ON INDO-MALAYAN PTEROPHYLLINAE (ORTHOPTERA, FAMILY TETTIGONIIDAE)

by

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The family Tettigoniidae consists of the long-horned grasshoppers with a more or less distinct sword-shaped ovipositor and with a distinct auditory organ at the proximal part of the fore tibiae.

Handlirsch unites into this family 14 subfamilies of which the Pterophyllinae only are considered here.

Concerning the name Tettigoniidae the opinions were diverging, but in recent literature this name is generally used. In the 10th edition of Linné's Systema Naturae (1758) a number of species of the genus *Gryllus* are united into the subgenus *Tettigonia*. This subgenus was considered as a genus by Fabricius and it would have been logical if he had kept the Linnean name *Tettigonia* for it. Fabricius, however, mixed up the Linnean names and called the here-mentioned genus: *Locusta*. This name has for many years been considered as the correct name of the genus, and *Tettigonia* L. was used for another group of insects.

Stål (1874) placed *Tettigonia* L. into the synonymy of *Locusta* F. as both names refer to the same group of species. Linné (1758), however, had given the name *Locusta* to a group of short-horned grasshoppers; moreover *Tettigonia* L. has priority over *Locusta* F. as it had been established earlier. Thus the name *Tettigonia* L. is the eldest in the group and therefore should be considered to be the type genus and the name of the family should be derived from it.

As to the type species of the genus *Tettigonia* L. Karny (1907) gives a survey of all Linnean species in the genus *Gryllus, Tettigonia,* and shows that successively all species have been placed into other (new) genera, leaving *viridissima* L. as the only species in the genus *Locusta* F. (Stål 1874). As is said above this genus is identical with *Tettigonia* L. and thus *viridissima* L. should be considered as the type species of *Tettigonia* L.

The present paper contains the results of studies on the Pterophyllinae, one of the subfamilies of the Tettigoniidae. The paper is chiefly based on the material of the Leiden Museum, but besides this a fairly large number of other specimens could be examined. I want to thank Mr. J. B. Corporaal of the Zoological Museum at Amsterdam for the opportunity to study the material of this institution. Moreover I am strongly indebted to Mr. C. J. M. Willemse at Eygelshoven who kindly put his material of Pterophyllinae and literature concerning this group at my disposal. Dr. W. Ludwig of the Zoological Institute at Halle a. d. S. favoured me by the loan of the type specimen of *Pseudophyllus Junghuhni* Giebel. Moreover my sincerest thanks are due to Prof. Dr. H. G. Stehlin, Prof. Dr. E. Handschin and Dr. J. Roux of the Museum Basle, where I could study the material of Pterophyllinae, and to Dr. P. Revilliod and Dr. J. Carl of the Museum Geneva, where I examined the type material from the collections of Pictet & de Saussure and many other interesting specimens.

From the material examined in Basle and Geneva only those specimens and species are mentioned which are of particular interest in connection with the collections of the Leiden Museum, the Zoological Museum at Amsterdam and Mr. Willemse's collection.

An important part of the collection of the Leiden Museum is the material on which the paper by de Haan (1842) was based. This material contains numerous types, which in recent time have been reexamined and commented upon by Karny (1920). Since de Haan's time a good deal of other material has been added to the collections of the Museum, but the greater part of it remained unidentified for many years. Recently a great number of specimens was received from the Zoological Museum at Buitenzorg. The latter material is of particular value as it consists of specimens identified by Karny, including many types.

PSEUDOPHYLLINI

Cratioma Bolívar

Cratylus (nec Meyer) Stål 1874, p. 51; Pictet & Saussure 1892, p. 6; Brunner von Wattenwyl 1895, pp. 10, 34; Kirby 1906, p. 293.
Cratioma Bolívar 1906, p. 394; Kirby 1910, p. 572; Karny 1923 a, p. 164; 1924, p. 171; 1926 b, p. 113.

Cratioma fenestratum (Stoll)

Gryllus Tettigonia fenestrata Stoll 1813, p. 12, pl. 5a fig. 13.
Conocephalus inflatus Thunberg 1815, p. 276.
Pseudophyllus myops Serville 1839, p. 468.
Locusta (Pseudophyllus) fenestrata de Haan 1842, p. 203.
Pseudophyllus fenestratus Walker 1869, p. 401.

Pseudophyllus tener Walker 1869, p. 402; Uvarov 1927, p. 93.
Cratylus inflatus Stål 1874, p. 68.
Cratylus fenestratus Pictet & Saussure 1892, p. 14, pl. 1 figs. 5 and 5a; Brunner von Wattenwyl 1895, p. 34, pl. 1 fig. 6; Kirby 1906, p. 293; Hebard 1922, p. 190; Karny 1923 a, p. 165; 1924, p. 173; Uvarov 1927, p. 93.

Leiden Museum:

Amboina: 2 ♀♀ and 2 ♂♂.

The females of this species possess two ring-shaped markings near the base of the tegmina, one between the radial and the medial vein and one between the two branches of the medial vein. These markings are very near each other and after the original description together are contained in a yellow patch. In dead specimens this is not always clearly seen but the females are at once recognizable by the double ring-shaped marking. Stoll's description was made after the female. The males do not possess the ring-shaped markings.

The females of the Leiden Museum correspond in nearly every respect with the descriptions given by Stoll and Brunner von Wattenwyl. One has to keep in mind, however, that in Brunner von Wattenwyl's key to the genera the hind tibiae of the species are described as follows: "Tibiae posticae haud compressae, superne spinulis minimis, in utroque margine aequalibus armatae." (l. c., p. 9) whilst in the diagnosis they are defined with the following words: "Tibiae posticae superne muticae" (l. c., p. 35).

The female specimens of the Leiden Museum show 6 to 8 minute small teeth on the superior inner margin of the hind tibiae whilst the males show an indication of 3 to 4 irregularities, visible only when strongly magnified. In both sexes the external margin is smooth.

As the differences with Brunner von Wattenwyl's specimens are found only in the denticulation on the hind tibiae I may add here that, in my opinion, this is of little importance as in some cases the number of spines on the legs is often subject to considerable individual variation. Moreover the two sexes in this respect sometimes are highly different.

Cratioma dilatatum Karny

Cratioma dilatatum Karny 1923 a, pp. 164, 165, fig. 25.

Leiden Museum:

Sumatra: Loeboekbangkoe, V 1908, J. Menzel, 1 ♂.

Karny's description and figure are after the female of the species; I do not hesitate to regard the specimen of the Leiden Museum as the male of *C. dilatatum* Karny.

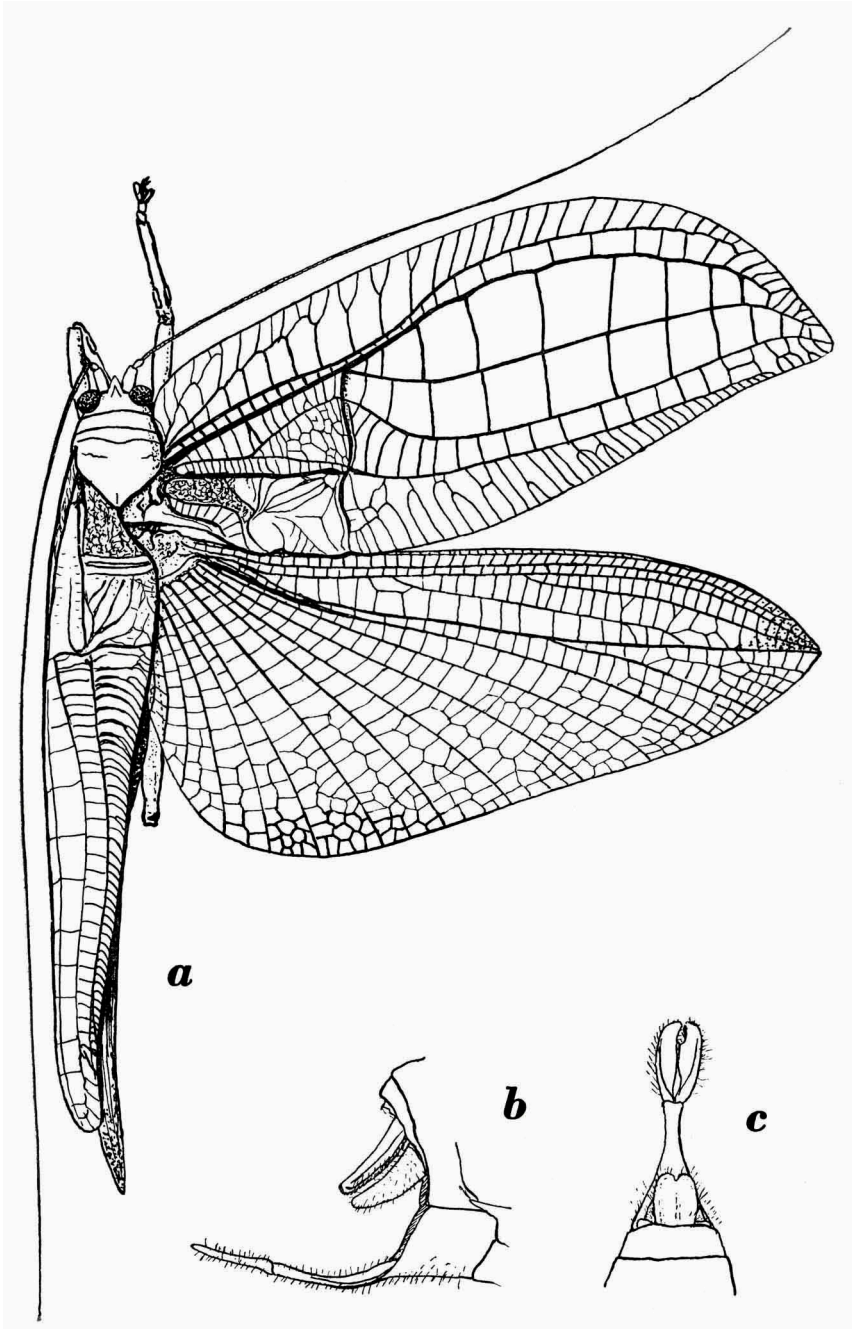

Fig. 1. *Cratioma dilatatum* Karny ♂, a, dorsal view; b and c, abdominal end, lateral and dorsal view. a, × 2; b and c, × 7.

The description of the male follows here.

General colour yellow, eyes brown, alae transparent except the triangular, anterior part of the tip, which is yellow.

The venation of the tegmina is almost the same as in the female except in the basal third of the postradial area where the stridulation organ is found (fig. 1 a). The radial vein runs almost parallel with the fore margin and reaches it in the apical part. The subcostal vein runs at a short distance of the radial vein in the basal half of the tegmina. About in the middle of its length the subcostal vein slightly diverges from the radial and runs half-way between the latter and the fore margin, and reaches the fore margin at some distance from the apex. The radial branch vein begins at one third of the tegminal length and ends in the fore margin near the apex. In its basal half the first medial vein shows a broad curve towards the radial vein, and in the apical half it runs almost parallel with the radial branch vein and ends in the apex. The areas between the radial vein and its branch and between the latter and the first medial vein are of about equal width, the area between the medial veins is but half as wide. The area between the second medial vein and the hind margin is rather broad near the base and tapers towards the apex.

The pronotum is of the same shape as that of the female. The granulated dorsal surface is bent in the apical half, the basal half is flat. The fore margin is smooth and straight, the hind margin is angular. The lateral lobes and their margins are almost smooth, without granules. The fore angle is broadly rounded, the hind angle is nearly rectangular.

The prosternum is smooth, without spines. The mesosternum is subquadrate. The fore angles bear a blunt protuberance and are distinctly pilose. The metasternum is about as large as the mesosternum and slightly converges caudally.

The head is broad, rounded. The vertex projects slightly between the globular, protruding, brown eyes. The fastigium verticis has a dorsal groove and is rather blunt at the top. It surpasses the antennal scrobes. The antennal scrobes are not prolonged in front before the eyes. The basal joint of the antennae is rather swollen, the second joint is globular. The rest of the antennae is threadlike and about one and a fourth time as long as the whole insect. The pale yellowish forehead is about twice as broad as long. The border of the labrum is pale yellowish.

The body is pale yellow like the legs. The legs are finely pilose on all elevated margins.

All the femora are smooth dorsally, the hind femora only are narrowly crested. Not even small thorns occur on the fore femora. The middle

femora bear 5 to 6 small teeth on the basal outer margin. The middle tibiae bear 4 little spines in the ventro-external margin only. The ventral margins of the hind femora have 7 to 8 small teeth each. The hind tibiae bear about 7 crenules on each margin but these are not always distinctly visible.

The supra-anal plate (fig. 1 b, c) is almost a rectangle with rounded hind angles, it has a minute incision at the top. The cerci are straight, stout, broad at the base and blunt at the top. The subgenital plate is broad at the base, prolonged caudally as a thin stalk at the top of which the styli are found (fig. 1 b, c).

Measurements in mm: length body 21, length pronotum 7, length tegmina 42½, breadth tegmina 18½, length alae 42½, breadth alae 19½, length antennae 62½, length anterior femora 6½, length posterior femora 13½.

Cratioma superbum (Rehn)

Timanthes superba Rehn 1909, p. 196, figs. 19 and 20.

From the description of this species and the figures it is clear that this species does not belong to the genus *Timanthes* Stål but to *Cratioma* Bol.

The specimen figured by Rehn is a male from Sumatra.

Cratioma superbum var. **aberratum** Karny

Cratioma aberratum Karny 1924, p. 171, fig. 75; 1927, p. 5, fig. 4.

Leiden Museum:

Locality unknown: 1 ♂ (holotype).

When comparing Karny's holotype with Rehn's description of *T. superba* the differences appear to be found in the minute teeth on the ventral margins of the fore femora, which are present in *superbum* and lacking in *aberratum*. Further differences are found in the somewhat longer hind femora and broader tegmina in *aberratum*. Similar differences, however, are found in the specimens of the related species *C. fenestratum* Stoll. The tegminal venation of *aberratum* and *superbum* show no differences of specific value.

Cratioma oculatum Karny

Cratioma oculatum Karny 1926 b, p. 113, pl. 4 fig. 9; 1927, p. 5.

Amsterdam Museum:

Borneo: Sambas, 1 ♀.

The specimen examined shows no differences from Karny's description. The species is distinguished from the closely related species by the coloured lines along the transverse veins in the tegmina and by the white ocelliform spot near their base.

From the allied species *C. cruentatum* Karny it is distinct by the almost straight radial branch vein, which in *cruentatum* is angularly curved and by the faintly curved first medial vein, which in *cruentatum* shows a broad curve near the base.

Chloracris Pictet & Saussure

Pseudophyllus (p.p.) Serville 1831, p. 143; 1839, p. 464; Brullé 1835, p. 136; Blanchard 1840, p. 21; de Haan 1842, p. 203; Brunner von Wattenwyl 1895, p. 36; Kirby 1906, p. 294; Hebard 1922, p. 189; Karny 1923 a, p. 164; 1924, p. 170; 1926 b, p. 111; Chang 1935, p. 36.
Chloracris Pictet & Saussure 1892, p. 10; Caudell 1927, p. 31; Karny 1931, p. 52.

Chloracris prasina Pictet & Saussure

Pseudophyllus neriifolius (nec Stoll) Serville 1831, p. 143; 1839, p. 466; Brullé 1835, p. 136; Blanchard 1840, p. 21; Brunner von Wattenwyl 1862, p. 93; 1895, p. 36, pl. 1 figs. 7 a and 7 b; Krauss 1903, p. 748.
Locusta (Pseudophyllus) neriifolia (nec Stoll) de Haan 1842, p. 203.
Chloracris prasina Pictet & Saussure 1892, p. 22, pl. 3 figs. 14 and 14 b; Caudell 1927, p. 31.
Pseudophyllus prasinus Kirby 1906, p. 294; Karny 1920, p. 207; 1923 a, p. 164; 1924, p. 170; 1926 b, p. 111; Willemse 1933 b, p. 8; Chang 1935, p. 36.
Cleandrus (Pseudophyllus) neriifolius (nec Stoll) Dammerman 1919, p. 100.
Cleandrus (Pseudophyllus) prasinus Dammerman 1929, p. 133, pl. 17 fig. 2.

Leiden Museum:

Malay Peninsula: Queda, P. J van der Does de Bye, 1 ♂.
Sumatra: Atjeh, Mr. W. Baerts, 1 ♀.
Java: Depok, 25 X 1912, D. van Mullem, 1 ♀; Dampit, Soemberpakel, Dr. D. Mac Gillavry, 1 ♀; West Java, H. van der Weele, 1 ♂; van der Hoeven, 2 ♀♀; 2 ♀♀ and 4 ♂♂.
Borneo: 7 IV 1931, Dr. P. H. van Thiel don., 1 ♂.
Locality unknown: 1 ♀.

Amsterdam Museum:

Sumatra: 1881, van Buuren, 1 ♂;
Java: Batavia, 1881, van Nooten, 1 ♀; Tjibodas, I 1899, Siboga Expedition, 1 ♂;
Locality unknown: 1920, Bik don., 1 ♀; ex coll. Mos, 1 ♀; 3 ♀♀ and 3 ♂♂ and 1 ♀ larva.

Mr. Willemse's Collection:

Java: Buitenzorg, 1 ♀ and 1 ♂; Lawang, Eastern Java, 1 ♀.

After Brunner's key to the species (1895, p. 36) the difference between *Chloracris prasina* Pictet & Saussure and *Chloracris brullei* Pictet & Saussure is that of the form, colour and number of the thorns on the hind tibiae only. I examined a rather large number of specimens, the types included, of *C. brullei* Pict. & Sauss. in the Geneva Museum and I can state that these characters are really sufficient to identify the species.

In *Chloracris prasina* Pict. & Sauss. the thorns on the dorso-internal

and the ventro-external margin of the hind tibiae are black, broadly based, and bent at the apex.

In *Chloracris brullei* Pict. & Sauss. all these thorns are of the same colour as the tibiae. They have a narrower base than in *prasina*. Generally their number is a little larger.

Similar differences are found in the thorns on the ventro-external margin of the hind femora. In *prasina* they are black and their number is 7 or 8, in a few specimens 9, but never more. In *brullei* their number is always 10 or more.

All the other differences are of a gradual character, e.g., the very faint or more distinct granulation of the pronotum, the more or less bent transverse veins near the apex of the tegmina in the area between the radial and the first medial vein, and the place where the radial branch vein begins. These characters are of relative value only.

As far as concerns these last mentioned characters I found them combined in all different manners in the two species.

The tegminal venation is rather constant in *prasina*. Only once I found an aberrant pattern in the left tegmen of a female specimen (locality unknown) in the Amsterdam Museum. In this case the radial branch vein forms two branches, one near its base which soon unites with the first medial vein, and the second more towards the top in the area between the radial vein and its branch, ending in the fore margin near the top (fig. 2 a).

All the specimens examined possess distinct broadly-based thorns on the hind tibiae.

Chloracris prasina var. **fenestrata** (Karny)

Pseudophyllus prasinus var. *fenestrata* Karny 1924, p. 171.

Leiden Museum:

Java: Buitenzorg, XII 1919, 1 ♀ (hololectotype, cotype of Karny).

Karny's type specimens show a number of more or less brown-bordered cells in the tegmina. The brown border runs close to the border of the cells or it runs nearer to the centres.

Karny's description of this variety was based on two specimens, which, however, belong to two different species. One specimen really belongs to *prasina* after the black, laterally compressed thorns on the hind tibiae. The second specimen should be regarded as a variety of *Chl. brullei* Pict. & Sauss. as it is distinct from *prasina* by the same characters as *brullei*, as is mentioned above.

Chloracris brullei Pictet & Saussure

Chloracris brullei Pictet & Saussure 1892, p. 22.
Pseudophyllus brullei Brunner von Wattenwyl 1895, p. 37; Kirby 1906, p. 294.

Leiden Museum:

Sumatra: Solok, Padang, various dates from 1908 to 1914, P. O. Stolz, 6 ♀ ♀ and 5 ♂ ♂; Matoer, Padangsche Bovenlanden[1]), X 1913, E. Jacobson, 2 ♀ ♀ and 2 ♂ ♂; Fort de Kock, 920 m, 1926, E. Jacobson, 2 ♀ ♀ and 1 ♂; Moeara Sako, X 1915, E. Jacobson, 1 ♂; Sumatra's Oostkust, 1922/23, Wittenrood, 1 ♂; Boegi Tinggi, Sumatra's Westkust, II 1904, J. Menzel, 1 ♀; Pangkalanbrandan, Sumatra's Oostkust, 1 ♀; Padang, 1 ♀.
Nias: 1911, J. P. Kleiweg de Zwaan, 1 ♀ and 1 ♂.
Riouw: A. H. G. Blokzeyl, 1 ♂.
Borneo: Upper Mahakam, XII 1912, Kampmeinert, 1 ♀; Mahakam, 1894, Borneo Expedition Dr. Nieuwenhuis, 1 ♀; 7 IV 1931, Dr. P. H. van Thiel don., 1 ♀.
East Indies: Dr. P. H. van Thiel don., 1 ♀.
Locality unknown: 1 ♀.

Amsterdam Museum:

Sumatra: Fort de Kock, 920 m, various dates from 1922 to 1925, E. Jacobson, 2 ♀ ♀ and 1 ♂; Padang, 1 ♀; Palembang, Lahat, Giesbers, 1 ♀; Padang, VII 1932, J. J. Kool, 1 ♀ (ex collection Jacobson); Benkoelen, C. J. Louwerens, 1 ♀ (ex collection Jacobson).
Java: Preanger, 1885, 1 ♂ larva.
Locality unknown: Brandligt don., from 1894 to 1899, 5 ♀ ♀ and 1 ♂; 1 ♀.

Mr. Willemse's Collection:

China: Tonkin, 1 ♂.
Sumatra: Padang, 1 ♀; Boven-Langkat, 1 ♀.

The general shape of this species is strongly similar to that of the preceding species. As is already explained there, the species should be identified after the spines on their hind legs. The number of spines on the ventro-external margin of the hind femora is 10 or more and as a rule these spines are a little longer than in *prasina*.

The tegminal length varies from 7.8 to 11 cm in the females and from 6.5 to 7.3 cm in the males. In most cases a length of a little more than 10 cm is found in the females and 7 to 7¼ cm in the males. In the specimens of the Leiden Museum the average length of the specimens of *Ch. brullei* is greater than of those of *Chl. prasina*.

Pictet & Saussure (1892) regarded *Pseudophyllus neriifolius* Brullé as a synonym of their species *brullei*, but in Brullé's text (1835, p. 137) the black thorns are emphasized.

So this synonymy must be rejected.

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1) The orthography of the names of localities in the Netherlands East Indies is in accordance with Dumont, Ch. F. H., 1917. Aardrijkskundig Woordenboek van Nederlandsch Oost-Indië.

Chloracris brullei var. **pantherina** nov. var.

Pseudophyllus prasinus var: *fenestrata* Karny (per errorum) 1924, p. 171.

Leiden Museum:

Sumatra: Fort de Kock, 920 m, IV 1921, leg. E. Jacobson, 1 ♀ (holotype, cotype of *Chl. prasina* var. *fenestrata* Karny); Padangsche Bovenlanden, 1917, leg. E. Jacobson, 1 ♀ (paratype).

