

IX.—Notes on Indian Rhynchota, No. 3.—By E. T. ATKINSON, B. A.

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[The notes are taken as far as possible from the original descriptions, most of which are practically unprocureable by observers in India, or from Stål, Signoret, Butler, or Distant &c. where these authors have redescribed a species; the measurements of specimens not in the Indian Museum have been converted into millimetres from the recorded measurements of the several authors.]

The insects belonging to this section have been so little worked in India that the collector may feel sure of a rich harvest of new species. At the same time, we may take warning from the confusion in the results of the investigations into the European forms how very necessary it is, from the similarity in appearance and small size of the great majority of the species, to use the microscope more freely than has apparently hitherto been the practice in ascertaining the generic characters. We must wait some time before we can usefully attempt to do more than collect, compare, and fix the locality for the new forms of *Membracidae* and *Jassidae* which exist in such profusion in this country. In the meantime, these notes summarising what has been done in, as near as possible, the words of the authors, is a contribution to the work.

Family MEMBRACIDÆ, Stål.

Subfam. *Membracida*, Stål, Hem. Afric. iv. p. 83 (1866); Fieber, Rev. Mag. Zool. (3 sér.) iii. p. 332 (1875).

Subfamily CENTROTINA, Stål.

Centrotida, Stål, Hem. Afric. iv. p. 83; Ofvers. K. V.-A. Förh. p. 280 [(1866)]; *Centrotina*, ibid. p. 727 (1870).

Scutellum distinct, produced backwards behind the metanotum, very often sinuated at the apex and furnished with acute apical angles. The scutellum is wanting in *Oxyrhachis*, which in Hem. Afric. iv. p. 84 (1866) is placed by Stål in his subfamily *Membracida* (*Membracina*), and in Ofvers. Kong. Vet. Aka. Förh. p. 280 (1869) in his subfamily *Centrotida* (*Centrotina*); in Hem. Fabr. ii. p. 47 (1869), it is again transferred to *Membracina*.

Genus OXYRHACHIS, Germar.

Silbermann's Rev. Ent. iii. p. 232 (1835); Fairmaire, A. S. F. F. (2 sér.) iv. p. 207 (1846); Stål, Hem. Afric. iv. p. 84 (1866); Ofvers. K. V.-A. Förh. p. 280 (1869); Fieber, Rev. Mag. Zool. (3 sér.) iii. p. 333 (1875).

Head perpendicular, frons a little elevated; thorax counted above the lateral angles, horns three-cornered; posterior process long,

question. There are many points in connection with these bodies that require clearing up, but these can hardly be solved without continuous observation of the living plant. Like all surf-line weeds, *Padina pavonia* requires a very free supply of oxygen, and the conditions necessary for observing it in, if I may so speak, captivity are wanting on board ship; so that the solution of these points must, I fear, be reserved for other observers more favourably situated. Assuming, however, that the body which has just been described is really the prothallus of this weed, it would render it extremely probable that all algae producing "spores" of but one kind go through some such cycle of changes; and a very large field of investigation appears in prospective as to the determination of the prothallus of each species. Some no doubt have been described as distinct species of algae, as, assuming their existence, they can hardly have been entirely overlooked up to now.

EXPLANATION OF THE PLATES.

PLATE IV.

Fig. 1. *Padina pavonia*, nat. size. The sori are disposed in concentric lines consisting of a structureless flattened indusial sac and a number of pear-shaped sporanges. Tufts of parane mata disposed along their sides give to the sori a woolly appearance.

2. Vertical section of frond through a sorus showing sporanges and parane mata, $\times 200$.

PLATE V.

Fig. 1. Prothallus of *Padina pavonia*, natural size.

2. The same, $\times 10$.

3. Transverse section of same, $\times 20$.

4. Portion of the section shewing male tubes in oblique section, $\times 300$.

5. Male mother-cell containing daughter-cells producing red-pigmented rods, $\times 400$.

6. Portion of the section showing a female tube in transverse section, $\times 300$.

7. Adeniform tissue of lower surface of the prothallus containing "hedgehog" cells in its meshes, $\times 300$.

8. One of the "hedgehog" cells more carefully drawn, $\times 500$.

narrow, broad at the base, gradually narrowed, three-cornered, reaching the interior margin of the tegmina; beneath, posteriorly compressly-amplified, furnished with a ridge continued throughout the entire thorax; tegmina with five oblong, apical areas; wings with three apical areas; sides of the pro- and meso-stethium armed with a small lobe or tooth; tibiæ dilated (Stål).

1. OXYRHACHIS TARANDUS, Fabricius.

Membracis tarandus, Fabr., Ent. Syst. Suppl. p. 514 (1798).

Centrobis tarandus, Fabr., Syst. Rhynch. p. 19 (1803).

Oxyrhachis tarandus, Germar, in Silbermann's Rev. Ent. iii. p. 232 (1835):

Burmeister, Handb. Ent. ii. (i.) p. 133 (1835): Amyot and Serville, Hist. Nat. Ins.

Hém. p. 536 (1843): Fairmaire, A. S. E. F. (2 sér.) iv. p. 268 (1846), t. 4. f. 13:

Walker, List Hom. B. M. ii. p. 503 (1851): Stål, Hem. Afric. iv. p. 81 (1866): Hem.

Fabr. ii. p. 47 (1869): Fieber, Rev. Mag. Zool. (3 sér.) iv. p. 12 (1876).

Body obscure, dorsum fuscous; pronotum with two compressed horns, arched, obtuse, posteriorly subulate, longer than the abdomen; tegmina hyaline, veins fuscous; wings white; feet ferruginous (*Fabr.*). Long 7-8; breadth of pronotum, 3 millims.

♂. Brown-red; ♀, reddish-yellow or russet; vertex usually russet, sometimes brownish, with two small callosities prolonged to the ocelli, the angles straight: head, or towards the base only, black: the pronotum with a red or russet-yellow median ridge running from the anterior margin, little defined, to the space between the lateral protuberances, thence defined and prolonged throughout the entire posterior process: lateral protuberances of the pronotum turning outwards and backwards and sometimes slightly upwards, a little compressed, varying in size, tip acute or obtuse: the posterior process reaching to or extending beyond the apex of the tegmina by about the fourth of its length, more or less recurved towards the apex, narrowly lanceolate in its posterior half with a median keel on the sides, its lower edge finely serrated: feet with sunken dots, ciliated and setiferous: tegmina sordid hyaline, the two corneous patches at the base and the veins, russet-yellow (or fuscous-ferruginous): abdomen in the ♂, black; all the feet and the venter in the ♀, russet-yellow or reddish. Genitalia in the ♂, seen from above, transversely semioval; seen from the side, trapezoidal, briefly truncated behind and directed obliquely towards the base, and forwards in a weak arch: anal *styli* yellow, projecting on the sides, widened almost into a lozenge-shape, on a short narrow pedicel: anal tube short, cylindrical, brown: genital plates placed one opposite the other, brown, gradually contracted together behind; their tip spatuliform, rounded and relieved: body whitish pubescent.

♀. Last ventral arch obtusely emarginate: lateral plates (*gaîne*) broad, oval, acuminate behind; vagina (*tarière*) straight, a little longer than the *gaîne*; anal tube cylindrical, extending beyond the *tarière*: abdomen russet yellow (*Fieb., Stal.*).

Reported from S. France, Egypt, Abyssinia, Senegal, Bengal. The Indian Museum possesses specimens from Calcutta.

2. OXYRHACHIS UNICOLOR, Walker.

Oxyrhachis unicolor, Walker, List Hou. B. M. ii. p. 509 (1851).

Piceous, densely fulvous pilose: head and pronotum thickly punctured: head transverse, not much broader than long, flat, slightly convex along the posterior margin, truncated in front, a little narrower than the pronotum between the shoulders, the pronotum ridged, rather low, rising vertically from the head, shoulders rounded, not prominent; horns above conical, prismatic, inclined forward, ascending, slightly diverging, their length equal to rather less than twice the breadth of the pronotum between them: posterior process ridged, reaching well beyond the tip of the abdomen, very slightly tapering from the base to the tip which is acute: very slightly undulating along the ridge; legs ferruginous; femora black; tibiae dilated: tegmina almost without colour, long, narrow, lanceolate, punctured, ferruginous and partly tawny at the base; veins ferruginous, stout: wings colourless (*Walker*). Body long, 6: wings, $14\frac{1}{2}$ -15 millims.

3. OXYRHACHIS RUDIS, Walker.

Oxyrhachis rudis, Walker, List Hou. B. M. ii. p. 509 (1851).

Ferruginous: head piceous, transverse, flat, finely punctured, truncated and with a ferruginous spot on each side in front; not much broader than long, a little narrower than the pronotum between the shoulders; pronotum itself very roughly punctured, slightly ridged, rising vertically from the head, with the shoulders rounded not prominent; horns above very broad, conical, diverging, almost horizontal, slightly curved, disc of the inner side slightly concave towards the base; posterior side less than half the breadth of any other: posterior process keeled or ridged, extending well beyond the tip of the abdomen, tapering and slightly declining from the base to the middle where it is deepened and keeled beneath and from thence to the tip is serrated beneath and slightly inclined upwards: tibiae dilated; tegmina and wings colourless: tegmina narrow, lanceolate, with a small pale brown spot on the angle of the posterior border; veins thick, ferruginous; three discoidal areolae (*Walker*). Body long, 6-7: wings, $13\text{-}14\frac{1}{2}$ millims.

Reported from India.

4. *ONYRHACHIS SUBJECTA*, Walker.

Onyrhachis subjecta, Walker, List Hom. B. M. ii. p. 501 (1851).

Smaller than *O. tarandus*, the dorsal horns shorter in proportion and less diverging, posterior process more inclined upwards and not serrated beneath. Black with a white pubescence; head transverse, subquadrate, flat, slightly impressed, finely punctured, not much broader than long, a little narrower than the pronotum, truncated and ferruginous in front: pronotum somewhat elevated in front, rather roughly punctured, rising almost vertically from the head with a ferruginous keel or ridge; shoulders of pronotum rounded, not prominent; horns above very broad, prismatic, conical, diverging, ascending, hardly curved downwards: posterior side much the shortest of all the sides; length of the horns rather less than the breadth of the pronotum between them; posterior process mostly ferruginous, reaching well beyond the tip of the abdomen, inclined upwards, and ridged beneath, but not serrated from the middle to the tip: pectus and abdomen whitish pubescent: legs red; tibiae dilated; wings colourless: tegmina tawny, punctured at the base and with a brown spot on the angle of the posterior border; veins stout, ferruginous, four discoidal areolae (*Walker*). Body long 6; wings, $11\frac{1}{2}$ millims.

Reported from India.

In *O. tarandus*, the pronotum is elevated in front, the posterior process is ridged and also serrated beneath, the length of the horns is rather more than twice the breadth of the pronotum between them, and there are four discoidal areas: in *O. subjecta*, the posterior process is not serrated beneath and the length of the horns is rather less than the breadth of the pronotum between them, otherwise as in *O. tarandus*: in *O. unicolor*, the pronotum is rather low in front and the length of the horns is as in *O. subjecta*: in *O. rufis*, the posterior process is keeled and serrated but there are only three discoidal areas.

Species of uncertain position.

5. *MEMBRACIS FUSCATA*, Fabricius.

Membracis fuscata, Fabr., Syst. Rhynch. p. 9, (1803); Fairmaire, A. S. E. F. (2 sér.), iv. p. 247, (1846).

Thorax foliaceous, rounded, fuscous; streak before the anterior margin and posterior band, white (*Fabr.*). This species does not seem to have been rediscovered since it was described by Fabricius. Reported from India.

Genus *HYPSAUCHENIA*, Germar.

Silber. Rev. Ent. iii. p. 231 (1835) : Am. & Serv., Hist. Nat. Ins. Hém. p. 535 (1843) ; Fairmaire, A. S. E. F. (2 sér.) iv. p. 520 (1846) ; Stål, Hem. Afric. iv. p. 86 (1866) ; Ofvers. K. V.-A. Förh. p. 280 (1869).

Head almost triangular, trilobed at the extremity ; prothorax a little shorter than the tegmina, without lateral horns, produced upwards in a compressed horn which is usually curved backwards and is bilobed at the tip ; posterior process unilobed, slender, narrow at the base, narrower than the scutellum ; tegmina free, slightly emarginate, extending much beyond the apex of the abdomen, very obliquely truncated at the apex, apical angle produced for some distance ; tibiæ simple.

6. *HYPSAUCHENIA UNGINATA*, Stål.

Hypsauchenia uncinata, Stål, Ofvers. K. V.-A. Förh. p. 283 (1869).

Obscurely ferruginous, ochraceous pubescent ; dorsal horn of the pronotum bending a little forwards, posteriorly sublobate, acuminate and recurved at the apex ; tegmina punctured before the middle, pollucid behind the middle. ♀, long, 8 ; broad $2\frac{1}{2}$ millims.

Reported from N. E. India : the Indian Museum possesses a specimen (mutilated) from the Nāga hills.

The anterior horn is much shorter and differently formed from other species of this genus : pronotum punctulate, furnished anteriorly with a compressed dorsal horn, somewhat shorter than the posterior process, bending a little forwards, posteriorly roundly amplified a little above the middle, apex slender, acuminate and much recurved ; posterior process somewhat elevated behind the middle ; tegmina fairly densely reticulated behind the middle (Stål).

7. *HYPSAUCHENIA HARDWICKII*, Kirby.

Centrotus hardwickii, Kirby, Mag. N. II. ii. p. 21, f. 5 b (1829).

