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**STUDIES IN MALAYAN, MELANESEIAN AND AUSTRALIAN
TETTIGONIIDAE (ORTHOPTERA).**

BY MORGAN HEBARD.

In 1920 the author published a first paper, dealing with that part of the collections here treated which covered the section belonging to the family Mantidae.¹

Though the present paper is considerably larger, the number of species of Tettigoniidae known from the regions under consideration is very much greater and, as a result, the present work is not intended to be in any way monographic. A number of difficulties have been cleared up and the proper sequence of species in some places we feel is now defined.

Much work remains to be done, and the Tettigoniidae of these regions must be monographed before the student will be able to determine material in small series. The literature on the group is too vast and scattered to be accessible, unless a great amount of preliminary work has been done; and reference to a large and comprehensive library is a constant necessity. In order to aid in locating the literature, particularly that subsequent to Kirby's Catalogue, numerous references have been given in the present study.

All of the material here recorded, unless otherwise stated, is in the author's collection at THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, with the exception of duplicate specimens from Mr. C. F. Baker, representing species not in his collection; such will be forwarded to him whenever desired. Five hundred and thirty-one specimens are recorded, representing ninety-four genera and one hundred and ninety-one species, of which fourteen genera, one subgenus, seventy-three species, and one subspecies, are new. Unfortunately, the great majority of species are represented by but one or two specimens.

We have found that Wallace's line separates quite as large a percentage of species of Tettigoniidae as of the Mantidae, clearly delimiting the Malayan from the Melanesian fauna.

¹ Proc. Acad. Nat. Sci. Phila., 1920, pp. 14 to 82.

Accurate and full descriptions of the genitalia have been found of the greatest importance. Failure by Brunner and Redtenbacher to describe these parts adequately constitutes one of the most serious defects in their monographs. The accuracy and finish shown in the accompanying figures, particularly of the Listroscelid genitalia, are due to the exceptional skill of Miss Mary B. Lane. We are deeply indebted to her for the unusual effort which was required in reproducing these indescribably intricate parts.

We have given the number of spines on the ventral femoral margins for many species, not because we believe the exact number to be diagnostic for any species, but because each species will probably be found to have a definite range in number and development² of such spines, often differing from that of its nearest relatives. In some groups we have already found these spines to be decidedly variable in certain species, quite constant in others. In our studies of the South American species of the genus *Conocephalus*, where we had large series of many species, the range in a species of such spines was found to constitute a valuable aid.

PHANEROPTERINAE

Group ELIMAEAE

Elimaea insignis (Walker)

1869. *Phaneroptera insignis* Walker, Cat. Dermapt. Saltat. Br. Mus., II, p. 344. [σ , Silhet.]

Khasia Hills, Assam, 1 σ , 1 φ .

The treatment, by Brunner, of material from Assam, as the synonymous *annulata*,³ is much more satisfactory than Walker's diagnosis.

Elimaea annamensis new species. Plate XI, figures 1 and 2.

This relatively large species is of a general pale green coloration, excepting the dorsal surface of the head, pronotum and tegmina, which is uniform dark reddish brown, and the antennae, which are of a similar dark color ventrad, slightly paler dorsad and show a few, very small and widely separated, pale annuli distad.

It is very closely related to *E. schmidti* Krausze, described from the same locality.⁴ It differs from that species in having the occiput and pronotal disk dark, in the shorter pronotum, more elongate tegmina and decidedly more elongate limbs.

Six species have been described as members of the genus *Elimaea*

² Highly specialized spines occur on the ventral femoral margins in the Pseudophyllid genus *Morsimus* and its allies.

³ Monogr. der Phaneropteriden, p. 92, pl. I, figs. 10, a to d, (1878).

⁴ Ins.-Börse, XX, p. 2, (1903).

from Than-Moi, Tonkin, alone, by Krausze and Carl. We are told by Dohrn⁵ that one of the former's species is referable to *Hemielimaea* and another to *Ducetia*. We believe, however, that the numerical abundance of the species of *Elimaea* in Indo-China is very large.

In Brunner's key⁶ the species runs nearest to *appendiculata* Brunner. The insect is large, with comparatively broad tegmina for the genus, though not as large or with tegmina as broad as in *E. insignis* (Walker).

TYPE: ♂; Phuc-Son, Annam. November to December. (From H. Fruhstorfer.) [Hebard Collection, Type no. 783.]

Cephalic femora slightly compressed and distinctly curved in a Phasmoid manner; dorsal surface convex, but with its internal margin weakly ridged, except in the more slender proximal portion. Cephalic coxae unarmed. Foramina of cephalic tibiae flattened conchate. Tegmina with median vein branching at end of proximal third, this branch sending three branches to the sutural margin distad. Pronotal disk with surface weakly convex to flattened caudal portion, lateral margins very broadly and evenly concave, the least width of disk meso-cephalad; lateral lobes slightly longer than greatest (caudal) depth, ventral margin weakly concave in cephalic half, weakly convex in caudal half, these portions forming a very weak rounded angulation at their juncture. Tegmina and wings fully developed, the former with greatest width decidedly greater than pronotal length, narrowing very slightly and evenly to the broadly rounded apex. Femora with genicular lobes bi-spinose. Caudal femora with dorsal surface deplanate in proximal three-quarters. Ventral femoral margins armed with minute but rather broad spines, as follows. Cephalic internal 11 and 12, cephalic external 6, median internal 0, median external 15, caudal internal 0 and 1, caudal external 12 and 15. Supra-anal plate elongate shield-shaped, with apex narrowly acute-angulate. Cerci cylindrical, curved and gradually tapering to near apex, where they are briefly enlarged, the external margins showing weak emargination at base of this enlargement, the apical enlarged portion with a low, longitudinal ridge extending to the apex, which there projects as a short, stout tooth. Subgenital plate elongate and slenderly produced, cleft for slightly over half its length, the two distal portions thus formed slender, parallel, curving very weakly dorsad, of nearly equal width in distal portions to their rounded apices.

Occiput and disk of pronotum victoria lake, this continued along the sutural margin of the tegmina as a broad suffusion, narrowing and disappearing near their apices. Disk of pronotum showing a

⁵ Stett. Ent. Zeit., LXVII, p. 352, (1906).

⁶ Monogr. der Phaneropteriden, p. 91, (1878).

slightly paler coloration medio-longitudinally. Other portions probably light green in life, now yellowish with tegmina strongly tinged with green. Antennae blackish victoria lake ventrad, slightly paler dorsad; showing distad two widely spaced, very small buffy annuli. Tegmina with very minute flecks of victoria lake in all areas between veins of discoidal field, these more numerous toward sutural margin and mesad. Tarsi tinged with brown.

Length of body (squeezed out) 30, length of pronotum 5.2, least width of pronotal disk 2, greatest (caudal) width of pronotal disk 3, greatest (caudal) depth of pronotal lateral lobe 3.4, length of pronotal lateral lobe 4, length of tegmen 39, greatest width of tegmen 7.2, width of tegmen near apex, 5.7, length of cephalic femur 10.2, length of caudal femur 28 mm.

The type of this handsomely colored insect is unique.

Elimaea lamellipes new species. Plate XI, figure 3.

This species is closely related to *E. caricifolia* Haan,⁷ described from Loetontoer, Borneo. Brunner⁸ indicated that his *E. femorata*, described from Borneo, might represent that species. After careful comparison of the original descriptions, we follow Dohrn who, in 1906, placed *femorata* in synonymy under *caricifolia*.

The present insect differs in the generally smaller size, with tegmina much narrower. Compared with the female, described by Brunner as *femorata*, further decided difference is found in the median vein of the tegmina, which does not branch mesad, the tegmina which do not widen distad and the median femora which are not carinate dorsad.⁹

TYPE: ♀; Labuan, British North Borneo. [Hebard Collection, Type no. 784.]

Cephalic femora very strongly compressed and strongly curved in a Phasmoid manner, lamellate dorsad except in immediate proximal portion, this formed by the external margin which longitudinally shows a broad convexity. Cephalic coxae unarmed. Foramina of cephalic tibiae flattened conchate. Face, to clypeal suture, strongly swollen. Tegmina with median vein branching at end of proximal two-fifths, this branch sending two branches to the sutural margin distad. Pronotal disk with surface flattened, showing very feeble convexity cephalad, lateral margins very broadly concave but showing irregularity by a minute emargination at the principal sulcus, caudad of this the disk is defined from the

⁷ Verh. Nat. Gesch. Nederl. overzee. bezitt., Zool., Ins., p. 195, (1842).

⁸ Monogr. der Phaneropteriden, p. 98, (1878).

⁹ This latter feature may, however, be due to an error in description. No species of *Elimaea* is known to us having the median femora carinate like the cephalic femora.

lateral lobes by a strong but rounded angulation. Lateral lobes of pronotum with length equal to greatest (caudal) depth, ventral margin very broadly convex. Tegmina and wings fully developed the former with greatest width decidedly greater than pronotal length, narrowing slightly and evenly to the broadly rounded apex. Femora with genicular lobes bispinose, except the external of the caudal femora which are unispinose. Caudal femora with dorsal surface deplanate in proximal two-thirds. Ventral femoral margins armed with very minute spines, as follows. Cephalic internal 8 and 9, cephalic external 11, median internal 0, median external 14 and 16, caudal internal 0, caudal external 7 and 8. Supra-anal plate very elongate, symmetrically trapezoidal, the lateral margins showing traces of concavity, the truncate apex with margin showing a trace of bilobation. Ovipositor curved dorsad, this slightly strongest proximad, apex rounded; lateral faces with faint transverse rugae distad, dorsal margin serrulate to near base, ventral margin serrulate in distal portion, the distal serrulations all rounded. Subgenital plate very small, triangular, with apex broadly truncate.

General coloration pale green. Antennae pale ventrad, suffused with brown dorsad in proximal portions (remainder missing). Tegmina with extremely numerous but exceedingly minute brown flecks in areas between the veinlets in the discoidal field, these fewer between median vein and its branch and absent between proximal portions of median and ulnar veins. Dorsal portions of lateral lobes of pronotum with minute dark brown dots, these more numerous at the juncture with the disk, which is defined by a faint yellowish line. Median limbs with small dark brown dots on external surface, cephalic and caudal limbs similarly marked with subobsolete dots. Tarsi tinged with brown.

Length of body (squeezed out) 23.5, length of pronotum 4.1, least width of pronotal disk 2.1, greatest (caudal) width of pronotal disk 2.8, greatest (caudal) depth of pronotal lateral lobe 3.3, length of pronotal lateral lobe 3.3, length of tegmen 35, greatest width of tegmen 7.1, width of tegmen near apex 5.3, length of cephalic femur 7.7, length of caudal femur 20.7, length of ovipositor 6.4 mm.

The type is unique.

*Elimaea bakeri*¹⁰ new species. Plate XI, figures 4, 5 and 6.

The present insect belongs to that section of the genus including forms with relatively less constricted pronotal disk and broader tegmina. It shows nearest agreement with the specimen described by Brunner as *parumpunctata* (Serville)¹¹ differing in the

¹⁰ Named in honor of Professor C. F. Baker, Dean of the College of Agriculture, University of the Philippines, through whose kind assistance a large portion of the material here studied, has been secured.

¹¹ Monogr. der Phaneropteriden, p. 98, (1878). That specimen, a female from the Philippines, we do not believe represents Serville's *parumpunctata*, described

coloration of the antennae, pronotum and limbs, while, though of the opposite sex, the tegmina are shorter and narrower and the caudal femora shorter, showing a differentiation in these proportions greater than we believe can be attributed to sexual differentiation.

The present is a medium large species, in life probably of a pale green coloration, the lateral margins of the pronotal disk outlined in a series of brown flecks, the tegmina with brown flecks, the cephalic and median femora proximo-externally splotched and flecked with brown and the median and caudal tibiae with a proximo-external fleck of the same color.¹²

The male subgenital plate is forked to near its base and divided into two strongly recurved, almost flagellate, processes, which proximad are embraced by the cerci.

TYPE: ♂; Davao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 785.]

Size and form medium for the genus. Cephalic femora rather strongly compressed and curved in a Phasmoid manner, lamellate dorsad except in immediate proximal portion, this formed by the external margin which longitudinally shows a very weak convexity. Cephalic coxae each armed with a very small spine. Foramen of cephalic tibiae conchate, deplanate dorsad and strongly flattened laterad. Face to clypeal suture somewhat swollen, bounded on each side by a broadly and shallowly concave area. Tegmina with median vein branching mesad, this branch sending two branches to the sutural margin distad. Pronotal disk with surface flattened, lateral margins very broadly and evenly concave. Lateral lobes of pronotum with length slightly greater than greatest (caudal) depth; ventral margin horizontal, almost straight, curving gently into the ventro-cephalic and ventro-caudal angles. Tegmina and wings fully developed, the former with greatest width de-

from a female from Java (*Hist. Nat. Ins., Orth.*, p. 418, (1839).) Dohrn, recognizing this difference, has named the species *brunneri* and has described very briefly the male sex. That sex is seen to differ from the male of *bakeri* in having the supra-anal plate sharply acute distad, the cerci apparently more simple and not embracing the subgenital plate (*Stett. Ent. Zeit.*, LXVII, p. 348, (1906).) Unfortunately Karny overlooked this and has again renamed the species *brunneri* (*Zool. Mededeel. Rijks Mus. Nat. Hist. Leiden*, V, p. 183, (1920).) It would appear that Haan, describing a Javanese male as *parumpunctata* Serville, really had that species (*Verh. Nat. Gesch. Nederl. overzee. bezitt.*, *Zool., Ins.*, p. 192, (1842).) If this is true, *parumpunctata* is a species belonging to that section of the genus in which the pronotal disk is more decidedly constricted and the tegmina narrower.

¹² To this species, *E. puncticosta* Bolívar (*Asoc. Espanola Prog. Cienc., Sec. 4a, Cien. Nat., Junio*, p. 8, (1913)) is apparently also related, differing, however, in a number of important features. It is unfortunate that that author chose to describe as new an imperfect female of this genus which contains so very many species and more unfortunate that such important measurements as the pronotal width, proportions of its lateral lobes and tegminal width were not given.

ecidedly greater than the pronotal length, scarcely narrowing to the broadly rounded apex, the curvature of which is stronger toward the costal than toward the sutural margin. Femora with genicular lobes bispinose, except those of caudal femora which are unispinose. Caudal femora with dorsal surface deplanate in proximal half. Ventral femoral margins armed with very minute spines, as follows. Cephalic internal 13 and 14, cephalic external 8 and 10, median internal 0, median external 17, caudal internal 0, caudal external 11 and 13. Supra-anal plate very elongate, symmetrically trapezoidal the lateral margins weakly convergent in proximal two-thirds, thence parallel but distad curving broadly into the truncate apex. Cerci elongate, cylindrical, curving inward, gradually and very feebly enlarging in proximal fourth, thence gradually tapering to near apex where they are suddenly thickened and truncate, the ventro-internal portion produced in a broad, acute, knife-like plate, resembling the dactyl of a mole-cricket. Subgenital plate very elongate, curving evenly dorsad with apices above distal portion of abdomen; cleft to near base and sulcate to base itself, the two processes thus formed slender and tapering, weakly divergent in proximal half, thence cylindrical weakly convergent and armed on the dorsal surface ¹³ with very minute teeth to their closely adjacent apices.

General coloration yellowish brown, probably pale green in life. Antennae light brown ventrad, darker dorsad, with weakly defined dark annuli. Head immaculate. Pronotum with a series of blackish flecks and dots along area of intersection of disk and lateral lobes. Tegmina with an occasional fleck of dark brown in areas between veins of distal portion of section between median vein and its branch and throughout medio-ulnar section, areas between veins in ulnar-anal section with very numerous, exceedingly minute, dark brown flecks. Cephalic and median femora with a small longitudinal blotch and a few flecks of dark brown proximad on the external face near the ventral margin. Median and caudal tibiae with a minute fleck of dark brown proximad on the external face.

Length of body 22, length of pronotum 4.7, least width of pronotal disk 2.4, greatest (caudal) width of pronotal disk 3.3, greatest (caudal) depth of pronotal lateral lobe 3.9, length of pronotal lateral lobe 4.1, length of tegmen 36.2, greatest width of tegmen 6.2, width of tegmen near apex 6, length of cephalic femur 8.1, length of caudal femur 25 mm.

The type is unique.

Elimaea flicauda new species. Plate XI, figure 7.

This insect resembles more closely *E. parumpunctata* (Serville) in general form, but shows a type of genitalic specialization agreeing

¹³ Due to the curvature of the plate this surface, in the distal portion, faces ventrad.

rather with that of *E. bakeri* here described and *E. brunneri* Dohrn. To the latter species closer relationship is shown.

The male, however, may be quickly recognized by the great length of the two recurved, filiform processes into which the subgenital plate, cleft to its base, is produced.

TYPE: ♂: Los Baños, Laguna, Luzon, Phillipine Islands. October 21, 1914. (E. F. Banzou.) [Hebard Collection, Type no. 855.]

Size medium, form very slender for the genus. Cephalic femora and foramina of cephalic tibiae as described for *bakeri*. Cephalic coxae unarmed. Face to clypeal suture flattened, with lateral concave areas weaker than in *bakeri*. Tegmina very narrow, scarcely widening distad; median vein branching shortly before median point, this branch sending two branches to the sutural margin distad. Pronotum narrower but otherwise quite similar to that of *bakeri*, except that the ventro-cephalic angle of the lateral lobes is sharp, forming an angle very slightly greater than ninety degrees; lateral margins of pronotal disk rounded, parallel on prozona, then diverging evenly and weakly to caudal margin. Tegmina and wings fully developed, very narrow, the former slightly narrower than the pronotal length except in stridulating field, showing very faint widening to distal portion; apex well rounded, median in position. Genicular lobes of cephalic femora bispinose; of median femora unispinose, rounded, (caudal femora missing). Ventral femoral margins armed with very minute spines, as follows. Cephalic internal 8 and 8, cephalic external 0, median internal 0, median external 2. Supra-anal plate declivous, linguliform, distinctly over twice as long as basal width, with apex rounded. Cerci as described for *bakeri*, but tapering from the base and slightly more slender. Subgenital plate cleft to base, the lateral portions slender, narrowing evenly and produced caudad some distance, then curved dorsad and directed dorsad as two extremely elongate, nearly straight, thread-like processes, their apices reaching to the dorsal margins of the tegmina when these are in repose, their apices faintly thickened.

General coloration buffy tinged with green, probably pale green in life. First joint of antennae buffy, tipped with brown (other portions missing). Head showing traces of a postocular yellowish line on each side, this continued along lateral margins of pronotal disk with minute scattered dots of dark brown (particularly externally), caudal margin of disk with regularly spaced dots of the same. Tegmina veronese green, stridulating field and costal margin very narrowly buffy, areolae between median vein, its branch and ulnar vein, with brown flecks mesad, toward sutural margin the minute intervals between the veinlets are brown but inconspicuous. Cephalic femora with a few flecks of dark brown on external face near ventral margin, this weaker on median femora; spines dark brown.

Length of body 17, length of pronotum 4.3, least width of pronotal disk 1.8, greatest (caudal) width of pronotal disk 2.7, length of pronotal lateral lobe 3.2, greatest (caudal) depth of pronotal lateral lobe 3.1, length of tegmen 34.7, median width of tegmen 4.2 width of tegmen near apex 4.2 length of cephalic femur 8.2, length from base to tip of subgenital plate 8.6, approximate actual length of subgenital plate 14 mm.

The type is unique.

Elimaea parumpunctata (Serville) Plate XI, figures 8 and 9.

1839. *Phaneroptera parumpunctata* Serville, Hist. Nat. Ins., Orth., p. 418.

[♀, Java.]

1842. *L[ocusta] parumpunctata* Haan, Verh. Nat. Gesch. Nederl. overzee. bezitt., Zool., Ins., p. 192. [♂, Java.]

Batu Sangkar, Padangische Bovenland, Sumatra, August and September, 1901, (Harrison and Hiller), 1♂, [Acad. Nat. Sci. Phila.].

We have commented upon this species on page 125, footnote 11. For the individual before us we would note the following features: Head immaculate. Pronotum constricted, the disk with surface distinctly concave caudad and with lateral margins concave suffused with brown and flecked with blackish, the lateral portions of the caudal margin narrowly black. Lateral lobes of pronotum very slightly longer than deep, ventral margin very weakly convex. Tegmina very narrow, widening slightly in distal portion to the rounded apex; median vein branching mesad, entire anal field velvety blackish, showing a maroon tinge, this continued very narrowly but solid to near end of sutural margin, adjacent intervals between veins with very numerous minute flecks of this color, other areas between veins of discoidal field usually with one or more similar flecks mesad, except in distal portion. Median femora with a larger brown fleck proximad on the external surface. Cephalic femora with spines and surface at their immediate bases embrowned. Limbs elongate and slender. Cephalic femora curved in a Phasmoid manner, with dorso-external margin decidedly lamellate except in proximal portion. Auditory foramen of cephalic tibiae conchate, but flattened dorsad and laterad. Ventral margins of femora armed, as follows. Cephalic internal 7 and 8, cephalic external 7 and 8, median internal 0, median external 11 and 12, caudal internal 0, caudal external 6 and 7. Genicular lobes of femora bidentate, except the cephalic internal, one median external and one caudal external, which are unidentate. Supra-anal plate small, slightly longer than wide, evenly rounded distad. Cerci comparatively short, simple, curving evenly inward to the aciculate apex. Subgenital plate comparatively short, cleft in distal third, the slender apical fingers thus formed separated by a narrowly U-shaped interval.

Length of body 17, length of pronotum 4, least (meso-cephalic) width of pronotal disk 1.2, greatest width of pronotal disk 2.4,

length of tegmen 34.4, least (median) width of tegmen 4.3, greatest (distal) width of tegmen 4.8, length of cephalic femur 9.6, length of caudal femur 23.7 mm.

Elimaea roseo-alata Brunner. Plate XI, figures 10 and 11.

1891. *Elimaea roseo-alata* Brunner; Verh. Zool.-bot. Ges. Wien, XII, p. 49. [♀; Deli, Sumatra.]

Goenong Soegi, Lampong, Sumatra, October and November, 1901, (Harrison and Hiller), 1♂, [Acad. Nat. Sci. Phila.].

We do not agree with Dohrn in considering *roseo-alata* a synonym of *parumpunctata* (Serville).

The following characters are given for the hitherto undescribed male sex. Tegmina widest meso-proximad, narrowing strongly mesad, then very slightly to the broadly rounded apex; anal field dark brown, with veinlets light brown; discoidal field light brown with very numerous minute flecks of dark brown toward anal vein and larger (twenty or more) flecks mesad in areolae of discoidal field. Wings with veins pink and intervening portions hyaline and strongly (pink and green) iridescent. Dorsal surface of abdomen pink. Tibiae suffused distad. Supra-anal plate nearly twice as long as proximal width, lateral margins weakly convergent proximad, then nearly parallel, rounding into the truncate apex. Cerci cylindrical, strongly curved inward, particularly distad, there tapering sharply off into a long, sharp, slightly curved, apical spine. Subgenital plate elongate, tapering strongly proximad, the long and narrow shaft beyond with lateral margins very weakly concave, the apex itself rather deeply cleft; the two portions thus formed projecting latero-distad and acute-angulate.

Length of body 17, length of pronotum 4.3, least width of pronotum 1.3, greatest (caudal) width of pronotum 2.7, length of tegmen 30, greatest (meso-proximal) width of tegmen 6.4, least (distal) width of tegmen 3.8, length of cephalic femur 8, length of caudal femur 21.8 mm.

Mirollia aeta new species. Plate XI, figures 12 and 13.

This insect is readily distinguished from the Javanese genotype, *carinata*, by its smaller size, weak though distinct limb spination and, in the male sex, the strikingly distinctive genitalic specialization.¹⁴

A full generic diagnosis has been given by Brunner.¹⁵

¹⁴ It is very possible that the female recorded by Karny as *M. carinata* (Haan), from Mount Makiling, Luzon, Philippine Islands, represents this species (*Philippines Jour. Sci.*, XVIII, p. 613, (1921).)

¹⁵ Monogr. der Phaneropteriden, p. 106 and pl. I, figs. a to c, (1875).

TYPE: ♂; Dapitan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 786.]

Size small, form compact, limbs short. Vertex weakly sulcate and moderately declivous to acutely rounded apex, which is strongly sulcate to the apical marginal border and fails to extend cephalad as far as the plane of the face by half the width of the first antennal joint. Maxillary palpi very elongate, fourth joint two-thirds as long as the third, fifth two and one-half times as long as the fourth. Margin of pronotal lateral lobes broadly convex from the rather deep humeral sinus to the ventro-cephalic angle. Metanotum hyaline and swollen beneath the stridulating field of the tegmina. Dorsal abdominal tergites unspecialized, but those proximad thickly supplied with fine hairs. Supra-anal plate very small and inconspicuous. Cerci very elongate, curving weakly outward, then strongly inward distad; shaft swollen proximad, then tapering, the distal portion slender and cylindrical to the bifid apex. Apex itself rounded conical, with a projection at its base on the inner side slightly more slender but twice as long, tapering to a minute uncinate tooth, which is curved ventrad. Subgenital plate tapering strongly proximad, thence elongate and slender but extending caudad only as far as proximal two-thirds of cercus; apex deeply and narrowly V-emarginate, the slender fingers thus formed very delicate, with apices rounded. Genicular lobes of femora rounded. Ventral femoral margins with the following minute spines distad. Cephalic internal 2 and 3, cephalic external 0, median internal 0, median external 3 and 3, caudal internal 1 and 1, caudal external 4 and 5.

General coloration pale yellowish green, probably pale green in life. Antennae with first two joints suffused with whitish dorsad and with large brown suffusions ventrad, succeeding joints with homologous brown suffusions, which become rapidly weaker and disappear distad. Pronotum with symmetrically arranged streaks of heavier pigmentation and with a minute brown fleck between the sulci on each side of the median carina. Tegmina immaculate except for a small brown suffusion mesad in the stridulating field. Limbs immaculate except for a brown line on each side of the enlarged proximal portions of the cephalic tibiae.

Length of body 14, length of pronotum 4.7, length of pronotal lateral lobe 3.4, greatest (caudal) height of pronotal lateral lobe 3.4, length of tegmen 21.2, width of tegmen 5.7, length of cephalic femur 3.8, length of caudal femur 11.8, length of cercus 5 mm.

The type of this interesting species is unique.

Mirollia cerciata new species. Plate XI, figures 14, 15 and 16.

This insect agrees closely with *M. aeta* here described, in general form, but is quickly separated by the very different vertex, punctate tegmina and distinctive male genitalia.

TYPE: ♂; Labuan, British North Borneo. [Hebard Collection, Type no. 787.]

Vertex sulcate proximad, thence suddenly and sharply declivent, the distal portion represented by a delicate rounded ridge, which fails to extend cephalad as far as the plane of the face by half the width of the first antennal joint. Maxillary palpi elongate but much shorter than in *aeta*, fourth joint slightly shorter than third and slightly over half as long as fifth. Margin of pronotal lateral lobes less broadly and evenly convex than in *aeta*, with humeral sinus weaker, the ventro-caudal angle broadly but more strongly rounded and the ventral margin thence nearly straight to the ventro-cephalic angle. Metanotum hyaline and swollen beneath stridulating field of tegmina. Median segment with a transverse proximal ridge adjacent to that area. First abdominal tergite with a large round area mesad which is deeply covered with a wax-like substance, second tergite with a smaller but similar area, third tergite with a much smaller and weaker area. Supra-anal plate very small and inconspicuous, rounded trigonal, with dorsal surface concave and lateral margins wrinkled mesad. Cerci very elongate, very weakly sigmoid except distad where they are strongly curved inward, shaft swollen and gradually enlarging in proximal half, this swelling occurring on the internal portion only, thence tapering and slender to the incurved, enlarged and bluntly rounded apex, at the base of which proximad is a small process directed distad and parallel to the true apex, beyond which it projects slightly and is there terminated in a small, chitinous, sharply decurved tooth. Subgenital plate extending caudad to near cercal apices, narrowing gradually in proximal portions and thence medio-longitudinally carinate, deeply and very narrowly V-emarginate distad, the broad fingers thus formed with apices more strongly convex externally than internally. Limbs as in *aeta*. Ventral femoral margins with the following minute spines distad. Cephalic internal 0, cephalic external 0, median internal 0, median external 0 and 3, caudal internal 0 and 1, caudal external 2 and 3.

General coloration pale yellowish green, probably pale green in life. Antennae with first two joints suffused with whitish dorsad and with large brown suffusions ventrad, remaining portions yellowish with weakly defined, narrow, suffused brown annuli. Stridulating field of sinistral tegmen showing a large median suffusion of dark brown; other portions of tegmina with a small but visible fleck of blackish brown mesad in all the larger areolae except distad in scapular field and with all the countless and microscopic intervals between the veinlets toward the sutural margin black, these areas so minute that they are invisible to the naked eye and do not even cause the tegmina to there appear darker in shade. Pronotum with all but lower portions of lateral lobes showing a profusion of minutely microscopic brown dots and with one larger, though minute, brown dot between the transverse sulci on each side of the median carina. Cephalic femora with a weak suffusion and flecks of brown proximad on the external surface. Cephalic tibiae with enlarged proximal portions suffused with

brown and with a dark brown line on each side. Other portions of limbs immaculate.

ALLOTYPE: ♀; Sandakan, British North Borneo. (From C. F. Baker.) [Hebard Collection.]

Agrees closely with male except that the pronotum lacks all but the larger of the minute flecks. Ovipositor broad, angularly bent upward in proximal portion, greatest width meso-distad, apex rotundato-truncate; ventral margin evenly convex, very minutely serrulate at apex, dorsal margin very minutely serrulate except in brief proximal portion. Subgenital plate quadrate-emarginate meso-distad, the lateral portions rotundato-acute-angulate.

Length of body ♂ 14, ♀ 15; length of pronotum ♂ 4.6, ♀ 4.1; greatest (caudal) depth of pronotal lateral lobe ♂ 3.3, ♀ 2.8; length of pronotal lateral lobe ♂ 3.3, ♀ 2.8; length of tegmen ♂ 20, ♀ 20.7; width of tegmen ♂ 5.7, ♀ 5.5; length of cephalic femur ♂ 3.7, ♀ 3.7; length of caudal femur ♂ 11, ♀ 11; length of male cercus 5.2, length of ovipositor 5.3, greatest width of ovipositor 2.7 mm.

The species is known from the described pair.

Ducetia thymifolia (Fabricius)

1775. *L[ocusta] thymifolia* Fabricius, Syst. Ent., p. 283. [New Holland (= Australia).]

Chandkhira, Silhet, Assam, 1 ♂.

Singapore, British Straits Settlements, (from C. F. Baker), 2 ♀.

Labuan, British North Borneo, 1 ♂.

Baguio, Benguet, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂.

Los Baños, Laguna, Luzon, Phillipine Islands, (from C. F. Baker), 1 ♂.

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 2 ♀.

Malinao, Tayabas, Luzon, Phillipine Islands, (from C. F. Baker), 1 ♂.

The Mount Makiling individual is the only wholly brown specimen in the present series, the others showing various types of the green color phase.

PROHIMERTA new genus.

This genus is an aberrant member of the Group Letanae, as the cephalic tibiae do not entirely lack dorsal spines. In general appearance the insect agrees best with species of *Letana* Walker, (of which *Pyrrhicia* Stål is a synonym), differing in the even broader

tegmina with distinctive venation, spination of the cephalic tibiae and different type of male genitalic development. Nearest actual agreement, however, is with *Himerta*, the male genitalia being similar in type, but *Prohimerta* differs in the weakly sulcate vertex, lateral lobes of pronotum which are not longer than high, much larger size, much longer and broader tegmina (with branches of the median vein strongly oblique, as in the genus *Phaula* Brunner) and spination of the cephalic tibiae.

Though the dorsal margins of the cephalic tibiae bear a few spines, the sudden constriction beyond the auditory foramina and the male genitalic development show the position of the genus to be in the Group Letanae and not in the Group Ducetiae.

GENOTYPE.—*Prohimerta annamensis* new species.

Cephalic coxae unarmed. Pronotum with disk flattened and caudal margin broadly convex, the lateral lobes roundly inserted but with angulation distinct, humeral sinus distinct. Vertex weakly sulcate and declivous to the rounded, horizontal distal extremity, which is separated by a considerable gap from the small, erect, rounded frontal fastigium. Male subgenital plate without styles, deeply cleft, with the fingers thus formed nearly parallel. Cephalic tibiae with apert auditory foramina, these members there stout but suddenly constricted beyond; sulcate dorsad bearing a proximo-external, meso-distal-external and on each side a distal very small spine. Pronotum and limbs, except caudal tibiae, rather thickly supplied with very small, stiff, short, erect hairs. Tegmina decidedly wider than pronotal length with branches of median vein strongly oblique. Prosternum unarmed. Mesosternum weakly lobate, metasternum sublobate.

***Prohimerta annamensis* new species.** Plate XI, figures 17, 18 and 19.

This is a striking species, due to the conspicuous pale annuli of the dark antennae, the dotted tegmina and dark cephalic feet and caudal tibiae.

TYPE: ♂; Phuc-Son, Annam. November and December. (From H. Fruhstorfer.) [Hebard Collection, Type no. 788.]

Head with occiput convex. Eyes prominent, globose. Maxillary palpi with fourth joint two-thirds as long as third and slightly over half as long as fifth. Pronotal sulci distinct on lateral lobes, principal sulcus indicated on disk by a median Y-shaped impression with arms convex and base short. Tegmina and wings fully developed, extending well beyond apices of caudal femora. Tegmina broad, narrowing very slightly to the broadly rounded apex; ulnar vein reaching sutural margin very slightly beyond median point; median vein sending four oblique branches to that margin. Femora with genicular lobes bispinose, the spines of the median

external and caudal external lobes very small. Ventral femoral margins armed with minute spines, as follows. Cephalic internal 4 and 4, cephalic external 4 and 6, median internal 0, median external 6 and 7, caudal internal 0 and 1, caudal external 8 and 8. Supra-anal plate very small, triangularly convex, deflexed between the cercal bases. Cercus with base small, stout conical, its apex produced inward in a sharp, slender blade nearly twice the length of the shaft, directed at right-angles to the shaft; this blade is longitudinally tri-lamellate and curves evenly and weakly to its sharp apex. Subgenital plate strongly narrowing at base, the distal portion very deeply and narrowly cleft and extending caudad of the cerci; the fingers thus formed stout, with external surface moderately supplied with short hairs and internal surface very thickly supplied with very short, erect hairs.

General coloration of tegmina and exposed portions of wings light green (in life probably including body and limbs), faded to yellowish brown over greater part of other portions. Head with vertex pinkish and two postocular suffusions of pinkish brown on each side. Antennae beautifully annulate, each of these annuli first briefly blackish brown, then fading over a considerable space to pinkish brown, terminated by a brief buffy area; these annuli become more elongate distad in strongly increasing ratio. Tegmina green, stridulating field pinkish brown, caudad of it a paler area and the pinkish brown narrowing beyond along the sutural margin and disappearing mesad; intervals between veins minutely flecked with brown, these flecks clustering to form distinct small patches at considerable intervals mesad between the veins. Cephalic femora and proximal portions of cephalic tibiae heavily suffused and dotted with brown, distal portions of cephalic limbs darkened. Median and caudal limbs with many minute dots of brown, the tibiae with a dark proximal fleck externally, caudal tibiae in large portion and caudal tarsi very dark.

Length of body 20, length of pronotum 4.8, least width of pronotum 2.2, greatest (caudal) width of pronotum 3.2, length of pronotal lateral lobe 3.8, depth of pronotal lateral lobe 3.9, length of tegmen 31.2, greatest width of tegmen 7.8, least width (near apex) of tegmen 7, length of cephalic femur 7.3, length of caudal femur 26.7 mm.

The type is unique.

Letana brunneri (Krausze)

1904. *Pyrrhizia brunneri* Krausze, Insekten Börse, XXI, p. 29. [♀; Than-Moi, Tonkin.]

Phuc-Son, Annam, (from H. Fruhstorfer), 1 ♀.

This specimen agrees closely with the original description except that the pronotal disk is not only punctate with a dull pink, but is also medio-longitudinally suffused with the same color, while the pronotal length does not equal the tegminal width. The femora

are armed with very minute spines along their ventral margins, as follows. Cephalic internal 3 and 4, cephalic external 0, median internal 0, median external 3, caudal internal 8 and 10, caudal external 10 and 12. The subgenital plate is rather broadly truncate and sub-bilobate distad.

Scambophyllum albomarginatum new species. Plate XII, figure 1.

This species is related to the Sumatran *S. sanguineolentum* (Westwood). Females before us differ from females of that species in the narrower tegmina, which narrow gradually distad from the median point, with meso-proximal concavity of the costal margin decidedly less and in the flattened subsulcate dorsal surface of the cephalic femora. Difference in coloration is shown by the broad white ventral margins of the pronotal lateral lobes and the narrow white costal margins of the tegmina.

TYPE: ♀ : Labuan, British North Borneo. [Hebard Collection, Type no. 805.]

Vertex represented by a small rounded, subsulcate projection, not extending as far cephalad and a very brief distance above the more narrowly rounded facial fastigium. Pronotum short, disk rounding broadly into lateral lobes, broader than long, with transverse sulci decided, its caudal margin broadly convex and showing faint angulation mesad; lateral lobes with ventral margin weakly oblique and very broadly convex (straight in paratype), caudal margin weakly oblique to the broad and weakly indicated humeral sinus. Tegmina very narrowly elongate-oval, narrowing gradually from the median point to the broadly rounded apex, the costal margin showing a broad and weak concavity meso-proximad; medastine vein very weak, but as heavy as the more than usually heavy transverse veins; discoidal vein curving to costal margin at end of its proximal three-fifths; median vein straight to costal margin near apex, branching at base of distal curvature of discoidal vein, this branch nearly longitudinal and running to apex; ulnar vein with a proximal branch running to median vein, this branch from that point running parallel to ulnar vein to opposite branch of median vein, there ceasing; the ulnar vein itself running nearly parallel to the median vein and branch. Wings Gryllacroid, parachute-like, not full and thus apparently showing incipient atrophy. Ovipositor strongly recurved at base, broad, broadly rounded at apex, disk distad scabrous, dorsal margin in distal portion and ventral margin toward apex with heavy triangular teeth. Subgenital plate triangular with broad truncate apex rounded, chitinous only in narrow marginal portions. Genicular lobes and ventral margins of femora unarmed. Caudal tibiae unspined dorsad, armed distad with a dorso-lateral minute pair of spurs and a median pair of heavier spurs.

Head biscay green, face yellowish, a very broad postocular bar of mummy brown which is continued on the sides of the body below the pronotum. Antennae with proximal joints marked with blackish, in remaining portions black with light buff, widely spaced annuli, of which the second is much the largest, occupying three joints. Pronotum biscay green, the lateral lobes very broadly margined ventrad with cream color, this showing traces of mars brown along its inner margin. Tegmina serpentine green with countless microscopic flecks of dark vinaceous (the intervals between the very closely packed veinlets), costal margin white, with a slightly narrower internal border of dark vinaceous, sutural margin more broadly black between the brown veins, this occupying all of the anal field. Wings apricot buff, the anterior field suffused with acajou red and the transverse veins of the radiate field strongly defined in that color. Abdomen washed with acajou red dorsad. Ovipositor green, suffused with brown distad. Limbs green and brown, the tibiae with dark dorsal margins, the femora tipped dorsad with black, with a white area immediately preceding and in strong contrast.

Length of body 27 and 19 (the latter specimen shrunken, the measurements of the type being given first), length of pronotum 4.5 and 4.7, caudal width of pronotal disk 4.8 and 4.9, length of tegmen 26.8 and 24, greatest (median) width of tegmen 8.7 and 6.9, meso-distal width of tegmen 7 and 5.8, length of cephalic femur 9.8 and 9.6, length of caudal femur 17.8 and 16.4, length of ovipositor 8.2 and 8.1 mm.

A female paratype, bearing the same data as the type, is before us.

Scambophyllum sanguineolentum (Westwood)

1848. *Phylloptera sanguineolenta* Westwood, Cab. Oriental Ent., p. 52, pl. XXV, fig. 3. [σ , ♀; Sumatra.]

Goenong Soegi, Lampung, Sumatra, October and November, (Harrison and Hiller), 1 juv. σ , [A.N.S.P.].

This small immature individual is dark brown, beautifully marked with buff and white. There is no question that it represents the genus, but we can not say with certainty the same for the specific determination. One species only, however, has been recorded from Sumatra.

Scambophyllum sandakanae new species. Plate XII, figures 2, 3 and 4.

The unicolorous wings and lateral margins of pronotal disk defined by dark markings are striking features of difference in this insect. In addition, though the emargination of the costal margins of the tegmina is more sudden even than in *S. sanguineolentum* (Westwood), these organs taper more strongly distad even than in *S. albomarginatum* here described, with venation more delicate and different in several important respects.

The present appears to be a dully colored species, showing none of the brilliant and striking contrasts found in the other known forms of this extraordinary genus.

TYPE: ♀; Sandakan, British North Borneo. (From C. F. Baker.) [Hebard Collection, Type, no. 806.]

Agrees with *albomarginatum* except as follows. Vertex more sulcate, distinctly so. Pronotum slightly longer than broad, with lateral margins of disk defined from lateral lobes by color, though not by contour. Tegmina broader, with a strong sub-angular concavity of the costal margin meso-proximad thence narrowing more strongly to the more strongly rounded apex, the sutural margin showing greater convexity, the axis of the distal portion of the tegmen being at a slight angle to the axis of its proximal portion; mediastine and transverse veins much weaker, scarcely visible to the naked eye, principal veins proportionately weaker; discoidal vein curving to costal margin at end of its proximal two-thirds; median vein showing a weak angulation mesad, reaching costal margin near apex, branching at base of distal curvature of discoidal vein and again distad, its first branch forked distad, these branches curving but in large part longitudinal; ulnar vein following margin of anal field for two-thirds its length, thence longitudinal, running straight to sutural margin at base of distal third. Wings with area proportionately slightly less, contour slightly more parachute-like. Caudal tibiae with dorso-distal spurs absent on all but one side of one tibia, (present on all in paratype).

ALLOTYPE: ♂; same data as type. [Hebard Collection.]

Size decidedly smaller than female. Vertex more distinctly sulcate, the apex of the facial fastigium also sulcate. Pronotal disk as long as broad. Stridulating field of tegmina large, with stridulating vein very short and heavy; concavity of costal margin weaker; distal portion of tegmina tapering much more strongly to the more sharply rounded apex; first branch of median vein not forked. Ultimate tergite broadly and narrowly concave above the rotundato-trigonal supra-anal plate, which is slightly broader than long. Cerci moderately stout, straight, cylindrical, tapering slightly to the apex which is armed with a single sharp tooth, directed inward at slightly less than a right angle to the shaft. Subgenital plate short, simple, transverse, with distal margin convex.

General coloration greenish yellow, (discolored, probably green in life). Antennae suffused with brown and showing small, widely spaced, buffy annuli. Head with a broad, irregular postocular suffusion of mummy brown, this continued on lateral lobes of pronotum, proximad there extending to near the ventral margin, the dorsal margin of this marking, though not continuous, clearly defining the lateral margins of the pronotal disk. Tegmina with areas between veins of anal field, except meso-distad, prouts

brown, this continued as a narrow black margin around the apex; other portions of tegmina, including costal margin, uniform greenish yellow. Wings unicolorous, vinaceous-buff, the anterior field tinged with the greenish yellow of the tegmina. Limbs much as described for *albomarginatum*, except that the pale pre-apical dorsal markings of the femora are buffy.

Length of body ♂ 16, ♀ 21.3; length of pronotum ♂ 3.8, ♀ 4.7; caudal width of pronotal disk ♂ 3.8, ♀ 4.2; length of tegmen ♂ 17, ♀ 23; greatest (median) width of tegmen ♂ 7.7, ♀ 8.8; meso-distal width of tegmen ♂ 5, ♀ 6; length of cephalic femur ♂ 8.4, ♀ 9.8; length of caudal femur ♂ 14, ♀ 18; length of ovipositor 7.2 mm.

The species is known from the described pair.

Acrypeza reticulata Guerin.

1829. *Acrypeza reticulata* Guerin, Voyage de La Coquille, II, part II, p. 152, Atlas Zool., Ins. pl. X, figs. 2 and 2a. [[♂]; Port Jackson, Australia.]

Jenolan, New South Wales, Australia, (from H. de Saussure), 2 ♂, 2 ♀, [A. N. S. P.].

Leptodera ornatipennis Serville.

1839. *Leptodera ornatipennis* Serville, Hist. Nat. Ins., Orth., p. 410. [♂, Java.]

Labuan, British North Borneo, 1 ♀.

Sandakan, British North Borneo, (from C. F. Baker), 1 ♂.

The best figure of this extraordinary and handsome insect is that given by Saussure, as the synonymous *Euparthenus gratiosa*.¹⁶

Length of body ♂ 28, ♀ 30; length of pronotum ♂ 9, ♀ 9; least (cephalic) width of pronotum ♂ 1.8, ♀ 1.8; greatest (caudal) width of pronotum ♂ 4.2, ♀ 4.2; length of tegmen ♂ 40, ♀ 44; median width of tegmen ♂ 15.7, ♀ 18; greatest (distal) width of tegmen ♂ 18.8, ♀ 20.3; length of cephalic femur ♂ 5.8, ♀ 7; length of caudal femur ♂ 17.8, ♀ 20.3; length of ovipositor 8.9 mm.

Ancylecha fenestrata (Fabricius) Plate XI, figure 20.

1793. *L[ocusta] fenestrata* Fabricius, Ent. Syst., II, p. 34. [East India.]

Sandakan, British North Borneo, (from C. F. Baker), 1 ♂.

This handsome insect, which in form reminds one of species of the New World genus *Stilpnochloa*, is readily recognized by the lamellate spinose plates on the limbs and the striking crescentic markings on the tegmina.

The male cerci have not been described, they are figured in the present paper. The bluntly serrate dorsal lamella of the distal arm is chitinous and dark, in striking contrast to the pale shaft.

¹⁶ Rev. Suisse Zool., pl. IX, fig. 9, (1898).

Length of body 30, length of pronotum 9.7, greatest (caudal) width of pronotum 6.8, length of tegmen 66.4, greatest width of tegmen 25.5, length of caudal femur 35 mm.

Phygela haani Stål. Plate XI, figures 21 and 22.

1876. *P[hygela] haani* Stål, Bih. K. Svenska Vet.-Akad. Handl., IV, No. 5, p. 57. [φ , Malacca, [Malay Peninsula].]

Singapore, British Straits Settlements, (from C. F. Baker), 2 ♂, 3 ♀.

The previously unknown male of this species shows the following genital characters: supra-anal plate elongate linguliform, deflexed between the cerci. Cerci elongate, cylindrical, tapering to the apex which is bifid, each of these projections armed with a tooth, the more distal projection heavier and with apical tooth larger. Subgenital plate elongate, extending slightly beyond cercal apices, tapering strongly proximad, thence weakly to apex which is rather strongly though transversely emarginate, this emargination symmetrically trapezoidal, the short lateral projections cylindrical and supplied with very slightly more slender, straight styles, which are about three times as long as wide.

Length of body ♂ 24 and 23, ♀ 29 to 30; length of pronotum ♂ 6.2 and 6.3, ♀ 6.9 to 7.1; length of tegmen ♂ 38.7 and 41.2, ♀ 46.9 to 49; greatest (meso-distal) width of tegmen ♂ 10.9 and 11.8; ♀ 13.8 to 14; length of caudal femur ♂ 25 and 25.7, ♀ 29 to 30.2; length of ovipositor 10.4 to 10.2 mm.

Arnobia pilipes (Haan)

1842. *L[ocusta] (Phaneroptera) pilipes* Haan, in Temmink, Verh. Nat. Geschied. Nederl. oversee. bezitt., Zool., Ins., p. 194. [φ , Japan.¹⁷]

Labuan, British North Borneo, 1 ♂.

The male genitalia of this interesting katydid have been described by Rehn,¹⁸ from a specimen taken at Bah Soemboe, Sumatra.

Tapiena cerciata new species. Plate XI, figures 23 and 24.¹⁹

The present insect is distinguished from the previously known species of the genus by its larger size and broader tegmina. The male ultimate tergite is not produced and in this respect agrees with the Sumatran *T. truncata* (Brunner).

TYPE: ♂; Davao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 792.]

¹⁷ There is practically no doubt that this locality was given in error, the genus not having been subsequently found north of Borneo.

¹⁸ Bull. Amer. Mus. Nat. Hist., XXVI, p. 192, (1909).

¹⁹ Brunner's *Tapeina* is preoccupied by *Tapeinus* Laporte, 1832, and *Tapiena* has been proposed by Bolivar to replace it (*Mem. Soc. Espan. Hist. Nat.*, I, p. 334, (1906)).

Occiput and pronotum strongly impresso-punctulate, femora and other portions of head less strongly so. Occiput flattened, very weakly convex; vertex very small, narrowing strongly and sulcate proximad, the apex thickened, convex and subattingent to frontal fastigium, nearly half as wide as the proximal antennal joint. Pronotal disk deplanate, scarcely wider caudad than cephalad; lateral lobes vertical and forming a sharply rounded angle with the disk, slightly higher than wide. Tegmina and wings fully developed. Tegmina broad, narrowing gradually distad to the rounded apex; ulnar vein sending three branches to the sutural margin; median vein branching distinctly proximad of its median point and with one more distinct, oblique, distal branch, the first branch forking before its median point. Supra-anal plate small, elongate, rounded triangular, deflexed between the cercal bases. Cerci large, base briefly cylindrical, the ventral margin thence curving evenly to the acute apex, the dorsal margin strongly produced and lamellate, the knife-edge thus formed rounding to base in proximal portion, thence evenly and gradually narrowing and concave to the recurved apex. Subgenital plate elongate but not extending as far as the cercal apices, tapering strongly proximad, thence weakly to apex, which is rather strongly transversely emarginate, this emargination rotundato-quadrata, the short lateral projections cylindrical and supplied with slightly more slender, straight styles, which are about seven times as long as wide. Ventral femoral margins armed with small teeth as follows. Cephalic internal ♂ 4, ♀ 3 and 4; cephalic external 0; median internal 0; median external ♂ 0, ♀ 1 and 1; caudal internal ♂ 4, ♀ 3 and 5; caudal external ♂ 5, ♀ 4 and 5. Genicular lobes of femora rounded and unarmed.

ALLOTYPE: ♀; Dapitan, Zamboanga District, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection.]

Agrees closely with male, size slightly larger. Ovipositor broad, tapering evenly to the acute apex; dorsal margin subserrulate in distal portion, ventral margin serrulate near apex. Subgenital plate triangular, with apex sharply acute.

General coloration immaculate green. The type is discolored. The allotype has the ovipositor light brown, darkened at apex.

Length of body ♂ 28, ♀ 31.7; length of pronotum ♂ 7, ♀ 7.3; cephalic width of pronotum ♂ 4.5, ♀ 4.8; caudal width of pronotum ♂ 5, ♀ 5.2; depth of pronotal lateral lobe ♂ 5.8, ♀ 6; greatest (dorsal) width of pronotal lateral lobe ♂ 5, ♀ 5.2; length of tegmen ♂ 43.7, ♀ 43.8; greatest width of tegmen ♂ 10.7, ♀ 11.9; length of ovipositor 9.2 mm.

The species is known from the described pair.

Casigneta cochleata Brunner.

1878. *C[asigneta] cochleata* Brunner, Monogr. der Phaneropteriden, p. 164.
pl. III, fig. 46. [σ , ♀; Moluccas; Amboina, [Moluccas].]

Amboina Island, Moluccas, 1 ♀, [A. N. S. P.]

Length of body 26.5, length of pronotum 5.6, length of tegmen 38.3, greatest width of tegmen 8.5, length of caudal femur 26.3, length of ovipositor 9.7 mm.

Casigneta lamellosa Brunner.

1891. *Casigneta lamellosa* Brunner, Verh. Zool.-bot. Ges. Wien, XLI, p. 77.
[σ , Celebes.]

Obi Island, Moluccas, 2 ♀.

Without males we are unable to determine these specimens with certainty. Brunner has described *lamellosa* from the male genitalia alone, but the measurements show it to be a species with more slender tegmina than *cochleata*. As the present specimens agree in this respect, we have assigned them accordingly. In all other features, except those of proportion, they are similar to the Amboina female here recorded as *cochleata*.

In these females as well as in the specimen of *cochleata*, the tegmina have the veinlets of the distal section of the enlarged portion of the anal field buffy, with minute intervals dark brown. From there to the apex the sutural margin has the minute spaces between the green veinlets similarly dark brown. These latter markings are so fine that they are scarcely distinguishable to the naked eye.

Length of body 24.5 and 25, length of pronotum 5.4 and 5.8, length of tegmen 38 and 39.3, greatest width of tegmen 6.9 and 7, length of caudal femur 26.7 and 27, length of ovipositor 10 and 10.9 mm.

Casigneta pellucida Brunner.

1878. *C[asigneta] pellucida* Brunner, Monogr. der Phaneropteriden, p. 165.
[σ , ♀; Philippine Islands.]

Dapitan, Zamboanga District, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

As stated by Brunner, this species differs from *C. cochleata* Brunner mainly in the paler general coloration and the triangular female subgenital plate. The tegmina show the same delicate marking we have noted for *C. lamellosa* Brunner, and in addition have a very small blackish brown fleck at the base of the anal vein.

Length of body 23, length of pronotum 5.8, length of tegmen 38, greatest width of tegmen 7.6, length of caudal femur 28.7, length of ovipositor 8.3 mm.

Elbenia tenera Brunner.

1878. *E[iben]ia tenera* Brunner, Monogr. der Phaneropteriden, p. 166.
[♀, Borneo.]
1898. *Elb[en]ia triangularis* Brunner, Abh. Senckenb. Naturfors. Ges.,
XXIV, p. 255, pl. XVIII, fig. 42. [♂; Kina Balu, Borneo.]

Labuan, British North Borneo, 2 ♂, 1 ♀.

The present material proves conclusively the synonymy indicated above, caused by Brunner's failure to associate the sexes of this species.

The anal tergite of the female has not been described. It is strongly specialized, being produced in a pair of slender, straight processes above the small, shield-shaped supra-anal plate.

Length of body (all squeezed out) ♂ 24 and 24.7, ♀ 24.5; length of pronotum ♂ 5 and 4.8, ♀ 5.3; caudal width of pronotal disk ♂ 2.9 and 3, ♀ 3; length of tegmen ♂ 34.5 and 32.8, ♀ 34.5; greatest width of tegmen ♂ 5.7 and 5.8, ♀ 6.5; length of cephalic femur ♂ 6.2 and 6.2, ♀ 6.5; length of caudal femur ♂ 20.8 and 20.8, ♀ 22; length of ovipositor 9.8 mm.

Elbenia nigro-signata Stål.

1876. *Elbenia nigro-signata* Stål, Bih. K. Svenska Vet. Akad. Handl.,
IV, No. 5, p. 56. [♂; Malacca, British Straits Settlements.]

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♀.

The present female apparently represents the previously unknown female of *nigro-signata*. It agrees closely with that sex of *E. tenera* Brunner. In addition to having the forking of the branch of the median vein more distal in position, the present female has the anal tergite produced in a pair of very slender, slightly decurved and divergent, straight processes, above the shield-shaped supra-anal plate, these processes more slender and elongate and more widely separated than in *tenera*.

Length of body 16.7 (shriveled), length of pronotum 5.3, caudal width of pronotal disk 3.4, length of tegmen 36.7, greatest tegminal width 7.3, length of cephalic femur 6.2, length of caudal femur 20.8, length of ovipositor 10.7 mm.

Elbenia makilingae new species. Plate XIII, figures 1 and 2.

Known from a unique female, this sex differs from any previously described female of the genus, except *E. manillensis* Pictet,²⁰ in the brevity of the ovipositor. From that insect the present differs in the smaller size and shorter pronotum, with lateral lobes no deeper than wide.

²⁰ It appears very possible that Brunner's *E. modesta*, described from the Philippines, will prove to be a synonym of *manillensis*. Pictet describes the ovipositor of that species as short, but does not give the length.

TYPE: ♀; Mount Makiling, Luzon, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 793.]

Vertex small, very narrowly V-shaped and deeply sulcate to near apex; as characteristic of genus. Pronotum with lateral lobes no deeper than wide. Tegmina and wings fully developed. Tegmina with median vein branching a brief distance before its median point, this branch forking nearly at its median point, these veins running longitudinally and showing only weak obliquity; near its extremity the median vein sends one or two, poorly defined, branches to the sutural margin and apex. Anal tergite simple, triangularly emarginate above the small, short, shield-shaped supra-anal plate. Ovipositor short for the genus, dorsal margin strongly concave proximad, ventral margin evenly convex to the acute apex; dorsal and ventral margins distinctly serrulate, surface of dorsal valves to near proximal portion with minute nodules, the other portions of the lateral surfaces of the valves with even smaller, very minute nodules. The ovipositor is much shorter and more strongly curved, with apex more acute than in *E. tenera* Brunner. Subgenital plate broad and short, its distal margin broadly convex but showing a slight flattening of this convexity laterad. Limbs elongate. Caudal femora heavy in proximal portions, very slender in distal portions. Genicular lobes of femora all bispinose, except one internal lobe of the cephalic femora which is unispinose. Ventral femoral margins armed as follows. Cephalic internal 2 and 4, cephalic external 0, median internal 0, median external 3 and 3, caudal internal 4, caudal external 5.

The unique type is badly discolored. It would appear to have been pale green in life, immaculate except for a delicate marking along the sutural margins of the tegmina, much as here described for *Casigneta lamellosa* Brunner on page 142.

Length of body 22.5, length of pronotum 5.1, caudal width of pronotum 3.1, depth of pronotal lateral lobe 3.7, width of pronotal lateral lobe 3.7, length of tegmen 36, greatest width of tegmen 7, distal width of tegmen 5.4, length of cephalic femur 8, length of median femur 10.9, length of caudal femur 25.2, proximal width of caudal femur 3.4, length of ovispositor 7.6, greatest width of ovispositor 2.1 mm.

The species is known from a single specimen.

Elbenia serratauda new species. Plate XIII, figures 3 and 4.

This remarkable insect has the male genitalia of the general type found in the Sumatran *E. appendiculata* Brunner, but shows decidedly greater specialization and several differences of striking character.