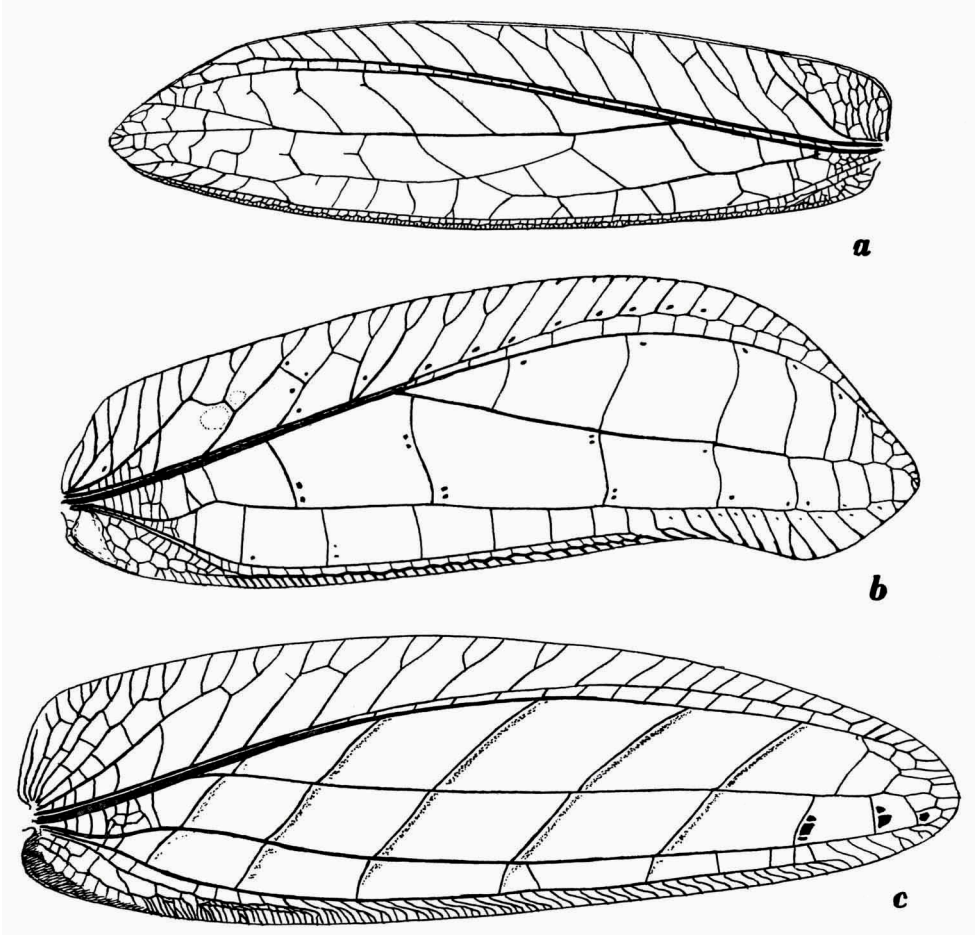

Fig. 2. a, *Chloracris prasina* Pict. & Sauss. ♀, left tegmen with aberrant venation; b, *Chloracris borneensis* nov. spec. ♀ (holotype), right tegmen; c, *Rhomboptera honorabilis* Brunner v. W. ♀, right tegmen. a, × 1⅛; b and c, × 1½.

The general shape and other characters are those of *Chl. brullei* Pict. & Sauss. The special character of the variety is that of the large, almost ring-shaped brown markings in a number of cells of the tegmina. These

markings do not always reach the borders of the cells. The number of cells differing in this way from the other cells of the tegmina is not constant, neither is their place or the size of the brown markings.

Chloracris borneensis nov. spec.

Leiden Museum:

Borneo: Upper Mahakam, II 1912, Kampmeinert, 1 ♀ (holotype).

The general colour of the specimen is light green. In all probability much of its original colour is lost in alcohol, but on the tegmina still remnants of a more or less opaque pattern are found which was probably white or yellow in the living insect. Two distinct oval white patches are found at the base of the tegmina in the preradial area between the costal vein and the subcostal vein (fig. 2 b).

The chief specific characters of the species are those of the form of the tegmina and their venation. The fore margin of the tegmina is faintly curved but at three quarters of the length it turns rather abruptly towards the top. The hind margin is slightly sinuate and in its apical part it forms a broad lobe. The subcostal vein and the radial vein run together from the base to a little before the middle of the radial vein. The radial branch vein begins at the same place and runs almost straight to the top of the tegmen. In contradistinction to the other species of the genus *Chloracris* the radial branch vein and the first medial of the tegmina of *C. borneensis* converge towards the apex.

The alae are similar to those of the other species of the genus, they are transparent with a green tip.

The pronotum is covered with blunt granules. The disc is flat. The fore margin is straight and smooth. The crenulated hind margin shows an obtuse angle in the middle. The fore margin, the obtuse fore angle and the ventral margin of the lateral lobes are minutely crenulated as it is usual in the genus *Chloracris*. The hind angle of the lateral lobes is almost rectangular but broadly rounded at the top.

The prosternum bears a wartlike elevation at the sides near the base of the legs only, but no thorns. The mesosternum is half as long as broad. The fore margin is almost straight, the fore angles are provided with a vertical thorn. The sides run parallel. The hind margin which separates the mesosternum and the metasternum is straight. The metasternum is of the same length as the mesosternum. Its base has the same breadth but the sides slightly converge caudally. The hind margin is slightly convex.

The head is smooth. The triangular protuberance on the vertex is slightly

impressed dorsally. The blunt top surmounts the antennal scrobes. The antennae are long, filiform, annulated. On the genae a vertical groove is found between the eyes and the mandibels.

The fore and middle femora are smooth dorsally, the hind femora possess a finely crenulated crest. Ventrally the fore femora bear 5 small thorns on the internal and on the external margin. The fore tibiae are smooth dorsally and bear 6 small thorns on both ventral margins. The middle femora are smooth dorsally. Their ventral armament is: internal 5 to 6, external 7. That of the middle tibiae is: dorso-internal 3, external none, ventro-internal and external 5 to 6. The ventral armament of the hind femora is internal 11 thin thorns and external 10 thorns, which distally become stouter. The hind tibiae bear 6 to 7 broadly based thorns on the dorso-internal margin and on the ventro-external margin. These thorns are curved at their tops. The dorso-external margin is smooth. The ventro-internal margin bears 6 to 7 thin thorns.

The supra-anal plate is ovate, nearly round. It is broadly incised at the top but the incision is not very deep. The base of the supra-anal plate is slightly narrowed. The cerci are straight, only the top is slightly bent upwards. The ovipositor has a curved ventral border. The dorsal margin is also slightly curved but it is obliquely truncated in the apical half. The colour of the ovipositor is yellowish, the top and a part of the ventral and dorsal border are black.

Measurements in mm: length body 44½, length pronotum 11½, length tegmina 75½, breadth tegmina 24, length alae 73, breadth alae 34, length anterior femora 10½, length posterior femora 23, length ovipositor 22, dorso-ventral diameter of ovipositor 6.

Rhomboptera Brunner von Wattenwyl

Rhomboptera Brunner von Wattenwyl 1895, pp. 10, 38; Kirby 1906, p. 294; Hebard 1922, p. 189.

This genus is closely related to *Chloracris* Pict. & Sauss. According to Brunner von Wattenwyl (1895) the distinctive character is found in the transverse veins in the areae between the radial vein and the second medial vein, which transverse veins are contiguous in *Rhomboptera* and alternating in *Chloracris*. Hebard (1922), however, found that *Chloracris harrisoni* (Rehn) closely resembles *R. honorabilis* Brunner v. W. except that the transverse veins are neither contiguous nor subcontiguous. For this reason he doubts whether really the two genera should be kept separate. In my opinion the two genera should be regarded as distinct. The characters in which the genus *Rhomboptera* differs from *Chloracris* are the following:

In the tegmina the branch of the radial vein begins distinctly nearer to the base than in *Chloracris*.

In *Rhomboptera* the area between the two branches of the medial vein is relatively narrower than in *Chloracris* and the number of transverse veins in this area is smaller (cf. figs. 2 b and 2 c).

Another constant character in the genus *Rhomboptera* is that of the dark line along the fore margin of the lateral lobes of the pronotum.

According to the shape of the pronotum it cannot be denied that the genera *Rhomboptera* and *Chloracris* are closely related.

Rhomboptera honorabilis Brunner von Wattenwyl

Rhomboptera honorabilis Brunner von Wattenwyl 1895, p. 38, pl. 1 fig. 8; Kirby 1906, p. 294; Hebard 1922, p. 189.

Leiden Museum:

Borneo: Long Bloe-oe, I 1894, Borneo Expedition Dr. Nieuwenhuis, 1 ♀; Mahakam River, 1894, Borneo Expedition Dr. Nieuwenhuis, 2 ♀♀; Bloe-oe, 25 IX 1894, Borneo Expedition Dr. Nieuwenhuis, 1 ♂; Sugut, Sandakan Bay, Prakke, 1 ♀.
Locality unknown: 1 ♀, label bearing the number "42".

In his description of *Rhomboptera* Brunner von Wattenwyl gave some data about the males but in his "Species unica" the male is not mentioned. So we do not know whether Brunner von Wattenwyl really has seen the male of *Rhomboptera honorabilis* or not.

In the material of the Leiden Museum there are two females which have tegmina of a length of 85 mm, which is slightly longer than the measurements given by Brunner von Wattenwyl. These specimens bear 6 coloured lines on both tegmina, just like the type specimen which is figured in Brunner von Wattenwyl's monograph. Two other female specimens which are a little smaller than the above-mentioned ones show only 5 such lines on the tegmina (fig. 2 c). These specimens which at first sight might be regarded as a distinct variety are linked to the typical form by a specimen with 6 lines on the left tegmen and 5 on the right.

The only male is much smaller than the females. But this male in all details fits into the general description, the measurements only are proportionally smaller: length body 28½ mm, length pronotum 8½ mm, length tegmina 54 mm, breadth tegmina 13½ mm, length anterior femora 7½ mm, length posterior femora 18 mm.

Brunner von Wattenwyl gives no information about the colour of the species. The general colour of the tegmina is grass-green, the oblique lines are whitish, bordered at one side with pink. Near the top of the tegmina some spots of a dark orange-colour are found (black in fig. 2 c). The pro-

notum too is green but bears some irregular yellow patches on the disc and a dark brown or black line along the fore margin of the lateral lobes. The body and the legs are light green.

Rhomboptera semilunata nov. spec.

Leiden Museum:

Locality unknown: 1 ♀ (holotype).

This species which is based on a single female specimen, is a little aberrant as the transverse veins between the two branches of the medial vein in the tegmina alternate with the percurrent veins between the radial and the first medial branch veins (fig. 3 c).

The species is characterized by the black, brown-bordered semilunar marking at the base of the tegmina between the radial and the medial veins (fig. 3 c).

The pronotum is of the same general shape as in *Rh. honorabilis* Brunner v. W. but the denticulation at the lower fore margin of the lateral lobes is sharper.

The face is not whitish as in the other species but light brownish.

The basal half and the distal end of the hind tibiae are dark brown like their whole ventral surface. The thorns of the hind legs are of the shape as usual in the genus, varying in colour in shades of brown like the part of the leg on which they are found. The legs of the other species are coloured in shades of light green or yellow with thorns in the same colour.

According to the relative number of transverse veins and their position, the general appearance and the dark fore border of the lateral lobes of the pronotum this species should be placed into the genus *Rhomboptera.*

Measurements in mm: length body 42½; length pronotum 10; length tegmina 68½; breadth tegmina 20½; length anterior femora 21; length posterior femora 21; length ovipositor 20.

Pseudophyllus Serville

Pseudophyllus Serville 1831, p. 143; 1839, p. 464; Brullé 1835, p. 136; Blanchard 1840, p. 21; de Haan 1842, p. 203; Caudell 1927, pp. 31, 32; Karny 1931, p. 52; Chang 1935, p. 36.

Cleandrus Stål 1874, p. 50; Pictet & Saussure 1892, p. 6; Brunner von Wattenwyl 1895, pp. 10, 38; Kirby 1906, p. 294; 1910, p. 572; Karny 1923 a, p. 167; 1924, p. 173; 1925, pp. 31, 32; 1926 b, p. 114.

Pseudophyllus neriifolius (Stoll)

(*Locusta neriifolia* Lichtenstein 1796, p. 82).

Gryllus Tettigonia neriifolius Stoll 1813, p. 11, pl. 4 a fig. 11.

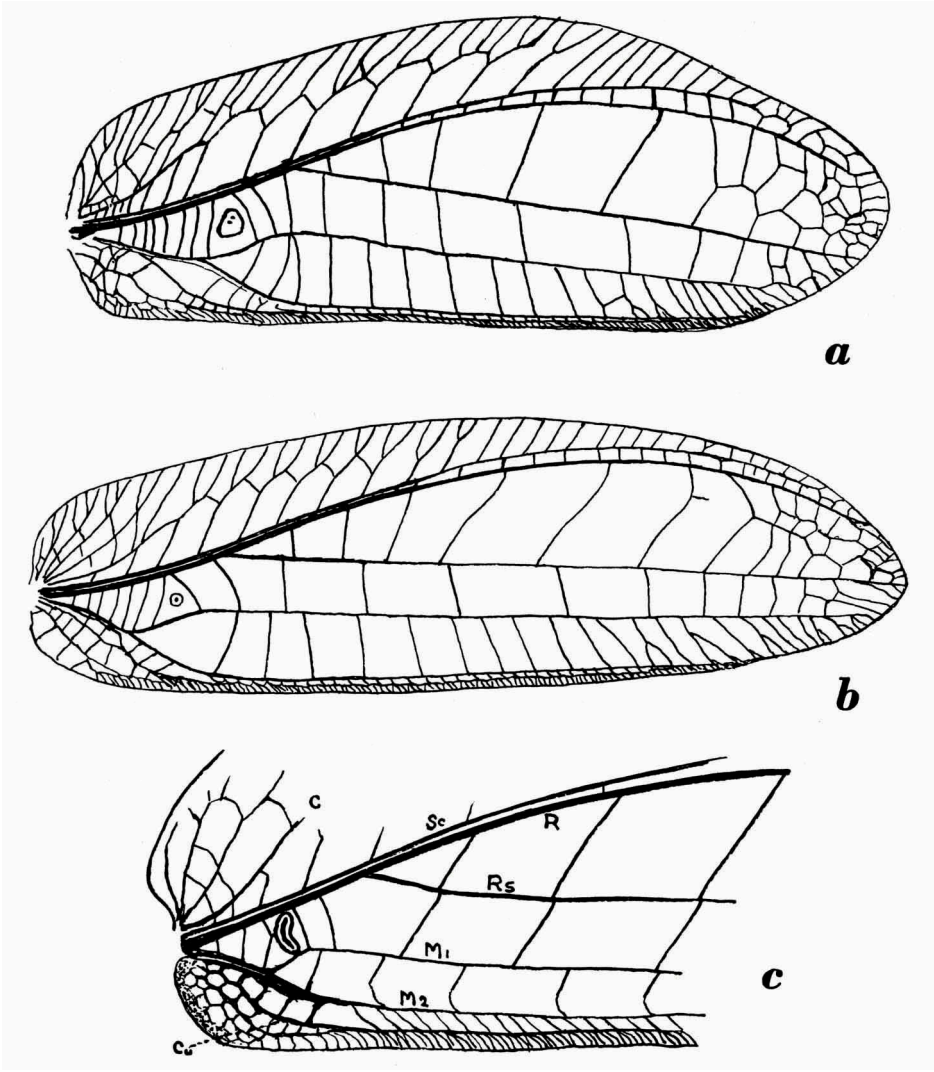

Fig. 3. a, *Pseudophyllus colosseus* (Hebard) ♀, right tegmen; b, *Pseudophyllus hercules* (Karny) ♀ (holotype), right tegmen; c, *Rhomboptera semilunata* nov. spec. ♀ (holotype), base of right tegmen. C. costal vein or costa; Cu, cubital vein or cubitus; M1, first medial vein or media 1; M2, second medial vein or media 2; R, radial vein or radius; Rs, branch of the radial vein or sector radii; Sc, subcostal vein or subcosta. a and b, natural size; c, × 3.

Pseudophyllus graniger Serville 1839, p. 467; Karsch 1887, p. 259.
Locusta (Pseudophyllus) granigera de Haan 1842, p. 204.
Cleandrus graniger Stål 1874, p. 67; Pictet & Saussure 1892, p. 13, pl. 1 figs. 3 and 4; Brunner von Wattenwyl 1895, p. 39, pl. 1 fig. 9; Dammerman 1919, p. 100.
Cleandrus neriifolius Kirby 1906, p. 295; 1910, p. 572; Bruner 1915, p. 272; Karny 1920, p. 207.
Cleandrus neriifolius Licht. (nec Stoll) Karny 1924, p. 173; 1926 b, p. 114.
Cleandrus neriifolius var. *uninotatus* (nec Serville) Karny 1924, p. 174.
Pseudophyllus neriifolius Caudell 1927, p. 32; Chang 1935, p. 36 (per errorum).
Cleandrus (Pseudophyllus) graniger Dammerman 1929, p. 133.

Leiden Museum:

Sumatra: Boenga-Mas, Palembang, A. L. van Hasselt, 1 ♀; Solok, XI 1912, P. O. Stolz, 1 ♀; Solok, VIII 1913, P. O. Stolz, 1 ♀; Atjeh, Mr. W. Baerts, 1 ♂; Soerian, 8 VII 1915, P. O. Stolz, 1 ♂; Sumatra Expedition 1877/78, 1 ♂.
Banka: IX 1885, Vosmaer, 3 ♀♀.
Java: Batavia, XII 1907, E. Jacobson, 2 ♀♀; Banjoewangi, 1910, Dr. D. Mac Gillavry, 1 ♂; Garoet, 1929, W. C. van Heurn, 2 ♀ ♀; Batavia, Dr. P. Buitendijk, 1 ♀; Batavia, Mans-Groen, 2 ♀♀; Java, 2 ♀♀.
Locality unknown: 1 ♀ and 1 ♂ larva.

Amsterdam Museum:

Sumatra: Midden Sumatra, 1907. J. P. Kleiweg de Zwaan, 1 ♀; Palembang, 1 ♀.
Java: Soerabaja, coll. Bernelot Moens, 1 ♀.
Locality unknown: Bik don., 1920, 1 ♀; 1 ♀.

Mr. Willemse's Collection:

Java: Tjipanaram (Gedeh) 1 ♂; Buitenzorg, 1 ♀ and 1 ♂.
Dutch East Indies: 1 ♀ and 1 ♂.

I do not know whether Lichtenstein (1796) described *Locusta neriifolius* in the Catalogue of the Hamburg Museum or that this is only a nomen nudum. Karny (1924) gives no further informations about this paper but mentions Lichtenstein as the author of *neriifolius*. As the paper itself was not available to me I cannot state who is the author of the name. For the present *neriifolius* Stoll will be maintained, this being the type-species of Serville's genus *Pseudophyllus*.

The species is easily known by the rather inflated general shape, the granulated pronotum with an angulated hind border, the unicolourous vertex and the ocellate elytra.

In the female the ocelli (ring-shaped veins) are found at the tegminal base between the radial and the medial vein.

In the males the anterior branch of the medial vein is bent anteriorly near the base and the ocelliform markings are found between the two branches of the medial vein just behind this curved part of the anterior branch (M2).

In one female specimen from Batavia (XII 1907, E. Jacobson) the left tegmen shows the venation of the male.

The ring-shaped marking at the base of the tegmina is varying in colour from light green to dark brown or black.

After this character Karny distinguished a variety which he regarded as *Pseudophyllus uninotatus* Serville. Serville's species, however, appears to belong into the genus *Onomarchus* Stål.

According to Karny the variety with a dark ring occurs on Java. In the material of the Leiden Museum the specimens from Sumatra all possess a more or less distinct dark ring whilst in the specimens from Java the ring is greenish. From Batavia both forms are present. As in the material from Sumatra there are specimens which may be regarded as intermediate forms I am not convinced that this difference alone is sufficient to regard the specimens with dark rings on the tegmina as a separate variety.

Pseudophyllus fortis Walker

Pseudophyllus fortis Walker 1869, p. 413; Karny 1931, p. 53.
Cratylus obesus Stål 1877, p. 44; Brunner von Wattenwyl 1895, pp. 34, 35.
Cleandrus latipennis Brunner von Wattenwyl 1895, pp. 39, 40; Kirby 1906, p. 295; Bolívar 1913, p. 8; Bruner 1915, p. 273.
Cleandrus fortis Kirby 1906, p. 295; Hebard 1922, p. 189; Bruner 1915, p. 273.
Chloracris fortis Caudell 1927, p. 32.

Mr. Willemse's Collection:

Philippine Islands: Suriga, Mindanao, 1 ♀; Buranen, Luzon, 1 ♂.

This species is very similar to *Pseudophyllus neriifolius* Stoll but it is easily recognizable by the broader tegmina, the indistinct ocelliform marking at the tegminal base and especially by the situation of the first transverse vein in the area between the radial vein and its branch. This first transverse vein is directed obliquely towards the tegminal base in contradistinction with the other transverse veins in the same area which point obliquely towards the apex. In *neriifolius* all transverse veins in this area point more or less towards the apex.

Pseudophyllus hercules (Karny)

Cleandrus hercules Karny 1923 a, p. 168; 1924 p. 175.
Cleandrus colosseus Karny (nec Hebard) 1926 b, p. 114.

Leiden Museum:

Borneo: 1 ♀ (holotype).
Sumatra: Palembang, 1 ♀.

Mr. Willemse's Collection:

British North Borneo: 1 ♀.

Karny's (1923 a) description of *Cleandrus hercules* was based on a single female specimen. Some years before Hebard (1922) described the species *Cleandrus colosseus* after a single male. In 1923 Karny had not yet seen Hebard's paper, but afterwards (Karny, 1926 b) he could compare the descriptions of the two species and was inclined to regard their differences due to sexual or individual variation. He therefore placed his *C. hercules* into the synonymy of *Cleandrus colosseus* (Hebard).

In the collection of the Leiden Museum there are three female specimens which correspond in nearly every detail. A closer examination, however, shows that one of these in some respects is distinct from both others, this specimen is identified here as the female of *Pseudophyllus colosseus* (Hebard).

The differences between the female of *P. hercules* (Karny) and that of *P. colosseus* (Hebard) may be summarized as follows: In *P. colosseus* (Hebard) the tegmina are relatively broader than in *P. hercules* (Karny), especially the area between the radial vein and the radial branch vein and the preradial area are broader than in the other species (fig. 3 a, b). Moreover the number of transverse veins between the radial vein and its branch is smaller in the above mentioned specimen of *P. colosseus* (Hebard) and agrees more with Hebard's figure of the tegmen of the male of *colosseus*.

Pseudophyllus colosseus (Hebard)

Cleandrus colosseus Hebard 1922, p. 192, pl. 16 figs. 12 and 13; Karny 1924, p. 114.

Leiden Museum:

Sumatra: Padang, Müller, 1 ♀.

The following is a description of the female of *Pseudophyllus colosseus* (Hebard), which hitherto was unknown.

The principal character is found in the tegmina. They are broader than in *Pseudophyllus hercules* (Karny). The preradial field is broader than in the latter species (fig. 3 a). The area between the radial vein and the radial branch vein is of another shape, shorter, and the transverse veins in this area are not bent and less numerous than in *hercules*. The marking at the base of the tegmina between the radial and the medial veins is much larger than in *hercules*, margined with brown and with a spot of brown in the centre.

The tegminal length is 107 mm, the breadth 38 mm.

The armament of the legs is as follows: fore femora ventro-internal 3 little spines; fore tibiae: ventro-internal 8, ventro-external 6; middle femora; dorsal 0, ventro-internal and external 5; middle tibiae dorso-

internal 4, external 0, ventro-internal and external 6; hind femora: dorsal 12 to 13 irregular short conical spines, ventro-internal 12 to 13, external 11; hind tibiae: dorso-internal 9, external 0, ventro-internal 10, external 12.

This armament differs only a little from that of the female of *Pseudophyllus hercules* (Karny), especially the number of ventral spines on the middle legs is smaller.

The general colour of the specimen is yellowish brown, the legs and pronotum and the frontal part of the head are slightly darker than the rest and of a ferrugineous shade.

The original colour is entirely lost, probably it was of a light green.

Measurements in mm: length body 60, length pronotum 18½, length tegmina 107, breadth tegmina 38, length fore femora 16½, length middle femora 17½, length hind femora 34, length ovipositor 28½.

Climacoptera Brunner von Wattenwyl

Climacoptera Brunner von Wattenwyl 1895, p. 41; Kirby 1906, p. 295; Karny 1924, p. 176; 1926 b, p. 114.

Climacoptera parallela (Walker)

Pseudophyllus parallela Walker 1869, p. 412.
Climacoptera ornata Brunner von Wattenwyl 1895, p. 42.
Climacoptera parallela Kirby 1906, p. 296; Karny 1924, p. 176; 1926 b, p. 115; Willemse 1933 b, p. 8.

Leiden Museum:

Sumatra: West Sumatra, I 1894, D. van der Hoop, 1 ♀.
Java: Tjibadak, VI 1919, No. 17, W. C. van Heurn, 1 ♀.

Amsterdam Museum:

Java: Preanger Regentschappen, 1888, Loman, 1 ♀; Preanger, 1906, Beuker, 1 ♀; Buitenzorg, 1881, Oudemans, 1 ♀.
Locality unknown: Bik don., 1920, 1 ♀.

Mr. Willemse's Collection:

Java: Buitenzorg, 1 ♀; Salatiga, 1 ♀; Malang, 1 ♀.

