 84. Antenna 85. Pronotum ; 86. Elytron ; 87. Last visible sternite ; 88. Tegmen ; 89. Aedeagus.

KERALA : State Museum, Trichur, June-August, 1917, 1 ex. (*G. P. Pillai*), deposited in the British Museum (Natural History), London.

Description

Male : Body small, shiny, moderately pubescent, length 11-12 mm.

Head : Strongly punctate ; occiput depressed ; eyes large and strongly convex ; antennae (Fig. 84) reaching near end of pronotum, segment I fairly elongate and straight, segment II round, segment III longer than segments IV and V, segments VI-VII slightly serrated, segments VIII-X progressively swollen and rounded apically, segment XI strongly swollen and conical.

Pronotum : (Fig. 85) : Punctate, hairy, depressed dorsally.

Ventral side : Mentum elevated, curved anteriorly, almost flat medially ; mesosternum rounded apically with slightly elevated small transverse carina and last visible sternite (Fig. 87) with deep round emargination.

Genitalia (Fig. 88 & 89) : Basal piece globular dorsally, parameres elongate and divergent apically ; aedeagus wide apically with an elongate dorsal hook raised above the apex, lower ventral hook very small and placed much apart from the apex.

Distribution INDIA : (Goa, Karnataka and Kerala).

54. *Mylabris orientalis* Marseul

Mylabris orientalis, 1872, Mem. Soc. Liege. : 451 ; Borchmann, 1917, Junk's Col. Cat., **17** (69) : 44.

Mylabris orientalis : Fairmair, 1896. *Ann. Soc. ent. Belg.*, **40** : 50

var. *antefasciata* Pic, 1909. *Echange* **25** : 175 (From Burma).

var. *birmanica* Pic, (From Burma), l. c. : 175.

Locality records and specimens examined

INDIA : Andhra Pradesh : Cuddapah dist. : Vempali, 5.viii.1929, 1 ex. (*H. S. Pruthi*) ; Bapatla, II. 1958, 1 ex. (*K. V. L. N.*) ; Nalgonda dist., Tiger valley, 6. x. 1963, 1 ex. (*S. R. S. Party*) ; Guntur dist., Nagarjunakonda, 3.ix.1963, 1 ex. ; Nagarjuna Hill, 30.ix.1963, 1 ex. (*B. Nath*).

Description

Male : Oblong, moderately wide ; length 19.5-26 mm.

Head : Transverse, almost rectangular ; a shiny impunctate space in the middle of the flat frons ; anterior half of the clypeus impunctate ; antennae short, segment I elongate, arched, segment II roundish, segments III and V equal, a little longer than IV, segments VI-X transverse, gradually wider, roundish apically, segment XI moderately elongate and obtuse apically.

Pronotum : Shiny ; moderately punctate and sparsely hairy ; convex and fairly wide posteriorly ; a longitudinal impunctate line in the middle dorsally ; basal margin elevated.

Scutellum : Elongate, rounded apically ; anteriorly with dense hairs, posteriorly impunctate and glabrous.

Elytra : Base narrowly black from the humeral angle upto sutural margin ; in the middle two strongly sinuate transverse black bands ; apical black area concave anteriorly ; the intermediate portions reddish or yellowish.

Ventral side Moderately pubescent ; cardo almost flat ; maxillary segments strongly elongate ; mentum shiny, fairly transverse, slightly concave ; ligula elongate and wider anteriorly ; apical segments of labial palpi slightly wider apically ; mesosternum shiny, brownish, mostly impunctate and without any transverse carina, slightly convex in the middle anteriorly and blunt apically ; foretarsal segments with dense hairs dorsally and tarsal pads poorly developed.

Genitalia : Basal piece moderately wide ; parameres also wide and elongate ; aedeagus massive, apex slightly convex, ventral hooks small, dorsal hook slightly longer.

Distribution INDIA, BURMA.

New Records : INDIA : Andhra Pradesh. No specific localities from India mentioned in earlier publications.

Remarks Marseul (1872) described the species from India but he did not mention the type locality and depository of types. Dr. Villiers, Deputy Director, Paris Museum informs (through personal communication, 1970), that the single type specimen of the species is present there. The species is less widely distributed and except Andhra Pradesh (South India) from nowhere else it has been reported so far.

55. *Mylabris pardoi* Saha

Mylabris pardoi Saha, 1972, *Oriental Insects*, 6 (3) : 273-275.

Description

Locality records and specimens examined

Holotype ♂, INDIA : Rajasthan, x.1941 (*B. N. Chopra & M. L. Roonwal*). *Paratypes* 13 ♀ ♀, with the same data as for the holotype.

Male : Body sparsely pubescent, opaque ; length 14-17 mm. (Holotype 14 mm.).

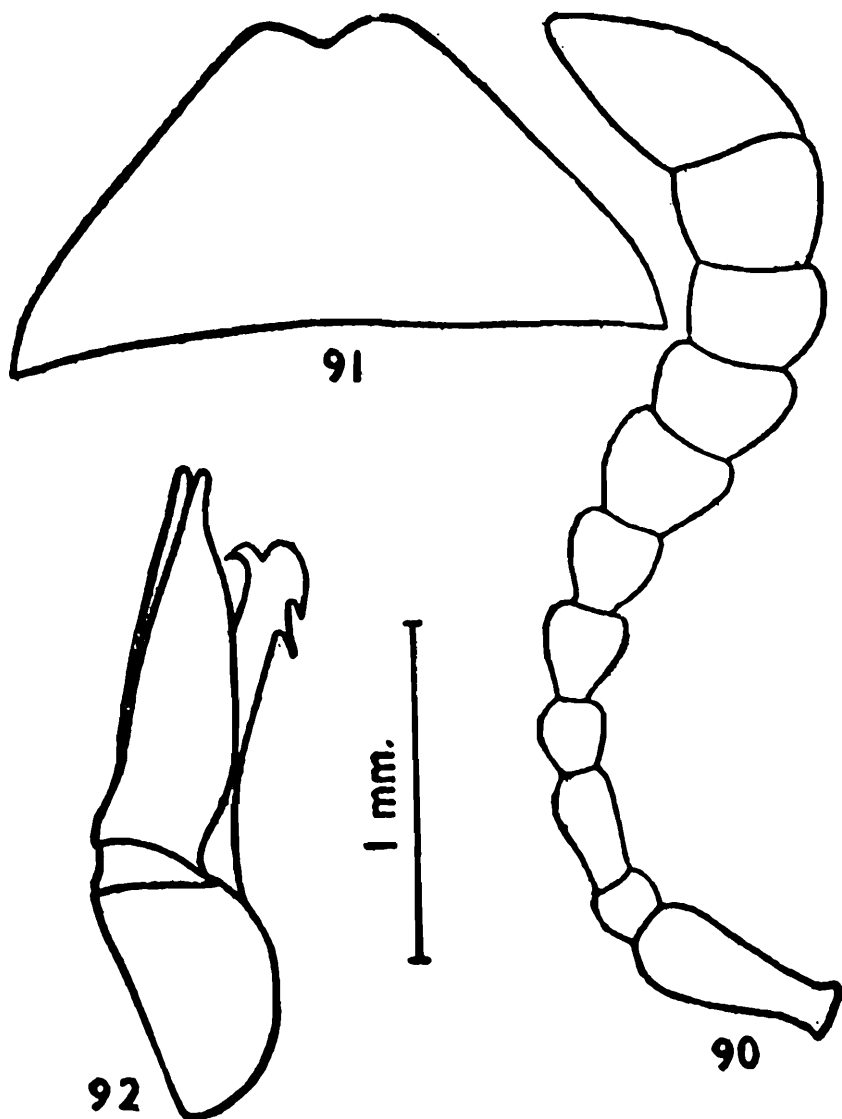
Head : Labrum transverse, frons indistinctly punctate, somewhat depressed with a median longitudinal ridge ; mandibles broad at base, slightly curved at apex ; antennae (Fig. 90) brown, extending beyond the pronotum, segment I elongate and cylindrical, segment III narrower and slightly smaller than I, segments IV-V elongate and slightly swollen, segments VI-IX progressively more transverse apically, segment X strongly enlarged and ring-like, segment XI distinctly conical, apical segments of antennae forming a distinct club.

Pronotum : Elongate, feebly companuliform, indistinctly punctate, glabrous posteriorly.

Scutellum : Elongate, rectangular.

Elytra Base black with two brownish maculae, black band in the middle, and apex black broadly ; intermediate parts brownish which have a few yellow hairs and black bands with brown hairs.

Ventral side Brown, mentum convex medially, with a small round depression on each side ; segment II of labial palpi strongly enlarged with long setae, apical segment smaller and narrower ;



Figs. (90-92) *Mylabris pardoi* Saha, ♂, 90. Antenna ; 91. Last visible sternite ; 92. Genitalia.

cardo with a longitudinal submedial elevated ridge and outer concave rough surface anteriorly ; segments II and IV of maxillary palpi fairly elongate ; mesosternum slightly convex medially, margined laterally, concave apically and with a narrow transverse carina anteriorly ; last visible sternite bilobed (Fig. 91).

Genitalia (Fig. 92) : Basal piece transverse, slightly concave dorsally ; parameres moderately elongate, parallel apically ; aedeagus broad, flattened apically, with two small fine closely situated ventral hooks and a dorsal hook curved semicircularly.

Female Segment II of labial palpi less enlarged and segment III more elongate ; cardo and apical visible sternite without longitudinal elevated ridge and emargination respectively.

Distribution INDIA (Rajasthan).

Remarks This species differs from *Mylabris cichorii* (Linn.) in the possession of opaque surface, less pubescence and indistinct punctures, brown ventral surface, more enlarged segment II of labial palpi, longitudinal elevated ridge on cardo, superficial emargination on the last sternite, and genitalic differences.

56. *Mylabris phalerata* (Pallas)

Meloe phalerata Pallas, 1781, *Icones Insectorum* Ross. Sibir : 78.

Mylabris sidae Fabricius, 1798, *Ent. Syst. Suppl.* : 120.

Mylabris phalerata : Marseul, 1872, *Mem. Soc. Liege* : 446 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 45.

Mylabris (Euzonabris) phalerata : Kuzin, 1954, *Trudi. Ent. Obs.*, **44** : 358.

Locality records and specimens examined

INDIA : West Bengal : Alipore, 24.ix.1959, 1 ex (*P. C. Dhar*) ; Kalyani, 26.vii.1965, 1 ex ; Gobardanga, 18.ix.1965, 3 ex. (*H. Ghosh*) ; Uttarpara, 14.ix.1957, 1 ex. (*Shaukat Ali*) ; Dighara, 15.ii.1965, 1 ex. (*B. C. Saha*) ; Calcutta, 4 ex ; Bihar : Santal Parganas, Sikanpura, 4 xii.1938, 1 ex. (*A. Hafiz*) ; Monghyr, 1 ex. ; Muzzafarpur, 20-22 viii.1949, 1 ex. (*A. P. Kapur*) ; Madhupur, 22.xii.1953, 1 ex. (*A. P. K. & G. M.*) ; Dhanbad, 11.ix.1969, 1 ex. (*Raj Tilak*) ; Orissa : Gopkunda Island, Chilka Lake, 7-15. viii.1907, 1 ex. (*Mus. Collr.*) ; 2.xi.1922, 1 ex. (*R. H. & S. R.*) ; Uttar Pradesh : Banaras, 1945, 1 ex. (*Sohrab Ali*) ; 1944-45, 2 ex. (*M. A. Ghufuran*) ; Lucknow, 16.xi.1907, 1 ex. (*Mus. collr.*) ; Dehra Dun, 1 ex., (*Mus. collr.*) ; Tamil forest block, 18.ix.1964, 1 ex. (*T. D. Soota*) ; Punjab : Hoshiarpur, 8.viii.1962, 1 ex., Hoshiarpur, Old Nangal, 23 viii.1962, 3 ex. (*R. K. Bhatnagar*) ; Shahpur, 1 ex. (*Henderson*) ; Jammu : Dhanodi Nala, 10.ix.1964, 10 ex. ; Tawi, 16.x.1964, 33 ex ; By the side of a branch of river Tawi, 21-24.x. 1964, 63 ex. (*Raj Tilak*), Madhya Pradesh : Raipur, xii.1939, 14 ex. (*H. S. Rao*) ; Gujarat : Kutiyana, x.1949, 1 ex. (*T. G. Vazirani*) ; Anand, 1 ex. (*V. C. Patel*) ; Karnataka : Belgaum dist., neighbourhood of Dhupdal & Gokak, xi.1928, 8 ex. (*B. P. & H. S. R.*) ; Malprabha river, Belgaum Dharwar Road, Khanapur, 21.xi. 1928, 8 ex. (*B. P. & H. S. R.*) ; Shimoga dist., Sagar, 3-4.xii.1928, 2 ex. (*H. S. R.*) ; Honnali Road near Shimoga, 10.xii.1928, 1 ex. (*H. S. Rao*) ; Andhra Pradesh : Forest around Pullala - madngu, 456 m., Palkonda Hills, 3-5.viii.1929, 4 ex. ; Forest between Diguvamelta and railway tunnel, 8 miles from station. Ca. 304-456 m., foot of Nallamalai Hills (E.), 22.viii. 1929, 4 ex. ; Forest around

Diguvamelta, Ca. 272 m., foot of Nallamalla Hills (E.), 19-23 viii. 1929, 2 ex. (*H. S. Pruthi*); Guntur dist., Nagarjunkonda, 5.ix. 1962, 13 ex.; Alleshwaram, 3-4.ix.1963, 7 ex.; Tiger valley, 4.x. 1963, 1 ex.; Nagarjun Hill, 30.ix.1963, 7 ex.; Madhavaram, 13.x. 1963, 1 ex.; Surya pet, 15.x.1963, 1 ex.; Raya varam, 20.x.1963, 10 ex.; Nidigal, 23-24.x.1963, 4 ex. (*B. Nath*); Tamil Nadu: Tope, foot of Palni Hills, 20-23.ix.1922, 2 ex (*S. Kemp*); Salem dist., Nagalur, 9 miles N. of Yercaud, 586 m, Western border of Shevaroy Hills overlooking the plains, 6-15 vi. 1929, 32 ex. (*L. E. T Short*); Kuttur, Yelagiri Hills, 642 m., 1-10. vii. 1929, 1 ex. (*H. S. Pruthi*).

SRILANKA : Bduchuddamr. P., May, 1910, 2 ex. (Ind. Mus.).

Description

Male Elongate, wide, opaque black, length 14-30 mm.

Head : Large, rounded posteriorly, densely punctured with hairs; frons flat, with a little shiny smooth space in the middle; labrum heart shaped; last segment of the labial palpi thickened and truncated at apex; antennae quite long, segments V-X rounded triangularly, segment XI elongate and distinctly fusiform.

Elytra : Base black with two yellowish or brownish maculae; broad, black, transverse band in the middle; apex broadly black; black bands moderately sinuate.

Ventral side Cardo concave anteriorly with an elevated longitudinal median line and micropunctate externally; last visible sternite with triangular emargination.

Genitalia : Basal piece wide and elongate; parameres moderately elongate; aedeagus moderately massive, strongly narrowed at apex with two ventral hooks of moderate length situated closely, dorsal hook fairly raised upwards obliquely and sharply bent at the tip.

Female Apical antennal segment more compressed and wide than that of male and the last sternite entire.

Distribution : INDIA, CHINA and SRILANKA.

New Records : INDIA : West Bengal, Bihar, Orissa, Uttar Pradesh, Punjab, Jammu, Madhya Pradesh, Gujarat, Karnataka, Andhra Pradesh, Tamil Nadu states and Sri Lanka. No specific localities from India mentioned in earlier works.

Remarks : It is the commonest Indian species of the genus *Mylabris*. Previously the distribution and variations of the species had not been studied. Now it is evident through the present study that it is most widely distributed and dominating species of the genus in India. It appears to be a polytypic species with geographical as well as individual variations. After studying about three hundred specimens from 11 states of India it has become evident that the population of *phalerata* may be classified into three distinct geographi-

cal variable groups. The population from the plains of northern India seems typical. The other two populations from Jammu (J & K) and Andhra Pradesh vary from the typical population by the elytral colourations and shape of aedeagus. This question needs further examination.

It has been observed that intraspecific variations are more common in *phalerata* and *pustulata* than in other species of *Mylabris*. The general intraspecific variations in size and shape of body are very common. The other intraspecific variation is the eye colour which is generally blackish, but is sometimes brownish and with or without yellowish network of patches. As we know, in case of convergence of morphological characters brought about by the impact of similar ecological conditions, a study of the genital structures has proved to be of utmost importance in determining the true systematic position of forms. So with this view I selected 50 specimens of *phalerata* and *pustulata* from similar as well as different geographical ranges and dissected out the male genitalia which showed moderate variations.

57. *Mylabris phalerata choaica* Saha

Mylabris phalerata choaica Saha, 1972, *Proc. zool. Soc.*, **25** : 22-23.

Locality records and specimens examined

Holotype ♂, PAKISTAN : Salt Range, Choa, 15-21 x. 1930 (S. L. Hora & H. S. Pruthi). *Paratypes* : 36 ex. with the same data as for the holotype ; 30 ex., Salt Range, Kallar Kahar (Lake), 20-21. x. 1930 (S. L. Hora & H. S. Pruthi).

Description

Male Body shiny ; length 20-26 mm.

Head Sparsely hairy, thickly and deeply punctured, rounded posteriorly ; labrum transverse, slightly notched in front ; antennae (Fig. 93) moderately elongate, with segment III slightly longer than segment IV, segments V-IX progressively increasing in width, segment XI slightly narrower than X, fusiform pointed at apex.