It agrees very closely with the Malaccan *E. nigrosignata* Stål in these features, but the bifid production of the anal segment has

its arms parallel, becoming weakly convergent distad, the cerci are proportionately shorter and do not extend as far caudad as does the subgenital plate, with a small cylindrical projection above their bases and the subgenital plate is straight-produced to the elongate and recurved, divided and internally serrulate distal portion. In other features these species appear to agree very closely, except that in *serraticauda* the tegmina are slightly wider, with first branch of the median vein forking mesad.

Though agreeing closely in general appearance with the female, here described as *E. makilingae*, the present male differs conspicuously in the pronotal lateral lobes, which are distinctly higher than wide and in the shorter limbs.

TYPE: ♂; Puerto Princesa, Palawan, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 794.]

Vertex as described for *makilingae*. Pronotum with lateral lobes distinctly higher than wide. Tegmina with median vein branching at about end of its proximal two-fifths, this branch forking at nearly its median point, these veins running longitudinally and showing very weak obliquity; near its distal extremity the median vein sends another poorly defined branch to the apex.²¹ Anal tergite produced mesad in two slender, narrowly separated, processes which are parallel proximad and converge weakly distad, with delicate, lamellate, rounded apices vertical. Below this tergite and above the cerci is a small projection bearing a small, straight, cylindrical projection, with apex rounded, directed caudad. Cercus cylindrical, tapering, curved evenly inward distad to the acute apex. Subgenital plate trough shaped, straight-produced proximad and narrowly V-emarginate in distal portion of this section, the two distal portions thus formed suddenly and strongly recurved, directed dorso-cephalad, each straight and gradually tapering, with internal margin armed with a regular row of small, stout teeth. Limbs as described for *makilingae*, except that they are decidedly shorter. Genicular lobes of femora all rounded and unarmed, except the internal of the caudal femora which are unispinose. Ventral femoral margins armed as follows. Cephalic internal 4 and 4, cephalic external 0, median internal 0, median external 2 and 3, caudal internal 2 and 3, caudal external 1 and 2.

The unique type is badly discolored but shows the entire proximal portions of the tegminal stridulating field, to and including the stridulating vein, very dark brown. The other portions were apparently immaculate, light green in life.

²¹ The venation of the sinistral tegmen is distorted in this specimen, the ulnar fusing with the first branch of the median vein, that branch forking twice instead of once, meso-proximad and meso-distad.

Length of body 23.5, length of pronotum 5.4, caudal width of pronotum 3.6, depth of pronotal lateral lobe 4.3, width of pronotal lateral lobe 3.8, length of tegmen 35.3, greatest width of tegmen 7.3, distal width of tegmen 6.3, length of cephalic femur 6.2, length of median femur 8.8, length of caudal femur 21.8, proximal width of caudal femur 2.9 mm.

The type is unique.

Furnia bakeri Karny.

1921. *Furnia bakeri* Karny, Philippine Jour. Sci., XVIII, p. 617. [φ ; Mount Makiling, [Luzon, Philippine Islands].]

Mount Makiling, Luzon, Philippine Islands, 1 φ .

We find that the genus *Furnia* agrees so closely with *Elbenia* in the great majority of generic and group characters that we refer it, without hesitation, to the present position in the Group Psyrae. The auditory foramina of the cephalic tibiae are conchate on both sides in this genus and, for this reason alone, it had been assigned a position in the Group Anaulocomerae.

The specimen before us agrees closely with the original description. We would note that the vertex, at its base only, is nearly as wide as the first antennal joint. The triangular projections of the anal tergite lie on each side of the shield-shaped supra-anal plate. The tegmina show a small brown suffusion proximo-laterad in the anal field.

Length of body 23.5, length of pronotum 5.8, length of tegmen 40.7, greatest width of tegmen 8.8, length of cephalic femur 7.8, length of caudal femur 23.3,²² length of ovipositor 11 mm.

Phaula rugulosa Brunner.

1878. *Phaula rugulosa* Brunner, Monogr. der Phaneropteriden, p. 167. [φ , Philippine Islands.]

Butuan, Mindanao, Philippine Islands, (from C. F. Baker), 1 φ .

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 φ .

Labuan, British North Borneo, 1 φ .

The last two specimens are larger than the type, but agree closely in all proportions and other characters given. Males may prove the presence of more than one species having the pronotum shallowly though thickly impresso-punctulate.

Length of body (the measurements of the Philippine specimens are given first) 23.3, 24 and 24.2, length of pronotum 4.8, 5.6 and 5.6, caudal width of pronotal disk 3.1, 3.3–3.3, length of tegmen 31.2, 35 and 36.2, width of tegmen 6.8, 8.2 and 8, length of caudal

²² This dimension is given by Karny as 35.5, probably a printers error for 25.5.

femur 19.7, 20.5 and 20.8, length of ovipositor 10.3, 11.7 and 12.2 mm.

Phaula phaneropterooides Brunner.

1891. *Phaula phaneropterooides* Brunner, Verh. Zool.-bot. Ges. Wien., xli, p. 81. [σ ; Manila, [Luzon, Philippine Islands].]
 1921. *Phaula teretiuscula* Karny, Philippine Jour. Sci., XVIII, p. 614. [φ ; Los Baños, [Luzon, Philippine Islands].]

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 σ , 1 φ .

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 σ , 2 φ .

Failure to associate the sexes which show a decided contrast in size, led to the synonymy indicated above. The present material enables us to establish this synonymy without hesitation.

The male genitalia have been very superficially described for the species. The anal tergite is truncate, with a small, shallow, triangular impression above the elongate-trigonal supra-anal plate. The cerci are ovate enlarged in distal two-fifths, the external surfaces of this portion being concave, the internal surface armed mesad with a large, erect tooth. The subgenital plate is short, extending caudad to the median portion of the cerci; it is carinate mesad, with apex very broadly emarginate, the lateral portions short, straight, styliform but not articulated.

MEASUREMENTS (in millimeters)

σ	Length of body	Length of pro- notum	Length of tegmen	Width of tegmen	Length of caudal femur	Length of ovi- positor
Los Baños	13.2	3.3	21	4	16.2	—
Mount Makiling	14.2	3.7	23.3	4.2	16.7	—
φ						
Los Baños	18	4.8	30	6.6	20	9.5
Mount Makiling	19.8	4.7	29.8	6.3	19.4	9.8
Mount Makiling	19	4.7	29.3	6.3	19.2	9.4

Phaula luzonica new species. Plate XIII, figures 5, 6 and 7.

This insect is nearest in relationship to *P. phaneropterooides* Brunner, differing in the larger size, dark marking of the cephalic tibiae at the auditory foramina, male genitalia (which, however, are of the same general type) and much shorter ovipositor.

TYPE: σ ; Baguio, Benguet, Luzon, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 795.]

Vertex rather narrowly V-shaped and shallowly sulcate, the lateral margins weakly concave and expanding weakly in distal

portion, instead of being there parallel as in *phaneropterooides*. Pronotum with surface smooth, the lateral lobes very slightly deeper than wide. Tegmina and wings fully developed. Tegmina with costal margin of stridulating field convex, not produced at stridulating vein; median vein with four oblique branches which do not fork. Anal tergite hooded, produced to opposite proximal portions of cochleate cercal apices, there truncate, the lateral margins obliquely ascendant and broadly concave to that point. Supra-anal plate concealed. Cerci cylindrical in slightly over proximal half, the remaining distal portion expanded into a delicate, vertical, lamellate plate, which is irregularly quadrate with angles rounded, bearing mesad on its concave internal surface a large erect tooth.²³ Subgenital plate small, short, extending caudad as far as median portion of cerci, carinate mesad, with apex broadly U-emarginate, the lateral portions thus formed short, straight, styliform but not articulated. Genicular lobes of caudal femora very weakly bispinose, of other femora bluntly or triangularly rounded. Ventral femoral margins armed with small teeth, those of the cephalic and median femora being minutely microscopic, as follows. Cephalic internal ♂ 2 to 3, ♀ 3 to 6, cephalic external 0, median internal 0, median external ♂ and ♀ 5, caudal internal ♂ 5 to 7, ♀ 4 to 5, caudal external ♂ 7, ♀ 10 to 11.

ALLOTYPE: ♀; same data as type. [Hebard Collection.]

Larger and more robust than male, but not showing as great sexual contrast as does *phaneropterooides*. Coloration similar, the marking of the cephalic tibiae of apparent decided specific diagnostic value. Ovipositor very short for the genus, curving very gradually upward to the acute apex, dorsal and ventral margins very finely serrulate an equal distance distad, lateral surface without nodes or grooves. Subgenital plate triangular with apex bluntly rounded and ventral surface showing a strong, very slenderly lamellate medio-longitudinal carina, percurrent to near apex.

General coloration immaculate yellowish oil green, the bodies of the specimens before us being much faded. Tegmina along sutural margin, immediately beyond stridulating area, with veins brown and interspaces toward anal vein blackish, this continued to apex of tegmina along the edge, but the veins become green and the interspaces so small that they are visible only under the lens. Pronotum, abdomen and femora microscopically dotted with hydrangea red. Cephalic tibiae in area of auditory foramen washed with hydrangea red and there, on dorsal surface, suffused with blackish.

Length of body ♂ (shriveled) 15, ♀ 22.3; length of pronotum ♂ 4.7, ♀ 4.8; caudal width of pronotum ♂ 2.7, ♀ 3; depth of

²³The general type is as in *phaneropterooides*, the lamellate distal portion in that species being, however, proportionately smaller, narrower, ovate and in position decidedly beyond the apex of the decidedly less produced anal tergite.

pronotal lateral lobe ♂ 3.7, ♀ 3.8; width of pronotal lateral lobe ♂ 3.4, ♀ 3.3; length of tegmen ♂ 31.7, ♀ 33.3; greatest width of tegmen (estimated, tegmina curled) ♂ 6, ♀ 7.7; length of cephalic femur ♂ 4.8, ♀ 5; length of caudal femur ♂ 16.4, ♀ 16.9; length of ovipositor 7.8 mm.

This interesting species is known from the described pair.

Phaula galeata new species. Plate XIII, figures 8 and 9.

This species belongs to the second section of the genus, as recognized by Brunner, in which the first branch of the median vein of the tegmina is forked. This should be noted as a feature of convergence toward the type characteristic of the genus *Elbenia*. It would appear probable that in this section of the genus several distinct generic units are involved and the present species may require generic separation when the group is comprehensively studied. At the present time insufficient material is at hand for this to be accomplished, though we feel justified in separating, on page 150, one of the units included by Brunner.

The remarkably crested and undivided anal tergite of the male, readily separates it from males of the species of apparently nearest affinity, the Bornean *P. gracilis* Brunner.

TYPE: ♂, Davao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 796.]

Vertex narrowly V-shaped and sulcate to near apex, the lateral margins parallel in distal portion as in *P. phaneropterooides* Brunner. Pronotum with surface smooth, the lateral lobes very slightly wider than deep. Tegmina and wings fully developed. Tegmina with costal margin of stridulating area convex, not produced at stridulating vein; median vein with first branch forked slightly beyond median point and weakly oblique, the median vein with a second undivided oblique branch distad; ulnar vein reaching sutural margin at end of its proximal two-thirds. Anal tergite produced mesad in a vertical lobe, this lobe higher than long, its dorsal and ventral margins moderately divergent to its broadly convex distal margin, the dorso-distal angle bluntly rounded, the ventro-distal angle delicately lipped. Cercus cylindrical, tapered and curving evenly inward to the irregularly enlarged apex, which is produced in a long, weakly sigmoid tooth. These organs reach to the base of the produced lobe of the anal tergite. Subgenital plate small, triangular, medio-longitudinally cleft to its base. This plate suggests the usual triangular type found in females rather than the type developed in males of any species we can recall. Ventral femoral margins armed with very small spines as follows. Cephalic internal 5, cephalic external 0, median internal 0 and 1, median external 6 and 7, caudal internal 3 and 5, caudal external 7 and 7.

The specimen is much discolored. General coloration immaculate, apparently pale green in life, except that the stridulating area is suffused and the sutural margin very narrowly blackish brown to its extremity. Occiput, genae, pronotum and femora microscopically dotted with hydrangea red; these dots, however, fewer and averaging larger than in *P. luzonica*, here described.

Length of body 19.5, length of pronotum 5, caudal width of pronotum 2.9, depth of pronotal lateral lobe 3.7, width of pronotal lateral lobe 4, length of tegmen 30, greatest width of tegmen 5.6, length of cephalic femur 5.9, length of caudal femur 19.3 mm.

The type is unique.

STICTOPHAULA new genus

This genus is erected to include *Phaneroptera trichopus* Haan,²⁴ *Phaula spinoso-laminata*, *Phaula chlorotica* Brunner and the three species described in the present paper.

GENOTYPE.—*Stictophaula bakeri* new species.

It is closely related to the genus *Phaula*, agreeing in all characters of group or higher importance. It differs in the very strongly declivous vertex, weaker tegminal venation, with veinlets fully as multitudinous, but with veins of discoidal field and cross-veins irregularly flexuous, sutural margin of male stridulating area produced at stridulating vein, cephalic femora with internal auditory foramen conchate,²⁵ simple male anal tergite, supra-anal plate and cerci and ovipositor of female with margins entirely unarmed, the dorsal valves weakly concave on their ventral margins distad, into which fit the apices of the ventral valves.

The tegminal surfaces are weakly convex and the character of their venation gives to individuals of this genus a general facies, contrasting with the species of *Phaula* much as does that of the species of the North American genus *Amblycorypha* when compared with the North American genus *Phaneroptera*.²⁶

Stictophaula bakeri new species. Plate XIII, figures 10, 11 and 12.

This insect is closely related to *S. spinoso-laminata* (Brunner). The apparent features of difference are the minutely but thickly pink-speckled pronotum, abdomen and median and caudal femora;

²⁴ Under this name *chlorotica* has been placed as a synonym by Dohrn. We do not believe that this synonymy can be recognized until material from Java and Singapore can be compared.

²⁵ Not flattened conchate as in the species of *Phaula*.

²⁶ Caudell has recently fixed the genotype of *Phaneroptera* as *curvicauda* (De Geer). As this is the first valid designation, *Scudderia* falls as a synonym of *Phaneroptera*, while the Old World genus, previously recognized as *Phaneroptera*, is renamed *Anerota* by Caudell (*Jour. Washington Acad. Sci.*, XI p. 488, (1921).)

similarly black-speckled cephalic femora, which, however, bear four striking, opaque, buffy patches; tegmina which have the median vein with two weak branches beyond the forked first branch,²⁷ and male subgenital plate which is produced distad in two triangular and not lobate projections, each showing on its inner margin a minute rectangular offset, rather than an acuminate tooth.

TYPE: ♂; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 797.]

Vertex narrowly V-shaped and sulcate to near apex. Maxillary palpi exceedingly elongate and slender, fourth joint half as long as third and one-third as long as fifth. Pronotum with surface smooth, disk defined from lateral lobes by the broadly rounded lateral margins, lateral lobes decidedly deeper than wide, with humeral sinus deep. Tegmina and wings fully developed, the delicate but close veinulation of the former giving them somewhat the appearance of ground-glass; tegmina with ulnar vein reaching sutural margin slightly beyond end of its proximal two-thirds, median vein branching distinctly before median point, two strongly oblique and irregular branches of the median vein distad. Supra-anal plate strongly deflexed, short, slightly broader than long, triangular, with lateral margins broadly convex. Anal tergite truncate distad. Cercus elongate, slender, weakly and evenly curved inward, tapering gradually to its acute apex. Subgenital plate narrowing proximad, distal portion V-emarginate, the lateral portions thus formed narrowly triangular with apices rounded, their internal margins each with a minute rectangular offset mesad. Genicular lobes of femora unarmed, except those of caudal femora which are unispinose. Ventral femoral margins armed with minute spines as follows. Cephalic internal 8, cephalic external 0, median internal 0, median external 8 and 9, caudal internal 6 and 7, caudal external 5 and 7.

Tegmina translucent light grape green, body and limbs in life apparently of this color. Maxillary palpi immaculate. Pronotum, abdomen, median and caudal femora minutely and thickly dotted with hydrangea red. Cephalic femora very thickly dotted with black, with five opaque buffy areas on dorsal surface, spines of these members black. Cephalic tibiae with a few black dots proximad, particularly dorsad on the auditory foramina. Tegmina, in areolae on each side of the ulnar vein with a few of the minute intervals between the veinlets mesad black, six or seven cross-veins near median vein gathering knots of veinlets near their bases, which are buffy; stridulating field with intervals between veinlets embrowned latero-proximad and mesad, sutural margin beyond very narrowly darkened, with veins brown and intervals between veinlets blackish, to apex.

²⁷ In this feature alone is closer agreement with *S. chlorotica* (Brunner) shown

Length of body 24, length of pronotum 6.2, caudal width of pronotum 3.4, depth of pronotal lateral lobe 5, width of pronotal lateral lobe 4.2, length of tegmen 35.3, greatest width of tegmen 8.3, length of cephalic femur 6.7, length of caudal femur 19.7 mm.

The type is unique.

Stictopaula quadridens new species. Plate XIII, figure 13.

Nearest the Javan *S. spinoso-laminata* (Brunner), the male of this insect may be quickly distinguished by the subgenital plate, which is produced distad in two slenderly acute-conical projections, between the bases of which are two sharp, straight teeth, one-third as long.

Unlike that species and *S. bakeri* here described, the present insect has the pronotum and limbs immaculate. The tegmina have the stridulating field more extensively suffused with blackish brown than in *bakeri*, but with brown areolae along the sutural margin much less conspicuous.

The tegminal venation is much as in *bakeri*, differing as described below.

TYPE: ♂; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 854.]

Agrees with the description of *bakeri* in all details except the following. Tegmina with median vein branching mesad, the cross-veinlets to the median vein more distinct and not gathering knots of veinlets near their bases. Subgenital plate narrowing proximad, mesad with a weak medio-longitudinal carina, distal portion briefly produced, terminating on each side in a slenderly acute-conical spike, each of these slightly longer than the distance between their bases, that interval supplied with two sharp, straight teeth of one-third the length, the narrowly U-shaped interval between these slightly deeper than the similar intervals between them and the lateral projections. Ventral femoral margins armed with minute spines as follows. Cephalic internal 5 and 7, cephalic external 0, median internal 0, median external 9 and 10, caudal internal 4 and 4, caudal external 9 and 9.

Tegmina translucent light grape green, body and limbs immaculate (discolored, in life probably the same color). Tegmina in areolae on each side of ulnar and principal branch of median vein with a few of the minute intervals between the veinlets mesad black; stridulating field blackish brown in proximal half, sutural margin beyond stridulating field very narrowly and weakly suffused, with veins brown and very minute intervals between veinlets blackish, to apex.

Length of body 21 (shriveled), length of pronotum 6.2, caudal width of pronotum 3.7, depth of pronotal lateral lobe 4.9, width of pronotal lateral lobe 4.2, length of tegmen 36, greatest width

of tegmen 8.8, length of cephalic femur 6, length of caudal femur 18.3 mm.

The type is unique.

***Stictophaula micra* new species.** Plate XIII, figures 14 and 15.

Known from a unique female, the present species is seen to agree closely with *S. spinoso-laminata* (Brunner) and *S. bakeri* here described, except for its decidedly smaller size.

In tegminal venation it agrees with *spinoso-laminata* in having the median vein with a single branch beyond its forked first branch, while it appears also to agree closely with that species in coloration. We believe that the male genitalia will show signal differentiation.

TYPE: ♀; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 798.]

Size small for the genus. Vertex narrowly V-shaped and sulcate to near apex. Maxillary palpi exceedingly elongate and slender, fourth joint slightly over half as long as third, slightly over one-third as long as fifth. Pronotum with surface smooth, disk rounding broadly into lateral lobes, these very slightly higher than wide, with humeral sinus deep. Tegmina and wings fully developed, the tegminal structure and venation as described for *bakeri* except that the median vein has but a single strongly oblique and irregular branch beyond the forked first branch. Ovipositor slightly longer than pronotum, its structure as characteristic of the genus. Subgenital plate very short, triangular. Genicular lobes unarmed except those of the caudal femora, the internal of those portions each with a large and very minute spine, the external of those portions unispinose. Ventral femoral margins armed with minute spines as follows. Cephalic internal 7 and 9, cephalic external 0, median internal 0, median external 8, caudal internal 4 and 6, caudal external 8 and 9.

Tegmina biscay green proximad (other portions, body and limbs faded, probably that color in life). Maxillary palpi with distal portion of terminal joint suffused with blackish. Cephalic femora very thickly dotted with black, the dorsal surface with these dots clustered, so as to appear subannulate but without intervening opaque patches, spines of these members black. Cephalic tibiae with a few black dots proximad, particularly dorsad of the auditory foramina. Tegmina in all areolae of discoidal field formed between ulnar, branches of median and median veins, except distad, with a few of the intervals between the veinlets mesad black, as are the intervals between the minute veinlets along the sutural margin for some distance caudad from the anal field. Head, pronotum, abdomen and other portions of limbs immaculate.

Length of body (shriveled) 14, length of pronotum 5.3, caudal width of pronotum 2.8, depth of pronotal lateral lobe 3.8, width of pronotal lateral lobe 3.5, length of tegmen 30.8, greatest width

of tegmen 6.7, length of cephalic femur 5.4, length of caudal femur 17, length of ovipositor 6.7 mm.²⁸

The type is unique.

Psyra brunneri Karny.

1878. *Ps[yra] ensis* Brunner, (not *Phaneroptera ensis* Haan, 1842), Monogr der Phaneropteriden., p. 171, pl. III, figs. 49a, 49b. [σ , ♀; Amboina, [Moluccas].]

1920. [*Psyra*] *brunneri* Karny, Zool. Mededeel. Rijks Mus. Nat. Hist. Leiden, V, p. 192. (New name.)

Obi Island, Moluccas, 1 σ .

Amboina Island, Moluccas, 1 σ , [A. N. S. P.].

The specimen from Amboina agrees fully with Brunner's description in form of the male cerci. In the Obi male the minute subapical internal tooth is absent from the cerci.

The literature on this genus is extremely unsatisfactory and without more material we cannot solve the problems which at present confront the student. It would appear very probable that *melanonota* Stål is a synonym of *ensis* (Haan), as is also *marginata* Fritze, in Karl.²⁹

Until a complete revision of the genus is accomplished we can only state that in the material before us two distinct species are represented, one unquestionably *brunneri* of Karny, the other *melanonota* of Stål.

Psyra melanonota Stål.

1876. *P[syra] melanonota* Stål, Bih. Svenska Vet. Akad. Handl., IV, No. 5, p. 56. [φ : Malacca, [Malay Peninsula].]

Davao, Mindanao, Philippine Islands, (from C. F. Baker), 1 σ , 1 φ .

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 φ

Obi Island, Moluccas, 5 σ , 2 φ .

Amboina Island, Moluccas, 1 φ , [A. N. S. P.].

Java (from H. de Saussure), 1 φ , [A. N. S. P.].

The Moluccan series has the pronotum immaculate except for a broad transverse band of blackish across the caudal portion of the disk above the humeral sinus. This band is sometimes paler in its cephalic half. The two distal cercal teeth in the males vary in their curvature and in the first tooth, which in form ranges from chisel-shaped to acute.

PSEUDOPSYRA new genus

Known only from the male sex, we are in consequence unable to state whether this genus should be referred to the Group Psyrae or

²⁸ Described for *spinoso-laminata* as scarcely longer than the pronotum, (7 millimeters), by Brunner, Verh. Zool.-bot. Ges. Wien, XLI, p. 80, (1891).

²⁹ Mitth. Schweizer Ent. Ges., XI, p. 299, (1908).

the Group Holochlorae, while in the astonishing male genitalic development closest approach appears to be found in the Group Isopserae.

In general appearance, however, the insect strongly suggests a small, uniformly colored species of the genus *Psyra*.

GENOTYPE.—*Pseudopsyra mirabilis* new species.

Size medium for the group, form much as in the genus *Psyra*. Head with eyes extremely prominent, bead-like. Vertex very small, in dorsal aspect appearing only as a smooth narrowing of the occiput cephalad without sulcation, in cephalic aspect with face nearly vertical, narrowly and irregularly sulcate to ventral margin, where it is briefly separated from the facial fastigium, its lateral surfaces fully occupied by the large lateral ocelli. Pronotum much as in *Psyra*, surface smooth, lateral lobes with length equal to width and with humeral sinus decided. Tegmina and wings fully developed, the former with venation much as in *Psyra*. Tegmina with mediastine vein distinct, median vein sending a forked branch and two or three distal branches obliquely across the discoidal field. Mesosternum with lobes small, triangular with apices rounded, metasternum with lobes much larger and more rounded. Male genitalia very highly specialized, the subgenital plate bearing extremely elongate styles. Femora supplied with minute spines on the usual margins for the group, genicular lobes bispinose. Cephalic tibiae with auditory foramina internally conchate, externally apert; dorsal surface weakly sulcate, its internal margin with three and one distal, small spines.

***Pseudopsyra mirabilis* new species. Plate XIII, figures 16 and 17.**

This plainly colored species shows one of the highest types of male genitalic specialization we have encountered, such occurring not only in the ultimate tergite but in the cerci and subgenital plate as well.

TYPE: ♂; Island of Penang, Malay Peninsula. (From C. F. Baker.) [Hebard Collection, Type no. 799.]

In addition to the characters given in the generic treatment, we note the following. Tegmina with ulnar vein distad sending a branch to the nearer fork of the first branch of the median vein, from there to the sutural margin strongly flexuous. Cross-veins of tegmina numerous, many of these straight and transverse. Anal tergite produced in a large shield-shaped plate, which is strongly deflexed with dorsal surface concave, this plate distad is nearly rectangulate emarginate, the emargination with lateral margins weakly divergent to its base, where the dorsal surface of the plate is briefly and very strongly concave in a V-shaped area. Supra-anal plate concealed beneath production of anal tergite. Cercus very large and elongate cylindrical, extending as far caudad as the subgenital plate, weakly tapering and directed ventro-

caudad in proximal half, there curving strongly up so that the distal portion is directed dorsad and weakly curved, that portion flattened with a percurrent knife-edge dorsad, which terminates in a minute, straight, aciculate spine at the apex. Subgenital plate tapering strongly proximad, then produced in a long narrow shaft with lateral margins parallel, weakly diverging distad with apex triangularly emarginate, the lateral portions produced beyond, straight and very slender, bearing at their apices extremely long, very slender, nearly straight, weakly sigmoid styles. Ventral femoral margins armed with the following number of spines. Cephalic internal 6 and 6, cephalic external 0, median internal 0, median external 5 and 6, caudal internal 5 and 6, caudal external 5 and 5.

General coloration yellowish green, probably rich green in life, Antennae with distal joints brown, their intersections yellowish.

Length of body 24.3, length of pronotum 6, caudal width of pronotum 3.7, depth of pronotal lateral lobe 4.2, width of pronotal lateral lobe 4.3, length of tegmen 36.4, greatest width of tegmen 9, length of cephalic femur 7, length of caudal femur 24.7, length of cercus 4 mm.

The type of this remarkable species is unique.

Holochlora venosa Stål. Plate XIII, figure 18

1873. *H[olochlora] venosa* Stål, Öfv. Kongl. Vet. Akad. Forh., 1873, p. 43.
[♀, Java.]

Singapore, British Straits Settlements (from C. F. Baker), 1 ♂.

This specimen agrees closely with Brunner's description of the male sex. Length of body 19, length of pronotum 5.8, length of tegmen 33, greatest width of tegmen 6.8, length of caudal femur 24 mm.

Holochlora mindanao new species. Plate XIII, figures 20, 21 and 22.

Related to *H. japonica* Brunner²⁰ (see Plate XIII, figure 19), the present insect differs in having proportionately longer limbs with femoral spines more decidedly darkened. The male sex is further distinguished by the shorter and much more deeply cleft anal segment, the two portions of which are not produced and lamellate laterad and thus do not conceal the cerci, and by the much longer and much more deeply cleft subgenital plate, with distal portions moderately expanded and supplied with longer styles.

In the females the genitalia are the same, except that in *mindanao* the dorsal portion of the ovipositor plica is almost black, like the distal portion of the ovipositor.

²⁰ A large series of that species is before us, from Hawaii, Japan and China.

TYPE: ♂; Davao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 800.]

Size medium small for the males of this genus. Head, pronotum, tegmina and wings much as in *japonica*. Anal tergite deeply U-emarginate to near its base, bearing two lobate fingers which are weakly curved downward, with dorsal surface weakly convex and very hairy, their truncate apices with a very small deflexed inner and a slightly larger deflexed outer projection. Cerci extending slightly caudad of apices of these, cylindrical, straight, tapering to the apex which curves up into an erect spine, directed dorsad and curving slightly cephalad. Subgenital plate narrow and elongate, extending far beyond cercal apices, proximal portion medio-longitudinally carinate, distal third deeply V-emarginate, the lateral portions thus formed vertical, expanding slightly and then narrowing to their truncate apices, which are each supplied with a straight flattened style, three times as long as broad, with apex rounded. Femoral genicular lobes bispinose. Ventral femoral margins armed with spines as follows, those of the caudal femora being heavy. Cephalic internal 5 and 5, cephalic external 0, median internal —, median external 4 and 4, caudal internal 5 and 6, caudal external 6.

ALLOTYPE: ♀; Zamboanga, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection.]

Differs from the male as follows. Size much larger, form broader, the contrast between the sexes much as in *japonica*. Ovipositor as characteristic of genus, with proximal plica of dorsal valves acute; distance from base of ovipositor to end of plica distinctly less than half that to end of ovipositor. Subgenital plate shorter than basal width, triangular, with apex acute, medio-longitudinally carinate.

General coloration immaculate, bright green, the dried specimens before us much discolored. Tegmina with mediastine vein and adjacent veinlets buffy. Spines of femoral margins brown, those of caudal femora blackish to near bases.

Length of body ♂ 22.5, ♀ 32; length of pronotum ♂ 6.2, ♀ 7.7; caudal width of pronotum ♂ 3.6, ♀ 5.2; length of tegmen ♂ 36, ♀ 49; greatest width of tegmen ♂ 7.8, ♀ 12.5; length of cephalic femur ♂ 8, ♀ 12.4; length of caudal femur ♂ 31.8, ♀ 33.7; length of ovipositor 10 mm.

The species is known only from the pair here described.

Holochlora signata Brunner. Plate XIII, figure 23.

1891. *Holochlora signata* Brunner, Verh. Zool.-bot. Ges. Wien., XLI, p. 92. [♂, ♀: Borneo; Singapore, [British Straits Settlements].]

Goenong Soegi, Lampung, Sumatra, October and November, 1901, (Harrison and Hiller), 1 ♀, [A. N. S. P.].

The markings of this very small species, though inconspicuous, are very distinctive.

Length of body 20, length of pronotum 6, length of tegmen 40, greatest width of tegmen 8.5, length of caudal femur 25.5, length of ovipositor 5.8 mm.

Holochlora fusco-spinosa Brunner. Plate XIV, figures 1 and 2.

1891. *Holochlora fusco-spinosa* Brunner, Verh. Zool.-bot. Ges. Wien., XLI, p. 92. [σ , Luzon, [Philippine Islands].]

Los Baños, Laguna, Luzon, Philippine Islands, August 26, 1915, (L. Uichanco), 1 σ ; 1913, (Ledyard), 1 σ .

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 σ .

Luzon, Philippine Islands, (from C. F. Baker), 1 φ .

Polillo Island, Luzon, Philippine Islands, (from C. F. Baker), 1 φ .

This species is closely related to *H. javanica* Brunner, differing in the tegmina which are obscurely maculate and which, in the females, narrow less evenly distad and are, in consequence, broader meso-distad. A short, suffused postocular line of brown is found on each side of the head, this continued as a short line of the same color along the lateral margins of the pronotal disk at its cephalic margin.

Brunner does not mention the stridulating area of the tegmina in the male type. In the male before us this area is occupied by a close network of veinlets, the stridulating vein itself subobsolete with no distinct convexity at the costal margin. This appears to agree closely with the type described for the male of *H. javanica* Brunner.

The female subgenital plate is minutely emarginate distad, this affording a feature of decided difference from *javanica*.

Length of body σ 28, φ 31 and 32; length of pronotum σ 7.2, φ 8.8 and 8.8; length of tegmen σ 45, φ 56.7 and 57.8; greatest width of tegmen σ 11, φ 15.2 and 15.7, meso-caudal width of tegmen σ 10.1, φ 13.8 and 14.5; length of cephalic femur σ 6.3, φ 8 and 8.2; length of caudal femur σ 27.5, φ 34.8, and —; length of ovipositor 9.8 and 10.1 mm.

Holochlora maxima new species. Plate XII, figure 5; plate XIV, figure 3.

This insect, known from a single female, is closely related to *H. fusco-spinosa* Brunner. It differs in the larger size, pale immaculate femoral spines and more deeply cleft apex of the subgenital plate. The tegmina are similar but more heavily maculate, this being, however, probably no stronger than in maximum intensive individuals of that species.

From the female sex of *H. javanica* Brunner it differs in all the features given here under *fusco-spinosa* to distinguish females of that species.

TYPE: ♀; Surigao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 701.]

Size very large, form robust. Tegmina tapering very gradually distad to meso-distal point, thence tapering strongly to the rather broadly rounded apex. Ovipositor as characteristic of the genus; proximal plica of dorsal valves acute dorsad but rounded ventrad, distance from base of ovipositor to end of plica slightly less than half that to apex of ovipositor. Subgenital plate elongate, medio-longitudinally carinate, lateral margins concave convergent to apex, which is V-emarginate a distance equal to the width of one of the two lateral, rounded apices thus formed. This emargination is distinctly larger than in *fusco-spinosa*.

General coloration yellowish, probably green in life. Head with a subobsolete postocular fleck of brown, which is continued very briefly on the lateral margin of the pronotal disk at the cephalic margin as a short linear suffusion. Tegmina with (six and seven) dark brown spots in proximal two-thirds of discoidal field near median vein and with much weaker but similar spots near ulnar vein toward the sutural margin and in areas between the ulnar and branches of the median vein.³¹ Limbs immaculate, except that the last joint of the caudal tarsi is dark brown to near its base; spines darkened only at their very tips. Abdomen with a large blackish blotch laterad on penultimate tergite. Ovipositor with dorsal portion of plica darkened, ovipositor valves embrowned except mesad toward base, becoming very dark distad.

Length of body 33.5, length of pronotum 9, caudal width of pronotal disk 6.7, length of tegmen 63.9, greatest width of tegmen 17.8, meso-distal width of tegmen 15.8, length of cephalic femur 8.3, length of caudal femur 35.3, length of ovipositor 11 mm.

The type is unique.

Holochlora javanica Brunner. Plate XIV, figure 4.

1878. *H[olochlora] javanica* Brunner, Monogr. der Phaneropteriden, p. 180.
[♂, ♀; Java; Sumatra; interior of India.]

Sandakan, British North Borneo, (from C. F. Baker), 1 ♀.

The immaculate tegmina, and subgenital plate of the female which is cleft in its distal two-fifths, quickly distinguish this insect from *H. fuscospinosa* Brunner and *H. maxima* here described.

Length of body 32, length of pronotum 8.2, length of tegmen 54.5, greatest width of tegmen 15.2, meso-caudal width of tegmen 13.8, length of cephalic femur 7.3, length of caudal femur 27.8, length of ovipositor 9.2 mm.

³¹ Similar but much weaker tegminal spots are indicated in two specimens of *fusco-spinosa* before us.

EULOPHOPHYLLUM new genus

The single species, to include which the present genus is proposed, is one of the most distinctive of the Orthoptera. This insect runs to the Group Holochlorae, nearest the genus *Liotrachela*, from which it is widely separated by features of the vertex, pronotum, tegmina, limbs and ovipositor. In the form and venation of the tegmina widest differentiation from any other known katydid is found.

GENOTYPE.—*Eulophophyllum thaumasium* new species.

Head deep, occiput convex with vertex curving and very strongly declivit to the facial fastigium, medio-longitudinally sulcate. Eyes elongate, vertical, not projecting strongly for the Group and very weakly so laterad. Pronotum short, surface of disk weakly concave with lateral margins raised in a rounded ridge; lateral lobes vertical, with width approximating depth, ventro-caudal portion decidedly produced caudad and broadly rounded. Tegmina very broad; costal margin nearly straight, very weakly and evenly convex; sutural margin broadly and evenly convex proximad, becoming strongly convex distad, to the rather sharply rounded apex at the costal margin. Tegmina with discoidal vein weakly and evenly curved to apex, sending seven straight and moderately oblique veins to the costal margin, which are parallel to and as heavy as the mediastine vein; median vein with two weak distal branches which curve distad in brief proximal portion, then recurve and run back to the sutural margin as weakly curved veins parallel to the similar branches of the ulnar vein. Ulnar vein separated a brief distance from the median vein, running to end of proximal three-fifths of tegmen, with three branches (the last actually the recurved portion of the ulnar vein itself) which recurve sharply and run back to the sutural margin as weakly curved, parallel and equally separated veins. The branches of these tegminal veins are all subparallel with intervening sections of the tegminal surface weakly concave. Wings with intercalated triangle apical and large. Mesosternal and metasternal lobes small, rounded quadrate. Ovipositor large, broad to the rounded apex, dorsal margin denticulate to near base, ventral margin denticulate distad; basal plica present, but weakly defined and rounded. Female subgenital plate simple. Cephalic coxae spined. Femora moderately heavy. Cephalic tibiae with dorsal surface flattened, subsulcate, bearing on its internal margin a proximal and an apical spine; auditory foramina flattened conchate internally, apert externally.

***Eulophophyllum thaumasium* new species.** Plate XII, figures 6 and 7.

The remarkable tegmina, with costal margin nearly straight and sutural margin strongly convex distad, give to the organs of flight, when these are spread, a strongly Lepidopteroid contour.

TYPE: ♀; Labuan, British North Borneo. [Hebard Collection, Type no. 802.]

The following features are noteworthy, in addition to those given in the generic diagnosis.

Antennae, beyond first two joints, exceedingly slender. Pronotal disk with cephalic margin weakly concave and caudal margin broadly convex, lateral margins straight and moderately divergent caudad. Ultimate tergite with a small, transverse, rectangular impressed area above the median portion of the supra-anal plate; the latter broader than long, simple, triangular. Lateral surfaces of ovipositor showing very faint, delicate, transverse striation in distal portions. Subgenital plate with lateral portion reflexed, roughly triangular, the weakly concave lateral margins converging to the rather broadly convex apex. Ventral femoral margins specialized as indicated and armed with the following spines. Cephalic internal (lamellate) 6 and 6, cephalic external 0 and 1, median internal 0, median external (lamellate) 6 and 7, caudal internal 3, caudal external 6.

General coloration ochraceous buff, the following portions barya yellow; a vertical subocular line, a very faint postocular line, the broad lateral margins of the pronotal disk, the transverse veins of the tegmina and a broad stripe including the ulnar vein but evenly continued an even distance from the median vein to the tegminal apex. Interval between ulnar stripe and median vein of tegmen greenish, the surfaces adjacent to the transverse veins showing a faint greenish tinge. Antennae of general coloration with very widely separated, rather broad annuli, which in proximal half are whitish and in distal half very dark brown.

Length of body 26, length of pronotum 5.9, cephalic width of pronotal disk 3.8, caudal width of pronotal disk 5.2, depth of pronotal lateral lobe 5, width of pronotal lateral lobe 4.7, length of tegmen 32.8, greatest width of tegmen 19, length of cephalic femur 7.2, length of caudal femur 20.8, length of ovipositor 18, greatest (meso-distal) width of ovipositor 3.8 mm.

The type of this extraordinary and leaf-like katydid is unique.

Sympaestria lampra new species. Plate XIV, figures 5 and 6.

This handsome species appears to resemble closely Haan's *nitidifolia*³² in general appearance and tegminal venation, differing in having the auditory foramina of the cephalic femora conchate internally, apert externally.

³² Karny has recently shown that Dohrn was in error in supposing *nitidifolia* assignable to *Sympaestria* and in considering the Brazilian *Stibara cornea* Brunner a synonym of that species. The differences between those species are there discussed, the decision being that *nitidifolia* is a species of *Stibara* or a member of a genus more nearly related to that entity than to any known Asiatic genus (*Zool. Mededeel. Rijks Mus. Nat. Hist. Leiden*, V, p. 200, (1920).).

In the three specimens before us, the proximal fork of the first branch of the median vein runs to the sutural margin; in the single male, however, the sinistral tegmen has this branch running directly into the ulnar vein, as described for the genotype, *Sympaestria acute-lobata* Brunner. Unusual individual variation is shown by this same fork being before the middle of the branch in the male, beyond the middle of the branch in the Sandakan female and decidedly beyond the middle of the branch in the Labuan female.

In the tegmina the ulnar vein to near its apex, the median, its first branch and forks of the same to near their apices and the discoidal veins are very heavily defined in the discoidal and scapular fields, other venation being scarcely noticeable to the naked eye.

TYPE: ♀; Labuan, British North Borneo. [Hebard Collection, Type no. 858.]

Size large, form robust but graceful. Vertex rounding strongly ventrad, its surface flattened so that in dorsal aspect it appears truncate, as wide as first antennal joint, showing mesad a short but rather heavy medio-longitudinal sulcus. Pronotum with disk feebly convex, broadening evenly caudad to the nearly semicircular caudal margin, sharply defined from the vertical lateral lobes by well rounded lateral angulation; lateral lobes decidedly deeper than long, cephalic margin straight, broadly rounding into the briefly straight ventral margin, which rounds even more broadly into the weakly convex caudal margin, humeral sinus decided. Tegmina and wings fully developed, the former stiff, shell-like, glossy, appearing smooth to the naked eye, but under the lens seen to be thickly and very finely impressed between the myriad of very minute veinlets; veins as described above; tegmina broadest mesoproximad, the sutural margin showing there a broadly convex angulation, margins convergent distad to the rather strongly rounded apex. Ovipositor broad, curved upward, apex rounded, dorsal and ventral margins armed distad with regular, small, rounded serrulations. Subgenital plate small, convex, longer than wide, triangularly acute-angulate produced with apex blunted. Cephalic coxae unarmed. Genicular lobes of cephalic and median femora rounded, of caudal femora bispinose. Ventral margins of cephalic and median femora unarmed, of caudal femora with 2 to 5 internal and 3 to 6 external, minute, almost microscopic spines. Cephalic tibiae rounded and with a single, minute disto-internal spine dorsad; internal auditory foramen conchate (or better termed moderately swollen, rimate), external auditory foramen apert.

ALLOTYPE: ♂; same data as type. [Hebard Collection.]

Agrees with female except as follows. Form slightly more graceful, pronotum distinctly narrower cephalad. Tegmina with surface of stridulating field much as elsewhere, stridulating vein

weakly defined. Ultimate tergite produced, truncate distad, lateral portions convex, mesad showing an angulate concavity which is narrowest distad. Supra-anal plate beneath, shield-shaped. Cerci slender, simple, cylindrical, tapering and weakly curved inward to the apex, which is armed with a very minute tooth. Subgenital plate moderately produced, tri-carinate, with lateral carinae rounded; distad bluntly V-emarginate, the lateral portions truncate and surmounted by small, simple styles, slightly longer than the depth of the emargination and three times as long as wide.

General coloration rich oil green. Lateral margins of pronotum and stridulating field of tegmen yellowish, beyond the sutural margin of the tegmina is blackish or has the minute intervals between the veinlets blackish, this continued to the apex. Proximad on the tegmina, particularly in the marginal field, moderately large suffused flecks of darker green or purple drab are indicated. Caudal margin of pronotum immaculate in male, faintly margined with black in Labuan female, narrowly but distinctly margined with black in Sandakan female.

Length of body ♂ 36, ♀ 34 and 35.8; length of pronotum ♂ 8.7, ♀ 8.9 and 9.4; caudal width of pronotum ♂ 7, ♀ 7.2 and 7.7; length of tegmen ♂ 53.8, ♀ 49.2 and 52.7; greatest width of tegmen ♂ 18, ♀ 17.8 and 18.2; length of caudal femur ♂ 22.3, ♀ 19.8 and 21.2; length of ovipositor 7 and 7.7 mm.

This handsome species is known from the described pair and a paratype female from Sandakan, British North Borneo, from C. F. Baker.

Dysmorphia obesa Brunner.

1878. *D[ysmorphia] obesa* Brunner, Monogr. der Phaneropteriden, p. 355, pl. VIII, fig. 106. [♀;³³ Malacca, [Malay Peninsula].]

Jelabu, British Straits Settlements, Malay Peninsula, 1 ♀.

This insect is clearly a higher development from a type similar to that of *Sympaestria*. Brunner separated these species very widely, due to the presence in *Dysmorphia* of apert auditory foramina on both faces of the cephalic tibiae. Though representing a Group, the *Dysmorphiae*, we place it immediately after the genus *Sympaestria*.

The female before us is found to resemble the type closely. The ovipositor is broad, upcurved, with apex rounded, suggesting the type developed in *Eulophophyllum*.

The richness and beauty of the coloration in this insect is very striking. The tegmina are shell-like, glossy, with stridulating field blackish brown, except for a few small areas of javel green.

³³ A Sumatran male of this species has subsequently been fully described by Griffini (*Wiener Ent. Zeit.*, XXVIII, p. 105, (1909).)

The other portions of the tegmina are javel green, with numerous short, linear streaks of purplish black, the sutural margin yellow ocher, interrupted by heavy flecks of blackish brown, which become smaller and are marginal in position distad.

Length of body 32, length of pronotum 12.7,³⁴ caudal width of pronotum 9.7, length of tegmen 41, greatest width of tegmen 22.1, length of caudal femur 16.7, length of ovipositor 12.8 mm.

Liotrachela cryptisema³⁵ new species. Plate XIV, figure 7.

The unique female before us of this species is distinguished from its close ally, *L. minuta* Brunner, by the more slender form, distinctly narrower tegmina, slightly longer ovipositor and antennal coloration. In these appendages the first joint is blackish brown dorso-distad, the second joint solidly blackish brown, in striking contrast to the other portions which are of the pale general coloration.

TYPE: ♀; Davao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 803.]

Size small and form slender for the genus. Vertex narrow, scarcely wider than the first antennal joint proximad, narrowing strongly, then with margins parallel to the blunt apex, with a linear sulcation to near apex; declivent in proximal portion, weakly declivent in distal portion. Pronotum with disk flattened, its lateral margins sharply rounded; lateral lobes distinctly higher than wide. Tegmina elongate, slender for the genus; first branch of median vein very weakly oblique, branching a short distance beyond its median point; second branch distal, strongly oblique, unbranched. Cephalic tibiae flattened dorsad, subsulcate briefly beyond proximal portion. Ovipositor short, broad, with lateral surfaces weakly and minutely tuberculate, curved strongly upward proximad, apex rounded, dorsal margin to near base and distal third of ventral margin armed with minute, even, rounded teeth. Subgenital plate longer than broad, with lateral margins weakly convex and convergent to the sharply rounded apex. Ventral femoral margins armed with small spines as follows. Cephalic internal 3 and 4, cephalic external 0, median internal 0, median external 1 and 2, caudal internal 9 and 11, caudal external 10 and 11.

Coloration yellowish, probably green in life, the antennae marked as described above. Spines black tipped, except those of cephalic tibiae.

Length of body 20, length of pronotum 5.6, caudal width of pronotum 4.2, depth of pronotal lateral lobe 4.8, width of pronotal

³⁴ Though given as 18 mm. for the type, the figure shows this dimension to be 11.9 for that specimen.

³⁵ In allusion to the easily overlooked, but apparently diagnostic, antennal marking.

lateral lobe 3.7, length of tegmen 37.8, greatest width of tegmen 7.3, length of cephalic femur 6, length of caudal femur 25.7, length of ovipositor 6.9 mm.

Liotrachela minuta Brunner.

1878. *L[iotrachela] minuta* Brunner, Monogr. der Phaneropteren, p. 184.
[♂; Luzon, [Philippine Islands].]

Los Baños, Laguna, Luzon, Philippine Islands, February 21, 1919, (S. G. Yap), 1 ♂.

Mount Banahao, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀.

The previously unknown female of *minuta* differs only from the female of *L. cryptisema*, here described, in the vertex which is broader proximad, in the immaculare antennae and in the proportions of the pronotum, tegmina and ovipositor.

Length of body 24.7, length of pronotum 6, caudal width of pronotum 4.8, depth of pronotal lateral lobe 5, width of pronotal lateral lobe 3.9, length of tegmen 39.3, greatest width of tegmen 8.7, length of cephalic femur 5.9; length of caudal femur 24.3, length of ovipositor 6 mm.

Liotrachela iliganae new species. Plate XIV, figures 8, 9 and 10.

Related to *L. minuta* Brunner, the male before us differs from the male type of that species in its slightly larger size, broader tegmina, distinctive genitalia and caudal tibiae which have a small dark brown suffusion on their external faces proximad.

TYPE: ♂, Iligan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 804.]

Size slightly larger than *minuta*, form similar. Vertex much as here described for *L. cryptisema*, except that it is more evenly declivent. Pronotum as there described, except that it is slightly broader. Tegmina similar except that they are wider, the first branch of the median vein forking mesad. Supra-anal plate weakly produced to a bilobate apex, with emargination between very small and rounded, below which projects the small, acute, triangular supra-anal plate. Cerci extending caudad nearly to apex of subgenital plate, proximal portion cylindrical, feebly tapering and feebly recurved; external margin very weakly convex proximad and strongly so distad to the acute, toothed apex, which is horizontal and directed mesad; internal portion of distal half enlarged into a somewhat flattened, rounded triangular projection, the internal margin, from the apex of this projection to the apex of the cercus, strongly concave and armed to near apex with (9 to 11) minute, stout teeth. Subgenital plate with margins moderately convergent in proximal portion, produced in two slender, sharp, straight spikes in slightly over distal third, the interval between these very

narrowly U-shaped. Ventral femoral margins armed as follows. Cephalic internal 3 and 4, cephalic external 0, median internal 0, median external 3 and 3, caudal internal 7 and 7, caudal external 6 and 6.

Coloration yellowish, greenish on caudal limbs and tegmina, probably uniform green in life. The caudal tibiae are marked as described above.

Length of body 25, length of pronotum 6.7, caudal width of pronotum 4.7, depth of pronotal lateral lobe 4.8, width of pronotal lateral lobe 4, length of tegmen 40, greatest width of tegmen 9, length of cephalic femur 5.8, length of caudal femur 27 mm.

In addition to the type, a single immature male is before us, secured at Kolambungan, Mindanao, Philippine Islands, from C. F. Baker.

Ephippitytha trigintiduoguttata Serville.

1839. *Phaneroptera* [*Ephippitytha*] *trigintiduoguttata* Serville, Hist. Nat. Ins., Orth., p. 422. [σ , Australia.]

Queensland, Australia, 1 ♀.

In all, thirty eight small, transverse, brown marks are to be found on the tegmina of this specimen.

Caedicia gloriosa new species. Plate XIV, figures 11 and 12.

This beautiful insect in form reminds one of one of the species of the New World genus *Phaneroptera* (*Scudderia* of recent authors). It shows nearest relationship to *C. marginata* Brunner, differing in the unicolorous pronotal disk, more striking and varied coloration of head, abdomen and tegmina and in the much more elongate limbs. It runs to *marginata* in Brunner's key, except that the caudal margin of the pronotum is not margined with black (*Monogr. der Phaneropteriden*, p. 190, (1878).)

TYPE: σ ; Townsville, Queensland, Australia. [Hebard Collection, Type no. 789.]

Vertex very slender, evenly and strongly declivit, longitudinally sulcate, its apex very slightly enlarged, minutely bilobate. Face convex, bounded laterad by a distinct impression which, in turn, is bounded by a low rounded ridge running from the eye to the clypeal suture. Maxillary palpi with fourth joint four-fifths as long as third, one-half as long as fifth. Pronotal disk deplanate, lateral margins straight and diverging very weakly caudad, rounding strongly into the nearly vertical lateral lobes; the latter with depth subequal to width. Tegmina elongate and narrow, narrowing gradually distad to the rounded apex; stridulating field very narrow; median vein branching at end of proximal third and with two distal branches, the first branch curving and running longitudinally in median portion, forking at end of its proximal three-fifths. Supra-anal plate very small and deflexed between cercal

bases. Cerci moderately elongate, moderately stout, flattened cylindrical, curving gently inward to the truncate apex which is armed with a row of minutely microscopic teeth. Subgenital plate small, extending caudad a decidedly lesser distance than the cerci, apex triangularly emarginate, the lateral extremities bluntly rounded. Genicular lobes of femora bidentate. Ventral femoral margins armed as follows with small teeth; cephalic internal 5 and 6, cephalic external 0, median internal 0, median external 5 and 6, caudal internal 7, caudal external 9. Cephalic tibiae with dorsal surface strongly sulcate, external margin with three and one distal small spines.

Head clay color, a postocular buffy line continued on each side along the pronotum to its caudal margin and below eyes to clypeal suture, this line bordered internally on vertex with hydrangea red and with a short median streak of the same color below the eyes. Eyes auburn, with a slender longitudinal blackish line. Pronotum clay color, the disk evenly washed with hydrangea red. Femora clay color with spines mars brown, tibiae and tarsi mars brown. Abdomen clay color, with a series of blackish brown markings laterad, the dorsal surface showing traces of hydrangea pink. Tegmina with anal field ochraceous-tawny margined with black, this heavy in area of stridulating field; discoidal field light green, scapular field dark green proximad shading into vinaceous, the costal margin narrowly white with immediate margin black in proximal portions.

Length of body 22.7, length of pronotum 5.8, cephalic width of pronotum 2.3, caudal width of pronotum 3.3, width of pronotal lateral lobe 4.2, depth of pronotal lateral lobe 4.1, length of tegmen 36.5, greatest (meso-proximal) width of tegmen 6.7, median width of tegmen 6, distal width of tegmen 3.9, length of cephalic femur 7.8, length of caudal femur 30 mm.

The delicacy of coloration in this species, the type of which is unique, gives it an exceptional beauty.

PLATYCAEDICIA new genus

This genus is erected to include species which have a very different general facies from the genotype of *Caedicia*, showing to it much the same general contrast which, in the New World, is found between the genera *Amblycorypha* and *Phaneroptera* (*Scudderia* of recent authors).

A general revision of the species of *Caedicia* is evidently greatly needed, the species now included probably representing several distinct genera. To *Platycaedicia* belong *major* (Brunner), *obiensis* here described and very possibly *hospes* (Brunner). The latter species was described from Amboina and referred to by Brunner as an Asiatic species. This is incorrect, Amboina being far east of Wallace's line and its fauna distinctively Melanesian.

GENOTYPE.—*Placycaedicia obiensis* new species.

Agrees closely with *Caedicia* differing in the following features. Cephalic tibiae nearly flat dorsad, showing subobsolete sulcation. Pronotum with disk widening distinctly caudad, lateral lobes with width distinctly less than depth. Tegmina broad, width much greater than the pronotal length, the branches of the median vein resultantly more oblique. Limbs decidedly shorter and heavier in proportion to the body bulk.

Nothing is to be found of diagnostic importance in the shape of the mesosternal and metasternal lobes. It is surprising to find so little difference after a close comparison of *obiensis* with the very widely different appearing *Caedicia gloriosa* here described.

***Platycaedicia obiensis* new species.** Plate XIV. figures 13 and 14.

This insect is closely related to *P. major* (Brunner), differing in the decidedly smaller size, narrower tegmina, less numerous spines of the dorso-external margin of the cephalic tibia and more numerous spines of the ventro-external margin of the caudal femora.

To *P. hospes* (Brunner) it would appear to be nearest in the majority of features, but the slightly sulcate dorsal surface of the cephalic tibiae and triangular mesosternal and metasternal lobes in that insect may indicate that these species are actually generically distinct.

TYPE: ♀; Obi Island, Moluccas. [Hebard Collection, Type no. 790.]

Vertex narrow, narrowing and evenly and strongly declivit, longitudinally sulcate but with the sharply rounded apex entire. Face rather decidedly convex, the depression and ridge on each side less decided than in *Caedicia gloriosa*, here described. Maxillary palpi with fourth joint two-thirds as long as third, only two-fifths as long as the very elongate fifth joint. Pronotal disk deplanate, lateral margins very weakly concave and diverging moderately caudad, rounding strongly into the nearly vertical lateral lobes; the latter with depth distinctly greater than width. Tegmina elongate and broad sutural margin very broadly and weakly convex but curving more broadly into the rounded apex than does the costal margin; median vein branching slightly before its median point and with four more distal branches the first branch forking slightly before end of its proximal third, all of the branches of the median vein following a strongly oblique course throughout or in greater portion. Ovipositor minute, unarmed, the apices of the dorsal valves produced with extremities sharply rounded; basal plica with a large, stout, convex-conical projection meso-caudad, which is directed caudad, the entire median portion of the plate very deeply concave. Subgenital plate very small, rounded triangular, with apex very briefly and narrowly emarginate. Geni-

cular lobes of femora bidentate, except those of cephalic femora which are very weakly so or are very weakly unidentate. Ventral femoral margins armed as follows with small teeth; cephalic internal 8 and 8, cephalic external 0, median internal 0, median external 9 and 9, caudal internal 12, caudal external 14. Cephalic tibiae with dorso-external margin armed with one proximal and one distal spine.

General coloration apparently light apple green in life, faded in large part to light yellowish brown in this dried specimen. Head with a short blackish brown line margining the dorso-internal margins of the eyes and another blackish brown fleck immediately below each eye. Maxillary palpi with distal joint tipped with blackish brown. Pronotum with lateral margins of disk apparently weakly defined in more yellowish green, with a small blackish brown fleck on each side of cephalic margin immediately within the lateral margins. Tegmina with a few dark brown flecks, irregularly placed but the majority mesad in areas between the ulnar and median veins to the latter's first branch; these flecks inconspicuous, but seen under the microscope to be solid and not made up of a cluster of minute flecks. Limbs unicolorous.

Length of body 22, length of pronotum 6.7, cephalic width of pronotum 2.6, caudal width of pronotum 4.2, width of pronotal lateral lobe 4.3, depth of pronotal lateral lobe 5.4, length of tegmen 42, greatest (median) width of tegmen 12.7, distal width of tegmen 9.8, length of cephalic femur 7, length of caudal femur 25.7, length of ovipositor 2.3 mm.

The type is unique.

Diastella maculata new species. Plate XV, figure 1.

This species, from Brunner's very inadequate description, appears to be closely related to that author's *D. flexuoso-cercata*, described from New Guinea. In the present insect the pronotal disk is not concave, while the tegmina are irregularly marked with large blotches of darker brown instead of being very weakly ornamented with oblique darker markings.