Till 1926 this species was only recorded from Java. Karny (1926 b) mentions one male specimen from Perak (Malay Peninsula). Both localities are linked together by one find from Sumatra which is mentioned in the material examined. The species has extensively been described after fresh specimens by Karny (1924).

Onomarchus Stål

Onomarchus Stål 1874, p. 51; Brunner von Wattenwyl 1895, p. 42; Kirby 1906, p. 296; Karny 1923 a, p. 168; 1924, p. 177; 1925, p. 41; 1926 b, p. 115; Chang 1935, p. 37.
Onomarcus Pictet & Saussure 1892, p. 14.

Onomarchus is a well established genus, distinct from allied genera in the following characters:

The pronotum bears only one transverse groove in the anterior half of the disc. The hind margin of the pronotum is acutely angular. The prosternum is smooth. The hind margin of the tegmina is broadly sinuous.

Three of Serville's (1839) species of *Pseudophyllus* belong to the genus *Onomarchus,* viz., *uninotatus, leuconotus* and *cretaceus.* The principal characters of *Pseudophyllus leuconotus* Serv. are: the disc of the pronotum is white, the lateral lobes are green. The head is green but the genae are yellow. The tegmina are very broad and nearly twice as long as the body. The inner dorsal margin of the hind tibiae bears 5 large, stout spines which are curved apically. The ventral margin bears 5 or 6 very small thorns.

The characters of *cretaceus* Serv. are: The lateral lobes of the pronotum are white, the disc is yellowish green with a longitudinal white patch on the posterior part. The head is green with white genae, the mouth parts are whitish. The tegmina are semitransparent, oval, and of a pale green. The posterior femora bear 8 to 9 stout spines ventrally, the hind tibiae are armed with a number of small spines.

From the description of *Pseudophyllus uninotatus* Serv. the following characters are of particular interest here: head green, genae white, mouth parts also white, lateral lobes of the pronotum finely granulated at the rounded fore angles (Serville 1839, p. 468: "finement dentelés aux angles antérieurs"), tegminal hind margin sinuously curved, apex rounded, colour of the tegmina green with yellowish patches and, at the base near the radial vein, a white spot. Fore and middle femora with small thorns ventrally. Hind femora ventrally with 7 or 8 thorns. The hind tibiae have small thorns on the inner ventral and on the outer dorsal margin, but on the inner dorsal margin much larger thorns are found which are faintly bent.

De Haan (1842) united these species as *Locusta (Pseudophyllus) leuconota,* and distinguished in the species two forms:

a.) (Cretacea, S. mas.) Elytris maculis magnis lacteis nebulosis, latioribus; pedibus anticis mediisque fusco-punctatis et marmoratis; pronoto cretaceo. Java. Long. elytr. ♂ 2″ 2‴, ♀ 3″. Lat. ♂ 9‴, ♀ 15‴.

b.) (Leuconota, S. mas; uninotata, S. femina.) Elytris viridibus, paulo angustioribus, vix nebulosis, puncto lacteo prope basin; pedibus anticis mediisque griseis, lacteo-nebulosis; pronoto viridi. Aloen-Aloen (Java), Padang, Pontianak, Banjermassing, Sidney. Femina. Long. elytr. 3″. Lat. 1″.

In my opinion the diagnosis sub a can only indicate *leuconotus* Serv. as this species has the fore and middle legs spotted and marbled with brown and the pronotum white dorsally. The diagnosis sub b indicates *uninotatus*

Serv. However, the measurements of the tegmina are mixed up as well as the names and the localities.

In the Leiden Museum there are two female specimens, one from Java and one from Padang. After de Haan's diagnosis they belong to *Locusta (Pseudophyllus) cretaceus* according to the white pronotum and the speckled fore and middle legs. The tegmina are 81 mm (3″) long and 33½ mm (15‴) broad.

Moreover, there are 1 ♀ from Padang, 2 ♀♀ from Java, 1 ♀ from Sydney, 1 ♀ from Amboina, 1 ♂ from Banjermassin and 1 ♂ from Borneo, which after de Haan's diagnosis all belong to *Locusta* (*Pseudophyllus*) *leuconota* and *uninotata*. The tegmina of the females are long 3″ and broad 1″, those of the males long 2″ 2‴ and broad 9‴.

In de Haan's paper this species is figured on pl. 20 figs. 9 and 10.

When comparing these specimens from the old collection with the descriptions by Serville I found that the specimens with the milky-white pronotal disc belong to *P. leuconotus* Serv., but when comparing the other specimens with *P. cretaceus* Serv. I could only state that the specimens do not belong to this species as they have 7 or 8 rather stout spines on the dorsal margin of the hind tibiae. Moreover the tegmina are opaque and the pronotum in a few specimens of the old collection only shows a tinge of white on the pronotal disc but no distinct markings as described by Serville for *cretaceus*.

These specimens which, moreover, possess a white spot near the tegminal base and a green pronotum agree with Serville's description of *Pseudophyllus uninotatus*.

Kirby (1906) and Karny (1924) considered *Pseudophyllus uninotatus* Serv. to belong to the genus *Pseudophyllus* in the more limited sense (*Cleandrus* Stål) as Serville describes some crenules at the fore angle of the lateral lobes of the pronotum, but these crenules are very small and not as distinct as in *Pseudophyllus neriifolius* (Stoll). In some specimens they are very indistinct or even lacking. In the larvae of *uninotatus* this crenulation of the lateral lobes is more distinctly visible.

Walker (1869) mentions *Pseudophyllus leuconotus, P. tenebrosus* and *P. cretaceus*. After Kirby (1906), who saw Walker's type specimen, and after Karny (1924) *P. tenebrosus* should be considered as a brown variety of *Onomarchus leuconotus* Serv.

As I have not seen Walker's (1869) paper nor material it must remain undiscussed here and I cannot decide as to the identity of *O. tenebrosus* Walk.

Stål (1874) who established the genus *Onomarchus*, only mentions

leuconotus Serv. as a species in his new genus. This species therefore should be considered as the type species of this genus.

Pictet & Saussure (1892) described three species in the genus (*Onomarcus* per errorem), viz., *latipennis, cretaceus* and *mandarinus* and added figures of *latipennis* and of their *cretaceus.* After their descriptions and figures *O. latipennis* appears to be synonymous with *leuconotus* Serv., their *cretaceus* with *uninotatus* Serv. and not with *cretaceus* Serv. Their third species, *mandarinus,* has not yet been identified exactly but it is very probable that it was described either after an aberrant specimen of *O. uninotatus,* or after a specimen of a local form (variety) of this species from Tonkin. The type specimen of *O. mandarinus,* however, is not present in the collection of the Geneva Museum. So it was impossible for me to trace this species.

Brunner von Wattenwyl (1895) thought that the differences between Serville's *leuconotus* and *cretaceus* and between the species described by Pictet & Saussure were based on the relative width of the tegmina only. He remarks that he had seen all intermediate forms from Java and in consequence had to unite all these species as *Onomarchus leuconotus.* Further he described two new species: *submuticus* and *nobilis.*

Brunner von Wattenwyl (1895) was wrong when he established the synonymy of all names known to him in the genus as among these were included the two species mentioned above. His *O. submuticus* appears to be *O. cretaceus* Serv. and his diagnosis of *O. nobilis* leaves no doubt as to its synonymy with *O. leuconotus* Serv.

Kirby (1906) mentions the same three species as Brunner von Wattenwyl and regards all other described species as varieties of *Onomarchus leuconotus* (Serv.). He places, however, *Pseudophyllus uninotatus* Serv. into the genus *Cleandrus.*

Dammerman (1920) figured *Onomarchus leuconotus* Serv. but named it *Pseudophyllium.*

Karny (1924) reduced the number of species in the genus to four and showed that the investigators after Serville had wrongly interpreted the species of this author. After a critical analysis of the descriptions by the various authors he found that the identification of the species was very well possible after the denticulation of the legs only, especially of the hind legs. His species are : 1, *O. leuconotus* Serv. (syn.: *Locusta* (*Pseudophyllus*) *leuconota* var. *cretacea* de Haan; *Pseudophyllus tenebrosus* Walker; *Onomarcus latipennis* Pict. & Sauss.; *O. leuconotus* Brunner v. W. partim); 2, *O. cretaceus* Serv. (syn.: *O. submuticus* Brunner v. W.); 3, *O. mandarinus* Pict. & Sauss. (syn.: *Locusta* (*Pseudophyllus*) *leuconota* var. *leuconota,*

uninotata de Haan; *Onomarcus cretaceus* Pict. & Sauss.; *Onomarchus leuconotus* (partim) of various authors, nec Serv.); 4, *O. nobilis* Brunner v. W. To Karny's meritorious revision of the genus the following must be

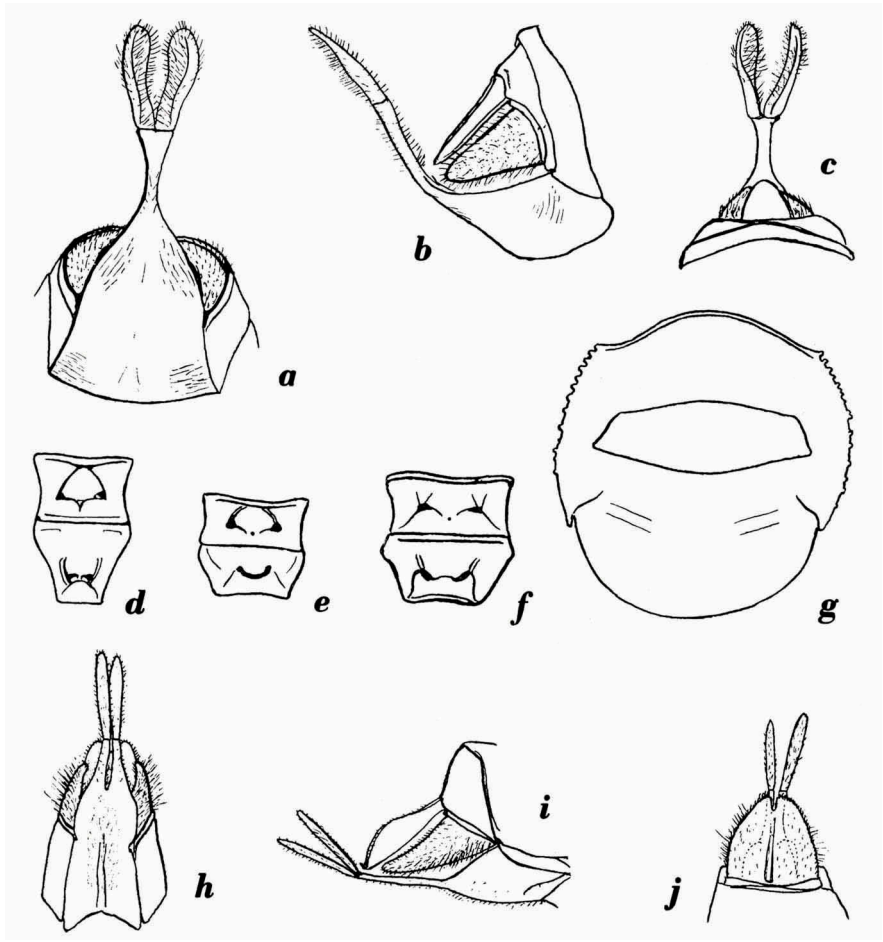

Fig. 4. a—c. *Onomarchus leuconotus* (Serv.) ♂, end of abdomen, ventral, lateral and dorsal view; d, *Onomarchus cretaceus* (Serv.) ♀, meso- and metasternum; e, *Onomarchus uninotatus* (Serv.), meso- and metasternum; f, *Onomarchus leuconotus* (Serv.), meso- and metasternum; g—j, *Microprion temnophylloides* Karny ♂ (plesiotype), g, pronotum, dorsal view, h—j, end of abdomen, ventral, lateral and dorsal view. a—c and g—j, × 5¼; d—f, × 1½.

added: *O. nobilis* Brunner v. W. should be placed into the synonymy of *O. leuconotus* Serv., and *O. uninotatus* Serv. should be used instead of *mandarinus* Pict. & Sauss.

The three species of Serville, which have given cause to such a great deal of confusion, can be distinguished in the following manner (for the larvae the same characters may be used as for the adults):

1. hind tibae with 5 strong thorns on the dorso-internal margin; pronotum dorsally white, laterally green; fore and middle legs spotted and marbled with brown; tegmina very broad; ovipositor rather broad: *O. leuconotus* (Serv.).
2. hind tibiae with 7 strong thorns on the dorso-internal margin; pronotum green with indistinct whitish flush; fore and middle legs greenish with white ventral surface; tegmina rather broad, with white spot near the base; ovipositor about as in the preceding species, nearly five times as long as broad: *O. uninotatus* (Serv.).
3. hind tibiae with 6 small thorns on both dorsal margins; pronotum laterally white, dorsally green with longitudinal white patch; tegmina more slender, of a semitransparent light green with several whitish spots; ovipositor more slender, about six times as long as broad: *O. cretaceus* (Serv.).

Onomarchus leuconotus (Serville)

Pseudophyllus leuconotus Serville 1839, p. 469; Walker 1869, p. 410.
Locusta (Pseudophyllus) leuconota var. a, *cretacea* de Haan (nec Serv.) 1842, p. 204.
? *Pseudophyllus tenebrosus* Walker 1869, p. 410.
Onomarchus leuconotus Stål 1874, p. 68; Brunner von Wattenwyl 1895, pl. 1 fig. 11; Bruner 1915, p. 273; Karny 1920, p. 204 (partim); Hebard 1922, p. 193 (partim); Karny 1924, p. 179; 1925, p. 41; 1926 b, p. 115; 1929, p. 192; Chang 1935, p. 37 (partim).
Onomarcus latipennis Pictet & Saussure, 1892, p. 15, pl. 2 figs. 6, 7 and 7 a.
Onomarchus nobilis Brunner von Wattenwyl 1895, p. 44; Kirby 1906, p. 296; Karny 1924, p. 181.
Onomarchus leuconotus var. *latipennis* Kirby 1906, p. 296.
Onomarchus leuconotus var. *tenebrosus* Kirby 1906, p. 296.
Pseudophyllium Dammerman 1920, p. 152, fig. 3.
Onomarchus tenebrosus Karny 1923 a, pp. 168, 169.
Onomarchus latipennis Caudell 1927, p. 32.

Leiden Museum:

Sumatra: Padang, 1 ♀.
Java: 1 ♀; Tjigombong, Preanger, 1915, J. B. Corporaal, 1 ♀; Java orient., C. Mulié, 1907, 1 ♀ larva; Teysmann, 1 ♀ larva.

Amsterdam Museum:

Java: Buitenzorg, 1888, M. Weber, 1 ♀; Buitenzorg, ex coll. E. Jacobson, 1 ♀ larva.
Locality unknown: 1920, Bik don., 1 ♀; 1 ♀; 1 ♂.

Mr. Willemse's Collection:

Java: Bandoeng, 3 ♀♀; Salatiga, 1 ♀; Malang, 1 ♀; Soekaboemi, 1 ♂.
Locality unknown: 1 ♀.

The characters of this species have already been mentioned above in comparison with the other species in the genus. An additional character is still found in the narrow strip of little pits running from the lower margin of the eyes downwards along the genae, which is not found in the other species. Another character which may be of use to identify the species is that of the shape of the meso- and metasternum (fig. 4 f). The position of the pits and grooves is rather constant. For comparison of this character in the three species the meso- and metasterna are figured (fig. 4 d and e).

The specimens recorded above undoubtedly belong to *O. leuconotus*, as they have very broad tegmina, the fore and middle legs speckled with dark brown, and a white pronotal disc.

As the male of this species has not yet been figured in details the abdominal end is figured here (figs. 4 a—c). The subgenital plate is broadest in the basal half, then tapers strongly and forms a stalk-like protuberance in its apical third, on the top of which the more or less compressed styli are found. In lateral view the cerci appear conical. They are broad at their base tapering to the top which is slightly curved inwards. The supra-anal plate is oval.

Onomarchus cretaceus (Serville)

Pseudophyllus cretaceus Serville 1839, p. 470; Walker 1869, p. 410; Karny 1929, p. 193.
Onomarchus submuticus Brunner von Wattenwyl 1895, p. 44; Kirby 1906, p. 296; Karny, 1923 a, p. 169; 1924, p. 180; 1929, p. 193.
Brunnea transversalis Karny 1924, p. 181.

Leiden Museum:

Sumatra: Aur Kumanis, III 1914, E. Jacobson, 1 ♀.
Borneo: Dutch North Borneo, Grensexpeditie 1912, leg. Mohari, 1 ♀ (type of *Brunnea transversalis* Karny 1924).

By the characteristical white markings on the pronotum, the shape of the meso- and metasternum, the rather small thorns on the dorsal margins of the hind tibiae, and in the females by the more slender ovipositor this species can easily be distinguished from *O. uninotatus* (Serv.).

The specimen from Sumatra in every respect corresponds with Serville's description of *Pseudophyllus cretaceus*. It has exactly the same colour pattern of pronotum and head, the same colour of the tegmina. The denticulation of the legs, especially that of the hind tibiae, which possess feeble spines, closely fits in with Serville's description.

The specimen from Borneo is the type specimen of *Brunnea transversalis* Karny. In the description Karny mentioned already that the tegminal venation is similar to that of *Onomarchus*. Upon a close study of Karny's type specimen I found that the denticulation of the legs is nearly identical with that of the specimen of *O. cretaceus*. Further Karny's specimen also has the subquadrate mesosternum and a longitudinal metasternum.

According to Karny's description the hind margin of the pronotum is broadly rounded. Unfortunately now the pronotum of the specimen is somewhat damaged, so that this character is no more apparent.

The specimen is altogether discoloured, no details of the pattern are to be found. The other specimen in the Leiden Museum has better kept its colour, it is of a semitransparent light bluish green with milky-white spots along the radial vein and its branch, at the base of the medial vein, and along the hind margin of the tegmina.

Onomarchus uninotatus (Serville)

Pseudophyllus uninotatus Serville 1839, p. 468; Brunner von Wattenwyl 1862, p. 93.
Locusta (Pseudophyllus) leuconota var. b. *leuconota, uninotata* de Haan (nec *leuconotus* Serv.) 1842, p. 204, pl. 20 figs. 9 and 10; Karny 1920, p. 208.
Onomarcus cretaceus Pictet & Saussure 1892, p. 15, pl. 2 figs. 8 and 8 a.
Onomarcus mandarinus Pictet & Saussure 1892, p. 16.
Onomarchus cretaceus Brunner von Wattenwyl 1893, p. 173; Karny 1925, p. 41.
Onomarchus leuconotus Brunner von Wattenwyl 1895, p. 43; Karny 1920, p. 208; 1926 b, p. 115; Caudell 1927, p. 32.
Cleandrus uninotatus Kirby 1906, p. 295.
Onomarchus leuconotus var. *cretaceus* Kirby 1906, p. 296.
Onomarchus leuconotus var. *mandarinus* Kirby 1906, p. 296.
Onomarchis leuconotus Hebard 1922, p. 193.
Onomarchus mandarinus Karny 1924, p. 180; 1926 b, p. 115; 1929, p. 192.
Pseudophyllus titan Caudell (per errorum) 1927, p. 32.

Leiden Museum:

Sumatra: Solok, Padang, various dates from 1903 to 1915, P. O. Stolz, 7 ♀♀ and 6 ♂♂; Sumatra Expedition 1877/78, 1 ♀ (labeled: Spjs, 1877); Sawahloento, Padangsche Bovenlanden, Mej. Delprat, 1 ♀; Padang, H. W. van der Weele, 1 ♀; Pladjoe, VI 1915, M. Horst, 1 ♀ and 2 ♂♂; Palembang, 1 ♀; Padang 1 ♀; Sumatra's Oostkust, 1922/23, H. G. Wittenrood, 1 ♂; Deli, 29 XII 1904, A. van Prehn-Wiesl, 1 ♀; West Sumatra, Loeboekbangkoe, V 1905, J. Menzel, 1 ♀; Padang, Fort de Kock, 1904, J. Menzel, 1 ♂.

Banka: Singkep, J. Semmelink, 1 ♀.

Batoe Islands: Poelau Tello, A. L. van Hasselt, 1 ♀ and 1 ♂.

Borneo: Banjermassin, 1 ♂; 1 ♂; Sintang, VIII/IX 1894, Borneo Expedition, 2 ♀♀; Semitau, 1894, Borneo Expedition, Velthuysen, 1 ♀; Poelau Sibau River, VI 1894, J. Büttikofer, 1 ♀; Sugut, Sandakan Bay, Prakke, 1 ♀; Long Bloe-oe, Borneo Expedition Dr. Nieuwenhuis, XII 1898, 1 ♂; Long Bloe-oe, Borneo Expedition Dr. Nieuwenhuis, I 1899, 1 ♂; Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♀; J. Büttikofer, 1 ♂; Nanga Raoen, Mandei River, III 1894, J. Büttikofer, 1 ♀.

Java: van der Hoeven, 2 ♀♀, 1 juv. ♀, 1 juv. ♂.
Amboina: 1 ♂.
Australia: Sydney, 1 ♀.

Amsterdam Museum:

Sumatra: Fort de Kock, 1926, 920 m, leg. E. Jacobson, 1 ♀ and 1 ♂; Loeboeksikaping, Sumatra's Westkust, 450 m, 1926, leg. E. Jacobson, 1 ♂; Lahet, Palembang, Giesbers, 1 ♀.
Java: Sinagar, 1888, M. Weber, 1 ♀.
Borneo: Barabei, Z.-O. Afdeeling, A. Pool don., 1883, 2 ♀♀.
Locality unknown: Bik don., 1920, 1 ♀ and 1 ♂.

Mr. Willemse's Collection:

Annam: Phuc-Son, 3 ♀♀ and 1 ♂.
Borneo: 1 ♂.
Locality unknown: 3 ♀♀.

The species has already rather elaborately been described in the preceding pages, but still some details may be added.

The general colour is green. In the females the tegmina have one or two white spots near their base, the largest one situated between the radial and the medial vein. The second white spot, when present, is found before the subcostal vein. These white spots do not occur in the males.

The pronotum is green, sometimes with a flush of white, but never with markings of a definite form.

The head is of a yellowish green, the forehead is dark green, broadly bordered with white along the genae. No minute pits are found in the area below the eyes. The clypeus, labrum and the mandibulae are of a whitish green (in old museum specimens this colour has altered to various shades of yellow).

The general colour of the legs is of a greenish grey shade, but the middle femora and tibiae are white below, appearing as if painted. The hind tibiae bear a row of strong broadly based thorns (6 to 7), which are situated at equal distances.

The tegmina have been figured by de Haan (1842, pl. 20 figs. 9: ♂, and 10: ♀). Brunner von Wattenwyl (1895) described *O. uninotatus* (Serv.) as *O. leuconotus* but his figure (l. c., fig. 11) is made after a male which is really *O. leuconotus* (Serv.) as can be seen from the spotted fore legs, the white-covered pronotum, the broad tegmina and the armament of the hind tibiae.

Pictet & Saussure (1892, pl. 2 fig. 8) figured the female after a somewhat damaged specimen, but the venation of the tegmina is distinctly visible. They also give a figure (l. c., fig. 8 a) of the meso- and metasternum. A comparison of this figure with those of *O. cretaceus* and *O. leu-*

conotus in the present paper (figs. 4 d and 4 f) shows marked differences of specific value (cf. fig. 4 e, which shows meso- and metasternum of *O. uninotatus* (Serv.)).

In *uninotatus* and *leuconotus* the meso- and metasternum together are about as long as broad. In *cretaceus* they are nearly twice as long as broad. In *uninotatus* the holes in the metasternum are found near the caudal margin, in the narrowed part. In the other species these holes are situated nearer to the central parts of the metasterna. In *uninotatus* they are joined by a curved groove. In *leuconotus* they are found at a greater distance and the groove is nearly straight with a small tubercle on its caudal margin.

Brunnea Brunner von Wattenwyl

Brunnea Brunner von Wattenwyl 1895, pp. 10, 44; Kirby 1906, p. 296; Karny 1924, p. 181.

Brunnea cincticollis Brunner von Wattenwyl

Brunnea cincticollis Brunner von Wattenwyl 1895, p. 45, pl. 2 fig. 12; Kirby 1906, p. 181; Hebard 1922, p. 193; Karny 1924, p. 181.
Pseudophyllus pomposus Karny, 1926 b, p. 112, pl. 3 fig. 3.