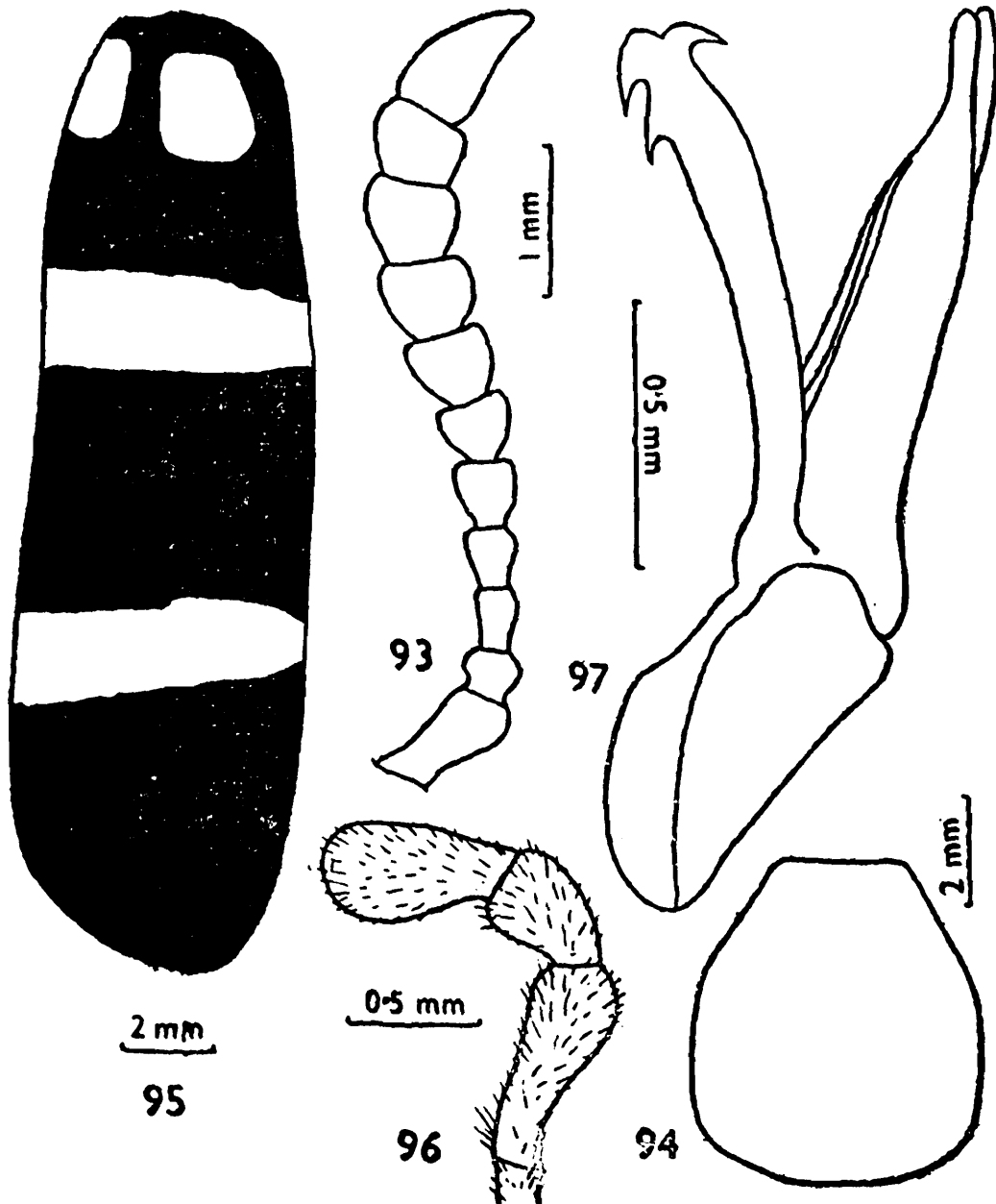
Pronotum (Fig. 94) : Punctured, sparsely hairy, bulging laterally.

Elytra (Fig. 95) : Elongate, convex, two yellow intermediate areas deeply punctured and black bands rugose.

Ventral side With sparse long hairs ; mentum hexagonal, almost impunctate, brownish anteriorly, convex medially ; ligula elongate, convex, blackish posteriorly ; apical segment of maxillary palpus (Fig. 96) strongly elongate and somewhat flattened at apex ; mesosternum with a transverse rounded carina ; legs brownish ; fore and midtibial spurs elongate, acute and divergent ; outer hindtibial spur more expanded and concave than the inner one.

Distribution PAKISTAN.

Remarks : This subspecies differs from the *M. phalerata phalerata* (Pallas) in having more pointed apical antennal segment, wider transverse black elytral bands, sixth visible abdominal sternite with apical triangular emargination and differences in male genitalia (Fig. 97).



Figs. (93-97) *Mylabris phalerata choaica* Saha, ♂, 93. Antenna ; 94. Pronotum ; 95. Elytron ; 96. Maxillary palpus ; 97. Genitalia.

58. *Mylabris pustulata* (Thunberg)

Meloe pustulata Thunberg, 1791, *Diss. Nov. Ins. spec.*, **6** : 113.

Meloe biundulata Pallas, 1781, *Icones Insectorum Ross. Sibir.* : 70.

Mylabris pustulata : Marseul, 1872, *Mem. Soc. Liege* : 449 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 47.

Mylabris (Euzonabris) pustulata : Kuzin, 1954, *Trudi, Ent. Obs.*, **44** : 358.

Locality records and specimens examined

INDIA : Tamil Nadu (Madras) : Salem dist., Harur, 600 m., 17 vi. 1929, 2 ex. ; Javadi Hills, Nadur Ca. 548 m., 20-30 vi. 1929, 11 ex. ; Kuttur, Yelagiri Hills, 641 m., 1-10 vii., 1929, 21 ex. ; Denkauikota, 914 m., 8-14 vii. 1929 ; 7 ex. (*H. S. Pruthi*). ii. 1969, 2 ex. (*O. B. Chhotani*) ; Coimbatore, 9. iii. 1962, 3 ex. (*K. V. L. Narayana*)., Andhra Pradesh : Waltair, 6. vii. 1903, 1 ex. (*Ind. Mus. Coll.*) ; Cuddapah dist., Kodar Ca. 182 m., 15-18 vii. 1929, 3 ex. ; Balapalli, 304 m., base or Seshachalams, 18-23 vii. 1929, 10 ex. ; Razampet, 152 m., 28-29 vii. 1929, 23 ex. ; Vempali, 5. viii. 1929, 3 ex. ; Chitvel, 152 m., base of Velicanda Hills, 30. vii. 1929, 3 ex. ; Forest between Guwalucheru and Kajtimudgu, 364 m., Palkonda Hills, 1-3 viii. 1929, 3 ex. (*H. S. Pruthi*) ; Nalgonda Dist., Nagarjunsagar, viii. 1962, 155 ex. ; Madhavaram, 10. x. 1963, 6 ex. ; Rayavaram, 18-20. x. 1963, 57 ex. ; Tiger valley, 4. x. 1963, 21 ex. ; Nidigal, 22. x. 1963, 1 ex. ; Yelleswaram, 29. x. 1963, 19 ex. ; Guntur dist., Nagarjunkonda, 5-6. ix. 1962, 3 ex. ; Nagarjun Hill, 30. ix. 1963, 9 ex. ; Nagarjun Hill, 1-2. x. 1963, 3 ex. ; Nandikonda valley, 6-8. x. 1963, 23 ex. (*B. Nath*) ; Orissa : Lake Chilka, Gopalkunda Island, 7-15 viii. 1907, 1 ex. (*Mus. collr.*) ; 13-14. iv. 1914, 2 ex. ; Barkuda Id., 25. vii.-4. viii. 1917, 5 ex. ; x. 1920, 1 ex. (*Annandale*) ; Karnataka : Belgaum dist., Neighbourhood of Dhupdal and Gokak, xi. 1928, 9 ex. (*B. P. & H. S. R.*) ; Shimoga dist., Sagar, 3-4. xii. 1928, 1 ex. ; Honnali road near Shimoga, 10. xii. 1928, 7 ex. (*H. S. Rao*).

SRI LANKA : Kandy, vii. 1908, 1 ex. ; Haragama, vii. 1910, 1 ex.

JAVA : Horsf., 1 ex.

Description

Male Elongate, subparallel, shiny, hairy, punctured, length 20-30 mm.

Head Square, shiny black, with sparsely setiferous moderate punctures ; labrum transverse, slightly sinuate in the middle anteriorly, with a row of transverse setiferous punctures in the middle and the rounded angles ; clypeus anteriorly impunctate, declivous ; frons flat with an impunctate slightly elevated longitudinal ridge base with two yellow maculae ; middle black band, wide, transverse and strongly sinuated ; apex black which is oblique and strongly sinuated in front ; intermediate yellow areas narrow.

Ventral side With long, black hairs which are sparse ; cardo brownish, shiny, impunctate and slightly convex posteriorly ; the last segment of the maxillary palpi elongate and slightly wider at the apex ; mentum widest in the middle and concave anteriorly ; ligula broad and convex ; mesosternum triangular, highly raised anteriorly with a transverse carina ; last visible sternite with a median semi-circular notch ; foretarsal claws with long hairs dorsally and ventrally with more well developed pads.

Genitalia : Basal piece wide ; parameres moderately wide and slightly bent ventrally at the apex ; aedeagus (Pl. XXIII, Fig. 98)

moderately large, curved and dorsoventrally flattened.

Female Mesosternum less raised anteriorly than that of male ; the last sternite entire.

Distribution INDIA ; CHINA ; SRILANKA ; JAVA.

New Records INDIA ; Andhra Pradesh, Orissa and Karnataka states, SRILANKA and JAVA. Previously recorded only from Pondicherry.

Remarks Now the detailed distribution of the species has been reported and the variation among the populations of different regions has been observed. It is interesting to note that the distribution of the species is generally limited to coastal and semi-coastal regions of peninsular India. It is most abundantly found in Andhra Pradesh. Variability has been observed in respect of body size (20-30 mm.), colour of eye, elytra, and pubescence ; shape of head, pronotum and abdomen ; and form of male genitalia which may be considered as individual variations or insignificant geographical variations.

59. *Mylabris rajasthanicus* Saha

Mylabris rajasthanicus Saha, 1972, *Oriental Insects*, 6 (3) : 277-278.

Locality records and specimens examined

Holotype : ♀, INDIA : Rajasthan, Sambhar Lake, Gudha, 2. iii. 1958 (*T. G. Vazirani*). *Paratype* : 1 ♂, with the same data as for the holotype (legs and abdomen damaged).

Description

Female Black, shiny, with fine silky white pubescence ; length 10-11 mm. (Holotype 11 mm.).

Head Rectangular, thickly punctate ; labrum distinctly emarginate in front, round laterally ; clypeus highly raised anteriorly ; mandibles small ; antennal segments (Fig. 99) I-V brownish, the rest mostly blackish, segment III elongate and strongly narrowed at base, segment VI compressed and widest medially, segments V-X progressively enlarged and round, apical segment narrower than X and blunt at apex.

Pronotum Shiny, punctate, almost uniformly convex dorsally with an impunctate area in the centre anteriorly.

Scutellum : Rectangular with fine pubescence.

Elytra (Fig 100) : Elongate, shiny, straight laterally ; yellow portions poorly punctate ; with sparse yellowish pubescence ; anterior black band smallest oblique, bilobed ; middle black band transverse, strongly sinuated, wider towards margin ; posterior black band, subapical, moderately sinuate.

Ventral side Dark brown with fine short silky white pubescence; mentum strongly transverse, slightly concave, almost glabrous, impunctate, shiny, narrower at both ends; ligula glabrous flat; segment II of labial palpi wider apically, apical segment cylindrical; segments of maxillary palpi elongate, light brown, moderately cylindrical, segments II-III with long erect setae; submentum and gular region impunctate, shiny, mostly glabrous; mesosternum fairly large, strongly shining, impunctate, with a fine elevated line along anterior margin, slightly convex centrally, apex slightly curved downwards; hind outer tibial spur swollen, excavated apically.

Distribution INDIA (Rajasthan).

Remarks This species differs from *Mylabris thunbergi* Billberg, 1813, in having narrower antennal segments (I, III, XI), elytral basal region yellow, subapical elytral transverse black band, transverse mentum, larger mesosternum.

60. *Mylabris solanensis* sp. nov.

Male Body black, strongly shiny, densely hairy and moderately punctate, length 10-11 mm.

Head With dense, long erect hairs, labrum elongate; frons flat; vertex and occiput depressed and strongly punctured; antennae fairly long, segment I elongate, segment III narrowest, segment XI fusiform; eyes large, strongly convex, finely granulate.

Pronotum Slightly emarginated posteriorly with punctures and dense long erect hairs.

Elytra Each black basally with two yellowish spots, an intermediate transverse black band and completely black apically, and the rest of it yellowish.

Ventral side Mentum subcircular; ligula convex; segment II of labial palpi wider apically, with long hairs, segment III elongate and cylindrical; maxillary palpi fairly elongate; cardo anteriorly depressed, with a few minute punctures; mesosternum fairly convex, with a small triangular transverse carina; fore legs with a few sparse golden hairs; foretarsal segments brown with a few long hairs dorsally; last visible sternite with long erect hairs and superficial emargination at apex.

Genitalia (Fig. 101 & 102): Basal piece moderately elongate and flat dorsally; parameres fairly elongate and slightly divergent apically; aedeagus straight except the bent apex which is with two ventral hooks and one perpendicularly placed dorsal hook.

Holotype ♂ INDIA: Himachal Pradesh, Solan, 1500 m., 1 ix. 1969 (O. B. Chhotani).

Paratypes 5 ♂♂, 5 ♀♀, with the same date as for the holotype; Uttar Pradesh, 1 ex., Garhwal dist., Dhakkhalara, 3048 m., 2. viii.

1958 ; 3 ex., Birahi, 1066 m., 16. viii. 1958, 1 ex., Ghat, 1156 m., 17 viii. 1958, 2 ex., Chamali Nand Paryag, 18. viii. 1958, (B. S. Lamba).

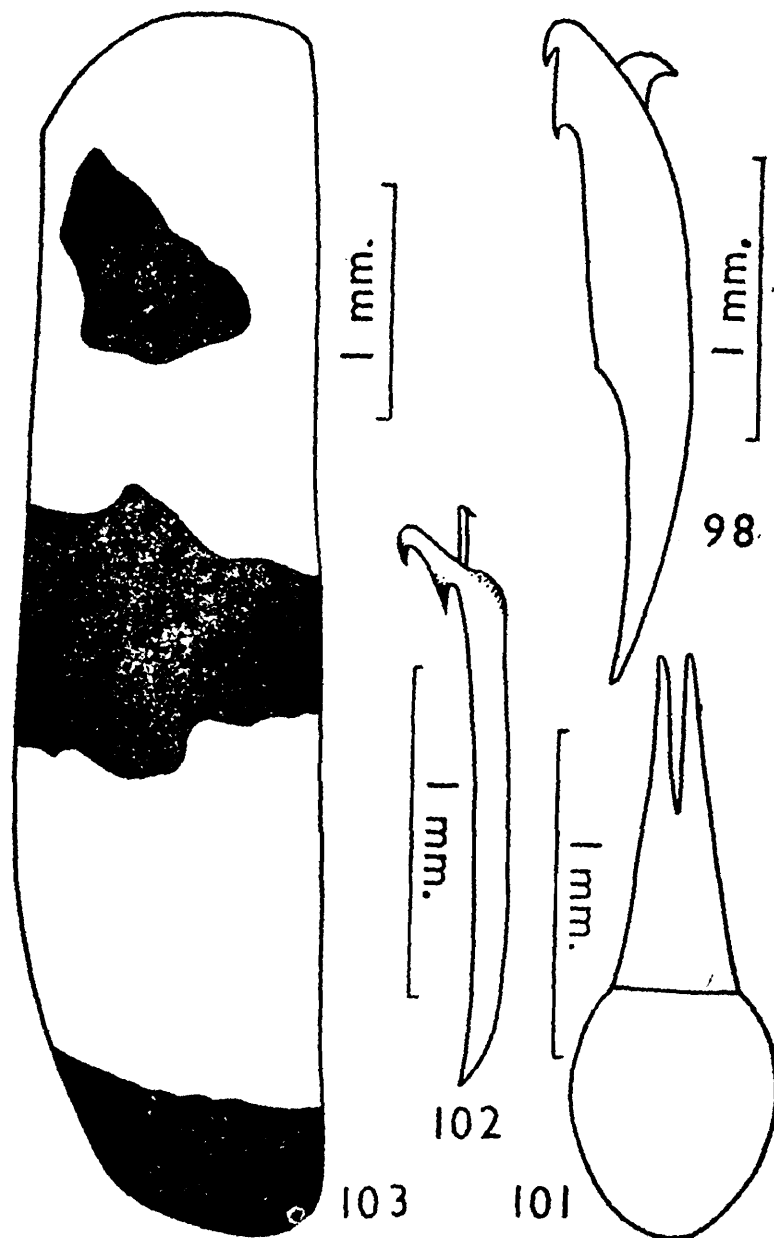


Fig. (98) *Mylabris pustulata* Thunberg, ♂, 98. Aedeagus.

Figs. (101-102) *Mylabris solanensis* sp. nov., ♂, 101 Tegmen ; 102. Aedeagus;

Fig. (103) *Mylabris trigonalis* Lichtenstein, ♂, 103. Elytron.

Remarks : It is near to *M. cichorii* (Linn.) but it differs from it in having more shiny body, wider segment II of labial palpi, fusiform apical antennal segment, less deep emargination on last visible sternite, wider parameres and aedeagus.

61. Mylabris thunbergi Billberg

Mylabris thunbergi Billberg, 1813, Mon. Mylr. : 18 ; Marseul, 1872, Mem. Soc. Liege : 476 ; Borchmann, 1917, Junk's Col. Cat., **17** (69) : 54.

Locality records and specimens examined

INDIA : West Bengal : Murshidabad, 4 ex. (Atkison) ; Bihar : Giridy, 9. ii. 1916, 1 ex. , Santal Parganas, 5. iii. 1938, 9 ex. (*H. S. R. & H. A. H.*) ; Sikaripara, 4. xii. 1938, 1 ex. ; Phulyuri hills, 20 miles from Dumka, on the Dumka-Madhupur road, 1 xii. 1938, 1 ex. (*H. A. Hafiz*) ; Patna, iii. 1946, 1 ex. ; Chota Nagpur, xi. 1948, 9 ex. (*Baugh, Sinha & Nath*) ; Parasnath hills, iv. 1948, 1 ex. (*Sinha & Nath*) ; Singhbhum dist., Manoharpur, 26. i. 1955, 1 ex., at light (*A. P. Kapur*) , Orissa : Ganjam dist., Chilka lake, on main land nr. back water at Kallikote, 2. xi. 1922, 4 ex. (*N. Annandale*) ; Madhya Pradesh : Rajpur, xii. 1938, 1 ex. (*H. S. Rao*) ; Andhra Pradesh : Cuddapah dist., Razampeta, 152 m., 28-29. vii. 1929, 2 ex. ; Palkonda hills, forest between Guwaluchervu and Kojtimudgu, 364 m., 1-3. viii. 1929, 1 ex. ; Lankamali hills, Forest around Rekalakunta, Ca. 304 m. 7-9. viii. 1929, 1 ex. ; Foot of Nallmalai hills (E.), Forest around Diguvamelta, Ca. 288 m., 19-23. viii. 1929, 1 ex. ; Sagol Eru Stream, 5 miles from Diguvametta Ca. 288 m., foot of Nallmalai hills (grass & shrubs near water-channel), 21 viii. 1929, 1 ex. (*H. S. Pruthi*) ; Guntur dist., Nagarjungkunda, 2-5. ix. 1962, 8 ex. ; Rayavaram, 20. x. 1963, 1 ex. ; Tiger valley, 4. x. 1963, 1 ex. ; Nagarjungkunda, 7 xi. 1963, 17 ex. (*B. Nath*) ; Tamil Nadu : Nadur Ca. 546 m., Javadi hills, 26-30. vi. 1929, 1 ex. (*H. S. Pruthi*) ; Coimbatore, 8-9. iii. 1929, 5 ex. (*K. V. L. Narayana*) , Coimbatore, 15. ii. 1969, 1 ex. (*O. B. Chhotani*) , Karnataka : Bangalore, 1 ex. (*J. Comeron*) ; Kerala : Trivandrum, Travancore, 12 xi. 1908, 1 ex. (*N. Annandale*) ;

SRILANKA : Haragama, 17 vii. 1910, 1 ex.