The heavier structure and pronotum which expands much more strongly caudad and has the ventral margins of the lateral lobes nearly straight and oblique in the Australian genotype, *D. latifolia* Brunner, may indicate that these species should be separated generically. The Melanesian species agree instead with Bolivar's genus *Diastellida*, but differ strikingly from that genus in the very conspicuous widening distad of the tegmina.

TYPE: ♀; Fakfak, Dutch New Guinea. [Hebard Collection, Type no. 481.]

Vertex very strongly declivous, longitudinally sulcate but with small, rounded apex entire. Face tumid. Maxillary palpi with

fourth joint three-quarters as long as third, two-fifths as long as the very elongate fifth joint. Pronotal disk deplanate, lateral margins very weakly concave and diverging moderately caudad, rounding strongly into the nearly vertical lateral lobes; the latter with width distinctly less than depth, margin from humeral sinus to ventro-cephalic angle rounded but showing some flattening ventrad. Tegmina coriaceous, due to the very close network of veinlets, elongate and broad, expanding with decidedly the greatest width distad; median vein branching slightly before its median point and with two more distal branches, the first branch forking near its base, all of these branches following a strongly oblique course. Ovipositor very minute, the genitalia as described on page 168 for *Platycaedicia obiensis*, except that the basal plica is not as deeply concave, its projection more slender and the subgenital plate has the apical emargination weaker. Ventral femoral margins armed with small teeth as follows; cephalic internal 4 and 4, cephal external 0, median internal 0, median external 4 and 5, caudal internal 7 and 8, caudal external 10 and 12.

General coloration ochraceous-buff, showing a greenish tinge in the discoidal field of the tegmina. Head with vertex showing a mottled suffusion of snuff brown. Antennae snuff brown with numerous irregular minute annuli of ochraceous-buff. Dorsal surface of pronotum solidly snuff brown to slightly beyond lateral margins and thickly but microscopically speckled with bister. Tegmina maculate and spotted with bister as figured, the proximal suffusion deepening to blackish brown in median portion. Distal extremity of cephalic and median femora snuff brown microscopically speckled with bister, caudal femora similarly marked with two additional bands of the same in distal portion. Cephalic tibiae triannulate, median femora quinqueannulate with the same. Dorsal surface of caudal tibiae seal brown.

Length of body 30, length of pronotum 6.1, cephalic width of pronotal disk 3, caudal width of pronotal disk 4.4, width of pronotal lateral lobe 4.7, depth of pronotal lateral lobe 5.2, length of tegmen 37, median width of tegmen 11.7, greatest (meso-distal) width of tegmen 14.6, length of cephalic femur 5.7, length of caudal femur 20.9, length of ovipositor 1.9 mm.

The type of this handsome species is unique.

Paracaedicia serrata Brunner.

1891. *Paracaedicia serrata* Brunner, Verh. Zool.-bot. Ges. Wien., XLI,
p. 103. [φ ; Sekar, New Guinea.]

Obi Island, Moluccas, 1 φ .

This specimen agrees very closely with the original description as emended in Bolivar's key (*Terres. Füzetek*, XXV, p. 190, (1902).) We find the dorsal surface of the cephalic and median tibiae to be deplanate but weakly sulcate.

Length of body 32, length of pronotum 8, length of tegmen 49.8 greatest (median) width of tegmen 13.6, length of caudal femur 27.3, length of ovipositor 2 mm.

Polichne parvicauda (Stål)

1860. *Phaneroptera parvicauda* Stål, Kongl. Svenska Freg. Eugenie's Resa., Zool., I, p. 320. [♀; Sydney, [New South Wales], Australia.]

Queensland, Australia, 1 ♀.

Anerota³⁶ subcarinata (Bolívar)

1899. *Ph[aneroptera] subcarinata* Bolívar, Ann. Soc. Ent. France, LXVIII, p. 764. [♂, ♀; Madura, Southern India.]

Phuc-Son, Annam, November and December, (from H. Frühstorfer), 1 ♂.

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀.

Iligan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♂.
Labuan, British North Borneo, 1 ♂, 1 ♀.

These specimens agree closely with material from southern India in the collection of the author. The females from Mount Makiling and Obi Island, however, do not show the usual and minute pronotal speckling.

Anerota furcifera (Stål).

1874. *P[haneroptera] furcifera* Stål, Recensio Orth., II, p. 29. [♂, Philippine Islands.]

Baguio, Benguet, Luzon, Philippine Islands, (from C. F. Baker), 2 ♀.

Polillo Island, Luzon, Philippine Islands, (from C. F. Baker), 2 ♀.

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 3 ♂, 1 ♀.

Mount Makilung, Luzon, Philippine Islands, (from C. F. Baker), 2 ♂.

We find no diagnostic difference in tegminal length between this species and *A. gracilis* (Burmeister). In all of the material before us of these two species, the tegmina fail to reach the apices of the caudal femora by a considerable interval, except in the female of the present species from Baguio.

Anerota gracilis (Burmeister)

1838. *Ph[aneroptera] gracilis* Burmeister, Handb. Ent., II, Abth. II, pt. I, p. 690. [♂, ♀; Java.]

1839. *Phaneroptera brevis* Serville, Hist. Nat. Ins., Orth., p. 418. [♂, ♀; Java.]

Sandakan, British North Borneo, (from C. F. Baker), 1 ♂.

³⁶ This name has recently been proposed by Caudell, Jour. Washington Acad. Sci., XI, p. 488, (1921). It takes the place of *Phaneroptera* of recent authors and *Gryllus falcatus* Poda is designated genotype. That author there fixes the genotype of *Phaneroptera* as *Locusta curvicauda* deGeer, this being the first valid genotypic fixation for that genus. As a result, the genus *Phaneroptera* now stands as valid for the North American genus recognized as *Scudderia* by recent authors, *Scudderia* falling as a synonym of *Phaneroptera*.

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♂,
1 ♀.

Kirby has already synonymized *brevis* and Stål's *subnotata* from the Philippines. Burmeister's *gracilis* is not preoccupied by *gracilis* of Germar, 1817, as supposed by Karny,³⁷ Germar having described a *Locusta gracilis*.

MECOPODINAE

After careful consideration of the literature and comparison of the species before us, we believe it best to follow Bolivar's arrangement of the sections and genera of this subfamily.³⁸ The remarkable development of the pronotum in the Section *Phyllophori* does not, in our opinion, warrant its recognition as a distinct subfamily.³⁹ The Sections *Phrietae* and *Segestini*⁴⁰ are, indeed, both more widely divergent from the Section *Mecopodi*.

Section PHRICTAE

CHLORACANTHA new genus

This genus is based on a single remarkable species here described, differing in a number of important features from the other genera of Section *Phrietae*. In fact the wholly unarmed femora and caudal tibiae, which are armed distad with a single small pair of ventral spurs, may oblige placement of this insect in a section of its own. The single species known is of very small size for the Subfamily.

GENOTYPE.—*Chloracantha lampra* new species.

Antennal scrobes very large, their margins moderately produced latero-ventrad and produced, attingent and rounding dorso-mesad; thus with narrowly triangular, sulcate vertex fitting tightly between them dorsad and the very narrowly triangular facial fastigium similarly fitting tightly between them on the cephalic face. Eyes globose and very prominent. Antennae very long, with proximal joints smooth. Frons reclinate, smooth, slightly higher than wide. Pronotum with disk flat, the two transverse sulci straight and deep, with a weakly indicated medio-longitudinal sulcus; cephalic and caudal margins of disk both very feebly convex and nodulose, lateral margins straight, nearly parallel; armed with large, rounded spines. Lateral lobes of pronotum vertical, decidedly longer than

³⁷ Zool. Mededeel, Rijks Mus. Nat. Hist. Leiden (1920); and Philippine Jour. Sci., XVIII, p. 616, (1921).

³⁸ Ann. Mus. Nat. Hungarici, I, pp. 161 to 178, (1903).

³⁹ Recognized by Caudell (*Gen. Ins., Fasc. 138, Orth., Locustidae*, p. 7, (1912).)

⁴⁰ See page 176, for our reasons for changing the name of this section from the *Moristini* to the *Segestini*.

deep, humeral sinus subobsolete. Tegmina foliaceous, rounding broadly distad at apex, veins and veinlets strongly defined in color, stridulating area large, with a large oval veinless area caudad. Wings small, parachute-like, showing distinct reduction and incapable of sustained flight. Prosternum strongly bispinose. Mesosternum with cephalic margin raised and tuberculate, this and the metasternum produced caudad in rounded-triangular lobes. Cephalic and median coxae bluntly angled proximad, the former with a heavy externo-lateral spine. Limbs slender. Femora unarmed, the genicular lobes angulate-rotundate; cephalic femora carinate dorsad, much longer than the median femora. Cephalic tibiae flattened dorsad between the very slightly raised lateral margins, this surface entirely unarmed; auditory foramina apert on both sides.

***Chloracantha lampra* new species.** Plate XIV, figures 15 and 16; plate XV, figure 2.

This species is widely distinguished from those of the genera, nearest to which it is placed, by its small size and great differences in the pronotal, tegminal and limb development.

The heavily spined lateral margins of the pronotum and green coloration, with beautifully but delicately marked tegmina, give this little insect a very distinctive appearance.

TYPE: ♂; Townsville, Queensland, Australia. [Hebard Collection, Type no. 807.]

In addition to the characters given in the generic description, the following are noted. Size small, form moderately slender. Maxillary palpi moderately elongate, fourth joint slightly shorter than third, third three-quarters as long as the fifth, the latter expanding distad at the obliquely truncate apex. Lateral margins of pronotal disk with large, rather slender, blunt spines, directed laterad and weakly dorsad, two on the prozona, two on the mesozona and three on the metazona on each side, the first and last much smaller than the others; lateral lobes with ventral margin nearly straight and weakly oblique, this margin and the rounded ventral angles supplied with irregular tubercles, three such tubercles being also present on the face of the lateral lobe. Tegminal venation forming a large and rather irregular series of angular areas; apex of tegmen at costal margin, broadly rounded. Supra-anal plate produced in a hooded lobe, with sides curling inward so that only a narrow vertical slit is seen meso-caudad and completely concealing the cerci. Subgenital plate small, narrowing to the narrowly V-emarginate apex. Cephalic tibiae narrow very gradually beyond the auditory foramina.

General coloration light elm green. Eyes warm sepia. Antennae verona brown. Tegmina with veins outlined in elm green, the areolae between light elm green in central portions, margined with greenish buff about the periphery of each, with a number of irregularly placed, round spots of apricot yellow; toward the costal

margin the tegmina become colorless, like ground-glass, with immediate margin buffy, this preceded by a very narrow suffusion of hydrangea red proximad; the veinless area of the stridulating field is also colorless, like ground-glass. Head, except vertex (which is light elm green and occiput which is washed with that color), and narrow portion of lateral lobes of pronotum, toward ventral margin buffy. Wings transparent but showing some opaque tendency like ground-glass, the cross-veinlets narrowly outlined in barium yellow. Limbs unicolorous, light elm green.

Length of body 16, length of pronotum 4.2, greatest pronotal width 2.9, height of longest lateral pronotal spine .8, depth of pronotal lateral lobe 2.2, length of pronotall ateral lobe 3.9, length of tegmen 13.4, median width of tegmen 5.1, length of cephalic femur 8.3, length of median femur 7, length of caudal femur 13.2 mm.

The type of this beautiful species is unique.

Mossula kiriwina new species. Plate XIV, figures 17 and 18.

This insect is nearest *M. salomonis* Kirby, apparently differing in the dark occiput, pale proximal portions of the antennae, dark caudal margin of the pronotal disk, narrower tegmina and shorter limbs.

In general appearance and the majority of generic and higher characters it is seen to agree closely with the species before us, here recorded as *Paradiaphlebus notatus* Brunner. In such features it differs primarily in having the cephalic femora with auditory foramina flattened conchate and in the vertex, which tapers to a minute rounded point with sides swollen, then falling away and sharply concave declivent to another similar projection, immediately above its intersection with the facial fastigium.

The present group, including these genera and *Diaphlebus*, requires careful revision and until this is done the proper number of valid genera contained can not be determined.

TYPE: ♂; Kiriwina, Trobriand Island, Melanesia.⁴¹ [Hebard Collection, Type no. 808.]

Form moderately robust. Eyes large, larger than in *P. notatus*. Vertex as described above. Maxillary palpi with fourth joint slender proximad, three-fifths as long as third, third joint nearly as the elongate, thickened, very weakly expanding and very weakly curved fifth joint. Pronotum with surface coarsely and heavily wrinkled, shaped much as in *P. notatus*, disk flattened and moderately concave caudad; caudal margin truncate, showing a very slight convexity; lateral lobes longer than deep, the humeral sinus distinct but not deep. Tegmina and wings fully developed; the

⁴¹ Situated off the northeastern coast of New Guinea.

former narrowing very gradually to the broadly rounded apex, veinlets very numerous and coarse, even in stridulating field, stridulating vein obsolete. Wings parachute-like, fully developed. Prosternum bispinose. Mesosternal lobes acute-angulate, metasternal lobes rounded, truncate caudad. Ultimate tergite weakly produced with lateral margins straight and very strongly convergent to median portion, which is shallowly and transversely emarginate, the proximo-lateral angles of this emargination rounded and its basal margin transverse. Below this portion is the rotundato-trigonal supra-anal plate. Cercus cylindrical, weakly incurved, tapering to the rounded apex, which is surmounted by a minute tooth, directed mesad. Subgenital plate rectangulate-emarginate distad, the lateral apices each bearing a heavy, straight style, nearly four times as long as broad. Femoral genicular lobes unispinose. Ventral femoral margins armed with the following number of spines. Cephalic internal 4, cephalic external 0, median internal 0, median external 4 and 5, caudal internal 7 and 9, caudal external 10 and 11. Cephalic tibiae with auditory foramina flattened conchate, but with slit wider than is usual in this type, these members flattened dorsad. Armament of tibiae as in *P. notatus*. Cephalic tibiae with an apical spine dorsad on each side and with two other spines on external margin. Caudal tibiae armed distad with three pairs of spurs.

General coloration chamois.⁴² Head with entire occiput suffused with blackish mummy brown; suture at base of antennal scrobes, twin subocular flecks and a median pair of weak suffusions on face and clypeus also this color. Pronotum with cingulate caudal margin blackish mummy brown, the adjacent portions of the disk and of the tegminal stridulating field suffused with this color as well. Tegmina with minute intervals between veinlets appearing slightly darker and with a few exceedingly weak brownish suffusions along the sutural margin. Wings brownish buff. Femora with spines blackish mummy brown, these members suffused with this color at apices also.

Length of body 38, length of pronotum 7.8, caudal width of pronotum 5.9, depth of pronotal lateral lobe 5.1, width of pronotal lateral lobe 5.8, length of tegmen 42.2, median width of tegmen 11, distal width of tegmen 7.8, length of cephalic femur 14, length of caudal femur 33 mm.

The type is unique.

Paradiaphlebus notatus (Brunner) Plate XVI, figure 1.

1898. *D[iaphlebus] notatus* Brunner, Abh. Senckenb. Naturforsch. Ges., XXIV, p. 258, pl. XIX, fig. 45. [σ ; Halmahera, [Gilolo Island, Moluccas].]

Obi Island, Moluccas, 1 ♀.

⁴² The sinistral caudal femur distad and the proximal portion of the sinistral caudal tibia are washed with light green. This appears to be a stain rather than the survival in a dried specimen of patches of green, which specimen in life was of a general green coloration.

This specimen agrees closely with the very inadequate description given by Brunner and with his figure, except that in the latter the auditory foramen is shown as fully conchate and the spines of the ventral margin of the caudal femora are heavier. These differences may be due to inaccuracies in drawing, as Kirby has already assigned the species to the genus *Paradiaphlebus*,⁴³ a genus erected by Bolivar⁴⁴ to include those species previously assigned to *Diaphlebus*, in which the auditory foramina are apert.

In the present specimen the general coloration is light green, the pronotal dorsum, apices of the femora and distal half of the ovipositor suffused with brown. The tegmina have the veinlets of the stridulating field heavy and buffy, beyond along the costal margin more delicate, but of the same color. The intervals between these veinlets are brown toward the anal vein, but blackish toward the sutural margin to the apices of the tegmina, this invading the veins at the apex of the stridulating field and there forming a large, longitudinal blackish suffusion. The ovipositor is nearly straight, curving very weakly dorsad. The subgenital plate is scoop-shaped, with lateral margins concave-convergent to apex, which is shallowly concave-emarginate, with a very small rounded projection at each side. The cephalic tibiae have the auditory foramina apert, but with ventral margin distinctly lamellate, particularly proximad. The ventral femoral margins are armed with the following spines. Cephalic internal 5 and 5, cephalic external 0, median internal 0, median external 6 and 6, caudal internal 7 and 7, caudal external 12 and 12.

Length of body 40, length of pronotum 6.8, caudal width of pronotum 5.8, depth of pronotal lateral lobe 4.7, width of pronotal lateral lobe 4.8, length of tegmen 37, median width of tegmen 10, distal width of tegmen 7, length of cephalic femur 13.9, length of caudal femur 32.8, length of ovispositor (estimated, apex broken off) over 30 mm.

Section SEGESTINI

We are obliged to change the name of this section, previously known as the Moristini. This is due to the fact that *Moristus* Stål falls as a synonym of *Sexava* Walker, as has been indicated by Kirby.

Segestes vittaticeps Stål.

1877. *S[egestes] vittaticeps* Stål, Öfv. K. Vet.-Akad. Förh., 1877, No. 10, p. 45. [σ , ♀; Philippine Islands.]

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 σ , 2 ♀.

From the present material it is seen that certain features, used

⁴³ Syn. Cat. Orth., II, p. 358, (1906).

⁴⁴ Ann. Mus. Nat. Hungarici, I, p. 165, (1903).

by Redtenbacher to separate his closely related Philippine *S. punctipes*, are not valid. In the present material the spines of the caudal femora are blackish brown, tinged at their bases with the same color, while the dorso-internal margins of the median tibiae are armed with from two to four spines, sometimes in the same specimen. The ovipositor is straight, not weakly curved, but this again does not appear to constitute a safe specific character in the genus.

We recognize *punctipes* as valid due to the female subgenital plate, described as "triangularis, elongata, acuminata, apice incisa, lobis angustis acuminatis." In the females here recorded this plate is short, the lateral margins strongly convergent and rounding into the apex, which is weakly rotundato-trigonal emarginate, in this respect agreeing more closely with *S. unicolor* Redtenbacher, from Pelew Island.

The heavy blackish brown suffusion on the dorsal half of the internal face of the caudal femora proximad is a striking feature in the material at hand. Ventral femoral margins showing the following range of spines in the series. Cephalic internal 0 to 1, cephalic external 0, median internal 0, median external 0, caudal internal 7 to 9, caudal external 8 to 14.

Length of body ♂ 35, ♀ 42 and 40.5; length of pronotum ♂ 5.5, ♀ 6 and 6.2; caudal width of pronotum ♂ 4, ♀ 4.2 and 4.4; length of tegmen ♂ 39, ♀ 44.6 and 45.3; greatest width of tegmen ♂ 5.5, ♀ 6.5 and 6.6; length of caudal femur ♂ 29, ♀ 31 and 32.7; length of ovipositor 20.3 and 22.7 mm.

***Segestes frater* new species. Plate XVI, figure 2.**

This insect shows a most remarkable general resemblance to *Segestidea soror*, here described from the same locality. That species is particularly distinguished by the more evidently rugulose pronotum with shallower lateral lobes, tegmina which are slightly broader distad and there run to a point at the sutural margin, heavier and fewer dark spots on the tegmina, dark internal suffusion of the caudal femora and presence of a small spine disto-dorsad on the external surface of the cephalic tibiae. These differences would appear to make confusion impossible, but, were the specimens not carefully examined, their general resemblance is so decided that one might easily fail to recognize the presence of two species.

The present insect is nearest the decidedly smaller *S. unicolor* Redtenbacher, described from Pelew Island. It differs further in

having the first branch of the median vein of the tegmina springing from decidedly beyond the median point and in having the ventral margins of the median femora unarmed.

TYPE: ♀; Obi Island, Moluccas. [Hebard Collection, Type no. 809.]

Size large for the genus,⁴⁵ form elongate. Vertex narrow, acuminate, produced distinctly beyond plane of face, sulcate from near occiput to apex. Pronotum rugulose, polished and appearing rather smooth to the naked eye; disk with cephalic margin broadly convex but showing a trace of angulation, caudal margin broadly convex, transverse sulci distinct, a medio-longitudinal carina feebly indicated cephalad and caudad, obsolete elsewhere but supplanted by a short deep sulcus before the principal sulcus; lateral lobes as deep as long, ventral margin rounded obtuse-angulate. Tegmina and wings very elongate; the former narrowing very gradually distad, with rounded apex median in position, median vein with first branch slightly before end of proximal three-fifths and with two distal branches. Ovipositor elongate, slender, unarmed, straight. Subgenital plate with length approximating width, convex, margin bilobate distad with a small triangular median emargination. Ventral femoral margins armed with small spines, as follows. Cephalic internal 2 and 3, cephalic external 0, median internal 0, median external 0, caudal internal 12 and 13, caudal external 11 and 13. Femora with genicular lobes unispinose, except the internal of the caudal femora which are bispinose. Thickened portion of caudal femora with low convexities on its dorsal surface. Cephalic tibiae with auditory foramina apert on internal face, conchate on external face, dorsal surface sulcate and entirely unarmed.

General coloration clay color. Antennae very feebly subannulate. Tegmina with flecks of warm sepia in areas between median vein and its first branch and in areas between median, mediastine and ulnar veins. Femora verona brown, heavily flecked and marked with clay color, the caudal femora paling distad, spines tipped with dark brown. Ventral surface of abdomen rufous. Ovipositor cinnamon buff shading to chestnut distad.

Length of body 52.5, length of pronotum 7.7, caudal width of pronotum 5.8, length of pronotal lateral lobe 5, depth of pronotal lateral lobe 5.1, length of tegmen 66.8, greatest width of tegmen 9.7, distal width of tegmen 6.7, length of cephalic femur 15.1, length of caudal femur 37, length of ovipositor 30, greatest width of ovipositor beyond base 2.8 mm.

The type is unique.

Segestidea soror new species. Plate XVI, figures 3 and 4.

We have compared this species with *Segestes frater*, here de-

⁴⁵ In fact largest of the genus, excepting *S. decoratus* Redtenbacher, which species may very possibly be referable to *Segestidea*.

scribed. It shows a closer general resemblance to that insect than to any of the known species of *Segestidea*.

TYPE: ♀; Obi Island, Moluccas. [Hebard Collection, Type no. 810.]

Size rather large for the genus, form elongate. Vertex narrow, acuminate, produced distinctly beyond plane of face, sulcate almost to apex. Pronotum rugulose, moderately polished but appearing rough to the naked eye; disk with cephalic margin broadly convex and showing no trace of angulation, caudal margin truncate, very broadly convex, transverse sulci decided, a medio-longitudinal line developing into a sulcus between the transverse sulci; lateral lobes longer than deep. Tegmina and wings very elongate; the former narrow, narrowing very slightly to the sharply angulate apex, which is at slightly less than a right angle, formed by the costal margin curving broadly to the sutural margin; median vein with first branch slightly before end of proximal two-thirds and with two distal branches. Ovipositor elongate, slender, unarmed, showing a very faint upward curvature. Subgenital plate broader than long, triangular, lateral margins convergent to the briefly and broadly U-emarginate apex, the lateral portions of which are rounded. Femora with genicular lobes unispinose. Thickened portions of caudal femora with low convexities on dorsal surface, these slightly more pronounced than in *Segestes frater*. Ventral femoral margins armed with small spines, as follows. Cephalic internal ♂ 4 and 5, ♀ 5 and 6; cephalic external 0; median internal 0; median external ♂ 3 and 3, ♀ 1 and 4; caudal internal ♂ 14 and 16, ♀ 14 and 14; caudal external ♂ 11 and 12, ♀ 13 and 14. Cephalic tibiae with auditory foramina apert on internal face, conchate on external face, dorsal surface sulcate, armed with a single small disto-external spine.

ALLOTYPE: ♂; same data as type. [Hebard Collection.]

Agrees closely with female, except as follows. Size smaller, form slightly more slender. Supra-anal plate rotundato-trigonal, as long as wide. Cerci tapering and curving evenly inward and upward to a small apical tooth; a plate beneath on each side bearing a small spine. Subgenital plate elongate, very slender to apex, which is V-emarginate, the lateral portions thus formed with apices surmounted by very small, rounded styles, no longer than wide.

General coloration clay color. Antennae weakly marbled with cinnamon-buff and isabella color. Tegmina with solid blackish brown flecks in scapular field and between median vein and its branch and proximal portion of ulnar vein. These markings more conspicuous and fewer than in *Segestes frater*. Femora verona brown heavily overlaid and flecked with cinnamon-buff. Caudal femora proximad, in ventral half of internal surface, heavily suffused with blackish brown; spines tipped with dark brown. Internal genicular areas of caudal femora and immediate base of caudal tibiae dorsad blackish brown. Ovipositor clay color, shading to

deep chestnut distad. Ventral surface of abdomen discolored, chestnut; in male clay color.

Length of body ♂ 43.5, ♀ 56.4; length of pronotum ♂ 8, ♀ 8; caudal width of pronotum ♂ 5.7, ♀ 5.7; length of pronotal lateral lobe ♂ 5.7, ♀ 5.9; depth of pronotal lateral lobe ♂ 4.2, ♀ 4.8; length of tegmen ♂ 58.9, ♀ 62.7; greatest width of tegmen ♂ 9.8, ♀ 10; distal width of tegmen ♂ 7.8, ♀ 8.5; length of cephalic femur ♂ 15.7, ♀ 16; length of caudal femur ♂ 36.2, ♀ 38; length of ovipositor 27.2; greatest width of ovipositor beyond base 2.9 mm.

The species is known from the described pair.

Sexava coriacea (Linnaeus)

1788. *G[ryllus] T[ettigonia] coriaceus* Linnaeus, Syst. Nat., Ed. X, I, p. 430.
[[East] Indies.]

Obi Island, Moluccas, 4 ♂, 4 ♀.

Amboina Island, Moluccas, 33 ♂, 18 ♀, [A. N. S. P.].

Of the material before us, two males and three females from Obi are rich green, the others brown. Both phases are represented in the Amboina series, but many of the specimens are badly discolored.

The measurements for the Obi series are as follows. Length of body ♂ 62 to 69, ♀ 66 to 74; length of pronotum ♂ 9.8 to 10, ♀ 11.2 to 11.7; length of pronotal lateral lobe ♂ 6.3 to 6.4, ♀ 6.9 to 7.2; depth of pronotal lateral lobe ♂ 6.5 to 6.6, ♀ 7.1 to 7.4; length of tegmen ♂ 68 to 71.5, ♀ 83.5 to 89; meso-distal width of tegmen⁴⁶ ♂ 14.9 to 15.3, ♀ 16.8 to 18.7; length of caudal femur ♂ 41 to 41.9, ♀ 47 to 48; length of ovipositor 43 to 47 mm.

Section MECOPODI

Characta labuanae new species. Plate XVI, figure 5.

Closely related to *C. bituberculata* Redtenbacher, the present insect is distinguished by the generally smaller size; shorter tegmina, which have a greater number of oblique veins at the distal margin; lateral margins of the pronotal disk, which are coarsely but equally tuberculate in prozonal, mesozonal and metazonal sections, and auditory foramina of cephalic tibiae, which are apert, the external only showing some thickening and lamellation of its ventral margin.

TYPE: ♀; Labuan, British North Borneo. [Hebard Collection, Type no. 811.]

Size smaller, form more stocky than in *bituberculata*. Vertex sulcate, rounded, with strongly bifid apex distinctly narrower than

⁴⁶ These organs are curved over the dorsum proximad, so that an accurate measurement of the greatest width cannot be taken.

first antennal joint, separated a brief distance from the weakly bituberculate facial fastigium. Eyes broad oval, more prominent than in *Mecopoda elongata* (Linnaeus). Pronotal disk flattened, showing very weak concavity, its surface rugulose, with two distinct transverse sutures, which laterad form decided V-emarginations of the lateral margins; cephalic margin weakly emarginate, with median section transverse (or subconvex); caudal margin subtruncate, showing very weak subangular convexity, with a minute but conspicuous, erect tubercle mesad; lateral margins moderately divergent caudad and subconvex, coarsely and equally tuberculate, this slightly irregular in mesozonal section. Lateral lobes of pronotum longer than deep; ventral margin horizontal, except in caudal portion, where it is moderately oblique, ventro-cephalic angle subdenticulate, a thoracic plate with below a small rounded denticulation. Tegmina and wings showing slight reduction, not extending beyond apices of caudal femora. Tegmina broadening to meso-distal point, then narrowing to the apex, which is median in position and rounded, the convexity of the sutural margin to the apex less than that of the costal margin, the former being in this portion subundulate. Tegminal venation somewhat irregular, first branch of median vein near end of proximal three-fifths, this branch forking at extremity of largest areola (in which is contained the desiccated spot), a second branch distad, which again forks distad. Ovipositor moderately elongate, evenly and weakly curved upward, of the same general type as in *Mecopoda elongata* but heavier. Subgenital plate convex, rounded triangular, with apex weakly angulate-emarginate. Cephalic and median femora roughened, with minute tubercles. Caudal femora armed dorsad and ventrad with long, heavy spines. Cephalic tibiae with apert auditory foramina, as described above, dorsal surface weakly sulcate, with lateral margins spined.

General coloration ochraceous-tawny, often with a more buffy tinge. Antennae darker, with short, widely spaced, buffy annuli distad. Lateral lobes of pronotum and tegmina toward lateral margins of anal field often somewhat darker. Tegmina moderately glossy, with small suffusions of dark brown along distal portion of sutural margin at apices of veins and with one large patch (and sometimes one or two smaller patches in adjacent areolae), which appears desiccated, meso-distad in median portion of largest areola of discoidal field.

MEASUREMENTS (in millimeters)

	Length of body	Length of pronotum	Caudal width of pronotum	Length of tegmen	Greatest width of tegmen	Length of caudal femur	Length of ovipositor
Type.	38	8.8	7.7	45	16.1	40	24
Paratype.	36.5	8.3	7.8	45	15.8	41	24.8
Paratype.	37	8.8	7.3	45	16.8	40.7	23.8
Paratype.	32.5	8.2	7.7	42.3	15.3	38.8	23.8

Three paratypes, bearing the same data as the type, are at hand.

Mecopoda elongata (Linnaeus)

1758. *G[ryllus] T[ectigonia] elongatus* Linnaeus, Syst. Nat., Ed. XI, 429.
[India.]

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 3 ♂.

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker),
1 ♀.

Davao, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Puerto Princesa, Palawan, Philippine Islands, (from C. F. Baker), 1 ♂.

Labuan, British North Borneo, 1 ♀.

Obi Island, Moluccas, 3 ♂, 8 ♀.

Amboina Island, Moluccas, 1 ♂, 2 ♀, [A. N. S. P.].

Singapore, British Straits Settlements, (from C. F. Baker),
2 ♂, 1 ♀, 1 juv. ♀.

Penang Island, British Straits Settlements, VIII, 1889, (from
H. de Saussure), 1 ♂, [A. N. S. P.].

The green color phase of this common insect is represented by
the following specimens, the remainder of the series being of dif-
ferent brown phases. Los Baños 1 ♂; Mount Makiling 1 ♀;
Obi 3 ♂, 2 ♀; Singapore 2 ♂, 1 juv. ♀.

EUMECOPODA new genus

The present genus is erected to include certain of the species pre-
viously placed in *Mecopoda* Serville.

GENOTYPE.—*Eumecopoda cyrtoscelis* (Karsch).

This genus differs from *Mecopoda*, as here restricted, in the fol-
lowing features. Head with apex of vertex transversely and bluntly
carinate. Pronotum with disk flattened, subconcave, lateral
margins carinate, overhanging, the incisions formed by the trans-
verse sulci sharply angulate emarginate, caudal margin with a
minute dorsal tubercle mesad, which is often subobsolete. Tegmina
with sutural margin, from meso-distal point of greatest width,
broadly convex, then broadly concave to the acute apex, so that
the tips of the tegmina are somewhat falcate. Cephalic tibiae
with auditory foramina conchate to subconchate, in the latter
condition partly apert but with ventral margin produced and cov-
ering a portion of the membrane. Caudal femora dorsad and
laterad bluntly and longitudinally carinate, there supplied dorsad
with blunt tubercles to relatively heavy, blunt tuberculations.

To this genus belong the following species. At the present time
insufficient material is available to determine whether all of these
are valid.

1888.	<i>cyrtoscelis</i> (Karsch)	Segaar Bay, southwestern Dutch New Guinea.
1891.	<i>walkeri</i> (Kirby)	Philippine islands.
1891.	<i>karschi</i> (Kirby)	Queensland, Australia.
1891.	<i>regina</i> (Kirby)	Duke of York Island, Bismarck Archipelago.
1898.	<i>superba</i> (Bolivar)	Hassam, New Guinea.
1908.	<i>moluccarum</i> (Griffini)	Celebes, the Islands of Amboina and Gilolo.
1922.	<i>reducta</i> new species	Butuan, Mindanao, Philippine Islands.

***Eumecopoda reducta* new species. Plate XVI, figure 6.**

This insect is apparently nearest *E. walkeri* (Kirby), the only previously known Malayan member of the present genus. From the unsatisfactory description of the unique female type of that insect, the single male before us is separated by the immaculate vertex and unarmed ventral femoral margins. Adequate diagnosis of *walkeri* will probably reveal other distinctive features.

Compared with the other species of *Eumecopoda*, the present insect differs greatly in the very much shorter limbs and organs of flight, the unarmed ventral femoral margins and caudal femora which are as strongly carinate as in *E. cyrtoscelis* (Karsch), but bear fewer and smaller tuberculations. From the males before us, further difference is shown by the strong medio-dorsal projections of the abdominal tergites and the much shorter cerci and subgenital plate, the latter bearing at its apices minute but distinct styles.⁴⁷

In general form the present insect shows closer resemblance to species of the genus *Characta*, from which genus it may be instantly separated by the broad, transversely carinate and undivided vertex.

TYPE: ♂; Butuan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 853.]

Size comparatively small, form very short for the genus. Vertex truncate distad, nearly transverse, bluntly but decidedly transversely carinate, due to a weak concavity of the dorsal surface toward this carina, which itself, unlike in the other species, projects slightly beyond the plane of the face. Face and genae moderately, occiput and pronotum very thickly impresso-punctulate. Pronotum shorter than in other species, with incisions of the strongly carinate lateral margins, at transverse sulci, much smaller

⁴⁷ Smaller but otherwise as in *Mecopoda elongata* (Linnaeus).

and less conspicuous; with a medio-longitudinal line, which becomes subcarinate in metazonal portion, but is only slightly heavier at the caudal margin. Pronotal lateral lobes as here described for *E. moluccarum* (Griffini), but with prothoracic pleurites unarmed. Tegmina short and broad, costal margin showing distinct obtuse-angulation slightly beyond median point, sutural margin rounding broadly, then very faintly and broadly concave (indicating very weak falcation) to the acute apex, situated on the costal margin and forming an angle of slightly less than ninety degrees. Wings failing to reach apices of tegmina by a short distance. Abdomen with distal tergites, excepting the ultimate, each produced meso-caudad in a decided finger-like projection, directed caudad; ultimate tergite with a triangularly impressed area before the triangular supra-anal plate. Cerci elongate, but decidedly shorter than in *moluccarum*, tapering strongly and straight, then toward apex incurved, the apex terminating in a minute tooth. Subgenital plate elongate produced, but decidedly shorter than in *moluccarum*, deeply V-emarginate distad, the lateral portions weakly divergent, tapering to their narrowly truncate apices, each of which is surmounted by a minute, rounded, socketed style, twice as long as its basal width. Cephalic and median femora rugulose, showing a feeble trace of carination dorso-distad. Caudal femora heavy proximad, dorso-external and ventro-external surfaces weakly concave between the medio-lateral and dorsal carinae, dorsal carina with (two or three) blunt but decided tubercles and a few sub-tuberculations. Ventral femoral margins unarmed. Cephalic tibiae with auditory foramina subconchate.

General coloration that of a dead leaf. Warm sepia, shading to tawny-olive on sides of thorax and with greater portion of tegmina bay. Limbs blackish, except proximal portions of caudal femora, which pale toward tawny-olive. Vertex immaculate. Antennae blackish, with widely spaced, short buffy annuli. Tegmina with a large blackish spot, meso-proximad in stridulating area; meso-distad with a number of small desiccated-appearing patches.

Length of body 25 (shrunken), length of pronotum 8.3, caudal width of pronotal disk 8, length of tegmen 43.7, greatest width of tegmen 20.8, length of cephalic femur 9.8, length of caudal femur 33.3, greatest width of caudal femur 6.2 mm.

***Eumecopoda cyrtoscelis* (Karsch) Plate XV, figure 3; plate XVI, figure 7.**

1888. *Mecopoda cyrtoscelis* Karsch, Ent. Nachr., XIV, p. 146. [Segaar Bay, near western extremity of south coast of Dutch New Guinea.]

Setekwa River, opposite Aru Islands on south coast of Dutch New Guinea, (from A. S. Meek), 1 ♂, 1 ♀.

The present specimens are very dark, the general coloration being blackish brown. Length of body ♂ 29, ♀ 42.5; length of pronotum ♂ 8.8, ♀ 10.1; caudal width of pronotum ♂ 7.7, ♀ 9.1; length of tegmen ♂ 57.8, ♀ 69.1; greatest width of tegmen ♂ 15.9,

♀ 18; length of caudal femur ♂ 42, ♀ 51.2; greatest width of caudal femur ♂ 6.3, ♀ 7.8; length of ovipositor 26.7 mm.

Eumecopoda moluccarum (Griffini) Plate XVI, figure 8 and 9.

1908. *Mecopoda cyrtoscelis* subsp. *moluccarum* Griffini, Atti Soc. Ital. Sci. Nat., XLVI, p. 277. [♂, ♀: Ternate (= Amboina); Halmahera, [Gilolo].]

Obi Island, Moluccas, 2 ♂, 3 ♀.

The present species is apparently nearest *E. regina* (Kirby). It differs from the unsatisfactory description of that insect in having the dorsal surface of the enlarged proximal portion of the caudal femora rugose, coarsely and roundly subdenticulate along the dorsal carina, in the proportionately broader tegmina and apparently average larger size.

The following description of this little known species is submitted for the convenience of future workers.

Female. Size large. Vertex truncate distad, subconvex, transversely bluntly but decidedly carinate; distinctly wider at sulcus formed with frontal fastigium than in *E. cyrtoscelis* (Karsch). Pronotum with a medio-longitudinal line, which becomes subcarinate in metazonal portion, terminating at caudal margin in a small rounded tubercle, which scarcely projects caudad of that margin. Lateral lobes of pronotum slightly higher than wide, perpendicular, ventro-cephalic angles produced in a minute roundly acute-angulate projection; ventral margin sinuous, with a produced tubercle projecting from a prothoracic pleurite slightly caudad of the ventro-cephalic angle; ventro-caudal angle broadly rounded and weakly produced. Tegmina broad, expanding to meso-distal point, where they are distinctly wider than in *cyrtoscelis*; distinctly falcate distad. Ovipositor elongate, curved weakly upward. Subgenital plate convex, with distal margin rather broadly bilobate. Cephalic and median femora rugulose, weakly carinate dorsad in distal portions. Caudal femora heavy proximad, specialized as described above. Ventral femoral margins armed (in the series) as follows. Cephalic internal ♂ 3 to 5, ♀ 2 to 3; cephalic external ♂, ♀ 0; median internal ♂, ♀ 0; median external ♂ 3 to 4, ♀ 3 to 4; caudal internal ♂ 7 to 8, ♀ 6 to 8; caudal external ♂ 10 to 12, ♀ 8 to 12.

Male. Agrees closely with female, differing as follows. Size smaller. Median segment and first abdominal tergite each raised in a rather large medio-longitudinal crest, which is suddenly truncate caudad. Cerci elongate, moderately stout but tapering strongly and curving inward to apex, which is more strongly curved inward and terminates in a minute tooth. Subgenital plate elongate produced, deeply V-emarginate distad, the lateral portions weakly divergent, tapering to their acute apices, without styles, but each, unlike *cyrtoscelis*, armed with a minute subapical tooth on the internal margin.

General appearance that of a dead leaf. Mars brown to tawny olive in coloration. Mottled, with paler ventral portions of caudal tibiae heavily banded with suffusions of dark brown at the spines. Antennae dark, with five to seven widely spaced, striking annuli of buffy. Tegmina mottled in large, solid areas, irregular in outline, with different shades of brown and showing often a number of desiccated-appearing patches, some of these occasionally shining blackish brown, the majority buffy brown. Caudal femoral spines dark only at tips. As is usual in this type of coloration, the occiput, disk of pronotum and anal field of the tegmina are often of a distinctly paler shade than the adjacent portions.

The coloration in such irregularly mottled katydids, which clearly resemble dead and dried foliage, is so subject to individual variation that it can not be more definitely described for the species.

MEASUREMENTS (*in millimeters*)

σ	Length of body	Length of pronotum	Length of tegmen	Greatest width of tegmen	Length of caudal femur	Greatest width of caudal femur	Length of ovipositor femur
Obi Island	34	7.8	56	17.1	40	5.8	—
Obi Island	36	9.5	65.5	19.2	49	7.3	—
♀	Obi Island	45.5	9.8	69	20.9	51.1	7.7
Obi Island	47	10.3	72	20.9	53.2	7.8	32.2
	37.5 ⁴⁸	10.7	74.6	22.7	54	8	32.3

The present material indicates that size alone is probably of little value in separating the species referable to *Eumecopoda*.

Macrolyristes imperator Snellen van Vollenhoven.

1865. *Macrolyristes imperator* Snellen van Vollenhoven, Tijdschr. voor Ent., VIII, p. 108,⁴⁹ pl. VII, figs. 1 and 2, pl. VIII, figs. A to C. [σ , ♀: Java; Borneo.]

Sandakan, British North Borneo, (from C. F. Baker), 1 ♀.

Nias Island, southwest coast of Sumatra, Sunda Islands, 1 σ .

Though not as heavily built as *Pseudophyllanax imperialis* (Montr.), the present species shows the greatest tegminal development found in the Tettigoniidae. The female before us has an expanse of 274 millimeters, (10 $\frac{3}{4}$ inches). This, for an insect, is truly enormous.

In both sexes the costal margin of the tegmina shows a very feeble convexity, the sutural margin broadly convex and curving to meet the costal margin at the acute-angulate apex. This gives to the

⁴⁸ The body of this specimen is shrunken.

⁴⁹ A paper, with figures, by C. Mulder, on the internal anatomy of this insect follows the original description. It is there stated that the species is known in Java as "Babang Salak," that it is arboreal and flies at night and that it is seldom seen, so that the natives ask five silver gulden for a specimen.

tegmina the appearance of "oblique truncation" originally described. The enormous stridulating field of the male is 26.4 millimeters in length, 18.3 in width, the stridulating vein 14.7 millimeters long. The large, transparent, rounded speculum of the dextral tegmen, bounded by a very high and heavily chitinous wall caudad, probably aids greatly in producing what should be one of the very loudest of insect stridulations.

The extreme basal slenderness of the caudal femora (these limbs are present only in the male before us), armed with rather decided spines ventrad, is a striking feature. Greatest width proximad 3.9, median width 3, distal width 3.7 millimeters. The greater distal width is caused by a pronounced medio-longitudinal, dorsal carina being there developed. The vental femoral margins are armed with spines as follows. Cephalic internal ♂ 4 and 4, ♀ 10; cephalic external 0; median internal 0; median external ♂ 5 and 7, ♀ 11 and 12; caudal internal ♂ 11 and 12; caudal external ♂ 14 and 14.

The female before us appears to represent the same species as the male, the differences shown being attributable to sexual diversity. This can, however, not be proven conclusively without comparison of additional material, though van Vollenhoven was satisfied as to the specific agreement of Bornean and Javanese material.

The egg in this species is 16.2 millimeters in length, 3.1 millimeters in greatest width.

Length of body ♂ 55, ♀ 67; length of pronotum ♂ 17, ♀ 18; cephalic width of pronotum ♂ 7.7, ♀ 8.4; greatest (meso-caudal) width of pronotum ♂ 17.3, ♀ 15.9; length of tegmen ♂ 96, ♀ 130; greatest width of tegmen ♂ 32, ♀ 38.9; length of cephalic femur ♂ 27.3, ♀ 36.8; length of caudal femur ♂ 56.7, ♀ —; length of ovipositor 34.3; greatest width of ovipositor beyond immediate base 6 mm.

Section PHYLLOPHORI

Hyperhomala woodfordi (Kirby)

1899. *Phyllophora woodfordi* Kirby, Ann. Mag. Nat. Hist., (7), IV, p. 309, pl. VI, fig. 6. [Solomon Islands.]

Honda, Solomon Islands, (P. H. Metcalf), 1 ♀, [U. S. N. M.].

Length of body 44, length of pronotum 30.2, greatest width of pronotum 13.2, length of mesonotum 24.6, length of tegmen 73.7, greatest width of tegmen 26.3, length of caudal femur 37, length of ovipositor 29 mm.

Phyllophora lanceolata Brunner.

1898. *Ph[yllophora] lanceolata* Brunner, Abh. Senckenb. Naturforsch. Ges., XXIV, p. 263, pl. XIX, fig. 49. [σ , φ : Halmahera, [Gilolo Island, Celebes]; Amboina [Island, Celebes]; Stephansort, New Guinea; New Britain and Duke of York Islands, [Bismarck Archipelago].]

Obi Island, Moluccas, 1 φ .

Length of body 45.5, length of pronotum 28.7, greatest width of pronotum (including marginal spines) 16.8; length of largest pronotal marginal spine .8, length of mesonotum 23, length of tegmen 63.3, greatest width of tegmen 26.4, length of caudal femur 30.8, length of ovipositor 24.9 mm.

Sasima truncata (Brunner)

1898. *Ph[yllophora] truncata* Brunner, Abh. Senckenb. Naturforsch. Ges., XXIV, p. 262, pl. XIX, fig. 48. [φ : Key Island.]

New Guinea, 1 σ , [A. N. S. P.].

Length of body 35, length of pronotum 23.3, greatest width of pronotum (including marginal spines) 12.2, length of largest pronotal marginal spine 2.3, length of mesonotum 17.3, length of tegmen 67, greatest width of tegmen 29.7, length of caudal femur 34 mm.

PSEUDOPHYLLINAE

In the literature on this subfamily several unusual difficulties are encountered which we think should be pointed out, to aid the student in avoiding further confusion.

Brunner's key, in his Monograph, is particularly unsatisfactory in one portion. Sections 4 and 4' under section 3' are exceedingly misleading and species running to this point should always be tried for both.

The attempt by Saussure and Pietet, in their "Iconographie des Sauterelles Vertes," to use data written them by Redtenbacher, has caused a most unfortunate confusion of generic names. That study was published in 1892 and Brunner, publishing the "Monographie der Pseudophylliden" in 1895, most unfortunately did not follow the generic assignments there made. Added to this are the older genera described by Walker and ignored by subsequent authors, which Kirby at last placed in his "Synonymic Catalogue of Orthoptera," Vol. III, in 1906.

Thus we find *Microprion* P. and S. a synonym of *Phylloimus* Stål, but *Microprion* Brunner a distinct genus, renamed *Micropion* by Kirby. *Oxyscelus* Brunner a synonym of *Tympanoptera* P. and S., but *Tympanoptera* Brunner a synonym of *Aprion* Serville, and *Aprion* P. and S. a synonym of *Morsimus* Stål. We, however,

believe *Acanthaprion* P. and S. to be valid, though also placed under *Morsimus* by Kirby. *Chloracris* P. and S. is a synonym of *Pseudophyllus* Serville. *Capnoptera* Brunner is preoccupied and Kirby has proposed the name *Typhoptera* for this genus. *Phyllostibronia* P. and S. and *Mataeus* Karsch are synonyms of *Zabalius* Bolivar. Finally *Tarphe* Stål is preoccupied by *Tegra* Walker, *Termera* Stål by Sanaa Walker and *Phanerotus* Brunner by *Calimenellus* Walker.

Section PSEUDOPHYLLI

***Pseudophyllus harrisoni* Rehn.**

1902. *Pseudophyllus harrisoni* Rehn, Proc. Acad. Nat. Sci. Phila., 1902, p. 21. [♀, Sumatra.]

Nias Island, southwest coast of Sumatra, Sunda Islands, 1 ♀.

This insect closely resembles the figure of *Rhomboptera honorabilis* (Brunner)⁵⁰ except that the transverse veins of the discoidal field alternate at the ulnar and branch of the median veins, being neither contiguous (percurrent) or subcontiguous. It appears very possible that this character is of no generic value. Should this prove to be the case, *Rhomboptera* would fall as a synonym of *Pseudophyllus*.

The present insect is further separable from *R. honorabilis* by its decidedly larger size, longer limbs and much longer ovipositor. The median tibiae are armed with very small spines; the figure of *honorabilis* shows much heavier spines on these members.

Length of body 57.5,⁵¹ length of pronotum 13.6, length of tegmen 89.7, greatest width of tegmen 24.8, length of caudal femur 29.1, length of ovipositor 35.7, greatest width of ovipositor 9 mm.

***Cleandrus fortis* (Walker)**

1869. *Pseudophyllus fortis* Walker, Cat. Dermapt. Saltat. Br. Mus., II, p. 413. [Juv. ♀, Philippine Islands.]

1877. *Cratylus obesus* Stål, Ofv. K. Vet.-Akad. Förh., 1877, No. 10, p. 44. [♂, ♀; Philippine Islands.]

1895. *Cleandrus latipennis* Brunner, Monogr. der Pseudophylliden, p. 40. [♂, ♀; Luzon, Philippine Islands; Celebes, [Moluccas].]

Manila, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀.

Los Baños, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, 1 ♀.

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

The dorsal surface of the caudal femora is described as having a row of minute spines in *fortis*, as obsoletely undulate in *obesus* and as smooth in *latipennis*. These differences we believe due to in-

⁵⁰ Monogr. der Pseudophylliden, pl. I, fig. 8, (1895).

⁵¹ The body length of the type is 57 mm.; 88 mm. including the ovipositor.

dividual variation and in consequence indicate the above synonymy. Kirby, in 1906, placed *obesus* as a synonym of *fortis*.⁵² In the present material the dorsal surface of the caudal femora shows a row of minute, blunt denticulations in the specimen from Surigao, this surface being smooth in the others, though showing a subobsolete undulation in the female from Los Baños.

The insect is smaller and more inflated than the other members of the genus, in general appearance resembling much more closely *Cratylus fenestratus* (Stoll).⁵³

Length of body ♂ 40.5, ♀ 49.5 to 52.5; length of pronotum ♂ 12, ♀ 12.2 to 12.3; length of tegmen ♂ 66.5, ♀ 70.3 to 75.1; greatest width of tegmen⁵⁴ ♂ 31.5, ♀ 22.8 to 23.2; length of caudal femur ♂ 21.8, ♀ 23 to 24; length of ovipositor 31.3 to 35.3; greatest width of ovipositor 7.2 to 7.9 mm.⁵⁵

Cleandrus dyaka new species. Plate XVI, figures 10 and 11.

Nearest in relationship to *C. neriifolius* (Stoll), the present species differs in the male sex in the somewhat larger size, more elongate tegmina which are not ocellate, distinctive armament of the median and caudal femora and caudal tibiae. The only markings are a few large brown dots on the tegmina and a curved brown line in place of an ocellate marking.

TYPE: ♂; Sandakan, British North Borneo. (From C. F. Baker.) [Hebard Collection, Type no. 812.]

Size medium, form slender for this genus of large and very robust insects. Vertex with dorsal surface depressed mesad, small, triangular and scarcely projecting beyond plane of face; as characteristic of genus. Pronotal surface thickly supplied with small, acute granules, showing two distinct transverse sulci; caudal margin of disk weakly and bluntly angulate at slightly over ninety degrees and supplied with a few low tubercles; lateral lobes with ventrocephalic and ventral portion of margin strongly tuberculate. Tegmina inflated, but by no means as much so as in *C. fortis* (Walker), costal margin rather decidedly convex meso-distad, medastine vein oblique. Prosternum unarmed. Cerci stout, with a sharp distal spine directed mesad. Subgenital plate very slenderly produced, with styles at apices, as long as and slightly stouter than the produced portion, forming a Y. Ventral margins of cephalic

⁵² Syn. Cat. Orth., II, p. 295.

⁵³ A male from Ceylon is in the Academy Collection.

⁵⁴ Estimated, as the great convexity of the tegmina prevents the exact measurement being taken.

⁵⁵ The measurements given by Brunner indicate a very great possibility that the largest female which he studied does not represent the present species. It seems doubtful also that the same species occurs both in the Philippines and the Moluccas.

femora and ventro-internal margin of median femora armed with very small spines. Ventro-external margin of median femora and ventro-internal margin of caudal femora armed with small but elongate spines. Ventro-external margin of caudal femora and tibiae and dorsal surface of caudal tibiae armed with large lamellate spines, the ultimate of the caudal femora noticeably the largest of all. Ventral femoral margins armed with the following number of spines. Cephalic internal 5 and 5, cephalic external 6 and 7, median internal 6 and 7, median external 7 and 7, caudal internal 11 and 12, caudal external 10 and 12. Caudal femora dorsad with a row of minute tubercles which become broader and weaker distad.

General coloration pale green. Eyes dark brown. Antennae with weak brown suffusions, forming elongate and very weak annuli. Tegmina in proximal area between anal and ulnar veins marked with a curved brown line; areolae between ulnar and first branch of median vein with one or two brown flecks in proximo-sutural and disto-costal corners, similar flecks in areolae between median vein and its branch in proximo-costal corners and a few similar flecks in areolae of scapular field.

Length of body 38.5, length of pronotum 11.7, greatest width of pronotal disk 10, length of tegmen 76.5, approximate width of tegmen 32.5, length of tegminal stridulating field 20.8, length of stridulating vein 9.2, length of cephalic femur 11.1, length of caudal femur 24.2, length of distal spine of caudal femur 3.1, width of same at base 1.9 mm.

The type is unique.

Cleandrus titan (White)

1846. *Pseudophyllus titan* White, Ann. Mag. Nat. Hist., XVIII, p. 24.
[♀, Silhet, [Assam].]

Khasia Hills, Assam, 1 ♂.

Arracon, Yomah Mountains, Burma, (A. V. B. Crumb), 1 ♀,
[A. N. S. P.].

Toungoo, Burma, (A. V. B. Crumb), 1 ♂, [A. N. S. P.].

The male genitalia appear to show little of specific value in the genus. In the present male the styles are elongate paddle-shaped.

The tegmina have the branch of the median vein, from near its base, showing a very slender blackish line. In the specimen from Assam, a whitish ocellate tegminal spot is developed, its periphery narrowly blackish with a slender outer ring of purplish brown. This specimen has the tegminal veins showing yellowish flecks with small interrupted areas of very delicate purplish. The Burmese specimens show only a faint trace of an ocellate marking, the other features described above scarcely indicated in the female, obsolete in the male.

The measurements of the male from Assam are given first

Length of body ♂ 46.5 (shrunken) and 52.5, ♀ 66; length of pronotum ♂ 18 and 17.2, ♀ 19.1; greatest width of pronotal disk ♂ 13.7 and 13.8, ♀ 15; length of tegmen ♂ 93 and 90.5, ♀ 108.8; width of tegmen (approximated in males) ♂ 40 and 40, ♀ 35; length of tegminal stridulating field 25.7 and 26.7; length of stridulating vein 13 and 12.7; length of cephalic femur ♂ 16 and 16.2, ♀ 15.3; length of caudal femur ♂ 30 and 29.6, ♀ 31.4; length of ovipositor 29.2 mm.

Cleandrus colosseus new species. Plate XVI, figures 12 and 13.

This, the largest Pseudophyllid known, is closely related to *C. titan* (White). In addition to the larger size, the male before us differs from that sex of *titan* in the smaller number of equally decided pronotal tubercles, the much broader and much more inflated tegmina, median femora which are smooth dorsad and caudal femora armed with a row of minute blunt tubercles dorsad instead of stout spines. The ventral femoral margins are also much less strongly armed with much smaller spines, none of which show any tendency toward lamellation.

TYPE: ♂; Sandakan, British North Borneo. (From C. F. Baker.) [Hebard Collection, Type no. 813.]

Size very large and robust. Vertex as in *C. dyaka* here described. Pronotum with surface mesad supplied with (about thirty) stout, blunt, prominent tubercles, with two very deeply impressed transverse sulci; caudal margin of disk weakly and bluntly obtuse angulate and supplied with a few low tubercles; lateral lobes with margins strongly and thickly tuberculate, these tuberculations longest on cephalic margin. Tegmina very large and strongly inflated; costal margin broadly convex, sutural margin showing broad concavity meso-distad, thence broadly convex to the rather strongly rounded apex; mediastine vein oblique. Prosternum unarmed. Cerci and subgenital plate as in *dyaka*, except that the styles are narrowly paddle-shaped. Ventral margins of femora armed with small spines, those of the caudal femora being more elongate distad, as follows. Cephalic internal 3 and 4, cephalic external 0, median internal 6 and 7, median external 5 and 6, caudal internal 13 and 14, caudal external 11 and 12. Spines on caudal tibiae likewise small and slender, showing no lamellation.

General coloration light green. Antennae with brown suffusions forming elongate, vague annuli. Tegmina in proximal area between anal and ulnar veins with a large opaque, buffy, circular marking, margined with brown and with a dot of brown in its centre; branch of median vein, from near its base, showing a very slender brown line.

Length of body 56, length of pronotum 17.6, greatest width of pronotal disk 16.3, length of tegmen 99.3, approximate width of

tegmen 45.5, length of tegminal stridulating field 35.3, length of stridulating vein 18.2, length of cephalic femur 15.6, length of caudal femur 29.7, height of distal spine of caudal femur 1 mm.

There is a possibility that the Bornean material, recorded as *C. rex* (= *titan*) by Brunner, represents this species and that the maximum measurements there given for the female sex apply to that specimen.

The type of this huge Pseudophyllid is unique. So great is the stridulating development that the sound which the males produce must be almost deafening.

Onomarchis leuconotus (Serville)

1839. *Pseudophyllus leuconotus* Serville, Hist. Nat. Ins., Orth., p. 469.
[♂, Java.]

Los Baños, Laguna, Luzon, Phillipine Islands, (from C. F. Baker), 1 ♂.

Butuan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Labuan, British North Borneo, 2 ♀.