Hypsauchenia hardwickii, Fairmaire, A. S. E. F. (2 sér.) iv. p. 520, t. 3, f. 20, 21 (1846) ; Walker, List Hom. B. M. ii. p. 631 (1851) ; J. L. S. Zool. x. p. 183 (1867).

Brownish black, sprinkled with short, decumbent, inconspicuous hairs ; legs (except the femora) paler than the rest of the body ; pronotum minutely punctured, elevated above the head into a recurved quadrangular horn and terminating in a fork resembling a pair of concavo-convex, pedunculated, pointed leaves ; scutellum (posterior process) of the length of the body, punctured, acute and elevated into a rounded lobe, near the apex ; tegmina naked, punctured, veined longitudinally (*Kirby*). Body long, 7-9 millims.

Reported from Nopál : the Indian Museum possesses specimens from Sikkim and Assam.

The *Hypsauchenia ballista* of Germar (Silb. Rev. Ent. iii. p. 231. 1835) *nee* Am. & Serv. (Hist. Nat. Ins. Héin. p. 535, t. 9, f. 5, 1843) is referred to *H. hardwickii* by Fairmaire (*l. c.* p. 520) and Am. & Serv.'s species *H. balista* is referred to the genus *Sphongophorus* from Mexico (*l. c.* p. 261). *S. balista*, Am. and Serv., differs from *H. ballista*, Germar, in the posterior process ending in an erect ensiform prolongation, which is wanting in *hardwickii* from India.

GENUS LEPTOBELUS, Stål.

Hem. Afric. iv. p. 86 (1866) : Ofvers. K. V.-A., Förh. p. 280 (1869).

Frons without a basal lateral lobe, gradually narrowed : sides of the pectus unarmed : thorax with the disc elevated, the elevated part furnished on both sides with a slender horn, and posteriorly with a slender process, well apart from the body : scutellum elongate, longer than broad, gradually acuminate or much narrowed towards the apex, and with the apex slightly and narrowly obtusely or subsinuate truncoed : exterior discoidal area of tegmina petiolated : wings with four apical areas : tibiae very rarely dilated (Stål).

8. LEPTOBELUS DAMA, Germar.

Centrotus dama, Germar, Silbermann's Rev. Ent. iii. p. 258 (1835) : Fairmaire, A. S. E. F. (2 sér.) iv. p. 510 (1846), t. 3, f. 14 : Walker, List Hom. B. M. ii. p. 602 (1851).

Leptobelus dama, Stål, Berlin Ent. Zeitsch. p. 386 (1866) : Ofvers. K. V.-A. Förh. p. 284 (1869).

Black : thorax, posteriorly, with white scales ; furnished with a short slender process on the dorsum anteriorly, turning upwards, armed at the apex on both sides with a spine which is produced outwards, and inflexed at the apex : scutellum elongated, spinose, white at the base : exterior discoidal area of corium petiolated (*Fairm.*). Body long, 9 millims.

Reported from India : the Indian Museum possesses a specimen from the Khasiya hills.

9. LEPTOBELUS GAZELLA, Fairmaire.

Centrotus gazella, Fairmaire, A. S. E. F. (2 sér.) iv. p. 510 (1846) : Walker, List Hom. B. M. ii. p. 602 (1851).

Leptobelus gazella, Stål, Berlin Ent. Zeitsch. x. p. 386 (1866) : Ofvers. K. V.-A. Förh. p. 284 (1869).

Cerulean black, thorax elevated in the middle, the elevated part trispinose, spines not inflexed, posteriorly not scaly with white. Closely allied to *L. dama*, from which it differs by its smaller size, the lateral spines shorter proportionately and slightly turned up : the prothorax is of

a bluish black without a white patch posteriorly; the scutellum is elongated, white at the base; the tegmina are transparent, more yellow, black at the base; exterior discoidal area of corium, petiolated. Body long 8 millims.

Reported from India.

10. LEPTOBELUS PALLIPES, Stål.

Leptobelus pallipes, Stål, *Ofvers. K. V.-A. Förh.* p. 284 (1869).

Black, distinctly punctulate; thorax anteriorly without a dorsal process; sides of thorax and pectus, also base of scutellum, densely ochreous-sericeous; tegmina sordidly vinaceous, base of clavus and entire costal area and radial area at the base and outwards beyond the middle, black, punctured; lateral horns of pronotum, slender, moderate, gradually acuminate, straight, turning outwards, above unicarinate, beneath bicarinate; posterior process slightly curved towards the base, thence straight, distant from the scutellum; exterior discoidal area of corium petiolated; feet yellow-ferruginous. ♀ body long 5-5½; breadth, 2 millims.

Reported from India.

Very like *L. curvispinus*, Stål, (Ceylon), lateral horns of thorax shorter, more slender, turning outwards; very little upwards; posterior process not reaching the apex of the scutellum and the frons narrower at the apex (Stål).

11. LEPTOBELUS VARIUS, Walker.

Centrotus varius, Walker, *List Hom. B. M. Suppl.* p. 162 (1858).

Leptobelus varius, Stål, *Ofvers. K. V.-A. Förh.* p. 285 (1869).

Black, minutely punctured; head somewhat excavated between the eyes; pronotum keeled, unarmed on each side, with a smooth shining spot on each side in front, shoulders somewhat acute; posterior process slender, acute, undulating, testaceous in the middle, not extending beyond the tip of the abdomen; legs piceous; knees, tarsi and tips of the tibiae tawny; tegmina punctured towards the base, with various vitreous marks hindward, and with a large vitreous patch near the tip of the costa (Walker.) Body long 4½; exp. teg. 8½ millims.

Reported from Burma.

The species of this genus appear to be distributed as follows:—

A. Thorax furnished on the dorsum anteriorly with a short, slender process turning upwards and armed at the apex on both sides with a spine produced outwards, exterior discoidal area of corium petiolate: *L. dama*, *L. gazella*.

B. Thorax anteriorly without the dorsal process, either cornuted or ridged above the lateral angles.

B. a. Posterior process of thorax distinctly curved towards the base: exterior discoidal area of corium petiolate: *L. curvispinus*, *L. pullipes*.

B. b. Posterior process of thorax straight, subundate, reaching the apical part of the scutellum, discoidal area of corium sessile, gradually much narrowed towards the base: *L. varius*, *L. auriculatus*, (Stål).

12. LEPTOBELUS SCUTELLARIS, Fabricius.

Centrotus scutellaris, Fabr., Syst. Rhynch. p. 19 (1803); Germar, Silb. Rev. Ent. iii. p. 257 (1835); Fairmaire, A. S. E. F. (2 sér.) iv. p. 510 (1845); Walker, List Hom. B. M. ii. p. 602 (1851).

Stål, in index to Hem. Fabr. (ii. p. 115), places a query after this species; and all that seems to be known is that it is reported from India.

13. LEPTOBELUS PARIIS, Fairmaire.

Centrotus paria, Fairmaire, A. S. E. F. (2^e sér.) iv. p. 513 (1846); Walker, List Hom. B. M. ii. p. 609 (1851).

Ferruginous: eyes projecting: horns a little divaricate, slender, acute, compressed: posterior process very slender, bordered on each side by the scutellum which is broad and white, as long as the abdomen: sides of the pectus white: feet yellowish: tegmina transparent (*Fairm.*) Long 6 millims.

Reported from India.

Genus XIPHOPEUS, Stål.

Hem. Afric. iv. p. 87, 91 (1866); Ofvers. K. V.-A. Förl. p. 281 (1869).

Frons prominulous below in the shape of a tubercle; thorax cornuted above the lateral angles; posterior process much distant from the scutellum and abdomen, much curved from the base or geniculated near the base; beneath, armed with small spines, at least towards the base, not dilated in the middle beneath; tegmina with five apical and two discoidal areas, none of which are petiolate: wings with four apical areas: tibiæ simple or very slightly dilated (Stål).

14. XIPHOPEUS PILOSUS, Walker.

Centrotus pilosus, Walker, List Hom. B. M. ii. p. 606 (1851).

Xiphopeus pilosus, Stål, Ofvers. K. V.-A. Förl. p. 285 (1869).

Ferruginous, very thickly clothed with sordid white down: head punctured, short, transversely subfusiform, a little narrower than the thorax, with a metallic lustre in front, nearly twice as broad as long: face small: thorax punctured, deep in front, partly black, rising almost vertically from the head, slightly ridged, shoulders obtusely angular,

somewhat prominent : horns above rather long, broad, irregularly prismatic, slightly diverging and inclined forwards ; tips more diverging, almost trifurcate, slightly amplified ; inner side and outer side much broader than the hinder side, angles slightly serrated ; of the three forks or angles at the tip, the fore one is slightly obtuse, the middle one acute, and the hind one rectangular ; hind horn stout and vertical for a short space from the base, then forming a right angle and extending backward much beyond the tip of the abdomen ; hind part tawny, slender, tapering, very slightly undulating, with an acute black tip : pectus and abdomen piceous : legs tawny : a brown spot on the hind angle of each tegmen : veins tawny, here and there, brown (*Walker*). Body long $4\frac{1}{4}$: exp. teg. $9\frac{1}{2}$ millims.

Reported from N. India.

Genus ACANTHOPHYTES, Stål.

Hem. Afric. iv. p. 87, 89 (1869) ; *Ofvers. K. V.-A.* p. 281 (1869).

Thorax much elevated between the lateral angles, very often cornated above the same angles ; posterior process distant from the scutellum, bisinuate beneath, more or less amplified or lobed in the middle, between the sinus, with the amplified part reaching the dorsum of the abdomen or the apex of the scutellum : tegmina with five apical, two discoidal areas : wings with four apical areas : tibiae simple (*Stål*).

15. ACANTHOPHYTES CAPRA, Fabricius.

Membracis capra, Fabr., *Ent. Syst. Suppl.* p. 514 (1798).

Centrotus capra, Fabr., *Syst. Rhynch.* p. 20 (1803).

Acanthophyes capra, Stål, *Hem. Fabr.* ii. p. 50 (1869).

Body altogether fuscous, immaculate : horns of thorax, large, thick, obtuse ; thorax posteriorly short, emarginate : tegmina fuscous (*Fabr.*). Ferruginous black or ferruginous, remotely flavescens-grey-sericeous, two small basal spots on scutellum and sides of pectus very densely sericeous : lateral horns of thorax depressed, truncated, bicarinate above. ♀ : long with tegmina $6\frac{1}{2}$; thorax broad, 3 ; exp. thoracic horn, $4\frac{1}{2}$ millims.

Head between the eyes a little shorter than broad, beneath the eyes abruptly very much narrowed ; frons gradually slightly narrowed, subtruncate, freely produced downwards for a distance : thorax punctured, armed on both sides anteriorly above the lateral angles with a depressed horn, very slightly narrowed towards the apex, truncated at the apex, bicarinate above and below ; anterior apical angle of the horns round, posterior somewhat acute ; posterior process distinctly carinate, very broadly sinuated in the middle above, a little amplified beneath in the middle, reaching the apex of the scutellum, very slightly decurved

towards the apex: tegmina fuscous-ferruginous or ferruginous-grey, punctured at the base (Stål).

Reported from Tranquebar, India.

Genus LEPTOCENTRUS, Stål.

Hem. Afric. iv. p. 87, 90 (1866): Ofvers. K. V.-A. Förh. p. 281 (1869).

Frons more or less prominulous downwards: thorax cornuted above the lateral angles; posterior process, slender, three-cornered, acute, emitted a little before the posterior margin of the thorax, altogether distant from scutellum and abdomen, not unless posteriorly touching the interior margin of the tegmina, not sinuated beneath nor amplified in the middle: scutellum emarginate at the apex, moderate: tegmina with five apical, two discoidal areas, none of them petiolated: wings with four apical areas: tibiae simple.

16. LEPTOCENTRUS TAURUS, Fabricius.

Membracis taurus, Fabr., Syst. Ent. p. 676 (1775): Spec. Ins. ii. p. 317 (1781): Maut. Ins. ii. p. 244 (1787): Ent. Syst. iv. p. 14 (1794): Olivier, Enc. Méth. vii. p. 665 (1792).

Membracis rupicapra, Fabr., Ent. Syst. Suppt. p. 514 (1798).

Centrotus rupicapra, Fabr., Syst. Rhyng. p. 18 (1803).

Centrotus taurus, Fabr., Syst. Rhyng. p. 20 (1803): Germar, Mag. iv. p. 32 (1821): Silb. Rev. Ent. iii. p. 257 (1835): Fairmaire, A. S. E. F. (2 sér.) iv. p. 510 (1846): Walker, List Hom. B. M. ii. p. 602 (1851); *ibid.* Suppt. p. 158 (1858); J. Ann. S. Zool. i. p. 93 (1856); *ibid.* p. 163 (1857).

Membracis tricornis, Hardwicke, Zool. Journ. iv. p. 114, t. Suppt. 30, fig. c. d. f. (1828).

Centrotus terminalis, Walker, List Hom. B. M. ii. p. 604 (1851).

Centrotus vicarius, Walker, l. c. p. 605 (1851).

Leptocentrus taurus, Stål, Ofvers. K. V.-A. Förh. p. 491 (1862): Berlin Ent. Zeitsch. x. p. 386 (1866): Hem. Fabr. ii. p. 50 (1869).

Fairmaire makes *M. tricornis*, Hardwicke, a synonym for *L. taurus*, Fabr., to which Walker adds his own *C. vicarius* and *C. terminalis*, and Stål adds *C. rupicapra*, Fabr.

