

OCCASIONAL PAPER N . 144

# **Records of the Zoological Survey of India**

**CARABIDAE (COLEOPTERA : INSECTA) OF CALCUTTA**

**S. K. Saha, A. K. Mukherjee  
&  
T. Sengupta**

**Zoological Survey of India**

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**S. K. SAHA, A. K. MUKHERJEE & T. SENGUPTA**

*Zoological Survey of India, New Alipur, Calcutta-53*



**सत्यमेव जयते**

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## INTRODUCTION

The paper deals with seventy-three species recorded in Calcutta from the studied collection of Zoological Survey of India which includes 73 species belonging to 45 genera under 19 tribes of the two subfamilies, Carabinae and Harpalinae.

Carabidae is one of the largest family in the order Coleoptera of the class Insecta. Nearly, 20,000 species are known from the world and many more are to be described. Commonly, it is found on the grounds, their elytra become fixed and hind-wings are atrophied. It is also plenty in tropics where they are ground-dwellers and also arboreal; in tropics hind-wings and elytra of this beetle becomes free. These beetles are commonly known as ground beetles. The members of this great family are mostly somber in appearance and a few are brightly coloured. Majority of them are nocturnal in habit and active during night-time. They usually live under bark, stone, logs, rotten wood specially on damp places, their larvae and adult feed on other insects. In India, it is found in all places from top mountain area to sealevel. The approximate number of these beetles in India appear to be 2,000 species and sizes vary from 1.5 mm to 22 mm.

The present paper deals with this group found in Calcutta. So far, 73 species under 45 genera belonging to 19 tribes of two subfamilies have been recorded from Calcutta. An attempt was made by Andrewes (1930) by publishing an account of Carabidae under a Catalogue of Indian insects. There he classified the whole family into two subfamilies and subfamilies were divided into many tribes such as, Ozaenini, Scaritini, Siagonini, Elaphrini, Loricerini, Omophronini, Opisthiini, Nebriini, Notophilini, Carabini, Hiletini, Hexagoniini, Granigerini, Pterostichini, Bembidiini, Disphaericini, Broscini, Idiomorphini, Harpalini, Trechini, Anchomenini, Odacanthini, Brachinini, Apotomini, Licinini, Panagaeini, Chlaeniini, Tetragonoderini, Lebiini, Pentagonicini, Helluonini, Physocrotaphini, Orthogniini, Zuphiini, Dryptini, Anthiini and Pseudomorphini, Ball (1968) Lindorth (1969) attempted to classify Carabidae into more subfamilies by giving status of subfamilies to different tribes of Andrews (1930).

We have followed the classical Carabinae-Harpalinae divisions of the whole family as was done by Sloane (1923) and Andrewes (1929, 1930 & 1935).

The Carabid beetles are economically important for their role as predator of pest of crop-fields. Both larvae and adults of carabids are carnivorous.

This study is mainly based on the colouration of elytra, pronotum, head, antennae, legs and lower surface of the body and also their shapes and sizes for to prepare keys to the tribes, genera and species.

This study is based on the collections made during the years 1907 to 1926 and deposited in National Zoological Collection. Amongst the noteworthy collectors are Mr. F. H. Gravley, Mr. S. W. Kemp, Mr. H. S. Pruthi. Most of the beetles studied were collected at light. The tribe Harpalini is well adapted and abundant in Calcutta.

*Classification*

## Subfamily : 1. CARABINAE

1. Tribe Carabini
2. „ Siagonini
3. „ Scaritini

## Subfamily : 2. HARPALINAE

4. Tribe Apotomini
5. „ Bembidini
6. „ Pterostichini
7. „ Perigonini
8. „ Harpalini
9. „ Panogaeini
10. „ Chlaeniini
11. „ Oodini
12. „ Odacanthini
13. „ Tetragonoderini
14. „ Brachinini
15. „ Lebiini
16. „ Zuphini
17. „ Dryptini
18. „ Helluonini
19. „ Licinini

Groupings of the tribes into subfamilies have been done after Andrews (1930).

The sequence of the tribes followed is from legs to more specialized ones, and that the most closely related groups stand near one and another (Ball, 1968).

The total number of species can further be divided into three groups viz. which are found only in Calcutta, the abundant ones and the ones found in Gangetic plains.

1.0. *The following species are only found in Calcutta :*

1. *Trilophus interpunctatus* var. *impunctatus* (Ptzeys)
2. *Zuphium olens* var. *pubescens* Nietner
3. *Lymnastis pullulus* Motschulsky
4. *Lymnastis cilosus* Bates
5. *Lymnastis indicus* Motschulsky
6. *Trichotichnus (Hyparpalus) lividus* Andrews
7. *Platymetopus senilis* Nietner

8. *Diplocheila retinens* (Walk.)
9. *Ophionea indica* Thunberg

2.0. *Most abundant species :*

1. *Siagona flesus* Fabricius
2. *Perigona nigriceps* (Dejean)
3. *Macrocheilus trimaculatus* (Olivier)
4. *Scarites indus* Olivier
5. *Tachys poecilopterus* Bates
6. *Chlaenius (Stenochlaenius) bioculatus* Chaudoir
7. *Clivina lobata* Bonelli
8. *Diplocheila polita* (Fabricius)
9. *Chlaenius (Chlaenius) hamifer* Chaudoir
10. *Brachinus sexmaculatus* Dejean
11. *Apotomus hirsutulus* Bates

3.0. *Species found in Gangetic Plains :*

1. *Tetragonoderus arcuatus* Dejean
2. *Perigona nigriceps* (Dejean)
3. *Lachnethorax biguttata* Motschulsky
4. *Drypta flavipes* Wiedem
5. *Scarites pnnctum* Wiedem
6. *Chlaenius (Chlaenius) trachys* var. *fnmatus* Andrews
7. *Tachys poecilopterus* Bates
8. *Tachys latus* Peyron
9. *Tachys truncatus* (Nietn.)
10. *Simous nigriceps* (Wiedem.)
11. *Dioryche nagpurensis* (Bates)
12. *Oxycentrus parallelus* Chaudoir
13. *Chlaenius (Chlaenius) chlorodius* Dejean
14. *Odacantha graciliceps* Bates
15. *Ophionea indica* Thunberg
16. *Anoplogenius microgopus* Bates
17. *Acupalpus (Egadroma) samargdulus* Fabricius
18. *Platymetopus senilis* Nietner
19. *Zuphium olens* var. *pubescens* Nietner
20. *Systolocranius linea* (Wiedem.)
21. *Apotomus hirsutulus* Bates
22. *Diplocheila retinews* (Walk.)
23. *Clivina helferi* Putzeys

24. *Microcosmus flavopilosus* Laferte  
 25. *Metabletus cymindulus* Bates

Subfamily I. CARABINAE

Tribe 1. CARABINI

Representative of the tribe Carabini usually includes large sized ground beetles which are predatory in habits, and brightly coloured.

Three genera namely, *Calosoma* Weber, *Carabus* Linnaeus and *Cychropsis* Boileau are found in India, of which one genus *Calosoma* Weber is recorded in Calcutta. The genus *Calosoma* Weber is represented by one species *C. maderae* F. of which one variety *C. maderae* F. var. *indicum* Hope recorded in Calcutta.

This tribe can be recognised by their procoxal cavities are open behind and the protibiae are entire, both the spurs are terminal, the mesoternum carinate in front, metacoxae continuous, the modibular scrobe without seta, labrum broad and emarginate, the palpi generally stout and its apical joint often dilated, elytra not bordered at base, species may be winged or apterous.

Genus *Calosoma* Weber

1801. *Calosoma* Weber, *Obs. Ent.*, i : 200

Form elongate—ovate, head triangular and shiny, labrum transverse and emarginate at apex, mandibles striate on upper surface and toothed at base only; fronto-clypeal suture not prominent and front bisulcate, Antennae slender, pubescent from 5th joint, joint 2 about one-third as long as 3 and both are compressed; Eyes large, lateral and prominent. Head not constricted behind the eyes. Pronotum cordate, transverse, impunctate but granulated, posterior and anterior angles obtuse and median line present. Elytra elongate-ovate, basal margin not bordered, striae obsolete, disk granulated, Legs long.

*Calosoma maderae* var. *indicum* Hope

1775. *Carabus maderae* Fabricius, *Syst. Ent.* : 273.

1831. *Calosoma maderae* var. *indicum* Hope, *Zool. Misc.* : 21.

Species large and elongate ovate, Head, pronotum, elytra, palpi, mandible, antennae and legs brownish black; labrum emarginate, transverse and truncate at apex; fronto-clypeal suture not prominent and front bisulcate. Eyes large and lateral. Antennae slender, Elytral intervals conspicuously punctate, surface uniformly granulate (var. *indicum*), humeral angle rounded. Scutellum small and transverse.

Length, 22 mm.

Material examined : 1 ex., Calcutta, July, 18; 1 ex., Calcutta, Mus. Colln. 1 ex., Beliaghata, East Calcutta, at light, 1. 2. 1979, A. K. Mukherjee,

*Distribution* : West Bengal, United Province, Bihar and Kashmir.

So far this species has been recorded from Kashmir, Kumaon, Dehra Dun ; U. P., Chapra and Pusa ; Bihar and Calcutta, West Bengal. This species is uncommon in Calcutta and attracted at light.

## Tribe 2. SIAGONINI

This tribe includes two genera, *Siagona* Latreille and *Luperca* Castlenau from India, of these only former genus *Siagona* is represented by 28 species from India, of which only one species i.e. *Siagona flesus* Fabricius has been recorded from Calcutta. Representative of the tribe can easily be recognised by the upper articulation-point of mandible with head not concealed by the clypeus, antennae distinct arising under a distinct lateral ridge and pedunculate body.

### Genus *Siagona* Latreille

1804. *Siagona* Latreille, *Nouv. Dict. Hist. Nat.*, XXIV : 141.

The species small to large in size, elongate-ovate, usually piceous or black, some times reddish brown or ferruginous. Head wide, moderately convex with lateral ridge on each side close to eye which are curved or bent inwards in front of eye ; eyes relatively small, labrum truncate in front, emarginate in middle with a rounded tooth in the emargination, mandibles short, thick, strongly curved and sharply pointed. Pronotum cyathiform, rather flat on disk, convex at sides, bare narrow, produced, and slightly emarginate, front angles rounded and rather inconspicuous, hind angles wanting, sides narrowly border, rounded close to front angles, then straight or moderately rounded, a deep longitudinal groove on each side between the median lines and margin. Elytra pedunculate, more or less ovate, usually very flat, very little wider than prothorax, elytra deeply and coarsely punctured and hairy laterally, humeral angle well developed ; femur moderately dilated and protibiae inwardly excised.

*Length* : 10 mm-20 mm.

### *Siagona flesus* (Fabricius)

1901. *Galarita flesus* Fabricius, *Syst. Eleuth.*, 1 : 216.

1831. *Siagona dorsalis* Dejean, *Spec. Genl. Col.*, v : 477.

Size medium, form elongate-ovate. Head, pronotum and elytra brown with an elongate black patch from base to apex along the sutural line of elytra ; mandible, labrum, clypeus, antennae and legs brown. Head somewhat quadrate, coarsely and deeply punctured with projecting setae ; Labrum truncate in front with median tooth, transverse, glabrous and 6 setigerous punctures anteriorly ; Clypeus emarginate, transverse, punctate with projecting setae ; antennae long and filiform, scape longer than other joints, joint 1 to 3 white erect setae, rest hairy ; Eyes small and lateral, Pronotum cyathiform, depressed, flat,

lateral margins rounded and bordered with erect setae, coarsely and deeply punctured on disk, basal foveae well developed from apex to base, median line prominent neck found between pronotum and elytra. Elytra elongate-ovate, hairy, striation absent, deeply and coarsely punctured, humeral angle well developed, lateral margins depressed flat and well bordered, femur well developed and flattened.

*Length* : 10 mm.

*Material examined* : 2 exs., Calcutta, at light, Eden garden, 1.xi.1911, F. H. Gravely.

*Remarks* : This species is distributed throughout India, Burma, Malay Peninsula, Siam, Indo-China, Senegal and Tanganyika.

### Tribe 3. SCARITINI

Under this tribe the four genera, viz. *Trilophus* Andrewes, *Clivina* Latreille, *Dyschirius* Panzer and *Scarites* Fabricius are represented from Calcutta.

The representatives of the tribe can easily be recognised by its pedunculate body, the bases of pronotum and well separated; scutellum not visible, antennae arising under a frontal plate.

#### *Key to the genera of the tribe Scaritini from Calcutta.*

- 1 (2) Buccal fissure extending beyond the base of mentum, head with one supraorbital seta, maxillae hooked at apex, elytra one and half times as long as wide, parallel sided  
... *Scarites*
- 2 (1) Buccal fissure not extending beyond the base of mentum, head with at least two supraorbital setae. Head with clypeus and frontal plates completely fused, mandibles not enlarged, genae slightly developed and not separated from head by a deep sulcus  
... (Clivinides)
- 3 (6) Prothorax not globose, elytra with marginal series of pores uninterrupted at middle, lateral margin not dentate, surface of head without carina, antennae with joints 1 and 2 normally attached.
- 4 (5) Labrum 6-9 setose, prothorax bordered from apex to peduncle, size not less than 5 mm  
... *Clivina*
- 5 (4) Labrum always 5-setose, border of prothorax not reaching hind lateral pore, size not more than 2.5 mm  
... *Irilophus*
- 6 (3) Prothorax globose with lateral margin extending or little beyond the hind lateral pore, elytra with marginal series of pores interrupted at middle, labrum 6-setose, size averaging about 3 mm  
... *Dyschirius*

#### Genus *Trilophus* Andrewes

1927. *Trilophus* Andrewes, *Ann. Mag. nat. Hist.*, (9) xx : 263.

The chief diagnostic characters are : body small and elongate, labrum 5-setose ;

pronotum and head glabrous and impunctate, pronotum laterally and posteriorly rounded ; scutellum not visible ; elytra forming well developed humeral angles.

**Trilophus interpunctatus impunctatus (Putzeys)**

1886. *Dyschirius interpunctatus* var. *impunctatus* Putzeys, *Ann. Soc. ent. Belg.*, xi : 10.

Species small and elongate. Head, pronotum and elytra brown. Head triangular, front bisulcate, glabrous and impunctate ; eyes black, small, coarse and lateral ; antennae short, filiform, joints 1, 2 and 3 glabrous, rest hairy. Pronotum somewhat quadrate, median line prominent, disk impunctate except a pair of punctures on basal part, posterior angle rounded, Elytra elongate—ovate, lateral border subparallel, striate—punctate, punctures deep and close extended to apex, intervals impunctate and flat, not glabrous.

*Length* : 2.5 mm.

*Material examined* : 4 exs., Calcutta, Nov. 1964.

*Remarks* : So far known in India this species is only recorded from Calcutta. This species is also recorded from Sri Lanka and Far East countries.

**Genus Clivina Latreille**

1802. *Clivina* Latreille, *Hist. Nat. Crust. et Ins.*, iii : 96.

1863. *Dacca* Ptzeys, *Postser ad Cliv. Mon. Mem. Lie ge*, xviii : 68.

The chief diagnostic characters are : body small and elongate. Head, pronotum and elytra brown ; labrum truncate and setose ; Clypeus slightly emerginate ; apex of maxillary palpi pointed. Head glabrous and impunctate, groove on vertex present ; eyes moderately large ; antennae short, joints 1 to 3 glabrous and rest hairy, joint 1 and 2 equal. Pronotum subquadrate, posterior angle rounded and surface impunctate neck-like ; Elytra striate-punctate, humeral angle well developed.

*Key to the species of genus Clivina Latreille from Calcutta.*

- 1 (4). Transverse sulcus of prothorax not reaching margin.
- 2 (3). Labrum 6-setose, mentum with rounded teeth, clypeus gently emerginate, neck constricted slightly interrupted at middle Length 6.5-11 mm.
  - ... *memoonia* (New record)
- 3 (2). Labrum 7-setose, clypeus deeply emerginate, neck constriction widely interrupted at middle, length 5-6 mm.
  - ... *lobata*
- 4 (1). Transverse sulcus of prothorax reaching the margin atextremities, labrum 7 or 9 setose, clypeus with median part and wings separated by a distinct notch, front smooth.
  - ... *helferi*

**Clivina helferi Putzeys**

1863. *Clivina helferi* Putzeys, *Posteer ad Cliv. Mon. Mem. liege.* : 41.

1929. *Clivina helferi* Andrewes, *Fauna Brit. India, I* : 367.

Form small and elongate. Head, pronotum and elytra shining reddish brown, palpi, base of antennae, middle hind legs, brownish yellow. Labrum truncate at apex, clypeus slightly emerginate, transverse, a pair of lateral grooves present near to the eyes; antennae short and stout, moniliform, 1-3 joints equal and glabrous and rest hairy, eyes moderately large, a groove present on vertex and latter sparsely punctured. Pronotum subquadrate, sides margined, median line prominent, surface minutely and sparsely punctured. Elytra elongate and parallel-sided, striate-punctate, striae coarsely and closely punctate, jumi quadrate, punctures extending to apex, intervals impunctate and convex.

*Length* : 4.00 mm.

*Material examined* : 1 ex., Calcutta, at light 22.ix.11, F. H. Gravely; 1 ex., Calcutta, at light, 10.x.11; 1 ex., Calcutta, at light, 22.xi.11 and 1 ex., Calcutta, at light, 11.ix.09.

*Remarks* : This species is common to Calcutta. It attracted at light during the month of September to November.

*Length* : 6.00 mm.

**Clivina lobata Bonelli**

1813. *Clivina lobata* Bonelli, *Obs. Ent. ii Me'm. Acad. Sci. Turin xx* : 481.

1892. *Clivina laeviceps* Bates *Ann. Mus. Civic. Stor. Nat. Genova xxxii* : 277.

1929. *Clivina lobata*, Andrewes, *Fauna Brit. India, I* : 375.

Form moderately large and elongate. Head, pronotum and elytra dark brown; labrum, antennae, legs reddish brown, and palpi brownish yellow. Labrum truncate and transverse; Clypeus emerginate, eyes large and convex, deep pit present on head, antennae short and moniliform, nearly smooth, only a row of punctures on the vertex. pronotum moderately convex, quadrate, glabrous, sides margined median line prominent, anterior angles well developed, posterior angles rounded. Elytra elongate, striae fairly and minutely punctate, intervals moderately convex, 3 with 4 pores adjoining striae 3; shoulder well marked.

*Length* : 7.00 mm.

*Material examined* : 1 ex., Calcutta, 22.ix.11, F. H. Gravely.

*Remarks* : This is a rather rare species in Calcutta, also recorded from other parts of India and Burma. This is a variable species in colour and size.

**Clivina memnonia Dej.**

1831. *Clivina memnonia*, Dejean, *Spec. Gen.* 5 : 503.

1929. *Clivina memnonia* Andrewes, *Fauna Brit. India, I* : 362.

Form small and elongate ovate. Head, pronotum and elytra deep brown, palpi and

antennae light brown ; labrum, clypeus and legs deep brown, labrum truncate and transverse ; clypeus slightly emarginate ; a distinct pit present on head, head glabrous and impunctate, Antennae short, and moniliform convex. subquadrate, impunctate, anterior angle rectangular, posterior angle rounded, median line prominent. Elytra elongate and parallel sided, striate deep and erenulate, intervals convex, 3 without punctures ; and forming slight narrow carina behind the shoulder.

*Length* : 6.5 mm length varies from 6.5. to 11.00 mm.

*Material examined* : 1 ex., Calcutta, 18.iv.1963.

*Remarks* : This species is distributed to India. Ceylon, Burma and Far East Countries.

### Genus *Dyschirius* Panzer

1813. *Dyschirius* Panzer *Index Ent.* : 67.

1846. *Phreonyctes* Schm. Goeb. in litt. *Fauna Col. Bir.* (cover).