Leiden Museum:

Sumatra: Solok, II 1912, P. O. Stolz, 1 ♀; Solok, IX 1913, P. O. Stolz, 1 ♀; Sipirok, Sumatra Expedition 1877/78, A. L. van Hasselt, 1 ♀.

It is rather difficult to define the generic characters of *Brunnea* against those of *Chloracris* Pict. & Sauss. (*Pseudophyllus* Brunner v. W.).

Brunner von Wattenwyl (1895) met with these difficulties when composing his key to the genera. In his key he even warned against misidentifications of this kind. The two genera, however, can be distinguished by the following characters: In *Brunnea* the pronotum bears two transverse furrows on its dorsal surface, the hindmost is deepest and lies at about the middle of the length, the other which is less distinct is found close before it. In *Chloracris* both transverse furrows of the pronotum are about equally deep. In *Brunnea* the hind tibae are smooth dorsally and in *Chloracris* all four crests of the hind tibae are armed. In *Brunnea* the antennae are dark reddish brown with broad white rings whilst in the other genus only greenish antennae are recorded.

Keeping this in mind I could prove that the type specimen of *Pseudophyllus pomposus* Karny in reality is a representative of the genus *Brunnea*. Moreover Karny's (1926 b) description and excellent figure leave no doubt as to the identity of the specimen with *Brunnea cincticollis* Brunner v. W.

The figure distinctly shows the characters of the species: the black-bordered pronotum, the smooth hind tibiae, the blue-bordered black markings in the postradial area of the tegmina, the yellow-bordered transverse veins in the same area and the black knees of all legs.

Brunner von Wattenwyl named the species *cincticollis* on account of the black border along the entire margin of the thorax. Sometimes this black border is partially interrupted, as, e.g., in the male specimen figured by Brunner von Wattenwyl. In one female specimen in the Leiden Museum the black border is interrupted in a similar manner, and; moreover, it does not occur on the posterior borders of the lateral lobes. It is interesting that in this specimen the pigmentation of the occiput and of the basal part of the antennae is less pronounced than in the other specimens of this species. In all probability a more extensive material of the species would show that an incomplete black border of the thorax is not uncommon.

In Brunner von Wattenwyl's records of measurements a misprint occurs: the length of the pronotum is 19.5 mm instead of 9.5 mm.

APRIONINI

Temnophyllus Brunner von Wattenwyl

Temnophyllus Brunner von Wattenwyl 1895, pp. 10, 46; Kirby 1906, p. 297; Karny 1923 a, p. 169; 1924, p. 182; 1926 b, p. 115.

Temnophyllus sjöstedti Karny

Temnophyllus sjöstedti Karny 1924, p. 183, fig. 77.

Leiden Museum:

Borneo: 1 ♀ (holotype); Balikpapan, VII 1912, Kampmeinert, 1 ♀.

The specimen from Balikpapan corresponds in every detail with the holotype.

Microprion Pictet & Saussure

Microprion Pictet & Saussure 1892, pp. 8, 17; Kirby 1906, p. 296; Hebard 1922, p. 196; Karny 1924, p. 185.
Micropion Brunner von Wattenwyl 1895, pp. 10, 53; Kirby 1906, p. 301.

This genus is easily distinguished from *Aprion* Serv. (*Phyllomimus* Stål) especially by its broader pronotum and by its having separate thorns on the ventral margin of the hind femora (these femora are serrated in *Aprion*). It strongly resembles the genus *Temnophyllus* Brunner v. W. in the shape of the pronotum but the tegmina are highly different in the two genera.

Microprion temnophylloides Karny

Microprion temnophylloides Karny 1924, p. 185, fig. 78; 1926 b, p. 117.

Leiden Museum:

Locality unknown: 2 ♀♀ (cotypes).
Borneo: Mahakam River, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♂; Kapoeas, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♂; Boven Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♂ (all plesiotypes).

Mr. Willemse's Collection:

Borneo: Kinabalu, 3 ♀♀.

A comparison of the three male specimens in the Leiden Museum with Karny's two cotypes of *Microprion temnophylloides* gives sufficient evidence of their identity. Especially the course of the primary and secondary veins of the tegmina, but also other characters, e. g., the armament of the legs, the shape and crenulation of the pronotum and the sternum, the distribution of the red pattern on the body, give strength for this view.

To the detailed description of the females by Karny I have nothing to add. As the males were hitherto unknown they may be described here in some detail.

The general colour of the living animal probably is greenish yellow. The specimens examined have a lemon-colour, head and prothorax are of a greenish tinge, the eyes are reddish-brown. The tegmina are of the same shape as in the females, tapering from the middle to the rounded apex. Along the radial vein there are red spots at the base of the principal transverse veins of the preradial area. In one of the females there is a series of discoloured yellowish spots at corresponding places of the tegmina. In the other female specimen not even traces of these spots can be found, probably on account of its being more strongly discoloured.

The arrangement of the secondary veins in the so-called preradial area of the tegmina and also of the other secondary veins in the males is almost the same as in the females.

The prothorax of the male (fig. 4 g) is slightly smaller than that of the female, the shape corresponds in both sexes.

The mesosternum and the metasternum are coalesced. Each part of this compound is about twice as broad as long, but together they are about as long as the breadth of the metasternum. The fore-border and the oblique fore-angles of the mesosternum are ornated with many crenules. The sides and hind border are smooth.

Dorsally the fore femora bear a crenulated keel. Ventrally 4 little thorns are found on the inner border and 7 to 12 indistinct crenules on the outer border. The middle femora are finely crenulated dorsally. Ventrally they bear 5 to 7 teeth on the outer border and 6 on the inner border. On the base of the posterior femora there is a well-developed crenulated dorsal keel, on the ventral borders of these femora there are 12 to 13 spines on the exterior side and 12 to 13 very small spines on the interior side.

The subgenital plate (fig. 4 h, i) reaches rather far backward, it is comparatively narrow. The side-borders converge towards the top. The terminal part has a deep incision of about one fourth of the total length. The styli are slightly longer than the incision, slender, lancet-shaped and rounded at the top. The supra-anal plate (fig. 4 i, j) is long, ovate, slightly incised at the top. The cerci are straight, curved at the utmost top only and ending in a little sharp thorn.

Measurements of the male in mm: length body 27½—30, length pronotum 6—6½, length tegmina 41½—44½, breadth tegmina 12—13½, length anterior femora 9—9½, length posterior femora 18—18½.

Mioacris Pictet & Saussure

Mioacris Pictet & Saussure 1892, pp. 7, 16; Brunner von Wattenwyl 1895, p. 50; Kirby 1906, p. 298; Karny 1923 b, p. 317; 1924, p. 187; 1926 a, p. 275; 1926 b, p. 116.
Chlorotribonia Pictet & Saussure 1892, pp. 7, 16; Brunner von Wattenwyl 1895, p. 50; Kirby 1906, p. 298; Matsumura & Shiraki 1908, p. 30.

Brunner von Wattenwyl (1895) united *Locusta (Aprion) brevifolia* de Haan, *Mioacris javana* Pict. & Sauss. and *Chlorotribonia acutipennis* Pict. & Sauss. under the specific name *Chlorotribonia brevifolia*. I had the opportunity to examine the types of the three species and I can affirm that they belong to one genus. However, I cannot confirm Brunner von Wattenwyl's opinion that the three should be synonymous, as I found constant differences in the shape of the subgenital plate, in the males as well as in the females.

As has been previously done by Kirby (1906) I use the name *Mioacris* for the genus instead of *Chlorotribonia* (which name is used by Brunner von Wattenwyl), as *Mioacris* is mentioned before *Chlorotribonia* in the original paper by Pictet & Saussure.

As the venal pattern of the tegmina appears to be subject to considerable variation it cannot be used to identify the species (fig. 5 a—k).

The following table may facilitate the identification.

	longicauda Burm	*brevifolia* de Haan	*javana* Pict. & S.	*acutipennis* Pict. & S.	*nieuwenhuisi* nov. spec.
tegmina	brown with oblique dark bands fig. 5m	light green with red-bordered white spots in the cells fig. 5a	green fig. 5d and e	green fig. 5f, g, h, i	green fig. 5j and k
lateral lobes of pronotum	nearly quadrate	nearly quadrate	rounded	nearly quadrate	nearly quadrate
ovipositor	long 2× pronotum	about as fig. 6a	about as fig. 6a	fig. 6a	fig. 6c
subgenital plate ♀	about as fig. 6b	fig. 6b′	fig. 6p	fig. 6b, r	fig. 6d
subgenital plate ♂	about as fig. 6h, but flat		fig. 6o	fig. 6h, i, j, q	fig. 6e, f, g

Mioacris brevifolia (de Haan)

Locusta (Aprion) brevifolia de Haan (partim) 1842, p. 207, pl. 19 fig. 3; Karny 1920, pp. 173, 208.
Xiphidium brevifolia Walker 1869, p. 275.
Chlorotribonia brevifolia (partim) Brunner von Wattenwyl 1895, p. 50; Krauss 1902, p. 748.
Mioacris brevifolia (partim) Kirby 1906, p. 298; Karny 1920, pp. 173, 208; 1922, pp. 207, 297; 1924, p. 187; 1926a, p. 275; Caudell 1928, p. 33.

Leiden Museum:

Java: Müller, 1 ♀ (holotype).

De Haan's (1842) description of *Locusta (Aprion) brevifolia* was based on three specimens from Java. After a detailed study of these specimens I am convinced that they do not belong to one species. One specimen, a female, differs from the others by a number of coloured patches on the tegmina (fig. 5a) and by the shape of the subgenital plate (fig. 6b′). As this specimen is figured by de Haan (1842, pl. 19 fig. 3) it may be selected as the holotype of *brevifolia*. The other specimens belong to *Mioacris acutipennis* (Pict. & Sauss.) according to the shape of their subgenital plates (fig. 6b and h) and their almost unicolorous green tegmina (fig. 5b and c).

The holotype of *Mioacris brevifolia* (de Haan) is characterized especially by the coloured patches in the postradial area of the tegmina, which do not

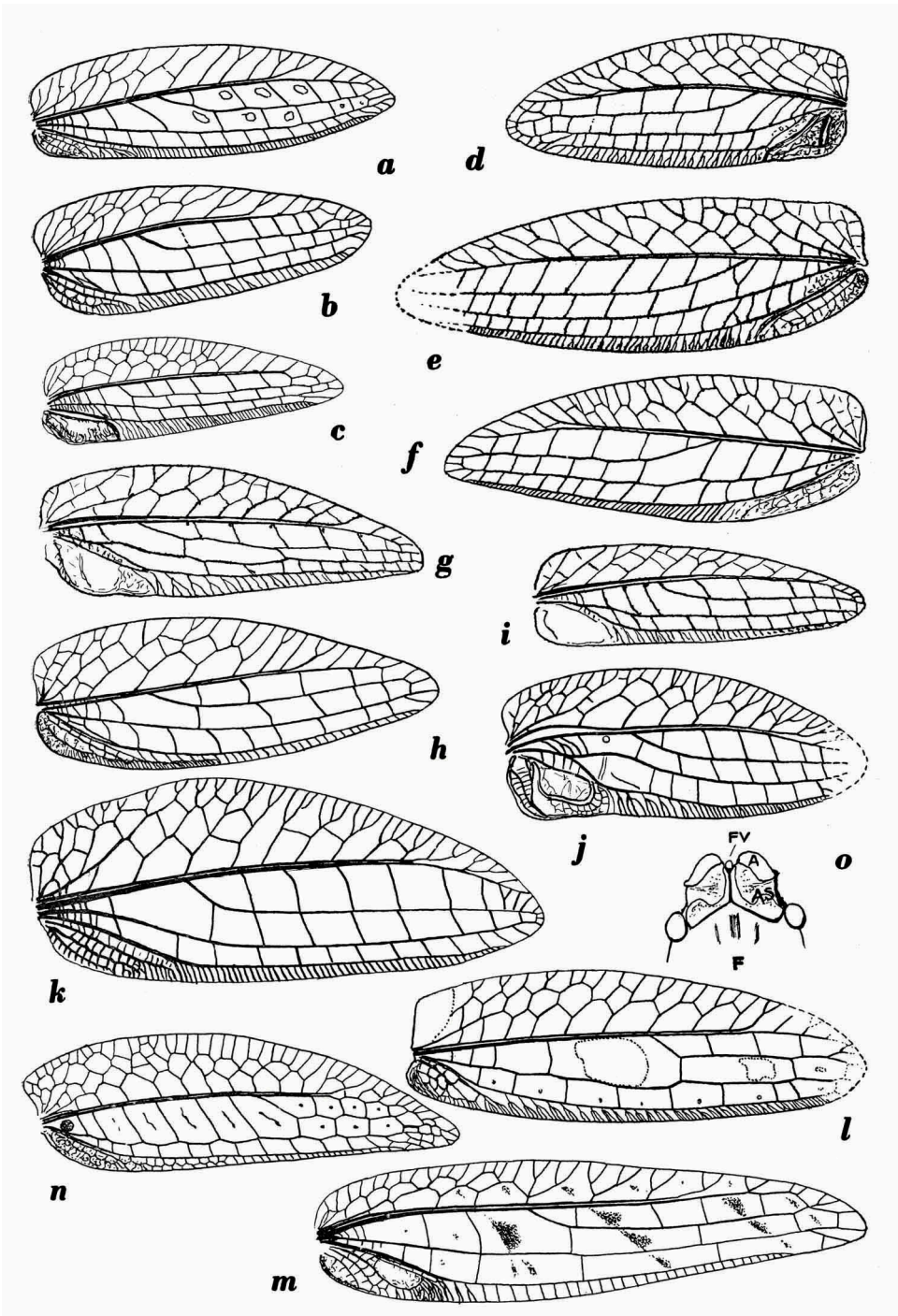

Fig. 5. a, *Mioacris brevifolia* (de Haan) ♀ (holotype), right tegmen; b, c and f—i, *Mioacris acutipennis* (Pict. & Sauss.), b, ♀, right tegmen, c, ♂, right tegmen, f, ♀ (cotype), left tegmen, g, ♂ (cotype), right tegmen, h, ♀, right tegmen, i, ♂, right tegmen; d and e, *Mioacris javana* Pict. & Sauss., d, ♂ (cotype), left tegmen, e, ♀ (cotype), left tegmen; j and k, *Mioacris nieuwenhuisi* nov. spec., j, ♂ (allotype), right tegmen, k, ♀ (holotype), right tegmen; l, *Promeca pulcherrima* nov. spec. ♀ (holotype), right tegmen; m, *Mioacris longicauda* (Burm.) ♀, right tegmen; n and o, *Aprion retrovenulosum* nov. spec. ♀ (holotype), n, right tegmen, o, forehead and antennal scrobes. A, antenna; AS, antennal scrobe; F, forehead; FV, fastigium verticis. g, × 2¼; o, × 5¼; all other figures, × 1½.

occur in the other species hitherto known. At present the specimen is yellowish and the patches in the postradial area of the tegmina are white with reddish-brown borders.

As can be seen from the figures (fig. 5 a—k, m) the shape of the tegmina too differs from that in the other species, the greatest width is about in the middle of the length, whereas in the other species the maximum width is found in the basal half at about one third of the length.

In *Mioacris brevifolia* (de Haan) the radial branch vein appears at one third of the tegminal length and gradually leaves the radial vein to join it again near the apex. The first and second medial veins run almost parallel with the radial branch vein. The fields between the radial vein, its branch, and the first medial vein are about equally wide. The field between the medial veins is nearly two thirds of the width of the preceding field. The remaining field between the second medial vein and the hind margin of the tegmina is about one third of this width.

The preradial area occupies about two fifth of the whole tegminal surface.

The general form of the tegmina is long-ovate with regularly curved fore and hind margins. The apex is rather sharply rounded.

The armament of the legs shows only little differences from that of the other species in the genus. All the femora are smooth dorsally, the hind femora only are thinly crested. Ventrally the fore femora bear 2 or 3 small thorns on the external margin. The middle femora bear 6 or 7 distinct thorns on the external and 6 indistinct small thorns on the internal margin. The hind femora are armed ventrally with 7 or 8 thorns on the external margin and 6 small thorns at the base of the internal margin. The armament of the tibiae may be summarized as follows:

	dorsal		ventral	
	external	internal	external	internal
fore	3 small	3 small	5 or 6	9
middle	4 or 5 small	4 or 5	7 or 8	8 or 9
hind	7	8 or 9	11	7

The abdominal end of the holotype is of approximately the same shape as that of *Mioacris acutipennis* (Pict. & Sauss.) (fig. 6a). The subgenital plate (fig. 6b'), however, differs by the broader and deeper incision at the apex, the relatively broader shape and the somewhat prolonged lateral angles from that in the other species (fig. 6 b, d, r, p).

Brunner von Wattenwyl (1895, p. 51) remarks that there is a male specimen in the Hamburg Museum which in the radial (= postradial) field

of the tegmina shows two white spots bordered with a rusty red, and in every other respect corresponds with the typical form. According to this author the species is extraordinarily variable in size. As further data on

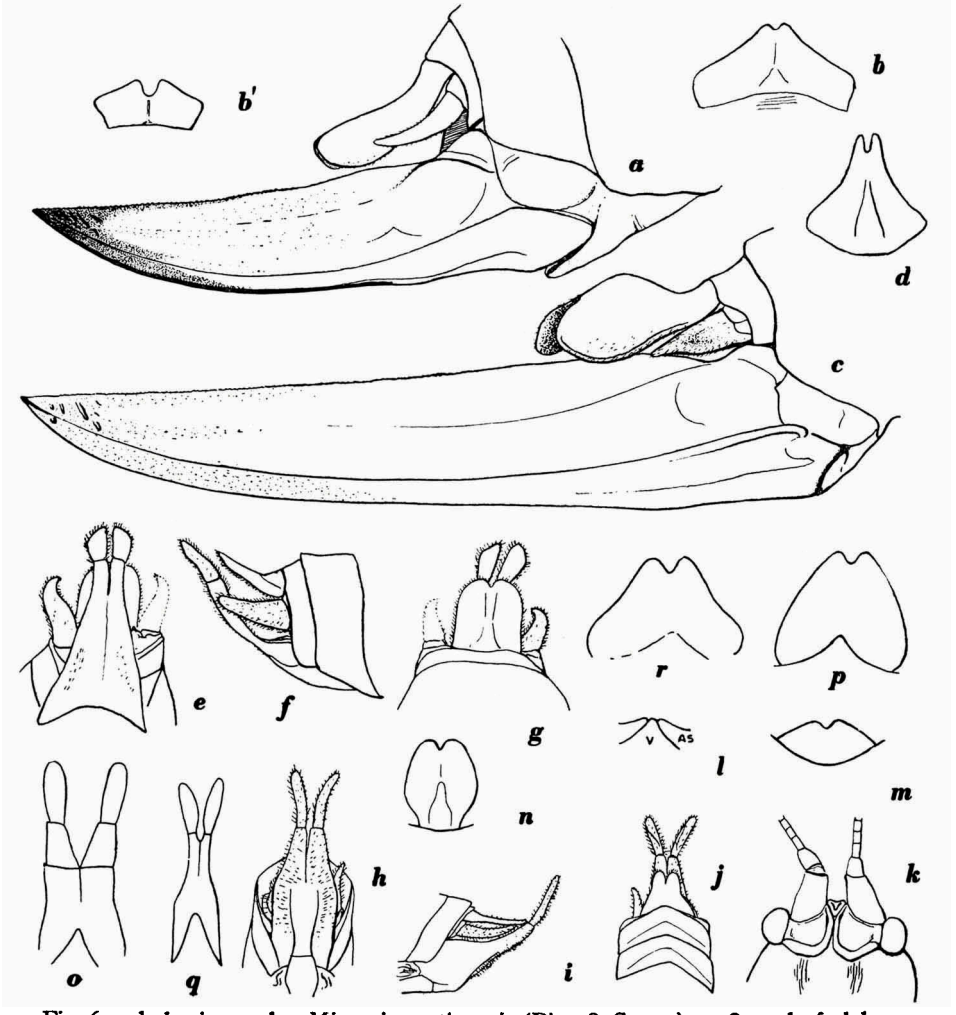

Fig. 6. a, b, h—j, q and r, *Mioacris acutipennis* (Pict. & Sauss.), a, ♀, end of abdomen, b, ♀, subgenital plate, h—j, ♂, end of abdomen, ventral, lateral and dorsal view, q, ♂ (cotype), subgenital plate, r, ♀ (cotype), subgenital plate; b', *Mioacris brevifolia* (de Haan) ♀, subgenital plate; c—g, *Mioacris nieuwenhuisi* nov. spec., c, ♀ (holotype), end of abdomen, d, ♀ (holotype), subgenital plate, e—g, ♂ (allotype), end of abdomen, ventral, lateral and dorsal view; k—n, *Promeca pulcherrima* nov. spec. ♀ (holotype), k, forehead and base of antennae, frontal view, l, vertex and antennal scrobes, dorsal view, m, subgenital plate, n, supra-anal plate; o and p, *Mioacris javana* Pict. & Sauss., o, ♂ (cotype), subgenital plate, p, ♀ (cotype), subgenital plate. AS, antennal scrobe; V, vertex. All figures, × 4. Figs. o—r drawn by Dr. J. Carl, Geneva.

the specimen are lacking, especially those on the tegminal pattern and the subgenital plate, the identification remains uncertain.

Mioacris acutipennis (Pictet & Saussure)

Locusta (Aprion) brevifolia (partim) de Haan 1842, p. 207; Karny 1920, pp. 173, 208.
Chlorotribonia acutipennis Pictet & Saussure 1892, p. 16, pl. 2 figs. 9 and 9 a—c.
Chlorotribonia brevifolia (partim) Brunner von Wattenwyl 1895, p. 50, pl. 2 fig. 17.
Mioacris brevifolia (partim) Kirby 1906, p. 298; Karny 1920, pp. 173, 208; 1924, p. 187; 1926 a, p. 275; Caudell 1927, p. 33.

Leiden Museum:

Java: Müller, 1 ♀ and 1 ♂ (both cotypes of *Locusta (Aprion) brevifolia* de Haan) (figs 5b and c respectively).
Nias: 1911, Kleiweg de Zwaan, 1 ♀ (fig. 5h).

Mr. Willemse's Collection:

Java: 1 ♂.

Geneva Museum:

Java: Soekaboemi, M. E. Walsh, 1 ♂ (fig. 5 i); Fruhstorfer, 2 ♀♀; 1 ♀ (cotype) (fig. 5 f); 3 ♂♂; 1 ♂ (cotype, not labelled but also from Java according to Pictet & Saussure's paper) (fig. 5 g).

As remarked above, in my opinion Brunner von Wattenwyl was wrong when he regarded *Mioacris javana* Pict. & Sauss. and *Chlorotribonia acutipennis* Pict. & Sauss. as synonyms of *Mioacris brevifolia* (de Haan). The most important character to identify the species is found in the subgenital plates, which are figured in fig. 6 b and r (female) and in fig. 6 h—j and q (male). Figs. 6 q and r represent the subgenital plates of the type specimens in the Geneva Museum. For a better comparison the subgenital plates of the type specimens of *Mioacris javana* Pict. & Sauss. are figured in fig. 6 o and p.

The tegmina of *Mioacris acutipennis* (Pict. & Sauss.) appear to be very variable in proportions and in their venation.

This is demonstrated in figs. 5 b, c and f—h. Figs. 5 f and g represent the tegmina of the type specimens. The other figures are made after specimens which on account of the structure of their genital plates belong to the same species.

For comparison, though no valuable differences are to be found, the tegmina of the type specimens of *Mioacris javana* Pict. & Sauss. are figured in fig. 5 d and e. Moreover the description of *Mioacris javana* by Pictet & Saussure sufficiently proves that the species is not identical with *M. acutipennis*. Distinct differences are found in the shape of the pronotum, the subgenital plate, the supra-anal plate and the denticulation of the hind legs.

Mioacris nieuwenhuisi nov. spec.

Leiden Museum:

Borneo: Long Bloe-oe, Borneo Expedition Dr. Nieuwenhuis, XI 1898, 1 ♀ (holotype); Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♂ (allotype).

This species differs from the other *Mioacris*-species especially by the shape of the supra-anal plate and by the larger size of the tegmina.

The general colour of the holotype is a light yellowish brown with light brown along the veins of the tegmina, the allotype is light green. The alae are transparent. The ovipositor is ochraceous except the ventral margin and the top which are light brown. The supra-anal plate is also brown.