Head fuscous, eyes castaneous, a white spot before the eyes: thorax fuscous with two stout horns, a little arched, produced posteriorly, filiform: sides of pectus white: wings obscure: body fuscous (*M. taurus*, Fabr.). Body small, fuscous: thorax with three horns, the lateral thicker, obtuse or rather truncate, subdentate; the intermediate, posterior, recurved: tegmina fuscous hyaline; wings whitish (*M. rupicapra*, Fabr.). Fairmaire remarks that *C. taurus* is black with the scutellum and sides of the pectus white and the tegmina with the costa fuscous. Hardwicke describes his *M. tricornis* as head, thorax, and body black;

wings ash-grey, longer and broader than the body, and incumbent: thorax three-horned, two of which are placed in front behind the eyes, about as long as the thorax, strong, erect and curved outwards; the third horn rises from the posterior margin of the thorax, extending in a gentle arch the whole length of the body and tapering to the apex. Stål notes that the type has the lateral margins and apical spine of the scutellum sordid whitish. Walker's *C. terminalis* is thus described: "Black, clothed with tawny hairs; head and pronotum roughly punctured: head convex very short, transversely subfusiform, a little narrower than the pronotum, undulating along the hind border, retuse in front, on each side of the face whose hind border is semicircular and occupies much less than half the length of the face; clypeus prominent, retuse: pronotum thick in front rising vertically above the head, indistinctly ridged; shoulders very obtusely angular, not prominent; above them are two long, stout, prismatic, diverging, acute horns which are curved backwards, especially towards the tips; their sides are slightly concave, their inner and outer sides are of equal breadth, their hinder side is narrower; behind them the pronotum is armed with a long, slender, smooth, acute triangular horn which is slightly curved downwards and extends to the tip of the abdomen: abdomen above with hoary reflections: tibiae pitchy; hind tarsi tawny: wings very pale lurid; a narrow pale brown streak on the fore-border near the tip of each tegmen; two discoidal areolae; veins tawny: wings colourless, veins black." Body long 6-8 millims.

Fairmaire notes that he cannot separate from this species smaller ones of which the horns are very acuminate and hardly recurved, and others in which the horns are relieved and oblique. *M. vicarius*, Walker, is one of those in which the horns are short.

Reported from India: the Indian Museum possesses specimens from Calcutta, Sikkim.

17. LEPTOCENTRUS REPONENS, Walker.

Centrotus reponens, Walker, List Hom. B. M. ii. p. 604 (1851); J. L. S. Zool. x. p. 183, (1867).

Centrotus antilope, Stål, Freg. Eug. Rosa, Ins. p. 261 (1859).

Leptocentrus antilope, Stål, Ofvers. K. V.-A. Förh. p. 727 (1870).

Fuscous ferruginous: rudely punctured, sparingly covered with whitish down, head and thorax anteriorly more densely clothed; thorax anteriorly subreclinately sloped, armed on both sides with a horn, strong, long, produced somewhat upwards, recurved towards the apex, three-cornered; posterior process from its base distant from the abdomen, somewhat curved at the base, thence straight, equally thick, extending somewhat beyond the apex of the abdomen, three cornered

with a high median ridge: tegmina weakly fuscous-hyaline, veins fuscous. Size almost the same as that of *L. taurus*, but differs in being longer, proportionately narrower, anterior horns longer, more produced upwards, scutellum concolorous (Stål). Body long 9: broad 5 millims.

Reported from New Guinea, Timor, Philippines, Ceylon, India: the Indian Museum possesses specimens from Calcutta.

18. LEPTOCENTRUS SUBSTITUTUS, Walker.

Centrotus substitutus, Walker, List Hom. B. M. ii. p. 605 (1851).

In structure like the preceding: horns of thorax short as in var. *viciarius*, Walker, of *L. taurus*; pectus with a thick patch of pale yellow down on each side in front; legs black; tarsi pitchy; hind tarsi tawny; wings black; tips colourless; veins tawny. Body long $6\frac{1}{4}$: wings long $12\frac{1}{2}$ millims. (Walker).

Reported from N. Bengal.

Genus CENTROTYPUS, Stål.

Hem. Afric. iv. p. 88 (1866): Ofvers. K. V.-A. Förh. p. 281 (1869).

Frons gradually narrowed from the base, without a lobe on both sides at the base; posterior process of thorax not sinuated on each side from the base to the scutellum, never distant from the scutellum, gradually narrowed, covering the whole or almost the whole of the scutellum; dorsum of thorax distinctly keeled, the keel not (or very obsoletely) continued forward through the thorax, which instead of a keel has a somewhat smooth line: sides of scutellum not prominulous, scutellum not or only a little, seldom twice, as broad as the base of the posterior process of the thorax: tegmina with five entire, oblong, apical areas; costal area punctured at the base, costal and radial areas abbreviated at the same distance or almost so from the base (Stål).

19. CENTROTYPUS FLEXUOSUS, Fabricius.

Membracis flexuosa, Fabr., Ent. Syst. iv. p. 12 (1794).

Centrotus flexuosus, Fabr., Syst. Rhynch. p. 18 (1803): Fairmaire, A. S. E. F. (2 sér.) iv. p. 516 (1846): Walker List Hom. B. M. ii. p. 611 (1851).

Centrotus anchorago, Guérin, Icon. Règne Anim. t. 59, f. 4 (1829-43).

Centrotypus flexuosus, Stål, Hem. Fabr. ii. p. 51 (1869): Ofvers. K. V.-A. Förh. p. 286 (1869).

Thorax punctured, cerulean; with a stout horn on both sides, flat, acute, black, a little flexuose, posteriorly produced in a spine, longer than the abdomen; wings black, a spot on the slender margin whitish: body black (*M. flexuosa*, Fabr.).

Cærulean black : lateral horns of thorax long, somewhat recurved, scarcely turning upwards, above unicarinate, hardly broader than the median part of the posterior process, acute : tegmina subvinaceous, ferruginous towards the apex, with the base and the broad costal limb beyond the middle, blackish (Stål) ♀. Body long 10 : breadth of pronotum $3\frac{1}{4}$: exp. horns of thorax $8\frac{1}{2}$ millims.

Reported from India : the Indian Museum possesses specimens from Sikkim.

20. CENTROTYPUS ASSAMENSIS, Fairmaire.

Centrotus assamensis, Fairmaire, A. S. E. F. (2 sér.) iv. p. 517 (1846).

Centrotus costalis, Walker, Ins. Saunders. Hom. p. 27 (1858).

Centrotypus assamensis, Stål, Ofvers. K. V.-A. Förh. p. 286 (1869) : Distant, J. A. S. B. xlviii. (2), p. 38 (1879).

Greenish black, blue on the horns : allied to *C. flexuosus*, Fabr. thoracic horns less dilated, ridged before and behind, more relieved : tegmina yellow, pellucid, with the external margin blackish brown, a brown patch at the internal angle (Fairm.). Long 11 millims.

Reported from Assam and Tenasserim ; the Indian Museum possesses specimens from the latter locality.

21. CENTROTYPUS OBESUS, Fairmaire.

Centrotus obesus, Fairmaire, A. S. E. F. (2 sér.) iv. p. 518 (1846) : Walker, List Hom. B. M. ii. p. 612 (1851) : Stål, Berlin Ent. Zeitsch. x. p. 386 (1866).

Centrotus malleator, Walker, List l. c. p. 612 (1851), Java.

Centrotus malleolus, Walker, List l. c. p. 613 (1851), Java.

Centrotus malleus, Walker, List l. c. p. 613 (1851), Ceylon.

Centrotypus obesus, Stål, Ofvers. K. V.-A. Förh. p. 286 (1869).

Cærulean-black, shining : prothorax tumid and rounded anteriorly and between the shoulders (especially in ♀), deeply punctured : horns conical, slightly projecting, almost horizontal : posterior process, sinuated, slender, slightly curved below at the tip, longer than the abdomen : scutellum white, short ; basal half of tegmina of a transparent yellow, rest brown, external border blackish (Fairm.). Long 8-10 millims.

Reported from Java, Ceylon, India.

Genus COCCOSTERPHUS, Stål.

Hem. Fabr. ii. p. 51 (1869).

Body small, obovate : head with the eyes equal in breadth to the anterior part of the thorax, with the eyes, deflexed, somewhat transverse, slightly inflexed beneath the eyes, from a little elevated, not freely prominent, with the apical margin a little promi-

lous: ocelli twice as distant from each other as from the eyes; thorax moderately convex, unarmed on both sides anteriorly, gradually narrowed behind the slightly prominulous lateral angles and gradually passing into the posterior process; the posterior process entire on both sides at the base, not sinuated, gradually acuminate, straight, slightly deflexed at the apex, equalling the apex of clavus, somewhat highly ridged, much depressed in the middle. No complete scutellum: mesonotum furnished on both sides at the apex with a spinule turning backwards. Tegmina short, not extending beyond the apex of the abdomen, gradually somewhat amplified towards the apex which is obliquely rounded, opaque and coriaceous at the base; exterior vein of clavus united with the commissure at some distance beyond the middle; corium emitting the ulnar and radial veins from the base, ulnar vein somewhat forked before the middle of the corium, two discoidal areolas or, if the areola behind the fork of the ulnar vein be included, three; the exterior discoidal areola stylated, stylus separating the interior (or intermediate) discoidal areola from the first apical area, five apical areas. Wings with three apical areolas. Feet moderate, tibiae prismatic, anterior a little depressed: anterior trochanters unarmed within.

A curious genus allied to *Gargara*, Stål; but very distinct in having the thorax behind the lateral angles gradually passing into the posterior process which has no sinus at the base; there is no produced complete scutellum, but the mesonotum is armed at the apex with two very distant spinac (Stål).

22. COCCOSTERPHUS MINUTUS, Fabricius.

Membracis minuta, Fabricius, Ent. Syst. Suppl. p. 514 (1798).

Centrotus minutus, Fabricius, Syst. Rhynch. p. 22 (1803).

Scaphula (?) minuta, Fairmaire, A. S. E. F. (2 sér.) iv. p. 495 (1846); Walker, List Hom. B. M. ii. p. 589 (1851).

Coccosterphus minutus, Stål, Hem. Fabr. ii. p. 51 (1869).

Minute: head and thorax black, scabrous with elevated dots: thorax subunarmed, produced posteriorly, attenuated, a little elevated before the apex, as long as the abdomen: tegmina obscurely whitish, somewhat spotted fuscous, black at the base; wings shorter, hyaline: body black (*Fabr.*). Black, flavescens-greyish-sericeous: head, thorax and tegmina remotely sprinkled with somewhat large granules: thorax furnished with a ridge or keel, obsolete anteriorly, very elevated in the posterior process, in its medium depressed part interrupted: tegmina palely greyish-flavescens, subpellucid, obsoletely dotted with white, veins here and there infuscate, granules and almost third basal part, black; black part punctured; ulnar vein running through this part greyish-flavescens (Stål).

♂. Body long $3\frac{1}{4}$: broad 2 millims.

Reported from E. India, Tranquebar.

Subfamily DARNINA, Stål.

Darnida, Stål, *Ofvers. K. V.-A.* p. 556 (1867); p. 250 (1869).

Genus HEMIPTYCHA, Germar (in part).

Fairmaire, *A. S. E. F.* (2 sér.) iv. p. 312 (1843); Stål, *Ofvers. K. V.-A.* Förh. p. 557 (1867), p. 250 (1869).

Thorax without an impression above the lateral angles, much elevated anteriorly, furnished on both sides with a long horn, strong, curved, acute, turning upwards, reaching with the lateral margins of the posterior process the longitudinal vein of the clavus, covering part of the apex of the clavus and narrow interior posterior part of the corium, apical half or more very slightly deflexed; entire dorsum tectiform or compressly acute, sinuated above beyond the middle, behind the sinus gradually decreasing in height, equal to or extending a little beyond the apex of the tegmina; head obtusely triangular: ocelli a little more distant from the eyes than from each other.

23. HEMIPTYCHA CRUX, Linnæus.

Cicada crux, Linn., *Syst. Nat.* (ed. 10) i. p. 435 (1758); *Mus. Lud. Ulr.* p. 154 (1764).

Hemiptycha crux, Stål, *Berlin Ent. Zeitsch.* x. p. 389 (1866).

Fuscous-testaceous: thorax black, anteriorly obsolete spinkled testaceous, behind the lateral horns broadly margined with yellow, this yellow margin narrowed backwards, extended beyond the middle of the posterior produced part: tegmina fuscous. Thorax distinctly punctulate, furnished with a very strong and long horn above the lateral angles, compressed, turning outwards and moderately upwards, at the apex obliquely truncated, anteriorly rounded, at the apex posteriorly acuminate, slightly amplified towards the tip; posterior produced part gradually acuminate, extending a little beyond the tip of the tegmina; apex itself very slightly recurved: dorsum seen from the side somewhat straight and with a distinct ridge, lateral margins straight (Stål). ♀, body long 18; exp. horns of thorax 17 millims.

Reported from India (*Linn.*).

Genus SCAPHULA, Fairmaire.

A. S. E. F. (2 sér.) iv. p. 494 (1846).

Head triangular, rounded at the tip: eyes very broad, prominent, ocelli contiguous: prothorax smooth, sometimes elevated, slightly rounded posteriorly; tegmina free, with posterior veins waved, one small discoidal; the internal extremity sometimes slightly covered by the prothorax: posterior tarsi longer than the anterior (*Fairm.*).

24. SCAPHULA SEMIATRA, Fairmaire.

Scaphula semiatra, Fairmaire, A. S. E. F. (2 sér.) iv. p. 494, t. iii. f. 18, 19; t. vii, f. 20 (1846); Walker, List Hom. B. M. ii. p. 589 (1851).

Brownish black, shining; prothorax somewhat elevated in the middle, terminated posteriorly by a defined, rounded border; tegmina free, dull black, posterior third transparent; abdomen beneath, anterior feet, knees, and tarsi yellowish; posterior feet blackish (*Fairm.*) Body long 6 millins.