Island of Penang, British Straits Settlements, (from C. F. Baker), 1 ♂.

Toungoo, Burma, (A. V. B. Crumb), 1 ♂, [A. N. S. P.].

Brunner, stating that the tegminal width is subject to considerable individual variation in this apparently common species, established three synonyms, to which Kirby has added one.

The form of the tegmina gives to the females a distinctive and hump-backed appearance.

The Butuan specimen shows a strikingly beautiful color form, in which the delicate green of the tegmina gives place in the areolae to extensive suffusions of lavender.

HAPALOPHYLLUM new genus

This genus is erected to include the single species described as *Brunnea vراzi* by Bolivar. This insect, it is true, runs to *Brunnea* in Brunner's key, but shows the following important differences.⁵⁶

Size medium, form moderately slender, resembling rather the more delicate species than those of the genus *Pseudophyllus*, to which latter *Brunnea cincticollis* Brunner shows a close superficial resemblance in size and contour. Pronotum supplied with blunt tubercles which are found also on the ventro-cephalic margin of the lateral lobes, the latter with ventral margin horizontal and broadly convex, the caudal margin cutting back to the deeply

⁵⁶ Comparison is made with a specimen of *Brunnea cincticollis* belonging to the United States National Museum. That specimen will be discussed at a later date by Mr. Rehn.

concave humeral sinus, so that the lateral lobes are slightly narrower mesad than ventrad. Tegmina more delicate, with costal margin more strongly convex and cross-veins of discoidal field decidedly oblique. Ovipositor with dorsal margin broadly subsinuate, showing very faint obliquity only in apical portion. Limb spination heavier, the caudal tibiae with dorso-external margin supplied with a few minute spines. Cephalic tibiae with auditory foramina conchate, very full and projecting beyond the dorsal plane of the limb.

Hapalophyllum vrazi (Bolivar)

1898. *Brunnea vrazi* Bolivar, Act. Soc. Española Hist. Nat., 1898, p. 141.
[♀, Borneo.]

Labuan, British North Borneo, 1 ♀.

This is a most delicately beautiful species and the present specimen appears to be even more strikingly colored than the type. The general coloration is cream buff, the occiput and particularly the disk of the pronotum washed with wax yellow, the latter with a very narrow line of deep vinaceous bordering the caudal margin. The cross-veins of the discoidal field of the tegmina are vinaceous, with a dot of wax yellow at the extremity of each and a buffy fleck margined with wax yellow proximad between the median and ulnar veins. The apex of the caudal femora externally, and base of the caudal tibiae, are lumiere green. Each of the first two abdominal sternites has a large triangular patch of purplish red.

Length of body 41, length of pronotum 6.3, caudal width of pronotal disk 18.3, length of tegmen 62.1, greatest width of tegmen 20, length of cephalic femur 8.6, length of caudal femur 18.3, length of ovipositor 16, greatest width of ovipositor 3.7 mm.

Section PHYLLOMINI

Temnophyllum speciosus Brunner. Plate XVII, figure 1.

1895. *Temnophyllum speciosus* Brunner, Monogr. der Pseudophylliden, p. 46,
pl. II, fig. 1. [♀ : Malacca, [Straits Settlements]; southern Borneo.]

Labuan, British North Borneo, 1 ♂.

The tegmen of the previously unknown male of this species is here figured. The ultimate tergite is deeply angulato-concave mesad, the supra-anal plate fitting into this. That plate is broad, with lateral margins straight and very weakly convergent to the apex, which is strongly angulate-emarginate, the delicate lateral acute-angulate portions thus formed being curled dorsad in the specimen before us.

The general coloration of this individual is jade green.

Length of body 42, length of pronotum 10.8, length of tegmen 56.8, (estimated) median width of tegmen 29, distal width of

tegmen 18.8, length of tegminal stridulating field 22.3, length of stridulating vein 10, length of cephalic femur 13.8, length of caudal femur 23 mm.

Promeca unicolor Brunner.

1895. *Promeca unicolor* Brunner, Monogr. der Pseudophylliden, p. 52.
[♂, ♀; Kina Balu, Borneo.]

Labuan, British North Borneo, 1 ♂, 2 ♀.

The median vein branches meso-distad in females, near the apex of the tegmina in males of this species.

The tegminal spots described by Brunner, when small, are dark vinaceous. When larger, these spots are seen to have white centers and in one female before us the more proximal are enlarged into opaque white blotches, rimmed with dark vinaceous.

Length of body ♂ 29, ♀ 32 and 34; length of pronotum ♂ 7, ♀ 9 and 9.1; length of tegmen ♂ 35.8, ♀ 55.7 and 55.8; median width of tegmen ♂ 11, ♀ 14 and 13.8; length of caudal femur ♂ 16.3, ♀ 22.7 and 22; length of ovipositor 27.8 and 30 mm.

From the measurements of the original series, it would appear probable that considerable individual variation in size and tegminal development will be found in this insect.

Promeca quadripunctata Brunner.

1895. *Promeca quadripunctata* Brunner, Monogr. der Pseudophylliden, p. 53. [♀, Java.]

Sandakan, British North Borneo, (from C. E. Baker), 1 ♂.

The previously unknown male of this species differs from males of *Phylloimus detersus* (Walker) in the decidedly more flattened-convex pronotum, with surface tuberculation somewhat weaker, lateral lobes decidedly wider, with ventral margin very broadly convex, less ample tegmina in proportion to body bulk, much more hairy ventral surface of limbs and caudal femora which are minutely denticulate dorsad and have their ventro-external margins armed with fewer spines, which, however, become distinctly larger distad.

Compared with a female of *Phylloimus pallidus* (Brunner), this insect is found to show convergence in the pronotal flattening, hairiness of the limbs and minute denticulation of the dorsal surface of the caudal femora. That species is easily separated by the immaculate pronotum, the punctulation of which is decided, lateral lobes with ventral margin weakly obtuse-angulate, much smaller male stridulating field, very much shorter cephalic femora and very different armament of the ventral femoral margins.

Length of body 26.5, length of pronotum 7.1, total width of

pronotum 6.8, length of tegmen 33.4, median width of tegmen 8, length of tegminal stridulating field 9.8, length of tegminal stridulating vein 5.2, length of cephalic femur 7.6, length of caudal femur 13.2 mm.

PHYLLOMIMUS Stål.

1873. *Phyllomimus* Stål, Öfv. K. Vetensk.-Akad. Förh., 1873, No. 4, p. 44.
1892. *Microprion* Pictet and Saussure, Iconogr. Sauter. Vertes, p. 17.

The genus *Phyllomimus* is monotypic, *granulosus* (= *detersus*) being the type. Kirby has selected *elliptifolia* Saussure and Pictet as genotype of *Microprion*, a species congeneric with *detersus*, if not actually a synonym of that exceedingly variable species.

Hence *Microprion* falls as a synonym of *Phyllomimus*.

Phyllomimus bakeri Karny. Plate XVII, figure 2.

1921. *Phyllomimus bakeri* Karny, Philippine Jour. Sci., XVIII, p. 611.
[♀; Mount Makiling, [Luzon], Philippine Islands.]

Polillo Island, Luzon, Philippine Islands, (E. H. Taylor), 1 ♀.
Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀.

In one specimen there is a large black spot meso-proximad between the median and ulnar veins, in the other specimen traces only of such a spot are found. Such a spot is individually absent or present, but variable in size, in the series of *P. detersus* (Walker) before us. It is evident that this feature is of no specific diagnostic value in these species.

The ovipositor is here figured, as it is very different from that of *detersus*. Its dorsal denticulations are transversely lamellate and rounded.

Length of body 36.5 and 36.2, length of pronotum 7.2 and 7.7, length of tegmen 54 and 55.3, median width of tegmen 13.8 and 13.3, length of caudal femur 17.1 and 21, length of ovipositor 19.8 and 19.4, median width of ovipositor 3 and 3 mm.

The narrower tegmina with venation more regular and cross-veins straight, transverse, gives to individuals of this species a very distinctive appearance.

Phyllomimus detersus (Walker). Plate XVII, figure 3.

1869. *Phyllomimus detersus* Walker, Cat. Derm. Saltat. Br. Mus., II, p. 406. [♂, unknown locality.]
1877. *P[hyllomimus] reticulatus* Stål, Öfv. K. Vetensk.-Akad. Förh., 1877, No. 10, p. 45. [♂, ♀; Philippine Islands.]
1882. *Microprion philippensis* Pictet and Saussure, Iconogr. Sauter. Vertes, p. 18. [♀, Philippine Islands.]
1895. *Phyllomimus amplipennis* Brunner, Monogr. der Pseudophylliden, p. 56. [♀, Philippine Islands.]
1895. *Phyllomimus rufatus* Brunner, Monogr. der Pseudophylliden, p. 56. [♀; Albany, Philippine Islands.]

To the previously established synonymy for the present species, (*sinensis* Walker, *granulosus* Stål and *truncatifolia* Pictet and Saussure), we add the above.

It appears that the common Philippine insect before us is the species recognized as *detersus* by Kirby, after examination of the type. The greatest confusion has apparently been caused by Brunner who, failing to recognize the variability of the species, considered the two Philippine species described by Stål to be valid and described two more. The species is exceedingly plastic, as the series of sixteen specimens, now before us, amply demonstrates.

Baguio, Benguet, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀.

Polillo Island, Luzon, Philippine Islands, (E. H. Taylor), 2 ♀.

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, 3 ♀.

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, 3 ♀.

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♂.

Iligan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♂.

Dapitan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Davao, Mindanao, Philippine Islands, (from C. F. Baker), 2 ♀.

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♂.

The present insect is subject to very great individual size variation, irrespective of geographic distribution. Stål gave 39 to 58 mm. for length including tegmina, for this dimension the present series shows the following extremes; ♂ 34.5 to 42.5, ♀ 40 to 68 mm.

The tegminal venation is irregular and the branching of the veinlets of the scapular field (used as a specific character by Brunner) particularly so.

Though usually with a black spot meso-proximad between the median and ulnar veins of the tegmina, individuals without this spot occur, others showing it reduced to different degrees.

In the smallest and one of the largest females at hand, the caudal femora distad and caudal tibiae are purplish pink. A rather similar individual color variation apparently constituted one of the reasons for Brunner's describing *rufatus*.

The measurements (in millimeters) of selected specimens from the series before us are as follows:

	Length of body	Length of pronotum	Length of tegmen	Width of tegmen	Length of caudal femur	Length of ovipositor
♂						
Los Baños	21.3	5	28.7	7.7	10.7	—
Mount Makiling	24.7	6	40.3	9.8	14.2	—
Iligan	26.7	6.7	36	10.8	14.6	—
Singapore	27	6.7	43	11.2	14.8	—
♀						
Baguio	25	5.8	33.1	9.4	11.8	12.8
Mount Makiling	31.5	7	39.8	10.8	14	15
Mount Makiling	37.7	9.1	51.2	14.8	18.7	19.8
Mount Makiling	30.5 ⁵⁷	8.7	59	15	20.7	29.2
Palillo Island	35.5	9.3	51.7	15.6	20.5	20.5
Davao	36	8.1	47.2	13.8	16.8	19.3

Phyllomimus ampullaceus (Haan)1842. *L[ocusta] (Aprion) ampullacea* Haan, Verh. Natuur. Geschied.Nederl. overzee. bezitt. Zool., p. 205. [*♂, ♀*: Java; Padang, [Sumatra].]1895. *Phyllomimus pallidus* Brunner, Monogr. der Pseudophylliden, p. 57.[*♂, ♀*: Borneo; Cambodia; Palawan,] Philippine Islands].

Labuan, British North Borneo, 1 ♀.

This species differs widely from *P. detersus* (Walker).⁵⁸ The tegminal markings are distinctive, though very faint. In the present species the wings fail to reach the extremities of the tegmina by a very brief distance, but show, nevertheless, decided atrophy, quite unfitting them for even usefulness as parachutes.

The present specimen is much smaller than the female described by Brunner as *pallidus*. The species, like *detersus*, is probably subject to decided size variation. Length of body 27, length of pronotum 6.1, length of tegmen 40, median width of tegmen 13.2, length of wing 35.8, greatest width of wing 13.8, length of cephalic femur 6.1, length of caudal femur 13.1, length of ovipositor 13.2, median width of ovipositor 3 mm.

Phyllomimus tonkinae new species. Plate XVII, figure 4.

This insect appears nearest *P. inquinatus* Brunner, described from a unique female, from Penang, British Straits Settlements.

The present male differs from the description and a male of that species before us, in being dark green in coloration, the tegmina with nearly colorless areas between the veins distad, with minute callosities mesad in all the larger areolae, which are whitish, except those between the ulnar and median vein which are dark. It is a much heavier and decidedly less delicate insect, the male body bulk being much greater and the organs of flight less developed, the tegmina narrowing more decidedly distad to the much narrower

⁵⁷ The body is shrivelled in this specimen.⁵⁸ The above synonymy has recently been indicated by Karny (Zool. Mededeel. Rijks Mus. Nat. Hist. Leiden, V, p. 175, (1920)).

apex. The very small size of the stridulating field and its strong and suddenly convex projection at the apex of the stridulating veins and the greatly reduced wings are other important features for separating the males of these species.

TYPE: ♂; Than-Moi, Tonkin. June and July. (From H. Fruhstorfer.) [Hebard Collection, Type no. 814.]

Size small, form robust for the genus. Pronotal surface rather thickly supplied with minute, low tubercles, the largest on the cephalic margin; ventral margin of lateral lobes weakly convex, showing a weak angulation. Tegmina broad, greatest width of scapular field nearly equal to greatest width of discoidal field; stridulating field very small, suddenly and roundly produced at apex of stridulating vein; costal margin broadly convex, sutural margin faintly convex, apex rounded and situated at the sutural margin. Wings greatly reduced, about two-thirds as long as tegmina, spatulate in contour, all but the anterior portion of the radiate field having disappeared. Supra-anal plate as long as broad, with free margin convex. Cerci moderately elongate, curving gradually inward and tapering to the minutely toothed apex. A large plate lies between these, bearing a minute tooth, directed dorsad and curved mesad, meso-proximad on each side. Subgenital plate of the usual Pseudophyllid type, rather short, with styles rather broadly spatulate. Ventral surfaces of femora moderately hairy, spines of cephalic and median femora mere tubercles, of ventro-external margins of caudal femora very small, in number as follows. Cephalic internal 3, cephalic external 0 (but rugulose), median internal 0, median external 3 and 6, caudal internal 0 and 4, caudal external 10 and 11. Ventro-external margins of median and caudal femora lamellate. Cephalic margin of metazona raised, roughened mesad, weakly tuberculate laterad.

General coloration forest green. Tubercles on cephalic margin of pronotum whitish green. Distal margins of abdominal tergites and dorsal margin of caudal femora purplish. Tegmina marked as described above, their ventral surfaces weakly washed with purplish in the more transparent areas, immediate costal margin whitish proximad.

Length of body 28.5, length of pronotum 6.4, length of tegmen 30.5, greatest width of tegmen 10, length of stridulating field of tegmen 4.7, length of wing 21, greatest width of wing 6, length of cephalic femur 7.2, length of caudal femur 12.9 mm.

The type is unique.

Phylloimus inquinatus Brunner.

1895. *Phylloimus inquinatus* Brunner, Monogr. der Pseudophylliden, p. 58. [♀; [Island of] Penang, Malay Peninsula.]

Island of Penang, British Straits Settlements, (from C. F. Baker), 1 ♂.

The previously unknown male of this species in general appearance resembles much more closely males of *Timanthes* than those of the other heavier and much less delicate species of *Phylloimus*.

We note the following characters of interest for this sex. Tegmina ample, costal margin very weakly convex and sutural margin almost straight from the broadly convex margin of the anal field to the distal extremity, where these margins curve into the very broad, transverse and scarcely convex distal margin. Wings extending caudad as far as tegmina. General coloration pale green, immaculate except for a few very small brown flecks, each mesad in the larger tegminal areolae. Dorsal margins of femora lamellate and very microscopically serrulate. Ventral femoral margins armed with spines, which are very minute on the cephalic femora and almost as small on the median femora, as follows. Cephalic internal 2 and 3, cephalic external 0, median internal 6 and 6, median external 8 and 9, caudal internal 12 and 15, caudal external 13 and 18 (of which about 10 to 12 are distinct).

Phyllozelus abbotti⁵⁹ new species.

Though in many respects resembling *Phylloimus* closely, the species of this genus may be quickly separated by the bispinose prosternum, acute tegmina, with branch of median vein sharply bent and thence parallel to the straight ulnar and median veins, limbs with genicular lobes bluntly triangular, caudal femora with ventro-external margin not lamellate but well spined and other less striking features.

The present insect apparently differs from the previously known species in having the dorsal margin of the caudal femora only minutely tuberculate.

From *P. siccus* (Walker) it differs further in the ventral margins of the pronotal lateral lobes, which show a weak, rounded obtuse angulation, while the caudal tibiae have the dorso-internal margin minutely serrulate. Walker's descriptions of *signatus* and *brevisculus* are too vague for any definite comparison, though they appear to be based on forms agreeing much more closely with *siccus*.

From *P. genicularis* Saussure and Pictet, it differs further in the decidedly smaller size, immaculate anal field of the tegmina, proportionately narrower tegmina, ovipositor which is shorter than the caudal femur, in the unarmed ventro-caudal margins of the cephalic femora and in the spines of the ventro-external margins of the caudal femora, which increase evenly in size distad.

⁵⁹ Named in honor of our friend, Dr. William L. Abbott, who for years gathered invaluable collections in the Malayan region.

TYPE: ♀; Singapore, British Straits Settlements. May, 1899.
(Dr. Wm. L. Abbott.) [U. S. National Museum.]

Size small for the genus, form robust. Vertex horizontal, sharply acute, projecting very slightly beyond the antennal scrobes and moderately sulcate throughout. Pronotum densely beaded, with ventral margins of lateral lobes very weakly rounded obtuse-angulate (as figured for *geniculatus* by Saussure and Pictet). Tegmina fully developed, with convexity of costal margin stronger than that of sutural margin, so that the very sharply rounded, acute apex is at the latter. Wings extending as far caudad as the tegmina, but apparently narrow. Supra-anal plate triangular, slightly longer than wide, with lateral margins weakly convex and apex sharply rounded; surface convex and sub-tectate. Ovipositor shorter than caudal femur, dorsal margin almost straight, feebly sinuous, serrulate in meso-distal portion; ventral margin straight proximad, curving meso-distal to the acute apex and sub-serrulate distad; lateral surface with (four and five) oblique, sharp, delicate distal ridges on dorsal valves and a blunt node below these on ventral valves. Limbs moderately pilose. Dorsal femoral margins lamellate and very minutely tuberculate, this very weak for median femora. Ventral femoral margins armed as follows. Cephalic internal 6 and 7, cephalic external 0, median internal 6 and 6, median external 3 and 4, caudal internal 9 and 9, caudal external 12 and 16. Dorso-internal margin of caudal tibiae weakly lamellate and minutely serrulate.

General coloration buckthorn brown tinged with tawny and quite uniform. Ovipositor deepening to tawny distad and still darker at apex.

Length of body 30, length of pronotum 7, length of tegmen 46.2, greatest tegminal width 12.3, length of cephalic femur 7.7, length of caudal femur 13.8, length of ovipositor 13.2 mm.

The type is unique.

Gonyatopus gemmiculus new species. Plate XVII, figures 5, 6 and 7.

This delicate and beautiful little insect does not have the external genicular lobes of the cephalic femora compressed and horizontally produced, but in all other respects agrees so closely with the description of *Gonyatopus* that we do not feel justified in erecting a new genus to include it.

The mesosternum in this species, however, does not have the margins simple, as might be inferred from Brunner's generic description, while the form and coloration of the cephalic coxal spine is a most remarkable feature in *gemmaclulus*, not mentioned elsewhere for other of the species.

The species is apparently nearest the Philippine *G. integer*

(Stål), from which it differs in the somewhat larger size and in striking features of coloration.⁶⁰

TYPE: ♂; Labuan, British North Borneo. [Hebard Collection, Type no. 815.]

Size small, form slender, structure very delicate. Head smooth, vertex acute, produced very slightly beyond margins of antennal scrobes, dorsal surface concave. Antennal scrobes produced ventrad in a bluntly conical projection. Pronotum with minute, scattered tubercles on disk and dorsal portions of lateral lobes; disk flattened, defined from the lateral lobes faintly by contour but strongly by coloration, with a subobsolete medio-longitudinal sulcus and two decided transverse sulci, caudal margin broadly convex; lateral lobes with cephalic and ventral margins straight and tuberculate and forming an obtuse-angulation. Tegmina and wings fully developed and capable of sustained flight. Tegmina with costal margin broadly convex, sutural margin weakly convex in stridulating field, thence nearly straight to distal extremity, where it curves into the broadly rounded apex; scapular field broken into irregular areolae; anal field very small; discoidal and median veins gradually diverging in distal two-fifths, median vein branching at end of proximal two-thirds, the branch forming an acute angle and curving proximad so that it thence runs parallel to the ulnar vein. Cephalic coxal spine lamellate, with ventral margin convex, so that it is half as wide as long. Mesosternum narrower than metasternum, cephalic and lateral margins weakly concave, these margins produced, convex latero-cephalic angles minutely tuberculate, the cephalic margin subtuberculate to near median portion. Ultimate tergite surrounded by preceding segment so that its dorsal portion is alone visible, with caudal margin concave. Supra-anal plate ovate, with greatest breadth distad and apical portion moderately truncate. Cerci small, stout conical, straight, tapering to apical portion which is folded inward at a right-angle to the shaft and terminates in a minute spine which does not extend inward so far as the inner margin of the shaft. Subgenital plate with lateral margins concave, narrowing to distal portion, then widening slightly to the truncate apex. Styles conical in proximal half, filiform in distal half. Dorsal femoral margins moderately lamellate and smooth. Ventro-external femoral margins and dorso-internal margin of caudal tibiae lamellate and armed with minute, procumbent spinulae, except distad on caudal femora where (7 and 8) small, erect spines occur. The count for these limbs as follows. Cephalic internal 14 and 14, cephalic external 15 and 15, median internal 8 and 8, median external 17 and 20, caudal internal 2 and 3 (subobsolete), caudal external 28 and 31. Genicular lobes of femora bluntly rounded. Mesosternum narrower than meta-

⁶⁰ As well as in the male genitalia, if these have been correctly described for *integer* by Brunner.

sternum, cephalic and lateral margins weakly concave, lateral margins and all of produced and convex latero-cephalic angles minutely tuberculate, the cephalic margin subtuberculate to near its median portion.

General coloration chamois. Antennae with short, widely spaced, black annuli. Disk of pronotum cinnamon, deepening laterad, and caudal margin bister, margined laterad with buff yellow. Cephalic coxal spine white, with a round ventro-mesal spot of black. Tegmina greenish chamois, the areolae with mottled suffusions of light cendre green, which become very inconspicuous and olivaceous in shade in distal portions. All tibiae distad with a brown fleck on dorsal surface. Third joint of tarsi with lateral lobes embrowned.

Length of body 18.3, length of pronotum 3.7, length of tegmen 27, greatest tegminal width 7.8, length of cephalic femur 5.8, length of caudal femur 10.3 mm.

The type of this distinctive insect is unique.

Aprion⁶¹ atroterminatus (Brunner)

1895. *Tympanoptera atroterminata* Brunner, Monogr. der Pseudophylliden, p. 67, pl. III, figs. 26b and 26c. [σ , ♀; Kina Balu, [British North] Borneo.]

Labuan, British North Borneo, 1 σ , 1 ♀.

The general coloration of this remarkable species is a very light milky green. The male before us is immaculate, except that the tegmina have a black spot in the second areola of the anal field beyond the enormous stridulating area, toward the anal vein, and the subgenital plate is shining black with styles, however, pale.

The female here recorded is marked with hay's russet, as figured by Brunner, the markings of the tegmina being, however, less heavy.

Length of body σ 33.7, ♀ 37.5; length of pronotum σ 6.3, ♀ 6.4; length of tegmen σ 54, ♀ 61.3; length of stridulating field of male tegmen 27; greatest (distal) width of stridulating field of male tegmen 19; greatest width of tegmen σ 25, ♀ 20; length of cephalic femur σ 12.5, ♀ 14; length of caudal femur σ 23, ♀ 24.6; length of ovipositor 16.5 mm.

Despoina superba Brunner.

1895. *Despoina superba* Brunner, Monogr. der Pseudophylliden, p. 68, pl. III, figs. 27a and 27b. [σ , ♀; Brunei, Borneo.]

Labuan, British North Borneo, 1 σ .

In the specimen before us of this wonderful species, the markings

⁶¹ It should be remembered that, in the literature, the name *Aprion* has been very generally incorrectly used for the genus which should be recognized as *Morsimus*. See notes on generic confusion, page 188.

are as figured by Brunner, except that all are more delicate. The median and caudal limbs are suffused with old rose. The remarkable coloration of the costal margin of the tegmina has been inadequately described. The margin itself is tawny, then comes a narrow band of white, interrupted by frequent slate-colored flecks, followed by a narrow band of ochraceous-tawny.

Length of body 30, length of pronotum 5.9, length of tegmen 49.5, length of stridulating field of male tegmen 21.4, greatest width of tegmen 12.6, length of cephalic femur 9, length of caudal femur 18.3 mm.

Despoina spinosa Brunner.

1895. *Despoina spinosa* Brunner, Monogr. der Pseudophylliden, p. 69, pl. III, fig. 27c. [σ , ♀; Kina Balu, [British North] Borneo.]

Labuan, British North Borneo, 2 ♀.

This astonishing insect represents the most specialized development yet known in the section of the Pseudophyllinae including pale green or brown species which have smooth tegmina. In the females at hand the pronotum is armed with a pair of large spines on each side of the cephalic margin of the disk, of which the lateral are very large, two large spines on each side of the mesozona, situated on the lateral margins of the disk and eight spines on its caudal margin, which grade from the two smallest mesad to the two largest laterad; the lateral lobes have the ventral margin armed with (3 to 5) large spines.

Length of body 38 and 36, length of pronotum 6.8 and 6.8, height of longest pronotal spine 2.1 and 2.1, length of tegmen 47 and 47, greatest tegminal width 18.7 and 18.8, length of cephalic femur 13.4, length of caudal femur 22.3 and 22.6, length of ovipositor 16 mm.

Tympanoptera grioleti Pictet and Saussure.

1892. *T[ympa]noptera grioleti* Pictet and Saussure, Iconogr. Sauter Vertes, p. 20, pl. III, figs. 15, a to c. [♀, Molucca Islands.]

Obi Island, Moluccas, 3 ♀.

The delicate and uniform coloration (except that the costal margin of the tegmina is narrowly yellowish and the antennae distad are delicately and finely annulate) and evenness of tegminal venation give to this insect an exceptionally neat appearance. A comparison of this genus with *Togona* will be found under *T. philippina*, here described.

Length of body 33.5 to 36.5, length of pronotum 5.5 to 5.9, length of tegmen 49 to 50.5, greatest width of tegmen 14.7 to 15.8,

length of caudal femur 15 and 16, length of ovipositor 17 to 19.2 mm.

Togona philippina new species. Plate XV, figure 4.

Closely related to the Formosan *T. unicolor*⁶² Matsumura and Shiraki,⁶³ the present females may be distinguished by their slightly smaller size, much smaller pronotum, longer tegmina, shorter ovipositor and the lamellate and much more abundantly spinose ventro-external margins of the median and caudal femora.

This genus is clearly very near *Tympanoptera*, differing in the subobsolete medio-longitudinal sulcation of the pronotum, narrower ovipositor which is evenly though weakly curved upward, shorter tegmina with veins not minutely tuberculate proximad, median vein forking slightly beyond end of proximal fourth, greater distal divergence of discoidal and median veins and sinuous ulnar and branch of the median vein.

TYPE: ♀; Surigao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 818.]

Size small, form moderately slender, structure delicate. Vertex acute, projecting very slightly beyond antennal scrobes, dorsal surface concave to near apex. Pronotum weakly tuberculate with a weak medio-longitudinal line defined by lateral carinulae which are mainly indicated by tubercles, with two transverse sulci which are not interrupted mesad; caudal margin of disk convex, humeral sinus obtuse-angulate but distinct, other margins weakly tuberculate; lateral lobes higher than wide, ventro-cephalic angle rounded rectangulate, ventral margin very weakly convex, ventro-caudal angle sharply rectangulate. Tegmina and wings fully developed and capable of sustained flight. Tegmina with costal margin broadly convex, sutural margin almost straight to the rather sharply rounded apex at its distal extremity; veins of discoidal field parallel in greater part, though the ulnar and branch of the median vein are sinuous, median vein branching slightly before end of proximal fourth and diverging from discoidal vein in distal third; majority of cross-veinlets of discoidal field transverse and straight, those of scapular field irregularly branching and moderately oblique. Supra-anal plate linguliform, medio-longitudinally carinate. Ovipositor not heavy for group, curving

⁶² Karna has recorded a male from Los Baños, Luzon, Philippine Islands, as *unicolor*, having compared it with Formosan males of that species. That individual almost certainly represents the present insect and it is probable that the differences in limb structure were not noted (*Philippine Jour. Sci.*, XVIII, p. 610, (1921).)

⁶³ The figure originally given of *unicolor* does not show the acute-angulate branching of the median vein, nor the gradual distal divergence of the discoidal and median veins of the tegmina, found in the material here treated. This is probably attributable to faulty drawing.

gently dorsad to its acute apex, the margins serrulate in distal half. Subgenital plate delicate, triangular, with apex bluntly bilobate. Ventro-external margins of median and caudal femora lamellate. Ventral femoral margins armed with the following number of procumbent spinulae. Cephalic internal 10 and 11, cephalic external 11 to 13, median internal 11 and 11, median external 15 to 18, caudal internal 16 to 17, caudal external 25 to 30. Caudal tibiae with four margins supplied with very small spines, the dorso-external margin weakly lamellate.

General coloration immaculate light greenish yellow, apparently faded to yellowish on body, probably pale green in life. Antennae delicately and finely annulate distad.

Length of body 27 and 25, length of pronotum 4.3 and 4.3, caudal width of pronotum 3 and 3, length of tegmen 37.8 and 36.4, greatest width of tegmen 11.9 and 11.7, length of cephalic femur 5.9 and 5.9, length of caudal femur 12.3 and 13.1, length of ovipositor 10.3 and 11.5 mm.

In addition to the type, a single paratypic female, from Los Baños, Luzon, Philippine Islands, is before us.

Morsimus albomarginatus new species. Plate XV, figure 5; plate XVII, figures 8, 9, 10 and 11.

Apparently nearest *M. inversus* (Brunner), the present insect differs; in proportions, in the non-carinate vertex, the immaculate head and pronotum, weak proximal curvature of the branch of the median vein of the tegmina, which forms an acute angle with that vein, anal field of tegmina, which lacks a spurious longitudinal vein and proportionately much smaller ovipositor.

TYPE: ♀; Labuan, British North Borneo. [Hebard Collection, Type no. 816.]

Size large for the genus, form medium, structure very delicate. Head smooth; vertex acute with dorsal surface faintly convex proximad, thence weakly concave to near apex. Distal margin at first antennal joint with a sharp tubercle ventrad and a smaller rounded tubercle dorsad. Pronotum moderately well supplied with very minute tubercles; disk rounding evenly into lateral lobes, with a very weakly indicated rounded medio-longitudinal carina and two distinct transverse sulci, flattened in caudal portion; lateral lobes with ventro-cephalic marginal portion thickened, tuberculate and broadly convex to slightly beyond median portion on ventral margin, ventro-caudal angle strongly convex at slightly more than ninety degrees. Tegmina and wings fully developed. Tegmina with costal margin broadly, though more strongly than usual, convex to the sharply rounded apex at sutural margin, which margin is straight except in the weakly convex proximal portion; veinlets of marginal and scapular fields pale, forking distad, oblique; discoidal and median veins scarcely diverging in distal

portion; median vein branching at end of proximal third, this branch forming an acute angle and curving gently to run parallel to median, ulnar and anal veins; these veins connected by six conspicuous (and distad one or more inconspicuous), straight, oblique, pale cross-veins, which are directed proximad toward the sutural margin, so that they are approximately parallel to the pale veinlets of the scapular field. Supra-anal plate apparently slightly longer than wide (partially pulled inward in this specimen), triangular, with lateral margins convex and medio-longitudinally carinate. Ovipositor moderately heavy; dorsal margin nearly straight, weakly convex proximad, thence weakly concave and very finely serrulate; ventral margin broadly convex meso-distad to the acute apex, with distal margin very finely serrulate; dorsal valves disto-laterad with five weakly oblique, sharp but delicate, transverse ridges. Subgenital plate very small, delicate, truncate trigonal. Ventro-external margins of median and caudal femora weakly lamellate. Ventral femoral margins armed with the following compound⁶⁴ spinulae,⁶⁵ which are produced though very small only distad on the external margins of the caudal femora. Cephalic internal 5 and 6, cephalic external 0 and 3, median internal 0 and 4, median external 7 and 9, caudal internal 6 and 6, caudal external 14 and 15. Caudal tibiae with dorso-internal margin armed with a series of closely placed, minute, compound spinulae and becoming moderately lamellate distad.

ALLOTYPE: ♂; same data as type. [Hebard Collection.]

Agrees closely with the female, except as follows. Size very much smaller. Pronotum more strongly tuberculate. Tegmina slightly less acute at apex; stridulating field small, oblique vein and veinlets less contrastingly paler. Genitalia crushed, the subgenital plate is seen to be very slenderly produced, with paddles shaped cerci. Spinulae of limbs even more compounded; those of the ventral femoral margins numbering as follows. Cephalic internal 3 and 4, cephalic external 7 and 7, median internal 1 and 5, median external 9 and 11, caudal internal 7 and 7, caudal external 16 and 16.

General coloration cream color. Head with occiput laterad washed with olive buff. Antennae cream color with a faint greenish tinge. Pronotum ochraceous-buff dorsad, shading to olive buff

⁶⁴ See plate XVII, figures 9, 10 and 11. This remarkable type of femoral spinulation is developed in the species of this and a number of other Pseudophyllid genera, which follow in linear arrangement.

⁶⁵ The number of such spines is evidently so variable that probably little of specific diagnostic value will be found. The actual number of femoral spines is probably very rarely constant in any species of the Tettigoniidae, though the average for a species, when sufficient material is available to determine it, will probably often be found to differ from that for related species. It is for this reason that we have given the exact spine count, in the present paper, for the new species described; as an aid in beginning to find the averages for these species, but certainly not to distinguish them from their allies on the basis of the exact number of spines present.

on lateral lobes and with caudal portion of disk light grape green, ventral margins of lateral lobes rather broadly cream color. Tegmina grape green, this weakening in areolae and heaviest toward the pale oblique transverse veins of the discoidal field and pale oblique veinlets of the scapular fields, the entire costal margin cream color, this rather broad proximad. Limbs buffy with a greenish tinge, the tarsi somewhat embrowned. Ovipositor ochraceous-buff, with distal portion blackish brown. In the allotype the transverse veins and veinlets are less contrastingly paler and, as a result, the distinctive coloration of this insect is seen to be far less pronounced in the male sex.

Length of body ♂ 18.7, ♀ 33; length of pronotum ♂ 4.3, ♀ 5.5; caudal width of pronotum ♂ 2.9, ♀ 4.3; length of tegmen ♂ 30, ♀ 50.5; greatest width of tegmen ♂ 8, ♀ 17.1; length of cephalic femur ♂ 5, ♀ 5.3; length of caudal femur ♂ 10.3, ♀ 14; length of ovipositor 14.8 mm.

This interesting species is known from the described pair.

Morsimus serraticollis Bolivar.

1890. *Morsimus serraticollis* Bolivar, Anal. Soc. Española Hist. Nat., XIX, p. 325. [♀; [Island of] Waigou, [Melanesia].]

Setekwa River, opposite Aru Islands on south coast of Dutch New Guinea, (from A. S. Meek), 1 ♀.

The pronotum in this specimen is not densely granulose, as later described by Brunner. The median carina is decided and irregularly tuberculate, the tubercles in places forming two irregular adjacent lines;⁶⁶ the other portions with scattered, minute tubercles, except the ventral margins of the lateral lobes, which are more strongly tuberculate.

The presence of a longitudinal spurious vein, running through the narrow anal field to near the tegminal apex, combined with other striking characters, will probably oblige separation of this species from *Morsimus*, when the forms here assigned are better known.

CHONDRODERELLA new genus

The present genus is erected to include the new species, *C. sexguttata* and very probably *rubromarginata* (Haan), of which it is likely that *borneensis* (Brunner) is, at least in part, a synonym.

GENOTYPE.—*Chondroderella sexguttata* new species.

Agreeing very closely in all other features with *Chondrodera* Karsch, this genus may be separated by the following characters. Tegmina with anal field lacking a spurious vein; discoidal and

⁶⁶ This shows some slight divergence toward the genus *Chondrodera*.

median veins adjacent to near apex, where the former runs suddenly off as one of the veinlets to the costal margin. Cephalic tibiae with auditory foramen internally flattened conchate, externally inflated conchate. Cephalic coxal spine thickened, but not lamel-late as in that genus. Limbs, particularly the cephalic, strongly hirsute; spinulae of the same compound character as found in *Morsimus*.

Chondroderella sexguttata new species. Plate XV, figure 6.

This species, compared with the brief original description of the Bornean *C. rubromarginata* (Haan) is seen to be very closely related, differing only in the small but very distinctive tegminal markings.

TYPE: ♂; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 817.]

In addition to the features given in the generic description, we note the following:

Size small, form rather slender, structure very delicate. Vertex acute, feebly concave mesad, extending slightly beyond margins of antennal scrobes and there slightly reflexed to the sharply rounded apex. Pronotum with two medio-longitudinal rows of slender but prominent tubercles, separated by a short interval; margins tuberculate, the surface elsewhere very faintly subtuber-culate; three transverse sulci present, of which the median alone is deep and alone cuts the median line of the pronotum, this occurring mesad. Tegmina and wings fully developed and capable of sustained flight. Tegmina very broad, anal field small, its free margin concave before and convex at the stridulating vein; thence the sutural margin is straight, distad curving to the rather broadly rounded apex, the costal margin convex, decidedly so proximad; anal field beyond stridulating area thickly filled with minute, irregular veinlets; median vein branching mesad, connecting veins of discoidal field in most cases perfectly transverse; transverse veins of scapular field not numerous, weakly oblique, the more proximal forking irregularly. Supra-anal plate nearly twice as long as wide, lateral margins weakly convergent, rounding distad into the truncate apex. Cerci simple, cylindrical, moderately elongate, tapering weakly to the rounded apex, which is armed with a minute tooth directed inward. Subgenital plate narrowed suddenly mesad, the distal half very slender, expanding very slightly distad and bearing very delicate, paddle-shaped styles. Ventral femoral margins armed with minute compound spines, except externally on the caudal femora, where the more distal spines, though small, are considerably larger. Cephalic internal 2 and 5, cephalic external 0 and 1, median internal 1 and 4, median external 5 and 6, caudal internal 8, caudal external 10.

General coloration warm buff tinged with light green. Antennae

unicolorous to distal portions, which are warm buff, feebly annulate with brown. Tegmina transparent pale yellow green, becoming colorless distad and toward the costal margin; brief proximal portion of marginal field with close network of veinlets hydrangea red, the minute intervals black, but with three circular white spots, each narrowly margined with black, the median largest, the first very small, but all conspicuous; areolae of scapular and discoidal fields each with a very minute black fleck mesad, the veinlets about these flecks so delicately marked with black that this can scarcely be noticed by the naked eye.

Length of body 22, length of pronotum 3.7, caudal width of pronotal disk 3.2, length of tegmen 29.3, greatest tegminal width 11.4, length of cephalic femur 5.7, length of caudal femur 10.8 mm.

The type of this handsome little insect is unique.

Section CYMATOMERAE

Sathrophyllia torrida Stål.

1874. *S[athrophyllia] torrida* Stål, Recensio Orth., II, p. 71. [♀, unknown locality.]

Toungoo, Burma, (A. V. B. Crumb), 1 ♂, 1 ♀, [A. N. S. P.].

The species of this genus apparently all show decided individual variation, the projections of the pronotum, tegmina and limbs being irregular and the irregular, mottled markings, resembling bark, also differing in shade and distribution in each individual.

The present specimens differ from the individual, here recorded as *S. marmorata* Stål, only in having the elevation of the pronotal disk very slight in its caudal portion and the meso-distal convexity of the dorsal surface of the cephalic tibiae much weaker.

Additional material may prove synonymy, but we believe that Brunner did not possess sufficient material to justify his action of placing this name under *S. rugosa* (Linnaeus). Comparison of the present specimens with material of that species before us, from India and Ceylon, shows marked differentiation in the strongly swollen basal portion of the occiput, much more decided tegminal shoulders at the base of the ulnar vein (resembling those developed in some Phasmids), deeper general coloration and specialized cephalic tibiae.

The size and relative proportions appear to offer no specific diagnostic features whatever.

Sathrophyllia marmorata Stål.

1874. *S[athrophyllia] marmorata* Stål, Recensio Orth., II, p. 71. [♀, unknown locality.]

Shwego, Burma, June 12, 1885, (L. Fea), 1 ♀, [A. N. S. P.].⁶⁷

⁶⁷ From H. de Saussure, determined by that author as *rugosa*.

The present individual is compared with specimens of *S. torrida* Stål under that species. It differs similarly from *S. rugosa* (Linnaeus), except that the elevation of the pronotal disk is fully as prominent in its caudal portion.

Olcinia erosifolia Stål. Plate XVII, figure 12.

1877. *Olcinia erosifolia* Stål, Öfv. K. Vetensk.-Akad. Förh., 1877, No. 10, p. 45. [♀, Philippine Islands.]

Labuan, British North Borneo, 1 ♂.

The pale face, truncate tegmina and black spines of the cephalic femora distinguish this insect. In the present specimen the head and thorax ventrad, limbs and even the first antennal joints are thickly supplied with long silky hairs, which are strikingly evident. The general coloration is grayish brown, the tegmina irregularly mottled with pale greenish and rusty brown. The costal margin of the sinistral tegmen has three, that of the dextral tegmen six, moderately large, rounded triangular projections.

The previously unknown male has the supra-anal plate small, produced and shield-shaped. The cercus is nearly semicircular, with apex minutely toothed. The subgenital plate is broad and shining black proximad with a broad subchitinous pale medio-longitudinal sulcus, then suddenly narrowed, the slender distal portion pale, short, with apex briefly forked and bearing moderately heavy styles, which curve inward distad.

Length of body (squeezed out) 32, length of pronotum 5.8, caudal width of pronotum 5, length of tegmen 32.4, greatest tegminal width 13.2, length of wing 33.4, length of cephalic femur 5.8, length of caudal femur 14.3 mm.

Sanaa imperialis (White)

1846. *Locusta (Acanthodis) imperialis* White, Ann. Mag. Nat. Hist., XVIII, pl. 1, fig. 1. [♀; Silhet, [Assam].]

Assam, 1 ♀.

The bold black and tan markings of this large insect are very distinctive.

Length of body 46, length of pronotum 10.8, length of tegmen 53, greatest tegminal width 18.1, length of cephalic femur 10.2, length of caudal femur 23.3, length of ovipositor 23.2 mm.

Typhoptera staudingeri (Brunner)

1895. *Capnoptera staudingeri* Brunner, Monogr. der Pseudophylliden, p. 97, pl. IV, fig. 40. [♂, ♀; Kina Balu, [British North] Borneo.]

Labuan, British North Borneo, 1 ♂.

The tegmina are bister, beautifully spotted and dotted with

light blue-green. Brunner does not mention the antennae, which in the specimen before us are blackish, with a broad buffy annulus, occupying six joints, above the bases of the caudal femora.

Length of body (squeezed out) 29.4, length of pronotum 4.5, length of tegmen 35.7, greatest tegminal width 9.1, length of cephalic femur 10, length of caudal femur 16, length of style 6.7 mm.

Section PANTECPHYLI

Callimenellus fumidus Walker.

1871. *Callimenellus fumidus* Walker, Cat. Dermapt. Saltat. Br. Mus., V Suppl. p. 25. [σ , ♀; China.]

Than-Mio, Tonkin, June and July, (from H. Fruhstorfer,) 1 σ , 1 ♀.

Brunner's *ferrugineus* is probably, at least in part, a synonym of this species.

Length of body σ 29, ♀ (squeezed out) 46.5; length of pronotum σ 7.2, ♀ 8.8; length of tegmina σ (apices chewed off), ♀ 11.8; width of tegmen σ 7.9, ♀ 7; length of stridulating field of male tegmen 5.4; width of stridulating field of male tegmen 5; length of cephalic femur σ 7.8, ♀ 9.8; length of caudal femur σ 13.7, ♀ 20; length of ovipositor 18.6 mm.

AGRAECIINAE

EPIPIOIDES⁶⁸ new genus.

The present genus has no close relatives. The truncate conical vertex suggests that of *Oxylakis*, but is sulcate dorsad only at its apex. The pronotum, with disk flattened, in shape somewhat suggests the Listroscelid genus *Hexacentrus*; its lateral lobes much deeper but otherwise agreeing with those of *Oxylakis*. The tegmina widen gradually distad, as in the Listroscelid genus *Parahexacentrus* and are strikingly truncate, though not to as great a degree as in *Eppia*. The armament of the limbs in some respects resembles that of *Oxylakis truncatipennis* Bolivar.⁶⁹ The armament of the mesosternum and metasternum is nearest that of *Oxystethus*. The ovipositor shows a striking development, not known to us in any other genus of the Tettigoniidae.

In spite of all these differences, the present species runs to

⁶⁸ In allusion to the very superficial resemblance, which the truncate tegmina give individuals of this genus, to the tropical American *Eppia truncatipennis* Stål.

⁶⁹ A species which we believe should be removed from that genus.

Oxystethus in Karny's key,⁷⁰ except that the pronotum is not as decidedly truncate caudad.

GENOTYPE.—*Eppioides malaya* new species.

Head with fastigium of vertex small, the dorsal surface weakly sulcate only at the comparatively broadly rounded, truncate, apex; its cephalic surface in the same plane and connecting with the facial fastigium. Face and genae smooth and shining. Pronotum broadening caudad and shining, not rugose; its disk flattened, broadened caudad and sharply defined from the lateral lobes in color; lateral lobes vertical, decidedly deeper than any except dorsal width, ventral portion of caudal margin as strongly convex as the decided humeral sinus is concave. Tegmina and wings fully developed. Tegmina with anal field flattened and sharply delimited; broadening gradually to the strongly truncate apex. Prosternum unarmed. Mesosternum with latero-caudal angles strongly produced ventrad in acute-angulate, lamellate spikes. Metasternum similarly but not as strongly specialized and with a node also at latero-caudal angles of proximal section. Ovipositor short and moderately heavy, slightly upcurved and tapering to the acute apex, the dorsal valves with margin smooth, but with a distal serrate ridge laterad, ventral valves with a similar but longer serrate ridge and with ventral margin coarsely but weakly serrate distad. Limbs short, but proportionately not as short nor as thick as in *Oxylakis*. Cephalic coxae spined. Femora with genicular lobes rounded, except the caudal internal which are unispinose; ventral margins armed with heavy spines, between which there are no smaller spines. Cephalic tibiae with auditory foramina rimate.

***Eppioides malaya* new species.** Plate XVII, figures 13 and 14.

We have discussed above the appearance of this distinctive and, in many respects, anomalous genus. The present species is very closely related to *E. bicolor*, here described.

TYPE: ♀ : Labuan, British North Borneo. [Hebard Collection, Type no. 833.]

In addition to the characters given in the generic diagnosis, the following appear noteworthy:

Size medium, form rather slender for the group. Eyes small and protuberant. Pronotum with a single distinct, though linear, transverse sulcus on disk; ventro-cephalic angle of lateral lobes strongly obtuse-angulate and showing a minute angular production, ventro-caudal portion rounding evenly into the straight, oblique ventral margin. Tegmina extending beyond caudal femora a distance nearly equal to their length to that point, the distal margin faintly concave, truncate. Ovipositor showing a faint obliquity

⁷⁰ Gen. Ins., Orth., Locustidae, Agraeciinae, Fasc. 141, p. 4, (1912.).

of the dorsal margin distad. Subgenital plate short, truncate; lateral margins rounding distad to the very broadly and weakly concave caudal margin. Femora with ventral margins armed as follows. Cephalic internal 3 and 3, cephalic external 0, median internal 1 and 2 (very small spines), median external 4 and 4, caudal internal 3 and 5, caudal external 6 and 8.

General coloration cinnamon-rufous, faintly mottled. Head with median ocellus buffy. Antennae of the general coloration, with alternating segments tipped with prouts brown. Dorsal surface of vertex, occiput, pronotum and anal field of tegmina solidly russet, very narrowly bordered laterad with buffy. Tegmina in other portions transparent cinnamon-rufous, paling somewhat distad with occasional areolae of discoidal field toward the median vein slightly darker than the others. Limbs cinnamon-rufous with flecks of buffy to median portions of femora, remaining portions washed with buckthorn brown and flecked with prouts brown. Ovipositor ochraceous-tawny, becoming chestnut brown distad.

Length of body 24.3, length of pronotum 6.1, cephalic width of pronotal disk 2.2, caudal width of pronotal disk 4.1, depth of lateral lobes of pronotum 4.7, median width of lateral lobes of pronotum 3.7, length of tegmen 35, median width of tegmen 6.3, greatest (distal) width of tegmen 7.8, length of cephalic femur 5.8, length of caudal femur 13.9, length of ovipositor 9.5 mm.

The type is unique.

Eppioides bicolor new species. Plate XVII, figures 15, 16 and 17.

Very closely related to *E. malaya* here described, the present insect, also known from a single female, may be distinguished by pronotal differences, the longer and narrower tegmina and very slightly longer limbs and ovipositor.

We believe that males of these species will show further differences of decided specific value.

TYPE: ♀; Jelabu, British Straits Settlements. [Hebard Collection, Type no. 834.]

Agrees with the generic description and very closely in all respects, except the following, with the description of *malaya*. Pronotum distinctly more elongate; lateral lobes with ventrocephalic angle without a projecting apical angulation, caudal margin with ventral portion more convex, this convexity terminating suddenly at the straight, oblique ventral margin. Tegmina more elongate but distinctly narrower distad, with distal margin straight, truncate. Ventral femoral margins probably very similarly armed in these species, except that no minute spines are present on the internal margins of the median femora in *bicolor*; the number as follows. Cephalic internal 2 and 3, cephalic external 0, median internal 0, median external 3 and 3, caudal internal 3 and 4, caudal external 6 and 7.

Coloration very similar to that of *malaya*, except that the shade is different and the dark dorsal portions are in much stronger contrast. General coloration buckthorn brown, faintly mottled. Dorsal surface of vertex, occiput, pronotum and anal field of tegmina contrastingly and solidly warm sepia, narrowly bordered laterad with buffy, though more broadly so than in *malaya*. Other markings as in that species except that the tegmina have more numerous clouded areolae, with a few flecks of darker brown, particularly along the sutural margin.

Length of body 23.5, length of pronotum 6.8, cephalic width of pronotal disk 2.2, caudal width of pronotal disk 4.2, depth of lateral lobes of pronotum 4.8, median width of lateral lobes of pronotum 4.1, length of tegmen 36.3, median width of tegmen 6.5, greatest (distal) width of tegmen 7.6, length of cephalic femur 6.2, length of caudal femur 15, length of ovipositor 10.1 mm.

The type is unique.

Oxystethus dyaka new species. Plate XVII, figure 18.

Related to the Bornean *O. geniculatus* Bolivar, the present female is distinguishable from the single male known of that species by its more simple coloration with less developed color pattern, particularly of the head and pronotum, and the tegmina and wings which, though fully developed, are decidedly shorter in proportion to the body bulk.

The general appearance of the present insect strongly suggests that of certain species of the Neotropical genus *Agraecia*.

TYPE: ♀; Sandakan, British North Borneo. (From C. F. Baker.) [Hebard Collection, Type no. 835.]

Size medium for the genus; form rather slender, much more slender than in some of the species. Vertex slenderly produced in a conical fastigium which is scarcely longer than the first antennal joint, moderately ascendant to its sharply rounded apex. Antennae extremely elongate. Face thickly and heavily impresso-punctate, this weaker on the genae. Pronotum elongate, surface thickly and heavily impresso-punctate; dorsum rounded into lateral lobes but with a few, small, smooth, impressed areas on each side, shoulders indicated only latero-caudad and weakly rounded; caudal margin of disk transverse, faintly sinuate and subemarginate; transverse sulci indicated only dorsad on lateral lobes, the latter decidedly longer than deep, with ventro-caudal portion strongly and roundly produced ventro-caudad, so that the ventral margin is broadly obtuse-angulate emarginate and declivit to that portion, humeral sinus decided. Tegmina and wings fully developed, extending slightly beyond apex of ovipositor. Tegmina narrow, straight, tapering very slightly to the evenly rounded apex; median vein branching mesad, this branch having two and three short, oblique distal branches. Mesosternum with a long, slender

spine latero-caudad on each side. Metasternum with a shorter but decided spine latero-caudad on each side of proximal section and terminating caudad in two bluntly rounded projections of equal length. Ovipositor elongate and slender, unarmed, of the usual Copiphorine type developed in this genus, widening slightly beyond its base, then narrowing as weakly to the moderately acute apex, so that it is widest mesad. Subgenital plate distorted, apparently decidedly produced and strongly concave at apex, fitting tightly about the ventral portion of the ovipositor base. Femoral genicular lobes developed as follows; cephalic internal and median internal strongly acute-angulate produced, cephalic external rounded, median external bluntly triangular, caudal internal and external heavily unispinose. Cephalic and median femora thickened, the ventral femoral margins armed with large spines, between which are minute spines, as follows. Cephalic internal 3 and 3 large, 8 and 9 small; cephalic external 0 large, 2 and 2 small; median internal 0, median external 4 and 4 large, 9 and 9 small; caudal internal 0; caudal external 5 large, 7 small.

General coloration clay color; face evenly suffused with tawny; dorsal surface of vertex, occiput, pronotum mesad and tegmina proximad, evenly suffused with mars brown. Antennae ochraceous-tawny, proximad with intersections of joints slightly darker, mars brown; distad uniform cinnamon-brown. Tegmina clay color with veinlets paler, with very numerous small flecks of blackish chestnut brown which are more numerous in half toward costal margin. Limbs and ovipositor clear ochraceous tawny; the former with femora briefly shining blackish brown distad, this weak on cephalic femora, strong and sharply defined on the others; the tibiae with a similar but very much more limited and inconspicuous marking proximad and distad, the cephalic tibiae suffused with that color very briefly dorsad at end of auditory foraminal area.

Length of body 31.5, length of pronotum 7.8, caudal width of pronotal disk 3.7, median depth of lateral lobe of pronotum 3.9, median length of lateral lobe of pronotum 6.1, length of tegmen 36.7, greatest width of tegmen 5, length of cephalic femur 8.3, length of caudal femur 16.8, length of ovipositor 17.1, greatest (median) width of ovipositor 2.2 mm.

The type is unique.

Oxystethus intermedius Redtenbacher.

1891. *Oxystethus intermedius* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 441. [σ , ♀; Java.]

Tengger Mountains, Java, 1890, (from H. Fruhstorfer), 1 ♀.

In coloration this specimen agrees fully with the original description, except that the genicular areas of the tibiae are not darkened.

Length of body 23.7, greatest width of head 4.8, length of pronotum 6.4, length of tegmen 5.7, width of tegmen 2.9, length of

cephalic femur 6.3, length of caudal femur 11.2, length of ovipositor 12.1, greatest width of ovipositor 1.8 mm.

Oxystethus brevipennis Redtenbacher.

1891. *Oxystethus brevipennis* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 443. [♀, Java.]

Java, (determined as *brevipennis* and presented by H. de Saussure), 1 ♀ [A. N. S. P.]

The head and pronotum in this insect are not as decidedly impresso-punctate as in *O. intermedius* Redtenbacher.

Length of body 36, greatest width of head 8.2, length of pronotum 9.5, length of tegmen 11.3, width of tegmen 5, length of cephalic femur 10.1, length of caudal femur 18.7, length of ovipositor 17.5, greatest width of ovipositor 2.7 mm.

Oxylakis punctipennis Redtenbacher.

1891. *Oxylakis punctipennis* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 447, pl. IV, fig. 60. [♀, Borneo.]

Sandakan, British North Borneo, (from C. F. Baker), 1 ♀.

Redtenbacher does not comment on the shortness of the limbs and the numerous short, stiff hairs there found. The species apparently has no close allies.

Length of body 21.5, length of pronotum 5.7, caudal width of pronotal disk 4, length of tegmen 31, width of tegmen 5, length of cephalic femur 4.8, length of caudal femur 10.7, length of ovipositor 10.2, greatest width of ovipositor 2.7 mm.

Anthracites major new species. Plate XVII, figure 19.

The large size and black body but almost uniformly pale limbs of this insect distinguish it from its nearest allies. Agreeing more closely with *A. nitidus* Redtenbacher in other features of coloration, the male genitalia are seen to be very different, while the limb spination is closer to that described for *A. geniculatus* Dohrn. All of these species are known only from the Island of Mindanao.

TYPE: ♂; Surigao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 836.]

Size large, form moderately robust, for the genus. Fastigium of vertex produced in a straight, very slenderly conical projection, its apex sharply rounded. Face smooth and shining, showing a few subobsolete impressions. Tegmina greatly reduced, much shorter than pronotum, with distal margin very broadly convex; stridulating field fully developed but in normal position wholly concealed by the pronotum. Cerci very short and heavy, weakly curved inward, with a heavy dorso-distal and a decidedly heavier ventro-distal tooth, these curved and directed strongly inward.

Subgenital plate scoop-shaped, roundly produced distad on each side in a small area, from a socket on the ventral surface of which spring the styles, between these the caudal margin of the plate is roundly emarginate to the median point, where there is a rounded projection, deeper than wide and longer than deep. Styles stout, straight, cylindrical, two and one-half times as long as broad, with apices bluntly rounded. Femoral genicular lobes as follows; cephalic internal and median internal produced in a small but stout tooth, cephalic external and median external triangularly produced with apex rounded, caudal all strongly bispinose. Ventral femoral margins armed (in the pair at hand) as follows. Cephalic internal 5 to 6, cephalic external 4 to 5, median internal 2 to 2 (proximal), median external 5 to 6, caudal internal 1 to 3, caudal external 7 to 8.

ALLOTYPE: ♀ ; same data as type. [Hebard Collection.]