Description

Male Elongate-oblong, wider posteriorly, shiny black, with small black, erect hairs ; length 8.5-17 mm.

Head Transverse, densely punctured ; eyes large, globular, brown ; frons flattened with a median fine longitudinal elevated line ; clypeus transversely elliptical , labrum transverse with a stria in the middle ; antennae moderately long, segment I slightly arched, segment II moderately globular, segments III IV distinctly longitudinal, segments V-XI gradually broader towards apex and forming a club, segment XI obtuse at apex.

Pronotum As wide as head, widest in the middle, dilated and rounded laterally, finely punctate with fine long hairs.

Scutellum : Elongate-oblong, with dense hairs.

Elytra Elongate, wider posteriorly, shiny, punctate with small fine hairs; each elytron with a curved black band along the humeral region which forms a triangle by joining the base with the suture; middle transverse black band narrower towards the suture; apical black area concave anteriorly.

Ventral side: Shiny, sparsely hairy; cardo moderately convex; maxillary segments elongate, terminal one swollen at apex; mentum deeply concave in the middle; ligula wide, slightly convex; short terminal segment of labial palpi fairly swollen and truncated at the end; mesosternum impunctate, very shiny, ends bluntly, without anterior transverse carina; last visible sternite emarginate superficially; tarsal pads poorly developed; all the tibial spines pointed.

Genitalia: Basal piece very large and elongate; parameres moderately short; apically narrowed and pointed; aedeagus moderately elongate and massive, dorsal hook arising upwards straightly beyond the apex of aedeagus and bent at the end perpendicularly, apex of aedeagus wide, flattened with two closely situated sharply pointed ventral hooks.

Distribution: INDIA, SRILANKA.

New Records INDIA: West Bengal, Bihar, Orissa, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Karnataka and Kerala states.

Remarks: It is evident from the distributional data that the species is fairly well distributed in India. By studying a large sample of the species collected from different states of India, it has been observed that the population of *thunbergi* may be classified into four distinct variable groups. The population from Bihar and Bengal (Murshidabad) has got the first black band on elytra long whereas in the south Indian examples it is shorter and curved. In some examples of Andhra Pradesh it is bifurcated perpendicularly and in a few examples from Kerala and Coimbatore (Tamil Nadu) it is very much abbreviated due to which it possesses exactly the elytral colour pattern of its allied species *balteata*. But the studies of genitalia confirm that the populations of different places with the above variations belong to the same species.

62. *Mylabris tiflensis* Billberg

Mylabris tiflensis Billberg, 1813, Mon. Mylbr.: 13; Marseul, 1872, Mem. c. Liege: 472; Borchmann, 1917, Junk's Col. Cat., 17 (69): 54.

Mylabris (Neabris) klapperichi Adam Kaszab, 1958. *Acta Zoologica*, 3 (3-4), 287-288.

Locality records and specimens examined

INDIA: Uttar Pradesh: Saharanpur, Rajaji Sanctuary, 26. iv. 1962, 16 ex. (*T. D. Soota*); Himachal Pradesh: Solan, Puijar Mugal garden, 5. v. 1969, 3 ex. (*K. K. Mahajan*); Dharhara, Dak bungalow, at light, 5. iv. 1945, 2 ex. (*H. A. Hafiz*).

Description

Male Body oblong, wide, convex, shiny black, with small erect black hairs, length 20-23 mm.

Head : Square, punctured and sparsely hair anteriorly ; labrum strongly transverse, slightly sinuated in front at the middle, with micro-punctures, small hairs and a deep depression in the middle ; mandibles strongly developed and testaceous anteriorly ; clypeus transverse, convex in the middle, about anterior $\frac{1}{3}$ portion reddish-impunctate, rest shiny and black with setiferous punctures ; frons with a median longitudinal elevated line and a pair of reddish spots in the middle ; with depressed, wrinkled areas behind the insertion of antennae ; vertex slightly convex, punctured with a few small hairs ; with a pair of depression just below the eyes ; antennae short, segment I compressed and apically swollen, segment II shortest and round, segment III cylindrical and longest, segments IV-Vn gradually wider apically, segments VII-X gradually round, segment XI fusiform but narrowed abruptly at apex.

Pronotum Almost glabrous, with some depressions and strongly wide posteriorly, with a pair of hump like elevations in the middle laterally, punctate dorsally.

Scutellum Semicircular, with micro-punctures and small fine hairs.

Elytra : Blood-red, little convex ; with strongly developed humeral angle, glabrous, punctate ; behind the humeral region small, narrow, transverse black band without touching the suture and outer margin ; behind the middle half second one touching both margins and wider ; sutural margin black at apex.

Ventral side With small and a few pubescence, shiny black, cardo brownish, moderately convex in the middle ; mentum with $\frac{1}{4}$ anterior portion testaceous, rest black, flat, sparsely punctate and hairy ; well developed ligula elongate and apically wider ; apical segments of the labial palpi small, testaceous, with very small fine hairs, apically flattened and truncated, distal segments of maxillary palps black, elongate with close fine small hairs and wider apically ; mesosternum black with flat transverse carina and pointed at apex ; metasternum highly raised with a longitudinal line in the middle ; each visible abdominal sternite with a pair of brownish patches anteriorly near the outer margins ; last visible sternite with triangular emargination foretibiae ventrally with fine small brownish hairs ; tibial spurs concave dorsally ; tarsal segments wider apically ; claws distally strongly narrowed, pointed and curved at apex.

Genitalia Basal piece of moderate size, parameres short, apically narrowed ; aedeagus well developed and wider dorsally, narrowed ventrally with two thin, pointed, closely situated ventral hooks, fairly away from the apex, and the dorsal hook arising just from the apex, thin, bent perpendicularly at end.

Distribution INDIA : North India. PAKISTAN.

New Records INDIA : Uttar Pradesh, Himachal Pradesh states.

Remarks : Billberg (1813) presumed that the individuals which he described under the name *tiflensis* might have been collected from Tiflis (Georgia). But this was perhaps not correct because all the individuals which Marseul (1872) examined were from India. The following elytral colour variations have been observed. The examples of Rajaji Sanctuary are smaller with yellowish elytral colour and posteriorly narrowed pronotum without reddish patches. In some examples, there are two black spots on the elytra instead of anterior black band and the apical black area is reduced and found very slightly at the sutural apex.

63. *Mylabris trigonalis* Lichtenstein

Mylabris trigonalis Lichtenstein, 1795, Cat. Hamburg : 76 Borchmann, 1917, Junk's Col. Cat., **17** (69) : 55.

Locality records and specimens examined

INDIA : TAMIL NADU : Nilgiri Hills, 1 ex. (*H. L. Andrews*) deposited in the British Museum (Natural History), London.

SRILANKA ; Balangoda, 539 m., 13-16. iii. 1882, 1 ex. (*G. Lewis*) ; Haragama, 17. vii. 1910, 1 ex.

Description

Male Body small, mostly black, hairy, shiny ; length 13-15 mm.

Head : Fairly punctate, hairy, depressed dorsally ; labrum transverse with a median depression ; eyes fairly granulate, very large and convex ; antennae moderately elongate but of a form similar to those of *thunbergi*.

Pronotum Broad, fairly punctate and hairy.

Scutellum Broad, rounded apically.

Elytra (Fig. 103) : Yellow or reddish with short black pubescence ; each elytron black at base and black apically and with a triangular or subtriangular black macula anteriorly.

Ventral side Shiny, hairy ; cardo slightly concave, sometimes with a small median elevated line ; apical segments of both palpi moderately broad ; mentum concave centrally ; mesosternum almost glabrous, flat without transverse carina ; fore tibiae with dense shiny white hairs.

Distribution INDIA. SRILANKA.

New Records : INDIA : Tamil Nadu state. SRILANKA. Previously recorded from east India.

Remarks The species is closely allied to *M. thunbergi* differing from it only in the elytral colour pattern and the presence of strongly shiny white hairs on foretibiae. During the present study it becomes

apparent that the differences between the above two species are not very great. Moreover, it was very poorly described without any figure by the original author, and the information regarding its type is also not available.

64. * *Mylabris jacquemonti* Blanchard

Mylabris jacquemonti Blanchard, 1844, in Jacquemont, Voy. Inde, Ins. 26 : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 40.

Distinctive characters Body mostly black with similarly coloured hairs ; length 10-11 mm. ; head very strongly punctured ; antennae completely black , pronotum very much narrow, nearly cylindrical and with close and large punctures ; elytra with three transverse narrow yellow bands, basal one not reaching the sutural margin, middle one fairly sinuate, and the last one subapical, sinuate and wider than the preceding one.

Distribution INDIA (Kashmir).

65. * *Mylabris mannheimsi* Kaszab

Mylabris (Euzonabris) mannheimsi Kaszab, 1961, *Bonn. Zool. Beitr.*, 3/4, 10 : 349-350.

Distinctive characters Body black ; elytral colour pattern similar to that of *M. phalerata* ; head broad ; eyes fairly large and roundish, strongly convex ; last abdominal sternites with long, thick hairs and a narrow emargination at apex in male ; fore tarsi with long black hairs ; length 13.4-18 mm.

Distribution INDIA (Bombay). CHINA.

66. * *Mylabris rajah* Marseul

Mylabris rajah Marseul, 1872, *Mem. Soc. Liege* : 452 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 49.

Distinctive characters : Antennae moderately elongate, segment I short, segment II shorter than III, segments VI and VII oblong and less thick than the later ; yellow bands of the elytra shortened, very much sinuated, without yellow pubescence, with silky grey hairs on the apical black of elytra.

Distribution : INDIA (Moradabad).

Remarks It is very near to *Mylabris orientalis* Marseul.

67. * *Mylabris rutilipubes* Marseul

Mylabris rutilipubes Marseul, 1872, *Mem. Soc. Liege* : 453 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 49.

Distinctive characters Narrow, elongated, shiny black, length 10 mm. ; head large and trigonal ; labrum transverse, subsinuated at the apex and rounded laterally ; labial palpi elongate, last segment brown, fusiform and truncate ; antennae long, segment I obconical, thick, segment II small and button like, segments III-IV subequal and reddish, segment V transverse, segments VI-X gradually thickened, segment XI terminated obtusely ; pronotum oblong, narrower than the head and moderately convex dorsally ; elytra with reddish transverse bands ; legs strong, fore tibiae with grey and black hairs.

Distribution INDIA (Dinapore).

Remarks It seems near to *Mylabris phalerata* (Pallas).

Genus VI: *Decapotoma* Voigts

Decatoma Laporte, 1840, *Histoire naturelle des Insectes Coleopteres*, II : 268 ; Marseul, 1873, *Mem. Soc. Liege*, : 569-571 ; Peringuey, 1909, *Trans. R. Soc. S. Afr.* 1, 1 : 221.

Decapotoma Voigts, 1902, *Wien. Ent. Zeit.* XXI, : 177 ; Wellman, 1908 *Proc. Acad. nat. Sci. Philadelphia* : 602, 604 ; Borchmann, 1919, *Junk's Col. Cat.* 17 (69) : 59.

Mylabris (Decapotoma) sensu novo mihi Kuzin, 1954, *Trudi. Ent. Obs.*, 44 : 337, 338, 339, 342, 348, 349, 358, 359, 365.

Type-species : *Meloe lunata* (Pallas) designated by Wellman (1910).

Laporte (1840), Peringuey (1909), Voigts (1902) and Borchmann (1917) considered the group as a separate genus. But Wellman (1908) placed it as a subgenus under the genus *Mylabris* along with other subgenera such as *Actenodia*, *Coryna*, *Ceroctis* and *Lydoceras* on the basis of the character and numbers of antennal segments. Kuzin (1954) placed it under *Mylabris* along with *Ceroctis* and *Mimesthes*. I am unable to see any character except ten-segmented antennae by which it had been separated from the well-established genus *Mylabris*. Moreover the suture of fusion between X and XI segments of antenna is found distinctly. But the reduction of antennal segments is one of the most distinctive character for which the separate status of the genus is being followed by the present workers like Kaszab (1969) and others also. *Decapotoma rouxi* (Laporte) is the only species known so far from India under the genus which is more fairly distributed in Africa. There are according to the Catalogue (Borchmann, 1917), 41 known species in the world.

Diagnostic characters : Antenna moniliform with ten segments, apical segment thick, enlarged, ovoid. Other characters are similar to those of the Genus *Mylabris* F.

Distribution : Asia and Africa.

68. *Decapotoma rouxi* (Laporte)

Decatoma rouxi Laporte, 1940, *Histoire naturelle des insectes Coleopteres*, II

268 : Marseul, 1872, *Mem. Soc. Liege* : 592.

Decapotoma rouxi : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 62.

Mylabris (Decapotoma) rouxi : Kuzin, 1954, *Trudi, Ent. Obs.*, 44 : 359.

Locality records and specimens examined

INDIA : Karnataka : 4. iv. 1876, 3 ex. (Purch) ; Bangalore, 1 ex. (Cameron).

Description

Male Body oblong, wide, black, shiny, with dense hairs, length 10-12.5 mm.

Head Round, with sparse and fine setiferous punctures, dorsal surface flat ; labrum broader anteriorly with two bunches of yellowish hairs laterally, long hairs and minute punctures medially ; clypeus brownish, declivous and impunctate anteriorly, fronto-clypeal suture very faint ; mandibles well-developed, dorsally blackish, ventrally brownish, arched and cross each other apically ; antennae brownish, distinctly clubbed apically, segments I-VI strongly narrowed and longitudinal, segments VII-VIII triangular and broader apically, segment IX broad and rounded, segment X long, broad, conical with a fine suture medially ; eyes large, convex, oval, dark brown, finely granulate and slightly emarginate in front.

Pronotum Distinctly campanuliform, sparsely punctured, slightly depressed posteriorly, with long silky white hairs and a small longitudinal impressed line medially.

Scutellum Rectangular, with long silky white hairs.

Elytra With sparsely yellowish hairs, a basal small narrow semicircular black macula from below the scutellum upto humeral angle, median complete black band slightly dentate on both sides and narrower towards margins, third black band strongly zig-zag and a black circle at apex.

Ventral side With long silky white hairs, shiny dark brown ; mentum transverse, yellowish in front and slightly convex in the middle ; ligula wide, sinuate anteriorly ; segments of labial and maxillary palpi moderately elongate and wider apically ; mesosternum triangular, pointed at the apex without elevated carina in the middle ; tibiae yellow ; tarsal segments slender with moderately developed pads, apical one longest ; appendages of claws strongly thin and smooth ; fore and midtibial spurs long, concave internally and black apically ; hind tibial spurs smaller and yellowish at the apex.

Genitalia Basal piece elongate ; parameres moderately wide and pointed at the apex ; aedeagus straight, flattened sub-apically with two small ventral hooks and a very minute recurved dorsal hook at the apex.

Female : Labrum smaller and more hairy ; ligula and segment of labial palpi wider apically.

Distribution : INDIA : South India.

New Record : INDIA : Karnataka state. Previously recorded from East India and Coromandel.

Tribe D. Lyttini Wellman

The tribe Lyttini which is polyphyletic in nature, was erected by Wellmann (1910) to include the following two groups : Lyttides and Calospastides. He defined the tribe on the basis of similar mandibles and antennae which are never clavate. The concept of the tribe Lyttini has undergone considerable modifications in the last fifty years. In the past it has served as a convenient dumping-place for Meloidae not assignable elsewhere.

On the structure of the claws, Kaszab (1959) divided the tribe Lyttini and proposed the following two subtribes : Lyttina and Lydina. In addition Lyttina had been grouped into three series which "constitute a distinct progressive line, comprising primitive and progressive genera" Kaszab (1969) who included 27 genera under the tribe. Selander (1964) divided the tribe Lyttini into 6 following subtribes ; Pyrotina, Eupomphina, Lyttina, Cerocomina, Mylabrina and Epicautina. These divisions were mainly based on ethological data. Only 5 genera of the tribe, namely, *Lytta*, *Cylindrothorax*, *Cyaneolytta*, *Sybaris* and *Eolydus* are represented from India.

KEY TO GENERA OF THE TRIBE Lyttini Wellman

- | | |
|--|---------------------------------|
| 1. Tarsal claws not pectinate | 2 |
| — Tarsal claws pectinate | <i>Sybaris</i> Stephens |
| 2. Metasternum with a red patch in the centre | <i>Cyaneolytta</i> Peringuey |
| — Metasternum without such red patch ... | 3 |
| 3. Antennae basically filiform, sometimes setaceous ; pronotum fairly elongate ... | <i>Cylindrothorax</i> Escherich |
| — Antennae basically moniliform, sometimes submoniliform ; pronotum broader ... | 4 |
| 4. Scutellum large, usually truncate apically | <i>Eolydus</i> Denier |
| — Scutellum small, usually rounded apically | <i>Lytta</i> Fabricius |

Genus VII. *Lytta* Fabricius

Cantharis Geoffroy, 1762, *Histoire abregee des insects*, 1 : 339 ; Lacordaire, 1859, *Histoire naturelle des insects, genera des Coleopteres*, 5 : 676 Champion, 1892, *Biol. Centrali-Americana, Coleoptera*, 4 : 437.

Lytta Fabricius 1775, *Systema entomologiae* ... : 260 ; Escherich 1895, Verhaudl. Kaiserlich-Koniglichen Zool.-Bot. Ges., 44 (1894) : 251 ; Selander, 1960, *Illinois biol. Monogr.* no. 28 ; Kaszab, 1962, *Ann. Hist. nat. Mus. Nat. Hung.*, 54 : 289-298.

Pomphopoea Leconte, 1862, *Smith. misc. Coll.* 3 (136) : 273.

Poreospasta Horn, 1868, *Trans. Amer. ent. Soc.*, 2 : 139.

Type-species : *Meloe vesicatoria* Linnaeus, designated by Wellman (1910).

The genus *Lytta* which was established by Fabricius (1775), with about 190 species, is one of the larger genera of the family Meloidae. Selander (1960) has divided the genus into 8 subgenera, namely *Paralytta* Selander (South western Canada to Central America), *Adicolytta* Selander (Mexican Central American), *Poreospasta* Horn (North America and Asia), *Pomphopoea* Leconte (North America), *Lytta* Fabricius (Eurasia), *Pseudolytta* Selander (China), *Mesolytta* Selander (South western Asia) and *Indiolytta* Selander (India).