Reported from Coromandel?

Family JASSIDÆ, Stål.

Jassida, Stål, Hem. Afric. iv. p. 82 (1866); Fieber, Kat. p. 8 (1872); Rev. Mag. Zool. (3 sér.) iii., pp. 337, 386, (1875).

Subfamily PAROPINA, Fieber.

Paropila, Fieber, Kat. p. 7 (1872); Rev. Mag. Zool. (3 sér.) iii, p. 384 (1875); *Paropides*, Sign. A. S. E. F. (5 sér.) ix, p. 47 (1879).

Genus SIGNORETIA, Stål.

Freg. Eng. Resa, p. 289 (1859).

Body elongate, subparallel: head with the eyes broader than the thorax, round in front, semilunate on the vertex, subconcave, furnished posteriorly with a high transverse ridge; frons large, convex, with a much elevated longitudinal ridge; ocelli placed in a small excavation in the margin of the base of the frons at the eyes: thorax shorter than broad, parallel, anteriorly semicircularly rounded and produced between the eyes, rounded behind, posteriorly convex, anteriorly semicircularly depressed, where it is furnished with two ridges before the apex, lying close to each other: scutellum small, triangular: tegmina longer than the abdomen with the longitudinal veins towards the apex, once joined by the transverse nervures, the intracostal longitudinal vein forked behind the middle: feet moderate, posterior tibiæ three-cornered, angles remotely spinose. Allied to *Paropia*: ocelli nearer the eyes, frons convex, ridged, thorax differing in shape, the scutellum very small (Stål).

25. SIGNORETIA MALAYA, Stål.

Thamnotettix malaya, Stål, Ofvers. K. V.-A. Förh. p. 192 (1855).

Signoretia malaya, Stål, Freg. Eng. Resa, p. 290, t. 4, f. 9, a. b. (1859).

Virescent-whitish, densely and roughly punctured; tegmina virescent whitish hyaline; entire clavus, space between the costa and the

second longitudinal vein, also other veins on both sides, fairly roughly punctured (Stål). Long 7; broad, $1\frac{1}{2}$ millims.

Reported from Malacca, Tenasserim (?).

Subfamily LEDRINA, Stål.

Ledrina, Stål, Ofvers. K. V.-A. Förh. p. 731 (1870): *Scarida*, Fieber, Kat. p. 7, (1872); Rev. Mag. Zool. (3 sér.), iii, p. 386, (1875).

26. LEDRA SERRULATA, Fabricius.

Ledra serrulata, Fabr., Syst. Rhynch. p. 24 (1803): Stål, Hem. Fabr. ii, p. 58, (1809).

Greyish or flavescent-greyish: body beneath and feet weakly testaceous flavescent or testaceous whitish: tegmina greyish pellucid behind the middle, near the base with a pallescent, broad, obsolete band; wings sordidly hyaline: the dorsum of the abdomen flavescent-sanguineous: thorax elevated posteriorly and furnished on both sides with a lobe, erect, produced forwards, crenulated posteriorly on the margin. Sometimes with two interrupted bands on the inferior part of the head and certain median marks on the thorax, black (Stål). ♀ Body long, 18; broad 5 millims. Stature of *L. aurita*, Linn. (Britain) head more roundly produced, lobes of thorax longer. Head somewhat shorter than the thorax, gradually distinctly amplified through a short space before the eyes, thence abruptly angulated and anteriorly much rounded, the ocellar tract impressed, the impressed part amplified forwards and gradually merging in the anterior disc, antecular part remotely sprinkled with distinct granules. Lateral margins of thorax parallel at the apex, thence somewhat divergent backwards, two parallel ridges behind the middle anteriorly slightly divergent, obtuse, minutely tuberculate, and towards the sides a lobiform crest, very high, slightly bending forwards, remotely granulate, posteriorly crenulate. Scutellum gradually transversely depressed towards the middle, before the middle sprinkled with granules towards the sides, posteriorly much elevated, the elevated part posteriorly black and granulate. Tegmina gradually slightly amplified beyond the middle, thence rounded outwards: almost entire clavus and corium towards the base punctured and sprinkled with granules at intervals, veins here and there infuscate. Tibiæ above sparingly granulate.

Reported from Malacca, Tranquebar.

27. LEDRA MUTICA, Fabricius.

Ledra mutica, Fabricius, Syst. Rhynch. p. 25, (1803): Stål, Hem. Fabr. ii, p. 59, (1809).

Ledra fornicata, Walker, List Hom. B. M. iii, p. 815, (1851).

Ledra carinata, Walker, List l. c. p. 815, (1851).

Greyish mingled with fuscous or weak ferruginous and granulated, beneath palely sordid flavescent : head and thorax equal in length, the head obtusely angulated at the apex, the thorax posteriorly quadricarinate : dorsum of abdomen weakly sanguineous : clavus sometimes marked anteriorly with a large pale spot : wings sordid hyaline, sanguineous at the base. ♀, body long, 18 ; broad $4\frac{1}{4}$ millims.

Allied to *L. dilatata*, Walker, but narrower, head longer. Head very obtusely tectiform, much produced, furnished with a median wrinkle, running through it, and posteriorly with four longitudinal wrinkles, the exterior a little oblique ; somewhat roundly amplified before the eyes, thence gradually obtusely angulated towards the apex, gradually very obtusely roundly-narrowed, sprinkled with granules and small tubercles. Thorax hardly narrowed forwards, subsinuate before the middle on both sides, behind the middle gradually elevated backwards, remotely sprinkled with granules, posteriorly furnished with four parallel ridges. Scutellum with the apical part much elevated and longitudinally bilobose, the wrinkles (*rugæ*) granulated. Tegmina gradually a little amplified beyond the middle, thence rounded externally, behind the middle more pellucid, towards the base sprinkled at intervals with granules, greyish, veins more obscure, here and there infuscate or palely ferruginous. Tibiæ above sprinkled with some granules (Stål).

Reported from Tranquebar, N. India, N. Bengal.

28. LEDRA DILATATA, Walker.

Ledra dilatata, Walker, List Hom. B. M. iii, p. 811, (1851) ; Stål, Ofvers, K. V. A. Förh. p. 495, (1862) ; Hem, Fabr. ii, p. 59, (1869).

Ledra scutellata, Walker, l. c. p. 812, (1851).

Ledra plana, Walker, l. c. p. 812, (1851).

Closely allied to *L. mutica*, Fabr. Testaceous, paler beneath : head and prothorax, with ferruginous tubercles : head broader than the thorax, very slightly arcuated, anterior margin rounded, each side somewhat angulated, hinder margin very slightly sinuate, weakly tricarinate, the lateral ridges short and oblique ; its length hardly half its breadth : thorax convex on the disc, furrowed across, very slightly convex along the anterior margin, with a pale band on the disc, which has five slight ridges, the middle one short : posterior margin concave in the middle, convex on each side : scutellum gibbous with two slight crests towards the tips : abdomen red above : tegmina whitish, very convex along the fore-borders towards the tips ; veins pale ferruginous with a few piccons tubercles towards the base : wings colourless : tibiæ with piccons tubercles, slightly widened and fringed (Walker). Body long $10\frac{1}{2}$; teg. 25 millims.

Reported from E. India.

29. *LEDRA DORSALIS*, Walker.

Ledra dorsalis, Walker, List Hom. B. M. iii, p. 810, (1851); Stål, Ofvers, K. V. A. Förh. p. 495, (1862).

Ferruginous, testaceous beneath, head a little broader than the thorax; very slightly arched, rounded in front, obtusely angular on each side, slightly sinuate on the posterior margin; its length hardly half its breadth; three broad, low, rounded ridges on the vertex, the side pair oblique; face with three black stripes corresponding to the ridges above: shield roughly punctured, slightly convex in front, very concave on the hind border, armed with six crests, outer pair irregular, horizontal, and oblique; next pair vertical, very high, marked with black, convex above, perpendicular and forming right angles behind; inner pair slight, interrupted with two black dots on each towards the hind border, scutellum convex: abdominal appendages short: legs testaceous: tegmina ferruginous, tuberculate, especially towards the base, almost colourless towards the tips: wings almost colourless (*Walker*). Body long 21; teg. $37\frac{1}{2}$ millims.

Reported from Silhat.

The following three species are of doubtful position:—

30. *LEDRA PUNCTATA*, Walker.

Ledra punctata, Walker, List Hom. B. M. iii, p. 824, (1851).

Testaceous, paler beneath: head and thorax broad, roughly punctured; head very short-conical, narrower than the thorax, not arched, hardly ridged, very slightly concave along the hind border, with irregular whitish reticulations; its length less than half its breadth; face with a furrow along each side; shield green on the disc, with irregular whitish reticulations in front and on each side, where it is slightly widened and angular: legs pale testaceous: tegmina almost colourless, punctured from the base to the tips, tinged with pale green and along the borders with pale brown; tips darker brown; veins very few: wings white (*Walker*). Body long, $7\frac{1}{4}$; teg. $15\frac{1}{2}$ millims.

Reported from Malabar.

31. *LEDRA LINEATA*, Walker.

Ledra lineata, Walker, List Hom. B. M. iii, p. 830 (1851).

Stramineous, fusiform: head and thorax flat; head almost smooth, conical, almost as broad as the thorax, not arched nor ridged, with a slight rim, hardly sinuate along the hind border; its length less than its breadth; face flat on the disc, with very oblique and indistinct striae on each side; shield minutely striated across; scutellum with a

slightly arched transverse suture near the tip: tegmina whitish, semi-transparent; veins bordered with a darker colour; wings colourless (*Walker*). Body long, $7\frac{1}{4}$; teg. $10\frac{1}{2}$ millims.

Reported from N. India.

32. LEDRA PUNCTIFERA, Walker.

Ledra punctifera, Walker, List Hom. B. M. Suppt. p. 249 (1858).

Greenish-testaceous (pale green? when alive); very minutely punctured, whitish testaceous beneath: head flat, short, conical, very slightly impressed on each side above, and with a very slight keel beneath: thorax with a very slight impression on each side: tegmina with ramose veins and with a black point in each disc towards the hind border: wings vitreous (*Walker*). Body long, $14\frac{1}{2}$; teg. 25 millims.

Reported from Darjeeling.

Genus LEDROPSIS, White.

A. M. N. H. xiv, p. 425 (1844).

Head with its prolongation longer than wide, parallel in front of the eyes, as wide as the thorax, then gradually curved to the tip, which is somewhat obtuse; ocelli on the same line with the front of the eyes and rather more distant from each other than from the eyes: eyes large but not very prominent; prolongation hollowed out beneath, with a spear-shaped elevated ridge running down the middle, the base of which, on the face between the eyes, is hollowed out: antennæ spring from a depression in front of the eyes beneath, 3-jointed, the terminal joint ending in a longish bristle: thorax rounded in front, very deeply notched behind, the posterior angles truncately rounded: tegmina with many inclosed cells at the end, the veins robust: body elongate, margined beneath: tibiae of posterior feet not dilated, serrated behind (*White*).

33. LEDROPSIS OBLIGENS, Walker.

Ledra obligens, Walker, List Hom. B. M. Suppt. p. 251 (1858).

Ledropsis obligens, Stål, Ofvers. K. V.-A. Förh. p. 495 (1862).

Reddish, very elongate-subfusiform, testaceous beneath: head convex, elongate-conical, much longer than broad; under side concave, with a very broad border, the middle compartment lanceolate, black towards the tip of the vertex: thorax convex: abdomen compressed, with a dorsal ridge: tegmina tawny, reticulated; veins very numerous with some whitish marks: wings greyish-vitreous (*Walker*). Body long $12\frac{1}{2}$; teg. $16\frac{1}{2}$ millims.

Reported from India?

Genus *TITURIA*, Stål.

Ofvers. K. V.-A. Förh. p. 158 (1865); Hem. Afric. iv. p. 102 (1866).

Body large, oblong: head foliaceous, clypeated, triangular, rounded at the apex, produced forwards and a little downwards, vertex flat; frons narrow, flat: face beneath the eyes, abruptly much narrowed, thence gradually narrowed, margins very slightly amplified: eyes small: ocelli placed behind the middle of the vertex between the eyes, more distant from the eyes than from each other: thorax and vertex in the same plane, somewhat sloped, the former sexangular, angularly amplified on both sides, lateral margins acute, anterior margin straight, posterior margin slightly sinuated: scutellum triangular: tegmina coriaceous, densely punctured, tectiform, reaching the apex of the abdomen, clavus very broad in the middle, corium triangular, obliquely or roundly truncated behind the clavus; veins irregularly anastomosed towards the apex, less elevated: feet somewhat short: anterior coxæ free; last tibiæ remotely dentated above. Allied to *Petalocephala*, (Stål).

34. *TITURIA PLANATA*, Fabricius.

Membricus planata, Fabr., Ent. Syst. iv. p. 11 (1794).

Lutra planata, Fabr., Syst. Rhyng. p. 25 (1803).

Epiclides planata, Am. & Serv., Hist. Nat. Ins. Héin. p. 578 (1843); Walker, List Hom. B. M. iii. p. 831 (1851).

Epiclides hebes, Walker, Ins. Saund. Hom. p. 100 (1858).

Petalocephala planata, Stål, Ofvers. K. V.-A. Förh. p. 501 (1862).

Petalocephala expansa, Stål, Ofvers. I. c. p. 158 (1865).

Tituria planata, Stål, Hem. Fabr. ii. p. 59 (1869).