Agrees closely with male, differing as follows. Size larger. Pronotum with caudal portion of disk decidedly shorter and caudal margin truncate, weakly convex, rather than broadly and evenly rounded. Ovipositor moderately elongate, slender, unarmed, gradually curved dorsad and tapering to the acute apex. Subgenital plate short, truncate-bilobate.

General coloration shining black, except in the following areas. Fastigium of vertex and two proximal antennal joints amber brown. Eyes brussels brown. Clypeus ochraceous-tawny, becoming orange rufous on the labrum. Tegmina with all veinlets conspicuously reed yellow. Ovipositor shading from black to russet distad. Ventral surface of abdomen blackish brown. Femora amber brown, in the female with median and caudal femora weakly darkened proximad and distad. Tibiae ochraceous-buff, the spines amber brown. Tarsi with dorsal portions of first two joints ochraceous-buff, black in other portions.

Length of body ♂ 33, ♀ 36; length of pronotum ♂ 10.8, ♀ 10; median depth of lateral lobe of pronotum ♂ 5, ♀ 5.2; median width of lateral lobe of pronotum ♂ 7.3, ♀ 7.7; length of tegmen ♂ 6.8, ♀ 6; exposed length of tegmen ♂ 3.2, ♀ 4.7; width of tegmen ♂ 4.7, ♀ 4.6; length of cephalic femur ♂ 9.8, ♀ 10.3; length of caudal femur ♂ 23.3, ♀ 25.2; length of ovipositor 18; greatest width of ovipositor beyond immediate base 2.2 mm.

The species is known from the pair here described.

Anthracites zebra new species. Plate XVIII, figures 1 and 2.

This is a small, pale species, showing a beautiful color pattern of dark brown. It belongs to the same group as *A. apoensis* here described and, though apparently nearest in relationship to that species, differs strikingly in color pattern and male genitalic features.

In coloration alone it shows nearer agreement with *A. femoralis*

Dohrn, described from Minahassa, Celebes. That species is described as being decidedly larger, with very different male genitalia.

TYPE: ♂; Mount Apo, Mindanao, Philippine Islands. June and July. (E. A. Mearns.) [United States National Museum.]

Size small, form normal for the genus. Fastigium of vertex produced in a straight, very slenderly conical projection, its narrow apex truncate. Face as in *A. major* here described. Tegmina much reduced, total length probably near that of pronotum, narrowing and rounding into the truncate apices; stridulating field in normal position wholly concealed by pronotum. Ultimate tergite with caudal margin weakly and triangularly bilobate produced caudad. Supra-anal plate vertical and tucked in between cerci, apparently broadly rotundato-trigonal. Cerci very short and heavy, dorsal surface flattened convex, disto-external angle sharply rounded rectangulate, disto-internal angle produced in a stout, decurved tooth. Subgenital plate flattened, lateral portions narrowly reflexed, the lateral margins gradually descending to apex, but in ventral aspect the sides appear parallel; distad strongly W-emarginate, the narrow lateral apices thus formed bearing a small socketed style disto-ventrad, above which they are terminated in a tooth of equal size, curved dorsad; the median produced portion narrowly triangular and directed dorso-caudad. Femoral genicular lobes as follows; cephalic internal acutely triangular-produced, cephalic external and median external rounded, triangularly-produced, median internal unispinose, caudal internal and external bispinose. Ventral femoral margins armed, as follows. Cephalic internal 5 and 6, cephalic external 5 and 5, median internal 2 and 3 (proximad), median external 6 and 6, caudal internal 1 and 1, caudal external 7 and 8.

Head tawny, fastigium of vertex to base of clypeus forming an elongate blackish brown, triangular marking; mandibles blackish brown; remaining portions of clypeus ochraceous-buff, palpi paler; labrum ochraceous-buff tinged with tawny. Antennae ochraceous-tawny, the two proximal joints with flecks of dark brown, beyond with intersections of joints slightly darkened. Pronotum tawny, (paling laterad, cephalad and meso-caudad, possibly due to discoloration of the specimen), small caudal area of lateral lobes above humeral sinus with a suffusion of dark brown. Tegmina pale ochraceous-tawny, veins of marginal field buffy, the minute intervals between the veinlets dark brown. Abdomen clay color, each tergite laterad with caudal margin sharply defined in a striking, though narrow, vertical band of blackish chestnut brown, ultimate tergite with a weak brown suffusion dorsad on each side. Limbs ochraceous-tawny, with spines no darker, apices of caudal femora slightly paler as are the median and caudal tibiae, the latter, however, slightly darkened at apices.

Length of body 22, length of pronotum 8.4, median depth of lateral lobe of pronotum 2.9, median length of lateral lobe of

pronotum 6, exposed length of tegmen 6.3, exposed width of tegmen 3.8, length of cephalic femur 7.2, length of caudal femur 15.3 mm.

The type of this handsome little insect is unique.

Anthracites apoensis new species. Plate XVIII, figures 3 and 4.

Closely resembling *A. zebra*, described above, in size and pale coloration, the present species may be readily distinguished by its pale face, more extensively and differently marked pronotum and abdomen, more abbreviated tegmina and by striking male genitalic differences.

TYPE: ♂; Mount Apo, Mindanao, Philippine Islands. June and July. (E. A. Mearns.) [United States National Museum.]

Agrees closely with *zebra*, except as follows. Fastigium of vertex produced in a straight, very slenderly conical projection, its apex very sharply rounded, almost aciculate. Tegmina greatly reduced, much shorter than pronotum, with distal margin very broadly convex; stridulating field fully developed, but in normal position wholly concealed by pronotum. Ultimate tergite broadly and weakly concave disto-mesad, the deflexed supra-anal plate oval, with a broad medio-longitudinal sulcus. Cerci very heavy and short, broader than long, strongly inflated conical with dorso-internal portion sublamellate and produced distad slightly beyond apex proper, armed with a stout, feebly curved spine, directed mesad; ventro-internally with a weakly incurved, very slenderly cylindrical process, directed caudad and armed at apex with a small spine, directed mesad and immediately below the dorsal spine; between these the internal surface of the cercus is flattened. Lower podical plates chitinized along dorsal margins, terminating in a flattened, uncinate spine. Subgenital plate flattened, lateral portions narrowly reflexed, then curled outward, so that the lateral margins themselves are seen from below to be weakly convex convergent to the briefly produced latero-caudal apices; very broadly and deeply U-emarginate distad, the narrow lateral apices thus formed bearing a small, apical, socketed style, with an internal tooth of equal size, directed meso-dorsad. Femoral genicular lobes as follows; cephalic internal bluntly triangular-produced, median internal less strongly so, cephalic and median external rounded, caudal external and internal bispinose. Ventral femoral margins armed as follows, (in the pair at hand). Cephalic internal 5 to 6, cephalic external 5 to 6, median internal 1 to 2 (proximad), median external 5 to 6, caudal internal 1 to 1, caudal external 4 to 7.

ALLOTYPE: ♀; same data as type. [United States National Museum.]

Agrees closely with male, differing as follows. Size somewhat larger. Pronotum with caudal portion of disk decidedly shorter and caudal margin more broadly convex. Ovipositor moderately elongate, gradually tapering to acute apex, unarmed, evenly and

weakly curved dorsad. Subgenital plate very short, truncate, surface concave mesad.

General coloration clay color. Mandibles blackish brown, with a suffusion of the same above their bases. Vertex, antennal scrobes and proximal joints of antennae marked with blackish brown, the antennae showing very short annuli of this color and with intersections of joints slightly darkened. Occiput with a postocular sulcus blackish brown on each side. Pronotum with a blackish brown suffusion latero-proximad on each side and a large suffusion of the same occupying all of the area of the lateral lobes above the humeral sinus and invading the disk, with internal margins parallel. Disk of pronotum latero-mesad between these markings with flecks of blackish brown and with a pair of minute flecks of the same mesad at the base of the produced caudal portion. Tegmina with minute intervals between veins and veinlets blackish brown. Abdomen with a median row of clay colored diamond-shaped spots narrowly delimited in blackish brown, mesad on each side is also a suffused, longitudinal blackish brown band. Limbs with spines dark brown, femora with a pre-genicular annulus of dark brown but with apices themselves very pale, these markings strongest on caudal femora. Cephalic and median tibiae suffused proximad and distad with dark brown. Ovipositor amber brown, becoming clay color proximad.

Length of body ♂ 21, ♀ 22.5; length of pronotum ♂ 9.3, ♀ 8.2; median depth of lateral lobe of pronotum ♂ 3.1, ♀ 3.2; median length of lateral lobe of pronotum ♂ 6.4, ♀ 6.8; exposed length of tegmen ♂ 3.7, ♀ 3.3; exposed width of tegmen ♂ 3.7, ♀ 3.4; length of cephalic femur ♂ 7.8, ♀ 8.2; length of caudal femur ♂ 16, ♀ 16.9; length of ovipositor 14.5 mm.

The species is known from the described pair.

Nicsara⁷¹ bifasciata (Redtenbacher)

1891. *Lobaspis bifasciatus* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XL1, p. 459, pl. IV, fig. 65. [♂, ♀; Cape York and Rockhampton, Queensland, Australia.]

Townsville, Queensland, Australia, November 4, 1899, (F. P. Dodd), 1 ♂.

This is one of the handsomest and most distinctively marked species of the genus.

Length of body 34.5, length of pronotum 10, length of tegmen 42.7, (least) median width of tegmen 6, length of cephalic femur 9.7, length of caudal femur 23.9 mm.

⁷¹ The best key to the genus *Nicsara* is that given by Brunner for the synonymous *Lobaspis*, Abh. Senckenb. Naturforsch. Ges., XXIV, p. 267, (1898).

Nicsara taylori⁷² new species. Plate XV, figure 7; plate XVIII, figure 5.

The present insect appears to be nearest *N. inflata* Brunner, described from the Island of Celebes. The female of that insect is unknown, but the ovipositor of the female of the apparently closely related *N. nigrifrons* Brunner, described from the Island of Lombok, agrees with that of *taylori*.

From *inflata* this species differs in having the proximal antennal segments pale, merely flecked with dark brown, the pronotal disk having dark lateral bands only, which are interrupted on the prozona and do not invade the lateral lobes and in having the limbs entirely pale, with pale spines.

TYPE: ♀; Polillo Island, Luzon, Philippine Islands. (E. H. Taylor.) [Hebard Collection, Type no. 837.]

Average in size and form for the genus. Head and pronotum smooth and shining, showing a few minute subobsolete impressions. Pronotum with sulci strongly defined in dorsal portions of lateral lobes, convex callosity below humeral sinus more prominent and outlined by a more decided sulcus than normal in the genus. Tegmina and wings fully developed, the former widening slightly to the broadly rounded apex. Ovipositor short and broader than is usual in the genus, curved dorsad, broadening gradually to median point, then narrowing gradually to the very acute apex. Subgenital plate subchitinous except at the thickened distal portions, truncate, transverse, leaving the decidedly hairy ventro-proximal portion of the ovipositor exposed. Genicular lobes of femora as follows; cephalic and median internal unispinose, cephalic and median external bluntly triangularly produced, caudal all bispinose. Ventral femoral margins armed as follows. Cephalic internal 6 and 6, cephalic external 7 and 7, median internal 3 and 3, median external 7 and 7, caudal internal 2 (and 8 very small), caudal external 11.

General coloration clay color. Head with two small, weakly sulcate, postocular lines of blackish brown. Entire face shining black; median ocellus, clypeus and labrum clay color. Proximal antennal joint clay color with a minute suffusion of dark brown, antennae in other portions uniform clay color. Pronotum with lateral margins of disk defined irregularly in blackish brown, this forming a triangle to the first transverse sulcus, interrupted and subobsolete to next sulcus, thence broken to principal sulcus and heavy from that point to caudal margin of disk. Tegmina transparent clay color, with proximal portion of discoidal field weakly suffused with chestnut brown. Limbs and spines immaculate, clay color. Ovipositor clay color, tinged with tawny distad.

⁷² Named in honor of the collector, Mr. E. H. Taylor, who has done much work in Philippine Herpetology.

Length of body 33, length of pronotum 10.4, caudal width of pronotal disk 5.1, depth of pronotal lateral lobe 5.4, median width of pronotal lateral lobe 8.4, length of tegmen 43.5, median width of tegmen 7.3, distal width of tegmen 8.7, length of cephalic femur 11.8, length of caudal femur 27.7, length of ovispositor 17.7, width of ovipositor beyond base 2.2, width of ovipositor mesad 2.9 mm.

The type is unique.

Nicsara philippina new species. Plate XV, figure 8; plate XVIII, figures 6 and 7.

Apparently nearest *N. taylori* here described, the present species is quickly separated by the suffused but much paler face, solidly black irregular bands separating the disk from the lateral lobes of the pronotum, not as decided convex callosity of the lateral lobes below the humeral sinus, delicately though distinctively marked limbs, decidedly more elongate ovipositor which is curved less strongly upward and tapers evenly from the basal portion and dark spines of the ventral femoral margins.

Discovery of the male of *taylori* will probably show marked genitalic differences to further distinguish that sex of these species.

TYPE: ♂; Mount Makiling, Luzon, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 838.]

Agrees fully with the description of *taylori*, except in the following features. Size somewhat smaller and caudal margin of the pronotal disk slightly more convex, as would be expected for the male when compared with the female sex. Convex callosity of lateral lobes of pronotum normal for the genus, not as decided as in *taylori*. Ultimate tergite truncate distad and hairy; supra-anal plate vertical and largely concealed by the arms of the cerci. Cerci heavy, very short, convex conical, but with minute apex acute, in length slightly exceeding their proximal width; meso-dorsad furnished on the internal surface with a cylindrical arm as long as the cercus, directed mesad with distal portion bent slightly meso-caudad, tapering to the apex which is armed with a heavy, weakly curved spine; beyond this on the ventro-internal margin of the cercus is another arm, forming with it a V-shaped interval with apex truncate, this more distal arm two-thirds as elongate, straight, similarly cylindrical and tapering to the rounded apex which is armed with a similar spine on its proximal face, this spine forming an obtuse angulation with the shaft of this arm. Subgenital plate feebly tricarinate distad, these carinae low and rounded, the distal margin between the styles angulate-emarginate at slightly less than ninety degrees, the lateral projections thus formed with apices bluntly rounded. Styles situated there in sockets at apices of the lateral carinae, straight, cylindrical, slightly flattened proximad and there very slightly narrower than at the rounded apex, each slightly over three times as long as greatest width. Femoral genicular lobes as in *taylori*. Ventral femoral margins armed with similar spines, as

follows.⁷³ Cephalic internal 5 and 5 (σ 6 and 6), cephalic external 3 and 3 (σ 4 and 4), median internal 0 (σ 2 and 2), median external 5 and 5 (σ 6 and 6), caudal internal 1 (σ 2 and 2), caudal external 7 (σ 9 and 10).

ALLOTYPE: σ ; Polillo Island, Luzon, Philippine Islands. (E. H. Taylor.) [Hebard Collection.]

Agrees closely with the male, differing as follows. Size larger, nearly equal to that of the female of *taylori*. Caudal margin of pronotal disk slightly more truncate, as in this sex of *taylori*. Pronotum with convex callosity of lateral lobes as in male, not as decided as in *taylori*. Ovipositor elongate, slender, tapering evenly from beyond base to the acute apex; weakly curved dorsad, this not as decided as in *taylori* and strongest meso-distad. Subgenital plate of the same type developed in this sex of *taylori*, the thickened distal portion heavier and more extensive, the transverse distal margin showing a weak trace of bilobation.

General coloration of male buckthorn brown tinged with tawny. Occiput, vertex and genae of that color, the occiput with a post-ocular line on each side of dark brown; face heavily suffused, mias brown, with a faint vertical median line of prouts brown; median ocellus buff, clypeus buffy, this deepening on labrum to russet distad, mandibles black. Antennae ochraceous-tawny, with intersections of a few joints darkened. Pronotum of general coloration, the disk slightly paler and more tawny, separated from lateral lobes by a broad, irregular band of blackish brown, sharply defined on the dorsal margin, vague on the ventral margin, this band occupying as much a portion of the disk as of the lateral lobes. Tegmina transparent buckthorn brown, suffused with tawny, this deepening in proximal portion of discoidal field, there weakly chestnut brown, flecks of the same toward the humeral trunk proximad in marginal field. Limbs buckthorn brown tinged with tawny, with very numerous, narrow, transverse lines of darker brown of a more tawny shade, distad the caudal femora deepen and become solidly brown, with distal portion conspicuously paler, ochraceous-buff tinged with buckthorn brown, spines deep russet. Abdomen clay color.

The female is a much darker, intensively colored individual; in general coloration prouts brown tinged with chestnut. The markings are as described above, the distal portion of the caudal femora ochraceous buff in even greater contrast. The ovipositor is dresden brown proximad, in remaining portions shining burnt sienna.

Length of body σ 29, σ 32.4; length of pronotum σ 8.8, σ 10; caudal width of pronotal disk σ 4.3, σ 5; depth of pronotal lateral

⁷³ The difference in spine count we believe to be wholly attributable to individual variation. So closely does the pair here described agree in all other features of specific diagnostic value, that we feel fully warranted in designating the female as allotype.

lobe; ♂ 4.8, ♀ 5.2; median width of pronotal lateral lobe ♂ 5.9, ♀ 7.3; length of tegmen ♂ 37.7, ♀ 47; median width of tegmen ♂ 6.1, ♀ 7.7; distal width of tegmen ♂ 6.9, ♀ 8.3; length of cephalic femur ♂ 9.3, ♀ 11.1; length of caudal femur ♂ 24.1, ♀ 29; length of ovipositor 23.7, width of ovipositor beyond base 2.3, width of ovipositor mesad 2.1 mm.

The species is known from the described pair.

Nicsara thoracica (Dohrn) Plate XV, figure 9.

1905. *Lobaspis thoracica* Dohrn, Ent. Zeit. Stettin, LXVI, p. 239. [♂, ♀; Obi Island, [Moluccas].]
 1907. *Lobaspis bimaculata* Karny, (not of Redtenbacher, 1891), Revisio Conocephalidarum, p. 69. [♀; Obi Island, Moluccas.]

Karny, in his revision, overlooked Dohrn's Indo-Malayan Conocephalid paper of 1905, in which three species of this genus were described, and as a result described the female of the present species as *bimaculata*, belonging to a series in which "dorso medio pronoti toto nigro differunt." This difference in pronotal marking constitutes one of the most striking color features to separate *thoracica* from *bimaculata*.

Obi, Island, Moluccas, 1 ♂, 2 ♀.

Length of body ♂ 24, ♀ 29 and 25.5; length of pronotum ♂ 9.3, ♀ 9 and 9; caudal width of pronotal disk ♂ 4, ♀ 4.1 and 4.1; length of tegmen ♂ 29.8, ♀ 34.3 and 37; median width of tegmen ♂ 5, ♀ 5.8 and 5.9; distal width of tegmen ♂ 4.8, ♀ 5.6 and 5.7; length of cephalic femur ♂ 9.2, ♀ 9.8 and 10; length of caudal femur ♂ 20.8, ♀ 22.7 and 23.1; length of ovipositor 18.2 and 20.7; median width of ovipositor 1.7 and 1.7 mm.

Nicsara bimaculata (Redtenbacher)

1891. *Lobaspis bimaculata* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 462. [♂; Halmahera, Gilolo Island (nec Dschilolo), [Moluccas].]

Obi Island, Moluccas, 1 ♂.

Like *M. thoracica* (Dohrn), this insect is apparently subject to decided variation in length of tegmina and limbs. These species are very closely related, the present being recognizable by the blackish brown suffusions laterad on the clypeal suture and the pronotal marking, consisting of only small latero-cephalic and latero-caudal dark markings on the disk.

Length of body 23, length of pronotum 9.2, caudal width of pronotal disk 3.7, length of tegmen 26.7, median width of tegmen 4.3, distal width of tegmen 4.1, length of cephalic femur 8.2, length of caudal femur 18 mm.

Rhytidogyne griffini Karny.

1907. *Rhytidogyne griffini* Karny, Revisio Conocephalidarum, p. 70, fig. 15. [♀, Annam.]

Xom-Gom, southern Annam, February, (from H. Fruhstorfer),
1 ♀.

Length of body 42.3, width of head 10, length of pronotum 10.3, exposed length of tegmen 2.1, width of interspace between tegmina 1, length of cephalic femur 11.2, length of caudal femur 18.8, length of ovipositor 20 mm.

Dicranocercus zamboangae new species. Plate XVIII, figures 8 and 9.

The coloration, though dull, readily distinguishes this insect from the two previously known species of the genus. In general appearance the male resembles that sex of *Macroxyphus vaginatus* Pictet, but closer examination shows the numerous distinctive features by which these genera are separated, while striking differences in coloration are then also noted. The remarkable cerci of the male are different from those of any other Tettigoniid known.

TYPE: ♂; Zamboanga, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 839.]

Size slightly smaller than that of *D. niger* Redtenbacher,⁷⁴ form moderately slender. Vertex slenderly produced, compressed, decidedly ascendant, with apex sharply rounded; dorsal surface with a low rounded carina, which is strongest proximad. Face deeply and thickly impresso-punctate, lateral portions of occiput and all of pronotum similarly but more shallowly impresso-punctate. Pronotum not produced and truncate caudad; lateral lobes weakly broadening caudad with ventro-caudal angle sharply rounded rectangulate and caudal margin nearly straight, very weakly oblique and nearly vertical. Prosternum unarmed. Tegmina and wings decidedly reduced, falling short of the apices of the caudal femora. Ultimate tergite large, distal margin truncate but showing broad convexity laterad and brief concavity mesad; supra-anal plate concealed. Cerci heavy proximad, there ventro-internally produced in a large tooth which is directed mesad, beyond this short proximal portion cylindrical, tapering to the sharply rounded apex, the ventral portion developed into a very large lamellate plate which widens gradually but strongly proximad from the apex of the cercus, its ventral portion curled inward and produced in a large lamellate finger directed meso-cephalad, then with free margin deeply convex to a smaller rounded lamellate projection directed mesad, thence with the free margin deeply concave to shaft of cercus. Subgenital plate with lateral margins broadly concave convergent, deeply U-emarginate distad, with the slender lateral apices thus formed weakly divergent; a small decurved style, three times as long as broad, situated in a socket disto-ventrad on each of these. Genicular lobes of femora uni-

⁷⁴ Described from Jolo Island, Sulu Archipelago.

spinose, except the cephalic external and median external which are bluntly rounded. Ventral femoral margins armed with spines, as follows. Cephalic internal 3 and 4, cephalic external 5 and 5, median internal 0, median external 5 and 6, caudal internal 0, caudal external 9 and 10.

General coloration prouts brown tinged with russet, the limbs deep russet except the cephalic tibiae which are hessian brown. Pronotum narrowly dorsad, median portion of occiput, all of vertex, two proximal antennal joints, antennal scrobes and frontal fastigium blackish chestnut brown. Face hessian brown.

Length of body 28, length of pronotum 6.7, caudal width of pronotal disk 2.9, length of tegmen 13, median width of tegmen 13, distal width of tegmen 1.8, length of cephalic femur 7.2, length of caudal femur 13.7, length of cercus 4 mm.

The type is unique.

Macroxiphus vaginatus Pictet.

1888. *M [acroxiphus] vaginatus* Pictet Mém. Soc. Phys. d'Hist. Nat. Genève, XXX, No. 6, p. 53, pl. II, fig. 27. [♀, Java.⁷⁵]

Kina Balu, British North Borneo, 1 ♀.

Labuan, British North Borneo, 1 ♂, 2 ♀.

Length of body ♂ 38, ♀ 39 to 41; length of pronotum ♂ 8.7, ♀ 10 to 10.1; caudal width of pronotal disk ♂ 3.8, ♀ 4.7 to 4.8; length of tegmen ♂ 29.4, ♀ 36.5 to 40; length of cephalic femur ♂ 9.6, ♀ 11.9 to 12; length of caudal femur ♂ 19.2, ♀ 24.7 to 24.7; length of ovipositor 46.2 to 49.8 mm.

Macroxiphus megapterus Brongniart.

1896. *Macroxiphus megapterus* Brongniart, Bull. Soc. Philom. Paris, (8), VIII, p. 130, fig. 2. [♀, North Borneo.]

Kina Balu, British North Borneo, 1 ♂.

Labuan, British North Borneo, 1 ♂, 1 ♀.

We concur with Karny in considering Dohrn's *M. pictipes* a synonym of this species. Dohrn, however, stated for the male cerci, "apice bifidi, subtus in medio dente brevi acuto instructi." There appears to be some inaccuracy here, as the males before us, though agreeing closely in other respects, have the strongly incurved cerci bidentate distad and, though unarmed ventrad, bearing mesad on the dorso-external margin a stout, uncinate tooth, directed caudad.

Acanthocoryphus mindanensis new species. Plate XVIII, figures 10 and 11.

The present insect is widely distinct from *A. brongniarti* Karny,

⁷⁵ We fully agree with Dohrn (*Ent. Zeit. Stettin*, LXVI, p. 243, (1905), in believing that Pictet was in error in giving Java as the type locality for this species. All subsequent material studied indicates that this remarkable insect is peculiar to Borneo.

described from Tonkin, but no characters warranting generic separation can be determined after close comparison with the description of that species.

The fully developed tegmina give *mindanensis* a much stronger resemblance to species of the genus *Salomona*. It is, however, easily distinguished from that genus by the unspined prosternum, specialized vertex, absence of a spine on the median coxae,⁷⁶ ovipositor of the type found in *Oxylakis* and other less important features.

The fully developed organs of flight, much shorter vertex, very weakly impresso-punctate face, pronotum which is produced caudad with humeral sinus distinct, apparently different femoral armament and coloration quickly separate *mindanensis* from *brongniarti*.

TYPE: ♀; Surigao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 841.]

Size medium, form robust; much as in the smaller heavier species of *Salomona*. Head very large and broad, occiput moderately impresso-punctate, face shallowly impresso-punctate, genae more strongly so and irregularly rugulose. Vertex produced in a slender conical fastigium, slightly longer than its proximal width, with apex rounded; dorsal surface with low, heavy basal tooth, then a blunt tubercle followed by two transverse sulci. Pronotum much as in *Salomona*, but with ventro-caudal portions of lateral lobes bent outward; disk flattened, rugulose, with a slightly impressed area at the weakly indicated principal sulcus, caudal portion slightly produced with caudal margin truncate; lateral lobes rugose with sulci distinct, ventral margin oblique declivous caudad, weakly obtuse-angulate-emarginate cephalad, ventro-caudal portions lightly and roundly produced so that a broad humeral sinus is indicated. Tegmina and wings extending to near apex of ovipositor. Ovipositor unarmed, weakly curved dorsad, broadening slightly beyond base, then narrowing gradually to the rounded apex. Subgenital plate short, with caudal margin truncate. Genicular lobes of femora unispinose, except the external of the cephalic and median femora, which are roundly produced. Cephalic and median femora moderately heavy, their ventral margins distad showing a broad and weak but appreciable concavity. Ventro-internal margin of cephalic femora armed with a large spine preceded by (1 to 3) very small spines, followed by (2 to 3) small spines and then a larger spine. Ventro-external margin of median femora armed with three large spines, of which the median is the largest, with (2 or 3) small spines in the intervals between. Ventro-external margin of

⁷⁶ In all species of the genus *Salomona* before us, both the cephalic and median coxae bear a stout spine, those of the median coxae being shorter and more uncinate.

caudal femora armed with six large spines. Other femoral margins unarmed.

General coloration buffy brown. Head ochraceous-buff paling to warm buff on face, occiput with large, vague, asymmetrical suffusions of saccardos umber. Cephalic face of vertex, internal surface of first antennal joint, antennal scrobes, margins of frontal fastigium, clypeal, mandibular and labral sutures and mandibles blackish brown, labrum tawny. Antennae ochraceous-buff, each joint heavily suffused with blackish brown proximad, uniform ochraceous tawny distad. Pronotum with disk clear antimony yellow, with cephalic margin very narrowly blackish brown; lateral lobes antimony yellow, with patches of prouts brown dorsad, the free margin heavily blackish brown to humeral sinus. Tegmina buckthorn brown, the very numerous veinlets slightly paler and yellow ocher in proximal portion of marginal field, distad numerous minute scattered areolae between the veinlets are blackish brown. Limbs buckthorn brown tinged with tawny. Ovipositor ochraceous-buff with dorsal margin and suture between valves tawny.

Length of body 33, length of fastigium of vertex 1.3, width of head 8.3, length of pronotum 9.7, caudal width of pronotal disk 5.3, length of tegmen 29.7, width of tegmen 6.3, length of cephalic femur 8.2, length of caudal femur 14.7, length of ovipositor 14, least proximal width of ovipositor 2.1, median width of ovipositor 2.7 mm.

The type is unique.

Salomona nigripes new species. Plate XVIII, figure 12.

This very large species is distinguished by the immaculate face, which is smooth in a large triangular median area, containing eight symmetrically arranged impressed punctae, the solidly black femora and tibiae, the straight and almost acute fastigium of the vertex, which shows a medio-longitudinal, linear dorsal sulcation and numerous other less striking features.

In coloration of the femora nearest agreement is with *S. laticeps*, described from Amboina by Haan. The inner portions of the caudal femora, in that species, are however yellow.

TYPE: ♀ ; Setekwa River, southwest coast of Dutch New Guinea, opposite Aru Islands. (From A. S. Meek.) [Hebard Collection, Type no. 840.]

Size very large, form robust. Vertex produced in a straight, rather short, nearly acute fastigium, with very sharply rounded apex showing a very weak deflection, the dorsal surface showing a very fine, linear, medio-longitudinal sulcation. Face with a median, triangular, smooth area with two small impressed punctae below the inner margins of the antennal scrobes, two similar but larger punctae mesad between these and two very small ones above the clypeal suture, with a heavier impressed puncta on each side above

the lateral extremities of that suture. Other lateral portions of face and genae heavily rugose and impresso-punctate, occiput smooth with well separated, weakly impressed lines and punctae. Pronotum normal for the genus, the principal sulcus deep dorsad but decidedly deeper laterad. Tegmina and wings well developed, but extending caudad only slightly beyond median portion of ovipositor and probably unfitted for sustained flight in so heavy bodied an insect. Ovipositor unarmed, evenly curved dorsad and of equal width to the distal portion, where it tapers to the narrowly rounded apex. Subgenital plate bilobate, with disto-lateral portions thickened. Ventral femoral margins armed with spines, as follows. Cephalic internal 6 and 6, cephalic external 6 and 6, median internal 1 and 1, median external 6 and 6, caudal internal 0, caudal external 9 and 9.

Coloration shining. Pronotum, occiput, caudal portions of genae and eyes pale sudan brown. Cephalic portions of genae and all of face mahogany red. Mandibles claret brown proximad, deepening to black distad. Clypeus and palpi ochraceous-buff, labrum mars yellow. Cephalic portion of vertex (except its immediate apex), frontal fastigium (but not connecting ridge between these), antennal scrobes and first two antennal joints black, remaining portions of antennae mahogany red. Tegmina sudan brown, the veins and veinlets proximad citrine (greenish), the tegmina with (12 and 15) scattered and sharply defined small patches of blackish brown. Femora and tibiae black, the genicular areas sanfords brown, the intervals between the joints buffy; tarsi sanfords brown. Mesosternum and metasternum largely blackish, other portions of body brownish buff, flecked with blackish brown. Ovipositor rich chestnut, briefly brownish buff proximad and liver brown distad.

Length of body 64, width of head, 12.2, length of pronotum 14.8, caudal width of pronotal disk 9.3, length of tegmen 55.7, median width of tegmen 13.2, length of cephalic femur 16.8, length of caudal femur 28.2, length of ovipositor 26.1, greatest width of ovipositor 3.6 mm.

The type of this handsome insect is unique.

Salomona coriacea Redtenbacher.

1891. *Salomona coriacea* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI,
p. 476. [σ : Moluccas; Aru [Islands]; Batjan [Island, Moluccas].]

Obi Island, Moluccas, 1 ♀.

The female before us agrees closely with Redtenbacher's description, except that the black area of the mouthparts extends dorsad, occupying a transversely rectangular area above the clypeal suture.

Length of body 50, width of head 11, length of pronotum 12.8, caudal width of pronotal disk 8, length of tegmen 28.3, median width of tegmen 12.7, length of cephalic femur 15, length of caudal

femur 24.7, length of ovipositor 22.3, greatest width of ovipositor 3.1 mm.

Salomona conspersa Stål.

1877. *S[alomona] conspersa* Stål, Öfv. K. Vetensk.-Akad. Förh., 1877,
No. 10, p. 46. [σ , Philippine Islands.]

Butuan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Dapitan, Mindanao, Philippine Islands, (from C. F. Baker),
1 large juv. ♀.

In spite of the very inadequate original description, we believe the present insect to be correctly located. The only feature in any way disturbing is that Stål gives, for the male length, including the tegmina, 58 mm., this dimension being, for the female before us, only 51 mm. Such decided size variation has, however, been recorded for other species of *Salomona*.

The general coloration is clay color, the mandibles and spines black, the tegmina with numerous very small flecks of blackish brown. The antennae have the first two joints clay color, the others chestnut-brown, solidly so distad, but in greater portion with intersections between the joints clay color. The ovipositor is much as in *S. nigripes* here described.

The vertex is exactly as in *S. maculifrons* Stål, its fastigium short, straight, acute conical, strongly ascendant, dorsad with a small tubercle at its base and with cephalic surface somewhat swollen. The structure is slightly more robust, with head broader than in that species; the face and genae much less deeply impresso-punctate, best described as thickly covered with shallow but large impressed puncta. The ovipositor differs from that of *maculifrons* in not tapering as markedly distad to the apex, which is distinctly less acute.

Had it been included, the species would have been placed in a different section of Redtenbacher's, Brongniart's and Karny's keys to the genus from *maculifrons*, due to the facial sculpture. Nevertheless, it is clear that these species are more closely related to each other than to the other species of *Salomona* here discussed.

Length of body 41, width of head 8.8, length of pronotum 10.8, caudal width of pronotal disk 5.9, length of tegmen 35.1, median width of tegmen 8.6, length of cephalic femur 13, length of caudal femur 22.7, length of ovipositor 20.2, greatest width of ovipositor 2.8 mm.

Salomona maculifrons Stål.

1877. *Salomona maculifrons* Stål, Ofv. K. Vetensk.-Akad. Förh., 1877,
No. 10, p. 46. [σ , Philippine Islands.]

Polillo Island, Luzon, Philippine Islands, (E. H. Taylor), 1 ♀.
Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker),
1 ♂, [U. S. N. M.].

In addition to the markings described by Stål, the femora in the specimens before us are ornamented with numerous small, blackish brown transverse spots or short lines, arranged in transverse series.

The insect is compared with *S. conspersa* Stål under that species.

Length of body 33.5 and 41.5, width of head 7.4 and 7.8, length of pronotum 9.6 and 10.1, caudal width of pronotal disk 5.7 and 5.8, length of tegmen 34.5 and 37.1, median width of tegmen 7.7 and 8.7, length of cephalic femur 11.8 and 12.1, length of caudal femur 20.8 and 20.9, length of ovipositor 19.2 and 18.8, greatest width of ovispositor 2.8 and 2.7 mm.

***Salomona guamensis* new species.** Plate XXII, figure 1.

This species is nearest *S. vittifrons* Walker (better known as the synonymous *S. dohrni* Redtenbacher). It agrees in the comparatively small size, heavily and thickly impresso-punctate face, immaculate pronotum and tegmina which extend beyond the apex of the abdomen. It differs in the darkened face, clypeus and labrum, pale antennae, tegmina without spots and pale, transparent wings.

TYPE: ♀; Island of Guam. July, 1918. (P. Nelson.) [Hebard Collection, Type no. 856.]

Size rather small, form robust for the genus; larger and very much heavier than *S. lita* here described. Head broad; face and genae heavily, thickly and irregularly ruguloso-impresso-punctate; occiput weakly impresso-punctate and showing a few irregular, impressed lines. Vertex slender, acute-conical, straight but somewhat declivit toward its acute apex, below which its cephalic surface shows a convexity, projecting as far as the apex.⁷⁷ Pronotum nearly quadrate in dorsal aspect, surface impresso-punctate, principal transverse sulcus alone decided, caudal margin of disk transverse, each side showing very faint concavity. Tegmina and wings showing some reductions, extending a short distance beyond the apices of the caudal femora. Ultimate tergite greatly depressed, lying below and beneath preceding tergite, deeply cleft medio-longitudinally, with surfaces of lateral portions weakly convex. Ovipositor unarmed, evenly and broadly curved dorsad and with meso-distal portion very faintly wider than just beyond the swollen base, tapering distad to the narrowly rounded apex.

⁷⁷ In the type the dorsal surface of the vertex is smooth proximad, in the paratype a decided conical tubercle is found there. This is the first case noted where, in *Salomona*, such tuberculation is found to be present, or absent, in individuals of unquestionably the same species.

Subgenital plate short, median portion moderately concave, rounding into the vertical lateral portions, disto-lateral angles rounded, with caudal margin between broadly obtuse-angulate emarginate. Ventral femoral margins armed with spines as follows. Cephalic internal 4 to 6, cephalic external 3 to 5, median internal 2 to 3, median external 4 to 5, caudal internal 0, caudal external 7 to 8.

Shining clay color. Head cinnamon buff, in the paratype with a greenish tinge. Face and cephalic portions of genae, except in subocular area, blackish chestnut brown; below subocular area broadly margined with hazel, with subocular area itself of the general pale coloration; clypeus, labrum and mandibles blackish brown; cephalic surface of vertex and proximal antennal joints washed with brown, remaining portions of antennae ochraceous tawny. Eyes isabella color. Pronotum and limbs immaculate clay color, in the paratype with a greenish tinge. Tegmina immaculate, the principal veins of the pronotal coloration, the intervals between these slightly darker, but the veinlets themselves noticeably paler, cinnamon buff. Palpi and abdomen clay color, the latter apparently suffused with brown disto-ventrad (discolored?). Ovipositor rich chestnut, slightly darker distad and buffy in enlarged proximal portion.

The measurements of the type are given first. Length of body 35 and 36, width of head 9 and 10, length of pronotum 9.7 and 10.1, caudal width of pronotal disk 5.8 and 5.9, length of tegmen 30 and 31.7, median width of tegmen 7.7 and 8.3, length of cephalic femur 10.7 and 11.7, length of caudal femur 17.2 and 18.7, length of ovipositor 17 and 19, greatest width of ovipositor 2.6 and 2.7 mm.

In addition to the type, a single paratypic female, taken on the Island of Guam, by D. T. Fulloway and belonging to the United States National Museum, is before us.

Salomona lita new species. Plate XVIII, figure 13.

This plainly colored and diminutive species has the caudal femora armed as in *S. ornata* Brunner and its allies. The pale green fastigium of the vertex appears to afford an inconspicuous but valuable color character.

Though running close to *S. dohrni* Redtenbacher (= *S. vittifrons* (Walker)) in the keys, the present insect differs widely from that species in numerous features.

TYPE: ♂; Obi Island, Moluccas. [Hebard Collection, Type no. 842.]

Size small, form slender for this genus of large and very robust species. Head comparatively narrow, much as in *ornata*, but with face and genae heavily impresso-punctulate and occiput weakly rugulose; vertex very slenderly lamellate produced, straight, (neither ascendant or decurved, sulcate or nodulose), with apex in lateral aspect rounded. Pronotum much as in *ornata*, but with

surface smooth, caudal margin of disk transversely truncate and transverse sulci weaker. Tegmina and wings showing some reduction, extending a short distance beyond the apices of the caudal femora. Ultimate tergite produced caudad in two fingers which are slightly convergent, then curve outward weakly near their acute apices, showing throughout a broad convexity dorsad; the area between these is evenly curved, forming more than a semi-circle proximad. Cerci very large and heavy; shaft with internal surface oblique and flattened from proximo-median point to apex, bearing proximo-mesad on its ventral margin an elongate, sigmoid process with apex acute, above which is a heavy, blunt, cylindrical process; apex of cercus with a large dorso-external and a smaller ventro-internal tooth, both of these curving inward. Subgenital plate with lateral margins weakly convergent to the broad and weakly undulate, transverse caudal margin; styles at slightly produced apices of latero-caudal angles, small, cylindrical, four times as long as proximal width. Limbs short and heavy, much shorter than in *ornata*. Ventral femoral margins armed with spines, as follows. Cephalic internal 6 and 6, cephalic external 6 and 6, median internal 2 and 2, median external 6 and 6, caudal internal 4 and 5 (small), caudal external 7 and 8 (and 4 and 5 very small proximal spines).

General coloration shining ochraceous-buff tinged with ochraceous-tawny. Fastigium of vertex neva green. Face below eyes deepening to russet, with large triangular median portion deepening to prouts brown, the clypeus almost wholly covered by two suffusions of blackish chestnut-brown, the labrum ochraceous orange, the mandibles blackish chestnut-brown. Antennae with first two joints of the general coloration, elsewhere uniform ochraceous-tawny. Tegmina transparent, of the general coloration, with veins and veinlets warm buff, except in marginal field where they are paler, light buff. Limbs of the general coloration, all spines russet; genicular areas of cephalic and median femora faintly washed with green; cephalic tibiae with a fleck of dark brown dorsad at the apex of the auditory foramina.

Length of body 29, width of head 5.8, length of pronotum 8.9, caudal width of pronotal disk 4.4, length of tegmen 23.2, median width of tegmen 4.6, length of cephalic femur 8.5, length of caudal femur 15.7, length of cercus 5.1 mm.

The type is unique.

Salomona ornata Brunner.

1898. *Salomona ornata* Brunner, Abh. Senckenb. Naturforsch. Ges., XXIV, p. 270, pl. XX, figs. 52, 52a and 52b. [σ , φ ; Halmahera, [Gilolo Island, Celebes].]

Obi Island, Moluccas, 2 φ .

Length of body 26.3 and 29.3, width of head 5.8 and 6.2, length of pronotum 9 and 9.2, caudal width of pronotal disk 4.6 and 4.7, length of tegmen 32.4 and 36, median width of tegmen 6.3 and 7.3,

distal width of tegmen 6.1 and 6.9, length of cephalic femur 9 and 10.7, length of caudal femur 21.2 and 23.7, length of ovipositor 15.9 and 16.8, greatest width of ovipositor 2.3 and 2.4 mm.

Salomona lobaspoides Karny.

1907. *Salomona lobaspoides* Karny, Abh. Zool.-bot. Ges. Wien, IV, p. 77.
[♂, Obi [Island], Moluccas.]

Obi Island, Moluccas, 1 ♀.

The only differences between this individual and those recorded as *S. ornata* Brunner are as follows. Size larger, coloration somewhat deeper, caudal portion of pronotal disk more produced and more strongly rounded caudad, pronotal lateral lobes with caudal angulation stronger and tegmina which widen distinctly caudad.

In these insects the genicular lobes of the femora are as follows; internal of cephalic and median femora unispinose, external of the same triangularly produced, all of caudal femora bispinose.

There is a decided possibility that *lobaspoides* may prove to be but a striking phase developed in the species *ornata*.

Length of body 35.5, width of head 8.1, length of pronotum 12, caudal width of pronotal disk 5.8, length of tegmen 49.2, median width of tegmen 10.7, distal width of tegmen 11.7, length of cephalic femur 12.9, length of caudal femur 27.7, length of ovipositor 19.3, greatest width of ovipositor 3 mm.

COPIPHORINAE

Lesina ensifer (Brullé)

1835. *Megalodon ensifer* Brullé, Hist. Nat. Ins., IX, p. 157, pl. XV, fig. 4.
[♀, East Indies.]

Labuan, British North Borneo, 1 ♂.

We agree with Kirby, who examined Walker's type of *Lesina lutescens*, an immature male, in considering these species congeneric. We do not believe, however, that *blanchardi* Brongniart⁷⁸ is genetically distinct (as did Kirby) and in consequence we place *Eumegalodon* Brongniart, proposed for the preoccupied *Megalodon*, in synonymy under *Lesina*. In fact it appears probable that *lutescens* will be found a synonym of *ensifer*. Karny doubted Kirby's assignment of *Lesina* and in consequence retained the name *Eumegalodon*.

The specimen of this uncouth, spiny insect before us is bister, shading toward sayal brown, the dorsal surface of the limbs buffy brown. The vertex and proximal portions of the antennae are

⁷⁸ A Siamese specimen of that species is before us.

chocolate, the eyes vandyke brown. The huge face is tinged with greenish and shows a pair of bister punctae mesad, while the labrum and proximal portion of the clypeus are vinaceous russet, the distal portion of the clypeus and jaws shining blackish brown.

Length of body 52.5, width of head 15, height of fastigium of vertex 3.8, length of pronotum 20.4, width between tips of longest dorsal pronotal spines 15.7, length of tegmen 31.8, median width of tegmen 11.8, greatest (distal) width of tegmen 13, length of cephalic femur 17.8, length of caudal femur 27.4 mm.

Xestophrys javanicus Redtenbacher.

1891. *Xestophrys javanicus* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 362, pl. III, fig. 16. [σ , ♀; Java.]

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 2 ♀.

The ventral femoral margins are armed with very small but stout spines, as follows. Cephalic internal 2 to 3, cephalic external 1 to 2, median internal 0, median external 3 to 4, caudal internal 0 to 1, caudal external 7 to 9.

The present specimens are clay colored, the dorsal surface of head and pronotum with very weak longitudinal streaks, the face suffused toward the clypeus with dark brown, the mandibles blackish except in proximo-external portions, the tegmina with subobsolete, scattered brown flecks.

Length of body 31.7 and 30, length of fastigium of vertex⁷⁹ 1.8 and 2, length of pronotum 8 and 8.1, length of tegmen 33.8 and 32.2, length of caudal femur 15 and 15.2, length of ovipositor 12.8 and 13.5 mm.

Pyrgocorypha philippina new species. Plate XXI, figure 1.

The present insect may be distinguished from the previously known Asiatic species of the genus by the longer fastigium of the vertex, heavier limb armament and dark proximal marking of the ventro-external margins of the caudal femora.

In general size it agrees closely with *P. formosanus* (Matsumura and Shiraki).

TYPE: ♂; Baguio, Benguet, Luzon, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 857.]

Size large for the genus, form robust. Fastigium of vertex elongate; dorsal surface flat, heavily and irregularly rugose, with

⁷⁹ As is customary, this measurement is taken from the ventro-cephalic base, where a tooth occurs if present, to the apex.

lateral margins converging evenly to the acute apex; ventral surface convex, rugulose, showing an indication of medio-longitudinal angulation, basal spine prominent, slender, with apex rounded, separated from frontal fastigium by a space greater than its width, which in lateral aspect is rounded. Head with occiput and genae weakly rugulose, face more strongly so. Pronotum heavily rugulose, disk flattened and separated from lateral lobes by heavy and blunt lateral carinae. Tegmina and wings fully developed, the former rounding rather sharply at apex. Mesosternal lobes acute-angulate produced. Subgenital plate acute-angulate emarginate meso-distad, the lateral portions thus formed truncate distad, each surmounted by an elongate, straight, very slender, cylindrical style, nearly five times as long as its greatest width. Femora with dorsal surfaces all showing low, rounded, very broad, transverse rugae. Caudal femora very slender. Ventral femoral margins armed as follows. Cephalic internal 4 and 5, cephalic external 6 and 7, median internal 5 and 6 (some of these minute), median external 5 and 6, caudal internal 12, caudal external 13.

General coloration tawny olive, finely mottled with brown and immaculate, except for a blackish line on proximal portion of the ventro-external margins of the caudal femora, a fleck of the same at the distal extremity of each auditory foramen of the cephalic tibiae and a number of dark brown flecks on the tegmina.

Length of body 39, length of fastigium of vertex 4.8, length of pronotum 9.9, caudal width of pronotum 6.2, length of tegmen 49, length of cephalic femur 10.3, length of caudal femur 22, greatest width of caudal femur 2.4 mm.

The type is unique. It constitutes the first record for the genus, as at present limited, from the Philippines.

EUCONOCEPHALUS Karny

1907. *Euconocephalus* Karny, Abh. Zool.-bot. Ges. Wien, III, Heft III, pp. 4 and 39.

Karny proposed this name as of subgeneric rank, but it has subsequently been given full generic recognition. Here we find an array of species, some of which are extremely plastic and many of which are exceedingly close in relationship. The treatment by Redtenbacher in his "Monographie der Conocephalidarum" is superficial, dogmatic and confusing. The work of several earlier authors was ignored and a multitude of species described, the validity of many being more than doubtful. Even the characters used are in many cases of questionable value, particularly those of coloration.

It is much to be regretted that Karny, in his "Revisio Conocephalidarum," made no effort to clear up the numerous Redtenbacherian errors. Though insufficient material of *Euconocephalus*

is at hand to warrant our undertaking such a revision, it is clear to us that the literature on the genus is in quite as great confusion as that for the tropical American species of *Neoconocephalus*. In that genus we were able to determine, from thorough study of the North American forms found north of Mexico, based on ample series, that a multitude of synonyms existed and that the range of variation in the widely distributed and very plastic species was a feature of the greatest importance, unknown or ignored by both Redtenbacher and Karny. In the material of *Euconocephalus*, now under consideration, eight species appear to be recognizable. For these we have chosen the apparently best fitting names from the long list and have been able to assign to synonymy a number of the names there found.

It is to be hoped that more truly revisionary work will be undertaken and, should this be done, we are satisfied that the number of species of *Euconocephalus*, placed at thirty-eight by Karny in the "Genera Insectorum" (1912), will show very great reduction.

***Euconocephalus indicus* (Redtenbacher)**

1891. *Conocephalus indicus* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 408. [σ , ♀: Himalaya [Mountains]; China; Birma; Penang, [British Straits Settlements]; Borneo; Java; Sumatra; Peak Downs, Australia.]

Singapore, British Straits Settlements, (from C. F. Baker), 1 σ .

In the present green specimen, the tegmina have a number of moderately large brown flecks distad.

***Euconocephalus picteti* (Redtenbacher)**

1891. *Conocephalus picteti* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 410. [σ : Sumatra; Perak, Malacca.]

Labuan, British North Borneo, 3 σ , 4 ♀.

In the present series the fastigium of the vertex is rather blunt, with proximal spine heavy. The tegmina do not have the costal margin darkened.

Length of body σ 26.5 to 27.5, ♀ 30 to 31.8; length of fastigium of vertex σ 1.8 to 1.9, ♀ 1.8 to 2.1; length of pronotum σ 7 to 7.2, ♀ 7 to 7.3; length of tegmen σ 27.3 to 32.5, ♀ 31.7 to 38; length of caudal femur σ 16.8 to 18.9, ♀ 19.7 to 21; length of ovipositor 16.3 to 19.2 mm.

***Euconocephalus varius* (Walker)**

1869. *Conocephalus varius* Walker, Cat. Dermapt. Saltat. Br. Mus., II, p. 320. [σ , ♀: China; Hong Kong; Silhet.]

1869. *Conocephalus turpis* Walker, Cat. Dermapt. Saltat. Br. Mus., II, p. 323. [σ , ♀; Philippine Islands.]

1874. *Conocephalus thunbergi* Stål, Recensio Orth., II, p. 109. [σ , Japan.]

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, 1 ♀, (♂ brown, ♀ green).

Than-Moi, Tonkin, June and July, (from H. Fruhstorfer), 1 ♂, (green).

After careful consideration of the literature and the material at hand, we believe the synonymy, indicated above, to be correct. Comparison of the present material, as well as a large series of this species from Japan, the Loo Choo and Bonin Islands, with a series, recognized by us as referable to *E. pallidus* (Redtenbacher) and so recorded in the present paper, shows that the latter insect is exceedingly close in relationship. The phylum under consideration is clearly subject to great specific individual variation and the nomenclature is in a chaotic state.

For the present, we believe *varius* to be separable from *pallidus* by the average slightly greater fastigial length (though often the same in individuals of the two), by the proportionately shorter caudal femora and average decidedly shorter ovipositor, which very rarely exceeds the caudal femur in length and is usually distinctly shorter. The form, general structure and markings are, in these insects, the same.

Length of body ^{⁸⁰} ♂ 33 and 35, ♀ 34.5; length of fastigium of vertex ♂ 2.6 and 2.5, ♀ 2.4; length of pronotum ♂ 8.8 and 9, ♀ 8.3; length of tegmen ♂ 38.7 and 41, ♀ 46.7; length of caudal femur ♂ 21 and 22, ♀ 22.8; length of ovipositor 24.8 mm.^{⁸¹}

***Euconocephalus pallidus* (Redtenbacher)**

1891. *Conocephalus pallidus* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 414. [♂, ♀: East Indies; Silhet, [Assam]; Calcutta, [India]; Ceylon; Birma; Tonkin; Penang and Singapore, [British Straits Settlements]; Java; Borneo; Philippines.]

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, (green).

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 2 ♂, (brown).

Mount Limay, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, (brown).

Iligan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀, (brown).

^{⁸⁰} The measurements of the Tonkinese male are given last.

^{⁸¹} We feel obliged to assign this specimen to *varius*, though in ovipositor length it agrees instead with the normal for *pallidus*. This is the only case in the large series of females of *varius* before us, in which the length of the caudal femur is exceeded by that of the ovipositor.

Sandakan, British North Borneo, (from C. F. Baker), 1 ♂, (brown).

Labuan, British North Borneo, 1 ♂, 2 ♀, (green).

Batu Sangkar, Padangische Bovenland, Sumatra, August and September, 1901, (Harrison and Hiller), 1 ♂, (brown), [A. N. S. P.].

Careful comparison of this series with material of *C. varius* (Walker) shows these species to be very nearly related, as discussed under that species. In Redtenbacher's key, *pallidus* is separated from *thunbergi* Stål (= *varius*) by its more slender form and more nearly acuminate tegminal apices. These features are shown, by the material at hand, to be worthless.

From the localities given in the original description and the final comments there made, we believe that more than one species may be included, the data on the immature female from the Philippines indicating that that specimen is probably referable to *varius* as recognized by us. As a result, it is probable that a single type must be selected for *pallidus*, before that name can be stabilized.

Length of body ♂ 34.5 to 36.5, ♀ 37.5 to 38.5; length of fastigium of vertex ♂ 2 to 2.2, ♀ 2.3 to 2.3; length of pronotum ♂ 8.7 to 9.2, ♀ 8.7 to 8.8; length of tegmen ♂ 44 to 45.7, ♀ 50.3 to 52.3; length of caudal femur ♂ 23.8 to 24.5, ♀ 25.3 to 26.6; length of ovipositor 26.8 to 27.1 mm.

***Euconocephalus nasutus* (Thunberg)**

1815. *C[onocephalus] nasutus* Thunberg, Mém. Acad. Imp. Sci. St. Pétersbourg, V, p. 273. [No locality given.]

1891. *Conocephalus insulanus* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 416. [♀: Borneo; Singapore, [British Straits Settlements].]

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 2 ♀, (brown); June 25, 1921, 1 ♀, (green).

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂.

This is the species treated as *acuminatus* (Fabricius) by Redtenbacher and Karny. Those authors failed to note that *Locusta acuminata* Fabricius is a homonym of *Gryllus (Tettigonia) acuminata* Linnaeus, as shown by the reference to Linnaeus given by Fabricius.

The specimens here recorded agree closely with a series from the Bonin Islands in the Philadelphia Collections. The majority have the costal margins of the tegmina pale throughout, but in a few specimens of the latter series a slight darkening is apparent. Should the marginal coloration of the tegmina prove of no diagnostic value, as appears very possible, the synonymy of *varius*

under *nasutus* would follow. There appears to be no other safe criterion for separating these species as here recognized.

Length of body ♂ 28.7, ♀ 34 and 37.5; length of fastigium of vertex ♂ 1.8; ♀ 2.4 and 2.8; length of pronotum ♂ 7.8, ♀ 8.1 and 8.9; length of tegmen ♂ 40.4, ♀ 44.3 and 51.2; length of caudal femur ♂ 19.7, ♀ 24.7 and 25.7; length of ovipositor 23.7 and 24.2 mm.

***Euconocephalus longiceps* (Redtenbacher)**

1891. *Conocephalus longiceps* Redtenbacher, Verh. Zool.-bot. Ges. Wien., XLI, p. 412. [♂, New Caledonia.]

Obi Island, Moluccas, 1 ♂, 3 ♀, (all green).

These specimens agree closely with those here recorded as *E. pallidus* (Redtenbacher), except in having a noticeably heavier, longer and more truncate fastigium of the vertex, while the ovipositor averages shorter.

Length of body ♂ 36.8, ♀ 37 to 40.8; length of fastigium of vertex ♂ 3.1, ♀ 3.2 to 3.7; length of pronotum ♂ 9.3, ♀ 8.8 to 9.1; length of tegmen ♂ 42.3; ♀ 48 to 50.3; length of caudal femur ♂ 24.3, ♀ 26.8 to 27.2; length of ovipositor 23.1 to 24.3 mm.

***Euconocephalus gracilis* (Redtenbacher)**

1891. *Conocephalus gracilis* Redtenbacher, Verh. Zool.-bot. Ges. Wien., XLI, p. 415. [♂, ♀; Penang, [British Straits Settlements]; Java; Borneo; Philippine Islands; Caroline Islands; Yap [Island]; Pelew [Island].]

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀, (brown).

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, (brown).

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀, (green).

Butuan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♂, (brown).

Batu Sangkar, Padangische Bovenland, Sumatra, August and September, (Harrison and Hiller), 2 ♂, 1 ♀, 1 juv. ♂, (brown).

The insect which we recognize as this species is intermediate in form of fastigium of vertex between *E. varius* (Walker) and *E. sobrinus* (Bolivar); this process averages proportionately longer than in *varius* but not as elongate nor as acute as in *sobrinus*.

In the present material the tegminal costal margins are immaculate or faintly margined with brown. This feature is clearly valueless as a specific factor in *gracilis*, except that it may be said that these margins are sometimes embrowned in the present insect, while in other species such coloration never occurs.

It is very possible that *gracilis* may be referred to synonymy under *sobrinus*, when these apparently plastic species are better known.

MEASUREMENTS (*in millimeters*)

	Length of body	Length of fastigium	Length of pronotum	Length of tegmen	Length of caudal femur	Length of ovipositor
♂						
Butuan, Philippines	28	2.3	7.7	34.8	18.4	—
Batu Sangkar, Sumatra	28.5	2.8	8.2	37.3	18.5	—
Batu Sangkar, Sumatra	30.5	2.7	7.7	35.8	—	—
♀						
Los Baños, Philippines	32	2.9	7.2	41.8	20	20
Surigao, Philippines	34.8	2.8	7.8	41.1	20	18.8
Batu Sangkar, Sumatra	31.5	2.9	7.4	38.5	20	18.3

***Euconocephalus sobrinus* (Bolívar)**

1884. *Conocephalus sobrinus* Bolívar, Arthropodos Viaje al Pacífico, Ins., Orth., p. 88. [[probably ♂], Java.]