Species small, shining, usually black bronzed. Head smooth, without longitudinal grooves ; antennae with scape about as long as pedicel. Pronotum subglobose. This species is not present in Zoological Survey of India collection and description given below has been taken from Fauna of British India by Andrews 1929.

### *Dyschirius bengalensis* Andrews

1929. *Dyschirius bengalensis* Andrews, *Fauna Brit. India. col., Carabidae I, Carabinae* : 392 & 397.

Colour brassy, palpi, joints 1 to 3 of antennae (rest fuscous), two hind pairs of legs and apical border of elytra dark ferruginous, front legs piceous, clypeus convex, more or less triangular, from margins truncate, facial sulci deep and irregular, Prothorax globose, one-third wider than head and a little wider than long, median line fairly deep, very deep near base, surface generally shiny with some faint cross-striation. Elytra ovate, with squarish shoulders, striate, striae fairly deep near base, shallower behind and punctate, punctures disappearing on apical third, intervals moderately convex.

*Length* : 2.7-3.1 mm.

*Material examined* : 1 ex., at light, Calcutta, 11. ix. 09., C. Palus (in Colln. Z. S. I.).

*Remarks* : This species is recorded from Calcutta and Sunderbans.

### Genus *Scarites* Fabricius

1775. *Scarites* Fabricius, *Syst. Ent.* : 249.

1857. *Poramecomorphus* Motschulsky *Etud. Ent.* : 96.

The chief diagnostic characters are : Species large, elongate-ovate ; head, pronotum and elytra black, palpi and legs deep reddish brown, antennae light brown, mandible dentate, labrum lobed and setose-punctured, head glabrous, impunctate and its front bisul-

cate ; pronotum somewhat subquadrate, transverse and median line prominent ; elytra elongate and parallel-sided, striate-punctate, large pores present on third stria, and humeral angle well developed.

*Key to the species of the genus Scarites Fab. from Calcutta*

1. Head rather deeply and not closely striate, sparsely punctate behind at side only, elytra deeply striate, intervals convex, size not less than 16 mm. ... *S. indus* Oliv.  
 Head finely and closely striate, densely punctate behind elytra superficially striate, intervals flat, size not more than 14 mm ... *S. punctum* Wied

**Scarites indus Olivier**

1793. *S. indus* Olivier, *Ent. Hist. Nat. Ins.*, iii : 36.

Species large and elongate ; head, pronotum, elytra mandible, labrum, clypeus black ; where as palpi, antennae and legs deep reddish black. Mandible bidentate ; labrum trilobed, each lobe with setigerous punctures, clypeus transverse, front broad, with a pair of depressions and wrinkled. Head somewhat squarish, glabrous and sparsely punctured on vertex. Antennae short, stout and moniliform, hairy joints 1-3 glabrous, rest hairy. Eyes small and lateral. Pronotum somewhat quadrate, transverse, impunctate and glabrous, lateral margins bordered and constricted at base, basal margin somewhat truncate. Elytra elongate and parallel-sided, shoulders squarish, striate-punctate, some pores present on third stria and intervals convex.

*Length* : 19 mm.

*Material examined* : 1 ex., Calcutta.

*Remarks* : This species is rather uncommon in Calcutta and recorded from throughout India and Ceylon.

**Scarites punctum Wiedem**

1823. *Scarites punctum* Wiedem, *Zool. Mag.*, ii (1) : 38

1855. *Scarites opaceus*, Chaudoir *Bull. Soc. Imp. Nat. Moscou*, i : 88.

Species moderately large and elongate, Head, pronotum and elytra black ; palpi, mandible, labrum, antennae joints 1-3, legs dark reddish black. Mandible unidentate, labrum trilobed, each lobe with setigerous punctures ; clypeus transverse and slightly undulated ; fronto-clypeal suture prominent, front broad with a pair of depressions ; apical segment of palpi almost pointed. Antennal joints 1-3 glabrous and rest hairy ; a pair of supraorbital setae present ; eyes small and lateral ; vertex coarsely and not deeply punctured. Pronotum subquadrate, transverse, lateral margins bordered, a pair of setae present on lateral margins posteriorly, median line prominent from apex to base, posterior angle carinate, anterior angle obtuse. Elytra elongate and parallel sided, well developed humeral angle, striate-punctate, three large pores present on third stria.

*Length* : 13.00 mm.

*Material examined* : 1 ex., Calcutta, 4. xi. 07, Mus. Colln.

*Remarks* : This species is recorded from various parts of Northern India and Eastern India ; Nepal.

#### Tribe 4. APOTOMINI

It is a small tribe comprising of a single genus *Apotomus* Illiger and represented by two species in India, namely, *A. atripennis* Motch. & *A. hirsutulus* Bates from India and both the species are also represented from Calcutta.

This tribe includes Carabids of small size, and their body more or less pubescent, palpi long and slender, sutures on the prothorax completely absent, head with only one supraorbital seta on each side, the penultimate joint of the labial palpi pilose and two basal joints of antennae glabrous.

#### Genus *Apotomus* Illiger

1807. *Apotomus* Illiger, *Mag. Ins.*, vi : 348.

Species are small in size (4 mm) elongate and parallel-sided. Head rectangular, glabrous ; labrum emarginate and setose ; clypeus truncate and glabrous ; palpi slender, long and pilose ; antennae slender, scape and pedicel glabrous, rest hairy ; eyes moderately large and lateral. Pronotum picher-shaped without lateral margins, disk with erect hairs, well developed stalk formed in between pronotum and elytra. Elytra parallel-sided slightly sinuate at apex, disk with dense erect hairs, striate-punctate, striae extended from base to apex, lower surface hairy and legs long and slender.

#### *Key to the species of the genus Apotomus Ill. from Calcutta.*

Body clothed with a short grey hairs, black or brown, the punctures of the elytra striae obsolete near base and apex	...	<i>atripennis</i> Motch
Body clothed with a dense erect pubescence, species dark ferruginous, the punctures of the elytral striae clearly visible both near base and apex	...	<i>hirsutulus</i> Bates

#### *Apotomus atripennis* Motch.

1858. *Apotomus atripennis* Motchulsky, *Etudes Ent.*, vii : 22;

We are not able to study this species and its diagnostic characters. It is not studied as it is not present in the collection ; H. E. Andrewes (1935) states in F. B. I. as follows :

Colour black or brown ; palpi, joints 1 and 2 of the antennae, and legs ferruginous ; joints 3 to 7 of the antennae brown or black, the four apical joints yellowish white.

Body covered with an extremely short pale grey tomentum, frequently abraded, without the stiff erect pubescence generally seen in the other species of the genus, surface microscopically rugose-punctate,

Head with a slight impression on each side at the extremities of the clypeal suture; eyes large but not very prominent; antennae quite reaching basal third of elytra. Prothorax not quite a half wider than head, a sixth wider than long, the sides contracting much more behind than in front, so that the apex is a half wider than the base; median line lightly impressed but quite distinct, surface smooth, the area between the constriction and the base coarsely punctate. Elytra one half times wider than prothorax and its width two-thirds longer than wide, a little depressed at middle just behind base, shoulders conspicuous, base sloping forward to the peduncle, lateral border not extending beyond shoulder, though the border of the epipleuron reaches the peduncle, sides with a slight sinuation before apex; striae moderately deep and conspicuously punctate, but much shallower near apex and disappearing on the basal declivity, though the inner striae sometimes reach the peduncle; intervals a little convex on disk, 1 somewhat raised, 4 a little wider than the others close to base.

Sterna rather coarsely punctate except the sides of the posternum and the disk of the metasternum on each side of the median sulcus. Venter very finely rugose-punctate.

*Length* : 3-3.25 mm.

*Remarks* : It is distributed throughout India including Calcutta; Burma, Malay, Siam, Indo-China, Java, Sumatra, Celebes, New Guinea.

#### ***Apotomus hirsutulus* Bates**

1892. *Apotomus hirsutulus* Bates, *Ann. Mus. Civ. Gen.*, xxxii : 287.

Species small, elongate and parallel-sided. Head, pronotum and elytra brown and covered with erect hairs; antennae, legs, eyes, palpi, mandible brown. Head rectangular and glabrous, labrum emarginate and setose; clypeus truncate and glabrous; antennae long and slender, 1st and 2nd joints glabrous, rest hairy; eyes moderately large and lateral; Pronotum and Elytra articulated with neck-like constriction, Elytra parallel-sided, striate-punctate, with deep and close punctures, striae extended from base to apex, disk with erect hairs, slightly sinuate at apex. Lower surface hairy and legs long and slender.

*Length* : 4.00 mm

*Material examined* : 1 ex., Calcutta, 14.xii.26, H. S. Pruthi; 1 ex., Calcutta, 2.ii.15, at light, F. H. Gravely; 1 ex., Museum compound, Calcutta, under stones, 16.vi.10, F. H. Gravely; 1 ex., Garia, Calcutta, 13.xii.10, Annandale; 1 ex., Calcutta, ii.14, F. H. G.; 1 ex., Museum compound, Calcutta, 16.v.12, F. H. Gravely.

*Remarks* : This species occurs throughout India and recorded from Calcutta several times.

#### **Tribe 5. BEMBIDIINI**

This is one of the largest tribes of the family Carabidae having numerous species, though the genera are few. The distribution is world-wide and five of the genera are found

in Indian region of which representatives of three genera are recorded from Calcutta. Three genera are extending a little beyond it ; elytra nine-striate, scutellary striote as a rule rather slightly impressed, apical recurved striole absent ; outer margin of front tibiae straight from base to apex.

*Diagnostic characters* : Head with two supraorbital setae on each side, frontal furrows moderately deep and not curving round behind the eyes ; the mandibles with a seta in the scrobe, ligula bisetose, setae placed close together ; paraglossae hardly extend beyond the ligula, apical joint of palpi exceedingly small and sublute, penultimate joint dilated and pubescent ; antennae with the first two joints glabrous ; elytra with or without recurrent striole.

*Key to the genera of the tribe Bembidiini of Calcutta :*

1. Outer margin of protibiae straight from base to apex ; a short scutellary striole present, no recurved striole at the apex of elytra ... *Bembidion*
2. Outer margin of protibiae obliquely truncate or slightly emarginate at apex ; no scutellary striole.
3. Upper surface glabrous ; a recurved striole always present on each stria at apex of elytra ... *Tachys*
4. Upper surface shortly pubescent ; no recurved striole at apex of elytra ... *Lymnastis*

**Genus *Lymnastis* Motchulsky**

1862. *Lymnastis* Motchulsky, *Etudes Ent.*, ii : 27.

1975. *Limnastus* Piochard de la Bruliere, *Ann. Soc. Ent. France*, 436.

1892. *Limnastis* Ganglbauer, 1802, *Kaf. Mitt.*, 1 : 181.

1896. *Limnastes* Bedel, *Catalogue raisonne des Coleopteres du Nord de l' Afrique*, p. 54.

1876. *Zuphiolum* Fairmaire, *Bull. Soc. Ent. France*, p. 344.

*Diagnostic characters* : Form elongate, flat and with short erect pubescence ; antennae short and stout and more or less moniliform ; labrum truncate or arcuate and six-setose ; mentum generally without median tooth ; ligula bisetose and fused with wide membranous paraglossae ; elytra more or less truncate at apex, striae 8, scutellary striole and apical striole all absent ; protibiae truncate at apex, but more emarginate than in *Tachys*, first two joints of front tarsi moderately dilated and produced inwards at apex.

Very little is known about the habits and nothing is known about biology of these insects.

*Range* : Southern Asia, Southern Europe, Africa and Australia.

Only three species are represented from India, all of which are recorded from Calcutta and *L. pullus* is recorded only from Calcutta.

*Key to the species of the genus Lymnastis of Calcutta*

1. Surface very coarsely punctate ; elytra striae punctate ; microsculpture absent ; colour dark ferruginous ... *indicus* Motch.
2. Surface moderately or finely punctate ; elytral striae impunctate. microsculpture present ; colour light ferruginous.
3. Elytra striae impressed, at least near apex ; meshes of microsculpture on the elytra transverse ; pronotum with base wider than apex ; upper surface uniformly ferruginous ; length 2 mm or more ... *pilosus* Bates
4. Elytral striae very faint, 1 and 2 slightly impressed near apex only ; meshes of microsculpture on the elytra isodiametric ; pronotum equally contracted at extremities ; prothorax and elytra (except apex) ferruginous, head and apex of elytra brownish ; length less than 2 mm ... *pullus* Motch,

**Lymnastis indicus** Motschulsky

1851. *Lymnastis indicus* Motschulsky *Bull. Soc. Imp. Moscou*, ii : 507.

Small and elongate ; head, pronotum and elytra light brown, antennae and legs deep brown, labrum transverse and truncate at apex, front not so broad, a pair of big punctures on the front vertex of head sparsely and minutely punctured, eyes small and lateral, black, antennae short and stout, submoniliform, 1st joint glabrous, rest hairy. Pronotum transverse, sides rounded, lateral margin slight sinuate at base, posterior angles obtuse, front margin wider than basal margin, median line fine, surface sparsely and finely punctured, disk with scanty hairs. Elytra elongate and parallel-sided, striae with fine punctures extending to apex, scutellum small, humeri rounded.

*Length* : 2.5 mm.

*Material examined* : Calcutta, at light, May-June, 1914, F. H. G.

*Remarks* : It occurs in Calcutta in the month of May-June. The specimen in the collection was recorded in May-June, 1914 at light.

**Lymnastis pilosus** Bates

1892. *Lymnastis pilosus* Bates *Ann. Mus. Civic. Stor. Geneva*, xxxii : 296.

Very small and elongate. Head, pronotum and elytra light brown ; antennae, legs also light brown ; labrum straight, clypeus straight, a pair of big punctures on front, antennae short and stout, 1st joint glabrous, rest hairy, eyes small. Pronotum cordate, transverse, lateral margin slightly sinuate at base, posterior angles rectangular, anterior angles obtuse, disc slightly hairy. Elytra elongate and parallel-sided, fine striate finely punctate.

*Length* : 2 mm.

*Material examined* : Calcutta, at light, 18.v.12, F. H. G. ; Calcutta at light, vi.14.

F. H. G ; Calcutta, 1863 ; Eden Gardens, at light, 9.x.11. F. H. G ; Calcutta, at light, May, 1914, F. H. G ; Calcutta, at light, vi.14 F. H. G.

*Remarks* : This species is not uncommon in Calcutta. It is generally found in the months of May and June. But one specimen was recorded from Calcutta in the month of October. It attracts at light.

### ***Lymnastis pullulus* Motschulsky**

1862. *Lymnastis pullulus* Motschulsky, *Etudes Ent.*, XI : 31.

1925. *L. leavatus* Andrews *Ann. Mus. Civic. Stoy. Nat. Geneva* : 494 and 497.

Very small and elongate-ovate. Head deep brown ; Pronotum elytra, legs light brown. Head minutely and sparsely punctured a pair of big punctures on the front, antennae moniliform, Pronotum cordate, transverse, lateral margins sinuate at base, posterior angle well developed. Elytra elongate-ovate, striae very faint, minute punctures, apics truncate.

*Length* : 1.5 mm

*Material examined* : Calcutta at light, 13.v.14 F. H. G ; Calcutta at light, F. H. G.

*Remarks* : It is not uncommon in Calcutta. It is generally found in the month of May and June. It attracts at light.

### **Genus *Tachys* Stephens**

1828. *Tachys* Stephens, *IU. Bit. Ent. Mandib.*, 2 : 2 and 4.

1831. *Tachys* Dejean, *Spec. Gen.*, 5 : 3.

*Diagnostic characters* : Form generally short and upper surface glabrous ; colour variable but usually reddish brown, with or without dark marking of black, with or without pale spots on the elytra ; labrum truncate or slightly emerginate, six-setose ; mentum with a small tooth in the emergination ; ligula truncate and bisetose, paraglossae narrow and extending beyond the ligula, stria of elytra extremely variable, number of striae 1-9, scutellary striole wanting and a recurved striole always present at apex, outer margin of front tibiae obliquely truncate and sometimes slightly emerginate at apex.

#### *Key to the species of the genus Tachys Steph.*

1. Mentum, with two circular pores (except truncatus) ... 3
2. Mentum without circular pore ... 7
3. Stria 8 impressed on apical half of elytron ; length 1.75-2.00 mm.
4. Fronto-dorsal pore on immediately adjoining stria 3 ; border of elytra dentate, angulate at shoulder ; striae 1 and 2 lightly impressed and vaguely crenulate ; hind dorsal pore just in front of apical striole ; size 1.75-2.00 mm. ... *impressipennis* Motch.
5. Front-dorsal pore placed on interval 6 ; border of elytra edentate, rounded at

- shoulder ; elytra with four inner striae at least moderately impressed and punctate ; hind dorsal pore in the hook of the striole; size 3.25 mm. ... *sericeus* Motch.
6. Striae 8 wanting ; apical striole wanting ; mentum without circular pore ; size 1.5mm. ... *truncatus* Nieth.
7. Elytra with two dorsal pores ; basal sulcus of prothorax not having two pores on middle ; claw not denticulate ... (17)
8. Frontal furrows not exceptionally deep, not converging in front and nearly meeting on front margin of clypeus ; labrum truncate or moderately emarginate ... (18)
9. Elytra with one well-defined apical spots and at least four fairly deep striae either side
10. Frontal furrows forming with the clypeal suture a deep more or less horseshoe-shaped impressions ; elytra black incompletely striate ... *latus* Peyr.
11. Frontal furrows and clypeal suture not forming a horseshoe-shaped impression ; elytra brassy, completely striate ... *kulgi* Nietn.
12. Elytra with two fairly large pale spots or one vague transverse band and with more than three dorsal striae on either side.
13. Elytra striae and basal sulcus of prothorax not crenulate.
14. Elytra with three dorsal impressed striae, colour ferruginous after with a vague dark transverse band across the middle ... *ceylonicus* Nietn.
15. Elytra with two rather shallow dorsal striae ; colour chestnut red and with four pale spots ... *poecilopleurus* Bates.
16. Elytral striae and basal sulcus of prothorax crenulate ; colour dark aeneous and slightly iridescent and with an ill-defined spot near the apex on either side ... *politus* Motch.
17. Elytra with only one dorsal pore ; basal sulcus of prothorax with two pores on middle claws denticulate ; elytra with a fairly distinct ocellate spot on each at apex ; length not exceeding 3 mm ; elytra quite on third wider than long ... *latissimus* var. *gracilis* (Motchulsky)
18. Frontal furrows long and deep, converging in front and nearly meeting on the frontal margin of clypeus, labrum semicircularly emarginate ; colour black to light chestnut ; elytra with a small apical and sometimes also a vague humeral spot ... *fumigatus* Notch.

### **Tachys sericeus** Motschulsky

1851. *Tachys sericeus* Motschulsky, *Bull. Soc. Imp. Nat. Moscow*, ii : 507.

1892. *Tachys photinus* Bates, *Ann. Mus. Civico Stor. Nat. Genova* xxxii : 288.

1935. *Tachys sericius* ; Andrewas, *Fauna Brit. India*, II. : 223.

Small and elongate-ovate. Head, pronotum, elytra, labrum, clypeus deep brown ; antennae & legs brown, labrum transverse and slightly emarginate at apex ; frontal grooves deep, head glabrous, microsculpture consisting of fine transverselines, eyes small,

coarsely faceted ; antennae slender, joint 1 & 2 longer than. Pronotum cordate, transverse, glabrous and impunctate, lateral margins bordered, sinuate at base, posterior angles acute, anterior angles rounded, median line prominent, basal margin emarginate, Elytra elongate ovate, humeri and apex rounded, border setulose ; all striae visible, innerones punctate, fronto-dorsal pore at fourth on striae 6 and hind one in the hook of the striole.

*Length*: 3 mm.

*Material examined* : 1 ex., Calcutta, at light, VI.14.F.H.G.

*Remarks* : This species is not common in Calcutta. The specimen in the collections was recorded from Calcutta on vi.1914 at light by F. H. Gravely. It is distributed to Calcutta : Bhamo, Karen Hills, Palon, Kawkarcik, Kuala-Lumpur and Borneo.