Clypeus flat, triangular, entirely virescent, eyes oblong, fuscous: pronotum smooth, flat, virescent, produced on both sides in a flat point, strong, acute: tegmina virescent, immaculate; body virescent (*Fabr.*). Olivaceous flavescens turning into virescent; above with the pre-stethium densely and distinctly punctured; head above finely and sparingly punctured: costa sordidly flavescens: apex of the spines of the last tibiæ fuscous; head obtusely triangular, more than twice as broad as long; thorax much dilated on both sides, angles acute, the anterior margin of the dilated part about one third longer than the posterior margin, the latter infuscate; the last ventral segment in the ♀ deeply sinuated at the apex (Stål). ♀, body 18: breadth of pronotum 10 millims.

Reported from Malacca, India, Tenasserim.

Subfamily PROCONUSA, Stål.

Ofvers. K. V.-A. Förh. p. 733 (1870).

Genus TETTIGONIA, H. Geoffroy (in part).

Hist. Ins. p. 429 (1764): Signoret, A. S. E. F. (2 sér.) i. p. 13 (1852).

Signoret (in *l. supra c.*) reviews the history of the group, first established by Geoffroy, in his work describing the insects found in the neighbourhood of Paris, under the name *Tettigonia*. In 1794, Fabricius separated the same group in his Ent. Syst. (iv. p. 27) under the name *Cicada*, and in his Syst. Rbyn. (1803) formed from it the genera *Jassus*, *Flata*, and *Cicuis*. In 1811, Latreille re-established *Tettigonia*, and, in 1821, (Mag. Ent. iv.) Germar reduced it by creating the genera *Gypona*, *Calidea*, and others. In 1825, Lepelletier de St. Fargean and Audinet-Serville (Enc. Méth. x. p. 600) formed two divisions, *Tettigonia* for those in which the head is rounded beyond the eyes and *Proconia* for those in which the head is conical. In 1829, Latreille (Règne Anim. 2nd ed., ii, 221) separated *Cicuis* from *Proconia*, and, in 1832, De Taporte de Castelneau (A. S. E. F. i, p. 222) formed *Germaria* and *Rhaphidorhinus*. In 1835, Burmeister (Handb. ii, (i) p. 117) restored the *Tettigonia* of Latreille and Germar with four subdivisions, and, again in 1840, Blanchard (Hist. Nat. Ins. iii) admits divisions only. In 1843, Amyot and Serville (Hist. Nat. Ins. Hém. p. 569) admit *Tettigonia*, *Germaria*, *Cicuis*, *Rhaphidorhinus*, and *Proconia*, and add *Aulocizes*, *Diastostemma*, and *Acopsis*. In 1850, Spinola (Tav. Sin. Modena) created *Dicrocephala* and *Wolfella*, and, in the same year, Signoret created *Dilobopterus* (Rev. Zool. (2 sér.) ii, p. 284). In 1851, Fitch formed *Helochara* for an American species, and, in the same year, Walker created *Propetes*.

In 1852-54, Signoret (A. S. E. F. (3 sér.) i-iii.) keeps one genus and five groups, and notices some 396 species then recorded from all parts of the world. Stål, in 1869 (Mem. Fabr. ii, p. 59, note), includes the group in his subfamily *Jassida* and division *Proconiida*, preserving *Germaria*, *Cicuis*, *Diastostemma*, *Rhaphidorhinus*, *Proconia*, and *Tettigonia* and adding a number of his own genera. In 1870, Stål (Ofvers. K. V.-A. Förh. p. 733) raises the group to the dignity of a subfamily under the name *Proconiina*. In 1884, Taschenberg (Zeitsch. Nat. Wiss. Halle, p. 431) sinks the genera and reviews the whole as one genus with subdivisions running so closely the one into the other as not to afford good generic characters. After examining the figures given by Signoret, this appears to me to be the most reasonable solution of the difficulties connected with the arrangement of the insects belonging to this group, which now number nearly five hundred.

35. TETTIGONIA SEMICIRCULARIS, Signoret.

Tettigonia semicircularis, Signoret, A. S. E. F. (3 sér.) i, p. 348, t. 10, f. 5 (1853)
Walker, List B. M. Suppl. p. 219 (1858).

Head rounded anteriorly, yellow, with two frontal bands united on the clypeus, white : clypeus and rostrum black : two half moons united on the vertex, a median band and on each side two spots, black : pronotum transverse with two bands, anterior one narrow and sinuated, posterior broad, uniting with the first, and on each side between them a transverse patch, black : scutellum with a semicircular band proceeding from the base, black : tegmina fuscous, with a farinose, powdery substance ; lateral margin transparent : abdomen black with the sides and border of the segments, yellow ; exterior margin pale, bordered with black, anus white : feet yellow. Long 5-6 millims.

Reported from Pondicherry.

36. TETTIGONIA PAVO, Signoret.

Tettigonia pavo, Signoret, A. S. E. F. (3 sér.) i, p. 675, t. 22, f. 4 (1853) : Walker, List B. M. Suppt. p. 218 (1858).

Bluish-black : head rounded, above bluish-black, beneath yellow with the frons and vertex between the eyes depressed : prothorax anteriorly somewhat narrow, yellow, with five spots or patches, black, of which three are on the anterior margin and two, corresponding to two on the base of the scutellum, are on the posterior margin : tegmina red, brown at the tips and exhibiting two bluish circles formed of an easily removeable farinose powder, one of these circles is on the cubital disc near the scutollary angle and the other is at the tip, half in the red part of the tegmen and half in the brown tip : wings brownish : abdomen bluish-black with the margin of the segments beneath, yellow : anal appendage as in *T. ferruginea* : feet yellow. Long 15 millims.

Reported from Bengal.

37. TETTIGONIA FERRUGINEA, Fabricius.

Cicada ferruginea, Fabricius, Ent. Syst. iv. p. 32 (1794) ; Suppt. p. 218 (1798) ; Syst. Rhynch. p. 62 (1803).

Proconia ferruginea, Walker, List B. M. iii, p. 783 (1851).

Tettigonia apicalis, Walker, List l. c. p. 736, China.

Tettigonia confinis, Walker, l. c. p. 736, China.

Tettigonia addita, Walker, l. c. p. 737, Java.

Tettigonia gemina, Walker, l. c. p. 737, Java.

Tettigonia obscura, Walker, l. c. p. 738, N. India.

Tettigonia duplex, Walker, l. c. p. 738, — ?

Tettigonia reducta, Walker, l. c. p. 739, Hong Kong.

Tettigonia longa, Walker, l. c. p. 740, Philippines.

Tettigonia immaculata, Walker, l. c. p. 740, Quilo ?

Tettigonia confinis, Walker, l. c. p. 745, — ?

Tettigonia ferruginea, Germar, Mag. Ent. iv. p. 69 (1821) : Signoret, Rev. Zool. p. 176 (1853) : A. S. E. F. (3 sér.) i, p. 676, t. 22, f. 5 (1853) : Walker, List B. M. Suppt. p. 218 (1858).

Fabricius describes this species thus :—"Head, thorax and scutellum spotted with black: tegmina red: wings white. Of median size: head glaucous, with band at the base of the rostrum, and dot on the frons and vertex, dull black: thorax sub-cinereous with an anterior spot and two posterior spots common to the scutellum, black: scutellum concolorous, with the two common spots at the base and one towards the apex, dull black: tegmina ferruginous, a little lighter at the tips: body and wings black." Signoret notes that the form of the anal appendage in the ♀ distinguishes this species. This is very large, deeply emarginate, covering a great part of the vulvar plates, more or less round on the sides and in shape like two approximated lobes. Walker describes his different species as varying from tawny to red-lead colour, testaceous, luteous or orange: the tips of the tegmina are black, lurid or brown: posterior margins of abdominal segments and tip of abdomen, red, tawny, luteous or ferruginous, so that the form of the anal appendage in the ♀ is the most steady character for distinguishing a species so variable in colour. Body long, 14-20 millims.

The Indian Museum possesses specimens from Sumatra, Tenasserim, Arakan, Sikkim, and Assam.

38. TETTIGONIA UNIMACULATA, Signoret.

Tettigonia unimaculata, Signoret, A. S. E. F. (3 sér. ii. p. 26 (1854): Stål, *Ofvers.* K. V.-A. Förh. p. 734 (1870).

Tettigonia kinbergi, Stål, *Freg. Eng. Resa, Ins.* p. 288 (1859).

Whitish with yellow veins: head triangularly rounded in front with a black spot between the ocelli and on both sides, above the antennal margin, near the eyes: ocelli blackish and placed in a deep groove: basal band on thorax produced subtriangularly in the middle and two basal spots on the scutellum, black: pronotum very convex in front, straight behind above the scutellum, anteriorly transversely furrowed: tegmina fuscous or yellow-white with the streaks a little brown, costal half, whitish hyaline: abdomen and feet yellowish white; vertex impressed on both sides. Allied to *T. albula*, Walker, from which it differs in its smaller size, narrower head, anteriorly more or less obtusely roundly-subangulated, in wanting the median black apical spot, in the thorax being more narrowed forwards, posteriorly a little broader than the head, and especially by the cavities on each side in front of the eyes in which are inserted the ocelli (*Sign.*, Stål) ♀ Body long, 5: broad, $1\frac{1}{2}$ millims.

Reported from Philippines, Malacca, India.

39. TETTIGONIA BELLA, Walker.

Tettigonia bella, Walker, *List Hom. B. M.* iii. p. 778 (1851): Signoret, A. S. F. (3 sér.) ii. p. 10, t. I, f. 8 (1854).

Black, striated and spotted yellow; head as broad as the thorax, angularly rounded in front, somewhat concave posteriorly; vertex with a stripe, a band on the posterior margin and a curved stripe on each side, frons and face with spots on each side and some larger marks in the middle, yellow; three pair of large contiguous luteous spots on the head beneath, one of these on the clypeus: thorax black, with a curved yellow band on each side: scutellum black: tegmina black, with eight yellow patches or spots; two oblique, basal; two sutural forming a patch common to the two tegmina and four marginal; of the latter those on each side nearer the base, four times longer than the others, tips lurid: abdomen black or purple, tawny at the tip beneath; legs testaceous, anterior femora marked with black: wings brown, iridescent, pale gray towards the base. In some cases the marks on the tegmina are oblong angular, more like longitudinal bands than spots (*Sign., Walk.*). Long $5\frac{1}{2}$ -6; teg. $12\frac{1}{2}$ millims.

Reported from N. India, Silhat.

40. TETTIGONIA ASSAMENSIS, Distant.

Tettigonia assamensis, Distant, Ent. M. M. xvi, p. 203 (1880).

Head pale yellow, with a black fascia occupying the space between the ocelli; pronotum creamy white, the lateral margins carmine and six black spots situated transversely, two smallest near anterior margin and the four larger across the disc. Scutellum pale yellow with three black spots, two basal and one subapical: tegmina pale creamy white with a broad longitudinal subcostal carmine band, commencing near the base and extending to about the middle; a black narrow oblique band nearly crossing the tegmina at the base and at commencement of the carmine band and five dark fuscous spots situated, one in centre of carmine band, three wide apart, longitudinally on the disc, and one at the marginal apex of the coriaceous portion: wings dark fuscous with the apical borders broadly creamy white: abdomen above pitchy, underside of body pitchy; legs luteous and tarsi pitchy; face orange yellow with a large crescent-shaped black fascia about its centre and a small black spot at the base: the head is rounded in front, much broader than long, and transversely channelled on the disc (*Distant*). Body long, 13 millims.

Reported from Assam.

41. TETTIGONIA EXTREMA, Walker.

Tettigonia extrema, Walker, List Hom. B. M. iii, p. 761 (1851): Signoret, A. S. E. F. (3 sér.) i, p. 663, t. 21, f. 4 (1853): Stål, Overs. K. V.-A. Förh. p. 495 (1862).

Euacanthus extremus, Distant, Scient. Res. 2nd Yarkand Mission, p. 15 (1879).

Pale yellow; head luteous; vertex semicircular in front, hardly concave on the posterior margin, with a slight ridge on the disc which is mostly occupied by a black mushroom-shaped patch of which the stalk rests on the posterior margin between the ocelli; face smooth, shining, with a slight ridge and on each side with indistinct oblique striæ: thorax with a median obconical patch and a rounded spot on each side, also scutellum and abdomen, brownish black: tegmina yellow with an elongated subtriangular blackish-brown stripe towards the interior margin and a similar stripe along the costa almost to the apex, gradually much amplified towards the apex and itself striped paler: wings dark brown (*Walk., Sign.*) Body long $6\frac{1}{2}$; teg. long $13\frac{1}{2}$ millims.

Reported from N. India, Marree.

42. TETTIGONIA QUADRILINEATA, Signoret.

Tettigonia quadrilineata, Signoret, A. S. E. F. (3 sér.) i, p. 669, t. 21, f. 12, (1853); Walker, List Hom. B. M. Suppt. p. 218 (1858).

Head, thorax, and scutellum yellow, with two median stripes from the vertex to the posterior margin of the thorax, a fine line between these stripes on the vertex, a stripe on the lateral borders of the thorax, and three spots on the scutellum, dark brown: tegmina red with interrupted narrow longitudinal black lines, irregularly disposed in rows, tips pale. Long 12 millims.

Reported from E. India.

43. TETTIGONIA RUBROMACULATA, Signoret.

Tettigonia cardinalis, Walker (*sec Fabricius*), List Hom. B. M. iii, p. 744 (1851).

Tettigonia rubromaculata, Signoret, A. S. E. F. (3 sér.) i, p. 668, t. 21, f. 11 (1853) Walker, List. l. c. Suppt. p. 218 (1858).