Indiolytta contains a single species, namely, *L. apicalis* Haag-Rutenberg, which has been synonymised with *Eolydus melanura* Hope by Kaszab (1961) who has proposed in addition two new subgenera, namely *Asiolytta* and *Syriolytta* for the Asian *Lytta*. Only 6 species, so far, known from India, and a new species, namely, *L. selanderi* has been described by me from North India. The genus is primarily temperate in distribution and less widely distributed in tropical countries. The four Indian species studied here are all confined to the base of the Himalaya.

Characters of the Genus Elongate-oblong, convex, mostly moderate to large size ; upper surface of body sparsely pubescent to glabrous but under surface always pubescent ; head wider than long, sides subparallel or converging to eyes, latter oblique, broadly ovate, not as long as width of frons ; labrum feebly emarginate ; antennae moderately elongate, only slightly surpassing elytral base, basically moniliform, often stouter apically, scape not extending beyond the middle of eye, second segment about one-fourth as long as first, third and following segments somewhat shorter than first ; antennae in female gradually becoming more distinctly moniliform distally ; pronotum slightly wider than long, subequal to head in width ; disk usually without a median line ; elytra usually rugulose ; legs frequently modified in male, midtibiae usually with the outer spur much stouter than the inner one ; sixth sternite in male usually deeply notched at apex, in female truncate apically ; male genitalia uniformly sclerotized ; aedeagus with a variable number of hooks.

Distribution World wide except Australia.

KEY TO SPECIES OF THE GENUS *Lytta* Fabricius

- | | | | |
|---|-----|-----------|---|
| 1. Body long (18-25 mm.) | ... | ... | 2 |
| — Body rather small (8-14 mm.) | | ... | 3 |
| 2. Antennal segments IV-IX gradually thickened and subcylindrical | | segment X | |

- strongly broad and subtriangular, segment XI elongate oval and thick apically; elytra with a pair of vittae *L. antennalis* (Marseul)
- Antennal segments IV-X fairly submoniliform, segment XI moderately slender and pointed apically; elytra without any vitta *L. flavipennis* (Motschulsky)
3. Each elytron with a smaller and narrower black vitta; male gena with a deep cavity; aedeagus truncate and flattened at apex without any apical hook but with a fairly elongate sharply pointed dorsal hook which is more than twice in length than ventral hook; length 8-11 mm. *L. limbata* (Kollar & Redtenbacher)
- Each elytron with a longer and wider vitta; male gena without any cavity; aedeagus rounded at apex with a strong curved apical hook, a dorsal hook slightly longer than ventral hook and in addition a minute spine in between apical and ventral hooks; length 14 mm. *L. selanderi* sp. nov.

69. *Lytta antennalis* (Marseul)

Cantharis antennalis Marseul, 1873, *Ann. Soc. Ent. Fr.*, **3** (5) : 230.

Lytta antennalis : Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.* **24** : 74-75 ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 90; Selander, 1960, *Illinois Biol. Monogr.* **28** : 27.

Lytta (s. str.) *antennalis* : Kaszab, 1962, *Ann. Hist. nat. Mus. Nat. Hung.* **54** : 294, 297.

Locality records and specimens examined

INDIA : Uttar Pradesh, Base of W. Himalayas, Dehra Dun, 4 ex. ; Deoban, 1 ex., det. Wellman (*Mus. coll.*).

Description

Male : Body moderately elongate, metallic mostly greenish, shiny, length 18-25 mm.

Head : Sparsely punctate and poorly hairy : labrum small, slightly wider anteriorly and feebly emarginate at apex ; frons strongly elevated anteriorly and with a macula posteriorly ; eyes small, feebly granulate ; vertex and occiput truncate laterally and with a median longitudinal moderately deep sulcus ; mandibles small and fairly broad ; antennae fairly elongate, segments I-III greenish, other segments brownish, segment I elliptical, segment II ring shaped, segment III elongate, segments IV-IX gradually thickened and sub-cylindrical, segment X fairly broad and subtriangular, segment XI elongate oval, longest.

Pronotum Poorly punctate and hairy, fairly broad and depressed more prominently so posteriorly, with a pair of hump like elevations laterally.

Scutellum : Small and triangular.

Elytra Elongate, parallel, alutaceous, brownish and each elytron with a pair of greenish vittae, of which the wider one along the suture and the narrower one along the side, with a nearly rounded apex.

Ventral side With sparse long greyish hairs; mentum moderately large, flat; apical segments of maxillary and labial palpi fairly elongate; each gena with a deep elongate, oval, curved cavity; gula slightly depressed; mesosternum triangular, fairly concave in the middle; metasternum large with long greyish hairs and a narrow median longitudinal blackish line; abdomen strongly elongate, narrowed apically and extending beyond the elytra, last visible sternite strongly thickened and elevated apically with moderate emargination and long greyish white hairs at apex; fore tibiae strongly broad and notched at apex with a strongly flattened thin spur with two small spines at apex; segment I of foretarsi strongly broad apically; midtibiae with a single cylindrical moderately elongate spur; outer hind tibial spur concave at apex and wider than the inner one.

Genitalia : Parameres elongate and parallel; aedeagus with a large dorsal curved hook and two small ventral hooks.

Female : Antennae less elongate than in male and blackish brown except first segment; fore- and midtibiae, each with a pair of elongate, pointed spurs; gena without any cavity; abdomen less elongate than in male, fifth visible sternite slightly emarginate, sixth visible sternite triangular and truncate at apex.

Distribution : INDIA : North India. JAPAN.

New Record : INDIA : Uttar Pradesh state. Previously recorded from Japan only.

70. *Lytta flavipennis* (Motschulsky)

Epicauta flavipennis Motschulsky, 1860, Schrenck's Reisen Amurl. : 145.

Lytta flavipennis : Haag-Rutenberg, 1880, *Deutsche Ent Zeitschr.* **24** : 74; Fairmaire, 1891, *C. R. Soc. Ent. Belg.* : 61; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 94; Selander 1960, *Illinois Biol. Monogr.*, 28 : 27.

Lytta (s. str.) *flavipennis* : Kaszab, 1962, *Ann. Hist. nat. mus. Nat. Hung.*, **54** : 294, 297.

Locality records and specimens examined

INDIA : Uttar Pradesh : Base of W. Himalayas : Dehra Dun, 2 ex., det. Wellman (*Mus. collr.*).

Description

Male : Body elongate, metallic green, length 18-19 mm.

Head : Triangular, strongly shiny, sparsely punctate, with a few long fine greyish hairs, a macula on frons, a deep median sulcus along vertex and occiput; labrum strongly transverse and emarginate anteriorly; clypeus fairly elevated medially; mandibles small and wide; eyes elongate oval, convex, moderately large and finely granulate; antennae moderately elongate, segment I fairly elongate, strongly broad and rounded apically, segment II smallest and rounded, segment III fairly elongate and slightly smaller than I, segments IV-X fairly submoniliform, segment XI pointed apically.

Pronotum : Fairly broad, medially depressed, sparsely punctate, with a few long greyish hairs, with a pair of hump like elevations laterally and a median deep depression posteriorly.

Scutellum : Small, shiny, triangular and elevated apically.

Elytra : Elongate, parallel, brownish, alutaceous.

Ventral side : Shiny, with long fine greyish hairs; mentum slightly elevated and flat; apical segments of labial palpi fairly broad; segments of maxillary palpi strong and broad; gena fairly punctate and hair; gula with a strongly triangular elevation; mesosternum pointed at apex, with a depression on surface apically; metasternum large with a narrow median longitudinal brownish line; abdomen elongate; last visible sternite with a broad triangular emargination and a tuft of hairs on each side; fore- and midtibiae with a single curved spur which is narrowed apically; outer hind tibial spur stout with the apex concave, broadly ovate and wider than the inner one; segment I of fore tarsi fairly large and strongly concave at base ventrally; segment I of hind tarsi strongly flattened.

Genitalia : Basal piece broad; parameres small; aedeagus broad apically, with two small sharply pointed ventral hooks and a wider dorsal hook.

Female : Not examined.

Distribution : INDIA.

New Records : INDIA Uttar Pradesh state. Previously recorded from 'East India.'

71 *Lytta limbata* (Kollar & Redtenbacher)

Epicauta limbata Kollar & Redtenbacher, 1842, in Hugel, Kaschm. **4** (2) : 535; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 77.

Epicauta nimbata Harold, 1870, *Cat. Col.*, **6** : 124; 1870, *Cat. Col.*, **7** : 2152.

Lytta (Asiolytta) limbata : Kaszab, 1962, *Ann. Hist. nat. Mus. nat. Hung.*, **54** : 294, 296.

Locality records and specimens examined

Uttar Pradesh : Base of W. Himalayas, Dehra Dun, 1 ex. (*Mus. collr.*), Kumaon, Bhim Tal, 1370m., 19-22.ix.1906, 1 ex. (*N. A. collr.*) ; Punjab, 1 ex., male (*S. K. Gupta*).

Description

Male : Body small, elongate, oblong, shiny, length 8-11 mm.

Head Black, fairly punctate, strongly shiny, sparsely hairy ; labrum wider apically, notched in the middle ; antennal segments more swollen apically, segment I longer and more swollen than segments II-VII, segments VIII-X subequal and semiform, segment XI longest and strongly aciculate at apex.

Pronotum : Black, fairly broad and punctate, medially convex and sparsely hairy.

Scutellum : Black, hairy, apically narrowed but rounded.

Elytra : Fairly broad, light brown, each with a wide black vitta in the middle extending from below humerus nearly upto apex.

Ventral side : Dark brown, strongly shiny, moderately hairy ; segments of maxillary and labial palpi narrowed ; each gena with a fairly deep elongate cavity ; mesosternum triangular and pointed at apex ; tibiae strongly narrowed at base ; segment I of foretarsi strongly abbreviated and pointed ventrally, segment II strongly narrowed at base but broad at apex ; last visible sternite with a small triangular emargination.

Genitalia : Basal piece fairly large ; parameres small, fairly convergent apically and with fine small hairs ventrally ; aedeagus elongate with truncate but flattened apex, a small ventrally hook and an elongate sharply pointed dorsal hook.

Female Head and pronotum less punctate ; antennal segment I less swollen, segment III longer than in male ; gena without any cavity ; segments I-II of foretarsi without any modification.

Distribution : INDIA

New Record : INDIA : Uttar Pradesh state. Previously recorded from Kashmir only.

72. *Lytta selanderi* sp. nov.

Male : Moderately small, blackish, shiny with pubescence, length 14 mm.

Head : Deep black, strongly shiny ; fairly punctured with long fine whitish hairs and a longitudinal median impressed line along occiput and vertex ; mandibles fairly well developed ; labrum very small ; clypeus concave posteriorly ; eyes fairly large and convex ; antennae moderately elongate, segment I widest and subequal to segment XI, segment II smallest and ring shaped, segment III slightly smaller than each of segment IV and V, segments VI-IX thicker than the preceding ones, segment X slightly narrower, segment XI spindle shaped and strongly aciculate apically.

Pronotum : Sparsely punctate and hairy, deeply concave centrally, less so apicad, with a median longitudinal impressed line.

Scutellum : With long hairs and narrowed apically.

Elytra : With sparse yellowish hairs and a broad black vitta extending from humerus to nearly apex occupying nearly whole of elytron except wider outer and fine sutural brownish margins.

Ventral side : Dark brown with yellowish long fine hairs ; cardo and mentum broad ; mesosternum fairly narrowed apically ; metasternum with dense pubescence ; last visible sternite with a small triangular emargination ; segment I of foretarsi strongly abbreviated and pointed inwardly, segment II of foretarsi strongly narrowed at base and broad at apex.

Genitalia : (Fig. 104 and 105) : Basal piece short ; parameres stout, convergent apically with sparse hairs ; aedeagus rounded at apex, with a strong curved ventral hook at apex besides the other, a slightly longer dorsal hook and a minute spine like hook in between the two ventral hooks.

Holotype : ♂, INDIA : Uttar Pradesh, Garhwal dist., Joshimath Kumar Chatte, 13.viii.1958 (*B. S. Lamba*)

Remarks The species resembles *L. limbata* but differs in being longer in size, more pubescent, in possessing longer antennae, smaller labrum, depressed pronotum with an impressed line, longer elytral black band, gena in males without any cavity, longer mesosternal apex, wider hind tibial spurs and aedeagus with four hooks.

73. * *Lytta cardonii* (Fairmaire)

Cantharis cardonii Fairmaire, 1894, *Ann. Soc. ent. Belg.*, **28** : 35.

Lytta cardonii : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 92.

Distinctive characters : Length 12 mm., bluish black, but elytra reddish ; head furrowed in the middle of the vertex.

Distribution : INDIA (Bengal).

Remarks It is very similar to *L. flavipennis*.

74. * *Lytta discipennis* (Fairmaire)

Cantharis discipennis Fairmaire, 1891, *Compt. rend. Soc. ent. Belg.* : C—Cl.

Lytta discipennis : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 93.

Distinctive characters Oblong, convex, blue black, with yellowish hairs length 8-12 mm.; head nearly square, sparsely punctate in the middle, thickly punctate on the sides and with a median deep longitudinal line ; antennae reach the middle of the body ; pronotum nearly half narrower than the elytra, the sides angularly rounded, rather abruptly compact in front, sparsely punctate and posteriorly convex ; scutellum thickly punctate ; elytra reddish, subparallel or broadening posteriorly ; ventral side with long hairs.

Distribution : INDIA (Kashmir).

75. * *Lytta flavoangulata* (Fairmaire)

Cantharis flavoangulata Fairmaire, 1891, *Compt. rend. Soc. ent. Belg.* : CXXXII—CXXXIII.

Lytta flavoangulata : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 94.

Distinctive characters : Elongate, convex and glossy, elytra moderately glossy, black yellow and the angles of the pronotum somehow yellow; length 16-19 mm.; head more or less triangular, convex, thickly punctate, chiefly at the sides ; antennae thick, short, hardly reaching the base of the pronotum ; scutellum triangular, sparsely punctate ; elytra parallel, thickly punctate ; segment I of fore tarsi fairly angulate in male and less angular in female.

Distribution INDIA (Kashmir).

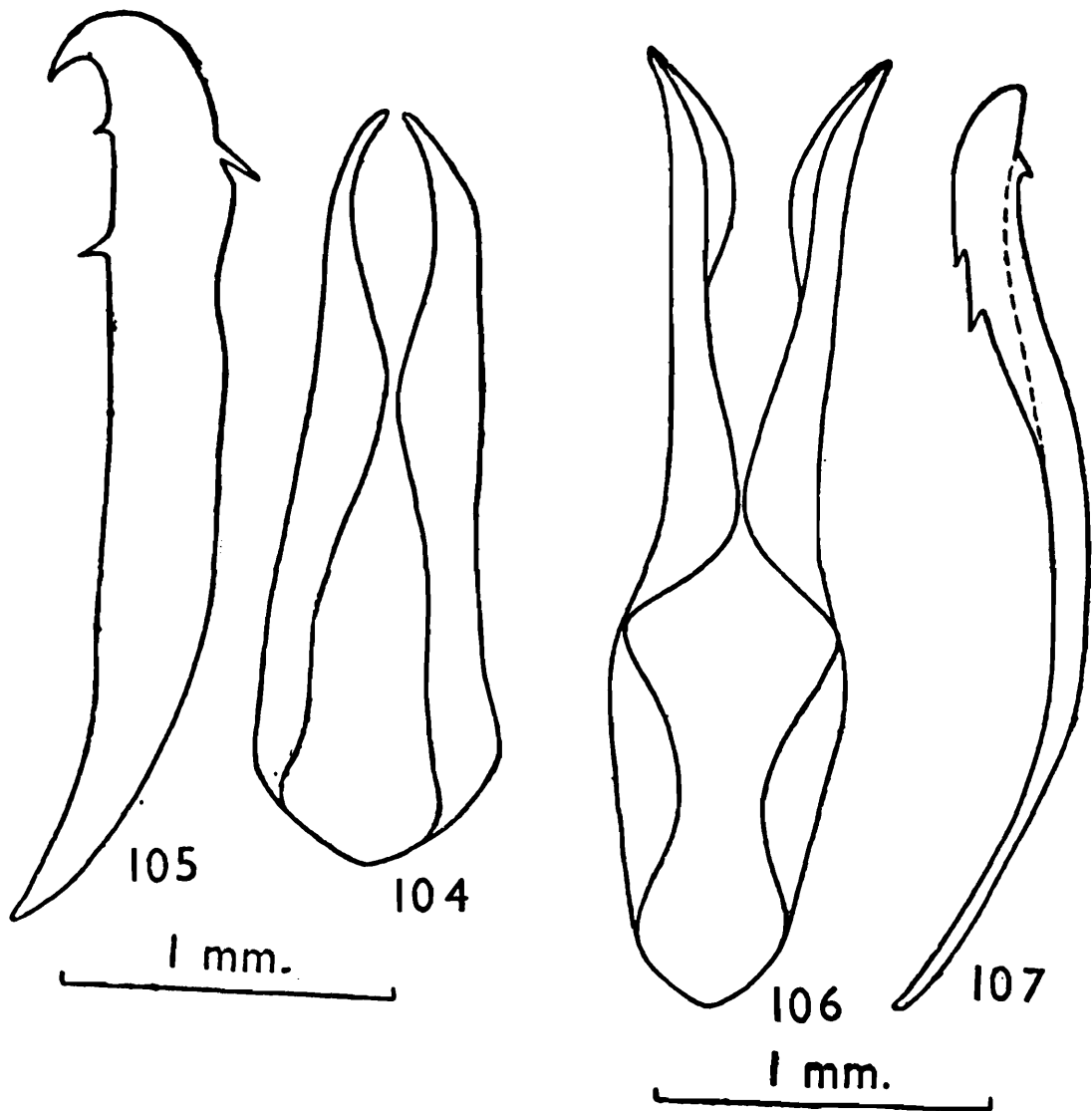
Remarks : It was allied to *L. flavipennis* Motschulsky (1860).

Genus VIII. *Cylindrothorax* Escherich

Sagitta Escherich, 1894, *Verh. zool. bot. Ges.* XLIV : 295.

Cylindrothorax Escherich, 1896, *Wien. Ent. Zeit.*, **15** : 28; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 108-109; Kaszab, 1955, *Ann. Hist. nat. Mus. Nat. Hung.*, s. n., 6 : 225-258.

The genus *Cylindrothorax* had been established by Escherich (1894). Borchmann (1917) catalogued only 9 species under the genus *Cylindrothorax* but no species was reported then from India. Kaszab (1955) has done valuable work on the genus and recorded 5 species, namely *ruficollis* (Fabricius), *semitestaceus* (Fairmaire), *pictus* (Laporte), *audouini* (Haag Rutenberg) and *braetii* (Fairmaire) from India which were apparently included in other genera. A new species, namely, *nagarjunkondaensis* has been described from south India by me.



Figs. (104-105) *Lytta selanderi* sp. nov., ♂, 104. Tegmen; 105. Aedeagus; Figs. (106-107) *Cylindrothorax nagarjunkondaensis* sp. nov., ♂, 106. Tegmen 107. Aedeagus.