Zamboanga, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♂, (brown).

Java, (from H. de Saussure), 1 ♀, (green), [A. N. S. P.].

The male here recorded has the fastigium of the vertex of no greater length than in males from Sumatra assigned to *E. gracilis* (Redtenbacher). In the present male, however, it is distinctly more slender and fully as acuminate as in the Javanese female before us.

Length of body ♂ 30, ♀ 34.2; length of fastigium of vertex ♂ 2.8, ♀ 3.7; length of pronotum ♂ 7.3, ♀ 7.8; length of tegmen ♂ 34, ♀ 41.7; length of caudal femur ♂ 17.8, ♀ 21; length of ovipositor 20.1 mm.

CONOCEPHALINAE

CONOCEPHALUS (Thunberg)

CHLOROXIPHIDION new subgenus

In 1915, Rehn and Hebard published a key to the subgenera of the genus *Conocephalus*.⁸² Little work has been done on the genus from that portion of the World here under consideration and we are not surprised to find an undescribed subgenus represented by certain species from Australasia and Malaysia.

TYPE OF SUBGENUS—*Conocephalus (Chloroxiphidion) javanicus* (Redtenbacher).

Prosternum bispinose. Caudal tibiae armed at distal extremity with two pairs of spurs, the ventral pair being absent.⁸³ Ventral

⁸² Trans. Am. Ent. Soc., XLI, p. 226.

⁸³ The dorsal pair of spurs are, moreover, greatly reduced, no larger than the spines of the dorsal margins of the caudal tibiae and only differentiated from them by having a basal socket.

margins of cephalic and median tibiae armed with five to six (normally six) well spaced spines. Male subgenital plate with distal margin more or less decidedly truncate, with no decided emargination or production; small, slender, filiform styles present disto-laterad.

The difference in number of caudal tibial spurs separates this subgenus from the subgenus *Xiphidion* Serville.

Of the material here studied, the species *modestus* (Redtenbacher) and *javanicus* (Redtenbacher) alone belong to the present subgenus.

Conocephalus (Chloroxiphidion) modestus (Redtenbacher)

1891. *Xiphidium modestum* Redtenbacher, Verh. Zool.-bot. Ges. Wien., XLI, p. 510, pl. IV, fig. 86. [♂, ♀; Cape York, Sidney and Peak Downs, Australia; New Caledonia; Lord Howe's Island; Fiji Islands; Ovalaua, New Guinea; Friendly Islands; Samoa.]

Queensland, Australia, 1 ♂.

Conocephalus (Chloroxiphidion) javanicus (Redtenbacher)

1891. *Xiphidium javanicum* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 526. [♀, Java.]

Pasoeroean, eastern Java, (determined as *javanicum* and presented by Saussure), 2 ♂, [A. N. S. P.].

Length of body 11 and 10.2, length of pronotum 2.8 and 2.8, length of tegmen 6.8 and 6.9, median width of tegmen 1.8 and 1.8, length of caudal femur 9.7 and 9.9 mm.

Conocephalus (Xiphidion) affinis (Redtenbacher)

1981. *Xiphidium affine* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 513. [♂, ♀; Philippine Islands; Aru Islands; Samoa; Ovalaua, [New Guinea]; Fiji Islands.]

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂, 1 ♀.

This is a very plain species. The dorso-internal node on the male cercus, proximad of the heavy median spine, serves readily to distinguish this sex of *affinis* from the males of the other species here recorded.

The ventro-external margins only of the caudal femora are armed, with the following number of spines in the present pair; ♂ 2 and 3, ♀ 2 and 3.

Length of body ♂ 13, ♀ 13.7; length of pronotum ♂ 2.8, ♀ 3; length of tegmen ♂ 15.9, ♀ 15; length of caudal femur ♂ 12, ♀ 11.8; length of ovipositor 9 mm.

Conocephalus (Xiphidion) maculatus (Le Gouillou)

1841. *Xiphidion maculatum* Le Gouillou, Rev. Zool., 1841, p. 294. [Mankassar (= Macassar), [Celebes Island, Moluccas].]

1871. *Xiphidium sinense* Walker, Cat. Dermat. Saltat. Br. Mus., V, Suppl. p. 35. [♂: unknown locality; Hong Kong, [China].]

The presence of a series of *maculatus* from the Province of Kwang-Tung, China, in a recently received collection, indicates that this is probably the most abundant species of *Conocephalus* in that region. As Walker's description agrees in all respects with this material we feel justified in indicating the above synonymy.

Mount Banahao, Luzon, Philippine Islands, (from C. F. Baker),
1 ♀.

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker),
2 ♂.

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♂,
1 ♀.

Island of Penang, British Straits Settlements, (from C. F. Baker),
1 ♀.

In addition to the suffused and interrupted brown band between the median and ulnar veins of the tegmina, this species is distinctive in having the limbs thickly supplied with flecks of mummy brown. The tegmina are not heavily marked in any of the present series, the specimens from Mount Makiling being so recessive that the tegminal suffusions are weakly defined. All are macropterous, with tegmina extending slightly beyond the apices of the caudal femora.

***Conocephalus (Xiphidion) laetus* (Redtenbacher)**

1891. *Xiphidium laetum* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI,
p. 514, pl. IV, fig. 87. [♀, northern Australia.]

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker),
1 ♀.

Zamboanga, Mindanao, Philippine Islands, (from C. F. Baker),
1 ♂.

Obi Island, Moluccas, 1 ♂, 1 ♀.

The Philippine material differs from the original description in lacking the dorsal brown stripe of head and pronotum, the Moluccan pair in being decidedly larger. These specimens agree so closely in all other features that we feel fully justified in considering them conspecific.

We note the following features, not mentioned by Redtenbacher. The antennae appear closely and minutely subannulate, rather than "remote fusco-annulatae." The ovipositor shows a very faintly sigmoid tendency and is broader than normal in the genus; thus of the same type as in the Japanese *C. gladiatus* (Redtenbacher), but much less elongate. Genicular lobes of caudal femora strongly bispinose. Caudal tibiae distad with dorso-internal spur

greatly reduced, no larger than and scarcely to be distinguished from the dorso-internal spines.

Length of body ♂ 15 and 18.8, ♀ 18.3 and 23.1; length of pronotum ♂ 3.3 and 4, ♀ 3.8 and 4.6; length of tegmen ♂ 20.4 and 24, ♀ 22.8 and 29.8; length of caudal femur ♂ 13.8 and 17, ♀ 15.8 and 17.8; length of ovipositor 17.2 and 18.7 mm.

Conocephalus (Xiphidion) borneensis (Redtenbacher)

1891. *Xiphidium borneense* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 514. [♂, ♀; Borneo.]

Island of Penang, British Straits Settlements, (from C. F. Baker), 1 ♂.

This insect appears to be very close to *C. laetus* (Redtenbacher), differing in the much shortened organs of flight and dark genicular areas of the caudal femora.

In the specimen here recorded the caudal femora have the genicular areas tipped with a suffusion of brown, rather than "apice extremo nigro-nitido." The male stridulating area is proportionately smaller and less elongate than in males of *laetus* before us, while the caudal tibiae have the dorso-internal spur conspicuous and decidedly larger than any of the dorso-internal spines. So close does it agree in other respects with *laetus*, that, were these features not of decided diagnostic value, we would have considered it a brachypterous example of that species.

The very narrow convex callosity of the pronotal lateral lobes in this species and *laetus* is slightly narrower than in the related *C. gladiatus* (Redtenbacher).

Length of body 16.8, length of pronotum 3.9, length of tegmen 13, length of caudal femur 14.3 mm.

Conocephalus (Xiphidion) longipennis (Haan)

1842. *L[ocusta] (Xiphidium) longipennis* Haan, Verh. Nat. Geschied. Nederl. oversee. bezitt., Zool., Ins., p. 189. [♂, ♀: Padang, [Sumatra]; Banjermassing, [Borneo].]

1877. *X[iphidium] spinipes* Stål, Ofv. K. Vetensk.-Akad. Förh., 1877, No. 10, p. 47. [♀, Philippine Islands.]

1891. *Xiphidium longicorne* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 513. [♂, ♀: Java; Borneo; Pelew [Island]; Yap [Island]; East Indies; Raratonga [Island]; Caroline [Islands].]

The female before us from Los Baños agrees fully with Stål's inadequate description of *spinipes* and we believe that examination of the type will establish definitely this synonymy, first indicated with a query by Redtenbacher.

Redtenbacher described *longicorne*, overlooking the fact that macroptery and brachyptery as well as variation in size

occurred in many species of the genus, this resulting in other synonyms by that author in the same paper. That *longipennis* is a very widely distributed species is an established fact, but Redtenbacher may easily have confused individuals of other species in his series listed under *longicorne* and we here designate the type locality for that name as Borneo.

Los Baños, Laguna, Luzon, Philippine Islands, (from C. F. Baker), 1 ♀.

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker), 1 ♂.

Sandakan, British North Borneo, (from C. F. Baker), 2 ♂, 2 ♀.

Batu Sangkar, Padangische Bovenland, Sumatra, August and September, (Harrison and Hiller), 1 ♀, [A. N. S. P.].

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♂.

A single pair from Sandakan are brachypterous. The male from Singapore has the organs of flight somewhat reduced. The series shows marked size variation, as follows.

MEASUREMENTS (*in millimeters*)

	Length of body	Length of pronotum	Length of tegmen	Length of caudal femur	Length of ovipositor
♂					
Mount Makiling	17	3.3	20.5	15	—
Sandakan	14.3	3.2	14	13.5	—
Sandakan	15	3.1	18.5	14	—
Singapore	16 ⁸⁴	3.5	19	14.5	—
♀					
Los Baños	20.2	3.9	24	17.8	17
Sandakan	15.5 ⁸⁴	3.7	15.1	14.8	15.6
Sandakan	15.8	3.7	21	16.4	15.2
Batu Sangkar	17.5	3.8	21.8	16.2	16.5

In the present series the ventro-external margin of the caudal femora is armed with from five to nine spines, the most frequent number being six.

The following features have hitherto not been given. Male ultimate tergite weakly bilobate distad. Male cerci rather slender throughout, the medio-internal tooth not greatly swollen at its base, the apical portion with dorsal surface declivent and weakly concave to its sharply rounded apex. Ovipositor straight or showing a very faint indication of curvature dorsad. Female subgenital plate with median portion of distal margin concave-emarginate, this plate tightly embracing the base of the ovipositor.

⁸⁴ The body is shrivelled in this specimen.

***Conocephalus (Xiphidion) melas* (Haan)**

1842. *L[ocusta] (Xiphidium) melaena* Haan, Verh. Nat. Geschied. Nederl. oversee. bezitt., Zool., Ins., p. 189. [σ , ♀; Java.]
 1891. *Xiphidium nigro-geniculatum* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 511. [σ , Borneo.]

There is scarcely any doubt that Redtenbacher has described a recessively colored specimen of the species as *nigro-geniculatum*.

Borneo, 1 σ .

Singapore, British Straits Settlements, (from C. F. Baker), 2 σ .

This handsome and strikingly colored species is now known to have a very wide distribution. A considerable unrecorded series is before us from Japan and China.

In the specimens here recorded, the ventro-external margins of the caudal femora are armed with two to four small spines. The measurements of the Singapore males are as follows; length of body 14.7 and 15.2, length of pronotum 3.3 and 3.7, length of tegmen 13.9 and 14.5, length of caudal femur 12.7 and 13.8 mm.

***Conocephalus (Xiphidion) formosus* (Redtenbacher)**

1891. *Xiphidium formosum* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 530. [σ , ♀; eastern Java.]

Pasoeroean, eastern Java, (determined as *formosus* and presented by Saussure), 1 σ , 1 ♀, [A. N. S. P.].

The greatly reduced tegmina and broad oblique suffusion of brown on the enlarged portion of the caudal femora readily distinguish this species from *C. melas* (Haan), to which it is closely related. The ventro-external femoral margins are armed with one to three minute spines in the pair before us.

***Conocephalus (Xiphidion) vestitus* (Redtenbacher)**

1891. *Xiphidium vestitum* Redtenbacher, Verh. Zool.-bot. Ges. Wien, XLI, p. 529. [σ , Philippine [Islands].]
 1920. *Conocephalus sannio* Karny, Verh. Zool.-bot. Ges. Wien, LXX, p. 27. [σ , ♀; Los Baños, Philippine Islands.]

Karny apparently overlooked the description of *vestitus*, the name *sannio* being based on material, apparently identical, except in being slightly darker in coloration than Redtenbacher's type.

Los Baños, Laguna, Luzon, Philippine Islands, 1917, 1 ♀, [A. N. S. P.]; (from C. F. Baker), 1 σ , 1 ♀.

This is one of the handsomest species of the genus, its coloration distinctive and strikingly contrasted. Length of body; σ 11.5, ♀ 12 and 12.5; length of pronotum σ 3.4, ♀ 3.7 and 3.9; length of tegmen σ 5.3, ♀ 2.7 and 2.7⁸⁵; length of caudal femur σ 14, ♀ 13.7 and 14.8; length of ovipositor 6.7 and 7 mm.

⁸⁵ The least exposed dorsal length is, however, only 1.7 mm.

Though apparently belonging near *C. melas* (Haan), the species has been referred by Karny to *Conocephalus* in its most limited sense (the subgenus *Conocephalus* as recognized by us), due to the absence of prosternal spines. We find that the prosternal spines are well developed in *melas* (as is normal in the subgenus *Xiphidion*), much smaller in *C. formosus* (Redtenbacher) and reduced to mere tuberculations at the latero-caudal angles of the prosternum in *vestitus*.

As a result we do not believe this character can be given higher than specific diagnostic significance in the present case and that the subgenus *Xiphidion* will fall as a synonym of the subgenus *Conocephalus*, unless other characters exist to warrant its separation.

Further study, however, we believe necessary before final action can be taken.

LISTROSCELINAE

Karny has recently described a genus, *Cecidophaga*,⁸⁶ related to the genera discussed below and which, in our opinion, should unhesitatingly be referred to the Listroscelinae. He has again dogmatically followed the assignments of Brunner and is confused by the fact that that author placed *Teratura* in the Conocephalinae (as at present understood), but the genus *Xiphidiopsis* in the Listroscelinae. This is one of the major reasons why Karny feels unable to assign *Cecidophaga* to a definite subfamily.

We feel certain that *Teratura* and *Xiphidiopsis* are related genera of the Listroscelinae. The spines of the cephalic tibiae are not unusually elongate in certain species of these genera, a character separating most of the Listroscelinae from other subfamilies. The general structure, however, shows such decided similarity to that of species of other unquestioned Listroscelids, that to separate them from that subfamily would be a violation of common sense. In fact both types of spination can be found in different species of the genus *Xiphidiopsis* itself.

Having modified the characterization of the Listroscelinae to cover the genera *Teratura*, *Xiphidiopsis*, *Cecidophaga* and *Lipotactes*, little of the confusion encountered by recent workers remains.

To do this admittedly weakens the distinction between the related subfamilies, but it is our experience that, as the species of the World become better known, the impossibility of separating

⁸⁶ *Treubia*, I, p. 292, (1921).

subfamilies, on anything like the clean-cut lines recognized in the past, is more and more realized.

ALLOTERATURA new genus

This genus is erected to include two Philippine species recently described by Karny as members of the genus *Teratura* and three new species here described.

It is apparently closely related to *Teratura*, differing strikingly in the extremely short, conical last segment of the maxillary palpi.⁸⁷

We cannot follow Redtenbacher and Karny in placing these genera in the subfamily Conocephalinae as now understood. The very close agreement in general structure with the genus *Xiphidiopsis* offers convincing proof that they should instead be referred to the Listroscelinae. Though members of that subfamily, they are aberrant in having the tibiae armed with shorter spines than in any of the other genera there included.

GENOTYPE.—*Alloteratura mindanao* new species.

Vertex shorter and narrower than first antennal joint, narrowly triangular with bluntly rounded apex, the dorsal surface longitudinally very weakly sulcate or subsulcate. Maxillary palpi very elongate but with last joint very short, broader than long, strongly conical. Pronotum much as in *Xiphidiopsis*, strongly produced caudad with margin there convex, dorsal surface weakly convex, lateral lobes with humeral sinus very weak to decided. Lateral foramen of thorax largely concealed in males, visible from latero-caudal point in females but never large and fully exposed as in *Xiphidiopsis*. Tegmina and wings fully developed to moderately reduced; stridulating field of male tegmina covered by production caudad of pronotum. Prosternum unarmed. Male genitalia showing very great specific differentiation, ultimate tergite produced with caudal margin concave. High specialization often found in a large plate above the subgenital plate and between the cerci, which is developed from the ultimate tergite ventro-distad on each side; thus the ultimate tergite forms a sort of yoke, a development previously unknown to us. Female with genitalia much as in *Xiphidiopsis*; cerci showing some swelling meso-distad; ovipositor curving gently dorsad, with margins unarmed. Cephalic coxae armed with a long spine. Femora unarmed, genicular lobes rounded (except in *sandakanae*, in which species those of the caudal femora are unispinose). Cephalic tibiae with apert auditory foramina, the ventral margins armed with four internal and three or four external, relatively short spines (the longest one and one-half

⁸⁷ These organs were not described or figured by Redtenbacher, but are shown by Karny's figure to be of the normal elongate type in the genotype, *T. monstrosa* Redtenbacher (*Gen. Ins., Orth., Conocephalinae, Fasc. 135, pl. I, fig. 1, (1912.)*)

to nearly twice the width of the tibia at that point) and a pair of very small distal spines. Median tibiae tapering meso-distad with distal portion slender, ventral margins armed with five (rarely six) external and three or four internal spines and with a pair of very small distal spines. Caudal tibiae with three pairs of short distal spurs; ventral margins supplied with numerous short and heavy spines, dorsal margins supplied distad with a few very small and slender spines.

In addition to the three new species here described, we assign to the present genus the two Philippine species *xiphidiopsis* and *simplex*, recently described by Karny as members of the genus *Teratura*.⁸⁸ It is very possible that the Japanese *Teratura suzuki* Matsumura and Shiraki belongs neither to that or the present genus, but to the genus *Xiphidiopsis*.

Alloteratura penangica new species. Plate XIX, figures 1, 2 and 3.

From the other known species of the genus the present may be distinguished by its smaller size, pronotum with humeral sinus very weak and reduction in the organs of flight.

The male before us differs further, from the known males of other species, in the distinctive but much less highly specialized genitalia.

TYPE: ♂; Island of Penang, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 820.]

In addition to the features given in the generic description, the following are diagnostic for this species. Size small, form slender. Vertex very weakly sulcate. Pronotum showing somewhat less convexity than in *A. xiphidiopsis* (Karny). Lateral lobes of pronotum shallow, with ventro-cephalic angle very weakly indicated, the margin convex to the ventral angle, which is broadly rounded at more than ninety degrees, caudal margin strongly oblique, straight except at humeral sinus where it is broadly and shallowly concave. Tegmina and wings showing considerable reduction, narrowed and nearly reaching apices of caudal femora. Ultimate tergite produced, embracing cercal bases, caudal margin weakly concave laterad to these and weakly concave above these, deeply concave between these. Cerci small and simple, moderately stout proximad with a short dorso-internal lamella, thence tapering and curving inward, then straight to the acute apex, the external margin curving to the straight internal margin to form this. Above the subgenital plate is seen a thick trapezoidal plate, extending caudad an equal distance (the yoke portion of the ultimate tergite). Subgenital plate trapezoidal in produced portion, a longitudinal carina on each side terminating at the latero-caudal

⁸⁸ Verh. Zool.-bot. Ges. Wien, LXX, p. 23, (1920).

angles in a weakly decurved, socketed style, three times as long as its basal width. Femoral genicular lobes bluntly rounded, tibial spination normal.

General coloration immaculate, buffy; probably a delicate, light green in life. Eyes dark brown. Antennae weakly suffused with brown at the intersection of each joint, a few of these widely spaced, much heavier, giving a subannulate facies.

Length of body 8.7, length of pronotum 3.8, greatest total width of pronotum 2.3, length of pronotal lateral lobe 2.9, depth of pronotal lateral lobe 1.4, length of tegmen 9.2, width of tegmen 2.1, length of cephalic femur 3.6, length of caudal femur 9.2 mm.

The type is unique.

Alloteratura bakeri new species. Plate XIX, figures 4 and 5.

Though instantly recognizable by the distinctive male genitalia, this sex of the present species agrees very closely in other respects with a male of *A. xiphidiopsis* (Karny) before us. In the present male the only other differences are seen to lie in the broader, blunter vertex which is less distinctly sulcate, the less ample pronotum with proportionately slightly shorter lateral lobes and the antennae which show no trace of annulation.

TYPE: ♂; Dapitan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 821.]

The following characters are considered diagnostic for this species, in addition to those noted in the generic description. Size and form medium for the genus. Vertex broader and blunter than in *A. xiphidiopsis*, flattened dorsad and showing a linear subsulcation. Pronotum very slightly less convex than in *A. xiphidiopsis*. Lateral lobes of pronotum with ventro-cephalic and ventro-caudal angles weakly indicated by broad convexities, the latter weakest ventral angle rounded at ninety degrees, caudal margin with humeral sinus deep, rounded obtuse-angulate. Tegmina and wings fully developed. Ultimate tergite moderately produced, its distal margin showing on each side two weak convexities, between which it is dorsad broadly and weakly concave. Cerci very heavy, swollen and irregular in contour, proximal three-fifths nearly as broad as long, lamellate dorsad and swollen in ventral portion, thence the cerci are cylindrical, produced dorsad, slanting inward, scarcely tapering in proximal half, weakly tapering in distal half to the rounded and attingent apices. Mesad between the cerci the yoke of the ultimate tergite projects caudad considerably beyond the subgenital plate, its angulate apex is hooded with dorsal surface medio-longitudinally sulcate, the ventral surface deplanate. Subgenital plate with lateral margins broadly convex-convergent to the narrowly truncate apex; the surface, on each side, just before the apex, raised and bearing a small, weakly decurved style, distinctly less than three times as long as its greatest width. Femoral genicular lobes bluntly rounded, tibial spination normal.

General coloration buffy, the tegmina distad pale green; probably uniform pale green in life. Eyes dark brown. Antennae immaculate. Pronotum with a band of ochraceous-orange defining on each side the lateral margins of the disk, this continued as a postocular band on the head.

Length of body 11.2, length of pronotum 4.8, greatest total width of pronotum 2.8, length of lateral lobe of pronotum 2.3, depth of lateral lobe of pronotum 2.1, length of tegmen 16.9, width of tegmen 2.8, length of cephalic femur 3.6, length of caudal femur 10.7 mm.

The unique male is before us.

Alloteratura xiphidiopsis (Karny) Plate XIX, figures 6 and 7.

1920. *Teratura xiphidiopsis* Karny, Verh. Zool.-bot. Ges. Wien, LXX, p. 23.
[♀; Mount Makiling, Luzon, Philippine Islands.]

Mount Makiling, Luzon, Philippine Islands, (from C. F. Baker),
1 ♂, 1 ♀.

The previously unknown male of this species is briefly compared with that of *A. bakeri* under that species.

In the present pair the ventro-cephalic angle of the lateral lobes is very weakly indicated in the male, obsolete in the female. The male genitalia show the highest specialization known for the species of *Alloteratura*. Cerci heavy and irregular in contour, stout in proximal third to a dorso-internal node, median third tapering in vertical section with dorso-external margin sharply angulate, distal third with margins curving weakly to the apex and dorsal margin sharp; the cerci curve inward and upward with some angulation indicated at each section described above and embrace the large yoked portion of the ultimate tergite. This projects mesad above the cerci as a large, vertical, transverse, rounded lobe and is produced ventrad beyond the cerci and apex of the subgenital plate as a stout cone, with apical portion lamellate, truncate and directed ventrad. Subgenital plate with lateral margins weakly convex convergent, a longitudinal carina on each side terminating at the latero-caudal angle and there supplied with a slightly decurved style, three times as long as its basal width; between the cerci the plate is bilobate, these small projections forming a broad V-shaped emargination mesad.

Length of body ♂ 11.2, ♀ 9.8; length of pronotum ♂ 5.6, ♀ 3.9; total width of pronotum ♂ 3.1, ♀ 2.6; length of pronotal lateral lobe ♂ 2.7, ♀ 2.3; depth of pronotal lateral lobe ♂ 2.3, ♀ 1.8; length of tegmen ♂ 18, ♀ 16.2; width of tegmen ♂ 2.8, ♀ 2.3; length of cephalic femur ♂ 4, ♀ 3.9; length of caudal femur ♂ 11.3, ♀ 10.7; length of ovipositor 6.5 mm.

Alloteratura sandakanae new species. Plate XIX, figures 8 and 9.

Though females alone are before us, the present insect may be readily separated by the dark vertex, antennae and pronotal disk, the denticulate genicular lobes of the caudal femora and average greater number of ventro-external spines of the median tibiae. The ovipositor is longer than in any of the species of the genus of which females are known.

TYPE: ♀; Sandakan, British North Borneo. (From C. F. Baker.) [Hebard Collection, Type no. 822.]

Size medium, form comparatively slender. Vertex normal, with dorsal surface showing a subobsolete linear sulcation. Pronotum narrower than in females of *A. xiphidiopsis* (Karny); lateral lobes shorter, cephalic angle broadly convex, ventral angle rounded at ninety degrees, caudal angle obsolete, humeral sinus distinct, obtuse-angulate. Tegmina and wings fully developed, longer than in *A. xiphidiopsis*. Ultimate tergite, as in females of that species, deeply concave above base of ovipositor. Cerci showing, as in *A. xiphidiopsis*, a meso-distal thickening but proportionately more slender, then tapering to the acute apex. Ovipositor slender, weakly curved dorsad, tapering to the acute apex. Subgenital plate shorter than wide, convex, sub-bilobate and showing a very weak median emargination. Genicular lobes of cephalic and median femora bluntly rounded, of caudal femora each with a single heavy spine. Tibial spines as normal in the genus.³⁹

General coloration clay color. Eyes dark brown. Antennae chestnut brown, heavily overlaid with black proximad, this becoming less extensive distad and only occupying the intersections of the joints. Vertex and occiput blackish brown, this continued as a dorsal suffusion of chestnut brown on the disk of the pronotum. Wings suffused with brown. Ovipositor tawny.

The type measurements are given first. Length of body 11 and 12.5, length of pronotum 3.5 and 3.9, total width of pronotum 2.3 and 2.5, length of lateral lobe of pronotum 2 and 2.1, depth of lateral lobe of pronotum 1.8 and 1.9, length of tegmen 17.6 and 18.7, width of tegmen 2.3 and 2.6, length of cephalic femur 3.3 and 4, length of caudal femur 10.5 and 11.7, length of ovipositor 8.8 and 9.8 mm.

In addition to the type, a female paratype, bearing the same data, is before us.

XIPHIDIOPSIS Redtenbacher

GENOTYPE, selected by Kirby in 1906, *X. fallax* Redtenbacher.

We here restrict this genus to the species having the auditory foramina of the cephalic tibiae apert on both faces.

³⁹ Except that, in the type, only one of the ventro-external margins of the median tibiae bears six (and one distal) spines.

As in *Alloteratura*, a single species is before us which has the genicular lobes of the caudal femora unispinose. Redtenbacher and Karny's characterization of the genus must, therefore, be modified in this respect. The subgenital plate in the female sex shows great specific differences. The cephalic coxae are armed with a spine in all of the species before us except the aberrant *gemmaicula* and *aglaia* here described. In the species before us the longest cephalic tibial spines exceed the width of the tibia at their bases by one and one-half to slightly over four times.

Xiphidiopsis dicera new species. Plate XIX, figures 10, 11 and 12.

This insect is distinguished in both sexes by the darkened and rounded tips of the genicular lobes of the caudal femora.

In the male, the ultimate tergite is produced mesad in a small two-horned process, the cerci are flattened, weakly incurved, with a blunt dorso-internal projection proximad.

In the female, the subgenital plate is of the same type as found in *X. lita* Hebard (described as probably adventive in Hawaii), but the triangularly produced median portion is more ample, with apex more acute.

The cephalic tibial spines are longer than in any other species before us, those of the males being somewhat longer than those of the females at hand.

TYPE: ♂; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 824.]

Size rather small for the genus, form slender. Vertex showing a subobsolete linear sulcation. Last joint of maxillary palpus equal in length to fourth, enlarging suddenly near the transverse, truncate apex. Pronotum elongate, with dorsal surface very feebly convex, the metazona produced caudad and equal in length to the prozona; cephalic margin of lateral lobes with ventrocephalic angle rounded and broadly obtuse-angulate, margin ventrad more strongly rounded, caudal margin weakly concave at humeral sinus and slightly more decidedly concave opposite the very large, apert, thoracic foramen. Tegmina and wings fully developed. Ultimate tergite moderately produced, its caudal margin shallowly concave between cercal bases, its surface mesad raised and produced caudad in a pair of cylindrical projections, each slightly over twice as long as its basal width, which diverge and form a right-angle between their bases. Cerci moderately stout, flattened in distal portions and twisting so that meso-distad the flattened surfaces are oblique and distad they are vertical; internal surface with a large, flattened, blunt tooth at end of proximal third, this margin showing a feeble convexity in median

portion of section beyond this tooth; cerci straight and scarcely taper to that point, thence evenly recurved and show weak convergence of the lateral margins to the bluntly bidentate apices. Subgenital plate very small, with a median transverse ridge, beyond this with lateral margins straight and parallel to the slightly decurved styles, each of which is nearly four times as long as its basal width, separated by a distance slightly greater than the length of one of these, the subgenital plate briefly produced between these and strongly transverse, trapezoidal. Cephalic coxae armed. Genicular lobes of all femora bluntly rounded. Cephalic tibiae very slender, except at the auditory foramina, which portion is decidedly swollen, ventral margins armed with four pairs and one external (or rarely five pairs) of elongate spines and with a distal pair of minute spines. These spines are unusually long for the genus, the longest slightly over four times the width of the tibia at that point. Median tibiae ventrad with five pairs of shorter spines and with a minute pair of distal spines; thickened in proximal two-thirds, decidedly more slender in distal third. Caudal tibiae armed as described for *Allotteratura* on page 250.

ALLOTYPE: ♀; Island of Penang, British Straits Settlements. (From C. F. Baker.) [Hebard Collection.]

Agrees closely with male, differing as follows. Size very slightly larger. Production of pronotum decidedly shorter, the metazona two-thirds as long as the prozona; lateral lobes with concavity of caudal margin opposite thoracic foramen less than at humeral sinus. Supra-anal plate small, subtriangular with apex very broadly rounded, impressed meso-proximad. Cerci cylindrical, widest meso-proximad, thence tapering to their acute apices, slightly incurved and hardly three times as long as greatest width. Ovipositor elongate, swollen proximad, distal portion curved very weakly dorsad with margins unarmed; dorsal valves acute at apex, ventral valves with a very faint concavity of ventral margin just before apex, with apex itself rounded and decurved. Subgenital plate of the same type as in *lita*, differing in being supplied with stiff hairs, while the produced, triangular, median portion is much larger, leaving only brief convex lateral portions, the produced portion only half as long as its basal width, with apex sharply rounded.

General coloration pale yellowish brown, probably immaculate light green in life. The genicular lobes of the caudal femora are tipped with blackish brown, this apparently of specific diagnostic importance. The intersection of the antennal segments are weakly embrowned to different degrees. The tegmina show the sutural margin faintly tinged with brown, as are the areolae toward that margin.

The measurements of the type are given first for the male sex, those of the allotype first for the female sex. Length of body ♂ 11 and 9 (greatly shrivelled), ♀ 11.5 and 11.3; length of pronotum ♂ 4.1 and 3.9, ♀ 3.6 and 3.4; greatest total width of pronotum

σ 2.1 and 2, φ 2.2 and 2.3; length of pronotal lateral lobe σ 2.2 and 2.1, φ 2.2 and 2.1; depth of pronotal lateral lobe σ 1.7 and 1.7, φ 1.8 and 1.8; length of tegmen σ 17.4 and 17, φ 18 and 18.7; width of tegmen σ 2 and 2, φ 2.1 and 2.2; length of cephalic femur σ 4.3 and 4.3, φ 4.2 and 4.2; length of caudal femur σ 10 and 10, φ 10.2 and 10.8; length of ovipositor 8.1 and 8 mm.

In addition to the described pair, a paratype male, bearing the same data as the type, and a paratype female bearing the same data as the allotype, are before us.

Xiphidiopsis cryptosticta new species. Plate XIX, figure 13.

This species has the tegmina marked faintly with suffused spots of brown, the genicular lobes of the cephalic and caudal femora suffused distad with brown, the latter unispinose.

In the female sex, which alone is known, the subgenital plate is broad, the disto-lateral portions with margin broadly convex and the median portion with distal margin concave. This is a very different type from that developed in *X. lita* Hebard and *X. dicera* described above. It is a much more simple development of the type found in the very distinct *X. drepanophora* described below.

TYPE: φ ; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 826.]

Compared with the female sex of *dicera*, the present insect is found to show the following diagnostic characters. Size medium, form slender. Vertex showing a weak sulcation, which in basal portion broadens into a shallow depression. Last joint of maxillary palpus equal in length to fourth. Pronotum with metazonal portion about two-thirds as long as prozonal portion; lateral lobes with margin curving evenly to ventral angle, which is more strongly rounded, concavities of caudal margin opposite humeral sinus and thoracic foramen very weak and of equal degree. Supra-anal plate small, shield-shaped, with apex rounded and dorsal surface weakly concave. Cerci of same type as in *dicera* but more elongate, nearly four times as long as greatest width, with apical portion very slender. Ovipositor as in *dicera*, except that the distal extremity of the ventral valves is even more weakly specialized. Subgenital plate distinctive; not narrowing to the distal extremity, latero-distad with margins broadly convex, mesad with distal margin concave; surface transversely shallowly concave meso-proximad and shallowly concave in disto-lateral portions. Limbs more elongate than in *dicera*. Genicular lobes of cephalic and median femora bluntly rounded, of caudal femora unispinose. Cephalic tibiae armed with the same number of spines as in *dicera*, these, however, much shorter, the longest slightly over twice (in one paratype varying to slightly over three times) the tibial width at that point. Median tibiae as in *dicera*, except that the internal of the proximal pair of spines is often missing.

General coloration pale yellowish brown, probably light green in life. The genicular lobes of the cephalic and caudal femora are tipped with a suffusion of dark brown, these markings not as decided or as conspicuous as in *dicerca*. The intersections of the antennal segments are strongly embrowned, at intervals being stronger and forming distinct annuli. Tegmina with sutural margins faintly embrowned and with areolae toward this margin forming a number of vague brown spots.

Length of body (females) 12.2,⁹⁰ 11.4 and 13; length of pronotum 4, 3.9 and 4.2; total width of pronotum 2.2, 2.2 and 2.3; length of pronotal lateral lobe 2.7, 2.6 and 2.7; depth of pronotal lateral lobe 2, 1.9 and 2; length of tegmen 20, 18.5 and 19.3; width of tegmen 2.3, 2.2 and 2.3; length of cephalic femur 5.7, 5.6 and 5.8; length of caudal femur 13.2, 12.8 and 12.8; length of ovipositor 8.7, 8 and 8.5 mm.

Two paratypic females, bearing the same data as the type, are before us.

Xiphidiopsis drepanophora new species. Plate XIX, figure 14; plate XX, figures 1, 2, 3 and 4.

This is the first species of the present genus known to us which, in the male sex, has the ultimate tergite produced latero-ventrad into a specialized projection between the cerci, thus forming a sort of yoke.

The genitalia for both sexes are highly distinctive.

TYPE: ♂; Kolambugan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 825.]

Size large for the genus, form slender but comparatively broad for the genus. Vertex weakly but distinctly sulcate. Last joint of maxillary palpus equal in length to fourth. Pronotum elongate, the metazona produced caudad and slightly exceeding the prozona in length, its surface slightly more convex than in *X. dicera* here described. Pronotal lateral lobes as in *X. cryptosticta* here described, except that the concavity of the caudal margin is very slightly stronger than that opposite the thoracic foramen. Tegmina and wings fully developed. Ultimate tergite triangularly produced with apex bi-mammate, the apices of these each forming a blunt and decurved denticulation. Supra-anal plate concealed. Cercus moderately stout, extending to apex of subgenital plate, there suddenly doubled-in upon itself to near base, thence with distal portion curving broadly inward, scythe-like, with acute apex projecting on opposite side of body. Above the subgenital plate and between it and the scythe-like portions of the cerci the large yoke of the ultimate tergite projects upward and extends beyond the apex of the ultimate tergite; this process is medio-longitudinally carinate ventrad opposite the distal emargination of the subgenital

⁹⁰ The measurements of the type are given first.

plate, it then shows a roundly elevated U-shaped ridge, above which the surface is raised in a rounded Y-shaped ridge, the apices rounded and projecting, while dorsad between these the surface is deeply concave, with dorsal margin bilobate beneath the bifid apex of the ultimate tergite. Subgenital plate medio-longitudinally subsulcate, lateral margins broadly convex to very slender apices, between which the distal margin is U-emarginate, these lateral apices surmounted by slender tapering styles, each about three times as long as its basal width. Limbs and their armament much as in *cryptosticta*, except that the genicular lobes of all the femora are bluntly rounded. Longest spine of cephalic tibiae slightly over twice the tibial width at that point.

ALLOTYPE: ♀; Dapitan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection.]

Agrees closely with male, differing as follows. Production of pronotum caudad decidedly shorter, the metazona three-quarters as long as the prozona. Supra-anal plate and cerci much as in *cryptosticta*. Ovipositor more elongate than in that species, the apex of the ventral valves much as in *dicerca*. Subgenital plate medio-longitudinally subcarinate, distal third broadly angulate emarginate with margins of this emargination feebly concave,⁹¹ the lateral angles thus formed nearly as long as their basal width, their apices sharply rounded and forming an angle of slightly less than ninety degrees.

General coloration light yellowish brown, green distad on organs of flight and caudal limbs; in life light green. Genicular lobes of cephalic and caudal femora suffused distad with dark brown, this narrowly margining the dorso-distal extremity of these members as well, though there very weak on the cephalic femora. Antennae and tegmina marked as in *cryptosticta*. The males have a dark brown suffusion on each tegmen at the caudal extremity of the stridulating area.

The measurements of the type are given first for the males, those of the allotype first for the females. Length of body ♂ 15 and 14, ♀ 17.2 and 14 (shriveled); length of pronotum ♂ 4.8 and 5.2, ♀ 4.7 and 4.6; greatest width of pronotum ♂ 2.7 and 2.7, ♀ 2.8 and 2.8; length of pronotal lateral lobe ♂ 2.7 and 2.8, ♀ 3 and 3; depth of pronotal lateral lobe ♂ 2 and 2, ♀ 2.1 and 2.1; length of tegmen ♂ 20 and 20.8, ♀ 23.9 and 22.3; width of tegmen ♂ 2.7 and 2.8, ♀ 3.1 and 3; length of cephalic femur ♂ 5.7 and 5.7, ♀ 6 and 5.9; length of caudal femur ♂ 12.8 and 13.3, ♀ 14.7 and 14.7; length of ovipositor 12 and 12 mm.

In addition to the described pair, a paratypic male bearing the

⁹¹ The female from the Island of Basilan has this emargination decidedly more extensive, occupying the distal two-thirds of the subgenital plate. In all other features it agrees so very closely with the allotype that we believe this difference to be attributable to individual variation.

same data as the allotype and a female from the Island of Basilan, from C. F. Baker, are before us.

Xiphidiopsis gemmica new species. Plate XV, figure 10; plate XX, figures 5, 6 and 7.

This and the following species differ strikingly from the other forms of the genus before us in their smaller size, more slender form, more delicate structure, more contrasting coloration, absence of a cephalic coxal spine and very high specialization of the male supra-anal plate and cerci.

Though representing a distinct group, we do not believe that they should be separated generically.

TYPE: ♂; Surigao, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type No. 827.]

Size small and form slender for the genus. Vertex with sulcation almost obsolete. Maxillary palpi with last joint equal in length to fourth. Pronotum elongate and slender, the metazona produced caudad and almost as long as the prozona, its surface as convex as in *X. drepanophora* here described. Lateral lobes of pronotum shallow, the ventro-cephalic angle broadly rounded, the ventral angle less broadly so, the caudal margin strongly oblique with concavity at humeral sinus very weak, but that opposite thoracic foramen decided. Ultimate tergite roundly produced on each side to bases of cerci, deeply and extensively U-emarginate mesad to near base. This emargination is filled by the supra-anal plate which there is flattened, longitudinally weakly bi-sulcate and directed caudad and weakly ventrad; beyond this it is directed ventrad, in a narrower shaft with proximo-lateral margins lamellate, which, opposite the apex of the subgenital plate, is expanded into a large, rounded apex with ventral surface flattened but convex mesad, bounded laterad and proximad by high sub-lamellate ridges, which are separated from the median portion by a deep channel. Cercus very large, very highly specialized, proximal section large and globose, about as broad as long, connected with distal portion by a short, thick neck; distal portion produced ventrad in a very large and delicate lamellate plate, directed mesad, with surface in an oblique plane (the cercal plates so large that they overlap strongly); distal portion produced dorsad in a heavy ridge, directed mesad at a sharp angle, the disto-internal portion (or true apex) separated from the ventral plate, directed dorsad, with immediate apex roundly acute-angulate produced and bearing at its caudal base a flattened vertical lobe with outline strongly convex. Above the subgenital plate the yoke of the ultimate tergite is produced as a very similarly shaped plate, but with free margins lamellate, bearing in homologous position to the styles, two processes of the same slenderness but longer, directed ventrad and then curved distad. Subgenital plate small, lateral margins strongly concave-convergent proximad, then subparallel to the

truncate apex, bearing small styles at the latero-caudal angles, each slightly over three times as long as its basal width, directed ventrad and curved weakly cephalad. Cephalic coxae unarmed. Genicular lobes of femora bluntly rounded. Cephalic tibiae with four pairs of spines and a distal pair of very small spines, the longest spine nearly three times the tibial width at that point. Median tibiae as described here for *X. dicera*, except that the proximo-external spine is absent on both and the penultimate-internal spine is absent on one of these. Caudal tibiae armed as characteristic of this and the genus *Allotteratura*.

ALLOTYPE: ♀; Butuan, Mindanao, Philippine Islands. (From C. F. Baker.) [Hebard Collection.]

Agrees closely with male, differing as follows. Pronotum less strongly produced caudad, metazona two-thirds as long as prozona. Supra-anal plate much as here described for *dicera*, but with apex less broadly rounded. Cerci cylindrical, widest meso-proximad, thence tapering to the elongate, slender apices, slightly incurved and slightly over four times as long as greatest width. Ovipositor elongate, swollen in proximal third, distal portion showing a faint curvature dorsad with margins unarmed; dorsal valves acute at apex, ventral valves with acute apices slightly decurved. Subgenital plate subquadrate, lateral margins rounding broadly into the transverse distal margin, which in caudal aspect is broadly concave.

General coloration yellowish buff, the tegmina delicate yellowish green. Antennae with intersection of the joints embrowned, at frequent intervals these markings being much heavier and forming blackish brown annuli. Vertex blackish brown, this paling on the occiput to a chestnut suffusion. Pronotum with a medio-longitudinal dark suffusion, chestnut cephalad, zinc orange mesad, then with an elongate triangular area of chestnut caudad, with the narrow, dark, cingulate caudal margin enclosing a small triangular patch of buffy. Tegmina faintly embrowned along sutural margin, but with a regular, longitudinal series of ten conspicuous blackish brown dots nearer this than the costal margin. Limbs immaculate, except that the penultimate joint of the tarsi and the apices of the caudal tibiae are embrowned.

Length of body ♂ 13.5, ♀ 11.8; length of pronotum ♂ 4, ♀ 3.7 greatest width of pronotum ♂ 1.7, ♀ 1.8; length of pronotal lateral lobe ♂ 2.9, ♀ 2.7; depth of pronotal lateral lobe ♂ 1.3, ♀ 1.3; length of tegmen ♂ 16.3, ♀ 16.2; width of tegmen ♂ 1.9, ♀ 1.9; length of cephalic femur ♂ 4.2, ♀ —; length of caudal femur ♂ 10.7, ♀ 10.5; length of ovipositor 7 -mm.

This delicately and beautifully marked insect is known only from the described pair.

Xiphidiopsis aglaia new species. Plate XV, figure 11; plate XX, figures 8, 9 and 10.

Agreeing closely with the male of *X. gemmicula*, here described, in general structure and color pattern, the present male differs in certain color features, but signally in the remarkable and distinctive genitalic specialization.

TYPE: ♂; Island of Basilan, Zamboanga Province, Philippine Islands. (From C. F. Baker.) [Hebard Collection, Type no. 828.]

Agrees closely with *gemmicula* in all structural features except the following. Vertex with a delicate, linear, medio-longitudinal sulcus. Pronotum with metazona slightly shorter than prozona. Ultimate tergite and supra-anal plate similar, except that the latter is more slender, with median shaft decidedly more elongate, this portion with dorsal surface channeled, the distal portion similar but less heavy, so that the apex has its median portion narrow, vertical but convex, with the lateral ridge reduced to a small, flattened lobe dorsad on each side, with outline strongly convex, these directed dorso-laterad. Cercus very large and intricately specialized, proximal portion heavy, short, produced internally in a heavy sub-denticulate plate; from this portion a much more slender shaft is directed caudad, developing distad as follows. Dorsad produced in a stout finger which is widest just before its rounded apex, ventrad produced as a very large and heavy plate, directed mesad with ventral surface deeply concave, forming an auriform process (so that these portions of the cerci overlap strongly). Above the subgenital plate the yoke of the ultimate tergite is produced, bearing two slender processes directed dorsad, which are concealed by the proximo-internal plates of the cerci. Subgenital plate very similar to that of *gemmicula*, except that it is somewhat shorter and the styles are not over three times as long as their basal width.

General coloration (apparently discolored) buffy brown, the sides of the thorax yellow and probably striking in life. Antennae as in *gemmicula*. Vertex tipped with blackish brown, remaining portions and a medio-longitudinal suffusion on occiput and pronotum of zinc orange, this, toward the caudal margin of the pronotum, changing to a small, elongate, triangular patch of buffy, bordered by a suffusion of blackish brown. This conspicuous marking, though of the same general character as in *gemmicula*, is seen to be differently proportioned. Tegmina very similar to those of *gemmicula*, but more embrowned, with a regular series of eleven, instead of ten, similar spots and one or two similar spots distad between the median vein and its branch. Limbs as in *gemmicula* except that the penultimate joint of the tarsi and the apices of the caudal tibiae are more heavily embrowned.

Length of body 13, length of pronotum 3.7, greatest width of pronotum 1.7, length of pronotal lateral lobe 2.8, depth of pronotal lateral lobe 1.4, length of tegmen 15.9, width of tegmen 1.9, length of cephalic femur 4, length of caudal femur 9.3 mm.

The type is unique.

EUANISOUS⁹² new genus.

We propose the present genus to include the two species, previously assigned to the genus *Xiphidiopsis*, which have the external auditory foramen of the cephalic tibiae apert, but the internal very strongly conchate; *distincta* (Redtenbacher) and *teuthroides* (Bolivar).

GENOTYPE.—*Euanisous teuthroides* (Bolivar).

The larger size and heavier build of *teuthroides*, when compared with the species of *Xiphidiopsis* before us, gives it a somewhat stronger, though wholly superficial, resemblance to a very diminutive and slender Gryllacrid.

***Euanisous teuthroides* (Bolivar)**

1904. *Xiphidiopsis teuthroides* Bolivar, Ann. Mus. Nat. Hungarici, II, p. 391. [σ° ; Singapore, [British Straits Settlements].]

Labuan, British North Borneo, 1 ♀.

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♂, 1 ♀.

In addition to the characters given by Bolivar, the following are noted. Vertex not sulcate. Distal joint of maxillary palpus distinctly longer than fourth. Cephalic coxae armed with a strong spine.

The topotypic female before us shows the following additional features of value. Ovipositor elongate, very faintly curved upward, margins unarmed, ventral valves subemarginate near the blunt and weakly deflexed apex, (as in *Xiphidiopsis*). Ovipositor with ventral valves, on each side at base, produced in a short, narrow, horizontal, rounded lamella.⁹³ Subgenital plate apparently not strongly chitinous and transversely truncate distad.

The caudal tibiae, though described by Bolivar as unarmed, are in the topotypic material before us armed dorsad with small spines and ventrad, except in proximal portion, with slightly larger spines, distad with three pairs of spurs. The male before us agrees so closely in every other detail with Bolivar's description that we are convinced "femora" instead of "tibiae" was intended. Thus *distincta* appears to be separable mainly by its smaller size, unarmed mesosternum and by male genitalic differences.

⁹² In allusion to the remarkably, but very differently, developed auditory foramina on the internal and external surfaces of the cephalic femora.

⁹³ The Labuan female has this lamella decidedly broader, and, though apparently agreeing in all other features (the contour of the subgenital plate can not be accurately distinguished), males from Borneo may show that insect to be specifically distinct.

The measurements of the Bornean female are given last. Length of body (all shrunken) ♂ 14, ♀ 13 and 14.5; length of pronotum ♂ 4.7, ♀ 4.5 and 4.4; greatest width of pronotum ♂ 2.8, ♀ 3.3 and 3.3; length of pronotal lateral lobe ♂ 3.3, ♀ 3.3 and 3.3; depth of pronotal lateral lobe ♂ 2.1, ♀ 2.2 and 2.2; length of tegmen ♂ 22.7, ♀ 24 and 25.4; width of tegmen ♂ 3.3, ♀ 3.4 and 3.4; length of cephalic femur ♂ 5.1, ♀ 5.8 and 5.8; length of caudal femur ♂ 11.1, ♀ 12 and 11.5; length of ovipositor 13 and 13.2 mm.

The spines of the ventral margins of the cephalic and median tibiae, though showing some development toward the claw-like type found in *Phisis*, are as short as is usual in *Xiphidiopsis*, the longest only slightly over twice the tibial width at that point.

***Phlugis thaumasia* new species.** Plate XXI, figures 2, 3 and 4.

This insect agrees in every feature of generic importance with the American genotype, *P. teres* (DeGeer).⁹⁴ It is the second Malayan species to be described of this otherwise Neotropical genus.

Known from a single male, the specimen is found to agree closely with the single known female of the other Malayan species, *P. dubia* (Karny), described from Banguey Island, British North Borneo. It is distinguished by the wholly unarmed caudal femora. We believe that the male sex of the Bornean insect will show distinctive genitalic differences.

These species may be quickly separated from other Asiatic Listroscelids by the prominent eyes, which are produced cephalad, the short, declivous and non-projecting vertex, the large curved spine of the cephalic coxae and distinctive limb armament.

TYPE: ♂; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 829.]

In addition to the generic characters noted above, the following are of diagnostic value. Size small, form slender, though not as slender and delicate as the majority of the American species. Maxillary palpi with fourth joint two-thirds as long as fifth, the latter very gradually enlarging distad to its truncate apex. Pronotum cylindrical, moderately produced caudad, the metazona two-fifths as long as the prozona; lateral lobes with ventral margin horizontal, caudal margin oblique, showing only a faint offset opposite the small, round but exposed thoracic foramen. Tegmina and wings somewhat reduced, the former slightly surpassing the

⁹⁴ Except that the caudal femora have but two pairs of distal spurs, the dorsal pair having disappeared. We, however, find this condition to be characteristic of the majority of the American species of *Phlugis*.

apex of the caudal femora. Prosternum and mesosternum each with a pair of bluntly conical projections, metasternum unarmed. Ultimate tergite briefly produced in space between cerci, the apex of this production transverse, weakly emarginate, with margins weakly convex. Cerci elongate and heavy, weakly sigmoid in lateral aspect, cylindrical with ventro-internal surface swollen at end of proximal third, thence slightly widening, then tapering to the sharply rounded apex, this distal two-thirds vertically somewhat lamellate (the cerci thus form elongate claspers, which are attigent distad). Subgenital plate with surface moderately convex, lateral margins weakly convergent to the truncate and weakly convex distal margin; styles situated at disto-lateral angles, very slender, cylindrical, directed ventrad and slightly curved cephalad, nearly six times as long as basal width. Femoral genicular lobes bluntly rounded. Cephalic femora armed ventrad with three external and four internal, moderately elongate spines, other femora entirely unarmed. Cephalic tibiae armed with four pairs of elongate spines and a minute pair of distal spines, the longest (proximo-internal) nearly five times the width of the tibia at that point. Median tibiae armed only with a minute pair of ventro-distal spines. Caudal tibiae unarmed ventrad, supplied with numerous small spines along the dorsal margin and armed distad with two pairs of short but heavy spurs.

General coloration immaculate, light brownish buff (apparently much discolored). Caudal tibial spurs and lateral portions of tarsal joints embrowned.

Length of body 11.5, length of pronotum 3.4, greatest width of pronotum 2, length of pronotal lateral lobe 3, depth of pronotal lateral lobe 1.2, length of tegmen 8.8, width of tegmen 1.9, extent of wing beyond tegmen 2.7, length of cephalic femur 3.8, length of caudal femur 11 mm.

The type is unique.

Phisis obiensis new species. Plate XVII, figure 20.

This insect is closely related to the Papuan *P. arachnoides* (Bolivar), differing in the female sex from the description of that species in the slightly shorter limbs, slightly longer ovipositor, subgenital plate which has its apex produced mesad in a small, narrow-necked lobe and spination of the trochanters and femora of the median limbs.

TYPE: ♀; Obi Island, Moluccas. [Hebard Collection, Type no. 830.]

Size medium, form very slender for the genus. Vertex very slender, weakly ascendant to the sharply rounded apex, medio-longitudinally weakly sulcate. Maxillary palpi extremely elongate, last joint decidedly longer than fourth, weakly and evenly curved, widening very slightly and gradually to the sharply rounded apex,

the dorsal surface concave in distal two-thirds. Pronotum with disk showing weak sulci, caudal margin weakly concave and cingulate; lateral lobes elongate, ventral margin horizontal, ventrocephalic angle more strongly rounded than ventro-caudal, caudal margin strongly oblique ascendant, humeral sinus very weakly indicated. Between the tegmina proximad, a convex scutellum is exposed. Tegmina and wings fully developed, the former narrow and elongate, extending as far caudad as the wings, broadening somewhat caudad with apices rather broadly rounded. Prosternum bispinose, mesosternum binodulose, metasternum weakly bino-dulose. Cerci simple, slender, curved. Ovipositor moderately falcate, the dorsal and ventral margins distad very finely serrulate to the acute apex. Subgenital plate very small, with a narrow-necked, small, oval production at apex. Cephalic coxae unarmed. Median trochanters with a small ventral spine. Femoral genicular lobes strongly unispinose. Cephalic femora with four internal and six external, very elongate and slender, ventral spines. Median femora with two very small proximo-internal and four elongate external ventral spines. Caudal femora with eleven and thirteen small ventro-external spines. Cephalic tibiae with auditory foramina inflated conchate, the oval openings ventro-cephalad; armed ventrad with eight pairs of very elongate, slender spines (on one tibia with a single sub-distal additional ventro-internal spine), which decrease in length distad, and a pair of minute apical spines. Median tibiae armed ventrad with seven external and six internal, somewhat less elongate spines and a pair of minute apical spines. Caudal tibiae with numerous very small dorsal and less numerous larger ventral spines and three pairs of distal spurs.

General coloration immaculate buffy, probably a very pale green in life. Flecks of green occur on this dried specimen on the occiput, dorsum of the pronotum, scutellum and sides of the thorax. Ovipositor ochraceous-buff, tinged with tawny distad.

Length of body 13, length of pronotum 3.2, greatest width of pronotum 2.3, length of pronotal lateral lobe 3, depth of pronotal lateral lobe 1.7, length of tegmen 25.3, proximal width of tegmen 2.2, greatest (meso-distal) width of tegmen 2.7, length of longest cephalic tibial spine 1.9, length of cephalic femur 8.9, length of caudal femur 14.8, length of ovipositor 9.8 mm.

The type is unique.

***Phisis philippinarum* Karny.**

1920. *Phisis philippinarum* Karny, Verh. Zool.-bot. Ges. Wien, LXX,
p. 31. [φ ; Los Baños, [Luzon], Philippine Islands.]

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 φ .

We assign the present specimen to *philippinarum*, as it agrees in every detail of limb armament as well as in many other features given in Karny's description. The proportions are, however, so different that it may represent a distinct species. Males probably will be needed to determine this.

The broadly truncate subgenital plate has the distal margin showing very weak obtuse-angulate production, the lateral portions of this margin being faintly concave.

Length of body 17 (distended), length of pronotum 3.8, greatest width of pronotum 2.7, length of pronotal lateral lobe 3.7, depth of pronotal lateral lobe 1.9, length of tegmen 18, greatest width of tegmen 2.1, length of longest cephalic tibial spine 2.3, length of cephalic femur 8.2, length of caudal femur 14.5, length of ovipositor 10 mm.

Phisis pectinata (Guérin)

1830. *Listroscelis pectinata* Guérin, Voyage de La Coquille, Zool., II, part II, p. 153; Atlas, pl. Ins. X, figs. 1 and 1a to 1c. [[♂]; Island of Bourou, Moluccas.]

Obi Island, Moluccas, 1 ♀.

Though this genotype has been excellently figured by Guérin and subsequently diagnosed by Serville, Redtenbacher has confused under this name probably a number of species and has given characters in his description which are not correct for *pectinata*.

The following features are noteworthy in the specimen before us. Ovipositor as described here for *P. obiensis*, but proportionately broader. Subgenital plate narrow, flattened ventrad, the lateral margins gradually converging to the truncate apex, which shows a weak concavity. Cephalic coxae with a short spine. Cephalic femora armed ventrad with four internal and five external, elongate, slender spines. Median femora armed ventrad with three shorter external spines and the internal margin with two minute proximal spines and a series of microscopic serrulations (this margin figured as unarmed by Guérin and so described by Serville).⁹⁵ Caudal femora armed ventrad with twelve external and two internal, minute spines. Cephalic tibiae armed ventrad with seven pairs of long, slender, curved spines and a pair of minute distal spines. Median tibiae armed ventrad with the same number of shorter spines and with a meso-dorsal spine.