The venation of the tegmina (fig. 5 j, k) strongly resembles that of *Mioacris acutipennis* (fig. 5 h). The preradial area takes nearly two fifth of the tegminal surface. The branch of the radial vein begins at about one fourth from the base. Before this bifurcation the radial vein is connected with the anterior branch of the medial vein only by some small transverse veins at the base, in contradistinction to *Mioacris brevifolia* (de Haan) where two or three transverse veins are found before the bifurcation in addition to the smaller ones. The radial branch vein terminates in the fore margin just before reaching the apex. The subcostal vein and the radial vein run together till about one third from the top, then they diverge to branch out towards the fore margin.

The alae are broadly rounded. The fore angle is nearly rectangular.

The pronotum is finely granulated. The fore and hind borders are almost smooth. The hind border is broadly rounded. The disc bears two transverse grooves, one before the middle and one behind it. The lateral lobes are approximately as long as broad. The ventral fore angle is rounded and provided with minute granules like the whole ventral margin. The hind angle is rectangular.

The prosternum is smooth, without thorns. The mesosternum has crenulated fore and side margins. The fore angles are provided with more strongly developed tubercles. The lateral margins of the mesosternum diverge caudally, those of the metasternum converge caudally. The hind margin of the metasternum is straight and about of the same length as the fore margin of the mesosternum.

All the femora are smooth dorsally. Ventrally the fore femora bear two little thorns on the internal margin near the top. The middle femora are armed ventrally with 5 thorns on the outer margin only. The middle tibiae are smooth dorsally and bear 6 little thorns on both the internal and the external ventral margins. The armament of the hind legs is as follows:

hind femora dorsally crested, ventro-external margin with 7 to 8 thorns decreasing from the top to the base, internal margin with 4 to 5 small thorns at the base. The hind tibiae are provided with a number of small thorns on all margins: dorso-internal 5 to 7, external 4, ventro-internal 4 and external 7.

The ovipositor is of a considerable size, about as long as the body, relatively longer than in the other species except *Mioacris longicauda* (de Haan). Its dorsal margin is straight and minutely serrate (fig. 6 c). The ventral margin is curved towards the top, smooth and of a light brown colour. The lateral parts of the top are adorned with several little elevated transverse ridges. The ovipositor is nearly four times as long as broad. The cerci are not cylindrical like in most Pseudophyllinae but compressed laterally, they have a ventral keel. When seen from the side the dorsal margin of the cerci is almost straight but the ventral margin is slightly sinuate. The supra-anal plate which in this genus is of aberrant shape is rather broad. A deep incision divides it into two ovate lobes which in the dried specimen stand rooflike one against the other. In *Mioacris acutipennis* Pict. & Sauss. the incision is not very deep and the lobes are narrower (fig. 6 b).

The subgenital plate is broadly triangulate. The apex is slightly tapering and ends in two thin lobes (fig. 6 d).

The male of this species is smaller than the female. In almost every detail it corresponds with the female, in so far as structural details of head, thorax and legs are concerned. Differences are found in the tegmina (fig. 5 j) and in the abdomen. The tegmina are light green with a white spot in the postradial area just before the base of the radial branch vein. The stridulation region is distinctly developed. The rest of the tegmina is about the same as in the female.

The abdominal appendages are differing from those of *Mioacris acutipennis* (Pict. & Sauss.) in so far that they are broader (figs. 6 e, f, g). The supra-anal plate is broadly ovate and slightly incised at the top. The cerci are rather thick, especially at the base; their top is curved inwardly, ending in a thin tooth. The subgenital plate is elongated triangular, incised at the top and bears two rather compressed styli.

The general colour of the male specimen is a light green, the hind femora only are of a more bluish tinge. It appears to be discoloured to a lesser degree than the female.

Measurements (those of the male in parentheses) in mm: length body 33½ (30); length pronotum 10 (8½); length tegmina 48½ (34); breadth

tegmina 18½ (14½); length alae 41½ (29); breadth alae 30½ (22½); length anterior femora 10 (8); length posterior femora 20½ (16); length ovipositor 20½; length antennae — (47).

Mioacris longicauda (Burmeister)

Pseudophyllus longicaudus Burmeister 1838, p. 689; Walker 1869, p. 401.
Locusta (Aprion) longicauda de Haan 1842, p. 207; Karny 1920, pp. 174, 208.
Chlorotribonia major Brunner von Wattenwyl 1895, p. 50.
Mioacris major Kirby 1906, p. 298.
Promeca longicaudus Kirby 1906, p. 299.
Mioacris longicauda Karny 1920, pp. 174, 208; 1924, p. 186; 1926 b, p. 116; 1927, p. 7.

Leiden Museum:

Sumatra: Padang, 1 ♀.
Australia?: New Holland, 1 ♂.

Of this species only the specimens mentioned by de Haan are present. The male from New Holland is the only specimen ever recorded from this locality. Burmeister's type specimen was from Singapore; other specimens are recorded from Sumatra and Java by later authors.

The species is characterized by the long ovipositor in the females and by the oblique brown bands on the tegmina (fig. 5 m).

Promeca Brunner von Wattenwyl

Promeca Brunner von Wattenwyl 1895, p. 52; Kirby 1906, p. 209; Karny 1923 a, p. 170; 1924, p. 187.

The genus *Promeca* can be distinguished from *Mioacris* at once by the different place of origin of the radial branch vein: in *Promeca* the radial branch originates in or past the middle of the radial vein, in *Mioacris* before the middle. In all specimens of *Promeca* in the Leiden Museum black markings are found on the thorax; black markings of this kind are not found in *Mioacris*.

Promeca fuscescens (de Haan)

Locusta (Aprion) fuscescens de Haan 1842, p. 206; Karny 1920, pp. 174, 208.
Pseudophyllus Junghuhni Giebel 1861, p. 120.
Xiphidium fuscescens Walker 1869, p. 275.
Aprion fuscescens Walker 1870, p. 426.
Promeca vittata Brunner von Wattenwyl 1895, p. 52.
Promeca fuscescens Kirby 1906, p. 299; Karny 1920, pp. 174, 208; 1921b, p. 309; 1922, p. 205, fig. 8; 1923 b, p. 317; 1924, pp. 187, 188.
Promeca Junghuhni Kirby 1906, p. 299.

Leiden Museum:

Java: Thihanjavar, 4 ♀♀ and 1 ♂ (cotypes).

Halle a. d. S. Museum:

Java: Junghuhn, 1 ♀ (holotype of *Pseudophyllus Junghuhni* Giebel).

Geneva Museum:

Java: 4 ♀♀ and 2 ♂♂.

In the Leiden Museum there are the specimens described by de Haan only. This author records "Thihanjavar (Java)" as the locality, on the labels is noted: "Java, v. Vollenhoven."

The study of the type specimen of *Pseudophyllus Junghuhni* Giebel from the Museum at Halle a. d. S. convinced me of its identity with *Promeca fuscescens* (de Haan). The tegminal venation is approximately identical, the dorsal half of the hind femora is black and the measurements correspond with those of the types of *P. fuscescens* (de Haan). In Giebel's description, however, the length of the ovipositor is 17 lines whereas in reality it measures only 11 lines (25.5 mm) like in *P. fuscescens*.

As no differences are found *P. Junghuhni* Gieb. is a synonym of *P. fuscescens* (de Haan).

The species can easily be recognized by the black dorsal half of the hind femora.

Promeca unicolor Brunner von Wattenwyl

Promeca unicolor Brunner von Wattenwyl 1895, p. 52; Kirby 1906, p. 299; Hebard 1922, p. 195; Karny 1923 a, p. 170; 1924, p. 188.

Leiden Museum:

Borneo: Upper Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♀.

Promeca pulcherrima nov. spec.

Leiden Museum:

Sumatra: Tandjong Morawa, Serdang, N.-E. Sumatra, Dr. B. Hagen, 1 ♀ (holotype).

The general colour is greyish green, probably bluish green in the living animal. The elytra are of the normal shape in the genus, acuminate at the top. The preradial area takes about two fifth of the tegminal surface. The branch of the radial vein begins a little beyond the middle of the radial vein (fig. 5 l).

The area between the radial vein and the first medial vein contains five large cells before the bifurcation of the radial vein. The general colour of the tegmina is greyish green, the veins are bluish green. The main character of the species is that of a few large red-bordered yellow patches, one occupying the humeral angle of the tegmina, one in the middle of the large

cell between the radial and the first medial veins at the base of the radial branch vein and a somewhat smaller one, situated in the same row of cells but more towards the top of the tegmina. Other red spots are found in a number of cells between the first and the second medial vein. The alae are highly transparent and of a broadly rounded shape as is usual in the genus.

The head is smooth, slightly conical. The vertex is only sligthly prolonged between the antennal scrobes, the top reaches just between their tops (fig. 6 k, l). The antennae are about one and a third times as long as the whole animal. They are very faintly annulated. The basal joint is somewhat swollen, the second joint is smaller, but also slightly swollen. The rest is threadlike. The antennal scrobes are rather broad frontally, prolonged broadly towards the vertex. They are excavated in the middle and inflated near the frontal base.

The globular, prominent eyes are dark brown.

The face is light ochraceous as the whole head and the mouthparts. Only the extreme borders of the labrum and the mandibles are tinged with brown.

Between the base of the mandibles and the eyes a slight impression is found but there is no distinct subocular groove.

The pronotum is of a broad, almost cylindrical shape. The fore margin is slightly rounded apically and provided with a few scattered crenules. The hind border is broadly rounded and smooth.

The disc bears two transverse grooves and four dark spots as is characteristic for the genus. The lateral lobes are about as long as broad. The margins are sparsely crenulated except at the fore angle where the crenulations are more densely set. The fore and hind margin of the lateral lobes converge a little towards the rounded ventral angles.

The prosternum bears no thorns. The mesosternum and the metasternum together are about as long as broad. The mesosternum takes two thirds of the length and the metasternum one third.

The fore border of the mesosternum is concave. The fore angles are obliquely truncated, and crenulated. The side borders also are slightly curved inwards.

The fore border of the metasternum is straight and smooth. The fore angles are rounded and the sides converge caudally. The hind angles are acute and the hind border is faintly concave.

The abdomen is pale ochraceous. The supra-anal plate is ovate, somewhat narrowed at the base and incised at the top (fig. 6 n).

The only available specimen is incomplete in so far as the cerci, together with a great part of the alae and the top of the right tegmen are missing.

The ovipositor is rather long and broad. It is almost straight ventrally,

only very faintly curved. Dorsally it is obliquely truncated, almost from the base towards the apex. The colour is pale ochraceous with a brown border ventrally and dorsally. The ventral base is pale ochraceous.

The subgenital plate is broadly triangular, light brown, with only a short broad incision at the top (fig. 6 m).

The fore and middle femora are smooth dorsally, the hind femora bear a crest on their basal half.

Ventrally the fore femora bear only a few crenules on the internal and the external margin. The fore tibiae bear 2 to 3 minute thorns on the dorso-external margin and 2 on the ventral margins each.

The middle femora bear 3 thorns on the apical half of the lower outer margin and a few crenules on the lower inner margin. The middle tibiae are armed as follows: dorsally, outer margin 2, inner margin 3, ventrally, outer margin 0 to 2, inner margin 0.

The hind femora bear 6 to 7 sharp thorns on the ventro-external margin and 4 to 5 smaller thorns on the basal part of the internal margin. The hind tibiae bear 7 to 8 very small thorns on the dorso-internal margin. The external margin is almost smooth. It only bears 3 to 4 crenulation-like irregularities in the distal half. The ventral inner margin is smooth, the outer margin bears one little sharp thorn near the top.

Measurements in mm: length body 3½, length pronotum 9, length tegmina 42½, breadth tegmina 15, length antennae 72, length anterior femora 9½, length posterior femora 19, length ovipositor 23½.

Aprion Serville

Aprion Serville 1839, p. 471; de Haan 1842, p. 204.
Phyllomimus Stål 1873, p. 44; 1874, p. 52; Brunner von Wattenwyl 1895, pp. 11, 61, 72 (notes!); Kirby 1906, p. 299; Karny 1923 a, p. 170; 1924, p. 189; 1926 b, p. 117; 1931, p. 55; Chang 1935, p. 38.
Microprion Pictet & Saussure (partim) 1892, pp. 8, 17.
Heteraprium Krauss (partim) 1903, p. 764.
Micropion Kirby 1906, p. 297.

As the opinions about *Aprion* Serv. are rather differing I studied the original descriptions (Serville 1831, pp. 471—473) of the genus and of the type-species *virescens* and made a reconstruction after those details when no doubt was possible. Some of these details are very important as they really exclude a great number of species formerly included in *Aprion* Serv. Especially the form of the mesosternum and of the tegmina show distinct differences.

After Serville the mesosternum and metasternum are "larges, transverses, rebordés" and the elytra are "du double plus longues que l'abdomen,

dilatées au milieu, très-arrondies au bout. Organe stridulant peu apparent" and in *A. virescens* Serv. "fort arrondies à l'extrémité".

I am convinced that Serville's description refers to a species of the genus *Phyllomimus* Stål and that *Aprion virescens* Serv. is closely related to *Phyllomimus ampullaceus* (de Haan) (1842, *Locusta, Aprion, ampullaceus* de Haan). It is very difficult to find out which species was meant exactly by Serville as he described the male only and his description is incomplete in many details which are used in present days to identify the species.

De Haan (l. c., p. 204) added a few new species to the genus *Aprion* Serv. and also mentions the type-species, but in Brunner's "Monographie der Pseudophylliden" Serville's species are not mentioned and de Haan's species are all distributed amongst other genera.

Brunner von Wattenwyl (1895, p. 72) goes so far as to say: „Der Name stammt von Serville. Allein die beiden von diesem Autoren angeführten Species gehören nicht hieher. De Haan beschreibt einige hieher gehörende Species unter diesem Namen. Pictet und Saussure haben das Genus ungefähr so definirt wie hier."

The first to solve the problem for the greater part was Krauss (1903, p. 764). He created the name *Heteraprium* for the species in the genus *Aprion,* nec Serville: "Da nach BRUNNER die typische Art (*virescens* SERV.) des von SERVILLE 1839 aufgestellten Genus *Aprion* nicht in das von HAAN und BRUNNER unter dem alten Namen neu definirte Genus gehört, so bezeichne ich letzteres mit dem neuen Namen *Heteraprium.* Ob das von STÅL 1878 aufgestellte Genus *Morsimus* (typische Art: *areatus* STÅL von den Philippinen) mit *Heteraprium* zusammenfällt, ist fraglich und bedarf noch näherer Untersuchung. Der Genusname *Tympanoptera* A. PICTET et SAUSS. (1892) [typische Art: *grioleti* A. PICTET et SAUSS. von den Molukken], der nach BRUNNER gleichfalls in Frage kommen könnte, ist anstatt *Oxyscelus* BRUNNER (1895) zu verwenden, nachdem die Art *grioleti* darin untergebracht worden ist. In Folge dessen muss auch das Genus *Tympanoptera* BRUNNER (1895) (nec A. PICTET et SAUSS.!) umgetauft werden, ich bezeichne es als *Tympanophyllum* (*τύμπανον-φυλλον*)."

Kirby (1906, p. 302) reestablished the genus *Aprion* Serv. with the original species, but added some species which after the subquadrate mesosternum should belong to another genus, e.g., the two species of the genus *Tympanophyllum* Krauss (*Tympanoptera* Brunner v. W.).

Most of the alterations given by Krauss are already taken up in Kirby (1906), but he did not yet succeed in settling the question fully. In part III (Kirby 1910) some additions were given. *Heteraprium brunneri* Krauss is separated from the rest of the species to which Krauss added it, and which

kept the name *Morsimus*. As no distinct generic characters are found till now I leave this species in the genus *Morsimus*.

The following is a short synopsis of the genera in connection with *Aprion* Serv. and the species now belonging to them.

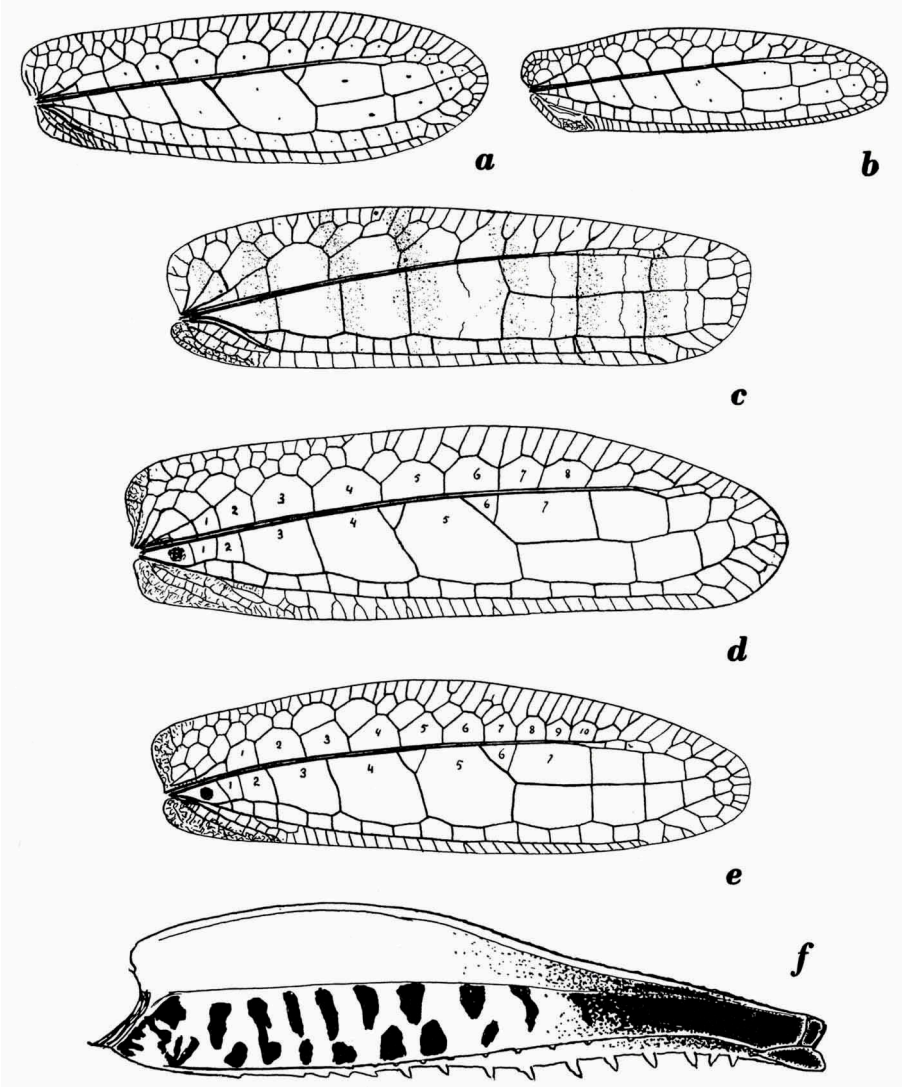

Fig. 7. a and b, *Aprion ampullaceum* (de Haan), a, ♀ (cotype), right tegmen, b, ♂ (cotype), right tegmen; c, *Aprion zebra* (Karny) ♀ (holotype), right tegmen; d, *Aprion major* (Brunner v. W.) ♀, right tegmen; e, *Aprion purpuratum* (Karny) ♀ (cotype), right tegmen; f, *Aprion major* (Brunner v. W.) ♀, internal surface of right posterior femur. a—e, × 1½; f, × 5¼.

Aprion Serv. (*Phyllomimus* Stål) with: *virescens* Serv. (type species); the species cited by Kirby (1906, pp. 299 and 300) as *Phyllomimus; ampullaceum* de Haan;? *semivitreum* Serv. (After the description I believe this to be a *Pseudophyllomimus* Karny but I could not get absolute certainty about this).

Tympanophyllum Krauss (*Tympanoptera* Brunner v. W.) with: *atroterminatum* Brunner v. W.; *extraordinarium* Brunner v. W.;? *porrectus* Walker; *arcufolium* de Haan; *timanthoides* nov. spec.

Tympanoptera Pictet & Saussure (*Oxyscelus* Brunner v. W.) with: *grioleti* Pictet & Saussure (type species); *angustipennis* Brunner v. W.; three species described by Karny (1924).

Morsimus Stål (*Heteraprium* Krauss) with the species cited by Kirby (1906, pp. 304, 305), except *ampullaceum* de Haan.

Aprion ampullaceum (de Haan)

Locusta (Aprion) ampullacea de Haan 1842, p. 205; Karny 1920, pp. 175, 208.
Aprion ampullaceum Walker 1870, p. 425.
Phyllomimus pallidus Brunner von Wattenwyl 1895, p. 57; Kirby 1906, p. 300; Bruner 1915, p. 274; Hebard 1922, p. 195; Karny 1923 a, p. 171; 1926 a p. 118.
Phyllomimus pallidus var. *major* Brunner von Wattenwyl 1895, p. 57.
Phyllomimus ampullaceus Karny 1920, pp. 175, 208; 1924, p. 191; 1927, p. 7; Hebard 1922, p. 195.

Leiden Museum:

Sumatra: Loeboekbangkoe, V 1905, J. Menzel, 1 ♀.
Banka: van den Bossche, 1 ♀.
Java: "Padang", 3 ♀♀ and 2 ♂♂ (cotypes).
Borneo: Sambas, Borneo occ., 1891, Dr. J. Bosscha, 2 ♀♀; Kapoeas, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♀.

Geneva Museum:

Sumatra: W. Morton, 1 ♀.
Java: 1 ♀.
Locality unknown: 1 ♀.

Karny (1920), who studied the type specimens of de Haan, found that one of these belongs to the species *Aprion inversum* Brunner v. W.

The specimen from Banka in the Leiden Museum corresponds in every detail with de Haan's cotypes. The three specimens from Borneo show slight differences from the cotypes as far as concerns the venation of the tops of the tegmina, not of sufficient importance, however, to separate these specimens from *A. ampullaceum.*

The tegmina of a female and of a male cotype are figured here (fig. 7 a and b).

Aprion inversum (Brunner von Wattenwyl)

Phyllomimus inversus Brunner von Wattenwyl 1895, p. 57; Kirby 1906, p. 300; Rehn 1909, p. 196; Bruner 1915, p. 274; Karny 1920, p. 175; 1923 a, p. 171; 1924, p. 191; 1926 b, p. 119.

Leiden Museum:

Java: "Padang", 1 ♂ (cotype of *Locusta (Aprion) ampullacea* de Haan).

Aprion zebra (Karny)

Phyllomimus zebra Karny 1920, p. 176; 1926 b, p. 118.

Leiden Museum:

Borneo: Pengarong, Benschop, 1 ♀ (holotype).

As Karny's description is altogether sufficient to recognize the species on its structural characters I only add a figure of the right tegmen of the type specimen (fig. 7 c). The tegmina are hyaline with green bands along the principal transverse veins. Another specific character is that of the basal part of the radial branch vein, which is almost perpendicular to the radial vein. The transverse veins in the area between the radial vein and the first medial vein almost all are perpendicular to these veins.

Aprion musicum (Carl)

Phyllomimus musicus Carl 1914, p. 554; Karny 1926 b, p. 118.
Phyllomimus tonkiniae Hebard 1922, p. 198, pl. 17 fig. 4; Karny 1926 b, p. 119.

Mr. Willemse's Collection:

Tonkin: Than-Moi, VI—VII, Fruhstorfer, 3 ♀♀.

Geneva Museum:

Tonkin: Than-Moi, VI—VII, Fruhstorfer, 1 ♀ and 3 ♂♂; Cuisinier, 1 ♀ (cotypes).

The specimens before me, all females, correspond in every detail with Carl's description. Comparison with the type specimens in the Geneva Museum eliminated every doubt as to their indentity. Moreover Carl mentions some variation in the ventral armament of the femora. This variation is partly due to the way in which the ventral margins are crenulated. Apically the crenulation is distinct but towards the base the crenules diminish in height and are difficult to trace. In large specimens more separate crenules or tubercles are found than in small specimens and it greatly depends upon the personal view of the investigator in which way the smaller crenules are interpreted and how many tubercles are distinguished as such.

Hebard's description (1922) of a male of *Phyllomimus tonkiniae* refers to a specimen which undoubtedly belongs to *A. musicus* (Carl). It is only a little smaller and in consequence some crenulated margins are less devel-

oped. The tegminal shape and venation are nearly identical with those in the present specimens.

The specimens described by Carl and Hebard and those mentioned above all bear the same label: "Tonkin, Than—Moi, Juni—Juli, H. Fruhstorfer."