Above deep black: head with an irregular angular black mark on the vertex, including a subquadrate black mark which proceeds from the hind border: face flat with two black stripes which unite on the clypeus, sides tawny; rostrum piccons: thorax with a transverse band and lateral bands, red: scutellum red with two triangular spots, their bases resting on the anterior margin and a sagittate mark near the apices of those spots, black: tegmina black with a number of uninterrupted longitudinal red streaks, the ends of most of which on each tegmen meet the ends of the corresponding streaks on the other tegmen: wings with a metallic tinge: tip of abdomen red; legs red, feet tawny (*Sign.*). Long with teg. 12-14 millims.

Reported from Nepál: the Indian Museum possesses specimens from Sikkim and Sibságar (Assam).

44. TETTIGONIA OPPONENS, Walker.

Tettigonia opponens, Walker, List Hom. B. M. iii, p. 757 (1851); Signoret, A. S. E. F. (3 sér.) i, p. 367, t. 21, f. 10 (1853).

Black: head and thorax slightly convex, head bright orange, concave along the posterior margin, more convex in front, with two clavate stripes and a spot between the tips of the stripes, black; beneath pale yellow, twice broader than long; face oval with a flat pale orange disc, a black stripe along two-thirds of each side is united to a black stripe on the clypeus, which is ridged and slightly compressed; rostrum pale yellow: thorax with a broad orange band which is sometimes half interrupted on the hind border and is waved along the fore border near each side of which it includes a little black cross streak, also a large subquadrate orange spot whose hind border is notched on each side near the tip of the scutellum which is tawny; legs pale yellow: tegmina dark grey with three orange stripes, costal and median united at the base, inferior hardly extending beyond the middle, veins brown (*Walk., Sign.*). Long 12 millims.

Reported from N. India.

Subfamily ACOCEPHALINA, Signoret.

Acocephalidae, Fieber, Kat. p. 10 (1872): *Acocephalides*, Puton, Signoret, A. S. E. F. (5 sér.) ix, p. 47 (1879).

45. ACOCEPHALUS STRAMINEUS, Walker.

Acocephalus stramineus, Walker, List Hom. B. M. iii, p. 847 (1851); Stål, Overs. K. V.-A. Förh. p. 494 (1862); Signoret, A. S. E. F. (5 sér.) ix, p. 88 (1879).

Bythoscopus stramineus, Distant, Scient. Res. 2nd Yarkand Miss. p. 18 (1879).

Bythoscopus indicatus, Walker, List l. c. Suppl. p. 266 (1858).

Pale testaceous; head slightly rugose, a little narrower than the thorax, rounded and almost semicircular in front, less sinuate behind; about four times broader than long; vertex longer in the middle than on the sides; two black dots on the anterior border which forms a slight rim; face flat, broad, punctured: thorax transversely striated; scutellum very slightly punctured; tegmina almost colourless, punctured nearly to the tips, pale testaceous towards the base: wings colourless (*Walker*). Body long, $9\frac{1}{2}$; teg. 21 millims.

Reported from Celebes, Java, N. China, Sind valley.

Genus HECALYS, Stål.

A. S. E. F. (4 sér.) iv, p. 65 (1864); Hem. Afric. iv, p. 113 (1866); Signoret, A. S. E. F. (5 sér.) ix, p. 266 (1879); includes *Glossocratus*, Fieber (Rev. Mag. Zool. (3 sér.) ii, p. 403, 1875).

Body oblong or elongate, depressed; head somewhat large or somewhat so produced, apical margin acute, more or less broadly foliaceous: face dilated, somewhat deeply sinuated below the eyes; frons a little convex: eyes small or moderate; ocelli placed on the apical margin of the head or at or near the eyes: thorax transverse, very obtusely rounded at the apex: scutellum triangular, a little broader than long: tegmina almost as long as the abdomen, margined at the apex, valvate behind the clavus, with five apical areas: feet moderate, posterior tibiæ very spinose. Allied to *Siva*, Stål, but differs in the head larger, more produced, margin foliaceous (Stål).

46. *HECALUS SULCATUS*, Fieber.

Glossocratus sulcatus, Fieber, Verh. K. K. Zool.-bot. Gesell. Wien. xvi, p. 513, t. 7, f. 13 (1866).

Hecalus sulcatus, Signoret, A. S. E. F. (5 sér.) ix, p. 272, t. 8, f. 28 (1879).

Sordid yellow: vertex parallel, parabolic in front, angles very obtusely rounded: prothorax with four elongated cavities in front, finely striated transversely behind: tegmina transparent, as long as the abdomen: veins strong, yellowish, not margined; a blackish dot at the point of the clavus: abdomen above with two bands of small brown patches, two at the base of each segment: feet entirely sordid yellow, unicolorous: ventral segments parallel, median lobe obtusely salient, sides sinuated (Fieber). ♀, body long, 11 millims.

Reported from E. India. Signoret considers this species to be probably one with *H. parva*, Walker (List iii, p. 828), though he gives the latter also with a ♀ as a synonym possibly of *H. paykulli*, Stål, who, however, makes it a *Selenocephalus* in Ofvers. K. V.-A. Förh. p. 494 (1862).

47. *HECALUS PAYKULLI*, Stål.

Petaloccephala paykulli, Stål, Ofvers. K. V.-A. Förh. p. 252 (1854).

Hecalus paykulli, Stål, A. S. E. F. (4 sér.), iv, p. 64 (1864); Signoret, *ibid.* (5 sér.) ix, p. 270 (1879), t. 7, f. 26.

Sordid whitish-yellow, smooth, shining, clouded with brown on the vertex, the length of the median line, and transversely on the prothorax, the tegmina and the veins of the same colour but with a brown line on each side. Head defined on the margin only, one and half times longer than the prothorax, as long as broad between the eyes, angularly rounded, the sides almost parallel above the eyes, then forming an angle at the tip; two excavations on the vertex on each side. Frons convex with a foliaceous border anteriorly, grooved on the sides, border concave above the clypeus which is itself broader at the base than at the tips but showing its greatest breadth in the middle, carinate in its median part. Rostrum very short. Genæ with the tip oblique from the

clypeus to the eye forming a very acute angle, concave, sinuous towards the clypeus then emarginate, concave near the eye. The prothorax a little more than twice broader than long, finely striated transversely in the posterior half and with several less marked impressions anteriorly. Tegmina opaque with four discoidal areas of which two are antoapical, five apical areas and three in the marginal space; a black dot occurs at the tip of the claval angle. Wings hyaline with the third sector reunited at the internal branch of the bifurcation of the second sector, then bifurcate and forming a long angular cell. Pectus and abdomen yellow: the latter a little deeper towards the base of the dorsal segments.

♂ has last segment of the abdomen hardly longer than the preceding, apical margin straight; a very small genital appendage; genital plates very narrow at the tip almost as long as the hypopygium and pubescent on the sides; the hypopygium a little broader and pubescent, the anal tube is surrounded by it and extends beyond it by very little. The ♀ has the last segment twice as long as the preceding, convex at the superior margin, angular in the middle and weakly sinuated on each side; the genital appendages or valvules are more than twice as long as the preceding and the oviduct extends beyond them by about one-third (*Signoret*). Stål writes:—Shining, sordid whitish-yellow; head (eyes excepted) almost equally long and broad, longer by half than the thorax, anteriorly slightly narrowed, smoothish; tegmina opaque; eyes fuscous. ♂ Body long 5; broad, hardly 2 millims: ♀, body long 6; broad, 2 millims: Stål gives ♀ long $8\frac{1}{2}$; breadth thorax 2 millims.

Reported from China, Senegal, (Australia?), Siliat.

Genus THOMSONIELLA, Signoret.

A. S. E. F. (5 sér.) x, p. 52 (1880).

Separated from *Hecalus*, Stål, by the presence of six discoidal areolas. Body depressed: head prolonged in front, fohaceous on the anterior margin of the vertex, with a groove throughout its entire length, vertex depressed, also the frons, the latter with the grooves and lateral sutures extending to the anterior border of the head: genæ sinuated, rounded in the middle: the lores occupying the entire space between the margin of the genæ and the frontal suture: sides of clypeus almost parallel, rounded at the tip, one and half times longer than broad: prothorax transverse, almost broader than the head with the eyes: tegmina transparent hyaline with a narrow marginal limbus: rest as in *Hecalus* (*Signoret*).

48. THOMSONIELLA KIRSCHBAUMII, Stål.

Hecalus kirschbaumi, Stål, *Ofvers. K. V.-A. Föeh.* p. 737 (1870).

Thomsoniella kirschbaumi, Signoret, A. S. E. F. (5 sér.) x, p. 52, t. 1, f. 44 (1880).

Pale yellow, shining, with a dot at the tip of the clavus and on the middle of the first apical area, black: anterior margin of vertex blackish. Head a little shorter than broad between the eyes, the anterior margin weakly angularly rounded and reflexed, vertex concave, ocelli in the groove very close to the eyes. Frons convex, almost as long as broad, the sides much rounded: genae broad with the angle very obtusely rounded. Prothorax convex anteriorly, concave behind, the lateral margins very slightly convex, almost parallel; finely, transversely striated. Clypeus with the sides parallel, rounded at the tip. Tegmina rounded at the tips with four broad apical and six discoidal cells, the sixth comprising a small hexagonal cellule with equal sides before the third apical cell; there is also a supplementary cellule; limbus very narrow, a transverse vein between the two veins of the clavus. Abdomen long, the last segment (♀) twice as long as the penultimate with the margin sinuous, emarginate in the middle and furnished with a rounded median lobe; valvules one half longer and the oviduct extending beyond them by a third. ♀, body long, 6; broad, 2 millims.

Reported from Philippines, Ceylon, India.

Resembles *P. wallengrenii*, Stål, but differs in the more rounded head, in the number of discoidal cellules, and in the groove on the border of the head (*Sign.*).

Genus SELENOCEPHALUS, Germar.

Silbermann's Rev. Ent. i, p. 180 (1833): Burmeister, Handb. ii, (i), p. 111 (1835): Amyot and Scrville, Hist. Nat. Ins. Hém. p. 583 (1843): Stål, Hem. Afric. iv, p. 108 (1866): Fieber, Rev. Mag. Zool. (3 sér.) iii, p. 399 (1875).

Body oblong: head short, broadly rounded at the apex, apical margin with a furrow: vertex flat, horizontal: face dilated, depressed at the base, lateral margins slightly sinuated beneath the eyes: ocelli placed in the furrow of the apical margin of the head at or near the eyes: thorax transverse, rounded anteriorly: scutellum a little broader than long, triangular: tegmina extending beyond the apex of the abdomen, membranous, margined at the apex, valvate behind the clavus, with 4-5 apical areas: feet moderate, posterior tibiae, a little compressed, very spinose (Stål).

49. SELENOCEPHALUS EGREGIUS, Stål.

Selenocephalus egregius, Stål, A. S. E. F. (4 sér.) iv, p. 66 (1864): Signoret, ibid. (5 sér.) x, p. 62, t. 2, f. 52 (1880).

Light olive green, smooth; vermilion spots on the head, prothorax and scutellum, glossy. Head very little broader than the prothorax, rounded in front; vertex not longer in the middle than towards the

eyes, with a biarcuated band of vermillion, margin with a slight groove, ocelli a little distant from the eyes; frons with the sutures concave, then convex at the tip, weakly impressed in front. Clypeus one and half times longer than broad, spatuliform; lobes much rounded; genæ broad, tip convex, a little sinuate in front of the subocular piece. Prothorax two and half time broader than long, thrice longer than the vertex and with a vermillion band in front which starting from the middle of the anterior margin proceeds obliquely towards the middle of the lateral borders where it ends in a round spot. Scutellum broader than long with four round dots at the base, two lateral towards the transverse stria and the tip, vermillion. Tegmina hyaline golden-yellow with the side strong and vermillion up to beyond the middle, veins blackish, the transverse blacker and with two lateral spots along the border, three at the suture and the extremity, black. Wings slightly infuscate with a lighter space in the supplementary cellule: body and feet yellow olive with deeper shades at the base of the abdominal segments: last ventral segment in ♀ scarcely longer than the preceding, emarginate in the middle with a median lobe, the sides very oblique, trilobate: valvules black, round, pubescent at the extremity; hairs yellow at the base, black at the tip: oviduct blackish just extending beyond the valvules (*Sign.*). ♀, body long, 8 millims.

Reported from Burma.

50. SELENOCEPHALUS CULTRATES, Walker.

Ledra culobato, Walker, List Hom. B. M. iii, p. 827 (1851).

Ledra cultrata, Walker, l. c. iv, p. 1159 (1851).

Selenocephalus cultratus, Stål, Overs. K. V.-A. Förh. p. 494 (1862).

Testaceous, almost fusiform; head conical, as broad as the thorax, shagreened, very slightly arched, very slightly concave along the hind border, with a very indistinct middle ridge, on each side of which there is a very slight furrow; its length a little less than its breadth; sides slightly angular; fore-part of the underside with slight diverging ridges which are at right angles to the slight oblique ridges on each side of the face; a piceous spot in front of each eye: ocelli near the hind border: thorax very slightly convex, hardly striated transversely, indistinctly impressed on each side; scutellum with a slight arched transverse suture near the tip: abdomen as broad as the thorax with seven slight black stripes; legs marked with black: tegmina pale testaceous, not punctured: wings colourless (*Walker*). Body long 10; teg. $14\frac{1}{2}$ millims.

Reported from India.

Genus PETALOCEPHALA, Stål.

Stål, Overs. K. V.-A. Förh. p. 266 (1856); Mem. Afric. iv, p. 103 (1866).