### **Tachys poccilopterus Bates**

1873. *Tachys poccilopterus* Bates, *Trans. ent. Soc. London* : 331.

1889. *Tachys deliciolus* Bates, *Ann. Soc. ent. France* : 274.

1935. *Tachys poccilopterus*, Andrews, *Fauna Brit. India*, II : 259.

Small and ovate, shiny. Head, pronotum and elytra shining dark brown, joints 1 and 2 of antennae, legs pale brown; elytra with four pale spots, the front one rounded and hind one transverse. Labrum truncate and transverse, antennae short and submoniliform, joints 1 and 2 equal ; eyes not prominent. Pronotum somewhat cordate and transverse, lateral margins bordered and slightly sinuate at base. posterior angles prominent and obtuse, anterior angles rounded, glabrous and impunctate, coarsely punctate on middle of basal margin, median line faint. Elytra convex and ovate with smooth rounded border, humeral angles rounded, two rather shallow dorsal striae, not crenulate, stria 1 entire, 2 shortened at extremities ; dorsal pore small on middle of stria 3, no microsculpture.

*Length* : 2.0-2.5 mm.

*Material examined* : 6 exs., Calcutta, at light, VI.14.F.H.G ; 1 ex., Calcutta, at light, VII.14. F.H.G. ; Calcutta, at light April 1914. F.G.F. ; 1 ex., Calcutta, at light, 31.III.14. F. H. G ; 1 ex.. Calcutta, at light, 16.VI.15.,F.H.G.

*Remarks* : This species is very common in Calcutta. It is generally attracted at light in the months of March to July. It is distributed in Calcutta ; Garo Hills ; Sikkim ; Eastern Duars ; Almora ; Ranikhet ; Haldwani ; Dehra Dun ; Burma ; Kualampur ; Singapore ; Siam ; China ; Indo-China ; Sumatra and Celebes.

### **Tachys ceylanicus (Nietn.)**

1858. *Bembidium ceylanicus* Nietn. *Ann. Mag. nat. Hist.*, (3) ii : 423.

1859. *Tachys ceylanicus*, Motschulsky, *Etud. Ent.* : 39.

1935. *Tachys ceylonicus*, Andrewes, *Fauna Brit. India*, II : 257.

Small and ovate. Head, pronotum, elytra dark raddish brown ; Labrum truncate

and transverse ; antennae submoniliform, head shiny, impunctate and glabrous. Pronotum somewhat cordate and transverse, lateral margins bordered, sinuate at little before the base, angles right with short slight carina, Elytra ovate, slightly pointed at apex, lateral border minutely setose, humeral angles rounded, three fairly deep crenulate frontal striae, 1 entire, 1 and 3 short at extremities striole on half way of elytra, dorsal pores on striae at a little behind middle, no microsculpture.

*Length* : 2.0 mm

*Material examined* : 1 ex., Calcutta, 22.ix.1911, (other data not available).

*Remarks* : It occurs in Calcutta. It is also distributed Sikkim, Eastern Duars, Almora, Dehra Dun, Karnataka, Sikkim, Eastern Durars ; Burma ; Malaya ; Java ; Sumatra ; Celebes ; Philippine Is. ; Annam and Hongkong.

### ***Tachys fumigatus* Motschulsky**

1851. *Tachys fumigatus* Motschulsky, *Bult. Soc. Imp. Moscow*, ii : 509.

1858. *Bembidium emereinatus*, Nietn., *Ann. Mag. nat. Hist.* (3) ii : 425.

1835. *Tachys fumigatus*, Andrewes, *Fauna Brit. India*, ii : 287.

Short and ovate. Head, pronotum and elytra dark reddish brown, a pair of yellowish brown apical spots on elytra ; labrum, palpi joint 1 and 2 of antennae, legs yellowish brown, rest of antennae and penultimate joints of palpi dark brown. Labrum and clypeus deeply emarginate, 3rd joints onwards hairy and deep brown, head with deep furrows convergant on front margin of clypeus, surface glabrous and impunctate ; antennae submoniliform, eyes moderate. Pronotum cordate, transverse, impunctate and glabrous, lateral margins sinuate near base, basal angles obtuse. anterior angles rounded. Elytra rather short and convex, border angle rounded, median line fine. Elytra ovate, humeral angle rounded, apex somewhat pointed, two pores on the base, striation towards suture and sides prominent, punctured ; scutellum short and triangular ; lower surface less dark than the upper surface.

*Length* : 3.00 mm

*Material examined* : 1 ex., Calcutta, 835/12 ; 1 ex., Museum compound, 1 ex., Calcutta, 8.IV.10 ; 1 ex., Mus. Coll ; Calcutta. ; 1 ex., Mus. Coll., Calcutta.

*Remarks* : This species is not uncommon in Calcutta. It is distributed throughout South East Asia (except Japan).

### ***Tachys impressipennis* Motschulsky**

1859. *Tachys impressipennis* Motschulsky, *Etud. Ent.*, VII : 39.

1903. *Tachys sinuaticollis* Solano, *Proc. Linn. Soc. NSW* : 579.

Small and elongate-ovate. Head, pronotum, elytra light brown ; antennae, labrum, clypeus, legs light brown. Labrum straight and transverse, presence of setae at front margin, clypeus straight and transverse, a pair of long setae arising from punctures anterior-laterally, clypeus, head glabrous, convex, shiny ; antennae small and slender submoni-

liform, 1st joint glabrous, rest hairy, eyes small and lateral, a pair of supraorbital setae present, Pronotum cordate, transverse, lateral margins bordered, sinuate at base, glabrous, anterior angle rounded posterior angle acute, two pairs of long setae anterior & posterior angles. Elytra smooth, two rather lightly impressed striae, minutely crenulate, 3 and 4 just traceable, 8 deep, dorsal pores at one-third, three-fifths small from base on third interval, microsculpture distinct.

*Length* : 2.0 mm.

*Material examined* : 1 ex., Calcutta, at light, IV 15, F. H. G. ; 4 ex., Calcutta, at light, March, 14, F. H. G. ; 4 ex., Calcutta, at light, VI. 14, F. H. G. ; 1 ex., Calcutta, at light, at light. March, 14, F. H. G.

*Remarks* : This species is generally found in Calcutta during March to June. It attracts at light. It is distributed throughout South-East Asia.

### **Tachys politus** Motschulsky

1854. *Tachys politus* Motschulsky *Bull. Soc. Imp. Nat. Moscow*, II : 509.

Small and ovate. Head, pronotum and elytra dark reddish black, a pair of brown spots on apical side of elytra, labrum, antennae 1st to 3rd joints, legs less brown ; palpi & antennal rest black. Labrum truncate and transverse with 3 pairs of setae anteriorly, clypeus truncate and transverse with a pair of setae anteriorly, fronto-clypeal suture prominent, front not so broad, front bisulcate, head shiny, glabrous and impunctate, antennal 1st and 2nd joints glabrous, rest hairy, eyes moderate and lateral-pronotum somewhat cordate, transverse, impunctate and glabrous, lateral margins bordered and sinuate at base, basal angle slightly carinate and with one seta, posterior angle obtuse and elytra elongate-ovate, humeral angle rounded, elytra glabrous, impunctate, striation feeble ; lower surface light brown.

*Length* : 1.5 mm.

*Material examined* : 4 exs., Calcutta, at light, VI. 14. F. H. G. ; 2 exs., Calcutta, at light, VI. 14. F. H. G. ; 2 exs., Calcutta, at light, March, 14. F. H. G ; 1 ex., Calcutta, at light, 17.VI.15, F. H. G ; 2 exs., Calcutta, at light, 16.VI.15, F. H. G. ; 1 ex., Calcutta, at light, June, 1914, F. H. G.

*Remarks* : This species is common to Calcutta. It is generally found in the months of March and June at light. It is distributed throughout South-East Asia excluding Japan and Australia.

### **Tachys truncatus** (Nietn.)

1958. *Bembidium truncatus* Nietn., *Ann. Mag. Nat. Hist.*, (3) ii : 421.

1862. *Polyderis tenellus* Motschulsky, *Etud. Ent.* : 35.

Small and elongate, Head, and elytra deep brown ; pronotum, legs, antennae light brown. Labrum truncate, clypeus truncate and transverse, a pair of setae on clypeus,

fronto clypeal suture prominent, front with a pair of sulcus, head glabrous and impunctate, antennae short and submoniliform, eyes small and lateral pronotum cordate, transverse, sinuate at base at lateral margin apex truncate.

*Length* : 1.5 mm.

*Material examined* : 1 ex., Calcutta, at light, IX. 09 ; 1 ex., Calcutta, at light, 18. V. 12, F. H. G ; 1 ex., Calcutta, in house of museum, at light, 20. ix. 11, F. H. G.

*Remarks* : This species is common in Calcutta. It is generally found in the months of May and September at light. It is distributed in Calcutta, Eastern Duars, Haldwani ; Ceylon ; Singapore ; Cochin-China ; Tonkin ; Java ; Sumatra ; Borneo and Philippine Islands.

### **Tachys latus Peyron**

1858. *Tachys latus* Peyron, *Ann. Soc. ent. France* : 364.

Small and elongate-ovate. Head, pronotum and elytra reddish brown, a pair of rounded pale brown patches near to apex of elytra. Labrum short, transverse and truncate, clypeus short and truncate, a pair of brown long setae on the clypeus, front bisulcate, head glabrous, smooth, and shiny, eyes small and lateral. Pronotum somewhat cordate, transverse, glabrous, shiny. Elytra elongate-ovate, striate, striation feeble at base, humeral angle rounded.

*Length* : 2.5 mm.

*Material examined* : 1 ex., Calcutta, at light, F. H. G.

*Remarks* : This species is not uncommon in Calcutta. It is distributed in Calcutta, Sardah, Pusa, Fyzabad, U. P. ; Ceylon ; Sumatra ; Tonkin ; Asia Minor.

### **Genus Bembidion Latreille**

1802. *Bembidion* Latreille, *Hist. Nat. Crus. et. Ins.*, 3 : 82.

1828. *Bembidion* Stephens, *Brit. Ent. Mandib.*, 2 : 29.

Form variable, body glabrous ; colour generally black, blue or green, often with pale spots or fasciae on the elytra ; labrum transverse, generally truncate, sixsetose ; mentum with a small tooth in emargination ; ligula bisetose, paraglossae narrower than ligula and extending a little beyond it ; elytra with nine-stiae, scutellary striole as a rule rather slightly impressed, apical recurved striole absent ; outer margin of front tibiae straight from base to apex.

### **Bembidion sobrinum Boheman**

1848. *Bembidion sobrinum* Boheman, *Ins. Caffr.* i : 232.

1927. *Bembidion opulentum* Andrewes, *Ann. Mag. Nat. Hist.*, (9) iii : 472.

Small, elongate. Head, pronotum and elytra excepting the apical portions all dark black, antennae excepting the 1st joint, palpi, legs dark brown and eyes black, Head

triangular, finely granulated, a pair of furrows on the frons, 3 pairs of brown setae on labrum ; labrum transverse ; clypeus emarginate ; eyes prominent, bulging, finely faceted, pronotum cordate, transverse, front margin wider than basal margin, sinuate at basal margin, median line fine, anterior angle obtuse. Elytra elongate-ovate, shoulder prominently developed, 8 rows of striation, fine, minute punctures on the striae, extends upto apex, elytral apical part brown.

*Length* : 4.5 mm.

*Material examined* : 1 ex., Calcutta, III.16, F.H.G.

*Remarks* : It is a rare species and recorded only from Calcutta. It generally occurs in the month of March. The specimen in the collection was collected by F.H.G. in the month of March in 1916.

### Tribe 6. PTEROSTICHINI

This tribe is world-wide in distribution and comprises over 150 genera. So far only 18 genera are known from India, of which only one genus *Abacetus* is recorded from Calcutta and under this genus only three species namely, *A. chalceus* Chaudoir, *A. placidulus* (Walk.) and *A. rufotestaceus* Chaudoir are found. The Pterostichini live on a variety of soils. This tribe is distinctly characterized by their palpi not subulate.

### Genus *Abacetus* Dejean

1828. *Abacetus* Dejean *Spec. genl. Col.*, iii : 195.

1866. *Caricus* Motschulsky, *Bull. Soc. Imp. Nat. Moscow*, i : 395.

The chief diagnostic characters are medium size and elongate-ovate ; colour deep brown ; labrum with 6 setigerous punctures and clypeus with 2 setigerous punctures ; pronotum cordate and transverse, sinuate at lateral margins, deeply punctured at median base ; elytra elongate-ovate, striate, impunctate and humeral angle well-developed,

*Length* : 5-6 mm.

### *Key to the species of the genus Abacetus Dejean*

1. Pronotum sinuate before posterior angles and lateral margins between sinuation and posterior angles parallel ; punctures sparse between basal foveae ... 2.  
Pronotum sinuate at posterior angles and lateral margins between sinuation and posterior angles not parallel, punctures dense between basal foveae, colour blackish brown.  
... *placidulus*
2. Anterior angles of pronotum slightly projecting, apex of pronotum is nearly equal to base ; colour reddish brown ... *rufotestaceus*  
Anterior angles of pronotum not projecting, apex of pronotum is distinctly narrower than base ; colour blackish brown ... *chalceus* Chaudoir

**Abacetus chalceus** Chaudoir

Species small, shiny black ; antennae and legs brown. Head impunctate ; labrum transverse and truncate ; eyes large, projecting and lateral furrow moderately deep extending upto clypeus ; antennae 11-jointed, filiform, first 3 joints glabrous and rest hairy. Pronotum cordate, basal margin truncate, lateral margins bordered, posterior angle rectangular and anterior angle obtuse, median line prominent and fine, basal foveae deeply punctured. Elytra elongate, striate, impunctate, intervals flat, a large pore on 3rd interval close to 2nd stria ; scutellum small and impunctate.

*Length* : 5.65 to 5.70 mm.

*Material examined* : 1 ex., Eden gardens, Calcutta, at light, 4 x.II, F.H. Gravely ; 1 ex., Calcutta, at light, XI.21, Ribbiero ; 1 ex., Calcutta, at light, XI.24, Ribbiero.

*Remarks* : It attracts light and rare in Calcutta.

**Abacetus placidulus** (Wlak.)

1858. *Agonum placidulus* Walk., *Ann. Mag. nat. Hist.*, (3) ii : 203.

1919. *Abacetus placidulus* Andrewes, *Trans. ent. Soc. London* : 190.

Species small, black and elongate-ovate ; palpi, antennae, legs deep brown, scape not deep brown. Head impunctate ; labrum slightly transverse ; antennae filiform, first joints glabrous and rest hairy ; eyes large, lateral, convex and projecting. Pronotum slightly transverse, cordate, anterior angle rectangular, posterior angle obtuse, median line prominent and deep, basal margin truncate, space between basal foveae deeply punctured. Elytra elongate, parallel-sided, striate, intervals flat, large pore on 2nd stria on the middle of the disk, humeral angle obtuse ; scutellum small and impunctate.

*Length* : 5.35-5.40 mm.

*Material examined* : 1 ex., Eden garden, Calcutta, at light, 7.xi.11., F. H. Gravely, 9154/H.

*Remarks* : It is rare in Calcutta. It is attracted to light. It is distributed throughout Bengal.

**Abacetus rufotestaceus** Chaudoir

1869. *A. rufotestaceus* Chaudoir, *Bull. Soc. Imp. nat. Moscow*, i : 398.

Species small, brown and elongate-ovate ; antennae and legs light brown. Head impunctate ; labrum transverse and truncate ; antennae filiform, first 3 joints glabrous and rest hairy ; eyes large, lateral and projecting. Pronotum transverse and cordate, anterior angle obtuse, posterior angle rectangular, basal margin truncate, median line prominent and fine, space between basal foveae wider and not closely but deeply punctured. Elytra elongate and parallel-sided, striate, impunctate, humeral angle obtuse, and impunctate.

*Length* : 5.50 to 5.55 mm,

*Material examined* : 1 ex., Eden garden, Calcutta, at light, 7.xi.11. F.H. Gravely.

*Remarks* : This species rarely occurs in Calcutta. It is recorded from Calcutta and Dacca.

#### Tribe 6. PERIGONINI

This tribe comprises of five genera, of which three are restricted to the Neotropical region and the other two to the Old world.

The genus *Perigona* Castelnau is recorded from Calcutta and it is represented by one speices, *Perigona nigriceps* (Dejean) in Calcutta.

This tribe can be distinguished by its head with two supraorbital setae on each side, elytra completely covering the abdomen, body not peduculate, prothorax not globose, its upper surface quardrated or cordate, elytral epiplura not interrupted by inner plica and elytra with stria 8 very deep throughout, close to margin in front, separated from it behind.

#### Genus *Perigona* Castelnau

1835. *Perigona* Castelnau, *Etud. Ent.* : 151.

1896. *Extromus* Percheron, *Trans. S. Afr. Phil. Soc.*, vii : 58.

The diagonistic characters are small size and elongate-ovate. Head triangular, impunctate, shiny but finely granulated ; labrum truncate, nearly quadrate and setose ; clypeus truncate, transverse and setose ; fronto-clypeal suture prominent ; antennae stout, submoniliform, pubescent 3rd joints onwards ; eyes moderate and lateral ; a pair of supraorbital setae present on each side. Pronotum somewhat cordate, transverse, shiny, glabrous, impunctate, a pair of setae present on lateral margins, apical margin wider than basal margin, posterior and anterior angles obtuse, median line present. Elytra elongate-ovate, humeral angle rounded, faintly striate, stria 8 deep, impunctate, Scutellum small and triangular. Legs slender and hairy.

#### *Perigona nigriceps* (Dejean)

1831. *Bembidium nigriceps* Dejean, *Spec. Genl. Col.*, v : 44.

1903. *Perigona australica* Solane, *Proc. Linn. Soc. NSW* : 635.

Species small and elongate-ovate. Head black ; palpi, labrum, clypeus, antennae, pronotum, elytra and legs brown. Head triangular, impunctate, shiny and finely granulated ; labrum truncate, nearly quadrate and setose ; clypeus truncate, transverse and setose ; fronto-clypeal suture prominent and a pair of supraorbital setae present on each side ; antennae stout, submoniliform and pubescent from 3rd joint onwards ; eyes moderate and lateral. Pronotum somewhat cordate, transverse, shiny, glabrous, impunctate, a pair of lateral setae present on either side, front margin wider than basal margin, posterior and anterior angles obtuse and median line prominent. Elytra elongate-ovate, humeral angle rounded, faintly striate, stria 8 deep, impunctate and glabrous. Scutellum small and triangular.

*Length* : 3 mm.

*Material examined* : 1 ex., Calcutta 7.3.17.

*Remarks* : This species occurs in Calcutta. Its distribution is cosmopolitan, but not yet recorded from Central and South America.

### Tribe 8. HARPALINI

This is one of the largest tribes of the family Carabidae and its representatives are found in all zoogeographical regions of the world. They are abundantly occur in India and also well represented from Calcutta. So far, 36 genera are recorded from Indian sub-region of which eight genera, namely, *Amblystomus* Erichson, *Trichotichnus* Morawitz, *Platymelopus* Chaudoir, *Oxycentrus* Chaudoir, *Diorche* Macleay, *Acupalpus* Latereille, *Anoplogenus* Chaudoir and *Pachytrachelus* Chaudoir have been recorded from Calcutta.

The representative of the tribe can easily be recognised by their head being not pedunculate, frons with one supraorbital seta on each side, palpi pubescent, scrobe of mandible devoid of any seta, antennal scape and pedicel glabrous, postero-lateral setae of prothorax absent, elytral apex not markedly truncate and epipleura not interrupted at apex.