During the present study it has been observed that the distribution of the genus in India is highly interesting. The species are mostly distributed from north-west to south-west India *i. e.* from Rajasthan to Goa. All the known species of the genus except *braetii* have been recorded by me from Gujarat. From the above facts it has been assumed that the species of the genus are more abundant in the semi-arid zone of India. Most of the collections had been made at light during night.

Characters of the Genus Body fairly elongate, usually slender, very finely pubescent ; head depressed dorsally, rounded posteriorly ; eyes very large, convex and coarsely granulate, poorly sinuate in front ; antennae filiform, sometimes setaceous ; pronotum fairly narrowed, sparsely pubescent and punctate ; elytra elongate, parallel, moderately convex and pubescent ; maxillary palpi usually elongate ; fifth visible sternite generally with a broad emargination and sixth visible sternite completely bifid in male ; legs strongly elongate ; basal piece large, parameres may be modified, aedeagus usually with short hooks.

Distribution ASIA and AFRICA.

KEY TO SPECIES OF THE GENUS *Cylindrothorax* Escherich

1. Antennae moderately elongate, antennal segments subcylindrical, nearly all of same width, scapes long, arched and narrowed, apical segments spindleform or rounded at apex and straight ; segment I of foretarsi nearly cylindrical in male. 2
- Antennae strongly elongate, antennal segments long, moderately flattened and gradually thin towards apex, scapes shorter, nearly straight, wider apically, apical segments longest, thinnest, narrowed and more or less curved apically ; segment I of foretarsi more or less flattened ventrally in male. 3
2. Head metallic green ; pronotum, tibiae and tarsi yellowish red ; apical antennal segments broader and rounded at apex ; segments of maxillary palpi rather broad ; aedeagus with an indistinct dorsal hook. *C. ruficollis* (Fabricius)
- Head black ; pronotum, tibiae and tarsi light brown ; apical antennal segment spindleform ; segments of maxillary palpi slender ; aedeagus with short dorsal hook which is more broad and rounded at apex. *C. semitestaceus* (Fairmaire)

3. Palpi blackish ; parameres moderately elongate ; aedeagus strongly flattened and thin ventrally with two very short ventral hooks. *C. nagarjunkondaensis* sp. nov.
- Palpi yellowish or brownish ; parameres abbreviated and modified ; aedeagus not flattened and with two longer ventral hooks. 4
4. Antennae and legs yellowish red or light brown ; élytra metallic blue with whitish pubescence ; abdomen dark blue ; aedeagus broad at apex. *C. pictus* (Laporte)
- Antennae and legs dark bluish ; élytra dark sky blue with fine dark brown pubescence ; abdomen black ; aedeagus spindle shaped at apex. *C. audouini* (Haag-Rutenberg)

76. *Cylindrothorax audouini* (Haag-Rutenberg)

Lytta audouini Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.*, **24** : 89.

Epicauta audouini Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 71.

Cylindrothorax audouini Kaszab, 1955, *Ann. Hist. nat. Mus. Nat. Hung.*, s. n., 6.

Locality records and specimens examined

INDIA : Goa : Mormugao, ix. 1916, 9 ex., (S. Kemp) ; Karnataka : Kanara dist., Hill stream on Jog Sagar Road, 30 xi. 1928, 2 ex., (*H. S. Rao*) ; Shimoga dist., Sagar, 3-4. xii. 1928, 1 ex. (*H. S. R.*), Belgaum dist., Gokak, xi. 1928, 2 ex., at light (*B.P. & H.S.R.*), Gujarat : Sasangir, 7-11 ix. 1969, 22 ex. (*T.G.Vazirani & G.N.Saha*) ; Bihar : Madhupur, 22. xii. 1953, 1 ex. (*A.P.K. & G. M.*).

Description

Male : Body elongate, dark sky blue with dark brown pubescence, palpi and pronotum brown, head and abdomen black, length 14-18 mm.

Head : Finely but sparsely punctate ; labrum rounded laterally, transverse with long fine hairs ; antennae elongate, gradually thin towards apex, segment I moderately broad at apex, segment II smallest, segment III strongly notched at apex and longer than segment I, segments IV-VII gradually increasing in length, segments VIII-X almost sub-equal, segment XI longest, thinnest, narrowed and slightly curved apically ; eyes strongly large, convex, elongate-oblong and distinctly granulate.

Pronotum : Fairly elongate, sparsely pubescent and punctate.

Scutellum Blunt at apex, triangular, dark bluish.

Elytra : Elongate dark, sky blue, with fine dark brown pubescence.

Ventral side : Maxillary palpi elongate, segment II nearly equal to apical one which is moderately broad at apex; mentum large, concave centrally; apical segment of labial palpi triangular and fairly flattened; mesosternum pointed at apex; fifth visible sternite with broad triangular emargination, sixth visible sternite bifid and each lobe rounded at apex; segment I of foretarsi strongly flattened ventrally.

Genitalia Basal piece, large, elongate convex; parameres very small, curved and narrowed apically; aedeagus elongate, curved, spiniform at apex with two sharply pointed ventral hooks and a small dorsal hook.

Female : More or less same as male except last visible sternite.

Distribution : INDIA.

New Records : INDIA : Goa, Karnataka, Gujarat and Bihar states. No specific localities from India mentioned in earlier contributions.

77. *Cylindrothorax nagarjunkondaensis* sp. nov.

Male Body elongate, mostly deep blue, head blackish brown or blackish, pronotum yellow, with fine, short, silky white pubescence, length 15-20 mm.

Head : Finely and sparsely punctate and hairy, usually with a reddish patch on frons; labrum wider anteriorly, with fine setiferous punctures; antennae elongate, gradually thin towards apex, segment I moderately broad apically, segment II smallest, segment III fairly notched at apex and longer than segment I, segments IV-VIII gradually increasing in length, segments IX-X subequal, segment XI longest, thinnest, narrowed and fairly curved apically.

Pronotum : Fairly elongate, yellow, strongly shiny, sparsely and finely pubescent and punctate.

Scutellum Large, triangular, yellowish, rounded at apex.

Elytra : Elongate, metallic deep blue with fine, short silky white pubescence.

Ventral side With short silky white pubescence ; maxillary palpi brownish, segment II fairly elongate and longer than apical one which is moderately broad at apex ; mentum large, concave centrally ; apical segment of labial palpi triangular and fairly flattened ; mesosternum moderately broad at apex ; fifth visible sternite with broad triangular emargination, sixth visible sternite bifid and each lobe moderately acuminate at apex ; segment I of foretarsi strongly flattened ventrally.

Genitalia : (Fig. 106 and 107) : Basal piece moderately large, elongate and convex ; parameres moderately elongate, curved, divergent and pointed at apex ; aedeagus fairly elongate, strongly flattened and thin ventrally, straight and pointed at apex with two very short ventral hooks and a blunt dorsal hook.

Female : Apical segment of antenna less curved ; last visible abdominal sternite with a shallow, small triangular emargination ; segment I of protarsi cylindrical.

Holotype : ♂, INDIA : Andhra Pradesh, Nagarjunkonda Dam Survey, Madhavaram, 10. x. 1963 (*B. Nath*).

Paratypes : 8 ♂♂, 8 ♀♀ with the same data as for the holotype ; ♂♂, 1 ♀, Suryarao pet, 14. x. 1963 (*B. Nath*) ; Andhra Pradesh : Cuddapah dist., Razampeta, 152m., 28-29. vii. 1929, 6 ex., at light (*H. S. Pruthi*) ; Maharashtra : Aurangabad (Dn), 1965, 1 ex. (*S. N. Rao*).

Remarks : The new species comes near to *audouini* (Haag R.) but it can be distinguished by the deep blue colour, silky white pubescence, yellowish pronotum and scutellum, blackish palpi, aedeagus being strongly flattened and broad at apex.

78. *Cylindrothorax pictus* (Laporte)

Lytta pictus Laporte, 1840, *Hist. Nat. Ins.* **11** : 275.

Epicauta picta : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 80.

Cylindrothorax pictus : Kaszab, 1955, *Ann. Hist. nat. Mus. Nat. Hung.*, s. n. 6. 235.

Locality records and specimens examined

INDIA : Punjab : Dist. Karnal, vill. Baros, Kaithal road, 18. ix. 1963, 1 ex. (*R. K. Bhatnagar*) ; Rajasthan : Jodhpur, Paota, 9. viii, 1961, 1 ex. ; Patodi House, 15. ix. 1961, 2 ex. (*O. Singh*) ; 7. ix 1963, 1 ex. (*Matilal*) ; 11. ix. 1963, 1 ex. (*V. C. Agarwal*) ; 27. vii 1970, 2 ex., at light (*V. P. Shom*) ; Gujarat : ix. 1969, 2 ex. ; Visavadar, 3-5. ix. 1969, 6 ex., at light ; Surendranagar, 19-21. ix.

1969, 3 ex. (T. G. Vazirani & G. N. Saha) ; Anand, 1 ex. (V. C. Patel).

Description

Male Antennae, palpi, pronotum and legs yellowish-red or light brown, elytra metallic blue, ventral side dark blue, length 14-17 mm.

Head : Black, shiny with fine whitish setiferous punctures, rounded posteriorly ; mandibles fairly bent at apex ; labrum transverse ; antennae elongate, gradually thin towards apex, segment I widest apically, segment II smallest, segment III strongly notched at apex, segment IV moderately notched at apex, segments V-X almost subequal, segment XI longest and thinnest ; eyes very large, globular, convex and granulate.

Pronotum Strongly elongate, poorly pubescent, and hairy.

Scutellum : Fairly narrowed and light brown at apex.

Elytra Elongate, parallel, narrowed at apex with fine whitish pubescence.

Ventral side : With fine whitish hairs ; maxillary palpi moderately elongate, segment II longest ; apical segments of both palpi broad ; mentum transverse, slightly concave in the middle ; mesosternum nearly glabrous, moderately large and pointed at apex ; metasternum fairly convex and poorly hairy at the middle ; abdomen elongate, visible sternites with a few whitish hairs, last visible sternite completely bilobed, legs elongate ; segment I of foretarsi moderately flattened ventrally.

Genitalia Basal piece large, elongate-oblong, convex ; parameres very short and abbreviated, obliquely bent at apex ; aedeagus moderately elongate and curved, broad at apex with two small sharply pointed ventral hooks and a very short dorsal hook.

Female Last visible sternite with a shallow round emargination at apex ; segment I of foretarsi not flattened.

Distribution INDIA.

New Records INDIA : Punjab, Rajasthan & Gujarat states. Previously recorded from Bengal.

79. *Cylindrothorax ruficollis* (Fabricius)

Cantharis ruficollis Fabricius, 1792. *Ent. Syst.*, 1 (2) : 85 ; Olivier, 1795. *Ent.*, 111, No. 46 : 11.

Cantharis tenuicollis Pallas, 1798, *Icon. Ins.*, : 102 (Beluchistan).

Cantharis ornata Laporte, 1840, *Hist. Nat. Ins.*, **2** : 275.

Cantharis syrica Herbst, 1784, *Arch. Ins.*, **5** : 145 (N. Africa).

Epicauta tenuicollis : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 84

Cylindrothorax ruficollis : Kaszab, 1955, *Ann. Hist. natn. Mus. Nat. Hung.*, s. n., **6** : 235.

Locality records and specimens examined

INDIA : Goa : Mormugao, ix. 1916, 11 ex. (S Kemp) , Karnataka : Belgaum dist., Gokal, xi. 1928, 1 ex., at light (B.P. & H.S.R.) ; Maharashtra : Poona, Dhond, 2-3. x. 1933, 3 ex., at light (P. Banerji); Aurangabad (Dn.), 1965, 2 ex. (S. N. Rao) ; Tamilnadu : 2 ex., 25. x. 1888, 1 ex. (Supdt Central Museum, Madras) ; Mahanandi, 242 m., foot of Nallamalai Hills, 12. viii. 1929, 1 ex. (H. S. Pruthi) ; Gujarat : Visavadar, 3-5. ix. 1969, 15 ex., at light (T G. Vazirani & G. N. Saha) , Sasangir, 7-9. ix. 1969, 28 ex., at light (T G. Vazirani & G. N. Saha) ; Anand (G. S.), 1 ex. (V. C. Patel) , Rajasthan : x. 1941, 1 ex. (B. N. C. & M. L. R.) , Bihar : Santal Parganas, Pakur, 23. x. 1938, 1 ex., at light (H. A. Hafiz) Madhupur, 22. xii. 1953, 2 ex. (A. P. K. & G. M.) ; Uttar Pradesh : Banaras, 1945, 6 ex. (Ram Kasis).

Description

Male : Body elongate, strongly shiny with fine silky white hairs ; head, elytra, ventral side and femora metallic green ; pronotum tibiae and tarsi yellowish red ; mouth parts and antennae blackish or dark brown ; length 11-15 mm.

Head Finely punctate, hairy and posteriorly rounded ; eyes very large, convex and coarsely granulate , antennae moderately elongate, segments wider apically with small fine hairs, segments I-II metallic greenish, other segments blackish, segment I cylindrical, arched and longest, segment II smallest, segment III slightly smaller than I, segments III-X flattened and gradually decreasing in length, segment XI rounded apically.

Pronotum : Strongly narrowed, fairly depressed anteriorly, sparsely hairy and punctate.

Elytra Elongate, parallel with fine silky white setiferous punctures, rounded at apex.

Ventral side Cardo elongate and flat ; maxillary palpi strongly elongate, apical segment longest, segment III widest, segments II-III with long whitish hairs ; mentum moderately concave ; apical segment of labial palpi large, triangular and strongly flattened ; mesosternum large, almost flat and glabrous, pointed at apex ;

metasternum convex with a median longitudinal blackish line ; abdomen fairly elongate, last visible sternite completely bilobed in male , legs fairly long , fore- and midtibial spurs moderately elongate and pointed apically , hind tibial spurs short, concave inwardly, outer spine broader, blunt at apex and inner one pointed apically ; tarsal segments strongly elongate and cylindrical ; claws moderately curved.

Genitalia Basal piece large, rounded posteriorly, parameres short, broad in the middle, rounded at apex ; penis elongate, moderately curved, rounded at apex with two sharply pointed ventral hooks and an indistinct dorsal hook.

Female Apical segments of antennae narrower and longer than those of male , maxillary palpi less elongate than those of male ; last visible sternite entire.

Distribution INDIA : Beluchistan ; North Africa.

New Records INDIA : Tamilnadu, Gujarat, Rajasthan, Bihar and Uttar Pradesh states. Previously recorded from 'East India'.

Remarks There are very few Indian species of Meloidae like *ruficollis* which is distributed in oriental as well as ethiopian and palaeartic region. It is most widely distributed species of the genus in India.

80 *Cylindrothorax semitestaceus* (Fairmaire)

Cantharis semitestacea Fairmaire, 1896, *Ann. Soc. ent. Belg.* XL : 51-52.

Epicauta semitestacea : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 82.

Cylindrothorax semitestaceus : Kaszab, 1955, *Ann. Hist. natn. Mus. Nat. Hung.*, s. n. 6 : 240.

Locality records and specimens examined

INDIA : Gujarat : Katiyana, x. 1949, 2 ex. (*T. G. Vazirani*).

Description

Male Body small, elongate, head black, pronotum, tibiae and tarsi light brown, mouth parts and other portions of the body dark brown with shiny, fine yellowish small hairs, length 10-11 mm.

Head Labrum fairly transverse ; clypeus black with fine long whitish hairs ; frons moderately rugose and punctate ; eyes fairly large and granulate ; antennal segments less elongate, subcylindrical

and all nearly of same width, segment I arched, narrowed and almost equal to segment III, segment II smallest, segments III-X gradually decreasing in length, segment XI longer than the preceding ones, spindle-shaped.

Pronotum Narrowed, campanuliform, poorly hairy and punctate.

Scutellum Brown, broad and rounded at apex, indistinctly pubescent.

Elytra Elongate, dark brown with fine short yellowish pubescence.

Ventral side : Maxillary palpi strongly elongate and segments slender; mentum nearly oval, apical segments of labial palpi thin and triangular; mesosternum large, almost glabrous and blunt apically; metasternum poorly hairy at the centre, last visible sternite bifid and lobes semicircular at apex.

Genitalia Basal piece transverse; parameres broad in the middle and narrowed at apex, aedeagus elongate, apex moderately narrowed with two sharply pointed ventral hooks placed wide apart and a very short dorsal hook with broad and rounded apex.

Female : Maxillary palpi less elongate than those of male; last visible sternite entire.

Distribution INDIA.

New Record INDIA : Gujarat. Previously recorded from Kanara.

81 * *Cylindrothorax braetii* (Fairmaire)

Cantharis braetii Fairmaire, 1894, *Ann. Soc. ent Belg.*, **28** : 41-42.

Lytta braetii Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 91.

Cylindrothorax braetii Kaszab, 1955, *Ann. Hist. natn. Mus. Nat. Hung.*, S. n., **6** : 236.

Distinctive characters : Length 10 mm.; dark blue; pronotum very smooth; elytra less smooth, blueviolet, slightly hairy; ventral part dark blue.

Distribution INDIA (North-Bengal).

Genus IX. *Cyaneolytta* Peringuey

Cyaneolytta Peringuey, 1909, *Trans. R. Soc. S. Africa*, **1** (1) : 249; Borchmann,

1917, *Junk's Col. Cat.*, **17** (69) : 103-105 ; Kaszab, 1953, *Ann. Hist. natn. Mus. Nat.-Hung.* s. n., **4** : 91-93.

The genus *Cyaneolytta* was erected by Peringuey in 1909. Borchmann (1917) catalogued 38 species in the genus *Cyaneolytta*. In the revisionary work on the genus Kaszab (1953) included 29 species and placed them in 11 groups. Some of the earlier species had been synonymised. Most of the species of the genus are recorded from Africa. Only a single species has been described from Madagascar, and three species, *acteon* (Laporte), *coerulea* (Leuckart) and *kulzeri* Kaszab had been recorded from India. One new species, *C. rajasthanica* has been described from Rajasthan by me. All the above four species are found in Rajasthan, north-west India where the population of the genus is also very abundant. From the above fact, it seems that desert and semidesert areas are favoured by the species of the genus.

Characters of the Genus Dark of light blue insects with a red patch in the centre of the metasternum; mentum transversely hexagonal; ligula triangular, dilated, deeply grooved longitudinally in the centre, the ligular lobes long and densely ciliate; maxilla and mandible robust, apical inner part of mandible with four blunt denticles at tip; labrum very broad, eyes very large, reniform; antennae long, second segment small, segments 4-11 fairly compressed, longer than broad, dilated at apex; pronotum moderately attenuated anteriorly; scutellum as broad as long; elytra very long, subparallel, glabrous or very poorly pubescent; legs slender, very long; tarsi mostly as long as or sometimes, a little longer than tibiae, tarsal segments compressed, poorly bristly underneath; claws long, greatly divaricating; inner spur of hind tibia variable in shape.