Length of body 16.7, length of pronotum 4.5, greatest width of pronotum 3, length of pronotal lateral lobe 3.7, depth of pronotal lateral lobe 2, length of tegmen 30.2, width of tegmen 3.8, length of longest cephalic tibial spine 2.7, length of cephalic femur 8, length of caudal femur 14.8, length of ovipositor 11.9 mm.

Phisis acutipennis Carl. Plate XXI, figure 5.

1908. *Phisis acutipennis* Carl, Rev. Suisse de Zool., XVI, p. 144, pl. 4, figs. 22 and 23. [♀, Java.]

⁹⁵ This may be due to the fact that the spines and serrulations of this margin are so small that they could easily have been overlooked without high magnification. Redtenbacher's description of this margin as bearing five spines is certainly referable to a distinct species.

Singapore, British Straits Settlements, (from C. F. Baker), 1 ♀.

The remarkable spatulate development of the spines of the cephalic limbs is well figured by Carl. These spines have their ventral surfaces concave and supplied with numerous microscopic black spinulae.

Carl has apparently (unlike most other authors) counted the distal pair of minute spines in giving the count for the cephalic and median tibiae. In the specimen here recorded the cephalic tibiae bear ventrad six pairs of very elongate, specialized spines and a pair of minute distal spines. The median tibiae have ventrad six external and five internal moderately elongate, slender spines and a minute distal pair of spines.

In this specimen we note further that the median trochanters are armed ventrad with a single small spine, the ovipositor has its margins minutely serrulate distad and the subgenital plate is minutely but suddenly concave-emarginate at its apex.

Length of body 16, length of pronotum 4.2, greatest width of pronotum 3, length of pronotal lateral lobe 3.8, depth of pronotal lateral lobe 1.7, length of tegmen 18.7, width of tegmen 2, length of longest cephalic tibial spine 3.4, length of cephalic femur 10.3, length of ovipositor 11.8 mm.

LIPOTACTES Brunner

1898. *Lipotactes* Brunner, Abh. Senckenb. Naturforsch. Ges., XXIV, p. 274.
1909. *Mortonielius* Griffini, Wiener Ent. Zeit., XXVIII, p. 107.

The above synonymy is wholly due to Brunner having assigned his genus to the Listroscelinae, while, when Griffini submitted his specimen, it was referred by Karny, Redtenbacher and Werner to the Tympanophorinae. It appears almost certain that the latter subfamily, based primarily on the absence of a dorso-internal spur on the caudal tibiae is of no value. The much lower significance of such differentiation is well understood if it is noted that the North American subgenera of *Conocephalus*, for instance, are in a number of cases thereby separable,⁹⁶

Lipotactes maculatus new species. Plate XV, figure 12.

This remarkable insect is readily distinguished from the Bornean genotype, *L. alienus* Brunner and the Sumatran *L. karnyi* (Griffini) by its much smaller size and varied coloration.

It is odd that, though three species are now known, a male of the genus has as yet not been described.

⁹⁶ See Rehn and Hebard, Trans. Am. Ent. Soc., XLI, p. 226, (1915).

TYPE: ♀; Singapore, British Straits Settlements. (From C. F. Baker.) [Hebard Collection, Type no. 831.]

The structural features appear to agree closely in all the species of *Lipotactes*, the present insect differing in size; agreeing with *alienus* but differing from *karnyi* in the pronotal sulci, the first of which is deep on the disk and near the cephalic margin, the others broader and subobsolete in that portion. The other important features are the stout form; large and broad head; prominent eyes; vertex which rounds down to the low, suddenly projecting, narrow, vertical fastigium, which is subsulcate on its cephalic face and is in contact with the frontal fastigium. Prozona heavily spinose, mesozona and metazona each heavily binodulose. Pronotum short, truncate. Tegmina and wings absent. Ovipositor short, acute, moderately recurved, with base somewhat swollen, the margins smooth to the acute apex. Subgenital plate triangular, medio-longitudinally carinate. Femora unarmed, the caudal femora much swollen proximad. Cephalic tibiae with auditory foramina rimate, these and the median tibiae armed ventrad with five pairs of heavy spines. Caudal tibiae with five distal spurs, the dorso-internal being absent. Cephalic coxae unispinose. Caudal coxae internally produced in a long finger. Femoral genicular lobes blunt, the cephalic internal and all of the median femora minutely and subobsoletely bispinose, the external of the caudal femora armed with a small spine and the internal with a large, heavy spine.

General coloration shining, brussels brown. Eyes deep chestnut brown. Occiput brussels brown, with four broad, suffused, longitudinal bands of dark prout's brown. Projecting portions of fastigium of vertex and facial fastigium blackish bay, with a broad vertical band of deep bay on face of clypeus, a similar but narrower subocular band on each side and a vertical fleck of this color beneath the narrowly blackish bay margined antennal sockets. Antennae with proximal joints brussels brown with suffusions of blackish bay, remaining joints darker with some of the intersections brussels brown. Pronotum brussels brown, with a broad dorsal band of blackish on the lateral lobes, this margined dorsad by a slightly paler shade than that of the remaining portions of the disk. These markings continued caudad, becoming very weak toward the distal portion of the abdomen. Ovipositor tawny. Cephalic and median limbs buckthorn brown showing a faint tinge of tawny and thickly ornamented with large flecks of blackish brown; the caudal tibiae similar, but less heavily flecked. Caudal femora buckthorn brown showing a faint tinge of tawny, with the following markings: externally a large, dorso-proximal, immaculate, oval patch of buffy, below which is a heavy, roughly elongate-trigonal patch of blackish brown with base distad, sending a ray of blackish brown from the dorso-distal angle to the dorsal margin of the limb; distad chestnut brown with a fleck of buffy dorsad, the remaining portions from the proximal to the distal dark marking showing numerous flecks of

blackish brown dorsad, a row of the same mesad, while the ventral margin is ornamented with a series of still heavier flecks.

Length of body 11.2, width of head (including eyes) 5, length of pronotum 3.2, greatest width of pronotum 3.4, length of pronotal lateral lobe 2.9, depth of pronotal lateral lobe 2.7, length of cephalic femur 3.4, length of caudal femur 12.1, greatest width of caudal femur 3.2, length of ovipositor 6.7 mm.

The type of this handsome and extraordinary little insect is unique.

Hexacentrus unicolor Serville.

1831. *Hexacentrus unicolor* Serville, Ann. Sci. Nat., XXII, p. 146. [♂, Java.]

Kolambungan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Zamboanga, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Labuan, British North Borneo, 2 ♂, 7 ♀.

Borneo, (from and determined by Saussure), 1 ♀, [A. N. S. P.] Obi Island, Moluccas, 1 ♂, 3 ♀.

Batu Sangkar, Padangische Bovenland, Sumatra, August and September, 1901, (Harrison and Hiller), 1 ♀, [A. N. S. P.]

Java, (from and determined by Saussure), 1 ♀, [A. N. S. P.]

Singapore, British Straits Settlements, (from C. F. Baker), 2 ♀.

Hexacentrus mundus (Walker)

1869. *Piura munda* Walker, Cat. Dermapt. Saltat. Br. Mus., II, p. 282. [♀; Ceram, [Moluccas].]

1920. *Hexacentrus spiniger* Karny, Verh. Zool.-bot. Ges. Wien, XII, p. 32. [♂; Mount Makiling, Luzon, Philippine Islands.]

Davao, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♂, 1 ♀.

Sandakan, British North Borneo, (from C. F. Baker), 1 ♂.

Kina Balu, British North Borneo, 1 ♂.

Obi Island, Moluccas, 12 ♂, 23 ♀.

Karny's recently described *H. spiniger* is a synonym, as indicated above, based on a very large and exceptionally intensively colored individual.⁹⁷

The additional synonymy indicated by Kirby is apparently correct, except that we find Stål's *annulicornis* to be a very distinct

⁹⁷ Should the Malayan form be found sufficiently distinct from the Melanesian to warrant racial recognition, the name *sellatus* (Walker) would have priority over *spiniger* Karny for the more western race. In the present material the Moluccan males have the tegmina averaging broader and tapering more rapidly distad than in the Malayan males. In so plastic a species, however, we believe it very unwise to attempt to recognize races on so slight a difference, and that indicated in but one of the sexes.

insect, for which we erect the genus *Euhexacentrus* below. Redtenbacher and Karny have misidentified material of *mundus* as *annulicornis*, this apparently resulting in Kirby's placing the latter name in the present synonymy.

In the Malayan material before us the last two tarsal joints are alone blackish, while in the Moluccan series the majority have all of the tarsal joints blackish. The present large series, however, shows this feature to be of no diagnostic value, a few Moluccan individuals having only the last two joints dark, while a single male of that series has the tarsi entirely pale, (these specimens belonging to the same species beyond possible question).

The color of the cephalic tibiae varies similarly, the majority of the Moluccan series having heavy dark brown flecks at the bases of the spines, a few intensive specimens have the external surface of the tibiae solidly dark brown to near their apices, while a few recessive examples have the tibiae with scarcely a trace of brown marking.

In the character of the presence of one or two dorsal spines on the median tibiae, even greater variation occurs, as in some individuals before us such spines are absent on one side and present on the other. Likewise the form of the male tegminal speculum varies to some extent.

EUHEXACENTRUS new genus.

The present genus is erected to include a single species, *E. annulicornis* (Stål). That species has apparently not been reported since the original description, Redtenbacher and Karny having mistaken *Hexacentrus mundus* (Walker) for it.

The limb armament and short, serrulate ovipositor are among the most important features to separate *Euhexacentrus* from *Hexacentrus*. Closer agreement in certain features is shown by the Papuan *Parahexacentrus paradoxus* (Karny).

Compared with *unicolor* Serville, genotype of *Hexacentrus* and other species of that genus before us, the present genus is found to differ as follows. Vertex similar, except that it shows a decided, though linear, medio-longitudinal sulcus. Pronotum with transverse sulci deeper and ventral margin of lateral lobes more lamellate and sinuous. Tegmina and wings showing reduction, as in *H. japonicus* (Karny), the latter differing in having the rounded apex nearer the costal than the sutural margin. Ovipositor very short and much heavier than in *Hexacentrus*, the dorsal margin weakly sinuate, with a faint obliquity indicated toward the acute apex; dorsal and ventral margins very minutely serrulate distad, un-

armed in *Hexacentrus*. Ventro-internal margin of cephalic femora and ventro-external margin of median femora armed with two large spines and some very small spinulae, the other ventral margins unarmed except for very small spinulae. Caudal femora with ventral margins also armed with fewer but heavier spines than in *Hexacentrus* (four to five), and with proximo-internal spinulae. Cephalic and median tibiae similar to *Hexacentrus*, with six pairs of spines, except that those of the cephalic tibiae are heavier and longer, while the median tibiae are unarmed dorsad.⁹⁸

The coloration of *annulicornis* is distinctive, though very delicate.

Euhexacentrus annulicornis (Stål). Plate XVII, figure 21.

1877. *H[exacentrus] annulicornis* Stål, Ofv. K. Vetensk.-Akad. Förh., 1877, No. 10, p. 46. [♀, Philippine Islands.]

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Butuan, Mindanao, Philippine Islands, (from C. F. Baker), 1 ♀.

Lack of material for comparison has apparently led Redtenbacher, Kirby and Karny, into the error of placing *annulicornis* as a synonym of the very distinct *Hexacentrus mundus* (Walker).

This species was originally very poorly characterized and we note the following features, in consequence, in addition to those given in the accompanying generic description, for the female sex.

Size small for the group. Maxillary palpi with fifth (distal) joint slightly longer than fourth. Subgenital plate slightly longer than broad, with lateral margins convergent and feebly convex to the very weakly bilobate, truncate apex. Femoral genicular lobes with cephalic external bluntly triangularly produced; cephalic internal, those of median femora and caudal internal strongly unispinose; caudal external strongly bispinose.

General coloration yellowish buff. Dorsal surface of vertex dark brown. Antennae with frequent elongate annuli of blackish brown. Pronotum with disk suffused with brown, the cephalic and caudal margins there narrowly blackish brown; lateral lobes with a dot of blackish brown mesad on ventral margin. Sides of thorax with a similar dot above insertion of median limbs. Tegmina pale greenish or green yellow; veinlets, but not veins, delicate vinaceous; a meso-proximal and meso-distal fleck of brown and a series of small flecks along the sutural margin. In the more intensive specimen, a series of as decided but smaller flecks also occur along the costal margin. Genicular spines of all femora blackish brown, the genicular area lined ventrad with that color. Limbs with the following blackish brown dots. Cephalic femora mesad with a dorsal, median and ventral dot and distad a median

⁹⁸ Though the median tibiae are usually supplied with one or two dorsal spines in *Hexacentrus*, we have found that presence or absence of such is an individual variation in species of that genus.

dot. Median femora mesad with a ventral dot and distad with a median dot. Caudal femora mesad with a dorsal dot. Caudal femoral spines blackish brown, with apices paler, brown. Caudal tibiae immaculate except for brown suffusions at the bases of the more proximal, small ventral spines.

Length of body 19.5 and 18.5, length of pronotum 5.5 and 5.7, caudal width of pronotal disk 2.8 and 2.9, length of tegmen 25 and 26.7, greatest (mesal) width of tegmen 5.8 and 6.8, length of cephalic femur 8.4 and 8.9, length of caudal femur 17.8 and 19.1, length of longest cephalic tibial spine 4.7 and 2.9, length of ovipositor 8.5 and 8.6, greatest (median) width of ovipositor 2.7 and 2.9 mm.

SAGINAE

Terpandrus splendidus new species. Plate XXI, figure 6.

From *T. horridus* (Burmeister) the present insect is quickly distinguished by its large size, much more elongate form and paler, striped coloration. In consequence, *splendidus* has a very distinctive general facies.

TYPE: ♀; Yerilla, North Coolgardie Goldfield, Central Division, West Australia. March, 1899. (C. Humphrey.) [Hebard Collection, Type no. 844.]

Size large, form elongate. Vertex with fastigium narrow, curving ventrad and not projecting beyond plane of face; dorsal surface longitudinally sulcate, cephalic surface narrow and convex, separated a brief distance from frontal fastigium. Eyes round, projecting, bead-like. Pronotum feebly sellate, transverse sulci weak, caudal portion of metazona slightly elevated, flattened, its surface wrinkled like other portions of disk but not as shining, due to its being microscopically rugulose as well; lateral lobes longer than deep, ventral margin very broadly convex, humeral sinus broadly concave. Tegmina and wings fully developed, extending to apex of the very long ovipositor, the former narrow. Cerci cultriform, due to a moderate lammellation of the internal margin, weakly incurved. Ovipositor slender, straight and very elongate, showing distad a slight curvature ventrad, the dorsal margin showing a weak, roughened channel toward the acute apex. Subgenital plate scoop-shaped, the disto-lateral margins convergent and weakly concave to the weakly produced, bluntly angulate apex. Spines of prosternum, mesosternum and metasternum heavy. Genicular lobes of cephalic and median femora bispinose, of caudal femora unispinose. Cephalic femora with ventral margins moderately lamellate, caudal femora slender, showing slight thickening proximad. Ventral femoral margins armed with spines, of which those of the cephalic femora are heavy and sublamellate, those of the caudal femora less so, as follows. Cephalic internal 5 and 6, cephalic external 9 and 9 (of which 1 and 2 proximal are very small), median internal 8 and 8, median external 5 and 6, caudal internal 7

and 8, caudal external 1 (very small) and 0. Auditory foramina of cephalic tibiae rimate. Cephalic and median tibiae armed with seven pairs of rather heavy spines.

Head and pronotum honey yellow, with a broad post-ocular band of whitish on each side, which is continued to the caudal margin of the pronotum and is there, in metazonal portion, bordered with a suffusion of cinnamon brown, broad on the disk and narrow on the lateral lobes. Lateral lobes of pronotum broadly margined ventrad with whitish. Tegmina transparent pale dull green yellow, like ground glass; stridulating field with a heavy border of warm buff, margined with a suffusion of cinnamon brown, the latter continued along the sutural margin to apex; interval between discoidal and median veins embrowned distad. Body apparently light buff in life, abdomen discolored in specimen under consideration. Ovipositor ochraceous-buff, tinged with tawny except proximad, much darker near apex, with dorsal channel blackish. Limbs light buff, dorsal surface of caudal femora with a longitudinal band of blackish chestnut brown, which becomes weak distad; spines blackish; caudal tibiae with lateral faces vinaceous-russet.

Length of body 47, length of pronotum 13.2, caudal width of pronotal disk 7.7, median length of pronotal lateral lobe 8.7, median depth of pronotal lateral lobe 5.9, length of tegmen 83.3, median width of tegmen 10, length of cephalic femur 18.3, length of caudal femur 44.5, greatest width of caudal femur 3.4, length of ovipositor 54, median width of ovispositor 1.8 mm.

The type of this handsome insect is unique.

PACHYSAGELLA new genus

The very stout build, short tegmina and limbs and weakly armed limbs readily distinguish this genus from the previously known valid genera of the Saginae.⁹⁹

GENOTYPE.—*Pachysagella maculata* new species.

Size medium, form very robust. Head large and broad, nearly circular in cephalic aspect; fastigium of vertex very small, projecting, apex bituberculate. Antennae very slender, shorter than body. Eyes prominent, but not projecting as much as in *Terpandrus*. Pronotum with disk nearly rectangular, surface weakly convex, the principal sulcus defined by a broad weak impression only in the male sex, cephalic margin broadly convex, lateral margins straight and almost parallel, caudal margin showing very feeble concavity, transverse; lateral lobes much longer than deep,

⁹⁹ Brunner has described *Pachysaga*, a genus without species (*Ann. Mus. Genova, XXXIII*, p. 183, (1893).) Study of the material upon which that name was based may show it to be closely related to, possibly the same as, the species here described. From the locality, Lord Howe's Island (and Java ?), it would appear probable that that insect is a member of a distinct though closely related genus.

ventro-cephalic angle rounding into the broadly convex ventral margin, caudal margin strongly oblique, with humeral sinus broadly concave. Tegmina and wings greatly reduced overlapping in male, lateral in female. Ovipositor elongate and slender, straight but showing greater obliquity of the dorsal than the ventral margin toward the aciculate apex. Limbs short. Femora with genicular lobes roundly produced, unarmed; internal margins alone armed with small spines. Cephalic tibiae with auditory foramina rimate and with a strong impression distad on each side beyond the openings. Prosternum armed with two slender spines, mesosternum and metasternum very broad, the former with two lateral, triangular spines. Cephalic coxae armed with a slender spine. Caudal tibiae without dorso-distal spine or spur.

Pachysagella maculata new species. Plate XXI, figures 7 and 8; plate XXII, figures 2, 3 and 4.

Wide dissimilarity is found when compared with other Australian species of the Saginae. The head in some ways suggests the type found in certain species of the otherwise very distinct genus *Salomona*, belonging to the Agraeciinae. When compared, however, the head is seen to differ greatly in having its width and depth nearly equal (due to the much shorter mouthparts), in the widely separated eyes, much shorter antennae, shorter and bituberculate fastigium of the vertex and almost vertical face.

TYPE: ♂; South Australia. (Compere.) [Hebard Collection, Type no. 845.]

In addition to the characters given in the generic description, the following are noted. Size medium for this subfamily, which includes very large species, form very thick-set. Occiput evenly convex to the small, straight fastigium of the vertex, which is directed cephalad and thus projects beyond the nearly vertical plane of the broadly convex face, the surface of face rugulose, particularly ventrad. Disk of pronotum smooth, velvety in appearance; lateral lobes weakly rugulose and shining in darkened portions, the ventral and caudal margins cingulate, this decided at the humeral sinus. Tegmina slightly broader than long, the greater portion occupied by the large stridulating area, which is broader than long. Wings pad-like, decidedly shorter than tegmina and with costal margins alone narrowly visible. Ultimate abdominal tergite narrow, lateral margins slightly raised and convex on each side of the depressed median point, where the small, acute, shield-shaped supra-anal plate is attached and fused with this tergite. Cercus triangular, nearly twice as long as basal width, internal portion moderately lamellate with margin nearly straight to apex, external margin very feebly convex to the minute and sharply rounded apex, the latter ventral in position, curled inward so that it is directed meso-distad; above which, at its base, is a

minute tooth on the dorsal (internal) margin, directed mesad. Subgenital plate ample, lateral margins convex-convergent to the short but broadly concave distal margin, styles (destroyed in type) situated in sockets at the disto-lateral angles formed by these margins. Ventral femoral margins armed with small spines, as follows. Cephalic internal 1 to 1, cephalic external 0, median internal 3 to 4, median external 2 (very small) and 0, caudal internal 3 to 5, caudal external 0. Caudal tibiae with apex supplied only with a pair of ventral spurs, scarcely larger than the preceding spines.

ALLOTYPE: ♀; same data as type. [Hebard Collection.]

Form like male, thick-set. Tegmina nearly circular, lateral, separated by a space slightly greater than the tegminal width. Vestigial wings almost entirely concealed, extending as far caudad as tegmina (slightly beyond caudal margin of metanotum). Supra-anal plate transverse, with free margin broadly convex. Ovipositor slender, straight, longer than body, the dorsal margin showing a weak, roughened channel (as in *Terpandrus*) toward the aciculate apex. Subgenital plate broader than long, lateral portions embracing base of ovipositor, margin at apex weakly angulato-concave.

Color pattern as figured, chestnut brown and clay color in male, cinnamon brown and clay color in female with delimiting lines of buff.¹⁰⁰ Tegmina tawny olive, in part washed with dark brown. Limbs cinnamon, the femora flecked with blackish brown, the caudal femora with longitudinal streaks of the same distad, their apices and brief section preceding these streaks immaculate.

Length of body ♂ 31.5, ♀ 31.8; length of pronotum ♂ 10.7, ♀ 10.7; cephalic width of pronotum ♂ 6.8, ♀ 7.3; caudal width of pronotum ♂ 8, ♀ 8.2; exposed length of tegmen ♂ 7.7, ♀ 4.1; width of tegmen ♂ 8.7, ♀ 4; length of cephalic femur ♂ 8, ♀ 8.8; length of caudal femur ♂ 16, ♀ 18.6; length of ovipositor 33.8; median width of ovipositor 1.6 mm.

This singular insect is known from the described pair.

GRYLLACRINAE

Little effort appears to have been made in assigning the multitude of species of the present genus to anything like natural groups or logical sequence. The type of wing coloration would first appear to be the most useful character for sorting to groups, but further study shows that, by such sorting, species having very great structural differences would be thrown together.

With the few species at present under consideration, we have arranged the linear sequence on the basis of the female ovipositor.

¹⁰⁰ These are clearly variations of the same pattern, probably subject to decided individual diversity in the species.

Three types are found. In the first, the ovipositor is curved dorsad with apex slightly enlarged, like certain spear-heads. In the second, the ovipositor is similarly curved dorsad, but distad tapers evenly to the sharp apex. In the third, the ovipositor is straight and shaped much as in certain Copiphorine genera; slender, but not tapering until near the acute apex. Under these groups the species showing least development of color pattern are placed first.

This is admittedly a sketchy arrangement, but a beginning must be made or the affinities of the many described species will become almost impossible to ascertain.

Gryllacris arctata Walker.

1869. *Gryllacris arctata* Walker, Cat. Dermapt. Saltat. Suppl. Blatt. Br. Mus., p. 184. [♀, Philippine Islands.]

Los Baños, Laguna, Luzon, Philippine Islands, (F. X. Williams), 1 ♂, [A. N. S. P.].

The synonymy of *G. brevispina* Stål has been confirmed by Griffini.¹⁰¹ The distinctive, though subtle, markings of this diminutive species are plainly shown in the present specimen. Measurements are not given, the individual before us being shrivelled from immersion in alcohol.

Gryllacris vitrea new species. Plate XXI, figure 9.

This modestly colored insect runs in Griffini's key of the Bornean species of *Gryllacris*,¹⁰² to that section including *G. signatifrons* Serville. From that insect the present is distinguished by the more generally pale head, pronotum largely suffused but not conspicuously dark, veins and veinlets of wings showing no trace of marginating suffusion and immaculate abdomen.

The male genitalia are widely distinct.¹⁰³

TYPE: ♂; Labuan, British North Borneo. [Hebard Collection, Type no. 846.]

Size and form medium for the genus. Fastigium of vertex broad, but slightly less than one and one-half times as wide as the proximal antennal joint, surface cephalad flattened, lateral margins very sharply rounded but not carinate; ventrad contiguous with the facial fastigium, there showing a bi-concave linear sulcation, which consequently has a median angulation, directed dorsad. Face smooth, not punctulate. Pronotum in dorsal aspect subquadrate;

¹⁰¹ Philippine Jour. Sci., X, p. 68, (1915).

¹⁰² Sarawak Mus. Jour., I, No. 2, p. 3, (1912).

¹⁰³ Described for *signatifrons* by Griffini (*Boll. Mus. Zool. Anat. Comp. Univ. Torino*, XXIII, No. 581, p. 6, (1908).)

cephalic margin weakly convex mesad, cephalic sulcus deep, longitudinal sulcus extending from median point to caudal sulcus, caudal sulcus moderately deep, lateral lobes with V-sulcus deeper. Lateral lobes of pronotum longer than deep, ventral angles broadly rounded, ventral margin straight and slightly oblique, humeral sinus distinct. Tegmina and wings fully developed, extending well beyond apex of abdomen, the latter extending nearly three millimeters further caudad than the former. Tegmina as broad meso-distad as mesad, apex rather strongly rounded and slightly nearer costal than sutural margin. Wings long and rather broad, not parachute-like. Eighth tergite broad. Ultimate tergite truncate produced, its surface weakly concave declivous to apex, beneath which it is armed with two uncinate spines, the apices of which project dorso-caudad. Beneath these are two heavier, curved spines, springing from chitinous supra-cercal plates. Cerci elongate and very slender. Beneath the cerci are heavy plates, directed mesad, with disto-cephalic angle produced in a curved spine. Subgenital plate weakly convex, except latero-distad where it is weakly concave, supplied with large socketed styles, between which it is produced in two narrow, rounded projections which extend caudad nearly to the median portion of the styles and between which a narrow U-shaped median emargination is formed. Cephalic and median tibiae armed with the usual number of spines of average length. Caudal femora stout and short, ventral margins armed with six internal and eight external small but stout spines, which increase in size distad.

Head with labrum, clypeus, face and two proximal antennal joints ochraceous-buff, shading to buckthorn brown on occiput; eyes bordered caudad with a suffusion of prouts brown, which is continued ventrad to the clypeus as a weak, subocular, vertical suffusion. Remaining portions of antennae cinnamon brown. Pronotum prouts brown with two flecks of buffy meso-laterad on disk and a similar fleck before ventro-cephalic angle of each lateral lobe, lateral lobes and caudal portion of disk fading to buffy toward margins. Tegmina with anterior field to near apex and narrow portion toward costal margin hyaline, in other portions very weakly and evenly tinted with prouts brown, veins and veinlets prouts brown. Wings hyaline showing the faintest of brown tinting, except distad in anterior field where they are very weakly tinted with prouts brown, veins prouts brown, veinlets very slender, tinged with that color. Body and limbs ochraceous buff, the tibiae and tarsi suffused with tawny. Spines of caudal femora tawny, becoming chestnut brown at apices.

Length of body 32.5, least width of vertex 1.7, length of pronotum 5.9, length of tegmen 38, median width of tegmen 11.8, length of cephalic femur 8.4, length of caudal femur 15.2, length of longest cephalic tibial spine 1.8 mm.

The type is unique.

Gryllacris nigrita new species. Plate XXII, figure 5.

In appearance this insect probably resembles closely *G. fuscinervis* var. *diamantii* Griffini¹⁰⁴ from the Island of Basilan, Philippine Islands. The blackish coloration of the body, except that abdominal tergites are each broadly buffy caudad, and hyaline the tegmina and wings, with veins and veinlets dark, show close agreement with that insect. In structure, however, the present insect differs greatly in the very broad vertex and much more elongate ovipositor, while in size it is larger with tegmina and wings shorter.

TYPE: ♀; Labuan, British North Borneo. [Hebard Collection, Type no. 847.]

Size small, form moderately robust for the genus. Fastigium of vertex very broad, slightly over twice as wide as the proximal antennal joint, surface cephalad flattened, lateral margins rather bluntly rounded; ventrad fusing with frontal fastigium, transverse linear sulcation being indicated only laterad. Face shining but with irregular impressed punctae and lines. Pronotum with cephalic margin of disk broadly convex, cephalic sulcus broad and deep, longitudinal sulcus faintly indicated meso-caudad, caudal sulcus very weak, lateral lobes with V-sulcus broad and very deep; lateral lobes somewhat longer than deep, ventral margin nearly straight, showing faint concavity meso-proximad, ventro-cephalic angle obtuse-angulate but more sharply rounded, humeral sinus small but distinct. Tegmina and wings extending slightly beyond apex of abdomen. Tegmina broadest slightly beyond median point, apex rather broadly rounded and slightly nearer costal than sutural margin. Wings very broad, moderately parachute-like. Ovipositor very elongate, slender, strongly curved at base, thence to apex weakly curved dorsad, the apex faintly enlarged with dorsal margin suddenly oblique to the sharply rounded tip. Subgenital plate flattened, triangular with apex U-emarginate, the lateral apices forming sharp, equilateral, triangular projections. Limbs hairy. Cephalic and median tibiae armed with the usual number of spines, which are exceptionally short. Caudal femora stout and short, ventral margins armed with five and six internal and nine and ten external small, stout spines, which increase in size distad.

Head, pronotum, thorax and limbs shining blackish, showing a chestnut tinge. Head with normally concealed portion of occiput, minute lateral ocelli and a longitudinal sulcus on ventral portion of clypeus, buffy. Antennae blackish brown proximad, thence hazel with principal joints (usually every fourth joint) very slightly darker. Tegmina and wings hyaline, showing an exceedingly faint tint of brown, veins and veinlets prouts brown, the cross-veinlets of the wings showing extremely faint traces of narrow marginal

¹⁰⁴ Monit. Zool. Ital., XXIX, p. 29, (1918).

suffusion. Abdomen shining blackish with caudal portion of each tergite buffy, these bands narrowing strongly distad. Ovipositor blackish proximad, thence becoming chestnut brown with dorsal and ventral margins and apex hazel.

Length of body 26 (somewhat extended), least width of vertex 1.9, length of pronotum 5.7, length of tegmen 22.9, median width of tegmen 8.9, length of cephalic femur 7, length of caudal femur 12.5, length of longest cephalic tibial spine 1, length of ovipositor 19.7 mm.

The type of this obscurely colored species is unique.

Gryllacris signifera (Stoll)

1813. [*Gryllus Tettigonia*] *signifera* Stoll, Natuur. afbeeld. beschr. Spoozen etc., Repr. Spectres, p. 26, pl. XIIa, fig. 50, Register p. 11. [[♀], East Indies.]

Sumatra, (Harrison and Hiller), 1 ♀, [A. N. S. P.]

The ovipositor is of the same general type of that found in *G. nigrita* here described.

Length of body 31, width of vertex 1.7, length of pronotum 7.2, length of tegmen 25.6, greatest width of tegmen 9, length of cephalic femur 10.9, length of caudal femur 18.8, length of longest cephalic tibial spine 2.9, length of ovipositor 17.4 mm.

Gryllacris heros Gerstaecker.

1860. *Gryl[la]critis heros* Gerstaecker, Archiv für Naturgesch., XXVI, p. 257. [♀; Amboina [Island, Moluccas].]

Obi Island, Moluccas, 1 ♂, 1 ♀.

The ultimate tergite of the male before us is large, produced caudad, forming a large, blunt cone, the ventral margin beneath transverse, above that of the subgenital plate.

In the present material of this large and handsome species the tegmina are translucent ochraceous-buff, in the male with proximal veins of marginal field whitish as originally described; in the female these organs are uniform warm buff. The wings are strikingly bicolored, as is normal for the species.

Length of body ♂ 41.5, ♀ 34.5 (abdomen retracted);¹⁰⁵ length of pronotum ♂ 8.2, ♀ 9.3; length of tegmen ♂ 35, ♀ 36; median width of tegmen ♂ 13, ♀ 13.3; length of cephalic femur ♂ 13.3, ♀ 14; length of caudal femur ♂ 21, ♀ 23; length of longest cephalic tibial spine ♂ 4.1, ♀ 4.9; length of ovipositor 29 mm.

Gryllacris punctipennis gemmica new subspecies. Plate XXI, figure 10.

Compared with typical *G. punctipennis* Walker, described from

¹⁰⁵ The original measurements for the type are. Length of body 35.9, length of tegmen 38, length of ovipositor 29.5 mm.

Batjan Island, Celebes,¹⁰⁶ the present insect is found to differ in its smaller size, black and strikingly contrasted face and conspicuous ocelli.

Were *punctipennis* not already known to be subject to great color variation, the striking facial coloration of the present insect would lead us to suppose it to be specifically distinct.

TYPE: ♂; Obi Island, Moluccas. [Hebard Collection, Type no. 850.]

Agrees closely with Griffini's description of the synonymous subsp. *dempwolffi*, differing as follows. Head with occiput, caudal half of genae, vertex to median ocellus and palpi light ochraceous-buff; ocelli washed with old rose; face, cephalic half of genae, mandibles and dorsal portion of clypeus shining blackish brown;¹⁰⁷ ventral portion of clypeus buffy, labrum etruscan red. Antennae buffy, washed with old rose proximad. Pronotum and limbs buffy, washed with old rose. Tegmina transparent, light ochraceous-buff, immaculate. Wings transparent, light ochraceous-buff, with four or five rows of rounded and sharply delimited spots of mummy brown in radiate field and an interrupted, short, submarginal line of the same color. These markings surround the cross-veinlets and reappear as a few scattered flecks in the anterior field.

Length of body 23.7, greatest width of fastigium of vertex 1.1, length of pronotum 4.9, length of tegmen 18.3, greatest width of tegmen 5.1, length of cephalic femur 7, length of caudal femur 12.2, length of longest cephalic tibial spine 1.9 mm.

The type is unique.

Gryllacris annulicornis new species. Plate XXII, figure 6.

Though running in Griffini's key for the Bornean species of *Gryllacris*¹⁰⁸ to section A, the narrow vertex and strikingly marked pronotum and limbs show closer agreement with the Bornean *G. maculipes* subspecies *irregularis* Griffini, than with any other described forms.

Though *irregularis* is apparently subject to considerable color variation, we believe that comparison will show *annulicornis* to be even more widely distinct than we can at present determine from the description of that subspecies.

The sharply and thickly annulate antennae, and ovipositor, which tapers evenly to its apex, constitute striking characters for the present species.

¹⁰⁶ Later very fully diagnosed by Griffini as *G. punctipennis* subspecies *dempwolffi*, which name that author has placed in synonymy under *punctipennis* after examination of Walker's type (*Boll. Lab. Zool. R. Scuola Sup. d'Agr. Portici, III, p. 213, (1909).*)

¹⁰⁷ In this feature only suggesting *G. personata* Serville, described from Java.

¹⁰⁸ Sarawak Mus. Jour., I, No. 2, p. 1, (1912).

TYPE: ♀, Obi Island, Moluccas. [Hebard Collection, Type no. 848.]

Size and form medium for the genus. Fastigium of vertex narrow, appreciably narrower than the proximal antennal joint, surface cephalad concave between the carinate lateral margins; ventrad fusing with frontal fastigium, transverse linear sulcation being indicated only laterad. Face shining, with a few faint impressions. Pronotum with cephalic margin of disk very broadly convex, cephalic sulcus very deep, longitudinal sulcus faintly indicated meso-caudad, caudal sulcus weak, lateral lobes with V-sulcus broad and moderately deep; lateral lobes decidedly longer than deep, ventral margin nearly straight, showing faint concavity ventro-cephalic angle broadly rounded, ventro-caudal angle broadly truncate, humeral sinus almost obsolete. Tegmina and wings extending beyond apex of abdomen. Tegmina broadest meso-distad, the sutural margin obliquely convex from that point to the well rounded apex, situated at the costal margin. Wings not well developed, probably incapable of sustained flight. Ovipositor comparatively short, very slender, curved gently and evenly dorsad to the sharp apex. Subgenital plate scoop-shaped, with apex in caudal aspect U-emarginate and dorso-lateral angles thus formed obtuse and rounded. Limbs elongate. Cephalic and median tibiae armed with the usual number of spines, which are very elongate. Caudal femora comparatively slender, ventral margins armed with (five and thirteen) internal and (ten and twelve) external stout spines, which increase in size distad.

Head vinaceous-rufous; the minute lateral ocellae and large median ocellus light ochraceous-buff, the latter surrounded by a heavy suffusion of blackish brown; margins of antennal scrobes blackish brown; clypeus with buffy medio-longitudinal suture, the lateral portions suffused with mars brown; labrum blackish brown; mandibles vinaceous-rufous, with suffusions of mars brown meso-proximad. Antennae with first joint blackish brown, thence ochraceous-buff with every second or third joint wholly or in part blackish brown, thus showing very numerous, sharply defined but irregularly spaced annuli. Pronotum broadly margined with ochraceous-buff, but with immediate margins blackish brown, a large blackish brown patch covering the greater remaining portion, with an invasion of the marginal ochraceous-tawny cephalad on the disk and ventro-cephalad on the lateral lobes. Tegmina hyaline, showing a very faint tinge of tawny, particularly meso-proximad; veins and veinlets dresden brown, deepening proximad to prouts brown. Wings hyaline, very faintly tinged with brown; veins and veinlets dresden brown, the cross-veinlets slender but conspicuous, though showing no trace of marginal suffusion. Abdomen mikado brown, each tergite heavily marked ventro-laterad with blackish brown, each sternite with a similar dark marking on each side. Ovipositor clay color, shading to cinnamon

distad. Limbs ochraceous-buff, the caudal femora washed laterad with ochraceous-tawny, with a median line of chestnut brown in proximal portion. Cephalic femora with a broad pre-genicular suffusion of chestnut brown, all ventral femoral margins and spines blackish brown. Cephalic tibiae with a short annulus of blackish brown proximad and a similar suffusion distad, median and caudal tibiae with similar proximal annuli. Spines of caudal tibiae blackish brown with heavy flecks of the same at their bases.

Length of body 33 (somewhat extended), least width of vertex 1.1, length of pronotum 6.3, length of tegmen 29, median width of tegmen 11, length of cephalic femur 13.7, length of caudal femur 23.3, length of longest cephalic tibial spine 4.1, length of ovipositor 17.7 mm.

The type of this handsomely marked species is unique.

Gryllacris macroxiphus new species. Plate XXII, figure 7.

We have been unable to find any closely related species among the numerous descriptions of Melanesian and Malayan forms of the genus. Nearest agreement is apparently with the Australian *G. straminea* Brunner, the present insect differing in the dark pronotum, uniformly pale limbs and somewhat larger size. The male differs further from the described male of that insect in having the subgenital plate truncate, not produced.

TYPE: ♂; Obi Island, Moluccas. [Hebard Collection, Type no. 849.]

Size and form medium for the genus. Fastigium of vertex very narrow, slightly over one half width of proximal antennal joint, surface cephalad concave between the carinate lateral margins, ventrad forming with facial fastigium a transverse suture. Face shining, moderately impresso-punctulate and rugulose. Pronotum with cephalic margin of disk very weakly convex, cephalic sulcus very broad and weak, becoming subobsolete dorsad, longitudinal sulcus represented by a fine impressed line meso-caudad, caudal sulci weak, lateral lobes with V-sulcus broad and not very deep; lateral lobes decidedly longer than deep, ventral margin nearly straight, showing faint concavity meso-cephalad, ventro-cephalic angle broadly rounded, ventro-caudal angle rounded and broadly subtruncate, humeral sinus broadly and very weakly concave. Tegmina and wings fully developed, very elongate, extending far beyond apex of abdomen. Tegmina comparatively narrow, rounded distad. Ultimate tergite rounding evenly ventrad, meso-ventrad with a minute, broadly W-shaped area, this laterad with margins carinulate, mesad impressed, its surface somewhat concave; below this area the tergite is armed with two very small teeth, curving dorso-mesad, with apices nearly attingent. Cerci elongate and very slender, between which are flattened plates (the armament of which can not be seen in the single male before us). Subgenital

plate narrowly transverse; free margin transverse, very feebly convex between the widely separated lateral styles. Styles small, moderately stout, cylindro-conical, straight, slightly over twice as long as basal width. Cephalic and median tibiae armed with the usual number of spines, which are very elongate. Caudal femora moderately stout and short, ventral margins armed with (twelve to fourteen) internal and (nine to thirteen) external spines, the proximal of which, where the greater numbers are present, being very small.

ALLOTYPE: ♀; same data as type. [Hebard Collection.]

Agrees with male, except as follows. Size very slightly larger. Ovipositor Copiphoroid, very elongate, straight, tapering at apex to an acute median point. Subgenital plate short, transverse, the lateral margins weakly convergent, rounding into the transverse distal margin, which in caudal aspect shows weak convexity ventrad.

Coloration in general very simple. Head and pronotum mars brown, except as follows; lateral carinae of fastigium of vertex and large median ocellus warm buff, portion of occiput normally concealed, caudal portion of genae, palpi, clypeus and labrum clay color. Antennae clay color, with first joint suffused with tawny. Pronotum almost uniform mars brown, the meso-distal area and meso-cephalic and meso-caudal portions of the lateral lobes very faintly paler. Spines of limbs clay color, those of the ventral femoral margins heavily tipped with mars brown. Ovipositor clay color tinged with ochraceous-tawny, except proximad.

Length of body ♂ 26.5, ♀ 31; least width of vertex ♂ .8, ♀ .9; length of pronotum ♂ 6, ♀ 6.7; length of tegmen ♂ 37.2, ♀ 39.5; length of cephalic femur ♂ 9.8, ♀ 11.2; length of longest cephalic tibial spine ♂ 4, ♀ 4.1; length of caudal femur ♂ 17, ♀ 18.5; length of ovipositor 31.7 mm.

This plainly bicolored insect is known from the described pair.

Gryllacris fumigata Haan.

1842. *L[ocusta] (Gryllacris) fumigata* Haan, Verh. Nat. Geschied. Nederl. overzee. bezitt., Zool., Ins., p. 219. [♂, Java.]

Labuan, British North Borneo, 2 ♀.

These specimens differ from the typical condition in having the ventral margins of all of the femora black. Agreement, in this respect only, is shown with the variety *elegans* Griffini.¹⁰⁹ We do not believe racial differentiation should be recognized, though further material may prove such to be the case.

The pronotum is somewhat paler laterad in the U-shaped depression formed by the sulci. The tegmina are translucent cameo brown, with series of areolae distad toward the lateral margins

¹⁰⁹ Ann. Mus. Nat. Hungarici, IX, p. 179, (1911).

vinaceous pink. The wings are vinaceous pink, each slender cross-veinlet of that color, strongly bordered with mineral red.

Length of body 30 and 36, length of pronotum 7.7 and 7.9, length of tegmen 38.3 and 43, width of tegmen (larger specimen alone spread) 15.8, length of cephalic femur 11 and 10.7, length of caudal femur 19.4 and 19.8, length of ovipositor 21.7 and 22.8 mm.

Paragryllacris griffinii new species. Plate XXI, figure 11.

In the male genitalia this species shows nearest agreement with the Australian *P. shelfordi* Griffini. The subgenital plate, however, differs widely in being shorter, entirely lacking lateral projections and in having the apex minutely triangularly emarginate mesad and obliquely truncate on each side.

The head is pale, but with vertex apparently much as in *shelfordi*. The transverse veinlets of the tegmina are slightly but appreciably darker than the veins, particularly proximad.

TYPE: ♂; Queensland, Australia. [Hebard Collection, Type no. 851.]

Size and form medium. Fastigium of vertex nearly one and one-half times as broad as proximal antennal joint, surface cephalad flattened and finely rugulose between the slender, elevated lateral carinae. Face rather thickly but not deeply impresso-punctulate and rugulose. Pronotum with cephalic margin of disk moderately convex, cephalic sulcus broad but deep, caudal marginal portion of disk slightly raised, with margin itself cingulate; lateral lobes with ventro-cephalic and ventro-caudal angles rather sharply rounded rectangular, ventral margin showing weak convexity. Tegmina and wings fully developed, ample, extending well beyond apex of abdomen. Tegmina with rounded apex slightly nearer costal than sutural margin. Ultimate tergite suddenly obtuse-angulate emarginate meso-caudad, on each side with a small finger directed ventrad and curving inward, above which is a minute node armed with a minute spine, curved meso-ventrad. Within, on the surface of the impressed area there formed, are plates armed ventrad with a spine, curved dorso-laterad, on each side. Cerci moderately elongate and slender. Subgenital plate with lateral margins straight, convergent to near apex, where they are briefly parallel, the apex with a minute angulate emargination, the lateral portions of the apex with distal margins straight, oblique to the median emargination. Spines of cephalic and median femora of the usual number, rather short. Caudal femora with ventral margins armed with (five and six) internal and (four and four) external, small spines.

General coloration cinnamon buff, deepening to tawny on face, clypeus, labrum, mandibles, cephalic tibiae, tarsi and briefly distad on all the femora. Tegmina and wings nearly clear hyaline, veins

and veinlets warm buff, except proximad on the tegmina, where the veinlets are dresden brown in all but the anal field.

Length of body 31.5, width of fastigium of vertex 1.8, length of pronotum 5.8, length of tegmen 40.8, greatest width of tegmen 13, length of cephalic femur 8.2, length of caudal femur 13.8 mm.

The type is unique. We take pleasure in naming this interesting species in honor of Dr. Achille Griffini, specialist on the Grylacrinae, who, we understand, has been obliged to give up active work, due to injuries received as an Officer in the Italian Army during the World War.

Papuogryllacris obiensis new species. Plate XXII, figure 8.

It is interesting to find a Moluccan species of this genus, hitherto known only from New Guinea and the more adjacent islands.

Of the known forms, *P. ligata* subspecies *concoloripes* Griffini,¹¹⁰ appears to be nearest, that insect differing in the more heavily impresso-punctate face, bicolored pronotum and immaculate limbs. The ovipositor of the present insect, very slender beyond base and weakly curved upward, appears to show further differentiation from the type developed in *P. ligata* (Brunner).

TYPE: ♀; Obi Island, Moluccas. [Hebard Collection, Type no. 851.]

Size medium, form moderately robust. Fastigium of vertex moderately broad, but distinctly less than one and one-half times as broad as proximal antennal joint, surface cephalad flattened between the rounded lateral margins, ventrad forming with facial fastigium a conspicuous, transverse, linear suture. Face shining, weakly impresso-punctulate. Pronotum with cephalic margin of disk weakly but distinctly convex, cephalic sulcus broad but deep, as are the V-sulci of the lateral lobes; lateral lobes decidedly longer than deep, ventral margin straight, ventro-cephalic angle somewhat truncate and rounded, ventro-caudal angle rounded and broadly truncate, humeral sinus broadly concave. Tegmina and wings fully developed, extending somewhat beyond apex of abdomen. Tegmina narrowing very gradually from median point, with apex median and rather broadly rounded. Ovipositor elongate and extremely slender, very gently curved dorsad throughout; apical portion not enlarged, the immediate apex sharply rounded. Subgenital plate semicircular, the lateral portions swollen so that the surface is there convex. Cephalic and median tibiae armed with three pairs of moderately elongate spines, not including the small distal pair of spines. Caudal femora very stout and moderately short, ventral margins armed with (fourteen and sixteen) internal and (nine and ten) external spines.

¹¹⁰ Redia, VIII, p. 306, (1912).

Head clay color, the face and vertex tinged with tawny, the ocelli straw yellow. Antennae ochraceous-tawny. Pronotum dark, mummy brown, paling slightly mesad on disk and lateral lobes to mars brown. Tegmina and wings transparent, the veins and veinlets buckthorn brown; tegmina very faintly suffused with buckthorn brown meso-proximad. Limbs immaculate, pale clay color, the spines of the caudal limbs tipped with blackish chestnut-brown. Abdomen clay color, the sternites each with a large patch of chestnut-brown on each side. Ovipositor hazel, becoming clay color proximad.

Length of body 34.5, width of vertex 1.9, length of pronotum 7, length of tegmen 32.5, median width of tegmen 10.7, length of cephalic femur 10, length of caudal femur 18.7, length of longest cephalic tibial spine 2.2, length of ovipositor 24 mm.

The type is unique.

STENOPELMATINAE

Bugajus couloni (Saussure) Plate XXI, figure 12.

1861. *Anostostoma couloni* Saussure, Ann. Soc. Ent. France, (4), I, p. 490, pl. XII, figs. 1, 1a to 1c. [♀, Java.]

Obi Island, Moluccas, 1 ♂.

The subgenital plate of the previously unknown male of this extraordinary insect is here figured. The supra-anal plate is vertical and almost wholly concealed.

In the present specimen the tegmina and anterior field of the wings are suffused with buckthorn brown to near the free margins.

Length of body 58, width of head 10.8, least (dorsal) width of vertex 1, greatest (ventral) width of vertex 1.7, length of pronotum 9.3; length of tegmen 40, greatest width of tegmen 19.8, length of cephalic femur 13.3, length of caudal femur 22.8 mm.

RHAPHIDOPHORINAE

Rhaphidophora gracilis Brunner.

1888. *Rhaphidophora gracilis* Brunner, Verh. Zool.-bot. Ges. Wien, XXXVIII, p. 297. [♂, ♀; Guimid Island, Samar, Philippine Islands.]

Philippine Islands, 1 ♀.

This specimen is uniformly colored, immaculate, the limbs becoming paler distad.

The fastigium of the vertex has the sulcus deepened into a chamber, so that the fastigium forms a conchate projection. The caudal femora are armed on the ventro-internal margin with a single minute, median spine. The caudal metatarsus almost equals the longest caudal tibial spur in length and is armed dorsad with (one and two) minute, distal spines. The female subgenital plate is, at its apex, produced in a very slender acute-angulate projection.

Length of body 29 (shortened), length of pronotum 10.5, length of caudal femur 32.6, greatest width of caudal femur 7.8, length of caudal tibia 32, length of caudal tarsus 13, length of cercus 17.8, length of ovipositor 19.5 mm.

Rhaphidophora deusta Brunner.

1888. *Rhaphidophora deusta* Brunner, Verh. Zool.-bot. Ges. Wien, XXXVIII, p. 298. [σ , East India.]

Assam, 1 σ

This specimen agrees fully with Brunner's short description. The ventral margins of the caudal femora are unarmed.

Length of body 22.7 (shortened) length of pronotum 8, length of caudal femur 23.5, greatest width of caudal femur 6.2, length of caudal tibia 21, length of caudal tarsus 8.9, length of cercus 8.7 mm.

Rhaphidophora baeri Bolivar.

1890. *Raphidophora baeri* Bolivar, Anal. Soc. Espan. Hist. Nat., XIX, p. 328. [φ ; Manila, Philippine Islands.]

Surigao, Mindanao, Philippine Islands, (from C. F. Baker), 1 σ .

We make this assignment with some uncertainty, as Bolivar does not mention any limb maculation for *baeri*. In the present specimen the limbs are pale brown, the cephalic and median femora suffused proximad and with a broad suffused annulus distad of dark brown. The caudal femora are heavily suffused with dark brown, so that everywhere except proximo-internally, only streaks and blotches of the paler coloration occur. The ventro-internal margins of the caudal femora are armed mesad each with two minute spines. The longest spur of the caudal tibiae about equals in length the caudal metatarsus, the latter being armed with (five) minute spines dorsad.

Length of body 27.5, length of pronotum 8.5, length of caudal femur 26.3, greatest width of caudal femur 7, length of caudal tibia 25.8, length of caudal tarsus 11, length of cercus 9.8 mm.

The geographical distribution of the species here considered, is shown by the following list and index.

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PHANEROPTERINAE				
<i>Elimaea insignis</i> (Walker)	122	Assam	—	—
<i>Elimaea annamensis</i> new species	122	*	—	—
<i>Elimaea lamellipes</i> new species	124	*	—	—
<i>Elimaea bakeri</i> new species	125	*	—	—
<i>Elimaea filicauda</i> new species	127	*	—	—
<i>Elimaea parumpunctata</i> (Serville)	129	*	—	—
<i>Elimaea roseo-alata</i> Brunner	130	*	—	—

NAME OF SPECIES.	PAGE.	MAL-AYAN	MELAN-ESIAN.	AUSTRAL-IAN.
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<i>Mirollia cerciata</i> new species	131	*	—	—
<i>Ducetia thymifolia</i> (Fabricius)	133	*	*	*
<i>Prohimerta annamensis</i> new species	134	*	—	—
<i>Letana brunneri</i> (Krausze)	135	*	—	—
<i>Scambophyllum albomarginatum</i> new species	136	*	—	—
<i>Scambophyllum sanguineolentum</i> (Westwood)	137	*	—	—
<i>Scambophyllum sandakanae</i> new species	137	*	—	—
<i>Acrypeza reticulata</i> Guerin	139	—	—	*
<i>Leptodera ornatipennis</i> Serville	139	*	—	—
<i>Ancylecha fenestrata</i> (Fabricius)	139	*	—	—
<i>Phygela haani</i> Stål	140	*	—	—
<i>Arnobia pilipes</i> (Haan)	140	*	—	—
<i>Tapiena cerciata</i> new species	140	*	—	—
<i>Casigneta cochleata</i> Brunner	142	—	*	—
<i>Casigneta lamellosa</i> Brunner	142	—	*	—
<i>Casigneta pellucida</i> Brunner	142	*	—	—
<i>Elbenia tenera</i> Brunner	143	*	—	—
<i>Elbenia nigro-signata</i> Stål	143	*	—	—
<i>Elbenia makilingae</i> new species	143	*	—	—
<i>Elbenia serraticauda</i> new species	144	*	—	—
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<i>Phaula rugulosa</i> Brunner	146	*	—	—
<i>Phaula phaneropteroidea</i> Brunner	147	*	—	—
<i>Phaula luzonica</i> new species	147	*	—	—
<i>Phaula galeata</i> new species	149	*	—	—
<i>Stictophaulia bakeri</i> new species	150	*	—	—
<i>Stictophaulia quadridens</i> new species	152	*	—	—
<i>Stictophaulia micra</i> new species	153	*	—	—
<i>Psyra brunneri</i> Karny	154	—	*	—
<i>Psyra melanonota</i> Stål	154	*	*	—
<i>Pseudopsyrta mirabilis</i> new species	155	*	—	—
<i>Holochlora venosa</i> Stål	156	*	—	—
<i>Holochlora mindanao</i> new species	156	*	—	—
<i>Holochlora signata</i> Brunner	157	*	—	—
<i>Holochlora fusco-spinosa</i> Brunner	158	*	—	—
<i>Holochlora maxima</i> new species	158	*	—	—
<i>Holochlora javanica</i> Brunner	159	*	—	—
<i>Eulophyllum thaumasiun</i> new species	160	*	—	—
<i>Sympaestria lampra</i> new species	161	*	—	—
<i>Dysmorphia obesa</i> Brunner	163	*	—	—
<i>Liotrachela cryptisema</i> new species	164	*	—	—
<i>Liotrachela minuta</i> Brunner	165	*	—	—
<i>Liotrachela iliganae</i> new species	165	*	—	—
<i>Diastella maculata</i> new species	169	—	*	—
<i>Paracaedicia serrata</i> Brunner	170	—	*	—
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NAME OF SPECIES.	PAGE.	MAL- AYAN.	MELAN- ESIAN.	AUSTRAL- IAN.
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<i>Mecopoda elongata</i> (Linnaeus)	182	*	*	—
<i>Eumecopoda reducta</i> new species	183	*	—	—
<i>Eumecopoda cyrtoscelis</i> (Karsch)	184	—	*	—
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<i>Cleandrus fortis</i> (Walker)	189	*	*?	—
<i>Cleandrus dyaka</i> new species	190	*	—	—
<i>Cleandrus titan</i> (White)	191	Assam, Burma	—	—
<i>Cleandrus colosseus</i> new species	192	*	—	—
<i>Onomarchus leuconotus</i> (Serville)	193	*	—	—
<i>Hapalophyllum vrazi</i> (Bolivar)	194	*	—	—
<i>Temnophyllum speciosus</i> Brunner	194	*	—	—
<i>Promeca unicolor</i> Brunner	195	*	—	—
<i>Promeca quadripunctata</i> Brunner	195	*	—	—
<i>Phyllomimus bakeri</i> Karny	196	*	—	—
<i>Phyllomimus detersus</i> (Walker)	196	*	—	—
<i>Phyllomimus ampullaceus</i> (Haan)	198	*	—	—
<i>Phyllomimus tonkinae</i> new species	198	Tonkin	—	—
<i>Phyllomimus inquinatus</i> Brunner	199	*	—	—
<i>Phyllozelus abbotti</i> new species	200	*	—	—
<i>Gonyatopus gemmiculus</i> new species	201	*	—	—
<i>Aprion atroterminatus</i> (Brunner)	203	*	—	—
<i>Despoina superba</i> Brunner	203	*	—	—
<i>Despoina spinosa</i> Brunner	204	*	—	—
<i>Tympanoptera griolleti</i> P. and S.	204	—	*	—
<i>Togona philippina</i> new species	205	*	—	—
<i>Morsimus albomarginatus</i> new species	206	*	—	—
<i>Morsimus serraticollis</i> Bolivar	208	—	*	—
<i>Chondroderella sexguttata</i> new species	209	*	—	—
<i>Sathrophyllia torrida</i> Stål	210	Burma	—	—
<i>Sathrophyllia marmorata</i> Stål	210	Burma	—	—
<i>Olcinia erosifolia</i> Stål	211	*	—	—
<i>Sanaa imperialis</i> (White)	211	Assam	—	—
<i>Typhoptera staudingeri</i> (Brunner)	211	*	—	—
<i>Callimenellus fumidus</i> Walker	212	Tonkin	—	—

AGRAECIINAE

<i>Eppioides malaya</i> new species	213	*	—	—
<i>Eppioides bicolor</i> new species	214	*	—	—
<i>Oxystethus dyaka</i> new species	215	*	—	—
<i>Oxystethus intermedius</i> Redtenbacher	216	*	—	—
<i>Oxystethus brevipennis</i> Redtenbacher	217	*	—	—
<i>Oxylakis punctipennis</i> Redtenbacher	217	*	—	—
<i>Anthracites major</i> new species	217	*	—	—
<i>Anthracites zebra</i> new species	218	*	—	—
<i>Anthracites apoensis</i> new species	220	*	—	—
<i>Nicsara bifasciata</i> (Redtenbacher)	221	—	—	*
<i>Nicsara taylori</i> new species	222	*	—	—

NAME OF SPECIES.	PAGE.	MAL-AYAN.	MELAN-ESIAN.	AUSTRALIAN.
<i>Nicsara philippina</i> new species	223	*	—	—
<i>Nicsara thoracica</i> (Dohrn)	225	—	*	—
<i>Nicsara bimaculata</i> (Redtenbacher)	225	—	*	—
<i>Rhytidogyne griffini</i> Karny	225	Annam	—	—
<i>Dicranocercus zamboangae</i> new species	226	*	—	—
<i>Macroxyphus vaginatus</i> Pictet	227	*	—	—
<i>Macroxyphus megapterus</i> Brongniart	227	*	—	—
<i>Acanthocoryphus mindanensis</i> new species	227	*	—	—
<i>Salomona nigripes</i> new species	229	—	*	—
<i>Salomona coriacea</i> Redtenbacher	230	—	*	—
<i>Salomona conspersa</i> Stål	231	*	—	—
<i>Salomona maculifrons</i> Stål	231	*	—	—
<i>Salomona guamensis</i> new species	232	Guam	—	—
<i>Salomona lita</i> new species	233	—	*	—
<i>Salomona ornata</i> Brunner	234	—	*	—
<i>Salomona lobaspoides</i> Karny	235	—	*	—

COPIPHORINAE

<i>Lesina ensifer</i> (Brullé)	235	*	—	—
<i>Xestophrys javanicus</i> Redtenbacher	236	*	—	—
<i>Pyrgocorpha philippina</i> new species	236	*	—	—
<i>Euconocephalus indicus</i> (Redtenbacher)	238	*	—	—
<i>Euconocephalus picteti</i> (Redtenbacher)	238	*	—	—
<i>Euconocephalus varius</i> (Walker)	238	*	—	—
<i>Euconocephalus pallidus</i> (Redtenbacher)	239	*	—	—
<i>Euconocephalus nasutus</i> (Thunberg)	240	*	—	—
<i>Euconocephalus longiceps</i> (Redtenbacher)	241	—	*	—
<i>Euconocephalus gracilis</i> (Redtenbacher)	241	*	—	—
<i>Euconocephalus scobrinus</i> (Bolivar)	242	*	—	—

CONOCEPHALINAE

<i>Conocephalus modestus</i> (Redtenbacher)	243	—	*?	*
<i>Conocephalus javanicus</i> (Redtenbacher)	243	*	—	—
<i>Conocephalus affinis</i> (Redtenbacher)	243	*	*?	—
<i>Conocephalus maculatus</i> (Le Gouillou)	243	*	*	—
<i>Conocephalus laetus</i> (Redtenbacher)	244	*	*	*
<i>Conocephalus borneensis</i> (Redtenbacher)	245	*	—	—
<i>Conocephalus longipennis</i> (Haan)	245	*	—	—
<i>Conocephalus melas</i> (Haan)	247	*	—	—
<i>Conocephalus formosus</i> (Redtenbacher)	247	*	—	—
<i>Conocephalus vestitus</i> (Redtenbacher)	247	*	—	—

LISTROSCELINAE

<i>Alloteratura penangica</i> new species	250	*	—	—
<i>Alloteratura bakeri</i> new species	251	*	—	—
<i>Alloteratura xiphidiopsis</i> (Karny)	252	*	—	—
<i>Alloteratura sandakanae</i> new species	253	*	—	—
<i>Xiphidiopsis dicera</i> new species	254	*	—	—
<i>Xiphidiopsis cryptosticta</i> new species	256	*	—	—
<i>Xiphidiopsis drepanophora</i> new species	257	*	—	—
<i>Xiphidiopsis gemmula</i> new species	259	*	—	—
<i>Xiphidiopsis aglaia</i> new species	261	*	—	—
<i>Euanisous teuthroides</i> (Bolivar)	262	*	—	—
<i>Phlugis thaumasia</i> new species	263	*	—	—
<i>Phisis obiensis</i> new species	264	—	*	—
<i>Phisis philippinarum</i> Karny	265	*	—	—
<i>Phisis pectinata</i> (Guerin)	266	—	*	—

NAME OF SPECIES.	PAGE.	MAL- AYAN.	MELAN- ESIAN.	AUSTRAL- IAN.
<i>Phisis acutipennis</i> Carl	266	*	—	—
<i>Lipotactes maculatus</i> new species	267	*	—	—
<i>Hexacentrus unicolor</i> Serville	269	*	*	—
<i>Hexacentrus mundus</i> (Walker)	269	*	*	—
<i>Euhexacentrus annulicornis</i> (Stål)	271	*	—	—
SAGINAE				
<i>Terpandrus splendidus</i> new species	272	—	—	*
<i>Pachysagella maculata</i> new species	274	—	—	*
GRYLLACRINAE				
<i>Gryllacris arctata</i> Walker	276	*	—	—
<i>Gryllacris vitrea</i> new species	276	*	—	—
<i>Gryllacris nigrita</i> new species	278	*	—	—
<i>Gryllacris signifera</i> (Stoll)	279	*	—	—
<i>Gryllacris heros</i> Gerstaecker	279	—	*	—
<i>Gryllacris punctipennis gemmica</i> new subsp.	279	—	*	—
<i>Gryllacris annulicornis</i> new species	280	—	*	—
<i>Gryllacris macroxiphus</i> new species	282	—	*	—
<i>Gryllacris fumigata</i> Haan	283	*	—	—
<i>Paragryllacris griffini</i> new species	284	—	—	*
<i>Papuogryllacris obiensis</i> new species	285	—	*	—
STENOPELMATINAE				
<i>Bugajus couloni</i> (Saussure)	286	*	*	—
RHAPHIDOPHORINAE				
<i>Rhaphidophora gracilis</i> Brunner	286	*	—	—
<i>Rhaphidophora deusta</i> Brunner	287	Assam	—	—
<i>Rhaphidophora baeri</i> Bolivar	287	*	—	—

EXPLANATION OF PLATES XI TO XXII.