Body very oblong or a little elongate, depressed: head clypeated, foliaceous, produced anteriorly; vertex somewhat flattish; face beneath the eyes abruptly very much narrowed, thence gradually, margins very slightly defined; frons small, narrow, flattish; eyes small; ocelli situate towards the base of the vertex, more distant from the eyes than from each other: thorax transverse, sexangular, not or only very slightly narrowed forwards, lateral margins acute, anterior-lateral much longer than posterior-lateral, anterior margin slightly rounded: scutellum triangular, subequilateral: tegmina subcoriaceous, pellucid, densely punctured, testiform anteriorly conjointly convex, clavus very broad before the middle, corium obliquely rounded at the apex, veins irregularly anastomosed towards the apex, less distinct: feet somewhat short; first coxæ free; last tibiæ above remotely dentated. Type *Petalocephala bohemani* (Stål).

51. PETALOCEPHALA CHLOROCEPHALA, Walker.

Lepra chlorocephalus, Walker, List Hom. B. M. iii, p. 825 (1851).

Petalocephala chlorocephala, Stål, Ofvers. K. V.-A. Förh. p. 494 (1862).

Testaceous, paler beneath, almost fusiform; head and thorax thickly punctured; head flat, conical, as broad as the thorax, very slightly arched, very slightly concave along the hind border, green in front with a median ridge; its length a little more than half its breadth; three ridges beneath, the middle one tapering to the fore border, the side pair curved outward: thorax almost flat, shield tinged with green on each side of the hind border: legs pale testaceous: tegmina almost colourless, testaceous towards the base, brown at the tips, with a small black spot in each disc: wings colourless (*Walker*). ♂, body long, 10; teg. 20 millims.

Reported from N. India.

Genus SIVA, Spinola.

Gen. Ins. Artr., p. 167 (1852): Stål, Hem. Afric. iv, p. 112 (1866): Signoret, A. S. R. E. (5 sér.) x, p. 197 (1880).

Body very oblong, somewhat depressed, above slightly convex: head narrower than the thorax, short, rounded anteriorly or obtusely rounded subangularly, anterior margin somewhat acute but not foliaceous: vertex horizontal, flat, about twice broader than the eyes; face dilated, frons and clypeus somewhat flat; frons longer than broad; clypeus spatuliform; genæ broad with the angle more or less angular and more or less emarginate: ocelli placed at the eyes on the anterior margin of the head: thorax transverse, narrowed forwards, twice broader than long, slightly rounded at the apex, almost straight above

the scutellum, lateral margins acute: scutellum triangular, a little broader than long: tegmina barely extending beyond the tip of the abdomen, tip narrow, irregularly veined: feet moderate, last femora compressed, last tibiæ very spinose. Allied to *Selenocephalus*.

52. *SIVA STRIGICOLLIS*, Spinola.

Siva strigicollis, Spinola, Tav. Sinot. p. 127 (1852): Signoret, A. S. E. F. (5 sér.) x, p. 198, t. 6, f. 64 (1880).

Selenocephalus costalis, Stål, Freg. Eug. Resa, Ins. p. 290 (1859): A. S. E. F. (4 sér.) iv, p. 66 (1864) ♀.

Siva costalis, Stål, Öfvers. K. V.-A. Förh. p. 736 (1870) ♀.

Very pale yellow with two black spots on the tip of the vertex and one at the tip of each clavus: head and pronotum striated transversely. Head narrower than the pronotum, round in front, thickened and reflexed, with two small black median spots, a median line and slight transverse striæ; breadth between the eyes a little smaller than the eyes together: face transversely striated, stronger and more oblique on the sides: frons longer than broad, flat at the base, more convex at the tip, the grooves and base of a brighter citron yellow: genæ with parallel circular streaks on the upper border which is circular, slightly sinuate beneath the eyes, the portion below the eyes and antennæ, glossy: clypeus twice longer than broad, broadly spatuliform at the tip, transversely striated and a little carinate at the base: lores longer than broad. Pronotum twice broader than long, grooved strongly and almost parallel, anterior border slightly convex, sides oblique and posterior border almost straight, angles oblique: scutellum broader than long with three spaces bounded by the angles, those at the base almost glossy, that at the tip, strongly transversely striated. Tegmina rugose, punctured, longer than the abdomen, veins strong: wings large, milky. Pectus yellow with paler spaces; feet yellow, femora flat, posterior tibiæ very spinny: abdomen uniform yellow.

♂ last ventral segment much larger than the penultimate but less broad, pubescent, almost square with the apical margin almost straight a little sinuate in the middle, angles round; covering almost entirely the plates of the genitalia and of half the hypopygium; the former very narrow, slightly pubescent; the latter forming two valves irregularly rounded at the tip and armed on the disc and sides with a few spiny hairs.

♀ last ventral segment a little longer on the sides than the penultimate not longer in the middle, lateral angles, acute, round at the tip, the middle concave, without sinuosities: the valvules four times longer, hardly pubescent, extending a little beyond the oviduct which is short

and enclosed by the dorsal tip of the valvules, the anal tip visible from below, invisible from above (*Sign.*). Body long, 10-11 millims.

Reported from Philippines, Coromandel, India.

GENUS DRABESCUS, Stål.

Subgenus, *Ofters. Kong. Vet. Aka. Förh.* p. 738 (1870): *Dabrescus*, Signoret, *A. S. E. F.* (5 sér.) x, p. 207 (1880).

Ocelli remote from the eyes, almost more distant than the antennæ; anterior tibiæ above broadly subsulcate, superior margin of the first tibiæ distinctly dilated: formed from *Selenocephalus*.

53. DRABESCUS NERVOSOPUNCTATUS, Signoret.

Dabrescus nervosopunctatus, Signoret, *A. S. E. F.* (5 sér.) x, p. 209, t. 7, f. 72 (1880).

Yellow, spotted with brown: vertex very short, at least four times broader than long between the eyes, a little longer towards the eyes than in the middle; in front a blackish patch and in the middle, a black median line: ocelli as distant from the eyes as from the median line: frons black, very finely rugose, almost as long as broad at the base which is yellowish, but bounded on the margin itself of the head by a blacker line which is continued on the eyes in a lighter shade. Scrobo oblique reaching the vertex at the level of the eyes. Clypeus black, carinate, spatuliform, rugose and with two small excavations at the tip: Genæ yellow with a blackish spot beneath the antecoxæ which is punctured with yellow dots; almost as broad as long, with the border free, straight from the clypeus to the external angle of the eye with a weak sinuosity above the anterior coxæ and a stronger beneath the eyes. Antennæ very short, yellow, the base of the second joint and the third joint black. Pronotum nearly thrice broader than long, yellow-brown, with brown spots furnished with light yellow round dots; finely striated transversely in all its length. Scutellum brown, with irregular, long or round dots, yellow. Tegmina golden-yellow hyaline, in appearance rugose, and furnished with brown veins, almost black with white dots regularly placed, the side brown, punctured white; in addition a band at the basal third and almost the upper half, brown, lighter in the middle but forming deep spots on the side in a line with the transverse discoidal vein on the suture at the level of the tip of the clavus, in a line with the transverse veins of the apical cellules; extremity of the apical cellules and the limbus, blackish. Wings hyaline, infuscate at the tip: pectus and feet yellowish brown; base of the spines of the posterior tibiæ and the tip of the claws, blackish: abdomen yellow, with the median part of the

dorsum broadly, a narrow median band on the venter, the tip of the last segment and the oviduct, black. ♀ with last segment twice as long as the preceding, weakly sinuate at the tip with a very small extension in the middle (*Sign.*). ♀, body long, 10; broad, $3\frac{1}{2}$ millims.

Reported from N. India.

34. DRABESCUS ANGULATUS, Signoret.

Dabrescus angulatus, Signoret, A. S. E. F. (5 sér.) x. p. 210, t. 7, f. 73 (1880).

In appearance very like *D. nervoso-punctatus*, Sign., from which it differs by the vertex being angular in the middle, frons longer, tegmina rugose although hyaline, the rugosities very close to each other, yellow, whitish at the tip and streaked with black in the hollows which they form, veins brown alternated with white dots, clavus with two transverse veinlets, one between the two veins and the other between the anal vein and the claval suture. Tegmina with a white, rugose, hyaline, basal band; a broad band, streaked black; a white hyaline band; a broad band streaked with black on the antepical areas; further the length of the apical cellules, of a golden hyaline, yellow, glossy not rugose, the marginal border deeper infuscate with a brown spot at the tip of the fourth external apical area.

Vertex very short angularly rounded in front, a little longer in the middle than towards the eyes, concave in the latter direction, convex in the middle, the extreme edge forming a light yellow ridge bounded on the vertex by a black line, on the frons by a black band confluent with the frons itself which is black, yellowish brown at the tip and along the sides; longitudinally striated and without lateral grooves. The remainder as in *D. nervosopunctatus*, except that the ♀ has the last ventral segment strongly emarginate in the middle, sinuated on the sides, the angles angularly rounded, and at this point twice as long as the preceding segment, although in the middle it is hardly as long. Oviduct and genital plates yellow, the latter a little shorter of the two (*Sign.*). Body long, 9; broad 3 millims.

Reported from N. India.

Subfamily JASSINA, Stål.

Ofters. K. V.-A. Förh. (pt.) p. 735 (1870).

Genus JASSUS, Fabricius.

Syst. Rhynch. p. 85 (1803): Stål, Hem. Afric. iv. p. 119 (1866): Spångberg, Ofters. K. V.-A. Förh. no 8 p. 3 (1878): *Culidia*, Germar, Burmeister.

Body oblong, subcylindrical; head a little narrower than the thorax, obtuse or very obtuse on the anterior margin: vertex horizontal, a little

narrower than the eyes, gradually somewhat amplified forwards; face dilated, more or less reclined, frons occupying the greatest part of the intraocular breadth of the face, very slightly convex; clypeus produced and amplified at the apex, truncated: ocelli situate on the apical margin of the head near the eyes: thorax transverse, short, shorter than the scutellum: scutellum hardly shorter than long, subequilateral, large: tegmina margined at the apex, valvate behind the clavus, with five apical areas: feet somewhat long; posterior tibiae very spinose (Stål).

55. JASSUS DEPLANATUS, Spångberg.

Jassus deplanatus, Spångberg, Ofvers. K. V.-A. Förh. no 8, p. 23 (1879).

? *Celidia indica*, Walker, List Hom. B. M. iii. p. 856 (1851).

? *Tettigonia jactans*, Walker, l. c. Suppt. p. 357 (1853).

Sordid yellowish white; vertex, face and feet weakly sub ferruginous yellowish, sides of frons weakly cinabar: pronotum and scutellum black-fuscous, the former with sordidly flavescens-white granules: pectus and abdomen black, the former more or less spotted with flavescens, segments of the latter, posteriorly, narrowly margined with sordid yellow; tegmina sordidly flavescens white, densely spotted with fuscous; costal spot a little beyond the middle subtriangular, large, sordidly whitish hyaline and a fuscous spot placed behind the preceding, both fuscous at the apex, veins more obscure, fuscous, sordidly spotted with white: wings fuscous. The last segment of the abdomen in the ♀ almost twice as long as the penultimate, slightly sinuated on both sides at the apex, median lobe somewhat produced, rounded posteriorly (Spångberg). ♀, body long, 8; broad, $2\frac{1}{2}$: body and tegmina long, 9 millims.

Reported from E. India.

Genus THAMNOTETTIX, Zetterstedt.

Ins. Lapp. p. 292 (1840): Stål, Hem. Afric. p. 101, 122 (1866): Scott, E. M. M. xii. p. 21 (1875).

Body oval or very oblong: head variable in breadth and shape, obtuse or very obtuse on the anterior margin: vertex horizontal: face dilated, reclined, slightly convex; frons occupying the greatest part of the intraocular breadth of the face: ocelli placed on the anterior margin of the head at or near the eyes: thorax transverse: scutellum moderate or small, equal in length to the thorax or shorter: tegmina membranous with 4-5 apical areas, most often valvate and margined at the apex: feet moderate, posterior tibiae, very spinose (Stål).

56. THAMNOTETTIX BIPUNCTATA, Fabricius.

Cicada 2-punctata, Fabricius, Syst. Rhyng. p. 78 (1803).

Thamnotettix bipunctata, Stål, Hem. Fabr. ii. p. 82 (1869).

Yellowish green, shining, smooth: frons (except the lateral margins) entire lores or beneath the middle, a spot before the middle and the apical two-fifths of corium and lateral spots on the pectus and abdomen, black, the incisures of the abdomen greenish-yellow: wings infusate. ♂, body long $4\frac{2}{3}$; broad, $1\frac{1}{6}$ millims.

Reported from Tranquebar. Head scarcely as broad as the thorax and a little shorter very obtusely roundly subangulate: vertex about twice as broad as the eyes, hardly twice as broad as long, slightly impressed within the anterior margin; face very slightly convex: thorax hardly more than two and half times broader than long, obtusely rounded anteriorly: tegmina rounded at the apex, valvate behind the clavus (Stål).

Genus *HYLICA*, Stål.

Stål, Trans. Ent. Soc. Lond. (3 sér.) i. p. 593 (1863).

Body oblong-obovate: head acutely produced, face somewhat reclined: ocelli placed on the upper part of the head, near the anterior angles of the eyes: rostrum very short: thorax somewhat elevated backwards, tuberculated, anterior lateral margin long, anterior middle angularly produced: scutellum elevated, tuberculated: tegmina subcoriaceous, broadly membranously margined at the apex: abdomen broader than the tegmina, posterior segments acutely lobed and reflexed on both sides: feet somewhat short, anterior tibiæ above somewhat dilated, posterior above spinose. Close to *Tettigonia* (Stål).