This species of the tribe Harpalini from Calcutta falls chiefly under three subtribes which are as follows :—

#### Subtribe I AMBLYSTOMINA

Genus *Amblystomus* Erichson  
*A. bivittatus* Andrewes

#### Subtribe II STENOLOPHINA

Genus *Pachytrachelus* Chaudoir  
*P. oblongus* Dejean

Genus *Anoplogenus* Chaudoir  
*A. microgonus* Bates

Genus *Acupalpus* Latereille  
*A. samargdulus* Fabricius

#### Subtribe III HARPALINA

Genus *Dioryche* Macleay  
*D. Nagpurensis* Bates

Genus *Oxycentrus* Chaudoir  
*O. parallelus* Chaudoir

Genus *Trichotichnus* Morawitz  
*T. lividus* Andrewes

Genus *Platymetopus* Dejean  
*P. senilis* Nietner

*Key to the genera and species of the tribe Harpalini from Calcutta.*

1. Clypeus and labrum asymmetrically emarginate at apex ; penultimate joint of labial palpi with more than two setae at inner side ; front tarsi of males with two rows of adhesive hairs on ventral side— — — — — subtribe AMBLYSTOMINA ... *Amblystomus* Erichson ... *A. bivittatus* Andrewes
- (i) Clypeus and labrum not asymmetrically emarginate at apex ... 2
2. Penultimate joint of labial palpi with two setae at inner side ; marginal series of pores on interval 9 of elytra composed of 14 pores and widely interrupted at middle...subtribe Stenolopina ... 3
- 6-2. Penultimate joint of labial palpi with more than two setae at innerside ; marginal series of pores on interval 9 of elytra composed of more than 14 pores and often continuous (except, *Dioryche*).....subtribe Harpalina ... 5
- 3-2. Front tibiae dentate.....*Pachytrachelus* Chaudoir ... *P. oblongus* Dejean
3. Front tibiae normal and not dentate ... 4
- 4(3') Elytra without scutellary striole ; prosternal process setose at apex ... *Anoplogenus* Chaudoir ... *A. microgonus* Bates
- 4' Elytra with scutellary striole ; prosternal process without setae at apex...*Acupalpus* Laterille ... *A. samargudulus* Fabricius
- 5(2') Dorsal surface glabrous ... 6
- 5' Dorsal surface pubescent, frontal impression of head short and not extending posterolaterally ; labrum covering mandibles, mentum without median tooth ... *Platymetopus* Chaudoir ... *P. senilis* Nietner
- 6(5') Elytra with marginal series of pores on interval 9 widely interrupted at middle and series of pores on intervals 5 and 7 present.....*Dioryche* Macleay ... *D. nagpurensis* (Bates)
- 6' Elytra with marginal series of pores on interval 9 continuous ... 7
- 7(6') Body narrow ; mandibles long ; scutellary striole of elytra short ; median tooth of mentum long...*Oxycentrus* Chaudoir...*O. parallelus* Chaudoir Body wide, mandibles short ; scutellary striole long ; interval 3 of elytra with one dorsal pore...*Trichotichnus* Morwawitz...*T. lividus* Andrewes.

## Subtribe AMBILYSTOMINA

1905. *Ablystomina* Jacobson, *Cal. Russ. fase. 3* : 202.

The chief diagnostic characters of the subtribe AMBLYSTOMINA are as follows : Clypeus and labrum asymmetrically sinuate at apex, basal margin of labrum visible at middle, mandible short and stout, penultimate joint of labial palpi with more than two setae on innerside, suture between mentum and submentum complete, elytra with complete basal border, scutellary striole between suture and stria 1 ; frontal 1 to 4 segments of front tarsi of males with two rows of adhesive hairs.

### Genus *Amblystomus* Erichson

1937. *Amblystomus* Erichson, *Kaf. Mark Brandenbo*, 1 (1) : 59

The chief diagnostic characters are ; body glabrous and inpunctate, clypeus emarginate and transverse, posterior marginal setae of prothorax absent and basal angles of pronotum more or less rounded, elytra quadrate and striae not distinct, legs slender and brown.

### *Amblystomus bivittatus* Andrewes

1919. *Amblystomus bivittatus* Andrewes, *Ann. Mag. nat. Hist.*, (9) iii : 474.

Species small, quadrate in shape. Head and pronotum blackish brown, elytra chocolate with irregular black and brown patches and its margin light brown, Antennae blackish brown, except scape & pedicel ; which are light brown. Labrum transverse with setae in a row along the front margin, clypeus slightly emarginate and transverse. Vertex of head finely granulated ; eyes black and coarsely faceted. Antennae slender, scape and pedicel glabrous and rest hairy. Pronotum oval, transverse, finely punctured, lateral margins bordered, median line rather fine and rather indistinct. Elytra quadrate, finely punctured and striate, apices slightly sinuate. Scutellum transverse, legs slender, brown.

*Length* : 4.5 mm.

*Material examined* : 1 ex., Calcutta, at light. ix.21, Rebeiro.

*Remarks* : This species usually attracted to light and distributed all over India.

### Subtribe STENOLOPHINA

1838. *Stenolophidae* Hope *Col. Man.* 2 : 89

The chief diagnostic characters of the subtribe STENOLOPHINA are as follows : Clypeus and labrum symmetric ; frontal impressions extending posterolaterally ; penultimate segment of labial palpi generally with two setae at inner side ; suture between mentum and submentum complete. Elytra with complete basal border ; scutellary striole between striae 1 and 2, or absent ; marginal series of pores widely interrupted at middle, segments 1 to 4 or 2 to 4 of male with two rows of adhesive hairs on ventral side.

### Genus *Pachytrachelus* Chaudoir

1852. *Pachytrachelus* Chaudoir, *Bull. Soc. Imp. Nat. Moscow*, i : 85.

1863. *Systemognothus* Putzeys, *Postser, ad. Chiv. Mon. Mem. Leige*, xviii : 18.

The chief diagnostic characters are : Body small, elongate. Labrum straight and somewhat transverse, with 6 setae ; clypeus slightly emarginate, antennae short and stout,

1st, 2nd joint glabrous, frons and head deeply and sparsely punctured. Pronotum somewhat quadrate, lateral margins sinuate at base, apical and basal part deeply and closely punctured, rest not so punctured. Elytra elongate and oblong, elytral apex separately rounded except slightly notched at the apical part.

### ***Pachytrachelus oblongus* (Dejean)**

1831. *Agonoderus oblongus* Dejean, *Spec. Gen. Col.*, v : 813.

Species small, shiny, elongate and somewhat quadrate. Head blackish brown, apical part of mandible blackish brown, rest deep brown, palpi deep brown and apical palpus pointed, Clypeus and labrum deep brown, antennae brown, eyes black, pronotum and elytra deep brown, legs deep brown. Labrum straight and somewhat transverse, 3 pairs of brown setae arising from punctures anteriorly, clypeus slightly emarginate, front broad and bisulcate, antennae short and stout, 1st and 2nd joints glabrous ; front deeply and sparsely punctured, rest glabrous and shiny, tempora well developed. Pronotum somewhat quadrate, anterior margin and lateral margins equal, lateral margins sinuate at base, posterior angle obtuse, apical and basal part deeply and closely punctured, rest not so closely punctured, median line prominent. Elytra elongate and oblong, striate from base to apex, humeral angle well developed, scutellum broad and impunctate, elytral apex separately rounded except slightly notched at the apical part, lower surface brown.

*Length* : 7 mm.

*Material examined* : 1 ex., Calcutta, at light, Oct. 1911. F. H. G. ; 1 ex., Calcutta, at light, xi.1917 ; 1 ex., Calcutta, at light, x.1921, S. W. Kemp ; 1 ex., Calcutta, at light, 25.vi.1915, F. H. G. ; 1 ex., Calcutta, at light, vi. 1914, F. H. G. ; 1 ex., Calcutta, at light, 9.x.1914, F. H. G.

*Remarks* : This species occurs in Calcutta in the months of June, October and November. It is usually attracted by light. This species is distributed throughout South-East Asia, but not extending to Japan & Australia.

### **Genus *Anoplogenius* Chaudoir**

1952. *Anoplogenius* Chaudoir, *Bull. Soc. Imp. Nat. Moscow*, 1 : 88.

1857. *Megrammus* Motschulsky, *Et. Ent. Hist. Nat. Ins.* : 26.

The chief diagnostic characters are : Body quadrate. Labrum punctate ; clypeus transverse ; head convex and glabrous. Pronotum cordate, transverse, lateral margins sinuate at base, finely and densely punctured along the basal margin. Elytra quadrate, striae deep and prominent, intervals flat and glabrous.

**Anoplogenus microgonus** Bates

1886. *Anoplogenus microgonus* Bates, *Ann. Mag. Nat. Hist.* (5) xvii : 78

Species medium size and quadrate in shape. Head, pronotum and elytra black, margin of pronotum and elytra brown, 1st and 2nd joints of antennae, palpi and legs brown, labrum truncate ; head convex, glabrous ; 1st., 2nd., joints of Antennae glabrous, rest hairy. Pronotum cordate, transverse, lateral margins sinuate at base, posterior angle rectangular, anterior angle rounded, median line fine, disk convex and glabrous, finely and densely punctured at the posterior angle. Elytra somewhat quadrate, humeral angle prominent, striae deep, prominent and complete, intervals flat and glabrous ; scutellum transverse and moderate.

*Length* : 8 mm.

*Material examined* : 4 exs., Calcutta, at light, i. 1956, A. Sirkar ; 1 ex., Calcutta, at light, 16.vi.15, F. H. G. ; 1 ex., Calcutta, 1907 (no other data).

*Remarks* : This species commonly occurs in Calcutta. It is generally found in the month of January and June. It is usually attracted light. This species is recorded from Calcutta, Surjabuggi, Sardah, Sunderbans and Diamond-Harbour.

**Genus Acupalpus** Latereille

1829. *Acupalpus* Latereille, *Cuvier's Reigme Animal* (Ed. 2), IV : 391.

1864. *Manicellus* Motschulsky, *Bull. Soc. Imp. Nat Moscou*, II : 207.

The chief diagnostic characters are, body impunctate except the basal area of pronotum, dorsal side glabrous, antennae pubescent from segment 3 ; clypeus straight. Pronotum oval, margined laterally. Elytral apical margin sinuate, legs brown.

**Acupalpus (Egadtoma) smargdulus** Fabricius

Species small, elongate-ovate. Head and elytra blackish brown, pronotum reddish brown. Labrum straight, transverse ; clypeus straight, transverse, with a pair of setae antero-laterally ; 1st segment of maxillary palpi pointed at apex ; head glabrous ; antennae brown, slender, 1st & 2nd joints glabrous, rest hairy ; eyes moderately large, black, coarsely faceted. Pronotum oval, margined laterally, median line fine, posterior angle of pronotum coarsely punctured. Elytra laterally margined, humeral angle well-developed, striate punctate, apical margin with few setae, legs brown.

*Length* : 6 mm.

*Material examined* : 1 ex., Calcutta, at light, March, 1914, F. H. G. ; 1 ex., Calcutta, at light, March 1914, F. H. G. ; 1 ex., Calcutta, VII. 1914, F. H. G. ; 1 ex., Calcutta at light, 4.x.1911, F. H. G. ; 1 ex., Calcutta at light, Oct. 1911, F. H. G.

*Remarks* : This is a common species in Calcutta. It is usually attracted to light. It is generally found in the months of October, November and March. So far, it is recorded from Calcutta only.

## Subtribe HARPALINA

1810. *Harpalini* Bonelli *Obs. Ent.* 1 : tab. syn.

The chief diagnostic characters of the subtribe HARPALINA are clypeus and labrum symmetric, penultimate segment of labial palpi with more than three setae on inner margin ; suture between mentum and submentum complete. Elytra with complete basal border ; segments 1 to 4 of fore tarsi and segments 1 to 4 of mid tarsi of male with adhesive hairs arranged in two rows on ventral side.

Genus *Dioryche* Macleay

1825. *Dioryche* Macleay, *Ann. Jav.* : 21.

The chief diagnostic characters are body glabrous, head with frontal impression obsolete, eyes well separated from buccal fissure, postgenae well developed, lateral series of marginal nores of elytra widely interrupted at middle, the interstices 5 and 7 with a series of pores ; penultimate segment of labial palpi with many setae, mentum deeply emarginate with short median tooth, clypeus bisetose, pronotum without posterior marginal setae.

*Dioryche nagpurensis* (Bates)

1891. *Platymetopus nagpurensis* Bates, *Com. Soc. ent. Belg.* : 329.

Species medium size and elongate. Head, pronotum and elytra dark brown : palpi, labrum, antennae except 1st and 2nd joints, legs deep brown ; eyes black. Labrum straight, somewhat rounded, 3 pairs of brown setae present anteriorly, apically sparsely and finely punctured. Clypeus slightly emarginate and short, head glabrous, antennae long, slender, hairy and last segment pointed at apex, eyes large and lateral. Pronotum somewhat cordate, transverse, impunctate except the basal margin and posterior angle which finely and closely punctured, basal margin and front margin nearly equal, lateral margins slightly sinuate at base, posterior angle obtuse, median line not distinct. Elytra elongate and sinuate at the apical end, glabrous, striate, a good numbers of coarse dots on the intervals 2 and 4 humeral angle well defined. Scutellum triangular and transverse.

*Length* : 7.5 mm.

*Material examined* : 1 ex., Calcutta, at light, in house, 6.iv.23, Ribeiro.

*Remarks* : It is fairly common in Calcutta, usually attracted to light and found during the months of April to June. It is distributed throughout Eastern and Northern India,

Genus **Oxycentrus** Chaudoir

1854. *Oxycentrus* Chaudoir, *Bull. Soc. Imp. nat, Moscou*, i : 345

1846. *Agreuter* Schm-Goeb., in litt. *Faun. Col. Birm.* (Cover).

The chief diagnostic characters are, body elongate and shiny. Labrum truncate and with 6 setae ; clypeus truncate and transverse with 2 setae ; antennae short and stout, 1st and 2nd segments glabrous. Pronotum short and cordate, a pair of long setae on the lateral margins, basal margin coarsely, densely and closely punctured. Elytra elongate and tapering towards apex, striae extended to apex, impunctate, intervals convex.

Genus **Oocycentrus** parallelus Chaudoir

1854. *Oxycentrus parallelus* Chaudoir, *Bull Soc. Imp. Nat. Moscou*. i : 343.

Species medium size, elongate and shiny. Head, pronotum and elytra deep black ; menadible, palpi, labrum, antennae, legs deep brown, eyes with blackish and whitish pigments. Labrum truncate and transverse, 3 pairs of brown setae arising from punctures anteriorly, palpi pointed and hairy, clypeus truncate and transverse, one pair of long brown setae arising from punctures anterior-laterally ; fronto-clypeal suture prominent, front bisulcate, eyes small and lateral, antennae short and stout, 1st 7 2nd segments glabrous, only a bristle on scape, rest hairy, a pair of supraorbital setae on head, head shiny and glabrous. Pronotum short and cordate, apical margin wider than basal margin, all the margins bordered, lateral margins sinuate at base, posterior angle acute, a pair of long setae on the middle of the lateral margins, median line prominent, basal part coarsely, densely and closely punctured, rest impunctate. Elytra elongate and tapering towards apex, apical part slightly notched, humeral angle well developed, striae extended to apex, impunctate, intervals convex. Scutellum very short and triangular, impunctate, lower surface black.

*Length* : 9 mm.

*Material examined* : 1 ex., Calcutta, at light, 18.vii.15, F. H. G. ; 1 ex., Calcutta, 4.xi.1907, Mus. Collr ; 2 exs., Calcutta, Mus. Collr ; 1 ex., Calcutta, Oct, 1212 ; 1 ex., Calcutta, at light, 6.xii.1907, Mus. Collr ; 1 ex., Calcutta, 31.v.1908, N. A. ; 1 ex., Calcutta, at light, Oct., 1921.

*Remarks* : This is a common species in Calcutta. It is generally found during the months August to December and also attracted at light. It occurs throughout Bengal ; Haflong ; Pusa ; Cahpra ; Saran ; Dehra Dun and Haldwani.

Genus **Trichotichnus** Morawit

1863. *Trichotichnus* Morawitz., *Mem. Head. Imp. Sci. Petuspany*, (7) vi (iii) : 63.

1898. *Asmerinx* Tchitch., *Ann. Soc. ent. Fr.* : 183.

The chief diagnostic characters are, body small and elongate. Labrum straight and broad, with 6 setae ; Clypeus truncate and transverse with 2 setae ; front and vertex closely

and finely punctured, antennae short and slender, first 2 joints glabrous. Pronotum rounded, apical part finely and closely punctured but basal part coarsely and deeply punctured. Elytra elongate, hairy and apical part slightly sinuate, striae extending to apex.

**Trichotichnus (Hyparpalus) lividus** Andrewes

1923. *Hypolithus lividus* Andr., *Spol. Zeyl.* p. 234.

Species medium size and elongate. Head, pronotum and elytra deep chocolate ; labrum, palpi, mandible antennae, legs light brown, eyes white. Labrum straight and broad, 6 brown setae arising from deep punctures anteriorly, maxillary apical palpi pointed and not densely hairy ; Clypeus truncate and transverse, finely punctured, a pair of long brown setae arising from clypeus anterior-laterally, frontoclypeal suture prominent, front large and finely punctured, antennae short and slender, first 2 joints glabrous and light brown, 3rd onwards hairy and deep brown ; eyes large and lateral. Pronotum transverse, margins rounded, anterior margin wider than basal margin, all the sides margined, anterior and posterior angles rounded and obtuse, median line prominent, apical part finely and closely punctured but basal part coarsely and deeply punctured, basal margin truncate. Elytra elongate, hairy and apical part slightly sinuate, striae extending to apex, humeral angle well developed ; scutellum large, triangular, pointed and impunctate.

*Length* : 9 mm.

*Material examined* : 1 ex., Calcutta (no other data available).

*Remarks* : It occurs in Calcutta.

**Genus Platymetopus** Dejean

1829. *Platymetopus* Dejean, *Spec. Genl. Col.*, IV : 68.

The chief diagnostic characters are body medium size and elongate. Labrum anteriorly rounded ; Clypeus not deeply emarginate ; frons, vertex and occiput closely and deeply punctured, antennae slender and short, 1st and 2nd joints glabrous. Pronotum transverse and margins rounded, disk closely and densely punctured and hairy. Elytra elongate-oblong, striate-punctate and hairy.

**Platymetopus senilis** Nietner

1857. *Ophonus senilis* Nietn., *J. Asiatic Soc. Burg.*, 26 : 150.

Species medium size and elongate. Head, pronotum and elytra blackish chocolate ; palpi, labrum, antennae 3rd to 11th joints, legs deep brown ; antennae 1st, 2nd joints light brown, glabrous excepting one long setae on scape ; eyes with white and black pigments. Labrum anteriorly rounded, punctured, projecting setae from punctures anteriorly, clypeus not deeply emarginate, punctured, with a pair of long brown setae antero-laterally ; frontoclypeal suture prominent, front broad and closely and deeply punctured ; vertex and occiput deeply and closely punctured, a pair of supraorbital setae on head ; eyes large and

lateral; antennae slender and short, from 3rd joints onwards hairy and a pair of long setae at each joint. Pronotum transverse and margins rounded, basal margin truncate, disk closely and densely punctured and hairy, median line prominent, posterior angle obtuse and anterior angle well developed. Elytra elongate oblong, striate-punctate, punctures extending to apex, intervals not smooth, humeral angle well marked, elytra hairy, long brown setae projecting on the apical margins, apical margins slightly sinuate; scutellum broad and punctate; lower surface blackish red and punctured; tarsi, femur deep brown whereas tibia light brown.

*Length* : 9 mm.

*Material examined* : 1 ex., Calcutta, x.1914, F. H. G.

*Remarks* : This is not common species in Calcutta. It is generally found in the month of October.

### Tribe 9. PANAGAEINI

It is one of the smaller tribes of the subfamily Harpalinae. Though it is a small tribe but it is represented in all of the major zoogeographical regions. 17 genera were listed in small Csiki (1929), 15 occur in the tropics and 11 of these are in the tropics of the old world.