In male, basal segment of fore tarsi dilated or lobate inwardly; outer spur of midtibia dilated and laminate.

Distribution ASIA and AFRICA

KEY TO SPECIES OF THE GENUS *Cyaneolytta* Peringuey

- | | | | |
|--|-----|-----|---------------------------------|
| 1. Head with a small, median brownish macula on frons | ... | .. | <i>C. coerulea</i> (Leuckart) |
| — Head without a brownish macula on frons. | | | 2 |
| 2. Body opaque, labrum small; body small (14-19 mm.) | ... | ... | <i>C. rajasthanica</i> sp. nov. |
| — Body shiny, labrum very large, body large (21-31 mm.) | | | 3 |
| 3. Antennal segments elongate and slender, pronotum small; in male fore tarsal segment I fairly elongate and strongly excavated inwardly; aedeagus narrowed at apex. | ... | ... | <i>C. acteon</i> (Laporte) |

- Antennal segments fairly flattened and broader ; pronotum large ; in male fore tarsal segment I broad and with dense setae inwardly at apex ; apex aedeagus rounded at apex. *C. kulzeri* Kaszab,

82. *Cyaneolytta acteon* (Laporte)

Cantharis acteon Laporte, 1840, *Hist. Nat. Ins.*, 2 : 273.

Lytta acteon : Haag-Rutenberg, 1880, *Deutsche Ent. Zeitschr.*, 24 : 58.

Cyaneolytta acteon : Borchmann 1917, *Junk's Col. Cat.*, 17 (69) : 103 ; Kaszab, 1953, *Ann. Hist. natn. Mus. Nat. Hung.*, 4 : 81, 87, 92.

Locality records and specimens examined

INDIA : West Bengal : Maldah, 2 ex. (*W. H. Irvine*) ; Murshidabad, 1 ex. ; Berhampur, 1 ex. (*Atkinson*) ; Gujarat : Anand, Inst. of Agric., 1 ex. (*V. C. Patel*) , Rajasthan : Jodhpur, Basni village, 9. viii. 1962, 18 ex. (*R. C. Sarma*) ; Salawas village, 7. ix. 1962, 2 ex. (*K. C. Kansal*) ; SIKKIM : 1 ex.

Description

Male Body generally large, elongate, shiny, length 21-31 mm.

Head : Labrum very large, and wider than clypeus with erect coarse small hairs ; frons and vertex finely punctate and poorly hairy ; mandibles with well developed teeth apically ; antennae long, segments elongate.

Pronotum Finely punctate and poorly pubescent, with a deep median fovea at the posterior margin.

Scutellum With dense long hairs.

Elytra Fairly wide.

Ventral side : Moderately pubescent , mesosternum deeply concave centrally and with a longitudinal reddish patch ; metasternum black anteriorly, brownish posteriorly ; visible sternite V strongly bifurcate and the lobes with long dense hairs apically and on inner margin ; last visible sternite with shallow triangular emargination ; foretarsal segment I fairly elongate, broad, and deeply excavated ventrally in male.

Genitalia : Parameres less sclerotised anteriorly and membranous dorsally , aedeagus narrowed at apex with two small closely situated ventral hooks and one fairly bent dorsal hook.

Female Differs from male in having less elongate antennae, more flattened antennal segments, apical sternites entire and narrowed protarsal segment I.

Distribution India.

New Records INDIA : West Bengal, Gujarat, Rajasthan and Sikkim states. No specific locality mentioned in earlier contributions except 'east India.'

83. *Cyaneolytta coerulea* (Leuckart)

Cantharis coerulea Leuckart, 1825, *Geigers Mag. Pharm.*, **11** : 132.

Cantharis violaeca Brandt & Erichson, 1833, *Mediz. Zoo.*, **2** : 123.

Cyaneolytta coerulea : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 103
Kaszab, 1953, *Ann. Hist. nat. Mus. Nat. Hung.*, **4** : 81, 83, 91

Locality records and specimens examined

INDIA : Rajasthan : Awa vill. east of Marwar Jn., 8. vii. 1961, 9 ex. (*Survey Party*) ; Jodhpur, Salawasvell, 16. vii. 1961, 1 ex. (*Survey Party*) ; Jodhpur, Basin village, 9. vii. 1962, 1 ex. (*R. C. Sharma*) ; Jawasid, 9. ix. 1961, 4 ex. (*Survey Party*) ; Uttar Pradesh : Banaras, 7. viii. 1945, 2 ex. (*S. C. Baigh & Ram Kasis*). Madhya Pradesh : Gwalior, 8-16. viii. 1958, 3 ex. (*J. G. Pawar*) ; Jabalpur, 7. vi. 1963, 1 ex. (*S. Chakrapany*) ; Bihar : Madhupur, 22. xii. 1953, 1 ex. (*A. P. K. & G. M.*) ; Assam : Sibsagar, 1 ex. (*S. E. Beal*).

Description

Male Body small, convex, generally blackish blue, tip of abdomen generally exposed ; length 11-20 mm.

Head Moderately punctate and poorly pubescent, with a small, median brownish spot on frons, antennae elongate, finely and fairly pubescent, segment I fairly swollen apically, segment II very small, segment III slightly longer than IV, segments V-X gradually decreasing in length, segment XI slightly longer than X and narrower apically.

Pronotum Elongate sparsely punctate and strongly shiny, with a median deep groove posteriorly.

Scutellum Slightly convex and poorly pubescent apically.

Elytra Small, convex and fairly broad at apex.

Ventral side : Mentum concave ; labial palpi small, apical segment of labial palpi moderately flattened and triangular ; maxillary palpi fairly elongate ; mesosternum completely black, moderately concave at the centre, pointed apically ; metasternum small, almost completely black with an impunctate, glabrous, median brownish longitudinal wide line ; abdomen strongly wide basad, visible sternite V with a shallow round emargination, last visible sternite with round or triangular emargination ; tarsal segments strongly flattened.

Genitalia : Basal piece moderately broad with deep emargination ; parameres membraneous dorsally and pointed at apex ; aedeagus fairly coiled at base, strongly flattened subapically, with two closely situated ventral hooks and one small, strongly sharp dorsal hook.

Female : Groove on the pronotum less deep ; apical sternites entire.

Distribution : INDIA.

New Records : INDIA : Rajasthan, Uttar Pradesh, Madhya Pradesh, Bihar and Assam states. Previously recorded from Bengal only.

84. *Cyaneolytta kulzeri* Kaszab

Cyaneolytta kulzeri Kaszab, 1960, *Ent. Arb. Mus. Frey.*, **11** : 287-288.

Locality records and specimens examined

INDIA : Rajasthan : Paratypes, 1960, 2 ex. (male & female), Barmer, Thar Desert, viii. 55, (leg *P. S. Nathan*) deposited in the Hungarian National Museum, Budapest ; 20. xi. 1961, 2 ex. (male) (*A. K. Dutta*) ; Jodhpur, Basni village, 9. viii. 1962, 3 ex. (*R. C. Sarma*) ; Jodhpur, Lal Madan, Paota, 7. vii. 1961, 1 ex. (*Mrs G. Dutta*) ; Patodi House, 7. vii. 1961, 1 ex. (*J. S. Bhatti*) ; Patodi House, 10. vii. 1961, 1 ex. (*K. C. Kansal*).

Description

Male : Moderately large, deep blackish blue, shiny, length 25-28 mm.

Head Labrum very large, coarsely but moderately pubescent ; clypeus almost flat ; frons and vertex densely punctured, with very fine small hairs and a narrow median longitudinal impressed line ; mandibles strongly bent at right angle ; antennae small, segment I

fairly wide apically, segment II very small, segment III longest and strongly emarginate at apex, segments IV-XI progressively flattened, segment IV slightly smaller than I, segments V-VII asymmetrical, segments VIII-X triangular, segment XI elliptical ; eyes large, convex, finely granulate and strongly oblique.

Pronotum : Small, densely punctured, with fine, small pubescence and a median longitudinal impressed line posteriorly.

Scutellum Small, slightly convex.

Elytra : Widest subapically and each with four distinct longitudinal striations.

Ventral side Poorly pubescent ; mentum concave centrally with a few setae ; segment II of labial palpi with dense erect setae, apical segment of labial palpi strongly transverse and triangular ; terminal segment of maxillary palpi flattened and truncate apically ; mesosternum finely pubescent, concave centrally and with a reddish longitudinal patch, pointed apically ; metasternum brownish except lateral margin anteriorly which is black, truncate apically ; abdomen fairly wide based ; visible sternite V with fairly deep but round emargination ; last visible sternite with shallow triangular emargination ; fore and midtibial spurs elongate and strongly pointed apically, inner one narrower and elongate ; foretarsal segment I moderately elongate, strongly broad apically and with dense setae ventrally.

Genitalia Basal piece strongly elongate ; parameres curved, divergent, flattened and membranous apically ; aedeagus moderately stout, round at apex, with three small sharp hooks.

Female : Paratype female specimen with more distinctly dentate left mandibles, foretarsal segment I elongate, wider abdomen, visible sternite V superficially emarginate and last visible sternite very small, entire.

Distribution INDIA : Rajasthan.

85. *Cyaneolytta rajasthanica* sp. nov.

Female Body small, elongate, blackish, opaque, length 14-19 mm.

Head Depressed, sparsely punctate and poorly pubescent ; labrum small ; eyes strongly large and convex ; antennae (Fig. 108) moderately elongate, antennal segment I fairly wide at apex, segment II smallest, swollen and rounded apically, segments III-V flattened and gradually diminishing in length, segment XI slightly longer than X and narrower apically.

Pronotum : (Fig. 109) : Fairly broad, sparsely punctate, opaque with some dorsal depressions.

Scutellum Flat, triangular and sparsely pubescent.

Elytra Elongate and parallel.

Ventral side : Moderately pubescent ; mentum slightly concave ; apical segment of labial palpi strongly flattened and rounded at apex ; maxillary palpi fairly elongate ; mesosternum almost flat with elevated posterior margin ; metasternum with a distinct median longitudinal wide brownish line ; abdomen elongate ; tarsal segments cylindrical.

Male : Not examined.

Holotype ♀, INDIA Rajasthan, Jodhpur, Patodi House, 15. ix. 1961 (O. Singh).

Paratype : 1 ♀, with the same data as for the holotype.

Remarks : This species comes near to *C. coerulea* (Leuck.) but it can be distinguished by the opaque body, absence of spot on frons, wider pronotum, more flattened elytra and wider apical segment of labial palpi, distinct median longitudinal brownish line on metasternum, and narrower abdomen.

Genus X. *Sybaris* Stephens

Sybaris Stephens, 1832, 111. Ent., 5 : 70 ; Lacordaire, 1859, *Gen. Col.*, 5 : 682.

Prionotus Kollar & Redtenbacher, 1842, in Hugel, Kaschmir, 4 (2) : 536.

Type species : *Sybaris immunis* Stephens, 1832, designated by Wellman (1910).

The genus *Sybaris* had been proposed by Stephens in 1832. Previously the concept of the genus had not been properly understood taxonomically. Wellman (1910) and Borchmann (1917) placed the genus under the tribe Mylabrini. Kaszab (1959) erected the subtribe Lydina under the tribe Lyttini to accomodate the following genera : *Sybaris*, *Alosimus*, *Micromerus*, *Lydus* and *Oenas*.

According to the catalogue of Borchmann (1917) only 9 species belonging to the genus *Sybaris* had been known. The four species of the genus, namely, *testaceus* (Fabricius, 1792), *semivittatus* (Kollar & Redtenbacher, 1842), *tunicatus* (Kollar & Redtenbacher, 1842) and *usta* (Fairmaire, 1896) had been recorded from India but Borchmann (1917) did not include *testaceus* and *usta* in his catalogue. Three new species, namely, *burmaensis* from Burma,

cylindricus and *garhwalensis* from India are being described in the present work making a total of 7 species from India.

Dr. Friedrich Janczyk (Vienna) wrote that the types of *S. semivittatus* and *S. tunicatus* are deposited in the Vienna Natural History Museum. But examination of these was not possible. Dr. Janczyk expressed his inability in lending these material because the specimens appeared him fragile.

Characters of the genus Body elongate, slender, finely pubescent and less hard; head subtriangular or subrounded; labrum moderately large, truncate or slightly emarginated anteriorly; clypeus moderately elevated anteriorly; frons usually elevated centrally; eyes large, oval, convex, and coarsely granulated; antennae elongate, filiform or subsetaceous, middle segments generally subequal and apical segment usually spindleshaped, narrowest and longest; pronotum generally broad, sparsely punctate and pubescent; scutellum posteriorly rectangular and truncate at apex, elytra long, sparsely pubescent, generally dark brown or black posteriorly; maxillary palpi elongate, segments generally subcylindrical, apical segment slightly flattened apically, mentum generally subglabrous, transverse, rounded laterally and truncate anteriorly, labial palpi small, apical segment generally subtriangular; mesosternum subglabrous, subplane and pointed posteriorly; metasternum generally elevated medially, fore- and midtibial spurs generally elongate and pointed at apex, outer hind tibial spur broad apically, excavated inwardly, inner one smaller, more pointed and excavated inwardly, claws pectinate; abdomen moderately elongate; basal piece and parameres generally small and thick; aedeagus elongate, curved basally and strongly flattened apically with a minute ventral hook and a larger dorsal hook.

Distribution : ASIA and AFRICA.

KEY TO SPECIES OF THE GENUS *Sybaris* Stephens

- | | |
|--|---|
| 1. Elytra black or dark brown posteriorly ... | 2 |
| — Elytra entirely yellow ... | <i>S. burmaensis</i> sp. nov. |
| 2. Elytra with longitudinal vittae posteriorly. | <i>S. semivittatus</i> Kolar & Redtenbacher |
| — Elytra without such vittae ... | 3. |
| 3. Head dark brown and strongly punctate ; eyes very large ... | <i>S. garhwalensis</i> sp. nov. |
| — Head brown or testaceous and less punctate eyes smaller ... | 4. |
| 4. Pronotum fairly wide and deeply depressed anteriorly ... | <i>S. testaceus</i> Fabricius |
| — Pronotum narrowed and slightly depressed anteriorly ... | <i>S. cylindricus</i> sp. nov. |

86. Sybaris burmaensis sp. nov.

Male : Body dorsally yellow, ventrally reddish brown, with antennal segments IV-XI, tibiae and tarsi dark brown, finely pubescent ; length 12 mm.

Head : Subtriangular, shiny, finely punctate with yellow pubescence, rounded posteriorly ; labrum fairly wide, subrounded elevated and emarginated apically ; clypeus more elevated than labrum and truncate apically ; eyes (partly damaged) large, oval, coarsely granulate ; antennae elongate, filiform, segment I small and widest apically, segment II smallest, segment III smaller than IV, segments V-IX subequal, segments X-XI spindle-shaped, subcylindrical, segment XI narrowest and longest.

Pronotum : (partly damaged) : Broad, shiny, poorly punctate and hairy.

Scutellum Pubescent, posteriorly rectangular and truncate at apex.

Elytra Elongate, parallel, yellow with fine yellowish pubescence.

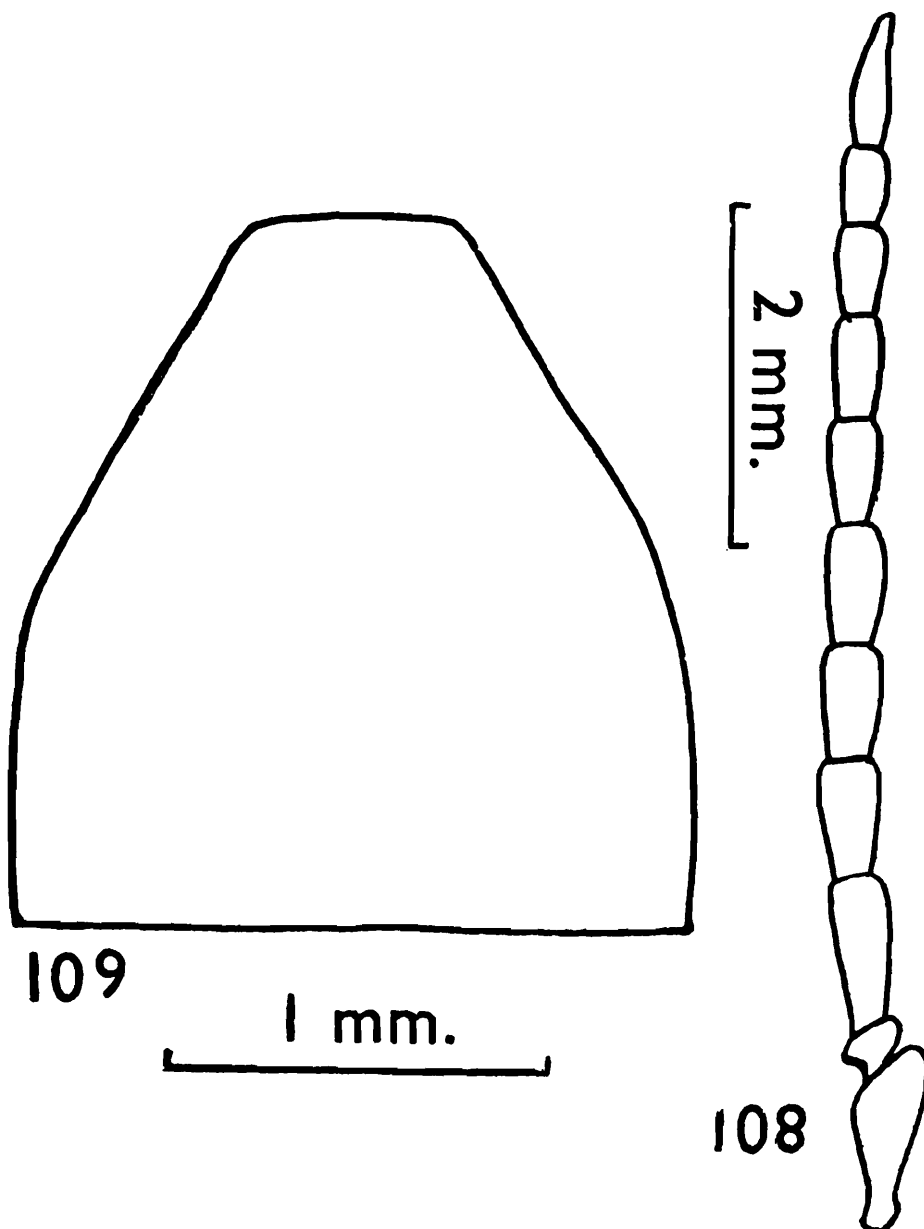
Ventral side : With fine brownish pubescence, maxillary palpi elongate, segments II and III cylindrical, segment II longest and curved, segment III smaller than segment IV which is slightly flattened ; labial palpi small, apical segment subtriangular and flattened ; mentum (partly damaged) small, planate, impunctate glabrous, rounded laterally and truncate anteriorly ; mesosternum subplanate, poorly pubescent and sharply pointed apically, metasternum moderately large, depressed, finely pubescent, fore and midtibial spurs elongate and pointed at apex ; outer hind tibial spur fairly broad, deeply excavated inwardly and truncated apically, inner one smaller, narrower but concave inwardly.