57. *HYLICA PARADOXA*, Stål.

Hylica paradoxa, Stål, Trans. Ent. Soc. Lon. (3 sér.) i. p. 593 (1863).

Body oblong-obovate, blackish or fuscous-testaceous; face below the middle (a black spot excepted), disc or two broad stripes on the venter sordidly stramineous. Var. *a*, feet sordidly stramineous, annulated with fuscous. Var. *b*, feet fuscous-testaceous; femora palely banded. ♀, body long, 10: broad, $3\frac{1}{2}$ millims.

Frons produced at the base in a short, compressed, slightly curved horn and furnished in the middle with two small tubercles: two posterior, distant tubercles on the thorax, higher than the rest, compressed: scutellum much elevated before the middle, furnished near the apex with a conical tubercle; disc of the elevated part hollowed out and more compressly-elevated on both sides (Stål).

Reported from Burma.

Genus *PENTHIMIA*, Gorman.

Mag. Ent. iv. p. 46 (1821). Stål, Mem. Afric. iv. p. 100, 107 (1866); Fieber, Rev. Mag. Zool. (3 sér.) ii. p. 392 (1875).

Body oval or ovate, somewhat depressed: head obtuse, anteriorly rounded; vertex somewhat sloped, slightly convex before the middle; lateral margins of face, somewhat distinct; frons a little convex; clypeus flat or very slightly convex: eyes moderate: ocelli placed on the disc of the vertex, more distant from each other than from the eyes: thorax transverse, a little narrowed forwards, anterior margin round: tegmina margined at the apex, valvate behind the clavus, 4-5 apical areas: feet moderate; femora compressed; last tibiae very spinose (Stål).

58. PENTHIMIA ORIENTALIS, Walker.

Penthimia orientalis, Walker, List Hom. B. M. iii. p. 841 (1851).

Deep black, oval: head and chest convex, thinly punctured: posterior border of pectus, red: tegmina thickly punctured; tips of tegmina and wings brown. Body long, 7; teg. $14\frac{1}{2}$ millims. A variety has the abdomen red on each side towards the tip: anterior tibiae and feet mostly red (Walker).

Reported from N. India.

59. PENTHIMIA COMPACTA, Walker.

Penthimia compacta, Walker, List Hom. B. M. iii. p. 842 (1851).

Ferruginous, short, broad: head and anterior margin of thorax, black: head very short, nearly as broad as the thorax, slightly concave posteriorly, rather more convex in front; face convex, distinctly transversely sulcated; thorax convex, minutely punctured black towards the fore border: tegmina piceous, ferruginous along the posterior margin: wings almost colourless (Walker). Body long, 3; wings long, $6\frac{1}{4}$ millims.

Reported from N. India.

60. PENTHIMIA CASTANEA, Walker.

Penthimia castanea, Walker, J. L. S. Zool. i. p. 93 (1856).

Ferruginous, smooth, shining: head black in front and beneath: pectus black in front and with a black spot on each side behind: legs black; tibiae very spinose: tegmina lurid and with black spots towards the tips (Walker). Body long, 5; teg. $10\frac{1}{2}$ millims.

Reported from Malacca, Tenasserim.

ADDITIONS AND CORRECTIONS.

61. MONEPHORA TRIMACULA, Walker.

Monephora trimacula, Walker, List Hom. B. M. iii. p. 682 (1851).

Body long, $7\frac{1}{4}$; exp. teg. $18\frac{3}{4}$ millims: reported from India.

62. SPHENORHINA CONTIGUA, Walker.

Sphenorhina contigua, Walker, l. c. p. 695 (1851).

Body long, $8\frac{1}{2}$; teg. $18\frac{3}{4}$ millims: reported from N. India.

63. SPHENORHINA INTERMEDIA, Walker.

Sphenorhina intermedia, Walker, List l. c. p. 695 (1851).

Body long, $7\frac{1}{4}$; teg. $16\frac{3}{4}$ millims: reported from N. India.

64. SPHENORHINA PROXIMA, Walker.

Sphenorhina proxima, Walker, List l. c. p. 695 (1851).

Body long, $7\frac{1}{4}$; teg. $14\frac{1}{2}$ millims: reported from N. India.

65. SPHENORHINA BRACONOIDES, Walker.

Sphenorhina braconoides, Walker, l. c. Suppl. p. 185 (1858).

Body long, $6\frac{1}{2}$; teg. $16\frac{3}{4}$ millims: reported from Burma.

66. SPHENORHINA APPROXIMANS, Walker.

Sphenorhina approximans, Walker, l. c. Suppl. p. 185 (1858).

Body long, $6\frac{1}{2}$ - $8\frac{1}{2}$; teg. $16\frac{3}{4}$ -19 millims: reported from N. India.

67. POOPHILUS COSTALIS, Walker.

Ptyelus costalis, Walker, List Hom. B. M. iii. p. 707 (1851): Stål, Ofvers. K. V.-A. Förh. p. 493 (1862).

Ptyelus concolor, Walker, List l. c. p. 715 (1851).

Ptyelus dolosus, Walker, List l. c. Suppl. p. 189 (1858).

Ptyelus rotundatus, Signoret, in Thoms. Arch. Ent. ii. p. 332 (1858).

Ptyelus natalensis, Stål, Ofvers. K. V.-A. Förh. p. 97 (1853).

Poophilus natalensis, Stål, Her. Afric. iv. p. 74 (1866).

More or less weakly or obscurely ivory-grey, pubescent; tegmina varied with fuscous; frontal part of anterior margin of the head, pallid, with five black spots: wings colourless, slightly infuscate at the apex: ventral disc black: tegmina nearly thrice longer than broad, apical half narrowed: frons and anterior feet, fuscous; apex of femora pallid (*P. natalensis*, Stål). ♀, long 9-10; broad, 3- $3\frac{1}{2}$ millims.

Reported from S. and W. Africa, Ceylon, N. India. Stål notes that his Ceylon example differs from the S. African in the head being a little more obtuse and more rounded.

68. CLOVIA CONIFER, Walker.

Ptyelus conifer, Walker, List Hom. B. M. iii. p. 711 (1851); J. A. S. B. liv. (2), p. 19 no. 38 (1885).

Ptyelus similans, Walker List l. c. p. 717 (1851).

Ptyelus frenulatus, Stål, Ofvers. K. V.-A. Förh. p. 250 (1854): l. c. p. 493 (1862).

Head and thorax ferruginous, flat, very thickly and minutely punctured, covered with tawny down; head short, indistinctly striped with brown, sinuate along the hind border, more rounded in front, its length not more than one-fourth of its breadth; face piceous, roughly punctured, with ten slight oblique ridges on each side of the disc which is flat; two yellow stripes along the sides unite near the front and form a cone and are produced along the pectus: the clypeus shining, convex, ferruginous, with an oblique furrow on each side; rostrum ferruginous, tip piceous; pectus with a broad black band between the anterior and intermediate legs: abdomen ferruginous, testaceous at the base: legs testaceous: tegmina ferruginous, conical towards the tips which are almost pointed, nearly colourless for half the breadth beneath the fore-border from the middle to the tips; some forked brown streaks in the disc, a few of them communicating with an irregular curved brown stripe which extends from three-fifths of the length of the fore-border to the tip and is darkest at each end: wings colourless; veins black, tawny at the base (*Walker*). Body long, $6\frac{1}{4}$; teg. $16\frac{1}{2}$ millims.

Reported from India, Java.

69. CLOVIA PUNCTUM, Walker.

Ptyelus punctum, Walker, List Hom. B. M. iii. p. 718 (1851); Stål. Ofvers. K. V.-A. Förl. p. 493 (1862); J. A. S. B. liv. (2), p. 19 (1885).

Ptyelus bipunctipennis, Stål, l. c. p. 250 (1854); Java.

Pale tawny, covered with pale down: head and thorax almost flat: head very convex in front, with two furrows which diverge from the fore border and communicate with two more oblique impressions near the hind border; face very convex, with a blackish disc, which has about eight oblique ridges on each side; disc of the breast, blackish: tegmina with a dark brown dot on the hind border near the tip; wings colourless; veins pale stramineous (*Walker*). Body long, 5; teg. $11\frac{1}{2}$ millims.

Reported from N. Bengal, Java.

70. PTYELUS SEXVITTATUS, Walker.

Ptyelus sexvittatus, Walker, List Hom. B. M. iii. p. 715 (1851); J. A. S. B. liv. (2), p. 19 (1885).

Yellow, shining: head and chest flat, minutely punctured, adorned with six black stripes: head concave along the hind border, almost conical in front; its length less than half its breadth; face very convex with indistinct ridges on each side, black towards the clypeus which is also black: disc of the pectus mostly black: abdomen piceous: a short dorsal stripe, hind borders of the segments, and oviduct, tawny: legs

yellow; tips of the hind tibiae and of the hind feet, piceous: tegmina brown, narrow, with two very large white spots on the fore border, with two indistinct whitish marks near the base, and with two more along the hind border: wings colourless; veins fawny, pale yellow towards the base (*Walker*). Body long, 5; teg. $12\frac{1}{2}$ millims.

Reported from N. India.

71. *PTYELUS SUBFASCIATUS*, Walker.

Ptyelus subfasciatus, Walker, List Hom. B. M. iii. p. 721 (1851); J. A. S. Ben. liv. (2), p. 19 (1885).

Pale fawny, shining, very finely punctured: head above luteous, slightly concave along the hind border, very convex in front; face very convex, piceous towards the clypeus which is also piceous; ridges on each side very slight: thorax with six brown stripes; a brown spot on each side by the base of the tegmina: disc of the pectus, black: abdomen piceous, pale fawny at the base: tips of the hind tibiae, black: tegmina brown with a fawny spot on each side at the base and with two white bands, the first not reaching the hind border, the second interrupted in the middle: wings colourless, veins fawny (*Walker*). Body long, $3\frac{1}{2}$; teg. $8\frac{1}{2}$ millims.

Reported from N. India.

72. *UROPTORA HARDWICKII*, Gray.

Uroptora hardwickii, Gray, Griffith's ed. Animal kingdom, Ins. ii. p. 261, t. 90, f. 3; t. 138, f. 5 a-d. (1832); Walker, List Hom. B. M. iii. p. 645 (1851).

The characters of the genus and species are given thus by Gray:—"the thorax produced over the head; the posterior legs simple and with the ovipositor forming a long tube; fulvous with the tegmina spotted between the veins with brown; the legs and ovipositor obscure": near *Athalion*, Latr. Body long, 18; ovipositor long, 13 millims.

Reported from Nepal: the Indian Museum possesses specimens from Sikkim, Assam.

Journal, liii. (2) No. 3 for 1884, p. 219 No. 26, *H. transversa*, Walker is the same as *Cheana dives*, West l. c. p. 221, No. 34.

l. c. p. 224, *D. lateralis*, Walker, No. 41 is the same as *D. vibrans*, Walker, No. 43.

l. c. p. 225, *D. immacula*, Walker, No. 52 is the same as *D. mannifera*, Linn, No. 39.

l. c. p. 229, omit *C. sublineata*, Walker, No. 70: Walker's locality is incorrect.

l. c. p. 229. *C. anwa*, Walker, No. 71 is included in *C. striata*, Walker, List i. p. 206.

l. c. p. 230. *Cicada subvitta*, Walker, No. 73 is a TIBICEN.

l. c. p. 230. *Cicada xantes*, Walker, No. 75 is a CICADATRA.

l. c. p. 231, *Fidicina operculata*, No. 81 is the same as *Fidicina Bubo*, Walker, List, p. 82 and is a CRYPTOTYMPANA.

l. c. p. 231. *Fidicina corvus*, Walker, No. 82 is a CRYPTOTYMPANA.

l. c. p. 232. *F. apicalis*, Germar, No. 14 includes also *Cicada semicincta*, Walker, List, i. p. 142.

l. c. p. 232. *M. illustrata*, Am. & Serv. No. 85 and *M. recta*, Walker, No. 86 are the same as *M. conica*, Germar.

l. c. 233. *M. quadrimacula*, Walker, No. 93 is a CICADATRA.

l. c. p. 233. *M. tersichore*, Walker, No. 94 is a DUNDUBIA.

Journal liv. (2) No. 1 for 1885, p. 19. *P. quadridens*, Walker, No. 39 includes as a variety *Glovina gullifer*, Walker, l. c. p. 20, No. 44 and is a CLOVIA.

X.—Descriptions of some new Indian Rhopalocera.

By LIONEL DE NICÉVILLE.

[Received, Feby. 7th.—Read, March 4th, 1885.]

(With Plate II.)

SYMBRENTHIA SILANA, n. sp., Pl. II, Fig. 9, ♂.

♂. UPPERSIDE black, *forewing* with a very regular streak from the base to beyond the cell extending slightly below the median but not touching the subcostal nervure, a subapical irregular streak not quite reaching to the costa or the outer margin, beyond which is a curved narrow lunular line; a broad band placed obliquely from the second median nervule to the inner margin. *Hindwing* with a broad discal band, a submarginal one less than half the width of the discal band becoming attenuated anteriorly, an obsolete (hardly traceable) very fine marginal line; all these markings bright ochreous paler in the middle. UNDERSIDE with the markings as above but glossy opaline white, the black ground-colour replaced by prominent black and yellow tessellations. *Hindwing* with a discal series of five imperfect somewhat cone-shaped ocelli of moderate size, the three nearest the anal angle centred with brilliant metallic blue; three lunules of that colour at the anal angle. *Both wings* with the margin black, a submarginal fine line defined with yellow on both sides.

♀. Larger, the *forewing* broader, the outer margin evenly curved. Markings throughout paler, except the blue ones on the underside of the