So far, 7 genera are recorded from India, the genera are *Brachyonychus*, Choudori, *Craspedophorus* Hope, *Dischissus* Bates *Euzchizomerus* Chaudoir, *Microcosmus* Choudoir, *Peronomerus* Schaum and *Trichisia* Motchulsky of which 4 genera e.g., *Craspedophorus*, *Dischissu*, *Euzchizomerus* and *Microcosmus* are recorded from Calcutta and each genus is represented by one species only.

This tribe can easily be recognised by their heads with two supraorbital setae on each side and apical joint of maxillary palpi set obliquely on to penultimate joint.

#### *Key to the genera of the tribe Panagaeini from Calcutta*

- |   |     |                       |
|---|-----|-----------------------|
| 1. 4th tarsal segments bilobed, elytra with or without spots                            | ... | 4                     |
| 2. 1st segment of antennae more than twice, as long as 2nd segment, elytra with spots   | ... | <i>Dischissus</i>     |
| 3. 1st segment of antennae less than twice as long as 2nd segment, elytra without spots | ... | <i>Euzchizomerus</i>  |
| 4. 4th tarsal segment not bilobed, elytra with spots                                    |     |                       |
| 5. 1st segment of antennae are slightly dilated, size not more than 8.00 mm.            | ... | <i>Microcosmus</i>    |
| 6. 1st segment of antennae are slightly dilated, size not less than 8.00 mm.            | ... | <i>Craspedophorus</i> |

#### Genus *Dischissus* Bates

1973. *Dischissus* Bates, *Trans. Ent. Soc. London* : 243

The diagnostic characters are elongate—oblong, shiny and whole body with erect

hairs. Head rectangular, deeply and coarsely punctured ; labrum slightly emarginate and bisetose ; clypeus slightly emarginate, broad, glabrous and bisetose ; antennae moderate, 3rd joint nearly equal to 1st joint and hairy ; eyes prominent, lateral and bulging ; neck constricted and glabrous. Pronotum cordate, not transverse, lateral margin expanded posteriorly, sinuate at base, deeply and coarsely punctured, densely erect hairs, presence of a pair of deep basal foveae, posterior angle not rectangular, anterior angle nearly obtuse. Elytra more or less parallel-sided, deeply striate-punctate, densely erect hairs, presence of 9 striae and a short scutellary striole, humeral angle rounded. Scutellum not so short, triangular, pointed apically and punctured. Abdomen black, with erect hairs throughout the ventral portion ; prostrunum, mesostunum and metastornum deeply and coarsely punctured.

*Length* : 7.5 mm.

*Range* : Calcutta.

### ***Dischissus longicornis* (Schaum.)**

1863. *Craspedophorus longicornis* Schaum, *Berl. Ent. Zeit.* : 84.

Species medium size, and elongate-oblong. Head, pronotum and elytra deep black ; palpi, mandible, antennae deep brown ; lateral margins of pronotum, legs brown ; and posteriorly elytra with two pairs of rounded orange patches, one pair near to base and other pair near to apex. Head rectangular, coarsely and deeply punctured and erect hairs throughout the head ; labrum truncate, transverse and with setigerous punctures ; clypeus straight, glabrous, shiny and broad ; eyes big, lateral and projecting ; antennae long and slender, 1st to 3rd joints less hairy than the rest, 3rd joint longer than all joints ; a prominent shiny neck. Pronotum rounded, coarsely and deeply punctured, densely erect hairs, lateral margins extended from middle to base, sinuate at posterior angle obtuse, median line indistinct. Elytra elongate—oblong, striate-punctate, punctures deep and close extending to apex, densely erect hairs, humeral angle rounded. Scutellum not so small, triangular, pointed at apex and punctate.

*Length* : 7.5 mm.

*Material examined* : 1 ex., Calcutta, at light, 24.viii.1914, F. H. G.

*Remarks* : This species is rare in Calcutta. But it is recorded in the month of August. It is distributed to Calcutta ; Rangoon ; Kuala-Lumpur ; Singapore ; Sumatra and Hongkong.

### **Genus *Euchizomerus* Chaudoir**

1850. *Euchizomerus* Chaudoir, *Bull. Soc. Imp. Nat. Moscou*, i : 413

The diagnostic characters are oval-shaped body, shiny, moderately large and whole body with erect pubescence. Head rectangular, shiny and sparsely punctured ; labrum

transverse, slightly emarginate and bisetose ; clypeus truncate, broad, shiny ; antennae long, slender, scanty hairs on 1st, 2nd, 3rd and rest hairy, 3rd joint longer than all joints ; eyes lateral, prominent and bulging ; well developed neck and glabrous. Pronotum narrow at base and apex, wing like expansion laterally from apex to middle sinuate at base, deeply and coarsely punctate with erect hairs. Elytra posteriorly oval, convex, but parallel-sided anteriorly, striate-punctate, presence of 9 striae and scutellary striole, intervals flat, body with erect hairs, humeral angle rounded. Scutellum not so small, triangular, pointed apically, glabrous and not punctured. Ventral portion black with copperish green reflection, prosternum, mesosternum and metasternum deeply and coarsely punctured with erect hairs, legs hairy.

*Length* : 10-11 mm.

*Range* : Ceylon ; Calcutta.

### ***Euschizomerus denticollis* (Kollar)**

1835. *Panageus denticollis* Kollar *Ann. Wien. Mus.*, i : 334, i. 31, f. 2.

Species medium size and ovate. Head, pronotum, elytra black, shiny with greenish tinge ; palpi, mandible, labrum, antennae, legs deep brown. Labrum slightly emarginate, transverse ; clypeus truncate, broad, glabrous and shiny. Head rectangular, with erect scanty hairs, a row of deep punctures at the lateral sides of head ; antennae long and slender, 1st and 2nd joints glabrous, 3rd joint longer than all joints and rest hairy ; eyes large, lateral and bulging ; neck constricted, shiny and glabrous. Pronotum narrow at base and apex, wing like expansion at the lateral margin from apex to middle, sinuate at base, erect hairs throughout pronotum, deeply and coarsely punctured, median line present. Elytra elongate-ovate, convex, humeral angle well developed, striate-punctate, punctures deep and coarse extending to apex, intervals flat. Scutellum large, triangular and impunctate.

*Length* : 11.00 mm.

*Material examined* : 1 ex., Calcutta, Eden Gardens, at light, 16.x.11, F. H. G.

*Remarks* : It occurs in Calcutta. This species is distributed to Calcutta and Ceylon.

### **Genus *Microcosmus* Chaudoir**

1878. *Microcosmus* Chaudoir, *Mon. Sur les Panageides, Ann. Soc. ent. Belgique* : 139

The diagnostic characters are oval-elongate body, shiny, small and the whole body with erect hairs. Head rectangular, deeply and coarsely punctured ; labrum slightly emarginate, 4 setose ; clypeus broad, bisetose ; antennae stout and moderate, 1st to 3rd joints with scanty hairs, rest deeply hairy, 3rd joint longer than rest joints ; eyes lateral, prominent, bulging-neck prominent ; pronotum cordate, transverse, lateral margins sinuate at base,

disk coarsely and deeply punctured with suberect hairs, anterior angle rounded and posterior angle rectangular. Elytra elongate; ovate, striate-punctate, 9 striae, scutellary striole distinct, intervals convex, disk with suberect hairs, humeral angle rounded. Scutellum prominent, triangular, pointed apically, punctate; ventral part black, hairy, deeply and coarsely punctured, legs hairy.

*Length* : 7 mm.

*Range* : Calcutta; Orissa.

### **Microcosmus flavopilosus LaFerte**

1851. *Microcosmus flavopilosus* LaFerte, *Annl. Soc. ent. Fr.* : 222.

Species small and elongate-ovate. Head, pronotum, elytra black; two pairs of transverse orange patches, one near to base and the other to apex of telytra; pronotal lateral margins orange from middle to base, labrum, clypeus, antennae, legs brown; labrum slightly emarginate and transverse, 4-setigerous punctures; clypeus truncate and broad. Head rectangular, with erect hairs, deeply and coarsely punctured; a constricted neck, shiny and glabrous; antennae small and slender, scape glabrous, 2nd and 3rd joints less hairy than remaining joints, 3rd joint longer than all joints; eyes large, lateral and bulging. Pronotum transverse, ovate, sinuate at base, coarsely and deeply punctured, erect hairs on disk, basal margin wider than front margin, anterior angle rounded, posterior angle acute, median line indistinct. Elytra ovate and elongate, humeral angle rounded, suberect hairs on disk, striate punctate, punctures deep and coarse extending to apex, intervals flat and with fine punctures. Scutellum not so small, triangular and punctate.

*Length* : 7.5 mm.

*Material examined* : 1 ex., Calcutta, at light, 12.xi.1907, Mus. Collector.

*Remarks* : This occurs in Calcutta. It is distributed to Calcutta; Nepal; Jorhat; Dacca and Sardah.

### **Genus Crspedophorus Hope**

1838. *Craspedophorus* Hope, *Col. Man.*, ii : 165.

1846. *Epicosmus* Chaudoir, *Bull. Soc. Imp. Nat. Moscou*, ii : 512 (note).

The diagnostic characters are somewhat oval and convex medium to large size (from 8 mm to 25 mm) and whole body with erect hairs. Head rectangular, deeply and coarsely punctured with sparsely erect hairs; labrum emarginate, transverse with setigerous punctures; clypeus broad; neck constricted; antennae moderate, slender and hairy, 3rd joint longer than rest joints; eyes prominent, lateral and bulging. Pronotum cordate, densely erect hairs, posterior angle nearly rectangular, anterior angle rounded, and deep basal foveae. Elytra somewhat parallel sided, posteriorly converging, deeply punctate striate, intervals convex with erect hairs profusely, humeral angle rounded. Scutellum glabrous, short,

triangular and pointed apically. Prosternum, Mesosternum and Metasternum deeply punctured.

*Range* : India, Pakistan and China.

### *Craspedophorus elegans* (Dej.)

1826. *Panagaeus elegans* Dej. *sp. Col.*, ii : 290.

Species medium size and elongate-oblong. Head, pronotum and elytra deep black, two pairs of orange patches on elytra, one pair near to shoulder and the other towards the apex, lateral margins of prothorax deep brown ; palpi, mandible, labrum, antennae from 3rd joint deep brown and hairy ; eyes with brown and black spot. Labrum emarginate, transverse and glabrous ; clypeus truncate and short ; head with long erect setae, coarsely and closely punctured ; eyes lateral, medium and bulging ; antennae filiform, joint 1 and 2 glabrous, rest hairy, 3rd joint longer than all joints ; neck constricted. Prothorax somewhat cordate, transverse, sinuate at base, deeply coarsely and closely punctured with densely erect hairs, basal and apical margins equal, posterior angle acute and anterior angle rounded, elongate and parallel-sided, slightly constricted at apex, striate-punctate, intervals convex at base and flat to apex, erect hairs densely throughout the elytra, humeral angle rounded. Scutellum small, triangular, pointed at apex and impunctate.

*Length* : 8 mm.

*Material examined* : 2 exs., Calcutta, Mus. Collr.

*Remarks* : It occurs throughout India. It is recorded from Calcutta also.

## Tribe 10. CHLAENIINI

### 10. Tribe CHLAENIINI : Harpalinae

It is one of the largest tribe of the subfamily Harpalinae. This tribe is represented by 91 species from India under two genera namely *Chlaenius* Bonelli and *Hololeius* Laforfe'. The genus *Chlaenius* Bonelli is represented by *C. (c.) Chlorodius* Dejean, *C. (c.) hamifer* Choudoir, *C. (c.) laevipennis* Choudoir, *C. (Stenochlaenius) bioculatus* Choudoir, *C. (c.) pictus* Choudoir, *C. (c.) marginifer* Choudoir in Calcutta and the genus *Hololeius* Laferte' is represented by one species *H. nitidulus* (Dejean) in Calcutta. The tribe Chalenini can be determined by marginal channel of the elytra normal, shallow or obsolete at apex ; form rarely oval. This is a large and varied group of Carabidae, which makes a substantial contribution to the ground beetle fauna throughout the temperate and tropical portions of the world.

#### *Key to the genera of the tribe CHAENIINI found in Calcutta*

Last joint of antennae pointed anteriorly, 3rd joint of antennae onwards hairy, palpi truncate, specially intervals in elytra flat ... *Hololeius* Laf.

Last joint of antennae not so pointed, elytral intervals are convex, antennae hairy from 2nd joint onwards, palpi truncate ... *Chlaenius Bonelli*

### Genus *Hololeius* Lafert's

1851. *Hololeius* Laferte *Ann. Soc. ent. France* : 274.

The diagnostic characters are large (12 mm) and elongate-ovate. The last joint of antennae pointed anteriorly, 3rd joint onwards hairy, palpi truncate and mandible pointed ; basal foveae of pronotum not touching base ; elytral apical margin constricted, humeral angle obtuse, intervals on elytra flat.

### *Hololeius nitidulus* (Dejean)

1826. *Chlaenius nitidulus* Dejean, *Spec. Genl. Col.*, ii : 34.

1851. *Hololeius nitidules*, Laferte *Ann. soc. ent. France* : 274.

Large and elongate-ovate. Head, pronotum and elytra dorsally deep black with greenish and sometimes reddish tinge on head ; pronotum and base of elytra ventrally black excepting legs ; palpi, mandible, labrum, antennae 1st to 3rd joints, lateral margins of pronotum, elytra and legs chocolate brown, antennal rest joints black ; eyes black. Labrum truncate, transverse and 6 setigerous punctures ; clypeus truncate and transverse, with 2 setigerous punctures at antero-lateral ; apical palpi truncate, fronto-clypeal suture prominent, front broad and with two dots of punctures ; head cylindrical, glabrous, minutely and finely punctured, two supraorbital setae present ; antennae long and slender, antennae 1st to 3rd joints glabrous and rest black and hairy ; eyes prominent and lateral. Pronotum somewhat subquadrate, flat, glabrous, not coarsely and not closely punctured, basal margin wider than anterior margin, a pair of basal foveae present not touching base, median line prominent, lateral margins slightly constricted at base and apex, posterior angle obtuse and anterior angle rounde. Elytra elongate-ovate, somewhat flat, humeral angle obtuse, lateral margin bordered and hairy, disk glabrous, striate-punctate, punctures moderately deep and not close, intervals flat and minutely and sparsely punctured, lateral sides of the disk with curved hairs elytral apical ; scutellum transverse and triangular, part slightly constricted.

*Length* : 12 mm.

*Material examined* : 1 ex., Calcutta, at light, xi.1915, F. H. G., 1 ex., Calcutta ; 1 ex., Calcutta, 13.iii.1907, N. A. ; F. H. G. ; 1 ex., Calcutta, Mus. Coll.

*Remarks* : This species is common to Calcutta. This species is collected in the months of November and March at light. It is distributed throughout South East Asia including Malay Archipelago excluding Japan and Australia.

Genus *Chlaenius* Bonelli1810. *Chlaenius* Bonelli, *Observ. Ent.*, I, Tab. Synopt.

*Chlaenius* is one of the largest and most taxonomically complex genera of the family Carabidae. Representatives of this genus are distributed throughout all zoogeographical regions of the world. More than one hundred species have been recorded from Indian and six species are found in Calcutta. They are characterised by the medium to large size, mostly brilliant colour, more or less pubescence on dorsal and ventral surfaces, more or less truncate apical segments of palpi, dense pubescence of antennae from 4th segment, labrum with 6 setae, clypeus with 2 setae, pronotum with a pair of posterior fixed setae, elytral base wider than that of pronotum and striae 8 complete, and mentum with median tooth.

*Key to the species of Chlaenius from Calcutta.*

1. Third segments of antennae equal to or longer than combined length of 1st and 2nd segments ; elytra without spots ... 3
2. Third segments of antennae shorter than combined length of 1st and 2nd segments ; elytra with spots ... 7
3. Posterior fixed setae on the hind angles ; dorsal head and pronotum coarsely and punctate with prominent pubescence, dorsal surface of tarsi glabrous... *laevipennis* Chaud
4. Posterior fixed setae anterior to hind angles ; head and pronotum faintly and sparsely punctate with minute pubescence, dorsal surface of tarsi pubescent.
5. Labrum deeply emerginate at apex ; median tooth of mentum simple ; elytra without pale lateral margins ... *chlorodius* Dejean
6. Labrum truncate at apex, median tooth of mentum bifid ; elytra with pale lateral margins ... *circumdatus* Brulle
7. Lateral margins of pronotum finely bordered and narrowly reflexed ; elytral spots more or less rounded ... *bioculatus* Chaud.
8. Lateral margins of pronotum widely bordered and not reflexed ; elytral spots elongated coma ( , ) shaped
9. Front tarsal segments 3-4 almost as wide as long ; elytral spots reaching lateral margins near apex ... *hamifer* Chaud.
10. Front tarsal segments 3-4 distinctly longer than wide ; elytral spots not reaching lateral margins posteriorly ... *pictus* Chaud.

*Chlaenius* (*Chlaenius*) *chlorodius* Dejean1826. *Chlaenius chlorodius* Dejean, *Spec. Gen. Col.*, ii : 365

Medium-sized and oval-shaped. Head, prothorax and elytra black, palpi brown, labrum brown, antennae 1st, 2nd & 3rd joint brown, 4th to 11th joint black, hairy but

joints between segments brown, eyes white with black pigment in centre, legs brown, margin of prothorax and elytra brown ; labrum straight, transverse, punctures in transverse anteriorly of labrum, setae arising from punctures ; clypeus short, pair of furrows on the front and sparsely punctate ; eyes large and bulging. Prothorax somewhat quadrate, basal margin slightly wider than anterior margin, presence of basal foveae not touching marginal base, prothorax punctate, median line distinct, anterior angle rounded and posterior angle rounded and posterior angle obtuse. Elytra somewhat elongate, covered with brown hairs, striation distinct humeral angle obtuse, shoulders well developed, apical part of elytra slightly pointed ; lower surface black.

*Length* : 11 mm.

*Material examined* : 1 ex., Calcutta, at light, Mus. Coll., 6.xi.1907.

*Remarks* : This species is rare in Calcutta. It is attracted to light. The specimen from Calcutta in the collection is recorded on 6th November, 1907. This species is distributed throughout Bengal, Bihar and some parts of U. P.

#### ***Chlaenius (Chlaenius) hamifer* Chaudoir**

1856. *Chlaenius hamifer* Chaudoir, *Bull. Soc. Imp. Nat. Moscou*, ii : 209.

1910. *C. queenslandicus* Solare, *Proc. Linn. Soc. NSW* : 437.

Medium size and elongate-ovate. Head, prothorax and elytra black, head and prothorax with greenish tinge, elytra hairy with brown hairs, basal palpi light brown, apical part dark brown ; antennal 1st, 2nd & 3rd joint light brown and the rest hairy and brown ; eyes white with blackish pigment ; two brown rounded patches on apical part of elytra and apically both joined. Labrum straight, transverse, 6 setigerous punctures on front of labrum ; clypeus straight with 2 setigerous punctures ; front of the head sparsely and minutely punctured ; eyes large and projecting. Prothorax transverse, sides are margined with brown colour, a pair of basal foveae not touching base, disk punctured, densely punctured at base than apex ; lateral margin rounded, Elytra elongate hairy, humeral angle rounded, striate-punctate, rows of punctures extended to apical part, intervals convex and punctate ; lower surface black.

*Length* : 12 mm.

*Material examined* : 1 ex., Calcutta, 13.11.1915, at light, F. H. G. ; 1 ex., Calcutta ; 1 ex., Calcutta, 18.11.1906 ; 1 ex., Calcutta, 10.11.1907.

*Remarks* : This species is common to Calcutta. It is attracted to light and is generally found in the month of November and December. It occurs throughout India, Ceylon, Burma, Siam, Singapore, Java, Sumatra, Borneo, Indo-China, Hongkong and Formosa.

#### ***Chlaenius (Chlaenius) laevipennis* Chaudoir**

1876. *Chlaenius laevipennis* Chaudoir, *Ann. Mus. Civic. Stor. Nat. Geneva*, viii : 196.