Genitalia : (Fig. 110 and 111) : Basal piece narrowed at base ; parameres elongate, parallel bifurcated beyond the middle and blunt at apex ; aedeagus curved posteriorly, rounded apically with a minute small ventral hook and a sharply pointed dorsal hook.

Female : Unknown.

Holotype ♂ U. BURMA : Le 0,357 m, x. 1915, Ind. Mus., (Miss Molesworth).

Remarks : It can be easily distinguished from all other species of the genus by the subtriangular head and entirely yellow elytra.



Figs. (108-109) *Cyaneolytta rajasthanica* sp. nov., ♀, 108. Antenna; 109. Pronotum.

87. *Sybaris cylindricus* sp. nov.

Male Body testaceous with antennae, elytral apex, tibiae and tarsi dark brown; finely pubescent, length 11-12 mm.

Head Subrectangular, elevated centrally, declivous and rounded posteriorly, feebly punctate and pubescent, labrum strongly transverse, slightly emarginated in front anteriorly, clypeus slightly elevated and truncate anteriorly; frons elevated at the centre; eyes large, oval, strongly convex, coarsely granulate; antennae moderately elongate, filiform, segment I small, widest apically, segment II smallest, segment III longer than I and segments IV-X which are subequal, segment XI spindle-shaped, narrowest and longest.

Pronotum : Subcylindrical, elongate, feebly punctate and poorly pubescent.

Scutellum Finely pubescent, broad and rounded apically.

Elytra : Sparsely pubescent, wider towards apex and dark or blackish brown apically.

Ventral side Sparsely pubescent, maxillary palpi elongate, segments II and III cylindrical, apical segment longest and flattened apically; mentum small, impunctate, glabrous, rounded laterally and truncate apically; labial palpi small, with subrounded apical segment; mesosternum slightly elevated centrally, moderately pointed apically; metasternum poorly pubescent and depressed centrally; fore and midtibial spurs elongate and pointed at apex; outer hind tibial spur broad, excavated inwardly and truncate apically, inner one smaller and narrower but concave inwardly.

Genitalia (Fig. 112 and 113) : Basal piece small, narrowed at base; parameres elongate and bifurcated at the middle, moderately pointed at apex; aedeagus rounded at apex with a minute ventral hook and a strongly curved dorsal hook subapically.

Female : Apical segments of maxillary and labial palpi less flattened.

Holotype ♂, INDIA : Bihar, Santal Pargana, Pakaur Subdivision, Amrapara, 12. xi. 1938, at light (*H. A. Hafiz*).

Paratype : 1 ♀, Maharashtra, Belgaum dist., Gokak, xi. 1928, at light (*B. P. & H. S. R.*).

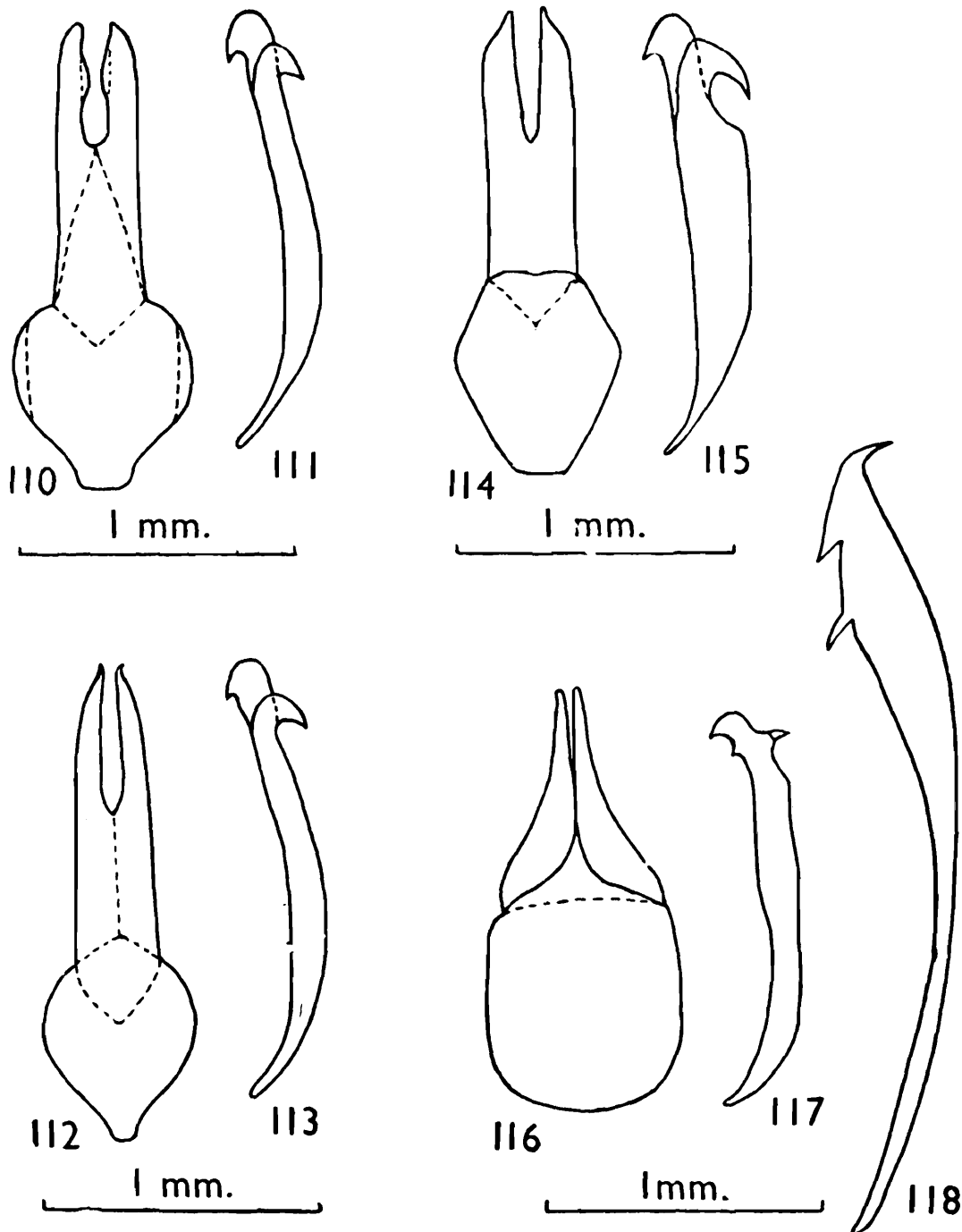
Remarks The new species is very near to *burmica* sp. nov. but it differs being mostly testaceous colour, and in having dark brown elytral apex, longer apical segment of maxillary palpi, subrounded apical segment of labial palpi and less pointed apex of mesosternum.

88. *Sybaris garhwalensis* sp. nov.

Male : Body yellowish except mentum and submentum, elytral apex, apices of the femora, tibiae and tarsi which are dark brown; finely pubescent; length 13 mm.

Head Pubescent, fairly punctate and strongly rounded posteriorly; labrum small, rectangular, finely punctate and pubescent, truncate anteriorly; clypeus also small, impunctate, slightly elevated and truncate anteriorly, frons, vertex and occiput coarsely punctate; eyes strongly large, convex, coarsely granulate and near to each other underneath, interocular space very small;

mandibles extending beyond labrum ; antennae filiform, fairly elongate and extend beyond the middle of elytra, segment I moderately wider apically and slightly longer than III, segment II smallest, segments IV-X subequal, segment XI longest, nearly spindle-shaped and pointed apically.



Figs. (110-111) *Sybaris burmaensis* sp. nov., ♂ 110. Tegmen. ; 111. Aedeagus.

Figs. (112-113) *Sybaris cylindricus* sp. nov., ♂, 112. Tegmen ; 113. Aedeagus.

Figs. (114-115) *Sybaris garhwalensis* sp. nov. ♂, 114. Tegmen ; 115. Aedeagus.

Figs. (116-117) *Eolydus meghalayaensis* sp. nov., ♂, 116. Tegmen ; 117. Aedeagus

Fig. (118) *Meloe arunachale* sp. nov., ♂, 118. Aedeagus.

Pronotum : Moderately broad, shiny, poorly punctate and hairy, deeply depressed anteriorly.

Scutellum : Pubescent, posteriorly rectangular and truncate at apex.

Elytra Elongate, parallel, finely pubescent, with apical 1/4 dark brown.

Ventral side Sparsely pubescent ; maxillary palpi moderately elongate, segment II and III subcylindrical, apical segment subrectangular but slightly flattened and wide at apex ; mentum fairly transverse, subrectangular, subglabrous and concave centrally ; labial palpi small, apical segment of labial palpi strongly flattened and triangular ; mesosternum moderately large, subglabrous and apically pointed ; metasternum elevated with a median impunctate line ; fore and midtibial spurs very fine, elongate and pointed at apex ; outer hind tibial spur moderately broad, deeply excavated inwardly and dentate at apex.

Genitalia (Fig. 114 and 115) : Basal piece small, narrowed basally ; parameres small and bifurcated from the middle , aedeagus elongate, curved posteriorly, rounded and flattened apically with a minute ventral hook and a dorsal hook which is large, strongly bent and pointed at apex.

Holotype ♂, INDIA : Uttar Pradesh, Garhwal dist., Palwara, 1311 m., 2. ix. 1959 (*B. S. Lamba*).

Remarks This species is close to *S. cylindrica* sp. nov. but it differs by the dark brown and strongly punctate head, very large eyes, more elongate antennae and wider pronotum.

89. *Sybaris semivittatus* (Kollar & Redtenbacher)

Prionotus semivittatus Kollar & Redtenbacher, 1842, in Hugel, Kaschmir, 4 (2) : 537

Sybaris semivittatus : Borchmann, 1917, *Junk's Col. Cat.*, 17 (69) : 5.

Locality records and specimens examined

INDIA : Andhra Pradesh : Nagarjunkunda, Nagarjunkunda dam, 28. ix. 1963, 6 ex. ; Madhavaram, 10-11 x. 1963, 12 ex. ; Suryarao pet, 14. x. 1963, 1 ex. (*B. Nath*). , Maharashtra : Poona, Dhond, 2-3. x. 1933, at light, 2. ex. (*P. Banerji*) ; Panchgani, 1219-124 m , W. Ghats, 1 ex. (*E. Blatter, S. J. & Fernandez*) ; Bihar : Purneah dist., Bhogaon, 30. ix. 1908, 1 ex. (*C. A. Paiva*) ; Madhupur, 22. xii. 1953, 1 ex. (*A. P. K. & G. M.*) , Madhya Pradesh : Nimar Div.,

East Asir range, 5. x. 1956 (*F. R. I. Project*), deposited in F R. I., Dehra Dun.

Description

Male Body elongate oblong, mostly reddish brown with antennae, eyes, clypeus partly, labrum, elytral vittae, maxillary and labial palpi, legs and some other ventral parts black or dark brown; finely pubescent; length 11-15 mm.

Head Subrounded, finely punctate and pubescent; eyes large, subrounded, strongly convex and coarsely granulate; antennae elongate, filiform, extend upto the middle of elytra, segments cylindrical, segment I slightly smaller than segment III, segment II smallest, segments III-V subequal, segments VI-X slightly smaller than preceding ones, segment XI longest, narrowed and spindle-shaped.

Pronotum Elongate, broad, subplanate, finely punctate and pubescent.

Scutellum Densely pubescent, posteriorly rectangular and truncate at apex.

Elytra Finely pubescent, each with a black vitta from the apex to middle and sometimes extending beyond the middle.

Ventral side Maxillary palpi moderately elongate, segment II and III subequal and cylindrical, apical segment longest, subrectangular, and slightly flattened; mentum dark brown, hexagonal, glabrous, impunctate and slightly depressed centrally, labial palpi very small, apical segment longest, moderately flattened and slightly wider at apex; mesosternum sharply pointed apically; metasternum partly dark and partly reddish brown with an impunctate median line, fore and mid tibial spurs elongate and pointed at apex; outer hind tibial spur strongly large, broad, spoon-shaped and excavated inwardly at apex, inner spur narrower, smaller but flattened and truncate apically abdomen mostly dark brown except 2 or 3 visible apical sternites which are testaceous; last visible sternite with slight emargination at apex.

Genitalia Very hard, basal piece small, narrowed at base, convex dorsally, parameres parallel, narrowed and thick, aedeagus fairly wide and concave at basal region, narrowed and rounded at apex with a small ventral hook and a broad, flattened dorsal hook.

Female Antennal segments generally smaller and last visible sternite truncate.

Distribution INDIA.

New Records INDIA : Andhra Pradesh, Maharashtra, Bihar and Madhya Pradesh states. Previously recorded from Kashmir.

90. *Sybaris testacea* (Fabricius)

Cantharis testacea Fabricius, 1792, *Ent. Syst.*, **1** (2) : 85.

Lytta testacea, Fairmaire, 1896, *Ann. Soc. ent. Belg.*, **40** : 53-54.

Sybaris testacea Blair, 1921 *Trans. ent. Soc. Lond.*, **11** (1) : 282.

Locality records and specimens examined

INDIA : Karnataka : Bangalore, 2 ex., det. Wellmen, (Cameron); Orissa : Barkuda Id., Chilka lake, 16. ix. 1919, 1 ex., det. K. G. Blair, (*E. Brunetti*) ; Ganjam dist., Rambha, 16. ii. 1922, 2 ex., at light (*N. Annandale*).

Description

Female Body testaceous with labrum, antennae, maxillary and labial palpi, meso and metathorax partly, legs and abdomen except the last two visible sternites dark brown ; with fine brownish pubescence ; length 11-14 mm.

Head : Punctate ; labrum transverse ; clypeus slightly elevated and truncate anteriorly ; frons slightly elevated at the centre ; vertex slightly depressed ; eyes very large, subrounded, coarsely granulate, and strongly convex ; antennae filiform, moderately elongate, segment I slightly wider than other segments, segment II smallest, III-IX subequal, segment III subequal to segment I and slightly smaller than the preceding ones, segment XI longest, spindle-shaped.

Pronotum Broad, punctate, fairly depressed anteriorly.

Scutellum . Densely pubescent, posteriorly rectangular and truncate at apex.

Elytra Finely pubescent, apical one-fourth blackish brown, and slightly narrowed at apex,

Ventral side Maxillary palpi elongate, segments subcylindrical, segments III and IV subequal and slightly longer than III ; mentum flat, glabrous, impunctate and hexagonal ; labial palpi very small, apical segment flattened and broad at apex ; mesosternum large, finely pubescent, subrounded anteriorly and pointed apically ; metasternum sometimes dark brownish ; sometimes femora entirely dark brown.

Male : Not examined.

Distribution : INDIA.

New Records : INDIA : Karnataka, Orissa States.

91. **Sybaris tunicatus* (Kollar & Redtenbacher)

Prionotus tunicatus Kollar & Redtenbacher, 1842, in Hugel, *Kashmir* **4** (2) : 537.

Sybaris tunicatus : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 5.

Distinctive characters Body rusty red ; antennae, eyes, elytral apices, tibiae and tarsi black ; elytra with large macula basally.

Distribution : INDIA (Kashmir).

92. **Sybaris usta* (Fairmaire)

Lytta usta Fairmaire, 1896, *Ann. Soc. ent. Belg.*, **40** : 54.

Lytta usta : Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 99.

Sybaris usta Blair, 1921, *Trans. ent. Soc. Lond.*, **11** (1) : 282

Sybaris usta : Kaszab, 1962, *Ann. Hist. nat. Mus. Nat. Hung.*, **54** : 297.

Distinctive characters Length 13-14 mm. ; elytra black apically ; head with transversal furrow between the eyes ; abdomen black in the middle ; metasternum slightly blackish on the sides.

Distribution SOUTH INDIA (Kanara).

Genus XI. *Eolydus* Denier

Eolydus Denier, 1913, *Bull. Soc. ent.*, **16** : 231.

Type species : *Eolydus atrocoeruleus* Denier, 1913, which has been synonymised by Kaszab (1961) with *Lydus atripes* (Pic, 1905).

The genus *Eolydus* is very closely allied to the genus *Lydus* Latreille, 1803 and both the genera belong to subtribe Lydina Kaszab, 1959. The following 6 species belonging to the genus *Eolydus* are known at present *atripes* (Pic, 1905) from India and Iraq, *afghanicus* Kaszab, 1958, from Afghanistan, *conspicuus* (Waterhouse, 1889) from Iran, *indicus* Kaszab, 1961, and *kanarensis* Kaszab, 1961, from India, *melanura* (Hope, 1831) from India and Nepal. In the

present work a new species, namely, *meghalayaensis*, has been described from north-east India.

Characters of the Genus Body usually elongate oblong, finely and sparsely pubescent ; head subrounded, widest medially, depressed dorsally, labrum transverse ; eyes large, convex, finely granulate ; antennae usually reaching slightly behind elytral base, antennal segments thick, scape usually wider apically and apical segment generally longest ; pronotum broad and subquadrate ; Scutellum large and truncate apically, elytra elongate, parallel, finely pubescent and rounded apically, apical segment of labial palpi usually strongly flattened at apex, midtibial outer spur large, fairly rounded and inwardly excavated at apex, inner one slender ; last segment of all tarsi usually emarginated inwardly ; last visible sternite narrowed and with a sharp deep emargination at apex ; aedeagus moderately robust, usually with dorsal hook larger than the ventral ones.

Distribution ASIA.

KEY TO SPECIES OF THE GENUS *Eolydus* Denier

1. Pronotum black ; two-third of elytra yellow or brownish and the posterior one-third black ; mesosternum aciculate apically *E. melanura* (Hope)
- Pronotum yellow elytra metallic blue ; mesosternum blunt at apex *E. meghalayaensis* sp. nov.

93. *Eolydus meghalayaensis* sp. nov.

Male Body small, elongate, metallic blue, pronotum yellow, antennae and legs brown ; length 9-10 mm

Head Dark metallic blue, sparsely punctate and hairy ; labrum and clypeus with more thick greyish hairs ; frons and vertex fairly depressed, eyes large, finely granulate ; antennae extends beyond the base of elytra, segment, I widest, segment II smallest, segment III twice in length of II and slightly smaller than I, segments IV-X subequal, segment XI longest, widest subapically and sharply pointed apically, apical segment wider than the preceding ones ; mandibles short, not extending beyond labrum.

Pronotum Yellow, broad, impunctate and poorly hairy.

Scutellum Large, broad, nearly impunctate and glabrous.

Elytra Metallic blue, finely pubescent, lacking distinct punctures, and rounded apically.