- PLATE XI.**—Fig. 1. *Elimaea annamensis* new species. Male. *Type*. Phuc-Son, Annam. Dorsal view of supra-anal plate. (Greatly enlarged.)
 Fig. 2. *Elimaea annamensis* new species. Male. *Type*. Phuc-Son, Annam. Dorsal view of cercus. (Same scale as figure 1.)
 Fig. 3. *Elimaea lamellipes* new species. Female. *Type*. Labuan, British North Borneo. Dorsal view of supra-anal plate. (Same scale as figure 1.)
 Fig. 4. *Elimaea bakeri* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Dorsal view of supra-anal plate. (Same scale as figure 1.)
 Fig. 5. *Elimaea bakeri* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Dorsal view of cercus. (Same scale as figure 1.)
 Fig. 6. *Elimaea bakeri* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Lateral view of distal portion of abdomen. ($\times 6$.)
 Fig. 7. *Elimaea filicauda* new species. Male. *Type*. Los Baños, Luzon, Philippine Islands. Lateral view of distal portion of abdomen. ($\times 6$.)
 Fig. 8. *Elimaea parumpunctata* (Serville). Male. Batu Sangkar, Sumatra. Dorsal view of cercus. (Same scale as figure 1.)
 Fig. 9. *Elimaea parumpunctata* (Serville). Male. Batu Sangkar, Sumatra. Ventral outline of subgenital plate. (Greatly enlarged.)
 Fig. 10. *Elimaea roseo-alata* Brunner. Male. Goenong Soegi, Sumatra. Dorsal view of cercus. (Same scale as figure 1.)
 Fig. 11. *Elimaea roseo-alata* Brunner. Male. Goenong Soegi, Sumatra. Ventral outline of subgenital plate. (Same scale as figure 9.)
 Fig. 12. *Mirollia aeta* new species. Male. *Type*. Dapitan, Mindanao, Philippine Islands. Dorsal view of cercus. (Greatly enlarged.)
 Fig. 13. *Mirollia aeta* new species. Male. *Type*. Dapitan, Mindanao, Philippine Islands. Ventral outline of produced portion of subgenital plate. (Greatly enlarged.)
 Fig. 14. *Mirollia cerciata* new species. Male. *Type*. Labuan, British North Borneo. Dorsal view of cercus. (Same scale as figure 12.)
 Fig. 15. *Mirollia cerciata* new species. Male. *Type*. Labuan, British North Borneo. Ventral outline of produced portion of subgenital plate. (Same scale as figure 13.)
 Fig. 16. *Mirollia cerciata* new species. Female. *Allotype*. Sandakan, British North Borneo. Lateral view of ovipositor and subgenital plate. ($\times 6$.)
 Fig. 17. *Prohimerta annamensis* new species. Male. *Type*. Phuc-Son, Annam. Lateral outline. ($\times 1\frac{1}{2}$.)
 Fig. 18. *Prohimerta annamensis* new species. Male. *Type*. Phuc-Son, Annam. Dorsal view of cercus. (Same scale as figure 1.)
 Fig. 19. *Prohimerta annamensis* new species. Male. *Type*. Phuc-Son, Annam. Ventral outline of subgenital plate. (Same scale as figure 1.)
 Fig. 20. *Ancylecha fenestrata* (Fabricius). Male. Sandakan, British North Borneo. Dorsal view of cercus. ($\times 5\frac{1}{2}$.)
 Fig. 21. *Phygela haani* Stål. Male. Singapore, British Straits Settlements. Dorsal view of cercus. (Greatly enlarged.)
 Fig. 22. *Phygela haani* Stål. Male. Singapore, British Straits Settlements. Ventral outline of subgenital plate. (Same scale as figure 21.)
 Fig. 23. *Tapiena cerciata* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Lateral view of cercus. ($\times 5$.)
 Fig. 24. *Tapiena cerciata* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Ventral outline of subgenital plate. ($\times 5$.)

- PLATE XII.**—Fig. 1. *Scambophyllum albomarginatum* new species. Female. *Type*. Labuan, British North Borneo. Dorsal view. ($\times 1\frac{1}{2}$.)
 Fig. 2. *Scambophyllum sandakanae* new species. Female. *Type*. Sandakan, British North Borneo. Dorsal view. ($\times 1\frac{1}{2}$.)
 Fig. 3. *Scambophyllum sandakanae* new species. Male. *Allotype*. Sandakan, British North Borneo. Dorsal outline. ($\times 1\frac{1}{2}$.)

- Fig. 4. *Scambophyllum sandakenae* new species. Male. *Allotype*. Sandakan, British North Borneo. Dorsal view of cercus. (Greatly enlarged.)
 Fig. 5. *Holochlora maxima* new species. Female. *Type*. Surigao, Mindanao, Philippine Islands. Lateral view. (Natural size.)
 Fig. 6. *Eulophophyllum thaumasium* new species. Female. *Type*. Labuan, British North Borneo. Lateral view. ($\times 1\frac{1}{2}$.)
 Fig. 7. *Eulophophyllum thaumasium* new species. Female. *Type*. Labuan, British North Borneo. Dorsal view. ($\times 1\frac{1}{2}$.)

PLATE XIII.—Fig. 1. *Elbenia makilingae* new species. Female. *Type*. Mount Makiling, Luzon, Philippine Islands. Lateral view of ovipositor and subgenital plate. ($\times 3$.)

Fig. 2. *Elbenia makilingae* new species. Female. *Type*. Mount Makiling, Luzon, Philippine Islands. Ventral view of subgenital plate. (Greatly enlarged.)

Fig. 3. *Elbenia serraticauda* new species. Male. *Type*. Puerto Princesa, Palawan, Philippine Islands. Caudal view of distal portion of abdomen. ($\times 5$.)

Fig. 4. *Elbenia serraticauda* new species. Male. *Type*. Puerto Princesa, Palawan, Philippine Islands. Lateral view of distal portion of abdomen. ($\times 5$.)

Fig. 5. *Phaula luzonica* new species. Male. *Type*. Baguio, Luzon, Philippine Islands. Dorsal view of stridulating field of sinistral tegmen. (Greatly enlarged.)

Fig. 6. *Phaula luzonica* new species. Male. *Type*. Baguio, Luzon, Philippine Islands. Lateral view of distal portion of abdomen. (Greatly enlarged.)

Fig. 7. *Phaula luzonica* new species. Female. *Allotype*. Baguio, Luzon, Philippine Islands. Lateral view of ovipositor and subgenital plate. ($\times 4$.)

Fig. 8. *Phaula galeata* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Lateral view of distal portion of abdomen. (Same scale as figure 6.)

Fig. 9. *Phaula galeata* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Dorsal view of cercus. (Greatly enlarged.)

Fig. 10. *Stictopaula bakeri* new species. Male. *Type*. Singapore, British Straits Settlements. Ventral outline of apex of subgenital plate. (Greatly enlarged.)

Fig. 11. *Stictopaula bakeri* new species. Male. *Type*. Singapore, British Straits Settlements. Dorsal view of stridulating field of sinistral tegmen. (Same scale as figure 5.)

Fig. 12. *Stictopaula bakeri* new species. Male. *Type*. Singapore, British Straits Settlements. Lateral view of sinistral tegmen. ($\times 1\frac{3}{4}$.)

Fig. 13. *Stictopaula quadridenta* new species. Male. *Type*. Singapore, British Straits Settlements. Ventral outline of apex of subgenital plate. (Same scale as figure 10.)

Fig. 14. *Stictopaula micra* new species. Female. *Type*. Singapore, British Straits Settlements. Lateral view of sinistral tegmen. ($\times 1\frac{3}{4}$.)

Fig. 15. *Stictopaula micra* new species. Female. *Type*. Singapore, British Straits Settlements. Lateral view of ovipositor and subgenital plate. ($\times 4$.)

Fig. 16. *Pseudopsyla mirabilis* new species. Male. *Type*. Island of Penang, Malay Peninsula. Lateral view of distal portion of abdomen. ($\times 3\frac{1}{2}$.)

Fig. 17. *Pseudopsyla mirabilis* new species. Male. *Type*. Island of Penang, Malay Peninsula. Ventral outline of subgenital plate. ($\times 3\frac{1}{2}$.)

Fig. 18. *Holochlora venosa* Stål. Male. Singapore, British Straits Settlements. Lateral view of apex of abdomen. (Greatly enlarged.)

Fig. 19. *Holochlora japonica* Brunner. Male. Shanghai, Kiang-Su, China. Lateral view of apex of abdomen. (Same scale as figure 18.)

Fig. 20. *Holochlora mindanao* new species. Male. *Type*. Davao, Min-

- danao, Philippine Islands. Lateral view of apex of abdomen. (Same scale as figure 18.)
- Fig. 21. *Holochlora mindanao* new species. Male. *Type*. Davao, Mindanao, Philippine Islands. Ventral outline of subgenital plate. (Same scale as figure 18.)
- Fig. 22. *Holochlora mindanao* new species. Female. *Allotype*. Zamboanga, Mindanao, Philippine Islands. Ventral outline of subgenital plate. (Greatly enlarged.)
- Fig. 23. *Holochlora signata* Brunner. Female. Goenong Soegi, Sumatra. Ventral outline of subgenital plate. (Same scale as figure 22.)

- PLATE XIV.**—Fig. 1. *Holochlora fusco-spinosa* Brunner. Male. Mount Makiling, Luzon, Philippine Islands. Lateral view of apex of abdomen. (Greatly enlarged, same scale as Plate XIII, figure 18.)
- Fig. 2. *Holochlora fusco-spinosa* Brunner. Female. Laguna Province, Luzon, Philippine Islands. Ventral outline of subgenital plate. (Same scale as figure 1.)
- Fig. 3. *Holochlora maxima* new species. Female. *Type*. Surigao, Mindanao, Philippine Islands. Ventral outline of subgenital plate. (Same scale as figure 1.)
- Fig. 4. *Holochlora javanica* Brunner. Female. Sandakan, British North Borneo. Ventral outline of subgenital plate. (Same scale as figure 1.)
- Fig. 5. *Sympaestria lampra* new species. Female. *Type*. Labuan, British North Borneo. Lateral outline of sinistral tegmen, showing only veins which are distinct, these very heavy and conspicuous. (Natural size.)
- Fig. 6. *Sympaestria lampra* new species. Male. *Allotype*. Labuan, British North Borneo. Lateral outline of sinistral tegmen, showing only veins which are distinct, these very heavy and conspicuous.¹¹¹ (Natural size.)
- Fig. 7. *Liotrachela cryptisema* new species. Female. *Type*. Davao, Mindanao, Philippine Islands. Lateral view of ovipositor and subgenital plate. ($\times 4$.)
- Fig. 8. *Liotrachela iliganae* new species. Male. *Type*. Iligan, Mindanao, Philippine Islands. Lateral view of distal portion of abdomen. ($\times 4\frac{1}{2}$.)
- Fig. 9. *Liotrachela iliganae* new species. Male. *Type*. Iligan, Mindanao, Philippine Islands. Dorsal view of cercus. (Greatly enlarged.)
- Fig. 10. *Liotrachela iliganae* new species. Male. *Type*. Iligan, Mindanao, Philippine Islands. Ventral outline of subgenital plate. ($\times 4\frac{1}{2}$.)
- Fig. 11. *Caedicia gloriosa* new species. Male. *Type*. Townsville, Queensland, Australia. Lateral outline. ($\times 1\frac{1}{2}$.)
- Fig. 12. *Caedicia gloriosa* new species. Male. *Type*. Townsville, Queensland, Australia. Dorsal view of cercus. (Greatly enlarged.)
- Fig. 13. *Platycaedicia obiensis* new species. Female. *Type*. Obi Island, Moluccas. Lateral outline. ($\times 1\frac{1}{2}$.)
- Fig. 14. *Platycaedicia obiensis* new species. Female. *Type*. Obi Island, Moluccas. Lateral view of ovipositor and subgenital plate. (Greatly enlarged.)
- Fig. 15. *Chloracantha lampra* new species. Male. *Type*. Townsville, Queensland, Australia. Lateral view of distal portion of abdomen. (Greatly enlarged.)
- Fig. 16. *Chloracantha lampra* new species. Male. *Type*. Townsville, Queensland, Australia. Ventral outline of subgenital plate. (Same scale as figure 15.)
- Fig. 17. *Mossula kiriwina* new species. Male. *Type*. Kiriwina, Trobriand Island, Melanesia. Dorsal view of cercus. (Greatly enlarged.)
- Fig. 18. *Mossula kiriwina* new species. Male. *Type*. Kiriwina, Trobriand Island, Melanesia. Ventral outline of subgenital plate. (Greatly enlarged, but not as much so as figure 17.)

¹¹¹ Venational abnormality is here indicated by the proximal fork of the first branch of the median vein, running directly into the ulnar vein.

- PLATE XV.—Fig. 1. *Diastella maculata* new species. Female. *Type*. Fakfak, Dutch New Guinea. Lateral view. ($\times 2$.)
 Fig. 2. *Chloracantha lampra* new species. Male. *Type*. Townsville, Queensland, Australia. Dorsal view. ($\times 2$.)
 Fig. 3. *Eumecopoda cyrtoscelis* (Karsch). Male. Setekwa River, Dutch New Guinea. Lateral view of caudal femur. (Natural size.)
 Fig. 4. *Togona philippina* new species. Female. *Type*. Surigao, Mindanao, Philippine Islands. Lateral view. ($\times 1\frac{1}{2}$.)
 Fig. 5. *Morsimus albomarginatus* new species. Female. *Type*. Labuan, British North Borneo. Lateral view. ($\times 1\frac{1}{2}$.)
 Fig. 6. *Chondroderella sexguttata* new species. Male. *Type*. Singapore, British Straits Settlements. Lateral view. ($\times 1\frac{1}{2}$.)
 Fig. 7. *Nicsara taylori* new species. Female. *Type*. Polillo Island, Luzon, Philippine Islands. Dorsal view of pronotum. ($\times 2\frac{1}{2}$.)
 Fig. 8. *Nicsara philippina* new species. Male. *Type*. Mount Makiling, Luzon, Philippine Islands. Dorsal view of pronotum. ($\times 2\frac{1}{2}$.)
 Fig. 9. *Nicsara thoracica* (Dohrn). Male. Obi Island, Moluccas. Dorsal view of pronotum. ($\times 2\frac{1}{2}$.)
 Fig. 10. *Xiphidiopsis gemmifera* new species. Male. *Type*. Surigao, Mindanao, Philippine Islands. Dorsal view of pronotum. ($\times 7\frac{1}{2}$.)
 Fig. 11. *Xiphidiopsis aglaia* new species. Male. *Type*. Island of Basilan, Zamboanga Province, Philippine Islands. Dorsal view of pronotum. ($\times 7\frac{1}{2}$.)
 Fig. 12. *Lipotactes maculatus* new species. Female. *Type*. Singapore, British Straits Settlements. Lateral view. ($\times 3\frac{1}{2}$.)

- PLATE XVI.—Fig. 1. *Paradiaphlebus notatus* (Brunner). Female. Obi Island, Moluccas. Ventral outline of subgenital plate. (Much enlarged.)
 Fig. 2. *Segestes frater* new species. Female. *Type*. Obi Island, Moluccas. Lateral outline. (Natural size.)
 Fig. 3. *Segestidea soror* new species. Female. *Type*. Obi Island, Moluccas. Lateral outline. (Natural size.)
 Fig. 4. *Segestidea soror* new species. Male. *Allotype*. Obi Island, Moluccas. Ventral outline of subgenital plate. (Much enlarged.)
 Fig. 5. *Characta labuanae* new species. Female. *Type*. Labuan, British North Borneo. Lateral outline. (Natural size.)
 Fig. 6. *Eumecopoda reducta* new species. Male. *Type*. Butuan, Mindanao, Philippine Islands. Lateral outline. (Natural size.)
 Fig. 7. *Eumecopoda cyrtoscelis* (Karsch). Male. Setekwa River, Dutch New Guinea. Ventral outline of subgenital plate. (Much enlarged.)
 Fig. 8. *Eumecopoda moluccarum* (Griffini). Male. Obi Island, Moluccas. Ventral outline of subgenital plate. (Much enlarged.)
 Fig. 9. *Eumecopoda moluccarum* (Griffini). Female. Obi Island, Moluccas. Lateral outline. (Natural size.)
 Fig. 10. *Cleandrus dyaka* new species. Male. *Type*. Sandakan, British North Borneo. Lateral outline of caudal femur. ($\times 1\frac{1}{2}$.)
 Fig. 11. *Cleandrus dyaka* new species. Male. *Type*. Sandakan, British North Borneo. Lateral outline of caudal tibia. ($\times 1\frac{1}{2}$.)
 Fig. 12. *Cleandrus colosseus* new species. Male. *Type*. Sandakan, British North Borneo. Dorsal view of tegmen. ($\frac{7}{10}$ natural size.)
 Fig. 13. *Cleandrus colosseus* new species. Male. *Type*. Sandakan, British North Borneo. Lateral outline of caudal femur. ($\times 1\frac{1}{2}$)

- PLATE XVII.—Fig. 1. *Temnophyllus speciosus* Brunner. Male. Labuan, British North Borneo. Dorsal view of tegmen. (Natural size.)
 Fig. 2. *Phyllominus bakeri* Karny. Female. Los Baños, Luzon, Philippine Islands. Lateral view of ovipositor. ($\times 1\frac{1}{2}$.)
 Fig. 3. *Phyllominus detersus* (Walker). Female. Mount Makiling, Luzon, Philippine Islands. Lateral view of ovipositor. ($\times 1\frac{1}{2}$.)
 Fig. 4. *Phyllominus tonkinae* new species. Male. *Type*. Than-Moi, Tonkin. Dorsal view of tegmen. ($\times 1\frac{1}{2}$.)

- Fig. 5. *Gonyatopus gemmulus* new species. Male. *Type*. Labuan, British North Borneo. Dorsal view of tegmen. ($\times 1\frac{1}{2}$.)
- Fig. 6. *Gonyatopus gemmulus* new species. Male. *Type*. Labuan, British North Borneo. Lateral view of cephalic coxal spine. (Greatly enlarged.)
- Fig. 7. *Gonyatopus gemmulus* new species. Male. *Type*. Labuan, British North Borneo. Ventral view of subgenital plate and styles. (Greatly enlarged.)
- Fig. 8. *Morsimus albomarginatus* new species. Female. *Type*. Labuan, British North Borneo. Lateral view of ovipositor. ($\times 1\frac{1}{2}$.)
- Fig. 9. *Morsimus albomarginatus* new species. Female. *Type*. Labuan, British North Borneo. Compound spinula distad on ventro-external margin of caudal femur. (Greatly enlarged.)
- Fig. 10. *Morsimus albomarginatus* new species. Female. *Type*. Labuan, British North Borneo. Compound spinula on dorsal margin of caudal tibia. (Greatly enlarged.)
- Fig. 11. *Morsimus albomarginatus* new species. Female. *Type*. Labuan, British North Borneo. Microscopic specialization in place of spinulae on ventral margin of caudal tibia. (Greatly enlarged.)
- Fig. 12. *Olcinia erosifolia* Stål. Male. Labuan, British North Borneo. Dorsal outline of cercus. (Much enlarged.)
- Fig. 13. *Eppioides malaya* new species. Female. *Type*. Labuan, British North Borneo. Lateral outline of pronotum. ($\times 2\frac{1}{2}$.)
- Fig. 14. *Eppioides malaya* new species. Female. *Type*. Labuan, British North Borneo. Lateral outline of tegmen. ($\times 1\frac{1}{4}$.)
- Fig. 15. *Eppioides bicolor* new species. Female. *Type*. Jelabu, British Straits Settlements. Dorsal view of fastigium of vertex. (Much enlarged.)
- Fig. 16. *Eppioides bicolor* new species. Female. *Type*. Jelabu, British Straits Settlements. Lateral outline of pronotum. ($\times 2\frac{1}{2}$.)
- Fig. 17. *Eppioides bicolor* new species. Female. *Type*. Jelabu, British Straits Settlements. Lateral outline of tegmen. ($\times 1\frac{1}{4}$.)
- Fig. 18. *Ozystethus dyaku* new species. Female. *Type*. Sandakan, British North Borneo. Lateral outline. ($\times 1\frac{1}{4}$.)
- Fig. 19. *Anthracites major* new species. Male. *Type*. Surigao, Mindanao, Philippine Islands. Lateral outline. ($\times 1\frac{1}{4}$.)
- Fig. 20. *Phisis obiensis* new species. Female. *Type*. Obi Island, Moluccas. Ventral view of subgenital plate. (Much enlarged.)
- Fig. 21. *Euhexacentrus annulicornis* (Stål). Female. Butuan, Mindanao, Philippine Islands. Lateral view of ovipositor. ($\times 3$.)

- PLATE XVIII.—Fig. 1. *Anthracites zebra* new species. Male. *Type*. Mount Apo, Mindanao, Philippine Islands. Dorsal view of cercus. (Greatly enlarged.)
- Fig. 2. *Anthracites zebra* new species. Male. *Type*. Mount Apo, Mindanao, Philippine Islands. Ventral view of subgenital plate. (Much enlarged.)
- Fig. 3. *Anthracites apoensis* new species. Male. *Type*. Mount Apo, Mindanao, Philippine Islands. Dorsal view of cercus. (Same scale as figure 1.)
- Fig. 4. *Anthracites apoensis* new species. Male. *Type*. Mount Apo, Mindanao, Philippine Islands. Ventral view of subgenital plate. (Same scale as figure 2.)
- Fig. 5. *Nicsara taylori* new species. Female. *Type*. Polillo Island, Luzon, Philippine Islands. Lateral view of ovipositor. ($\times 1\frac{1}{4}$.)
- Fig. 6. *Nicsara philippina* new species. Male. *Type*. Mount Makiling, Luzon, Philippine Islands. Dorsal view of cercus. (Greatly enlarged.)
- Fig. 7. *Nicsara philippina* new species. Female. *Allotype*. Polillo Island, Luzon, Philippine Islands. Lateral view of ovipositor. ($\times 1\frac{1}{4}$.)
- Fig. 8. *Dicranocercus zamboangae* new species. Male. *Type*. Zamboanga, Mindanao, Philippine Islands. Lateral outline. ($\times 1\frac{1}{4}$.)

- Fig. 9. *Dicranocercus zamboanga* new species. Male. *Type*. Zamboanga, Mindanao, Philippine Islands. Ventro-lateral view of cercus. (Greatly enlarged.)
- Fig. 10. *Acanthocoryphus mindanensis* new species. Female. *Type*. Surigao, Mindanao, Philippine Islands. Lateral outline. ($\times 1\frac{1}{4}$)
- Fig. 11. *Acanthocoryphus mindanensis* new species. Female. *Type*. Surigao, Mindanao, Philippine Islands. Lateral outline of fastigium of vertex. (Much enlarged.)
- Fig. 12. *Salomona nigripes* new species. Female. *Type*. Setekwa River, Dutch New Guinea. Lateral outline. (Natural size.)
- Fig. 13. *Salomona lita* new species. Male. *Type*. Obi Island, Moluccas. Internal view of cercus. (Greatly enlarged.)

- PLATE XIX.—Fig. 1. *Alloteratura penangica* new species. Male. *Type*. Island of Penang, British Straits Settlements. Lateral outline. ($\times 4$)
- Fig. 2. *Alloteratura penangica* new species. Male. *Type*. Island of Penang, British Straits Settlements. Dorsal view of distal portion of abdomen. (Greatly enlarged)
- Fig. 3. *Alloteratura penangica* new species. Male. *Type*. Island of Penang, British Straits Settlements. Ventral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 4. *Alloteratura bakeri* new species. Male. *Type*. Dapitan, Mindanao, Philippine Islands. Lateral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 5. *Alloteratura bakeri* new species. Male. *Type*. Dapitan, Mindanao, Philippine Islands. Ventral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 6. *Alloteratura xiphidiopsis* (Karny). Male. *Topotype*. Mount Makiling, Luzon, Philippine Islands. Ventral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 7. *Alloteratura xiphidiopsis* (Karny). Male. *Topotype*. Mount Makiling, Luzon, Philippine Islands. Lateral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 8. *Alloteratura sandakanae* new species. Female. *Type*. Sandakan, British North Borneo. Internal lateral outline of cephalic tibia. (Greatly enlarged.)
- Fig. 9. *Alloteratura sandakanae* new species. Female. *Type*. Sandakan, British North Borneo. Ventral outline of subgenital plate. (Greatly enlarged.)
- Fig. 10. *Xiphidiopsis dicera* new species. Male. *Type*. Singapore, British Straits Settlements. Lateral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 11. *Xiphidiopsis dicera* new species. Male. *Type*. Singapore, British Straits Settlements. Ventral view of distal portion of abdomen. (Same scale as figure 2.)
- Fig. 12. *Xiphidiopsis dicera* new species. Female. *Allotype*. Island of Penang, British Straits Settlements. Ventral outline of subgenital plate. (Same scale as figure 9.)
- Fig. 13. *Xiphidiopsis cryptosticta* new species. Female. *Type*. Singapore, British Straits Settlements. Ventral outline of subgenital plate. (Same scale as figure 9.)
- Fig. 14. *Xiphidiopsis drepanophora* new species. Female. *Allotype*. Dapitan, Mindanao, Philippine Islands. Ventral outline of subgenital plate. (Same scale as figure 9.)

- PLATE XX.—Fig. 1. *Xiphidiopsis drepanophora* new species. Male. *Type*. Kolambungan, Mindanao, Philippine Islands. Dorsal view of distal portion of abdomen.
- Fig. 2. *Xiphidiopsis drepanophora* new species. Male. *Type*. Kolambungan, Mindanao, Philippine Islands. Lateral view of distal portion of abdomen.

- Fig. 3. *Xiphidiopsis drepanophora* new species. Male. *Type*. Kolambugan, Mindanao, Philippine Islands. Ventral view of distal portion of abdomen.
- Fig. 4. *Xiphidiopsis drepanophora* new species. Male. *Type*. Kolambugan, Mindanao, Philippine Islands. Dorsal view of cercus.
- Fig. 5. *Xiphidiopsis gemmicula* new species. Male. *Type*. Surigao, Mindanao, Philippine Islands. Dorsal view of distal portion of abdomen.
- Fig. 6. *Xiphidiopsis gemmicula* new species. Male. *Type*. Surigao, Mindanao, Philippine Islands. Lateral view of distal portion of abdomen.
- Fig. 7. *Xiphidiopsis gemmicula* new species. Male. *Type*. Surigao, Mindanao, Philippine Islands. Ventral view of distal portion of abdomen.
- Fig. 8. *Xiphidiopsis aglaia* new species. Male. *Type*. Island of Basilan, Zamboanga Province, Philippine Islands. Dorsal view of distal portion of abdomen.
- Fig. 9. *Xiphidiopsis aglaia* new species. Male. *Type*. Island of Basilan, Zamboanga Province, Philippine Islands. Lateral view of distal portion of abdomen.
- Fig. 10. *Xiphidiopsis aglaia* new species. Male. *Type*. Island of Basilan, Zamboanga Province, Philippine Islands. Ventral view of distal portion of abdomen.

[All of the figures on plate XX are greatly enlarged, to the same scale.]

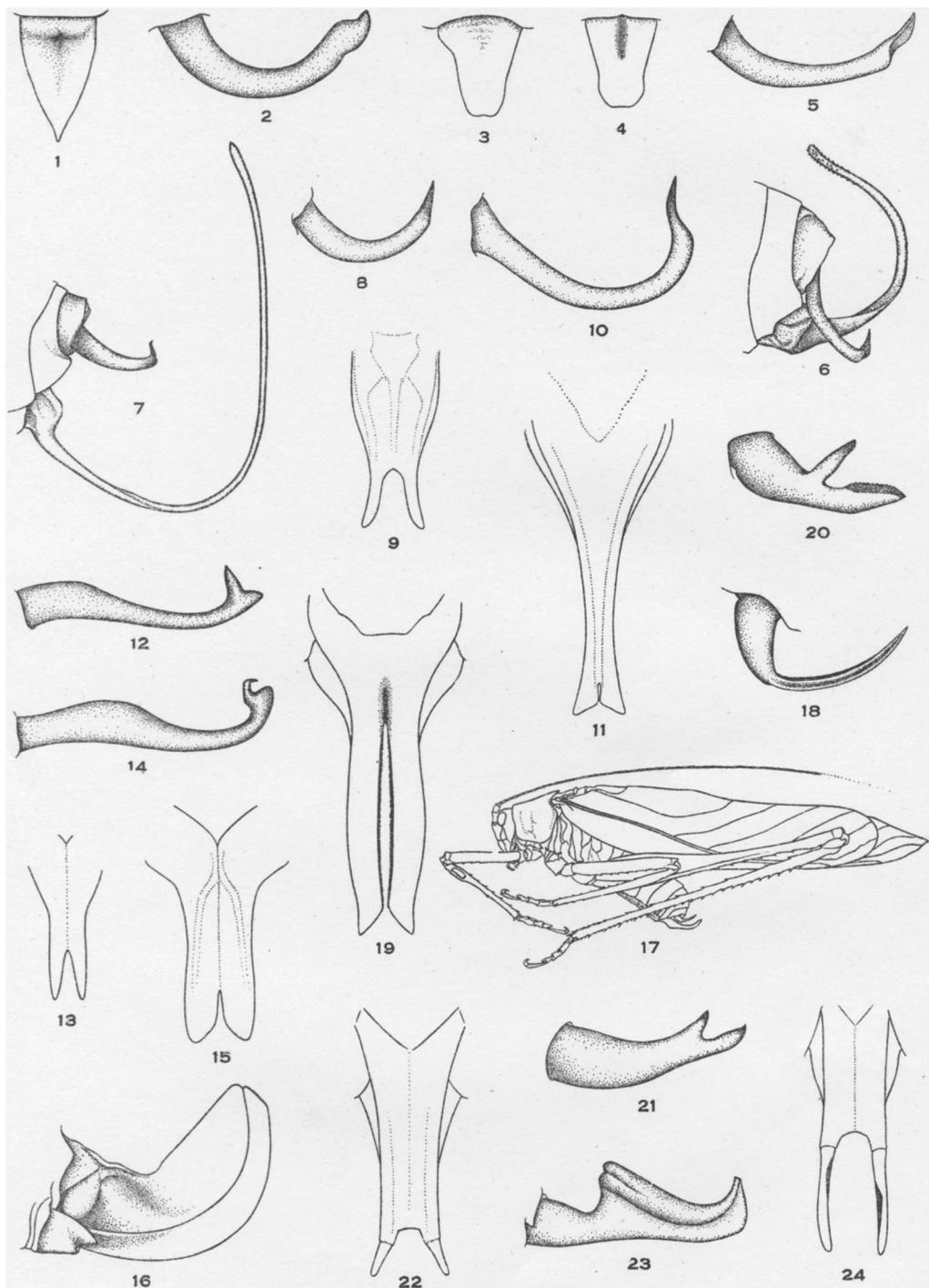
PLATE XXI.—Fig. 1. *Pyrgocorypha philippina* new species. Male. *Type*. Baguio, Luzon, Philippine Islands. Lateral outline of head and pronotum. ($\times 2$.)

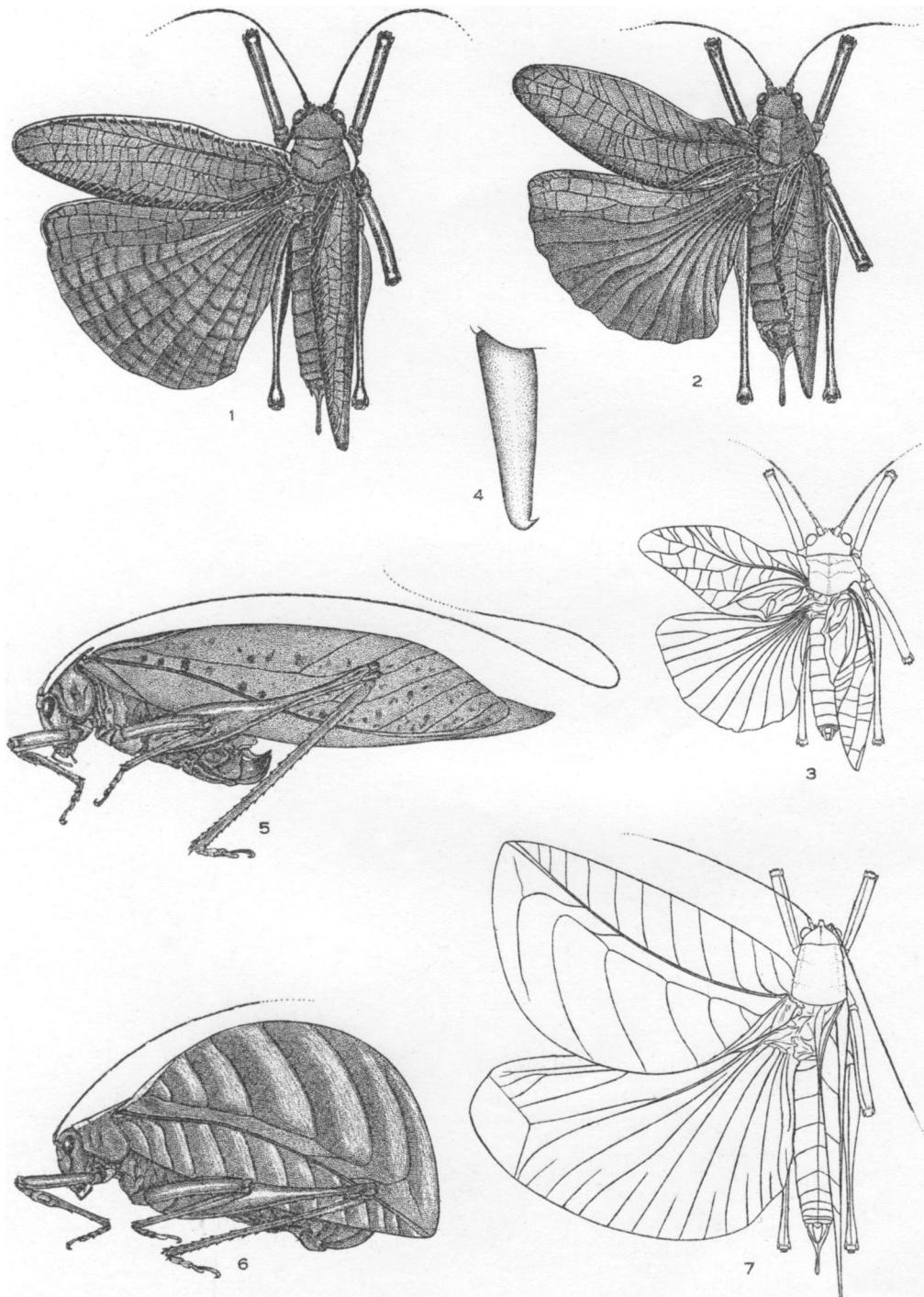
- Fig. 2. *Phlugis thaumasia* new species. Male. *Type*. Singapore, British Straits Settlements. Dorsal view of apex of abdomen. (Much enlarged.)
- Fig. 3. *Phlugis thaumasia* new species. Male. *Type*. Singapore, British Straits Settlements. Lateral view of apex of abdomen. (Same scale as figure 2.)
- Fig. 4. *Phlugis thaumasia* new species. Male. *Type*. Singapore, British Straits Settlements. Ventral view of apex of abdomen. (Same scale as figure 2.)
- Fig. 5. *Phisis acutipennis* Carl. Female. Singapore, British Straits Settlements. Specialized and concave ventral surface of longest cephalic tibial spine. (Greatly enlarged.)
- Fig. 6. *Terpandrus splendidus* new species. Female. *Type*. Yerilla, West Australia. Lateral view. (Natural size.)
- Fig. 7. *Pachysagella maculata* new species. Male. *Type*. South Australia. Cephalic view of head. ($\times 2$.)
- Fig. 8. *Pachysagella maculata* new species. Male. *Type*. South Australia. Dorsal view of cercus. (Much enlarged.)
- Fig. 9. *Gryllacris vitrea* new species. Male. *Type*. Labuan, British North Borneo. Ventral view of subgenital plate. (Much enlarged.)
- Fig. 10. *Gryllacris punctipennis gemmicula* new subspecies. Male. *Type*. Obi Island, Moluccas. Dorsal view of wing. ($\times 2$.)
- Fig. 11. *Paragryllacris griffini* new species. Male. *Type*. Queensland, Australia. Ventral view of subgenital plate. (Much enlarged.)
- Fig. 12. *Bugajus couloni* (Saussure). Male. Obi Island, Moluccas. Ventral view of subgenital plate. ($\times 5$.)

PLATE XXII.—Fig. 1. *Salomona guamensis* new species. Female. *Type*. Island of Guam. Cephalic view of head. ($\times 2$.)

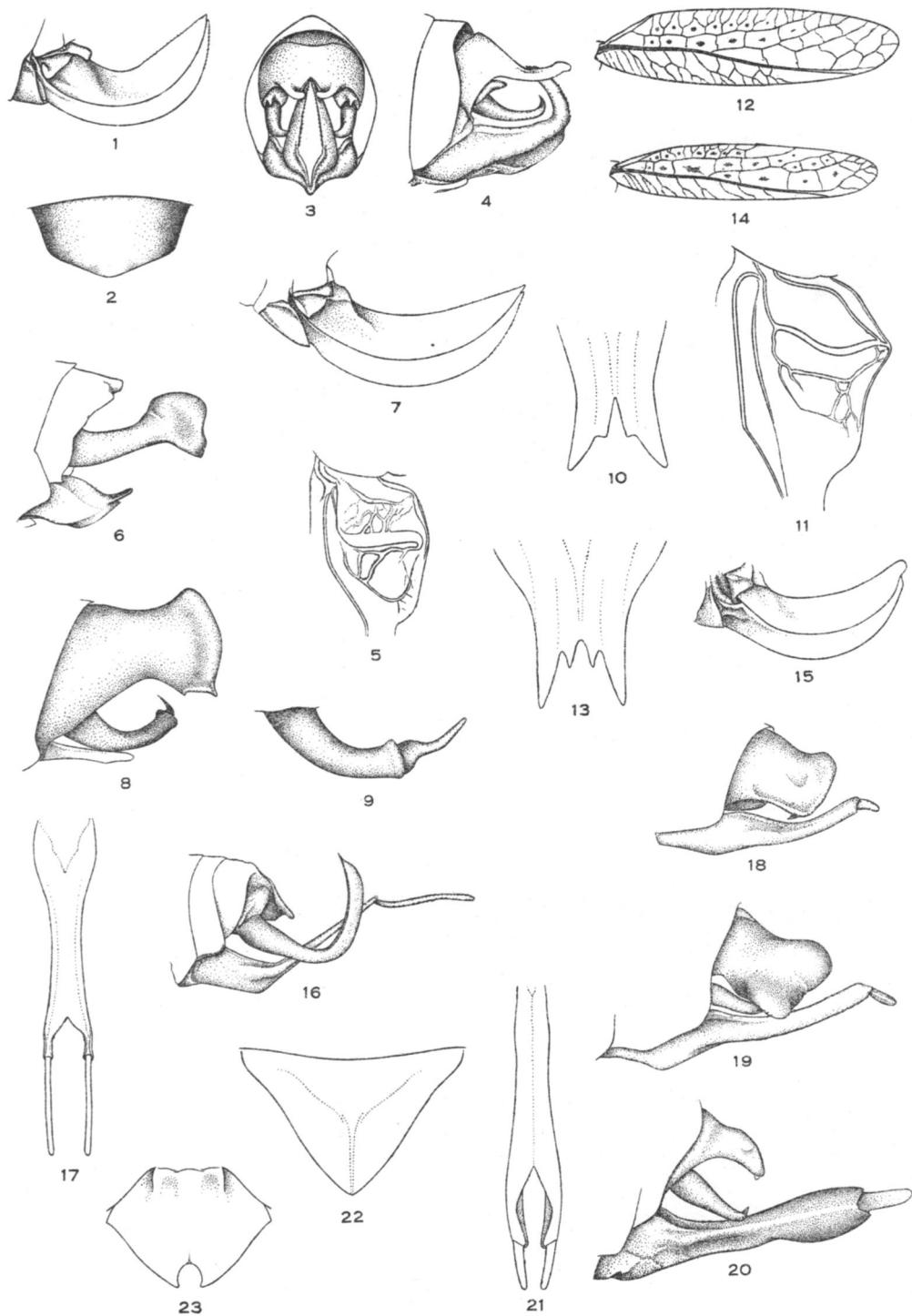
- Fig. 2. *Pachysagella maculata* new species. Male. *Type*. South Australia. Dorsal view. ($\times 2$.)
- Fig. 3. *Pachysagella maculata* new species. Female. *Allotype*. South Australia. Dorsal view. ($\times 2$.)
- Fig. 4. *Pachysagella maculata* new species. Female. *Allotype*. South Australia. Lateral view. ($\times 2$.)

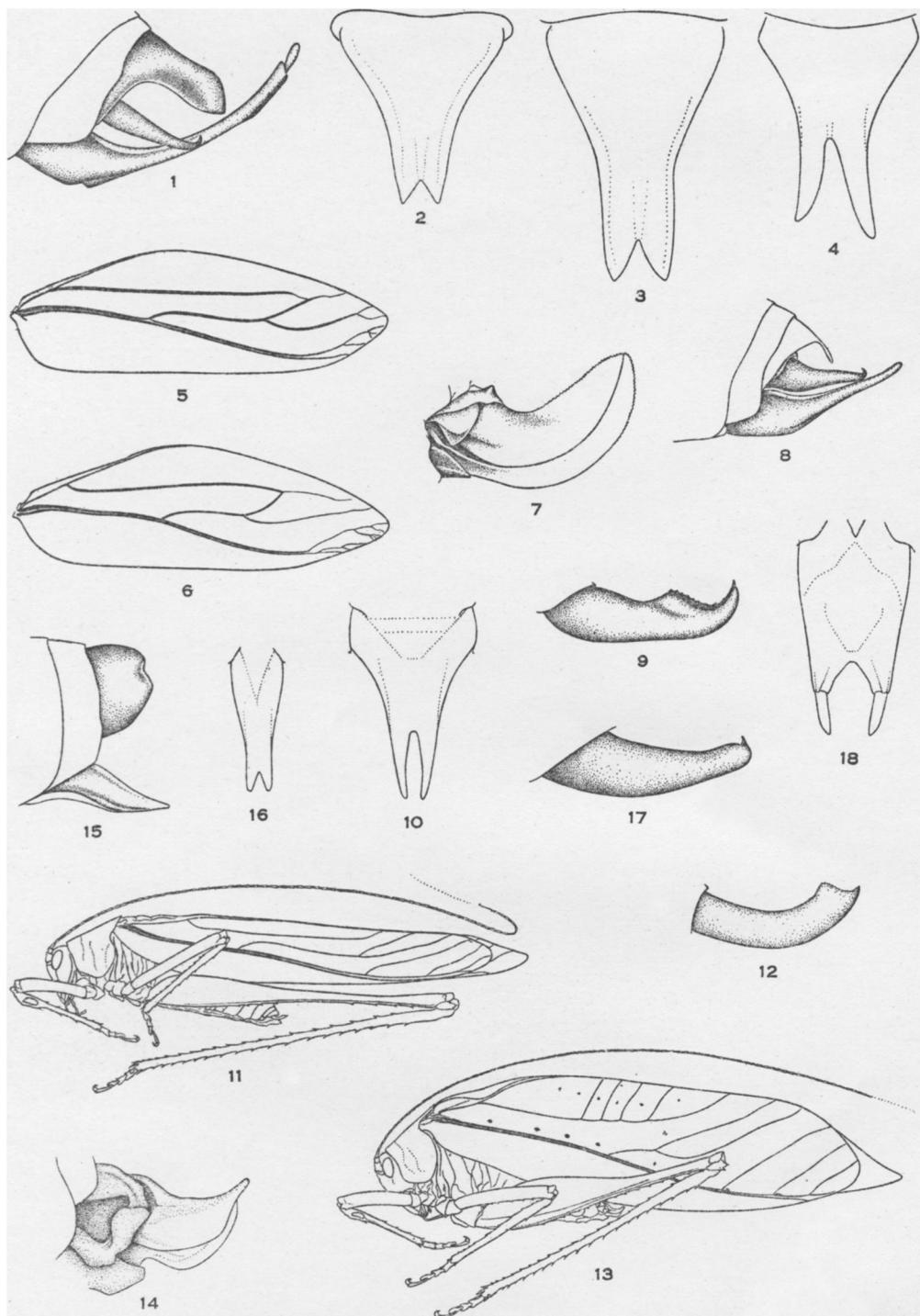
- Fig. 5. *Gryllacris nigrita* new species. Female. *Type*. Labuan, British North Borneo. Lateral view of ovipositor. ($\times 2\frac{1}{2}$.)
- Fig. 6. *Gryllacris annulicornis* new species. Female. *Type*. Obi Island, Moluccas. Lateral view of ovipositor. ($\times 2\frac{1}{2}$.)
- Fig. 7. *Gryllacris macroxiphus* new species. Female. *Allotype*. Obi Island, Moluccas. Lateral view of ovipositor. ($\times 2\frac{1}{2}$.)
- Fig. 8. *Papuogryllacris obiensis* new species. Female. *Type*. Obi Island, Moluccas. Lateral view of ovipositor. ($\times 2\frac{1}{2}$.)



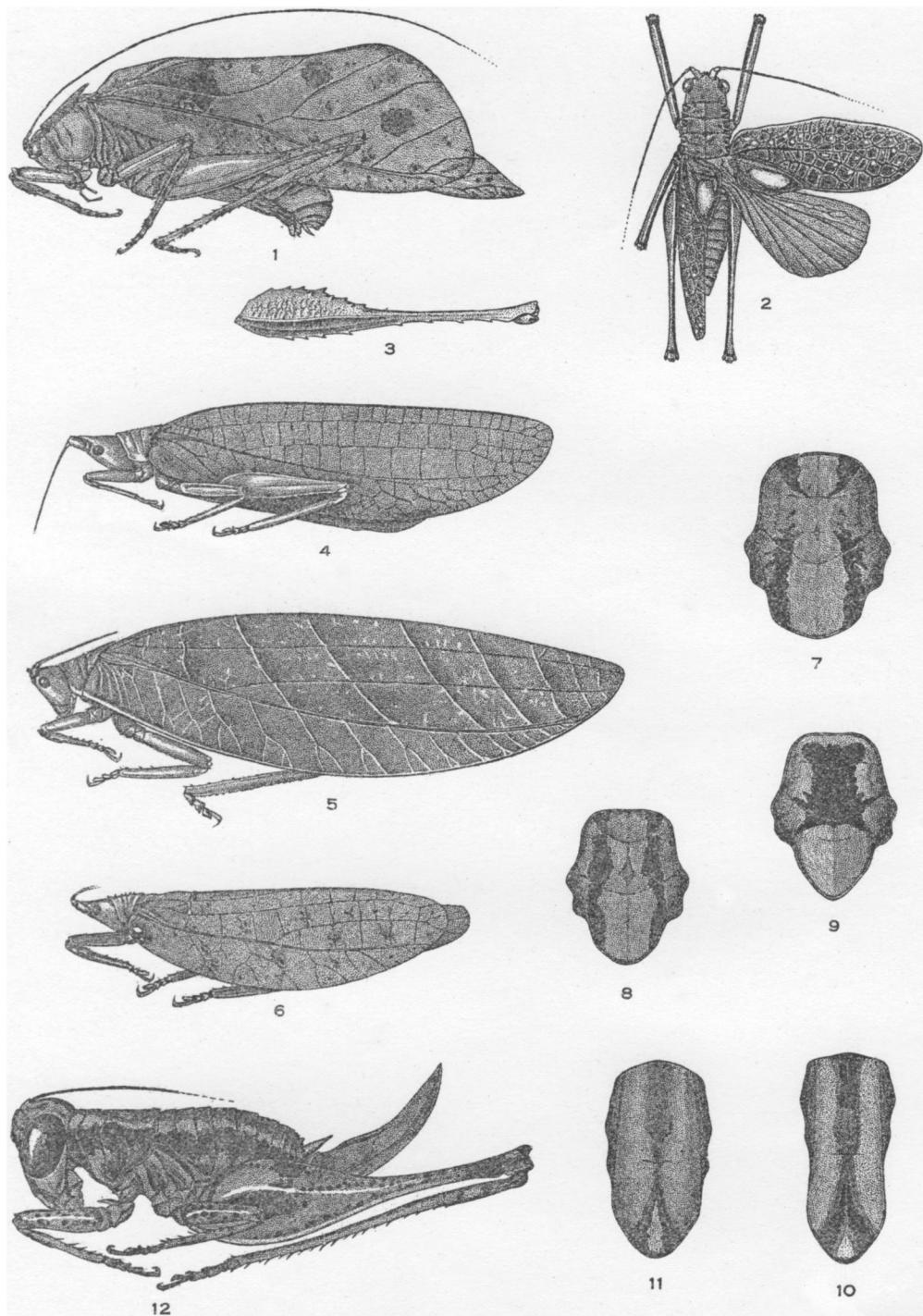


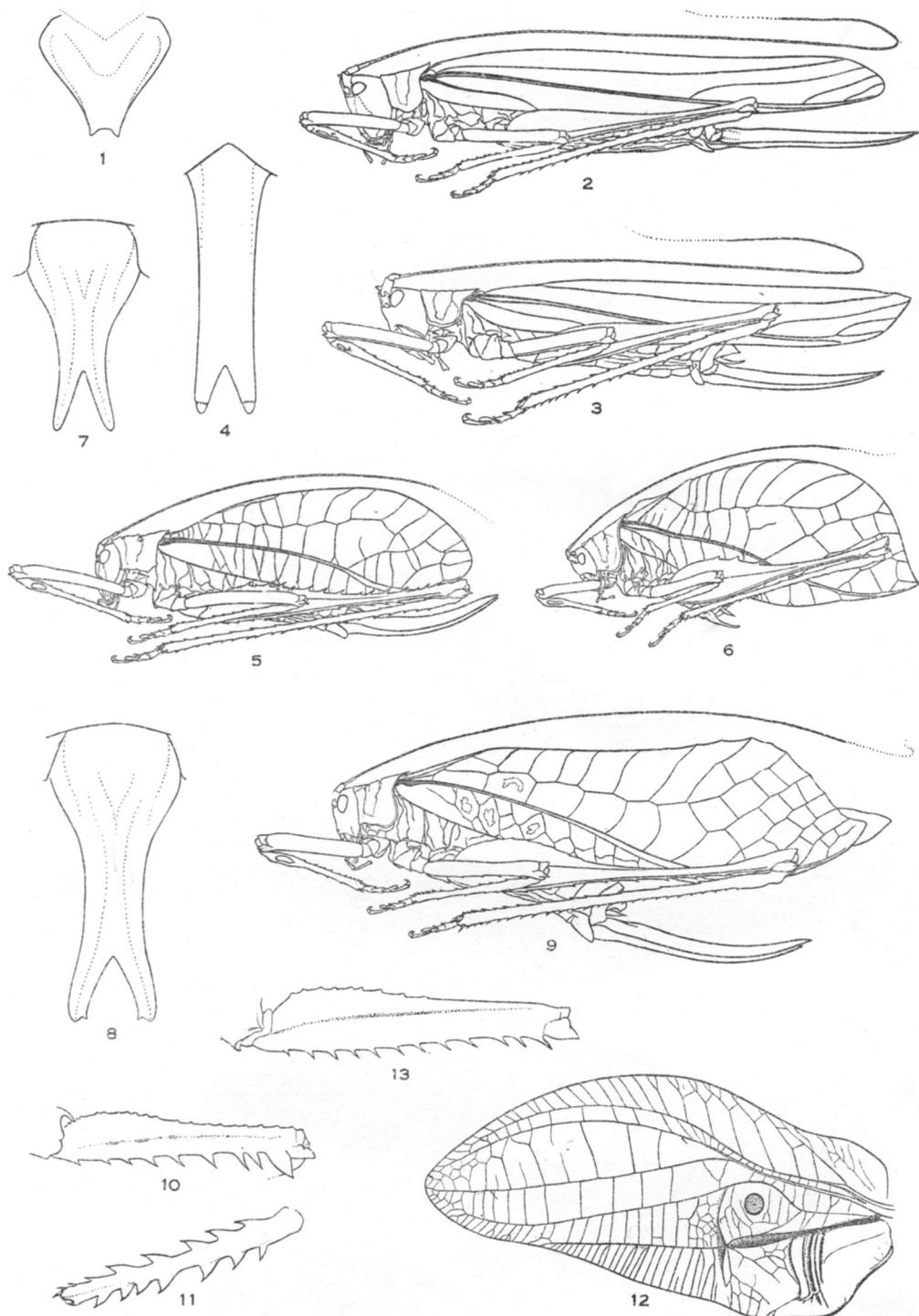
HEBARD: MALAYAN, MELANESIAN AND AUSTRALIAN TETTIGONIIDAE.





HEBARD: MALAYAN, MELANESIAN AND AUSTRALIAN TETTIGONIIDAE.





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