Medium size and elongate. Head and prothorax black, with greenish tinge, shiny,

head with less brown pubescences ; antennae, palpi, labrum and two margins of elytra brown extending to apex, elytra rather black but densely covered with brown pubescens, eyes with white and black pigments. Labrum slightly emarginate, transverse, row of deep punctures in front of labrum, brown setae arising from the punctures ; clypeus straight ; head somewhat quadrate, sparsely but deep punctures on vertex, antennae somewhat stout and hairy ; eyes large and projecting. Prothorax cordate, transverse, covered densely with brown pubescens, anterior margin wider than basal margin, lateral margin sinuate at base, posterior angle forming somewhat acute angle, prothorax coarsely and deeply punctured, median line indistinct. Elytra elongate and parallel-sided, covered densely with brown pubescens excepting the shoulders, humeral angle rounded, base of elytra finely granulated, striate-punctate, intervals flat, punctate, elytral apices separately rounded. Scutellum triangular and impunctate. Lower surface black, brown pubescens throughout ; legs brown, but coxae deep brown, coarsely and deeply punctured, prosternum and mesosternum, prosternal process well developed.

*Length* : 7.5 mm.

*Material examined* : 1 ex., Calcutta, at light, Mus. Coll. 6.xi.1907.

*Remarks* : This species is rarely found in Calcutta. The specimen in the collection was recorded on 6th November, 1907. It is attracted to light. This species is distributed to Calcutta, Dacca, Sylhet, Kumaun and also in Burma.

### ***Chlaenius (Stenochlaenius) bioculotus* Chaudoir**

1856. *Chlaenius (Stenochlaenius) bioculatus* Chaudoir, *Bull. Soc. Imp. Nat. Moscou*, ii : 198

Medium size and elongate-ovate. Head, prothorax and elytra black, shiny with greenish & violet tinge on head ; prothorax and basal part of elytra, labrum, palpi, antennae legs deep brown, margin of prothorax brown, a pair of transverse brown patches extending from apical one third to apex. Labrum straight, transverse and 6 setigerous punctures present ; clypeus emarginate, minutely and finely punctured, two setigerous punctures on the sides of clypeus, antennae long and slender, 1st to 3rd joints glabrous, rest joints hairy and black, eyes large and projecting, head moderately and closely punctured. Prothorax with somewhat rounded lateral margins, margins brown, hairy deeply and coarsely punctured, median line distinct, basal margin straight. Elytra elongate and ovate, striate-punctate, hairy, intervals convex, closely & deeply punctured, apical margins sinuate, humeral rounded ; scutellum triangular, black and impunctate ; lower surface black.

*Length* : 12 mm.

*Material examined* : 1 ex., Calcutta, 11.10.1920, Ribeiro, at light.

*Remarks* : This species is not rare in Calcutta. It is generally found in the month of October. It is attracted to light. The specimens in the collection was collected at light in the month of October in 1920. It is distributed throughout India, Ceylon Burma, Borneo, Indo-China, Sumatra, Hongkong, Japan.

**Chlaenius (Chlaenius) pictus** Chaudoir

1856. *Chlaenius pictus* Chaudoir, *Bull. Soc. Imp. Nat.*, ii : 208.

Medium size and elongate-ovate. Head, prothorax shiny bluish green with reddish tinge, lateral margins of prothorax reddish brown, elytra dark brown, lateral channel black, a pair of transverse brown patches extending from apical one third to apex and then united at extremities ; palpi, antennae, legs reddish brown, eyes with whitish and blackish pigments. Labrum slightly emarginate, transverse, 6 setigerous punctures on front. Clypeus slightly emarginate transverse, 2 setigerous punctures on lateral sides, tentorial pits small, head finely and moderately densely punctured, antennae moderately long and slender, hairy from 4th joint, eyes large and prominent. Prothorax somewhat rounded, basal margin wider than apical margin, lateral sides margined, basal fovae deep, median line distinct coarsely and densely punctate with yellowish pubescent, Elytra elongate-ovate, humerus rounded, striate-punctate, intervals slightly convex, coarsely and densely pubescent.

*Length* : 11.5 to 12 mm.

*Material examined* : 1 ex., Calcutta, at light, October, 1921, Riberio ; 1 ex., Calcutta, at light, 16.xi.07, Mus. Coll.

*Remarks* : This species occurs in Calcutta. It is attracted to light in the months of October and November. It is distributed to Khasi hills, Sibsagar, Saran, Birbhum, Pusa, Chapra, Kangra, Bombay, Kathiwar, Madura, Coimbatore in India ; It is also recorded from Java, Sumatra, Siam, Indo-China and China.

**Chlaenius (Chlaenius) pulcher** Nietn.

1856. *Chlaenius (Chlaenius) marginifer* Chaudoir, *Monograph in Ann. Mus. Civ. Stor. Geneva* : 118.

1856. *Chlaenius (Chlaenius) pulcher* Nietner *J. Asiatic Soc. Beng.*, xxv : 387.

Medium size and elongate-ovate. Head, prothorax and elytra deep brown with greenish tinge on head ; prothorax and base of elytra, palpi, antennae, legs, margins of elytra, lateral and apical light brown except the apical part of palpi which dark brown, eyes chocolate with white pigments. Labrum straight, transverse, rows of transverse punctures not close, 6 setigerous punctures present ; clypeus truncate, 2 setigerous punctures on lateral sides, clypeo-frontal sutural line prominent, antennae slender and hairy, vertex and front of head sparsely punctured ; eyes large and projecting. Prothorax cordate, lateral sides well margined, sparsely punctured, median line prominent, a pair of basal fovae well marked, lateral margins sinuate before the base, rectangular posterior angle. Elytra elongate-ovate, striate-punctate, punctures fine and not close on the striate, granulated finely, humeral angle well developed. Scutellum large, triangular and granulated finely.

*Length* : 14 mm.

*Material examined* : 1 ex., Calcutta, at light, Mus. Coll. 11.xi.1907.

*Remarks* : It rarely occurs in Calcutta. It is attracted to light. The specimen in the collection was collected 11.xi.07 at light. It is distributed throughout India and Ceylon.

### Tribe 11. OODINI

So far, 8 genera are recorded from India, of which 4 genera namely *Anatrichis* Leconte, *Dodes* Dejean, *Simous* Chaudoir, and *Systolocranius* Chaudoir are found in Calcutta. Each genus is represented by one species.

This tribe is closely related to Chlaeniini, but it differs in pronotum and elytra not covered with fine pubescence ; shape is oval and ninth interval of elytron consisting of a narrow, broken carina, eighth stria forming a deep groove in apical half.

#### *Key to the genera of the tribe Oodini from Calcutta.*

- |  |     |                      |
|--|-----|----------------------|
| 1. Clypeus with two setigerous punctures, labrum truncate or emarginate with three or six setigerous punctures | ... | 2                    |
| —Clypeus without setigerous punctures, labrum with three setigerous punctures                                  | ... | 3                    |
| 2. Labrum emarginate with six setigerous punctures   | ... | <i>Simous</i>        |
| —Labrum truncate with six setigerous punctures   | ... | <i>Systolocrania</i> |
| 3. Elytra distinctly striate-punctate, striate 7 as distinct as others   | ... | <i>Anatrichis</i>    |
| —Elytra rather faintly striate, striae impunctate, striae 6th and 7th absent                                   | ... | <i>Oodes</i>         |

#### Genus *Simous* Chaudour

1882. *Simous* Chaudoir *Mon. des Oodides* (1) *Ann. Soc. ent. Fr.*, : 373.

The chief diagnostic characters are penultimate joint of labial palpi glabrous, labrum emarginate with six setigerous punctures, clypeus emarginate with two setigerous punctures, ventral surface of tarsi 1 to 4 with two rows of short setae, elytra distinctly striate punctate, 7 striae on elytra as distinct as others, striae nearly touching base, size large.

#### *Simous nigriceps* (Wiedem.)

1821. *Oodes nigriceps* Wiedem. *Germ. Mag.*, iv : 114.

1826. *Oodes pulcher* Dejean *Spec. Genl. Col.*, ii : 375.

Species large and oval shaped. Head, pronotum and elytra black with greenish tinge ; mandible black ; palpi, antennae 1st to 3rd joints, legs deep brown. Head rectangular and glabrous ; labrum slightly emarginate, transverse and 6 setigerous punctures ; clypeus slightly emarginate, broad, transverse and 2 setigerous fronto-clypeal suture prominent ; antennae 1st to 3rd joints glabrous, rest hairy and spines present at each joints ; eyes large and lateral. Pronotum oval, transverse, anteriorly narrower than posteriorly,

basal margin truncate and wider than front margin, posterior angle rectangular and anterior angle obtuse, median line prominent. Elytra elongate-ovate, striate-punctate, punctures deep but not close, striation extended to apex, humeral angle well developed, elytral apices separately rounded. Scutellum long, triangular and impunctate ; lower surface black.

*Length* : 15 mm.

*Material examined* : 4 ex., Calcutta, Mus. Collr. (no other data available).

*Remarks* : This is not uncommon to Calcutta. It is distributed throughout India.

### Genus *Systolocrainius* Chaudoir

1857. *Systolocrainius* Chaudoir, *Bull. Soc. Imp. Nat. Moscou*, ii : 23.

The diagnostic characters are penultimate joint of labial palpi glabrous, labrum truncate with three setigerous punctures, clypeus with two setigerous punctures, ventral surface of tarsi 1 to 4 with two rows of short setae, striae deeply punctate, striae 6th and 7th as distinct as others.

Size large.

### *Systolocrainius* *linea* (Wiedem.)

1821. *Oodes linea* Wiedem., *Germ. Mag.*, iv : 113.

1826. *O. grandis* Dejean, *Spec. Gen. Col.*, ii : 376.

Species large and elongate-ovate. Head, pronotum and elytra black ; mandible black ; palpi, antennae 1st to 3rd joints deep reddish black, labrum truncate, transverse, convex and 3 setigerous punctures ; clypeus truncate, broad and not setose ; fronto-clypeal suture prominent ; antennae short and slender, 1st to 3rd joints glabrous, rest hairy with spines present at each joints ; eyes large, lateral and prominent. Pronotum oval, transverse, narrower anteriorly than posteriorly, basal margin truncate, median line prominent, posterior angle rectangular and anterior angle obtuse. Elytra elongate-ovate, striae-punctate, punctures moderate, deep but not close, striation extending to apex, humeral angle nearly rectangular. Scutellum large, triangular and impunctate ; lower surface black.

*Length* : 16.5 mm.

*Material examined* : 1 ex., Calcutta, Botanic Gardens ; 1 ex., Calcutta, 24.viii.1907, Mus. Collr. ; 1 ex., Calcutta, 24.ix.1907, Mus. Collr.

*Remarks* : This species is common at Calcutta. It is distributed throughout India.

### Genus *Anatrichis* Leconte

1853. *Anatrichis* Leconte, *Trans. Am. Phil. Soc.* x : 391.

The diagnostic characters are penultimate joint of labial palpi glabrous, labrum emarginate with 3 setigerous punctures, clypeus straight, without setigerous punctures,

ventral surface of tarsi 1 to 4 with two rows of short setae, elytral striae distinctly punctate, stria 7 as distinct as others. Size small.

### **Anatrichis pedinoides Chaudoir**

1882. *Anatrichis pedinoides* Chaudoir *Annls. Soc. ent. France* : 321.

Species small and oval. Head, pronotum and elytra black ; palpi, mandible, antennae, legs brown, labrum emarginate, 3 setigerous punctures ; clypeus truncate, broad ; vertex and front minutely, finely and densely punctured ; antennae 1st to 3rd joints glabrous, rest hairy ; eyes black. Pronotum oval, transverse, basal margin wider than front margin, median line distinct. Elytra oval, all the sides of elytra margined, striate-punctate, striation extended to apex, stria 7 distinct. Scutellum triangular and pointed at apex.

*Length* : 6 mm.

*Material examined* : 1 ex., Calcutta, May, 1920, C. Dover.

*Remarks* : It rarely occurs in Calcutta. It was collected in the month of May in 1920. It is distributed to Calcutta, Munser and Bhiwapur (Nagpur) ; Tharrawaddy.

### **Genus Oodes Dejean**

1826. *Oodes* Dejean, *Spec. Gen. Col.*, ii : 374.

The diagnostic characters are penultimate joint of labial palpi glabrous, labrum truncate with 3 setigerous punctures, clypeus without setigerous punctures, ventral surface of tarsi 1 to 4 with two rows of short setae, elytra rather faintly striae, striate impunctate, striae 6th and 7th absent. Size variable.

### **Oodes (Oodes) westermanni Laferte**

1851. *O. (O.) westermanni* Laferte, *Annls. Soc. ent. France* : 271 (note 2).

Species medium size and oval. Head, pronotum and elytra black with reddish tinge ; palpi, mandible, labrum, antennae 1st to 3rd joint deep brown, rest joints black & eyes black. Head rectangular, finely and closely punctured ; labrum straight and transverse, 3 setigerous punctures ; Clypeus slightly emarginate and transverse, broader than labrum ; fronto-clypeal suture prominent ; antennae slender and small, 1st to 3rd joints glabrous, rest hairy with spines at each joints, eyes large and lateral. Pronotum oval, anteriorly narrower than posteriorly, basal margin wider than front margin and truncate, median line prominent, posterior angle rectangular and anterior angle obtuse. Elytra elongate-ovate, striate-impunctate, humeral angle well developed. Scutellum long, triangular and pointed at apex lower surface black.

*Length* : 9 mm.

*Material examined* : 1 ex., Calcutta, at light, 8.xi.1907, Mus. Collr ; 1 ex., Calcutta, at light, 6.xi.1907, Mus. Collr. ; 1 ex., Calcutta, at light, iv.1915, F. H. G. ; 1 ex., Calcutta, at light, .iv.1915, F. H. G.

*Remarks* : This species is not uncommon in Calcutta. It is distributed in Bengal and Nepal.

## Tribe 12. ODACANTHINI

The tribe Odacanthini occurs in all of the major zoogeographical regions. The genera, *Dicraspeda*, *Lachnothorax*, *Lasiocera*, *Odecantha*, *Ophionea* and *Selina* are found in India.

Under this tribe three genera namely, *Lachnothorax* Motschulsky, *Odecantha* Paykull and *Ophionea* Klug are recorded from Calcutta. The genus *Lachnothorax* Motschulsky is represented by one species, *L. biguttata* Motschulsky, the genus *Odecantha* Paykull is represented by two species, *O. graciliceps* Bates and *O. punctata* Nietner and the genus *Ophionea* Klug is represented by one species, *O. indica* Thunberg.

It differs from other tribes such as Dryptini, Zuphiini, Galeritini and Physocrotaphini by its 1st joint of antennae not scapiform. It can be recognised by its head narrowed behind to a condyliform neck ; prothorax subcylindrical, with more or less obsolete lateral borders.

### *Key to the genera of the tribe Odacanthini*

1. Prothorax subcylindrical, more or less lengthy, devoid of lateral borders and whole body pubescent or glabrous, elytra elongate-ovate or nearly parallel-sided, intervals of striae flat or convex ... 2
- Prothorax subcylindrical but more lengthy, devoid of lateral borders and whole body glabrous, elytra ovate-elongate, intervals flat ... *Odecantha* Paykull
2. Prothorax subcylindrical less lengthy, devoid of lateral borders, whole body pubescent, elytra elongate-ovate, intervals convex ... *Lachnothorax* Mots
- Prothorax subcylindrical, more lengthy, devoid of lateral borders, whole body glabrous, elytra nearly parallel-sided, intervals flat ... *Ophionea* Klug

### **Lachnothorax** Motschulsky

1862. *L. Lachnothorax* Motschulsky, *Etud. Ent.* : 48.

The diagnostic characters are small (6.00 mm) and ant like. Head triangular, less pubescent, shiny, not punctate, frons grooved ; labrum small, straight and transverse ; clypeus straight, small and transverse, antennae moderately elongate, 1st to 3rd joints less hairy, rest joints strongly hairy ; eyes large, lateral and prominent ; well developed condyli-

form neck. Pronotum small, doom-shaped, dense pubescent, highly and deeply punctured. Elytra oblong-oval, pubescent, striate-punctate, punctures not deep near the apex, humeral angle rounded, 9 striae, presence of short scutellary striole, intervals convex, apices obliquely truncate, legs slender, long and hairy.

Range : India, Ceylon and Celbes.

### **Lachnothorax biguttata** Motschulsky

1862. *L. biguttata* Motschulsky, *Etud. Ent.* : 50

Species small and elongate-ovate. Head, pronotum and elytra black, a pair of rounded orange patches on the apical part of elytra ; palpi, labrum, clypeus, antennae, legs brown ; eyes black. Labrum truncate, transverse, convex and setigerous punctures ; clypeus truncate and transverse, fronto-clypeal suture prominent. Head triangular, vertex less hairy and impunctate ; antennae 1st to 3rd joint glabrous, only with projecting setae, rest hairy ; eyes large and lateral ; presence of well developed condyliform neck. Pronotum narrower than head, doom-shaped, convex, with projecting setae, apex narrower than base, disk closely and deeply punctured. Elytra elongate-ovate, humeral angle rounded, striate-punctate, punctures coarse, deep and close, not extended to apex, apices obliquely truncate, disk with projecting setae. Legs long and hairy.

*Length* : 6.00 mm.

*Material examined* : 1 ex., Calcutta, 22.ix.1907 ; 1 ex., Calcutta, 19.vi.1914.

*Remarks* : This species is common to Calcutta, Dehra Dun, Marmugao, Madras, Trangueber, Badura & Ceylon.

### **Odacantha** Paykull

1798. *Odacantha* Paykull, *Faun. Suec.*, i : 169.

1919. *Arame Andrews*, *Annals. & Mag. Nat. Hist.*, (9) iii : 477.

The diagnostic characters are variable sizes from 6.00 mm to 10 mm. Slender, elongate, shiny and glabrous. Head elongate ; labrum straight and transverse ; front sparsely and finely punctured ; vertex devoid of punctures ; antennae slender, long, hairy 3rd joint onwards ; eyes lateral and prominent ; well developed neck in between head and pronotum ; pronotum sub-cylindrical, more lengthy than the genus *Lachnothorax* Mots, finely and closely punctured. Elytra ovate-elongate, striate-punctate, punctures fine and close ; intervals not flat, humeral angle well-developed, elytral apices obliquely truncate. Legs slender, long and not hairy.

#### *Key to the species of the genus Odacantha* Paykull

1. Head, pronotum black and 3/4th of elytra from base reddish black ; 2nd joint of

antennae onwards reddish brown and hairy ; Clypeus, labrum & palpi reddish brown ... .. *graciliceps* Bates  
 —Head, pronotum reddish brown ; 3/4th of elytra from base reddish brown ; 2nd joint of antennae onwards reddish black and clypeus, labrum & palpi brown ... .. *punctata* (Nietn.)

***Odacantha graciliceps* Bates**

1892. *Casnonia graciliceps* Bates, *Ann. Mus. Civ. Stor. Nat. Geneva*, 32 : 381.

Small, elongate ; head, prothorax and 3/4th of elytra reddish black, apical part of elytra pale brown, apical palpi, clypeus, labrum and 2nd joint onwards of antennae deep brown than the other parts, eyes black. Labrum transverse, truncate with 3 pairs of brown setae ; clypeus truncate ; frons black with deep and sparsely punctured ; eyes prominent and lateral. Head becomes constricted to the joint of prothorax forming neck. Prothorax somewhat cylindrical in shape, basal part wider than front margin, deeply & closely punctured. Elytra elongate, parallel-sided, deep row of punctures forming 8 striae, intervals convex, elytral apices obliquely truncate.

*Length* : 6 mm.

*Material examined* : 1 ex., Calcutta Museum, at light, 20-23.xi.1922, S. Kemp.

*Remarks* : It rarely occurs in Calcutta. The collected specimen in the collection was caught at light in the month of November in the year 1922 in museum house, Calcutta.

***Odocantha punctata* (Nietn.)**

1858. *Casnonia Punctata* Nietn., *Ann. Mag. Nat. Hist.*, (3) 2 : 178.