Aprion major (Brunner von Wattenwyl)

Phyllomimus major Brunner von Wattenwyl 1895, p. 58; Kirby 1906, p. 300; Karny 1920, p. 179.

Leiden Museum:

Sumatra: Loetoentoer, Sumatra Expedition 1877/78, VI 1878, ex. coll. Dr. H. J. Veth, 1 ♂.

Java: "Padang", 1 ♀ (cotype of *Locusta (Aprion) arcufolia* de Haan, per errorem!).

Besides the specimen identified by Karny as *A. major* the Leiden Museum possesses one male, which corresponds in every detail with the former. In the figure (7 d) of the right tegmen of the female specimen some numbers are placed in the row of cells before the combined radial and subcostal veins and also in the row behind these veins. In the male the cells in these areas are nearly of the same proportions.

When compared with the proportions of the corresponding rows of cells in the tegmina of the following species, a distinct difference is found. For the species concerned here these proportions appear to be constant. Probably they can be used as a specific character.

The hind femora of this species show a number of slightly elevated red markings (fig. 7 f), a character which occurs in a number of species of the genus *Aprion*.

Aprion purpuratum (Karny)

Phyllomimus purpuratus Karny 1924, p. 190.

Leiden Museum:

Sumatra: Sibolangit, VII 1921, W. M. Docters van Leeuwen, 1 ♀ and 1 ♂ (cotypes); Solok, 22 X 1913, P. O. Stolz, 1 ♀.

This species which shows distinct red elevated markings on the hind femora, is closely related to both *Aprion major* and *A. reticulatum*. I add a figure of the right tegmen of the female type specimen (fig. 7 e) as in my opinion the tegminal venation will prove to be of value to recognize the species in addition to the various other characters as, e.g., the thorns of the legs, the granulation of the pronotum, the general form of the elytra and the length of the ovipositor. As remarked above, under *A. major*, especially the proportions of the numbers of cells in the rows before and

behind the radial vein in the tegmina may prove to be of specific value. In *A. purpuratum* the number of cells before the radial vein is comparatively larger than in *A. major.*

Aprion retrovenulosum nov. spec.

Mr. Willemse's Collection:

British India: Shembaganur, A. Heyne, 1 ♀ (holotype).

Geneva Museum:

British India: Madura, Dr. J. Carl, 1 ♀ (paratype).

After the shape of the tegmina the species should be placed near *Aprion acutipennis* (Brunner v. W.). All other characters, however, point towards *Aprion truncatum* (Brunner v. W.).

The general colour is light green, the tegmina are dark grass-green. The globular eyes are brown. The face is light yellowish. The ovipositor is pale yellowish at its base. The apical half is brown, the margins are very dark brown in the apical two thirds.

The tegmina (fig. 5 n) are a little more than three times as long as wide. The fore margin is strongly curved. The hind margin is almost straight, except at its base. The apex is very acutely rounded. The maximum width of the tegmina is found at one third from the base. In this region the preradial area and the postradial area are nearly equally broad. The radial vein is faintly curved and runs nearly parallel with the hind margin, it ends in the fore margin, at a considerable distance from the apex. The preradial area thus tapers towards the apex. The subcostal vein accompanies the radial vein till one third from the tegminal apex, then runs obliquely towards the fore margin. The transverse veins in the preradial area for the greater part are directed more or less obliquely towards the base. The radial branch vein begins just in the middle of the radial vein. It forms a sharp angle with the radial vein but it soon turns apicad and runs nearly parallel with the hind margin. The two branches of the medial vein also run nearly parallel with each other from near their base, and with the hind margin. The area between the second medial vein and the hind margin in its basal fifth contains the cubital and anal veins; here it is broadest, and it tapers very faintly towards the apex. The area between the radial vein and the first medial vein is nearly twice as broad as the area between the latter and the hind margin. In this area a brown rugose circular patch is found near the base, a feature which is rather common in the genus *Aprion.* Moreover nearly all cells in this area bear a dark spot in their centres like in *A. truncatum* (Brunner v. W.).

The alae are much shorter than the tegmina. They are not fully developed. The anal area is much reduced. The top is acutely rounded, nearly like the tegminal top.

The head is conical. The fastigium verticis surmounts the antennal scrobes and it is grooved dorsally. The antennal scrobes are broadly developed, especially in front where they reach and touch each other over a considerable distance (fig. 50). The forehead is pale yellowish green with three indistinct brown patches below the antennal scrobes. The genae and the mouthparts are very pale yellow. Dorsally the head is light green. The eyes are globular and of a brown colour. The antennae are slightly longer than the resting animal, they are light green, irregularly spotted with blackish. The basal joint is pale green. On the external surface it bears a carina with a small tooth near the base.

The pronotum is nearly cylindrically bent in the dorsal part. The lateral lobes are directed ventrolaterad. The fore margin of the disc is broadly rounded. All margins are distinctly crenulated. The hind margin is angulate. On the minutely tuberculated dorsal surface two transverse grooves are found, one before the middle and one exactly in the middle. These grooves are connected on the lateral lobes by an indistinct oblique groove. The fore angle of the lateral lobes is broadly rounded and bears a row of very distinct crenules. The hind angles are rectangularly rounded. The ventral margin forms a diffuse angle in the middle. No humeral sinus is found in the hind margin of the lateral lobes.

All the femora are smooth dorsally. Their ventral margins bear crenules and small teeth. In the holotype 4 and 7 crenules are found on the ventro-internal margins of the fore femora and a row of indistinct crenules on the external margin, and also on the external lateral surface. On the external margin of the middle femora one distinct thorn is found near the top and 4 or 5 less distinct ones nearer to the base. The internal margin is indistinctly crenulated. The hind femora are armed ventrally with 7 distinct thorns on the apical half of the external margin and with small crenules on the basal half. The armament of the internal margin is nearly equal to that of the external margin, but the spines are smaller.

The fore tibiae are smooth dorsally. Ventrally they bear 3 and 4 very small thorns on the apical half of both margins. The middle tibiae are smooth dorsally. On the ventro-internal margin 3 thorns are found and 2 on the ventro-external. The hind tibiae bear a great number of more or less indistinct crenules on all margins.

The prosternum is smooth, without thorns. The mesosternum and the metasternum are broader than they are long together. The fore and lateral

margins of the mesosternum are crenulated. The middle of the concave fore margin is almost smooth. The fore angles are faintly truncated obliquely, forming an almost rectangular angle with the concave lateral margins. The hind margin is concave too, but smooth. The fore margin of the metasternum is convex, the fore angles are nearly rectangular. The lateral margins are straight, slightly converging caudally. The hind margin is smoothly convex in the middle part and angular at the sides.

The supra-anal plate is rather long, narrow. The lateral margins taper towards the slightly incised top. The cerci are conical, nearly straight. The ovipositor is rather long and very faintly curved upward. The dorsal margin is finely serrulated in its apical two thirds. The ventral margin is smooth and evenly curved towards the top. The subgenital plate is triangular with an incision at the top.

The specimen from Madura corresponds in nearly all details with the holotype. It is a little smaller, its forehead has no brown patches or lines, the antennae are slightly longer and the basal joints of the antennae have no distinct crest.

Measurements of the holotype in mm: length body 26; length pronotum 6½; length tegmina 38½; width tegmina 12½; length alae 29; length fore femora 7; length hind femora 13½; length antennae 45; length ovipositor 17.

Phyllozelus Pictet & Saussure

Phyllozelus Pictet & Saussure 1892, p. 11; Brunner von Wattenwyl 1893, p. 174; 1895, p. 60; Kirby 1906, p. 300; Karny 1923 a, p. 172; 1924, p. 191; 1926 b, p. 119.

Phyllozelus siccus (Walker)

Pseudophyllus siccus Walker 1869, p. 403.
Phyllozelus infumatus Brunner von Wattenwyl 1893, p. 174; 1895, p. 60.
Phyllozelus siccus Kirby 1906, p. 300; Hebard 1922, p. 200; Karny 1923 a, p. 172; 1924, p. 192; 1926 b, p. 119; 1927, p. 7.

Leiden Museum:

Sumatra: Deli, 1 ♀.
Engano: Wienecke, 2 ♀♀.
Banka: van den Bossche, 1 ♀.

Amsterdam Museum:

Borneo: Barabei, S.-E. Borneo, A. Pool don., 1883, 1 ♀.

Geneva Museum:

Ceylon: Kandy, Laravoire, 1932, 1 ♀.

This species is easily known by the curious rugose erosion patch in the anal area of the tegmina and by the peculiar venal pattern. The subcostal

and the radial veins diverge about at the same place where the branch of the radial vein finds its origin, namely a little before the middle of the tegmina. The hind femora ventrally bear thorns which are of equal length.

The description by Brunner von Wattenwyl was made after an old discoloured museum-specimen. Fresher specimens show a colour pattern strongly differing from the unicolourous olive-yellow which appears in most cases after alcohol preservation.

In the specimen from Deli the tegmina are of a bright jade green with a round grey-brown erosion-patch in the anal area. Along the radial vein four red spots are found at the bases of the transverse veins of the radial area and at the bifurcation of the radial branch vein. Moreover, a red-bordered white spot is found at the base of the second transverse vein. In this specimen the distance between the bifurcation and this second transverse vein is about 12 mm.

The alae are transparent with light green veins. The thorax, the dorsal surface of the fore femora and fore tibiae, and the basal joint of the antennae are of about the same colour as the tegmina, only slightly paler. The rest of the antennae is green with many dark-brown rings.

Except the parts already mentioned above the legs for the greater part are yellowish, but the internal surface of the middle and hind femora is light orange, the dorsal surface of the middle femora is marbled with deep greenish blue and the apical half of the dorsal surface of the hind femora is of the same blue-green colour but interrupted by three white spots. The tarsi are yellow.

The ventral surface of the animal is light yellow. The upper surface of the head is yellow. The forehead is yellowish, the genae and clypeus are white.

The ovipositor is ochraceous, darkened towards the apex.

Pseudophyllomimus Karny

Pseudophyllomimus Karny 1924, p. 192.

Pseudophyllomimus bruneri Karny

Pseudophyllomimus bruneri Karny 1924, p. 192, fig. 79.

Leiden Museum:

Borneo: N.-Borneo Expedition 1912, Mohari, 1 ♀ and 1 ♂ (cotypes); Borneo Expedition Dr. Nieuwenhuis, 1894, Upper Mahakam, 1 ♀; Borneo Expedition Dr. Nieuwenhuis, 1894, Mahakam, 1 ♂; Borneo Expedition Dr. Nieuwenhuis, 1898, Long Bloe-oe, 1 ♀.

As already stated by Karny the type specimens are discoloured. The Leiden Museum possesses three more specimens which have better kept their colour. They are of a transparent bluish green with white-bordered erosion patches. The veins are of a dark green colour.

Gonyatopus Brunner von Wattenwyl

Gonyatopus Brunner von Wattenwyl 1895, p. 62; Kirby 1906, p. 301; Karny 1924, p. 194.

Gonyatopus pilosus Brunner von Wattenwyl

Gonyatopus pilosus Brunner von Wattenwyl 1895, p. 63, pl. 3 fig. 23; Kirby 1906, p. 301; Karny 1924, p. 194.

Leiden Museum:

Java: Banjoewangi, 1910, Dr. D. Mac Gillavry, 1 ♂.

This species is characterized by the longly pilose fore legs. The female has been figured by Brunner von Wattenwyl (1895, fig. 23). The abdominal end of the male is figured here (fig. 8 h, i, j). The shape of the subgenital plate of the male is indicated by Brunner von Wattenwyl as "petiolata". Indeed the subgenital plate caudally ends into a stalk which bears the curved styli. The basal part is much broader. The cerci are straight, blunt at the apex. The supra-anal plate is oblong with slightly curved margins and a faint longitudinal impression in the middle.

Timanthes Stål

Timanthes Stål 1877, p. 45; Brunner von Wattenwyl 1895, p. 64; Kirby 1906, p. 302; Karny 1923 a, p. 175; 1924, p. 194.

Timanthes lobifolius (de Haan)

Locusta (Aprion) lobifolia de Haan 1842, pp. 205, 206, pl. 18 figs. 11 and 12; Karny 1920, pp. 176, 208.
Aprion lobifolia Walker 1870, p. 425.
Timanthes lobifolius Brunner von Wattenwyl 1895, p. 65, pl. 3 fig. 24; Kirby 1906, p. 302; Rehn 1909, pp. 196, 198; Bruner 1915, p. 274; Karny 1920, pp. 176, 208; 1922, p. 204; 1923 a, p. 172; 1924, p. 195.

Leiden Museum:

Java: 3 ♀♀ and 2 ♂♂ (cotypes); 1 ♀ and 1 ♂ (cotypes) (labeled: Padang, Java); 1 ♂ (ex coll. H. C. Blöte).

Mr. Willemse's Collection:

Java: 1 ♀ and 1 ♂.

Geneva Museum:

Sumatra: W. Morton, 1 ♀ and 1 ♂.
Java: Java occ., Pengalengan, 4000 m, 1893, Fruhstorfer, 1 ♀; Soekaboemi, M. E. Walsh, 1 ♂; 5 ♀♀ and 5 ♂♂.
Locality unknown: 2 ♀♀.

After a detailed study of the type specimens Karny (1920) published elaborate remarks on these animals. To this description I have nothing to add.

All specimens mentioned above correspond in every detail with the type specimens.

Timanthes imperfectus nov. spec.

Leiden Museum:

Sumatra: Piek van Koerintji, VIII 1915, Edw. Jacobson, 1 ♀ (holotype) and 1 ♂ (allotype).

The general colour is very light green with reddish-brown markings on the tegmina. The eyes are brown.

Tegmina (figs. 8 f and g) with almost semicircular fore-margin and rounded apex. Hind margin straight. The system of veins is incomplete as the branch of the radial vein is lacking. The subcostal and radial veins run together till about three fifth of their length, then they diverge rather strongly.

In the female the first medial vein is a little crooked, the second medial vein is straight (fig. 8 f). From the radial vein to the hind margin the areas are in proportion of 3 : 2 : 1 relatively.

In the male the tegmina (fig. 8 g) are relatively slightly broader than in the female. The stridulation organ takes up about the whole basal third of the tegmina. The areas between the radial and first medail vein and between the latter and the second medial vein are of about equal breadth. The area between the second medial vein and the hind margin is broader than the preceding ones at the base and tapers towards the apex.

In both sexes reddish brown arrow-shaped markings are found near the transverse veins, especially distinct in the area between the radial and the first medial veins.

In both sexes the basal part of the fore margin of the tegmina is coloured in a rather quaint way. A number of thin coloured lines is found along the border from the outside inwards in the following succession: white, dark orange-red, yellow, the latter gradually passing into the green of the tegmen.

The alae are reduced to very small organs of only a few mm in length. In *Timanthes lobifolius* (de Haan) to which species *Timanthes imperfectus*

is nearest related, a beginning of such a reduction of the wings is already perceivable as Karny (1920) has shown.

The fore femora are armed along their ventral inner border with two spines and a number of crenules. The ventral outer border and the dorsal surface are smooth. The middle femora are armed in the same way. The hind femora are minutely serrulated along the ventro-external margin and

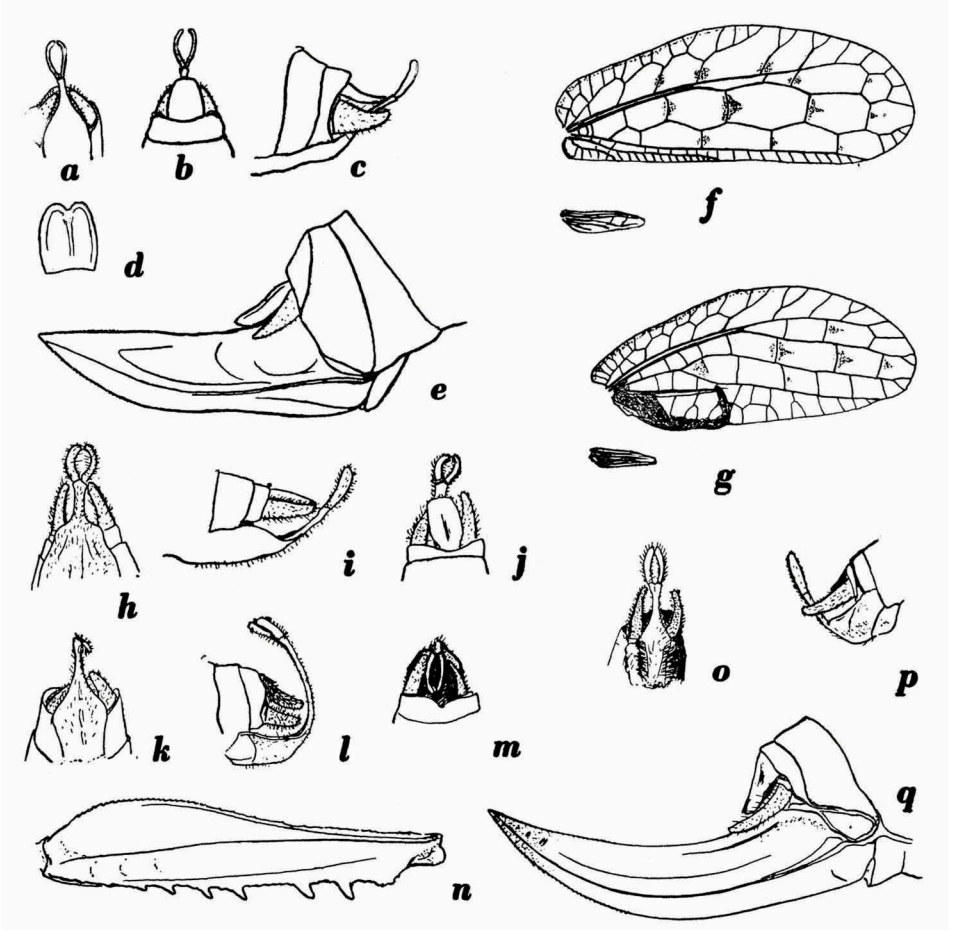

Fig 8. a—g, *Timanthes imperfectus* nov. spec., a—c, ♂ (allotype), end of abdomen, ventral, dorsal and lateral view, d, ♀ (holotype), supra-anal plate; e, ♀ (holotype), end of abdomen, lateral view, f, ♀ (holotype), right tegmen and ala, g, ♂ (allotype), right tegmen and ala; h—j, *Gonyatopus pilosus* Brunner v. W. ♂, end of abdomen, ventral, lateral and dorsal view; k—n, *Diplodontopus rubromarginatus* (de Haan) ♂ (holotype), k—m, end of abdomen, ventral, lateral and dorsal view, n, left hind femur; o—q, *Chondrodera borneensis* Brunner v. W., o—p, ♂, end of abdomen, ventral and lateral view, q, ♀ end of abdomen, lateral view. a—e and h—q, × 5¼; f and g, × 1⅛.

bear 2 to 3 small spines near the top. The fore and middle tibiae ventrally bear two thorns on either side. The hind tibae on all margins are adorned with 6 to 8 little thorns.

The prothorax is of approximately the same shape as in *T. lobifolius* (de Haan). It is rounded at the base and at the fore margin. The ventral border of the lateral lobes is bent behind the middle. All borders of the prothorax are tuberculated. The surface is crenulate with two transverse furrows and a faint longitudinal groove.

The prosternum is unarmed. The meso- and metasternum are broader than long. The slightly bent fore border of the mesosternum is smooth but for one large tubercle at each fore angle.

The head is conical, smooth. The eyes are globular, prominent and of a reddish brown colour. The face is pale ochraceous. The vertex is prominent, grooved dorsally at the top, not surpassed by the borders of the antennal grooves. The antennae are light green and sparsely covered with thin off-standing black hairs. The antennae are more than twice as long as the whole animal.

The ovipositor (fig. 8 e) is a little shorter than the hind femora, comparatively broad, yellowish, slightly darkened at the base only. The subgenital plate is triangular with rounded sides, incised rectangularly at the top and crested along the median line. The cerci are conical. The supra-anal plate (fig. 8 d) is relatively long, the sides are slightly curved and the apex is faintly bilobate.

The abdominal end of the male is figured in figs. 8 a—c. The subgenital plate is rather broad at its base, it tapers towards the apex and ends in a short stalk on the top of which the thin almost crescent-shaped styli are found. The apical half of the subgenital plate is slightly turned upward. The cerci are conical, faintly curved at the top.

The supra-anal plate is of nearly the same shape as in the female, but it is not incised at the top.

Measurements (those of the male in parentheses) in mm: length body 18 (15), length pronotum 4 (3½), length tegmina 20 (18), breadth tegmina 7½ (9), length anterior femora 5½ (5½), length posterior femora 11 (11), length ovipositor 8½.

Tympanophyllum Krauss

Locusta (Aprion) de Haan (partim) 1842, pp. 204, 205.

Tympanoptera (nec Pictet & Saussure) Brunner von Wattenwyl 1895, pp. 11, 66; Hebard 1922, p. 188.

Tympanophyllum Krauss 1903, p. 764; Kirby 1910, p. 572; Karny 1924, p. 195; 1926 a, p. 302; 1926 b, p. 120.

This genus contains rather large animals with a small pronotum, in shape similar to that of *Timanthes* Stål.

The prosternum is smooth, without thorns. The mesosternum is almost quadratic, the metasternum is of the same length, but narrowing towards

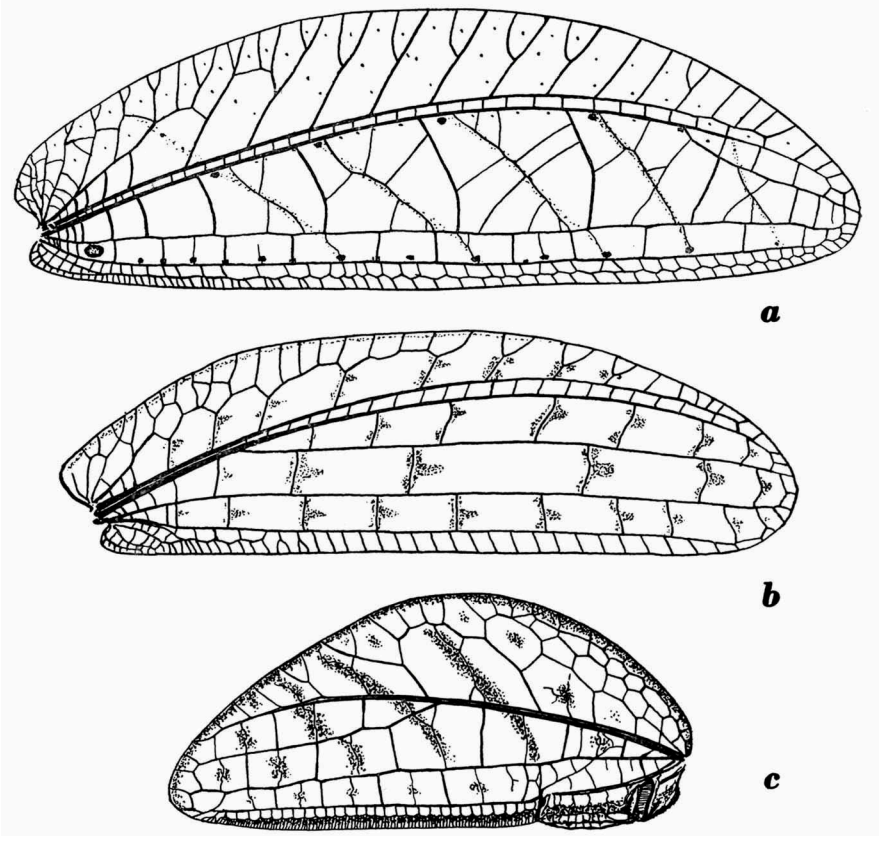

Fig. 9. a, *Tympanophyllum arcufolium* (de Haan) ♀ (holotype), right tegmen; b, *Tympanophyllum timanthoides* nov. spec. ♀ (holotype), right tegmen; c, *Diplodontopus rubromarginatus* (de Haan) ♂ (holotype), left tegmen. a and b, × 1½; c, × 2¼.

the hind margin. The tegmina have an evenly curved fore margin. The hind margin is straight. The hind legs are relatively short.

Brunner von Wattenwyl's diagnosis of his genus *Tympanoptera* (different from Pictet and Saussure's genus of the same name) nearly completely covers the genus *Tympanophyllum*. Two of Brunner von Wattenwyl's species are included in this genus, moreover the species *Tympanophyllum arcufolium* (de Haan) which is not mentioned in Brunner von Wattenwyl's paper and the new species described below.