Ventral side Dark bluish, finely pubescent, mentum large, flat, poorly pubescent and hairy; apical segment of labial palpi triangular, fairly flattened and wide apically, maxillary palpi elongate, apical segment moderately wide apically, mesosternum triangular, flat, nearly impunctate and glabrous, blunt at apex, metasternum large and depressed dorsally; last visible sternite strongly narrowed, fairly hairy with a deep, triangular and sharp emargination apically; midtibiae widest apically; segment I of fore tarsi fairly lobed inwardly; all other tarsal segments elongate, cylindrical, with dense greyish setae.

Genitalia (Figs. 116 and 117): Basal piece fairly large, suboval; parameres smaller than basal piece, narrowed and parallel at apex; aedeagus moderately elongate, rounded subapically, with sharply raised dorsal hook, apical ventral hook broad and very finely pointed at apex and other ventral hook minute.

Female Not examined.

Holotype ♂, INDIA: Meghalaya (Assam), Shillong, Khasi Hills, Cherrapunji, 1-3. x. 1926 (*R. B. S. Sewell*).

Paratypes 3 ♂♂, with the same data as for the holotype.

Ramarks From all other Indian species of *Eolydus* having a yellow pronotum, *meghalayaensis* is easily recognized by its metallic bluish elytra, emargination of sixth visible sternite deeply bilobed in males, segment I of fore tarsi in males fairly lobed inwardly.

94. *Eolydus melanura* (Hope)

Lydus melanurus Hope, 1831, *Zool. Misc.* : 32 Borchmann, 1917, *Junk's Col. Cat.* **17** (69) : 8.

Lytta apcalis Haag-Rutenberg, 1880, *Deutsche ent. Zeitschr.*, **24** : 71; Fairmaire, 1896, *Ann. Soc. ent. Belg.*, **40** : 53; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 90.

Eolydus melanura : Kaszab, 1961 *Bonn. Zool. Beitr.*, **3** (4) : 346, 347.

Locality records and specimens examined

INDIA : Assam : North Lakhimpur (Base of hills), Silonibari, 11 x. 1911, 1 ex. (*H. Stevens*); Uttar Pradesh : Base of W. Himalayas, Dehra Dun, 4 ex. (*Mus. coll.*), Siwaliks, 914 m., 24. ix. 1922, 1 ex. (*S. N. Chatterjee*); vii. 1924, 1 ex. (*Student's coll.*), deposited in the Forest Research Institute, Dehra Dun.

Description

Male Body elongate oblong, finely pubescent, dark-brown or blackish, anterior two-third of elytra yellow or brownish and rest black ; length 14-20 mm.

Head Strongly punctured, depressed and fairly hairy ; labrum transverse, emarginate in front ; antennae moderately elongate, apical segments more thick, segment I short, wider apically, segment II shortest and ring shaped, segment III narrower and slightly smaller than I, segment IV smaller than III, segments V-X gradually thick and subrounded, segment XI longest, spindle shaped and moderately pointed at apex ; eyes strongly large, convex, granulate and angularly notched in front.

Pronotum Fairly broad, strongly and thickly punctured, hairy.

Scutellum : Large, thickly punctate and hairy, apically broad and truncate.

Elytra Broad, parallel, alutaceous with prominent costae ; pubescence short, very sparse, inconspicuous.

Ventral side : Finely hairy ; mentum fairly transverse, nearly flat ; apical segment of labial palpi triangular, strongly flattened and thin ; maxillary palpi elongate, segment III short funnel-shaped at apex, apical segment narrowed at base and wider apically ; mesosternum pubescent and aciculate posteriorly ; last visible sternite with sharp triangular emargination ; outer midtibial spur strongly large, rounded and excavated at apex, inner one slender.

Genitalia : Basal piece broad ; parameres also broad, pointed and slightly divergent at apex ; aedeagus elongate, moderately robust, fairly broad apically with two very small widely apart ventral hooks and a strong sharply pointed dorsal hook.

Female Last visible sternite entire.

Distribution INDIA : North India. NEPAL.

New Records : INDIA : Assam, Uttar Pradesh states. Previously recorded from NEPAL.

95. *Eolydus indicus Kaszab

Eolydus indicus Kaszab, 1961, *Bonn. zool. Beitr.*, 3/4, 12 : 343-345.

Distinctive characters Antennae yellow ; elytral base and

apex black ; head and pronotum sparsely punctate ; fore tibiae curved and flat in male ; length 11-14 mm.

Distribution INDIA (Bombay)

96. **Eolydus kanarensis* Kaszab

Eolydus kanarensis Kaszab, 1961, *Bonn. zool. Beitr.*, 3/4, 12 : 345-346.

Distinctive characters Head and pronotum very sparsely punctate ; antennae moderately elongate and thick, segment I longer than III, segment III longer than IV-VII, segment XI longest ; pronotum broader than long and smaller than head ; length 11.2 mm.

Distribution SOUTH INDIA (Kanara).

Tribe E. MELOINI Blanchard

The tribe Meloini was established by Blanchard in 1845. As defined by different authors, it includes those meloids which are without wings, and in which, in most cases, the elytra are shorter than the abdomen and metasternum is very short. Horn (1894) and Van Dyke (1928) remarked that the tribe was unnatural. In their opinion, the alar atrophy is of insufficient taxonomic value to justify tribal status of the group. Kaszab (1969) includes the following genera in the tribe Meloini : *Lyttomeloe*, *Meloe*, *Gynapteryx*, *Pseudomeloe*. The Indian fauna includes only the single genus *Meloe*.

Genus XII. *Meloe* Linnaeus

Meloe Linnaeus, 1758, *Syst. Nat.*, ed. 10 : 419 Leconte, 1853, *Proc. Acad. nat. Sci.* **6** : 328 Champion, 1892, *Biol. Centr. Am., Col.*, **4** (2) : 364 Wellman, 1910, *Can. Entom.*, **42** : 395 Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 119 ; Van Dyke, 1928, *Univ. Cal. Rebl. Ent.*, **4** : 417.

Proscarabaeus Stephens, 1832, *Ill. Brit. Ent.*, **5** : 65.

Type species : *Meloe majalis* Linnaeus, designated by Wellman (1910).

This well-defined genus was established by Linnaeus in 1758. The important taxonomic works on the genus are those of Leach (1810, 1813), LeConte (1862), Horn (1894), Champion (1891-1893), Peringuey (1909) and Van Dyke (1928). The genus *Meloe* which was divided into fourteen subgenera, displays many diverse characteristics. According to Borchmann's catalogue (1917) there are 133 described species of the genus in the World. Only two species, namely, *semicoriaceus* and *transversicollis* had previously been

recorded by Fairmaire (1891) from India. In this work, a new species, *arunachalae* is described from the north east Himalayan region.

Characters of the Genus. Moderate-sized, elongate-oblong, black or blackish violet insects often with a much enlarged abdomen; head triangular or rectangular, much broader than long, broader than prothorax, median impressed line usually wanting; labrum and clypeus generally small; eyes usually small and oblique, frons generally depressed; antennae of moderate length, usually extending slightly beyond the base of the elytra, more or less moniliform with the intermediate segments in the males of some species much enlarged and flattened; pronotum subplanate, elongate or broad, usually without any median longitudinal line. sides widened from base to apical one fourth or one third, thence narrowed to apex, scutellum small; elytra much shorter than the abdomen, very broad and generally covering meso- and metathorax, imbricate along suture, divergent apically, sometimes rugose, hind wings wanting in both sexes; maxillary and labial palpi moderately long; mentum usually small; mesosternum usually short and blunt apically; metasternum very short and mid coxae partly covering the hind coxae; legs moderately long; tibial spurs spiniform, rather long, the outer hind tibial spur and sometimes the inner, expanded and concave at apex; abdomen large and broad.

Distribution Primarily Holarctic and more richly developed in the Old World.

KEY TO SPECIES OF THE GENUS *Meloe* Linnaeus

- 1 Intermediate antennal segments strongly flattened and curved in male *M. arunachalae* sp. nov.
 — Intermediate antennal segments not flattened 2
 2. Clypeus subtriangular; elytra strongly rugose *M. semicoriaceus* Fairmaire
 — Clypeus rectangular; elytra feebly rugose *M. transversicollu* Fairmaire

97. *Meloe arunachalae* sp. nov.

Male (Figs. 1 & 2): Body elongate oval, moderately large, black or blackish blue, length 8-20 mm.

Head Rectangular, strongly shiny, poorly punctate; labrum transverse, with fine long hairs and a shallow emargination apically; clypeus short, impunctate and depressed anteriorly, with long fine

hairs posteriorly ; frons almost impunctate, centrally depressed with a fine median longitudinal line ; posterior angles rounded ; eyes moderately large, oval, finely granulate with a shallow emargination in front ; antennae elongate, apical segments more slender and elongate than the basal ones, intermediate segments strongly dilated but flattened and curved, segment I longer and wider than segment III, segment II smallest, segment IV ring shaped and wider than the preceding ones, segment V transverse usually truncated apically and wider than segment IV, segment VI strongly transverse and truncated both basally and apically, segment VII heavy, strongly flattened, truncated and subrounded apically, segments VIII-XI very slender, elongate and cylindrical, segments IX-X nearly subequal and longer than VIII, segment XI longer and pointed at apex.

Pronotum Narrower than head, subrectangular, strongly shiny, wider subapically, very sparsely and finely punctate, marginate and with fine emargination basally.

Elytra Small and less wide, very finely rugulose.

Ventral side Shiny finely pubescent ; maxillary and labial palpi moderately elongate, segments wide, apical segment of maxillary palpi less flattened but that of labial palpi fairly flattened ; mentum small, flat, impunctate ; mesosternum transverse, rounded apically and with a few fine hairs ; legs elongate : fore and midtibial spurs almost subequal ; outer hind tibial spur large, broad with a oval excavation at apex, inner one smaller, slender, curved and sharply pointed at apex ; tarsal segments elongate and cylindrical ; abdomen wide, last visible sternite bilobed with wide, shallow triangular emargination and each lobe with a bunch of soft hairs.

Genitalia : Basal piece large, convex ; parameres bifurcate dorsally near the subapex ; basal piece and parameres both hard in texture ; aedeagus (Fig. 118) strongly flattened and leaf like posteriorly, narrowed and subcylindrical apically, with a very minute dorsal hook at apex and two small fairly bent dorsal hooks.

Female Intermediate segments of antennae cylindrical ; last visible sternite without any emargination.

Holotype ♂, INDIA : Arunachal (Assam) : Kameng Div., Tawang, 12-14. xii. 1965 (SKB & ANTJ),

Paratypes 2 ♂♂, 4 ♀♀, with the same data as the holotype; Bhutan : Susuma, 12. ii. 1969, 1 ex., Wang du, Phodrung, 26. ii. 1969, 1 ex. (S. K. Mitra).

Remarks It appears that the new species is close to *M. violaceous* Marsham, 1802, but it can be distinguished by blackish colour, less and fine punctures, less elongate but more convex eye, narrower pronotum and less rugose elytra.

98. *Meloe semicoriaceus* Fairmaire

Meloe semicoriaceus Fairmaire, 1891, *Compt. rend. Soc. ent. Belg.* : CII ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 132.

Locality record and specimen examined

IRAN : Bushire, 1 ex. Ind. Mus., det. Wellman.

Description

Body moderately large, dorsally mostly black, fairly bluish ventrally, strongly punctate and rugose.

Head ; Triangular, strongly, irregularly and unequally punctate and rugose ; mandibles strongly flattened, concave and apically dentate ; labrum strongly transverse, with shallow emargination apically ; clypeus subtriangular, sharply truncate and rectilinear apically ; frons slightly depressed centrally, posterior angles rounded ; eyes small, elongate, moderately convex, narrowly emarginate in front ; antennal segment I broad and suboval, segment II very small and round (rest broken).

Pronotum Subrectangular, broad, black but laterally bluish, strongly, irregularly and unequally punctate and rugose, subapically as wide as head, finely marginate and with shallow emargination and depression basally.

Elytra (broken Posteriorly) : Fairly broad, imbricated at suture, strongly rugose.

Ventral side (abdomen broken) : Fairly bluish, finely pubescent and punctate, both palpi moderately elongate, segments subcylindrical ; mentum transverse and almost flat ; legs well developed and flattened ; fore- and midtibial spurs large, slender, subequal and pointed at apex ; outer hind tibial spur fairly large, strongly broad at apex with elongate oval excavation inwardly, inner one slender and smaller.

Distribution : INDIA (Kashmir) ; IRAN.

New Record : IRAN.

99. *Meloe transversicollis* Fairmaire

Meloe transversicollis Fairmaire, 1891, *Compt. rend. Soc. ent. Belg.* : CII ; Borchmann, 1917, *Junk's Col. Cat.*, **17** (69) : 133.

Locality record and specimen examined

INDIA : Himalayas : Rhala, 3200 m., 27 v. 1955, 1 ex., expedition to the Himalayas by M. S. Mani (*Santokh Singh*).

Description

Female : Body small, oblong, blackish brown dorsally, ventrally mostly brownish, length 9.5 mm.

Head , Triangular, moderately, densely and unequally punctate ; mandibles strongly flattened, concave and without any dentition apically ; labrum strongly transverse with setae and round emargination in front ; clypeus rectangular, anteriorly inpunctate, glabrous and light brown posteriorly with setiferous punctures ; eyes small, moderately convex, with a shallow round emargination in front ; antennae small, extending upto almost the base of pronotum, segments I and III subequal but segment I wider, segment II smallest, segments IV to X subequal but progressively wider and rounded, segment XI longest and widest but pointed at apex.

Pronotum : Feebly rugose, less punctate and narrower than head, abruptly narrowed and declivous towards apex, posteriorly depressed and with a median longitudinal faint line.

Elytra Broad, feebly rugose, narrowed apically.

Ventral side Shiny, small fine setiferous punctures ; maxillary palpi elongate, apical segment longest and widest ; apical segment of labial palpi bell-shaped, strongly flattened and largest ; mentum transverse, almost flat and glabrous ; legs long and flattened ; fore- and midtibial spurs long, slender and nearly subequal ; outer hind tibial spur large, broad with oval excavation at apex, inner one smaller, slender, curved and sharply pointed at apex.

Distribution INDIA : North India.

IV. SUMMARY

In the present paper an effort has been made for the first time to make a taxonomic revision of the largest number of the blister beetles found in India. It includes 98 species and one subspecies belonging to the subfamily Meloinae of the family Meloidae in the order Coleoptera. Running keys for the tribes, genera and species have been provided for the easy determination of the species.

Relevant additional characters of taxonomic importance for the known species have been incorporated. Moreover detail descriptions of the new species have been provided. List of synonymies wherever necessary have been provided for the taxa. Taxonomically important characters have been illustrated with the help of photographs of camera lucida drawings.

For the previously known species new records with regard to distribution in different parts of Indian subcontinent have been reported. Besides structural variations have also been noted.

Taking into consideration the distribution of different species it is noted that some species are restricted to Northern India ; some species are restricted to peninsular India ; some species are found to desert and semi-desert parts of India, while others are more or less found all over India.

Literature relevant to the present contribution have been furnished under references.

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VI. ADDENDUM

The author visited the Hungarian Natural History Museum, Budapest, which is holding the world's richest collections of Meloidae, and Tenebrionidae covering all Zoogeographical regions and including thousands of types accumulated from the different museums of the world. These unique collections had been made of the labours of countless collectors and elaborated by the very serious and painstaking effort of Dr. Z. Kaszab who has been working on these groups since 1938. The result of the studies made by the author on the Tenebrionidae represented in the aforesaid museum would be published somewhere else. Some of the highlights about the work on the Meloidae are presented in a nutshell below.

Since the time of Linnaeus (1758) and Fabricius (1775, 1781), the family Meloidae had received the attention of many workers of the world, who made contributions on its taxonomy, biology, larval and adult morphology, ecology, ethology and biogeography etc. From the taxonomical point of view, it is a very distinct group and having a unique combination of distinctive characters, it occupies a special place in the order Coleoptera. But unfortunately, this group had not received the attention of any Indian taxonomist before the work of the present author.

The attention of the author was first drawn to the family Meloidae in the Autumn of 1969, while collecting insects at the arid and semiarid parts of Gujarat (India). He found different species in their natural habitat and it has been observed that they form a very conspicuous part of the fauna, feeding gregariously on pollens and petals of flowers thereby affecting the fruit setting adversely and at time causing severe damage for cotton, Potato, Brinjal and other useful crops.

The revisionary work on the subfamily Meloinae from India includes 12 genera, 98 species including 18 new species described by him. In this work, the author could not include the other genera of the family Meloidae from India due to the want of the material.

So, when the author in November, 1976, visited the Hungarian Natural History Museum, he gave special emphasis for studying the collection of the group from the oriental region and compiling a catalogue on the species from the region.

In course of the studies in the aforesaid museum, about 3000 specimens of 170 species of Meloidae belonging to 21 genera, namely, *Eletica*, *Epicauta*, *Psalydolytta*, *Denierella*, *Mylabris*, *Decapotoma*, *Xanthabris*, *Pseudabris*, *Croeseherichia*, *Lytta*, *Cyaneolytta*, *Cylindrothorax*, *Sybasis*, *Eolydus*, *Meloe*, *Nemognatha*, *Synhoria*, *Stenoria*, *Horia*, *Zonitis* and *Zonitoschema* collected from India, Nepal, Bhutan, Burma, Pakistan, Afghanistan, Sri Lanka, South China, Vietnam, Malaysia, Java, Sumatra, Borneo, Formosa, Phillipines and New Guinea were examined. More than two hundred holotypes and paratypes were also examined and detailed notes for future references have been made. Keys for the many genera from the oriental region were compiled; the detailed geographical distributions of the oriental fauna had been noted and all these would be useful for writing a fauna volume on Meloidae from the Indian subcontinent.

It has been observed that some genera, namely, *Denierella*, *Eolydus* and *Pseudabris* are found only in Asia; other genera, namely, *Eletica*, *Psalydolytta*, *Decapotoma*, *Cylindrothorax*, *Cyaneolytta* and *Sybasis* are available only from Asia and Africa; while the genus *Mylabris* is distributed in Asia, Africa and Europe. During this study some interesting observations have been made on the old world genera as regard their zoogeography and phylogeny.

Furthermore, the library of the museum has exquisite compilations of the original literature on the groups. So, the author got the opportunity to study a very comprehensive literature. Since the publication of Borchmann's (1917) catalogue vol. 17, pars 69, dealing with this family, the literature on the oriental Meloidae has been very scattered and it was, therefore, considered necessary to compile a catalogue which would bring together all the known species from the oriental region and Afghanistan.

The author wishes to express his sincere thanks to the Secretary, Dept. of Science and Technology, Govt. of India and to the Director, Zoological Survey of India, for deputing him to Hungary for the advanced study on the coleopteran insects; to the Govt. of Hungary for offering a fellowship. The author is grateful to Dr. Z. Kaszab, Director General, Hungarian Natural History Museum, Budapest who made available all the materials and literature for this comprehensive study.

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