Small, elongate. Head, prothorax and 3/4th of elytra reddish brown ; 2nd joint of antennae onwards reddish black ; clypeus, labrum and palpi brown. Labrum transverse, truncate, with 3 pairs of brown setae ; clypeus truncate, deep and almost close punctures on frons ; eyes lateral and prominent. Head constricted to the joint of prothorax forming a neck. Prothorax cylindrical, closely and deeply punctured, basal margin wider than front margin. Elytra elongate and parallel sided, a pair of carina on the shoulders, deep and close rows of punctures forming 8 stria extending to apical extrimities, apical extrimities obliquely truncate.

*Length* : 6 mm.

*Material examined* : 1 ex., Eden gardens, Calcutta at light 2.xi.1911, F. H. Gravely.

*Remarks* : It rarely occurs in Calcutta. This species in the collection was caught by F. G. Gravely from Eden gardens, Calcutta in light during the month of November in the year 1911.

### Ophionea Klug

1821. *Ophionea* Klug, *Ent. Bras. Spec.* : 298 (part).

1834. *Casnoidea* Cast., *Etud. Ent.* : 40.

The diagnostic characters are medium in size (7.00 mm) and ant-like. Head black ; palpi, antennae brown but apical part of palpi somewhat black and 4th joint onwards of antennae deep brown ; pronotum deep brown ; elytra brown but two pairs of black transverse patches present ; legs slender and brown, only joints black. Labrum & clypeus truncate ; palpi pointed ; head triangular and impunctate ; a neck form in between head & pronotum ; pronotum cylindrical, devoid of lateral borders ; elytra parallel-sided, striate-punctate, intervals flat and impunctate, shoulders well developed and rounded, a black transverse band on the basal part and another black broad transverse band after mid of the elytra ; elytra obliquely truncate at the apex and laterally bordered ; lower surface not unicolorous.

### *Ophionea indica* Thunberg

1784. *Ophionea indica* Thunberg, *Nov. Ins. Spec.*, ili : 68.

Elongate, ant-like ; head black ; palpi, antennae brown ; eyes with whitish and blackish spots ; prothorax deep brown with elongate black spot on the disk, elytra deep brown with two pairs of transverse black bands, one on the basal part and the other after the mid part of elytra ; legs deep brown, joints black ; labrum straight, granulated with 6 setigerous punctures ; clypeus transverse ; antennae long and slender, last segment pointed ; head triangular, finely granulated but impunctate, a pair of furrow on the front. Pronotum cylindrical, narrower than the head, sides rounded, median line fine. Elytra elongated, parallel-sided, striate-punctate, close and coarse punctures becoming fine posteriorly, obliquely truncate at apex ; last ventral segment exposed ; legs slender and long.

*Length* : 7.5 mm.

*Material examined* : 1 ex., Calcutta, x.1922, at light, S. W. Kemp ; 1 ex., Eden gardens, Calcutta, at light, 2.xi.1911, F. H. Gravely ; 1 ex., Calcutta, 26.xi.1907, Mus. Collr ; 1 ex., Calcutta, at light vi.14, F. H. G. ; 1 ex., Calcutta, Mus. Collr. at light, 3.ix.1907 ; 1 ex., Calcutta, Mus. Collr., 24.xi.1912 ; F. H. G.

*Remarks* : This species is common to Calcutta. Generally it is found in the months of September to December.

It attracts to light. It is distributed throughout South Eastern Asia and the Malay Archipelago from Japan in the North to New Guinea in the South.

### Tribe 13. TETRAGONODERINI

It is under the subfamily of Harpalinae. This tribe is represented by 11 species in India, of which one species, *T. arcuatus* Dejean is found in Calcutta.

This tribe can be recognised by their maxillae produced above apex into an obtuse ciliate lobe.

### Genus *Tetragonoderus* Dejean

1829. *Tetragonoderus* Dejean, *Species Generes des Coleopteres*, IV : 485.

The diagnostic characters are small in size from 5 mm to 7 mm, elongate-ovate. Head slightly cylindrical, labrum and clypeus straight, impunctate, with one or two erect setae; eyes lateral, moderate and projecting; antennae moderate and slender; pronotum transverse and cordate, laterally sinuate, anterior angle rounded and posterior angle obtuse with one erect setae; elytra ovate, slightly truncate apically, striate without punctures, a few erect setae laterally present; scutellum short, triangular; colour in general black with brownish patch transversely on elytra; palpi, antennae and legs reddish brown.

It is found in South Asia and South East Asia.

### *Tetragonoderus arcuatus* Dejean

1829. *Tetragonoderus arcuatus* Dejean, *Spec. Gen. Col.*, IV : 495.

1871. *Tetragonoderus cardoni* Bates, *Comp. ren. Soc. ent. Belgique* : 338.

Species small and elongate-ovate. Head, pronotum & elytra blackish brown, two pairs of light brown transverse patches on elytra anteriorly and posteriorly and one pair on the mid of lateral side; palpi, antennae and legs deep brown. Labrum punctate and transverse with 6 setigerous punctures; clypeus truncate and transverse, with a pair of erect setae antero-lateral, fronto-clypeal suture prominent; head glabrous impunctate with a pair of supraorbital setae; eyes moderately large, lateral and projecting, apical palpi pointed but truncate, antennae moderate and slender, 1st to 3rd joints glabrous, only one erect setae present anteriorly and rest hairy. Pronotum cordate, transverse, glabrous, impunctate, two pairs of long setae on antero-lateral side and the other on posterior angle, lateral margins bordered, sinuate at base, posterior angle obtuse and anterior angle rounded, basal margin truncate and shorter than front margin. Elytra ovate, humeral angle obtuse, striate, striae extend to apex, without punctures, intervals slightly raise, lateral margins rounded; scutellum small, triangular, posteriorly acute, impunctate.

*Length* : 4.5 mm.

*Material examined* : 3 exs., Calcutta Maidan, Feb. 1929; 3 ex., Calcutta, Ind. Mus.; 1 ex., Z. S.I., Calcutta; 3 exs., Mus. Compound, 22.iv.1910; 1 ex., Indian Mus. Calcutta, 28.v.1911,

*Remarks* : It occurs in Calcutta. It is distributed in eastern part of India.

### Tribe 14. BRACHININI

This is a tribe of moderate size and is represented in all of the major zoogeographical regions. The genera, *Brachinus* Weber, *Crepidogaster* Boheman, *Mastax* Fischer, *Phero-*

*psophus* Solier, *Stypholomerus* Chaudoir are found in India, of which the genera, *Brachinus* and *Pheropsophus* are found in Calcutta. The genus *Brachinus* is represented by two species, *Brachinus modestus* Schm.-Goeb., and *B. sexmaculatus* Dejean, whereas *Pheropsophus* is represented by one species, *Pheropsophus (Pheropsophus) occipitalis* (Macleay) in Calcutta.

This tribe can be recognised by their venter petr with seven or eight visible segments ; metacoxae separated and 1st abdominal sternite between them, mandibles with a seta in the scrobe, elytra truncate and with a narrow membranous border at apex.

#### Key to the genera

Size large, the apical margin of labrum rounded head not constricted behind the eyes, elytra with less prominent membranous border at apex. ... *Pheropsophus*

Size not large, the apical margin of labrum straight, head constricted behind the eyes and elytra with a prominent membranous border at apex. ... *Brachinus*

#### **Pheropsophus Solier**

1833. *Pheropsophus* Solier, *Annl. Soc. ent. France* : 461.

1906. *Stenaptinus* Maindr. *Bull. Soc. ent. France* : 15.

The diagnostic characters are large size and elongate. Head rectangular, glabrous and shiny ; labrum rounded transverse and setose ; clypeus emarginate, transverse and setae ; antennae stout, scape dilated and pedicel short ; eyes large and lateral. Pronotum cordate, not transverse, lateral margins bordered, sinuate at base, posterior angle nearly rectangular and anterior angle rounded, median line prominent, sparsely and coarsely punctured at apex and base. Elytra elongate oblong, striate-impunctate, intervals broad and raised, humeral angle rounded, elytral apices truncate, last 3 abdominal segments exposed. Scutellum triangular.

#### **Pheropsophus occipitalis (Macleay)**

1825. *Aptinus occipitalis* Macleay, *Ann. Jav.* : 28.

1919. *Pheropsophus occipitalis*, Andrewes. *Trans. ent. Soc. London* : 168.

Species moderately large and elongate. Head brown with rectangular black patch on vertex and one elongate black patch on front ; eyes black ; palpi and mandible deep brown ; clypeus and labrum not so deep brown ; antennae filiform, scape dilated, pedicel smaller than all joints, rest thiry and deep brown ; pronotum black but with two brown elongate patches to the lateral sides of the posterior part ; elytra black with one pair of brown patch on the base of elytra near the humeral angles and the other elongate brown patch on the sides of lateral margin centrally ; legs brown but hind femur with blackish colour at the apex. Head triangular, glabrous and shiny ; labrum rounded, transverse with 6 setigerous

punctures ; clypeus not deeply emarginate, two setigerous punctures ; fronto-clypeal suture not prominent, bisulcate ; one pair of supraorbital setae on eye, pronotum cordate, not transverse, front margin wider than basal margin, lateral margins bordered and sinuate at base, posterior angle nearly rectangular, median line prominent, pronotal disk punctured with large punctures at the apex and base. Elytra elongate oblong, apices truncate, 3 abdominal segments exposed, humeral angle rounded striate broad and broader than intervals, hairy, intervals raised, shiny ; Scutellum triangular and wrinkled.

*Length* : 16 mm.-18 mm.

*Material examined* : 1 ex., Calcutta, in house, at light, Feb., 1924, S. Ribeiro.

*Remarks* : It is found in Calcutta. It is distributed to Eastern India.

### Brachinus Weber

1801. *Brachinus* Weber, *Obs. Ent.* : 22.

1834. *Aploa* Hope, *Trans. zool. Soc. London*, i : 91.

The chief diagnostic characters are moderate size and elongate-oblong. Head rectangular. glabrous and shiny ; labrum truncate, transverse and setose ; clypeus emarginate, transverse, setose and shiny ; antennae stout, pedicel short and hairy ; eyes large and lateral. Pronotum cordate, not transverse, lateral margins bordered and sinuate at base, apical margin wider than basal margin and slightly emarginate, median line prominent from base to apex, posterior angle nearly rectangular and anterior angle obtuse. Elytra elongate and oblong, humeral angle rounded, apices truncate and bordered with transparent membranous margins, last abdominal segment exposed, striate-impunctate, intervals raised and convex, elytra sparsely hairy. Scutellum triangular and pointed apically. Legs long and hairy abdomen, meta and mego-sternum punctured.

#### *Key to the species of the genus Brachinus*

Small size, body pubescent, elytra not apoted, striae not distinct	...	<i>modestus</i>
—Large size, body less pubescent, elytra spotted, striae prominent	...	<i>sexmaculatus</i>

### **Brachinus modestus** Schm-Goeb.

1846. *Brachinus modestus* Schm. Goeb., *Faun. Col. Birm.* : 73.

Species small and elongate-oblong. Head, pronotum, palpi, antennae, legs brown ; triangular brown patch on elytra along the sutural line and ended near the half of elytra, rest black eyes black. Labrum truncate, transverse and setose ; clypeus truncate, transverse and setose ; eyes large and lateral. Pronotum hairy, somewhat cordate, anterior margin wider than basal margin, the lateral margins sinuate at the posterior angles, median line fine, posterior angle and anterior angle obtuse. Elytra elongate-oblong, hairy, apical part

broader than basal part, striation indistinct, elytral apices truncate, shoulder rounded. Scutellum triangular.

*Length* : 6 mm.

*Material examined* : 1 ex., Calcutta, at light, Mus. Collr., 6.xi.1907.

*Remarks* : It is rare in Calcutta. It is distributed to Calcutta ; Bhamop Thamo ; Tharawaddy ; Prome, Toungoo ; Rangoon ; Moulmein and Cochin-China.

### ***Brachinus sexmaculatus* Dejean**

1825. *Brachinus sexmaculatus* Dejean, *Spec. Genl. des. Coleop.*, i : 312.

Species moderate size and elongate. Head, pronotum, antennae, legs, marginal and apical lines of elytra brown ; two pair of brown patches, one on shoulder and the other towards apex, rest of the elytra blackish brown. Labrum straight, transverse and setose ; clypeus slightly emarginate, transverse and setose ; fronto-clypeal suture prominent, a pair of furrows on the lateral side of front ; eyes large and lateral ; antennae hairy 3rd joint onwards, pedicel short. Pronotum cordate, not smooth, anterior margin wider than basal margin, lateral margins sinuate at base, posterior angle nearly rectangular and anterior angle obtuse, prominent median line. Elytra elongate-oblong, humeral angle rounded, striate, intervals raised, truncate at apex, last abdominal segment exposed. Scutellum triangular.

*Length* : 12 mm.

*Material examined* : 1 ex., Calcutta, in house, at light, 11.1924. S. Ribeiro ; 1 ex., Calcutta, Mus. Collr. ; 1 ex., Calcutta, Mus. Collr., at light, 29.xi.1907 ; 1 ex., Calcutta, Mus. Collr., at light, 11.xi.1907 ; 1 ex., Calcutta (Other data not available).

*Remarks* : It is commonly found in Calcutta. This species is distributed throughout India and Ceylon.

### Tribe 15. LEBIINI

This is one of the largest tribes comprising many genera and is represented in all of the major zoogeographical regions of the world.

The genera, namely, *Anchista* Nietner, *Anomotarus* Chaudoir, *Apristus* Chaudoir, *Aristolebia* Bates, *Bothynoptera* Schaum., *Crachichila* Chaudoir, *Calleida* Latreille et Dejean, *Catascopus* Kirby, *Celaenephes* Schmidt-Goebel, *Coptodera* Dejean, *Cymindis* Latreille, *Cymindoidea* Castelnau, *Dolichoctis* Schmidt-Goebel, *Dromius* Latreille et Dejean, *Endynomena* Chaudoir, *Lebia* Latreille, *Lebidia* Morawitz, *Lioptera* Chaudoir, *Metabletus* Schmidt-Goebel, *Microlestes* Schmidt-Goebel, *Miscelus* Klug, *Mochtherus* Schmidt-Goebel, *Parana* Motschulsky, *Pericalus* Macleay, *Peripristus* Chaudoir, *Physodera* Eschscholtz, *Platyтарus* Eairmaire, *Scalldion* Schmidt-Goebel, *Sinurs* Chaudoir, *Somotrichus* Seidlila, *Stephana* Chaudoir, *Taridius* Chaudoir and *Velinada* Andrewes are recorded from India, of which,

*Metabletus* Schmidt-Goebel is found in Calcutta. The genus *Metabletus* is represented by one species. *M. cymindulus* Bates in Calcutta.

This tribe can be recognised by their mentus supported at base by a projecting submentum, head with two supraorbital setae on either side, pronotum with two lateral setae on either side, antennae with three basal segments glabrous, elytra truncate at apex, elytral epipleurae not interrupted by inner plica and first segments of anterior tarsi in male dilated.

#### Genus *Metabletus* Schmidt-Goebel

1886. *Metabletus* Schmidt-Goebel, *Faunula Col. Bir.* : 38.

The diagnostic characters are small size and elongate-ovate. Head cylindrical, impunctate and finely granulated ; labrum truncate and transverse ; clypeus truncate and transverse, fronto-clypeal suture prominent ; antennae slender, filiform and pubescent from 4th joint onwards ; eyes moderate and lateral. Pronotum somewhat cordate, impunctate and granulated, posterior and anterior angles obtuse, basal margin lobed at middle. Elytra elongate-ovate, humeral angle rounded, disk granulated, faintly striate, elytral apices obliquely truncate, last abdominal segment exposed. Scutellum small and pointed apically.

#### *Metabletus cymindulus* Bates

1892. *Metabletus cymindulus* Bates *Ann. Mys. Civ. Stor. Nat. Genova*, xxxii : 418.

Species small and elongate-ovate. Head black ; palpi, labrum, antennae, pronotum and elytra brown, two orange patches – one elongate patch on the base of elytra and the other rounded patch near to apex of elytra. Head cylindrical, impunctate and granulated ; labrum truncate and transverse ; clypeus truncate and transverse ; fronto-clypeal suture prominent ; antennae slender, filiform and pubescent 4th joint onwards ; eyes moderate and lateral. Pronotum somewhat cordate, disk impunctate but granulated, posterior and anterior angles obtuse, basal margin lobed at middle. Elytra elongate-ovate, apices obliquely truncate, last abdominal segment exposed, disk granulated, faintly striate and humeral angle rounded. Scutellum small and apically pointed. Legs brown and slender.

*Length* : 3.5 mm,

*Material examined* : Specimens from Calcutta were not available for study ; description based on the following : 1 ex., Assam, 4900 ft. 12.x.1914, S. W. Kemp.

*Remarks* : It is found in Calcutta. It is distributed in Eastern India to Western India, but not in South India.

#### Tribe 16. ZUPHIINI

This is a small tribe, closely related to the Dryptini, recorded from all the major zoogeographical regions. Most of the genera are restricted to the tropics of the old and

new worlds. So far, this tribe is represented by three genera from India, namely *Agastus* Schmidt-Goebel, *Planetes* Macleay and *Zuphium* Latreille, of which, two genera, *Agastus* Schmidt-Goebel, and *Zuphium* Latreille are found in Calcutta. The genus *Agastus* is represented by one species *A. lineatus* Schmidt-Goebel from Calcutta, whereas, *Zuphium* is represented by two species, namely *Z. modestum* Schmidt-Goebel, *Z. olens* Rossi and *Z. olens* var. *pubescens* Nietn.

The representatives of this tribe can easily be recognised by antennae joint 1 being scapiform and also antennae slender, and joint 1 usually about as long as the next three joints together, neck about one-third as wide as the head, prothorax normally bordered and with sharp edge, tarsal joint 4 not bilobed.

*Key to the genera of the tribe Zuphiini from Calcutta*

- Joint 3 of antennae equal to pedicel and less than half to the scape ... *Agastus*  
 ... Schmidt-Goebel  
 Joint 3 of antennae much longer than pedicel and more than half of the scape  
 ... *Zuphium* Latreille

**Agastus Schmidt-Goebel**

1846. *Agastus* Schmidt-Goebel *Faunula Coelopteromm Birmaniae* (H. M. Schmidt-Goebel : 30.

This genus represents in the National Collection by only one species *A. lineatus* Schmidt-Goebel, which is a partly damaged, most of the generic characters given below have been taken from the description made by Schmidt-Goebel (1846).

Mentum dentate but moderately blunt ; ligula truncate apically ; paraglossa membranous, laterally connate and apices prominent but short above. Apical segment of labial palpi elongate and fusiformis, maxillary ovate and truncate ; labrum transverse, narrowed and truncate ; tarsi with short and simple, punctures indistinct, brick red in colour ; elytral disk swollen with raised lines, base of the antennae testaceous.

**Agastus lineatus Schmidt-Goebel**

1846. *Agastus lineatus* Schmidt-Goebel, *Faunula Coleopterum Birmonae* : 31.

Species flat and slender, nearly to *Polystiches fasciolatus* in the structure, only it is small. Head densely and strongly punctured with erect yellowish hairs ; labrum and antennae red, latter at the end somewhat dark red. Prothorax hardly wider than the head ; little longer than width and slightly narrowed behind ; elytra truncate with granular punctures, short and scattered blackish brown hairs on elytra ; abdomen and leg brownish yellow.

*Length* : Not measured as the specimen completely damaged in the collection,

*Material examined* : 1 ex., Calcutta (damaged).

*Remarks* : It occurs in Calcutta. It is distributed to Burma : Toungoo, Palon ; Cochin-China ; Cambodia & Philippine Island.

### Genus *Zuphium* Latreille

1806. *Zuphium* Latreille, *Gen. Crust. Et. Ins.*, i : 198.