Tympanophyllum arcufolium (de Haan) has a somewhat aberrant tegminal pattern as the radial branch vein begins near the top instead of near the base of the radial vein.

As all other characters are those of the genus *Tympanophyllum,* I place the species into this genus.

Tympanophyllum arcufolium (de Haan)

Locusta (Aprion) arcufolia de Haan 1842, pp. 204, 205; Karny 1920, pp. 177—179, 208.
Aprion arcufolium Walker 1870, p. 425; Kirby 1906, p. 302.
Tympanoptera arcufolia Karny 1920, pp. 177—179, 208.

Leiden Museum:

Sumatra: Padang, Müller, 1 ♀ (holotype).
Borneo: Nangah Raven, V 1894, Büttikofer, 1 ♀.

Karny (1920) published an elaborate redescription of this species. As the venation of the tegmina is of a rather uncommon type I give here a figure of the right tegmen of the holotype (fig. 9 a). The chief particulars are: the radial branch vein begins at nearly four fifth from the base. The broad area between the radial vein and the first medial vein is divided into a number of large cells, each containing an oblique tertiary vein which is bordered by a faint dark pigmentation.

The specimen from Borneo is almost identical with the type. It has a slightly broader supra-anal plate and on the whole is of a somewhat larger size.

Measurements (those of the specimen from Borneo in parentheses) in mm: length body 43 (39½), length pronotum 7 (7), length tegmina 65 (68), breadth tegmina 21 (24), length alae 63 (67), breadth alae 27½ (29), length anterior femora 12.3 (12), length posterior femora 22½ (23), length ovipositor 22 (26).

Tympanophyllum atroterminatum (Brunner von Wattenwyl)

Tympanoptera atroterminata Brunner von Wattenwyl 1895, p. 67, pl. 3 fig. 26 b, c; Karny 1920, p. 178.
Aprion atroterminatus Kirby 1906, p. 302; Hebard 1922, p. 203.
Tympanophyllum atroterminatus Kirby 1910, p. 572.
Tympanophyllum atroterminatum Karny 1924, p. 195; 1926 b, p. 120.

Mr. Willemse's Collection:

Borneo: 1 ♀.

This species as well as the following are easily recognizable with Brunner von Wattenwyl's diagnosis and figures.

Tympanophyllum extraordinarium (Brunner von Wattenwyl)

Tympanoptera extraordinaria Brunner von Wattenwyl 1895, p. 67, pl. 3 fig. 26c; Rehn 1909, p. 200.
Aprion extraordinaria Kirby 1906, p. 302.

Mr. Willemse's Collection:

Sumatra: Deli, 1 ♂.

Tympanophyllum timanthoides nov. spec.

Leiden Museum:

Locality unknown: 1 ♀ (holotype).

The species, which is based on one rather damaged specimen, is placed in the genus *Tympanophyllum* on account of the shape of the mesosternum and metasternum. It has lost the greater part of its legs and antennae. The tegmina are different from those of all other species of the genus but bear some resemblance to those of *Tympanophyllum atroterminatum* Brunner v. W. The venal pattern is highly similar to that of *Timanthes lobifolius* (de Haan), but the specimen described here is twice as large and differs from the latter by its generic characters of the thorax. A further similarity with *Timanthes lobifolius* is found in the arrow-shaped spots on the tegmina.

The colour of the tegmina is tender green with brown arrow-shaped figures at the transverse veins (fig. 9b) and with green borders along the short tertiary veins which are found along the longitudinal margins of the larger cells (not drawn in the figure). The fore margin is narrowly bordered with white and brown. The subcostal and radial veins are slightly curved along the whole of their length. They diverge near the base at about one fourth of the tegminal length. The radial branch vein leaves at the same point. It reaches the fore margin just before the apex. The radial branch vein and the medial veins are almost straight and parallel with the hind margin.

The alae are well developed and of normal shape.

The head, the thorax and the legs (what is left of these) are pale ochraceous, the abdomen is light brown.

The head is conical. The vertex is slightly prolonged but it does not surmount the basal joints of the antennae. Its top is narrowly rounded, the dorsal surface is slightly sulcate. The eyes are globular, prominent. The face is smooth. The clypeus bears a central brown patch which continues on the labrum.

The pronotum has a minutely tuberculated disc with two transverse furrows, one before the middle and the other in the middle. The fore margin is

rounded and minutely crenulated. The hind margin is smooth and forms a blunt angle in the middle. The lateral lobes are almost as long as broad, pointing slightly backwards. The crenulated fore angle is obtuse. The almost smooth hind angle is acute.

The prosternum is smooth, without thorns. The mesosternum is quadratic with straight borders. The metasternum is of the same length but the caudal border is half as long as the fore border.

The fore coxae bear a spine dorsally.

The ovipositor is broad, compressed, the dorsal margin is almost straight. The ventral margin is curved upward to the top. The apical part of the ovipositor and the basal margin are black, the sides and the lower base are yellow. The cerci are faintly curved at the top. The supra-anal plate is long, ovate and truncate at the top. The subgenital plate is broadly triangular and rectangularly incised at the top.

Measurements in mm: length body 34, length pronotum 6½, length tegmina 62, breadth tegmina 19½, length ovipositor 15½.

Despoina Brunner von Wattenwyl

Despoina Brunner von Wattenwyl 1895, pp. 12, 68; Karny 1924, p. 195; 1926 b, p. 120.
Despoena Kirby 1906, p. 303.

Despoina superba Brunner von Wattenwyl

Despoina superba Brunner von Wattenwyl 1895, p. 68, pl. 3 fig. 27 a, b; Hebard 1922, p. 203; Karny 1926 b, p. 120.
Despoena superba Kirby 1906, p. 303.

Leiden Museum:

Borneo: Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1894, 1 ♀; Long Bloe-oe, Borneo Expedition Dr. Nieuwenhuis, 1898, 1 ♀.

Geneva Museum:

Borneo: Brunei, Staudinger, 2 ♀♀ and 1 ♂.

Despoina spinosa Brunner von Wattenwyl

Despoina spinosa Brunner von Wattenwyl 1895, p. 69, pl. 3 fig. 27 c; Hebard 1922, p. 204; Karny 1924, p. 196.
Despoena spinosa Kirby 1906, p. 303.

Leiden Museum:

Borneo: Long Bloe-oe, Borneo Expedition Dr. Nieuwenhuis, 1898, 2 ♀♀ and 1 ♂.

Despoina submutica Karny

Despoina submutica Karny 1929, p. 193, fig. 8.

Mr. Willemse's Collection:

Borneo: Kinabalu, 3 ♀♀ (plesioallotypes) and 1 ♂.

Karny's description was made after the male. As three females now are available the following notes refer chiefly to these.

The tegminal venation in the females is normal, nearly as that figured by Brunner von Wattenwyl of *Despoina superba* (1895, fig. 27 b). The subcostal and radial veins are not separated as distinctly in their basal parts as this is the case in the male. The radial branch begins at one fourth of the radial vein from the base. It is faintly curved towards the tegminal apex. The medial vein bifurcates very near the base. The anterior branch first runs almost parallel with the radial vein for a little distance, then turns a little posteriorly and runs towards the apex almost parallel with the radial branch vein. The posterior branch of the medial vein runs parallel with the radial branch vein almost from the base. The areas between the fore margin of the tegmina and the second medial vein are almost of the same proportions as in the male, at least in the apical part of the tegmina. In the female the area between the second medial vein and the hind margin is of about the same width as the preceding one, whereas in the males it is broad near the base and tapers towards the top of the tegmina.

The colour-pattern of the tegmina of the females is almost the same as that of the males. In the females a distinct yellow spot is found near the base between the radial vein and the first medial vein.

A character not mentioned by Karny but present in both the male and the females examined by me is the deep-red patch found on the basal half of the abdominal ventral plates 1—4.

In the female the supra-anal plate is almost oval, slightly abbreviated at the apex. The cerci are slender, their tip is turned upwards. The ovipositor is rather broad. The dorsal margin is almost straight, faintly truncated at the apex. The ventral margin is straight in the basal half and curved towards the apex in the apical half. The tip is very dark brown. Along the dorsal margin the dark colour reaches almost the middle and ventrally it reaches till nearly one third from the base. The subgenital plate is almost triangular, broadly incised at the top.

Karny writes (1929, p. 194): "♂ genitalia as usual in this and the allied genera." To this I may observe that the cerci in the male are stronger than in the female, their apex is only very faintly curved upwards and they

bear a rather broad leaf-like broadening ventrally, which is never mentioned for this or allied genera.

Measurements of one of the females in mm: length body 37, length pronotum 6½, length tegmina 63, breadth tegmina 20½, length anterior femora 8½, length posterior femora 19, length ovipositor 15½, breadth ovipositor 4, length antennae 74.

Tympanoptera Pictet & Saussure

Tympanoptera Pictet & Saussure 1892, pp. 8, 19; Kirby 1906, p. 303; Hebard 1922, p. 188; Karny 1924, p. 196.
Oxyscelus Brunner von Wattenwyl 1895, pp. 12, 70; Kirby 1906, p. 303.

Tympanoptera grioleti Pictet & Saussure

Tympanoptera grioleti Pictet & Saussure 1892, p. 20, pl. 3 fig. 15; Kirby 1906, p. 303; Bruner 1915, p. 274; Hebard 1922, p. 204; Karny 1924, p. 196; 1926 a, p. 170, fig. 16.
Oxyscelus grioleti Brunner von Wattenwyl 1895, p. 71, pl. 3 fig. 29; Kirby 1906, p. 303.

Leiden Museum:

Sumatra: Tandjong Morawa, Serdang, N. E. Sumatra, Dr. B. Hagen, 1 ♀ and 1 ♂.
Moluccas: Boeroe, 1864, Hoedt, 3 ♀♀; Saparoea near Amboina, 1 ♀.

Amsterdam Museum:

Locality unknown: 2 ♀♀.

Mr. Willemse's Collection:

Amboina: 1 ♀.

Geneva Museum:

Moluccas: Amboina, 2 ♀♀ and 2 ♂♂ (the types included).
Locality unknown: 2 ♀♀.

Tympanoptera angustipennis (Brunner von Wattenwyl)

Oxyscelus angustipennis Brunner von Wattenwyl 1895, p. 71.
Tympanoptera angustipennnis Kirby 1906, p. 303; Karny 1924, p. 196.
Tympanoptera uvarovii Willemse (per errorum) 1933 b, p. 8.

Leiden Museum:

New Guinea: Between „Modderlust" and Karawan, 18 V 1910, P. N. van Kampen, 1 ♀.

Mr. Willemse's Collection:

New Guinea: Sakoemi, Prince Leopold, 1 ♀.

Brunner von Wattenwyl knew only two species in his genus *Oxyscelus*. Except the type species, *Oxyscelus grioleti* (Pictet & Saussure), he mentions *O. angustipennis*, characterized by the tegmina which are four times as long as broad, the venulae in the preradial area which stand nearly

perpendicular on the subcostal vein in the basal half, and the angulous transverse veins in the "anal" area, which are interconnected. This anal area, however, is the area between the posterior branch of the medial vein (second medial vein) and the hind margin. For comparison with the other species in the genus *Tympanoptera* I give here a figure of the right tegmen (fig. 10 a) of the specimen in the Leiden Museum. This specimen corresponds with Brunner von Wattenwyl's measurements and with his rather short diagnosis. From *T. grioleti* Pict. & Sauss. it can easily be distinguished after the venation of the preradial area, from *T. angustissima* Karny by the relatively broader tegmina, from *T. annulata* Karny by the smaller number of transverse veins between the radial vein and its branch. In the last-mentioned character it corresponds with *T. uvarovii* Karny, but it differs from the latter species in the venation of the preradial area (fig. 10 e).

Tympanoptera angustissima Karny

Tympanoptera angustissima Karny 1924, p. 196.

Leiden Museum:

New Guinea: North New Guinea, Gjellerup, 1 ♀ (holotype); Sekroe, Mac Cluer bay, 1897, K. Schädler, 1 ♀.

Mr. Willemse's Collection:

New Guinea: South New Guinea, Versteeg 1912/13, 9 IX 1912, 1 ♂ (plesiotype).

Geneva Museum:

New Guinea: Simbang, Huon Gulf, 1899, Biró, 1 ♀; Erima, Astrolabe Bay, 1896, Biró, 1 ♀ (det. Bolívar: *Tympanoptera angustipennis*).

The specimen from Sekroe is almost identical with the holotype. As the male has not yet been described some details follow here.

The general colour is yellowish brown with a tinge of green at the base of the tegmina and brown markings on the pronotum. The tegmina are adorned with a great many small black spots in the cell-centres.

The tegmina are nearly five times as long as broad. They are broadest at one fifth from the base, tapering gradually towards the apex. The fore and hind margin are but very faintly curved. The apex is acutely rounded. The subcostal and radial veins run together till very near the apex. Except in their basal fifth, which is curved, they are nearly straight till the apex. The same can be said of the branches of the medial vein, which from their basal fifth run almost parallel with the radial vein. The radial branch vein begins a little before the middle of the radial vein. It soon turns towards the apex and also runs parallel with the radial vein. The areas between the

radial vein, its branch, and the two branches of the medial vein are of nearly equal width. The stridulation organ takes up the basal fifth of the postradial area. In consequence the venation is slightly differing from that of the female. The area between the second medial vein and the hind margin is broadest at about one fifth from the base and takes up nearly one third of the total width in this region. It tapers towards the top.

In the preradial area nearly all cells have a black spot in their centre. In the area between the radial and the first medial veins a number of cells bear two or four spots in the centres. The cell between the radial vein and the first medial vein at the base of the radial branch vein is adorned with a compound of six or seven spots. All other cells, except those in the stridulation area and in the row of cells along the hind margin, each have one black spot.

The alae are a little shorter than the tegmina and nearly two times as broad in the basal half. They are hyaline, the top is rounded and not coloured.

All the femora are thinly carinate dorsally, without thorns. At the basal half of the hind femora the keel is stronger developed. Ventrally all femora are denticulated on both margins. The fore femora bear 15 or 16 small but distinct tubercles on the internal margin and 15 small thorns on the external margin. The middle femora have 15 small tubercles on the internal margin and 21 small thorn-like tubercles on the external margin. The hind femora have 15 tubercles on the internal margin and 30 or 31 on the external margin.

The fore and middle tibiae are smooth dorsally. The fore tibiae are broken in the specimen described here. They bear some small thorns on the ventral margins, especially in the apical half. The middle tibiae bear 13 small thorns on the external margin and 10 or 11 on the internal margin. In the hind tibiae 14 or 15 small thorns are found on all keels.

The head is sharply conical. In front the thinly prolonged vertex and the antennal scrobes are almost equally long. The vertex bears a longitudinal, median groove. Laterad of this groove two black spots are found at the base of the narrow fastigium verticis.

The eyes are rather small, globular. The antennal scrobes do not touch the eyes.

The basal joints of the antennae bear a crest on their internal surface. The antennae are irregularly ringed with dark brown.

The pronotum is convex in the anterior part, the posterior part is flat. The disc bears two transverse grooves which are connected on the lateral lobes by an oblique groove. The whole surface is sparsely covered with small crenules. The anterior margin is evenly curved, and slightly projecting

over the occiput. The hind margin is almost smooth, distinct crenules are found just before it on the disc. The distance between the tubercles along the fore and hind margin is rather large.

The lateral lobes are broader than long. The fore angle is blunt, the hind angle is almost rectangular. The ventral margin is slightly rounded. It is distinctly crenulated. On the lateral lobes, just behind the posterior groove, a whitish tubercle is found which is larger than the others.

The disc of the pronotum bears a dark brown, triangular spot on the anterior part, which extends from the fore margin to the first transverse groove. Between the two transverse grooves an indistinct brown medial line is found. The posterior part of the pronotum is bordered with dark brown along the hind margin. From the lateral angles this brown band first slightly bends inwards and then is directed anteriorly.

The prosternum is smooth, without spines. The mesosternum is subquadratic. The fore margin is convexly, but faintly curved. The fore angles are rounded and the lateral margins are concavely curved. The hind margin is straight. The metasternum is a little shorter than the mesosternum: it is about two thirds of its length. The lateral margins are slightly tapering caudally. The hind margin is straight.

The supra-anal plate is rather long. The lateral margins are slightly concave. The top is rounded and incised in the middle and forms two short lobes. The cerci are of normal shape, broadest at the base and slightly tapering to the apex, and very faintly curved. The subgenital plate is broad at the base, convex, tapering strongly to the middle of its length and ending into a stalk-like processus, on the slightly broadened top of which the lanceolate styli are found.

Measurements in mm: length body 26; length pronotum 6½; length tegmina 51; breadth tegmina 12; length alae 43; breadth alae 18; length anterior femora 10; length posterior femora 19.

Tympanoptera annulata Karny

Tympanoptera annulata Karny 1924, p. 198; Willemse 1933 b, p. 8.

Leiden Museum:

New Guinea: South New Guinea (Exploration 1907), 1 ♂ (holotype).

Tympanoptera uvarovii Karny

Tympanoptera uvarovii Karny 1924, pp. 196, 200; 1926 a, p. 170, fig. 16.

Leiden Museum:

New Guinea: Hoesin Bivak, III and IV 1910, 1 ♂ (holotype).

Karny (1924) compared his species with the two other species which he described in the same paper. In some details my results of the study of the tegmina differ from those of Karny, therefore a few remarks and a figure (fig. 10 e) are given here. The pattern of transverse veins in the preradial area differs distinctly from that in *T. annulata* Karny, as in the latter the row of cells along the subcostal vein consists of alternatively large and small cells. In the course of the subcostal vein, the radial vein, and its branch, the apical part of the medial veins and the transverse veins between these veins the species seems to correspond with *T. angustipennis* (Brunner v. W.) but from this species it differs by the less complicated venal pattern in the preradial area.

As the Leiden Museum possesses only a single male specimen of *T. uvarovii,* and only a single female specimen of *T. angustipennis,* I cannot decide with this scanty material whether the two are specifically distinct.

Zatricaprion Karny

Zatricaprion Karny 1923 a, p. 172; 1924, p. 194.

Karny erected this genus for his new species *Zatricaprion reticulatus* as there are marked differences with the allied genera in Brunner von Wattenwyl's Monograph. From *Morsimus* Stål (*Aprion* Brunner von Wattenwyl) it differs in the pronotum which bears no median crest.

Zatricaprion quadratus (Rehn)

Timanthes quadratus Rehn 1909, p. 198, fig. 21.
Morsimus albomarginatus Hebard 1922, p. 206, pl. 15 fig. 5, pl. 17 figs. 8—10.
Zatricaprion reticulatus Karny 1923 a, p. 173, fig. 29; 1924, p. 194; 1927, p. 7, fig. 6.
Zatricaprion mjöbergi Karny 1927, p. 7, fig. 6.

Leiden Museum:

Sumatra: Sumatra's Westkust, 1915, 1 ♀ (labeled: cotype of *Zatricaprion reticulatus* Karny); Serdang, J. A. N. Schagen van Leeuwen, 1 ♀; Loeboekbangkoe, V 1905, J. Menzel, 1 ♀; Ajer Koemanis, III 1914, E. Jacobson, 1 ♂.
Borneo: North Borneo, 1 ♀ (labeled: type of *Zatricaprion reticulatus* Karny).

Mr. Willemse's Collection:

Sumatra: Tomiang, Rantau district, Atjeh, 1 ♀.

The synonymy of the names given above is proved by the descriptions and figures of the quoted authors. There are individual differences, but these are of little importance as the specimens are linked by intermediate forms. All specimens have a distinct white or light yellow tegminal fore margin. The radial branch vein begins at about one third from the base. The transverse veins between the radial vein and the second medial vein for the greater part are contiguous. Towards the apex they are subcontiguous

and sometimes even alternating. These transverse veins are directed obliquely, slightly towards the apex. The venulae in the preradial area are directed obliquely towards the fore margin of the tegmina. In the basal part of the area they form some cells, but in the apical two thirds they are bifurcated or straight. The subcostal and the radial vein diverge at one fourth from the top.

In the area between the two medial veins there are, between the oblique veins, a number of transverse veins which run almost perpendicular to the longitudinal veins. In the type specimen from Borneo these perpendicular transverse veins are lacking in the left tegmen but present in the right. This specimen is an intermediate form towards *Morsimus albomarginatus* Hebard in which species the oblique transverse veins are contiguous. Whether this bornean species should be considered as a separate form or as a variety I am not yet quite certain. *Morsimus albomarginatus* Hebard, however, shows a great similarity to *Morsimus areatus* Stål and probably will appear to be a synonym of the latter. Then *Morsimus areatus* Stål should be the name of the species from the Philippines and of Northern Borneo, this being the type species of the genus. The sumatran form then probably should be considered as a variety.

The differences which separate Karny's *Z. mjöbergi* from his species *Zatricaprion reticulatus* are mainly found in the black margined vertex and in the structures on the margins of the posterior femora and tibiae. At first sight Karny's figures (1927) seem rather convincing as to the last-mentioned difference, but when examining our specimens on this character I found that the structures are subject to considerable variation at different places of the same margin, and that both different shapes as figured by him occur together in one and the same animal. The black-bordered vertex is also found in the female type specimen of *Z. reticulatus* Karny (from Loeboekbangkoe) and in the only male specimen present here, but the latter differs from the male type specimen of *Z. mjöbergi* after the compound spinulae on the margins of the hind legs: these are intermediate between those in the two species. Consequently *mjöbergi* should be considered as a synonym of the present species.

Morsimus Stål

Morsimus Stål 1877, p. 44; Kirby 1906, p. 304; 1910, p. 572; Karny 1924, pp. 201, 202.
Aprion Pictet & Saussure 1892, p. 20; Brunner von Wattenwyl 1895, p. 72.
Acanthaprion Pictet & Saussure 1892, p. 26.
Heteraprium Krauss 1903, p. 764; Kirby 1910, p. 572; Karny 1923 a, p. 174; 1924, p. 202.

Morsimus oleifolius (Fabricius)

Locusta oleifolia Fabricius 1793, p. 35.
Pseudophyllus oleifolius Serville 1839, p. 470.
Locusta (Aprion) oleifolia de Haan 1842, p. 205; Karny 1920, pp. 179, 208.
Zumala oleifolia Walker 1869, p. 416.
Aprion maculifolia Pictet & Saussure 1892, p. 21, pl. 3 fig. 19.
Aprion maculifolius Brunner von Wattenwyl 1895, p. 75; Rehn 1909, p. 200.
Morsimus oleifolia Kirby 1906, p. 304.
Morsimus maculifolius Karny 1927, p. 8.

Leiden Museum:

Java: Ardjasari, Preanger, 1 ♀; 1 ♀ (specimen referred to by de Haan).

Amsterdam Museum:

Sumatra: Ampugadang, Sumatra's Westkust, 120 m, 1926, leg. A. de Kock, 1 ♀; Ampugadang, Sumatra's Westkust, 120 m, 1924, ex coll. Jacobson, 1 ♀; Deli, de Bussy, 1 ♀; Medan, Sumatra's Oostkust, 29 IV 1921, J. B. Corporaal, 1 ♀; Padang Bedagei, Sumatra's Oostkust, A. van der Boot, 1 ♀.

Mr. Willemse's Collection:

Sumatra: Deli, 1 ♀.
Netherlands East Indies: 1 ♀.

Geneva Museum:

Ceylon: H. de Saussure, 1 ♀; Trincomalee, 1 ♂ (both specimens are the types of *Aprion oculatum* Pict. & Sauss.).
Sumatra:? Toerongie, 1 ♀ (type of *Aprion maculifolius* Pict. & Sauss.).
Locality unknown: 1 ♀ (cotype of *Aprion maculifolius* Pict. & Sauss.).

The red-bordered white spot at the base of the tegmina is of normal appearance in this species though sometimes it is lacking. The pattern of the veins of the tegmina is characteristic for the species. The radial branch vein begins close to the base of the radial vein. It is straight and shows no distinct angle near the base. The transverse veins in the area between the radial vein and its branch are almost perpendicular to these veins.

Morsimus obliquevenosus (Brunner von Wattenwyl)

Aprion obliquevenosus Brunner von Wattenwyl 1895, p. 76.
Morsimus obliquevenosus Kirby 1906, p. 304.

Leiden Museum:

Sumatra: Tandjong Andalas, V 1914, E. Jacobson, 1 ♀; Tebingtinggi, F. J. Weijnman, 1 ♀.
Java: Pengalengan plane, south of Bandoeng, 1500 to 1800 m, Dr. J. Bosscha, 1 ♀.