Size small to large (6 mm-10 mm) and elongate-oblong. Head triangular, finely and closely punctured ; labrum slightly emarginate, transverse, narrower than clypeus ; Clypeus slightly emarginate, transverse and glabrous ; fronto-clypeal suture prominent ; antennae long and slender, scape longer than other joints ; eyes large, lateral but not bulging ; neck well developed. Pronotum somewhat cordate, not transverse, disk hairy, median line prominent, anterior angles rounded, posterior angles acute to rectangular, lateral margins bordered and sinuate at base. Elytra elongate-oblong, striation indistinct, disk hairy, apices truncate, last abdominal segment exposed. Scutellum triangular and hairy. Ventral surface hairy, legs hairy and abdomen closely and moderately punctured.

#### *Key to the species of the genus Zuphium from Calcutta*

1. Scape of antennae hardly exceeds head posterior angles of prothorax projecting laterally, lateral margin of prothorax between situation and posterior angles not parallel, size not more than 6 mm ... *Z. modestum* Schmidt-Goebel
- Scape of antennae clearly exceeds the head, posterior angles of prothorax not projecting laterally, lateral margin of prothorax between situation and posterior angles parallel, size not less than 10 mm ... *Z. olens* Rossi

### *Zuphium modestum* Schmidt-Goebel

1846. *Zuphium modestum* Schm.-Goeb. *Faunula Col. Bir.* : 29.

Species small and elongate. Head dark brown ; pronotum brown ; elytra brown with two elongate black patches extending from base to apex ; palpi, antennae, legs brown. Labrum dark brown, narrow slightly emarginate and transverse and setose ; clypeus broader than labrum, dark brown, slightly truncate, transverse and setose ; fronto-clypeal suture prominent ; frons sparsely and minutely punctured ; supraorbital setae present ; vertex of head slightly pubescent ; eyes small, lateral and not bulging ; antennae filiform, hairy and scape longer than other joints ; neck well developed. Pronotum somewhat cordate, lateral margins bordered and sinuate at base, posterior angle well developed forming acute angles, front margin wider than basal margins and disk pubescent. Elytra elongate-ovate, hairy, truncate at apices, last abdominal segment exposed, humeral angle rounded, striation indistinct. Scutellum small, triangular and hairy.

*Length* : 6 mm.

*Material examined* : 1 ex., Calcutta, at light, 26.11.1914, F. H. G. ; 1 ex., Calcutta, at light, 26.12.1925.

*Remarks* : This species is not uncommon to Calcutta. It is distributed in India ; Yenna Valley ; Tharrawaddy ; Penang ; Siam ; Coimbatore and Cochin-China.

### **Zuphium olens (Rossi)**

1790. *Carabus olens* Rossi, *Rn. Etrusc.*, i : 217.

Species large and elongate. Head triangular, brown anteriorly and deep blackish brown posteriorly ; pronotum brown ; elytra black with a pair of brown patches at the basal part and another brown patch at the apical part of suture and lateral margins brown ; mandible, labrum, clypeus, palpi, antennae and legs brown ; eyes with blackish pigments. Labrum slightly emarginate, transverse and setose ; clypeus slightly emarginate, transverse, broader than labrum and setose ; fronto-clypeal suture prominent ; frons broad ; vertex and frons of head minutely and closely punctured ; neck well developed. Pronotum subcordate, not transverse, lateral margins bordered and sinuate at base, posterior angle rectangular, anterior angle obtuse and pronotum densely pubescent. Elytra elongate-ovate, highly pubescent, striation indistinct, humeral angle rounded, elytral apices truncate, last abdominal segment exposed. Scutellum triangular and hairy.

*Length* : 9 mm.

*Material examined* : 1 ex., Museum Compound, Calcutta, 12-13.vi.1910, S. Kemp ; 1 ex., Calcutta, 23.xi.1907, Mus. Collr. ; 1 ex., Calcutta, at light, 17.vi.1915, F. H. G.

*Remarks* : This species is common to Calcutta. It is distributed in India & Ceylon.

### **Zuphium olens var. pubescens Nietn.**

1858. *Zuphium olens* var. *pubescens* Nietn., *Ann. Mag. nat. Hist.*, (3) : ii : 182.

Species large and elongate. Head anteriorly brown, posteriorly dark blackish pronotum brown ; elytra black with a pair of rounded brown patches at the basal part and another rounded brown patch at apical suture and lateral margins brown, palpi mandible, labrum, clypeus, antennae, legs brown. Apical palpi obliquely truncate ; labrum slightly emarginate, transverse and setose ; clypeus slightly emarginate and setose ; fronto-clypeal suture prominent, front broad, frons and vertex minutely and closely punctured, antennae long, slender and hairy, 1st joint longer than all joints ; eyes large, lateral and not bulging ; presence of well developed neck. Pronotum cordate not transverse, lateral margins bordered and sinuate at base, posterior angles not rectangular, anterior angles obtuse, disk hairy. Elytra elongate-ovate, striate faint, hairy, humeral angle rounded,

apices truncate, last abdominal segment exposed, setae present on the lateral and apical margins.

*Length* : 9 mm.

*Material examined* : 1 ex., Calcutta, at light, x.1922, S. W. Kemp.

*Remarks* : It occurs in Calcutta. It is distributed in Calcutta and Ceylon.

### Tribe 17. DRYPTINI

This tribe has few genera, it is closely related to the tribe Zuphiini. This tribe is represented by one genus *Drypta* Latreille from Calcutta and under it there are two species, viz. *D. flavipes* Wiedem, and *D. lineola* Macleay.

This tribe is characterized by the neck about half as wide as the head, prothorax subcylindrical, the border obsolete or if present without a sharp edge, and tarsal joint 4 is bilobed.

### *Drypta* Latreille

1796. *Drypta* Latreille, *Precis des caracteres generiques des Insects* : 75.

The diagnostic characters are moderate size and parallel-sided. Head rectangular, closely and deeply punctured; labrum trilobed, transverse and setose; clypeus broad, transverse and not punctured; antennae long, slender, prominent and bulging. Pronotum almost cylindrical, closely and deeply punctured, lateral margins with erect hairs. Elytra parallel-sided, humeral angle rounded, striate-punctate, presence of 9 striae and scutellary striole, intervals with small punctures with erect hairs, apices truncate. Scutellum not so broad, punctate. Legs hairy, tarsal joint 4 bilobed. Prosternum, mesosternum, metasternum and abdomen punctured.

*Range* : Bengal; Assam.

### *Key to the species of Drypta*

1. Elytra almost parallel-sided; Pronotum almost cylindrical; dorsal surface copperish reflection; scape unicolored, angulate ... *D. flavipes* Wiedem
- Elytra distinctly wider near apex; Pronotum slightly cordate; no copperish reflection; scape bicolored, slightly clavate and straight ... *D. lineola* Macleay

### *Drypta flavipes* Wiedem

1823. *Drypta flavipes* Wiedem, *Zool. Mag.*, (ii) 1 : 60.

Species medium, elongate and parallel-sided. Head, pronotum and elytra copperish green; mandible, palpi, labrum, clypeus, antennae and legs brown. Labrum trilobed, 6

long setigerous punctures ; clypeus straight, transverse and impunctured ; antennae long and slender, scape longer than all joints, slightly angulate, pedicel short ; eyes large and lateral. Pronotum almost cylindrical, convex, front margin and basal margin equal, densely hairy, closely and deeply punctured. Elytra elongate and parallel-sided, disk and margins densely hairy, humeral angle rounded, apices truncate, striate-punctate, 9 striae, puncture close and deep. Scutellum short, triangular and punctate. Legs longer and hairy.

*Length* : 9.5 mm.

*Material examined* : 2 ex., Calcutta, 6.ix.1907, Mus. Collector.

*Remarks* : This is not uncommon to Calcutta. It is distributed throughout Bengal and Assam.

### ***Drypta lineola* Macleay**

1825. *Drypta lineola* Macleay, *Ann. Jav.* : 27.

Species medium, elongate and parallel-sided. Head and pronotum brown ; elytra black except a pair of longitudinal brown patches on the disk of elytra from the near of the base to apex ; mandible, palpi, labrum, clypeus, antennae except a black patch anterior to the scape, and legs brown ; eyes black. Labrum trilobed, median lobe well developed, with long 6 setigerous punctures ; clypeus truncate and transverse, impunctate ; head rectangular, closely and deeply punctured, not densely hairy ; presence of well developed neck ; eyes large and lateral ; antennae long and slender, scape longer than all joints, pedicel short. Pronotum somewhat cordate, largely and closely punctured, not densely hairy, median line present, sinuate at base, front margin and basal margin equal. Elytra elongate-oblong, convex, hairy, humeral angle rounded, apices truncate, striate-punctate, presence of 9 stria and scutellary striole, punctures deep and close. Legs long and hairy.

*Length*: 9.5 mm.

*Material examined* : 4 exs., Calcutta, at light, 19.vij.1914, F. H. G.

*Remarks* : This is common to Calcutta. It is generally found in the months of July, August. It is distributed throughout S. E. Asia.

### **Tribe 18. HELLUONINI**

The tribe Helluonini is found in all of the major zoogeographical regions of the world. Most of the genera are restricted to the Australian Region ; several occur in the Oriental and Ethiopian Regions and two are restricted to the Neotropical region. *Colfax* Andrewes, *Creagris* Nietner, *Macrocheilus* Hope and *Omphra* Reiche are found in India, of which one genus *Macrocheilus* Hope is recorded from Calcutta and it is represented by only one species, *M. trimaculatus* (Oliver).

This tribe is closely related to Odacanthini but can be separated from the latter tribe by its head not narrowed behind to a condyliform neck, labrum large, smooth, and semicircular, practically concealing the mandibles; body hairy, appendages short and stout.

### Macrocheilus Hope

1838. *Macrocheilus* Hope, *Col. Man.*, ii : 166.

1842. *Acanthogenius* Reiche, *Annl. Soc. ent. France*, : 334.

The diagnostic characters are large size and elongate-oblong. Head rectangular, deeply and coarsely punctured; apical palpi truncate; mandibles concealed by labrum; labrum glabrous, smooth, shiny, broad and semicircular; clypeus transverse and truncate, anteriorly with a row of punctures; fronto-clypeal suture prominent; antennae short and stout, hairy; eyes large, lateral and prominent. Pronotum cordate, transverse, deeply and coarsely punctured with erect hairs, prominent median line, anterior angle rounded and posterior angle rectangular. Elytra elongate and parallel-sided, slightly truncate, striate-punctate, presence of 7 striae and small scutellary striole, intervals convex with irregular deep punctures, disk hairy, humeral angle rounded; Scutellum moderate, apical angle rounded, punctured. Abdomen finely punctured, Pro-, meso- and metasternum sparsely and deeply punctured; legs hairy.

*Length* : 15.00 mm.

*Range*—India.

### *Macrocheilus trimaculatus* (Olivier)

1790. *Carabus trimaculatus* Olivier, *Enc. Meth.* : 347.

Species large and elongate-oblong. Head, pronotum and elytra black; palpi, labrum, antennae, legs brown; two pairs of rounded orange patches on elytra, one on the middle of elytra and the other towards apical part along the sutural line. Head somewhat rectangular, moderately coarsely and not closely punctured; apical palpi truncate; labrum broad, rounded anteriorly or semicircular and impunctate; clypeus straight and transverse and a row of setigerous punctures anteriorly antennae straight, stout and submoniliform, eyes large and lateral. Pronotum cordate, transverse, frontal margin wider than basal margin, lateral margins bordered, sinuated at base, disk highly and densely punctured, projecting setae all over the pronotum, anterior angle obtuse and posterior angle rectangular. Elytra elongate and parallel-sided, projecting hairs on disk, humeral angle rounded, apices slightly truncate, last abdominal segment exposed, striate-punctate, presence of 7 striate, intervals convex, irregular row of punctures on intervals; legs stout and hairy.

*Length* : 15.00 mm.

*Material examined* : 1 ex., Dum Dum, nr. Calcutta, vii.1907, B. Lord,

*Remarks* : This species occurs in Calcutta. It is distributed throughout India, Ceylon, Burma, Penang, Laos, Tonkin, Philippines and Honkong.

### Tribe 19. LICININI

This is a small tribe. So far, three genera namely *Badister* Schellenberg, *Diplocheila* Brulle and *Licinus* Latreille are known to occur in India, of which two genera *Badister* and *Diplocheila* are found in Calcutta. The genus *Badister* is small and is represented by one species *B. thoracicus* Wiedem in Calcutta, whereas genus *Diplocheila* is represented by four species, namely *D. cordicollis* (Laf.), *D. latifrons* (Dej.), *D. polita* (Fabr.) and *D. retinens* (Walk.).

The representatives of this tribe can be recognised by their mandibles short and thick, emarginate or truncate at apex, clypeus more or less emarginate, often asymmetrically, and exposing the basal membrane of the labrum.

#### *Key to the genera of the tribe Licinini*

Small in size, elytra first 1/5th from base brown and rest 4/5th with an elongate black patch	...	...	<i>Badister</i>
— Large in size, elytra, pronotum and head black		...	<i>Diplocheila</i>

#### Genus *Badister* Schellenberg

1806. *Badister* Schellenberg, *Helv. Ent.* ii : 90-91.

1828. *Trimorphus* Stephens, *Brit. Ent.* i : 180.

The chief diagnostic characters are : body small and elongate. Head impunctate, glabrous, pronotum transverse, front margin emarginate and lateral margin rounded, elytra elongate, parallel-sided, impunctate and with well developed shoulder,

#### *Badister thoracicus* Wiedem

1823. *Badister thoracicus* Wiedem, *Zool. Mag.* : 157.

Species small and elongate. Head dark black ; pronotum brown ; elytra 1/5th part from base brown, rest 4/5th an elongate black patch on the elytra ; palpi, antennae, legs brown ; eyes black. Head impunctate, glabrous. Pronotum transverse, front margin emarginate and wider than basal margin, lateral margin rounded, median line prominent. Elytra elongate, parallel-sided, impunctate, shoulder well developed.

*Length* : 7 mm.

*Material examined* : 1 ex., Calcutta, 18.11.1915, F. H. G. ; 1 ex., Calcutta, 9.11.1912. N. A.

*Remarks* : It is distributed to Calcutta and Berhampur.

### Genus *Diplocheila* Brulle

1834. *Diplocheila* Brulle, *Hist. Nat. Ins.*, IV : 407.

1858. *Symphyus* Nietn., *Ann. Mag. nat. Hist.*, (3) : ii : 180.

The chief diagnostic characters are large size and elongate. Head, pronotum and elytra black ; antennae stout, slender, and filiform ; labrum deeply emarginate ; clypeus emarginate ; Pronotum cordate, transverse. Elytra striate-punctate, slightly sinuate at apex.

#### *Key to species of the genus Diplocheila*

1. Antennae 4th to 11th joints hairy and black	...	<i>polita</i>
—Antennae 4th to 11th joints hairy and brown	...	2
2. Labrum deeply emarginate	...	<i>latifrons</i>
—Labrum not deeply emarginate	...	3
3. Absence of long setae at the lateral margins of elytra	...	<i>retinens</i>
—Presence of long setae at the lateral margins of elytra	...	<i>cordicollis</i>

#### *Diplocheila polita* (Fabricius)

1792. *Carabus polita* Fabricius, *Ent. Syst.* I (1) : 146.

Species medium size and elongate. Head, pronotum and elytra black ; palpi, labrum, clypeus, antennal joints 1st to 3rd deep reddish black ; antennal joints 4th to 11th black, hairy ; legs black. Apical segment of palpi pointed. Labrum emarginate and setose ; clypeus slightly emarginate, transverse and setose ; fronto-clypeal suture prominent ; front short and bisulcate ; antennae medium and slender ; eyes large and lateral. Head glabrous, a pair of suborbital setae present. Pronotum cordate, transverse, front margin and basal margin equal, lateral margins bordered and sinuate at base, posterior angle obtuse, anterior angle rounded, median line prominent and disk glabrous. Elytra elongate and parallel-sided, striae with close and fine punctures extending to apex, humeral angle rounded, elytral apex slightly sinuate. Scutellum long and triangular ; lower surface black.

*Length* : 18 mm.

*Material examined* : 1 ex., Calcutta ; 1 ex., Calcutta,—1907. Mus. Collr. ; 1 ex., Calcutta, at light, 8.xi.1907, Mus. Collr.

*Remarks* : It occurs in Calcutta. This species is distributed throughout India, Ceylong and Burma.

**Diplocheila latifrons (Dejean)**

1831. *Rhombus latifrons* Dejean, *Spec. Gen. Col.* v : 679.

Species moderately large and elongate. Head, pronotum and elytra jet black ; palpi, labrum, antennal 1st to 3rd joints deep reddish black ; antennal joints 4th to 11th hairy and brown ; legs black. Head glabrous and setose ; clypeus short, slightly emarginate and setose ; eyes moderate and lateral. Pronotum somewhat cordate, transverse, glabrous, sinuate at base, basal and front margin nearly equal, lateral sides margined, median line prominent, a pair of basal foveae present, posterior angle rectangular and anterior angle rounded. Elytra elongate, parallel-sided, slightly sinuate at apex, striate-punctate, punctures fine and not close, long striae extending from base to apex, intervals convex. Scutellum large, triangular, impunctate and glabrous, lower surface deep reddish black.

*Length* : 15 mm.—18 mm.

*Material examined* : 2 exs., Calcutta, at light, 12.xi.1907, Mus. Collr. ; 1 ex., Calcutta, M. Karimudin ; 1 ex., Calcutta, at light, 6.xi.1907, Mus. Collr. ; 7 exs., Calcutta, at light, 11.xi.1907, Mus. Collr. ; 1 ex., Calcutta, at light, 10.xi.1907, Mus. Collr. ; 1 ex., Calcutta, at light, 8.xi.1907, Mus. Collr.

*Remarks* : It is commonly found in Calcutta. It is distributed in Bengal, Bihar, Kashmir and Karnataka.

**Diplocheila retinens (Walk.)**

1859. *Platysma retlnens* Walk., *Ann. Mag. nat. Hist.*, (3) : iii : 51.

Species medium size and elongate. Head, pronotum and elytra black ; palpi, labrum, clypeus, antennal joints 1st to 3rd deep reddish black ; antennal joints 4th to 11th hairy and brown ; legs black. Head glabrous ; labrum emarginate and setose ; clypeus slightly emarginate and setose ; eyes large and lateral. Pronotum cordate, transverse, sinuate at base, front margin emarginate and basal margin truncate, posterior angle rectangular, median line prominent. Elytra elongate and oblong, striate with not close and deep punctures, punctures extending to apex, elytral apical part slightly sinuate, humeral angle rounded. Scutellum long and triangular. Lower surface black.

*Length* : 16.5 mm.

*Material examined* : 1 ex., Calcutta, —.—1907, Mus. Collr., 1 ex., Calcutta, at light, 11 xi.1907, Mus. Collr. ; 1 ex., Calcutta, Mus. Collr.

*Remarks* : This species is commonly found in Calcutta. It is mainly confined to Bengal.

**Diplocheila cordicollis (Leferte)**

1851. *Rhembus cordicollis* Laferte, *Ann. Soc. ent. France* : 279.

Species moderately large and elongate. Head, pronotum and elytra black; palpi, antennal joints 1st to 3rd, labrum deep reddish black; antennal 4th to 11th joints hairy and brown; legs black. Labrum emarginate and setose; clypeus slightly emarginate, transverse and setose; fronto-clypeal suture prominent; antennae stout and long; eyes prominent, bulging and lateral. Pronotum somewhat cordate, transverse, lateral sides margined, a pair of basal fovae well developed, median line prominent, basal and front margin equal, posterior angle obtuse and anterior angle rounded. Elytra elongate, parallel-sided, striae well developed extending upto apex, impunctate, humeral angle rounded, apical margin slightly sinuate.

*Length* : 23 mm.

*Material examined* : 1 ex., Calcutta, at light. 6.xi.1907, Mus. Collr.

*Remarks* : This specise is rarely found in Calcutta. It is distributed mostly throughout India.

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