This species strongly resembles the preceding but differs in the place of insertion of the radial branch vein and in the oblique transverse veins in the area between the radial vein and its branch. Moreover this area is

relatively broader than in *M. oleifolius* (F.). where the transverse veins are perpendicular to the radial vein.

Morsimus inversus (Brunner von Wattenwyl)

Aprion inversus Brunner von Wattenwyl 1895, pp. 74, 77.
Heteraprium inversum Krauss 1903, p. 765; Kirby 1910, p. 572.
Morsimus inversus Kirby 1906, p. 305.
Heteraprium brunneri Karny (per errorem) 1923 a, p. 174, fig. 31; 1924, p. 202.

Leiden Museum:

New Guinea: Fak-fak, N.-W. Papua, C. J. L. Palmer, 3 ♀♀; Hollandia, Dr. P. N. van Kampen, 1 ♀; Semorsai, Dr. P. N. van Kampen, 1 ♀.

This species and *Heteraprium brunneri* Krauss are very closely related, and must be placed into one genus.

According to Karny (1924) Kirby without any sensible argument placed *inversus* into the genus *Heteraprium*, and Karny, therefore, kept it into the genus *Morsimus* Stål.

The great similarity between the two species had already been emphasized by Krauss. Karny, however, keeps *brunneri* Krauss in the genus *Heteraprium* Krauss on account of its having two groups of transverse veins in the tegmina, one group "obliquae, contiguae" and the other "perpendiculares, alternantes". This character is also given for *Aprion inversus* Brunner v. W., though in other words: "...extra venulas transversas normales, venulis fortioribus, retrotendentibus, aeque remotis numero 6 obsito, ..."

Without sufficient reason Karny rejects the synonymy of *inversus* Brunner v. W. and *brunneri* Krauss and even places them into different genera. The only difference between the species is that of the insertion of the radial branch vein, which begins nearly perpendicularly on the radial vein (subito deflexo) in *inversus* Brunner v. W., and which forms an acute angle with the radial vein in *brunneri* Krauss. According to Krauss another difference between the two species is that of the more distinct oblique veins in *inversus* Brunner v. W. against equally developed transverse veins in *brunneri* Krauss. In well-preserved specimens each of the oblique veins is accompanied by a narrow dark line, on account of which the veins seem stronger developed. This, however, does not occur in all specimens examined by me. The transverse veins are nearly equally thin. The other characters in which the species differ according to Krauss, viz., the granulation of the pronotum and the crenulation of the borders of the lateral lobes, also lose their value. In the specimens of *inversus* Brunner v. W. before me the granulation of the pronotum varies slightly and shows no differences from that of *brunneri* Krauss, neither with the original figure, nor with our only specimen which should belong to it after the basis of the radial branch

vein. The second difference should be found in the fore and ventral margins of the lateral lobes which are covered with small teeth or granules in *brunneri* Krauss and which are "crenulato" in *inversus* Brunner v. W. In my opinion Krauss' translation of "crenulato" as "mit Kerben besetzt" is

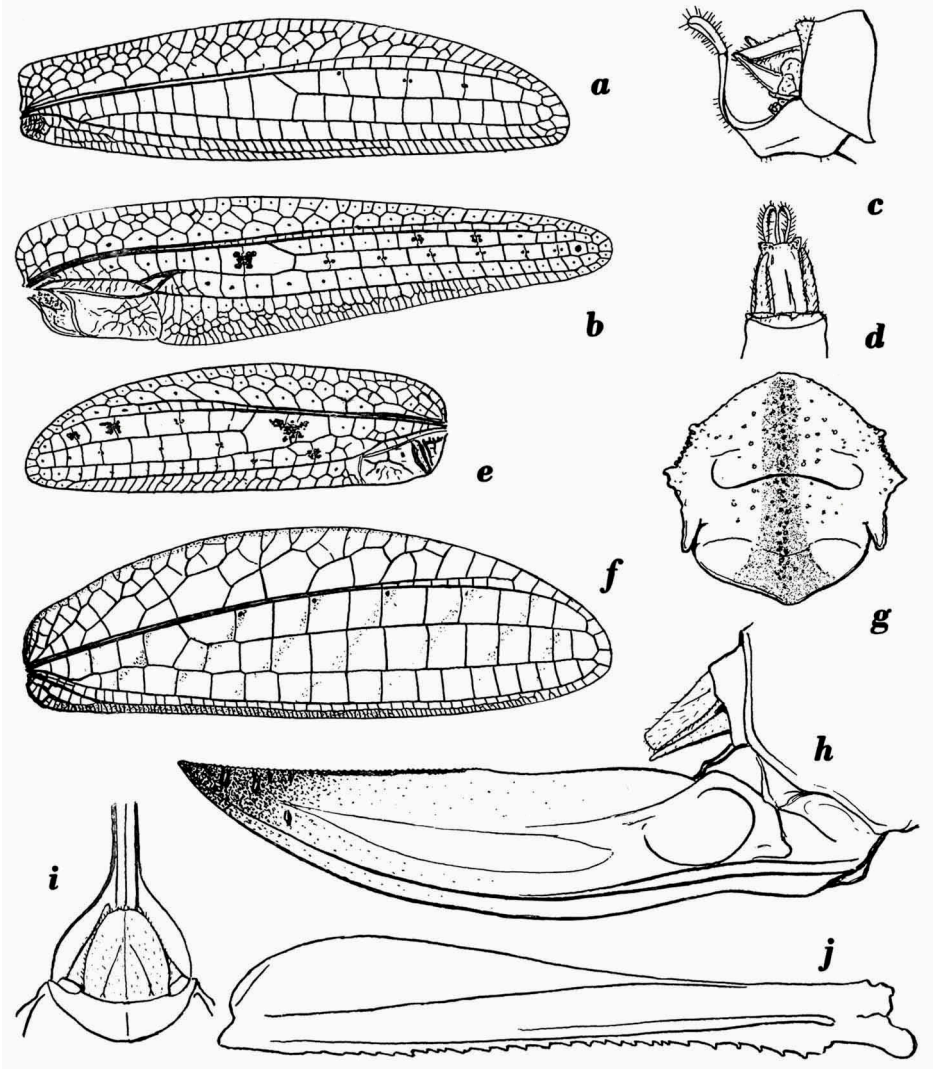

Fig. 10. a, *Tympanoptera angustipennis* Brunner v. W. ♀, right tegmen; b—d, *Tympanoptera angustissima* Karny ♂ (pleisioallotype), b, right tegmen, c and d, end of abdomen, lateral and dorsal view; e, *Tympanoptera uvarovii* Karny ♂ (holotype), left tegmen; f—j, *Acauloplax regularis* nov. spec. ♀ (holotype), f, right tegmen, g, pronotum, dorsal view, h, end of abdomen, lateral view, i, the same, dorsal view (top of ovipositor omitted), j, left hind femur. a, b, e and f, × 1½; c, d, g—j, × 5¼.

not altogether right, and in both descriptions the same structures are meant.

As the anatomical characters are the same for both species, except the insertion of the radial branch vein only, I consider *H. brunneri* Krauss as a variety of *Morsimus inversus* (Brunner v. W.).

As the species *Aprion inversus* Brunner v. W. has the generic characters of *Morsimus* Stål (*Aprion* Brunner v. W.), there is no necessity to place it into the separate genus *Heteraprium*. I therefore keep it in the genus *Morsimus*.

I may mention here that the specimen figured by Karny (1923 a, fig. 31) does not belong to *brunneri* Krauss but to *inversus* Brunner v. W.

All the specimens of the Leiden Museum are females. They have lost their colour in consequence of their being kept for a long time in alcohol. Something of the colour pattern, however, is still visible on the head and pronotum, viz., a white median line with a trifurcation towards the posterior part of the pronotum. The triangular spaces, included by the white lines are brown now. Of the original colour no further details are to be seen except a red line along the outside of the femora. I suppose that the general colour in the living animal was a light green.

Morsimus inversus var. **brunneri** (Krauss)

Heteraprium brunneri Krauss 1903, p. 764, pl. 67 fig. 12; Kirby 1910, p. 572.

Leiden Museum:

New Guinea: North New Guinea, Zoutbron, VII 1910, Dr. P. N. van Kampen, 1 ♀.

About this specimen no further details need to be given as *brunneri* has been discussed already above.

The specimen is rather damaged but the insertion of the radial branch vein is distinctly visible and leaves no doubt about the identity of the specimen.

Diplodontopus Karny

Diplodontopus Karny 1931, p. 57.

Diplodontopus rubromarginatus (de Haan)

Locusta (Aprion) rubromarginata de Haan 1842, p. 206; Karny 1920, pp. 180, 208.
Chondrodera rubromarginata Kirby 1906, p. 305; Karny 1923 a, p. 175.
?*Chondroderella rubromarginata* Hebard 1922, p. 208.
Chondroderella rubromarginata Karny 1926 b, p. 121.

Leiden Museum:

Borneo: Martapoera, Müller, 1 ♂ (holotype).

Brunner von Wattenwyl (1895) was inclined to regard de Haan's *Locusta (Aprion) rubromarginata* as identical with his *Chondrodera borneensis*. As

he was not altogether certain of this he kept the latter name for the species. Karny (1920) has shown that de Haan's specimen is specifically distinct from *C. borneensis,* he placed the species *rubromarginata* into the genus *Chondrodera,* though it does not entirely fit into the generic diagnosis as given by Brunner von Wattenwyl, especially as far as concerns its shorter fastigium verticis and its strong, numerous femoral thorns. In the paper cited above Karny published a new description of de Haan's species.

Afterwards Karny (1931) founded the genus *Diplodontopus.* My studies of de Haan's type proved that it belongs to this genus, and that it is closely related to the type-species, *Diplodontopus insolitus* Karny. The following remarks give sufficient proof for this opinion.

The head is conical. The fastigium verticis surmounts the antennal scrobes and bears a dorsal groove. The pronotum is rather sparsely granulated and on the disc two longitudinal rows of tubercles are found. The fore margin is evenly rounded, the hind margin is obtusely angulate. All margins are crenulated. The fore angles of the lateral lobes bear some tooth-like tubercles.

All the femora are provided with a number of rather large teeth along the ventral outer margin. Dorsally they are smooth. The teeth are of unequal length and stand at more or less irregular intervals (fig. 8 n).

The tegmina are of nearly the same shape as those of *D. insolitus* Karny, but they are not truncate at the apex. The venation (fig. 9 c) corresponds in many respects with that of *insolitus.* The preradial area is rather broad, broadest in the basal half. It contains a large number of cells, almost in the same way as in *insolitus.* The radial branch vein begins past the middle. The subcostal vein is rather broad at the base. In *insolitus* the pigmented patches are found in the cell-centres but in *rubromarginatus* they form dark, oblique bands which continue in a number of cells, passing through their centres. The fore borders of the tegmina are pigmented with dark brown and with orange red.

Different from *insolitus* is, moreover, the abdominal end (fig. 8 k, l, m), especially the subgenital plate. The apical part of the subgenital plate is stalk-like and strongly curved upwards, bearing two thin, foliaceous styli on the incised top.

From *Chondroderella borneensis* Brunner v. W. the species differs by its hairless fore legs and the strongly spinous ventral margins of the femora. Moreover the cell centres of the tegmina are not provided with a distinct black spot. The venation of the preradial area is less simple than in *Ch. borneensis,* and no dark-bordered white spots are found at the humeral angle.

Chondroderella Hebard

Chondroderella Hebard 1922, p. 208; Karny 1926 b, p. 120.

Chondroderella borneensis (Brunner von Wattenwyl)

Chondrodera borneensis Brunner von Wattenwyl 1895, p. 80, pl. 3 fig. 32; Kirby 1906, p. 305; Karny 1923 a, p. 175.
Chondroderella sexguttata Hebard 1922, p. 209, pl. 15 fig. 6; Karny 1926 b, p. 121.
Chondroderella borneensis Hebard 1922, p. 208; Karny 1926 b, p. 120.

Leiden Museum:

Nias: E. E. W. G. Schröder, 1 ♀.
Borneo: Balikpapan, Ir. M. Hardonk, 1 ♂.

Geneva Museum:

Borneo: Brunei, Staudinger, 2 ♀♀ and 1 ♂.

Except a male from Borneo the Leiden Museum possesses one female specimen from Nias which should be placed into this species. Both specimens correspond in every respect with Brunner von Wattenwyl's diagnosis and the female specimen shows no differences with the female figured by Brunner von Wattenwyl (1895, fig. 32 a).

The tegminal pattern fully agrees with this figure, in all large cells a black spot is found. These spots are situated in thin, indistinctly pigmented lines which run obliquely over the tegmina; 5 such lines are found in the female and 4 in the male.

The pronotum is characterized by the double longitudinal row of tubercles on the disc. This character is also found in the closely related genus *Diplodontopus*.

In *Chondroderella borneensis* all the legs are pilose on the margins. On the hind femora 7 small thorns are found in the apical part of the ventral outer margin.

The abdominal ends of the female and the male are figured (figs. 8 o, p, q).

The ovipositor (fig. 8 q) is distinctly curved, it is minutely serrated in the apical third of the dorsal and ventral margins. In both sexes the cerci are rather slender and slightly curved. The subgenital plate of the female is broadly triangular with a small incision at the top. The subgenital plate of the male is broad in the basal part, strongly convex. The apical half tapers at its base and ends into a stalk-like part on the top of which the faintly curved styli are found.

The supra-anal plate is oval, nearly shield-shaped. In the female the hind margin is slightly incised.

The male in the Geneva Museum has no eye-spots on the foreangle of the tegmina but this angle is black.

Acauloplax Karsch

Acauloplax Karsch 1891, pp. 77, 95; Brunner von Wattenwyl 1895, p. 80; Kirby 1906, p. 305; Karny 1931, pp. 52, 61.
Acauloplacella Karny 1931, p. 62.

The genus was established by Karsch for *A. exigua,* an african species. Brunner von Wattenwyl placed a new species from Celebes, *asiatica,* into the genus as it is very similar to the type species which he only knew from the description and the figure by Karsch. Karny (1931, p. 62) proposed the generic name *Acauloplacella* for the latter species, as he was convinced that the two species are far more distinct than would appear after the literature. Karny did not point out the differences between *Acauloplax* and *Acauloplacella,* therefore the latter genus was not sufficiently established and is unvalid according to the international rules of zoological nomenclature.

Acauloplax asiatica Brunner von Wattenwyl

Acauloplax asiatica Brunner von Wattenwyl 1895, p. 81.
Acauloplax (Acauloplacella) asiatica Karny 1931, p. 62, figs. 31 and 32.

Amsterdam Museum:

New Guinea: Oranje Mountains, 1927, A. Kalthofen, 1 ♂.

Mr. Willemse's Collection:

Celebes: Menado, 1 ♂.

Basle Museum:

Celebes: Posso Lake, II 1895, Sarasin, 2 ♀♀ and 1 ♂.

As is shown by Karny (1931) the species is characterized by the dark-bordered white or yellow markings on the pronotum and the head.

The specimen from New Guinea is differing from those from Celebes only in the shape of the radial branch vein, which forms a less acute angle with the radial vein. It is not nearly straight like in Karny's figure (1931, fig. 30) but forms an obtuse angle near its origin.

A more extensive material from New Guinea would be needed to prove whether this specimen should be considered as belonging to a separate species.

Acauloplax regularis nov. spec.

Leiden Museum:

New Guinea: Sekroe, Mac Cluer Bay, 1879, K. Schädler, 1 ♀ (holotype); Fak-fak, 1908, C. J. L. Palmer, 1 ♀ (paratype); New Guinea, 1 ♀ (paratype).

The general colour is not easily to be traced as the specimens before me all lost their colour in alcohol. Probably they were light green when alive

but now two of the specimens show a light yellowish brown colour with light brown veins in the tegmina, the alae are transparent. The third specimen is almost white as it was immature when killed.

The tegmina are about twice as long as the body, long ovate, broadest in the middle (fig. 10 f). The fore margin is evenly curved to the rounded top. The hind margin is almost straight, curved near the top only. The radial vein is slightly curved over more than three quarters of its length, the apical part is rounded more intensely towards the apex. In the basal part of the tegmina the subcostal and radial veins run together, in the apical part they gradually diverge. The subcostal vein ends in the fore margin at about one fifth from the top. The radial branch vein is emitted within one third from the base.

The areae between the radial vein, the radial branch vein and the two medial veins are divided into numerous almost equal quadratic cells. The transverse veins are subpercurrent. The arrangement of the cells in the preradial field is rather regular. Along the subcostal vein a regular alternation of quadrangular and hexangular cells is found.

In the second, fourth, sixth and eighth cell of the area between the radial vein and its branch a distinct spot is found in the basal corner near the radial vein. In the postradial field a number of oblique bands are found of a slightly darker colour, which run at almost equal distances at an angle of about 45° with the hind margin, pointing towards the base. The four middle bands run through the above-mentioned spots near the radial vein.

The alae are transparent, only a little shorter than the tegmina. The tip is almost rectangularly rounded and not coloured.

The head is sharply conical, carinate in the middle. The vertex is acute, projecting very slightly beyond the antennal scrobes. Its dorsal surface is concave near the top. Frontally the antennal scrobes nearly reach each other and leave only a thin strip of the vertex visible. The face is slightly elevated in the middle. The clypeus and labrum are pale yellowish. On their internal surface the large basal joints of the antennae bear a small crest ending into a thorn. The second joint is shorter and shows an indistinct protuberance on the internal surface. The rest of the antennae is thin, filiform and finely annulated.

The pronotum (fig. 10 g) is slightly roof-shaped and medially has a crenulated crest. This crest is bordered by a brown longitudinal line. The disc itself is sparsely covered with small granules. A little before the middle of its length it bears a distinct transverse groove, and two oval patches near the basal margin.

The crenulated fore margin projects slightly over the occiput of the head and forms a blunt angle. The hind margin is broadly rounded, with a small protuberance in the basal middle. The ventral parts of the lateral lobes are pointing outwards. The fore angles are concavely truncated. All the borders are distinctly crenulated.

The prosternum does not bear any thorns or protuberances. The mesosternum is subquadratic, broader than long. The fore angles are broadly rounded and distinctly crenulated. The fore margin and the concave lateral margins are only faintly crenulated. The smooth hind border is almost straight. The metasternum is smooth on all margins, the sides are concave, the hind border is straight. The length is about two thirds of that of the mesosternum.

Dorsally and on the outer lateral surface the fore femora bear a minutely crenulated crest. The ventral inner and outer margin too are minutely denticulated. The fore tibiae bear 8 or 9 very small thorns on each of the margins.

The middle femora are smooth dorsally and crenulated on the ventral margins. The armament of the middle tibiae is as follows: dorso-internal margin with 13 to 15 very small thorns, external margin with about 7 indistinct teeth. Ventro-internal margin with 3 to 5 small thorns in the apical half and the external margin with about 12 small thorns.

The hind femora are smooth dorsally, but thinly crested, the ventral outer margin is minutely serrulated (fig. 10 j), the inner margin adorned with about 16 crenules. The hind tibiae bear about 16 small thorns on each of the margins.

The top of the abdomen and the ovipositor (fig. 10 h) are rather strongly developed. The dorsal hind border of the penultimate abdominal segment is broadly excavated, the last segment is visible in this excavation. The supra-anal plate (fig. 10 i) is oval, thinly crested in the median line. The cerci are thin and almost straight. The ovipositor is rather broad. The dorsal margin is almost straight, in the apical half it is obliquely but faintly truncated to the top. The ventral margin is sinuous. The ovipositor is narrowest near the base, broadest in the middle and ends rather sharply. The colour is yellowish brown, darkest along the margins and nearly black at the apex. Near the top the lateral surfaces are adorned with a number of small elevations. The subgenital plate is broadly triangular with a median crest, the top is triangularly excavated.

The species is closely related to *Morsimus serraticollis* Bol. after Brunner von Wattenwyl's diagnosis of the species as *Aprion serraticollis* (Bol.), but *Acauloplax regularis* is smaller. Moreover, the number of transverse veins

between the radial vein and the radial branch vein and those between the latter and the first medial vein are 12 and 15 in *serraticollis* and 10 and 13 in the new species respectively.

Measurements of the holotype in mm: length body 26; length pronotum 6.2; lenght tegmina 52; length alae 47½; length anterior femora 7.3; length posterior femora 17; length ovipositor 17.2.

CYMATOMERINI

Sathrophyllia Stål

Sathrophyllia Stål 1894, pp. 54, 70; Brunner von Wattenwyl 1895, pp. 13, 86; Kirby 1906, p. 306; Lefroy 1909, p. 96; Karny 1923, p. 176; 1924, p. 202; 1926 b, p. 121.
(*Dehaania* i. lit. van Vollenhoven, in Museum Leiden).

In this genus the fore margin of the tegmina is not or only very faintly undulate (fig. 11 a, b). In this character it differs from *Olcinia* Stål where the fore margin shows distinct lobes (fig. 14 a, b, f.). In most species of *Sathrophyllia* the tegmina are tapering towards the apical part, not broadly rounded as in the genera *Tegra* Walker and in many species of the genus *Olcinia* Stål.

Sathrophyllia femorata (Fabricius)

Locusta femorata Fabricius 1787, p. 233; de Haan 1842, p. 202.
Gryllus, Tettigonia, femorata Stoll 1813, p. 16, pl. 6a fig. 22.
Pseudophyllus femoratus Burmeister 1838, p. 698; Walker 1869, p. 401.
Pseudophyllus.....? Giebel, 1861, p. 120.
Sathrophyllia femorata Stål 1874, p. 72; Brunner von Wattenwyl 1893, p. 177; 1895, p. 88; Kirby 1906, p. 307; Karny 1920, pp. 181, 208; 1923 a, p. 176; 1923 b, p. 318, figs. 1—5; 1924, p. 202, pl. 1; 1926 b, p. 122; 1927, p. 8; 1929, p. 194; Caudell 1927, p. 33; Willemse 1933 b, p. 9.
Dehaania femorata Koningsberger 1902, p. 12; 1915, p. 96.
Cymatomera orientalis Rehn 1909, p. 200, figs. 22 and 23.
Lathrophyllia femorata (err. typogr.) Heller & Günther 1936, p. 75.

Leiden Museum:

Malay Peninsula: Queda, P. J. van der Does de Bye, 1 ♀ and 1 ♂.

Sumatra: Tandjong Morawa, Serdang, 1882, Dr. B. Hagen, 1 ♂; Moearalaboeh, Padangsche Bovenlanden, 1907, Gooszen, 1 ♂; Buo, Padangsche Bovenlanden, III 1914, E. Jacobson, 1 ♀; Padang, Sumatra Expedition 1877/78, 1 ♀; Sumatra's Westkust, 1922/23, H. G. Wittenrood, 1 ♀ (ex. coll. H. C. Blöte); Solok, 26 XI 1912, P. O. Stolz, 1 ♀ and 1 ♂; Solok, 1913, P. O. Stolz, 1 ♂; Sumatra, Ludeking, 2 ♀♀; Sumatra, 2 ♀♀.

Billiton: van den Bossche, 1 ♀ and 1 ♂.

Nias: 1908, E. E. G. W. Schröder, 1 ♀.

Java: Batavia, XII 1907, E. Jacobson, 1 ♀; Samarang, VII 1910, E. Jacobson, 1 ♀; Buitenzorg, Dr. H. Brumert, 1 ♀; Rembang, Piepers, 1 ♀; West Java, Piepers, 1 ♂; Java, van der Hoeven, 1 ♀; Java, 1 ♀ und 3 ♂♂.

Borneo: Rantau, S. E. Borneo, P. J. van der Does de Bye, 1 ♂; Rantau, S.-E. Borneo, 1919, F. C. E. van Putten, 1 ♀; Loetoentoer, 1 ♂ larva.
Locality unknown: 4 ♀♀.

Amsterdam Museum:

Sumatra: Fort de Kock, 1000 m, VI 1930, leg. J. Kool, 1 ♀ (ex coll. E. Jacobson); Fort de Kock, 920 m, 1924, leg. E. Jacobson, 1 ♀; Fort de Kock, 920 m, 1926, leg. E. Jacobson, 1 ♀; Lahat, Palembang, Giesbers don., 1874, various dates, 3 ♀♀; Palembang, 2 ♀♀.
Java: Jogjacarta, C. J. Louwerens, 1 ♀ (ex coll. E. Jacobson); Buitenzorg, M. Weber leg., 1 ♂ larva; Buitenzorg, 1881, Oudemans, 1 ♀; Preanger Regentschappen, 1885, Loman, 2 ♀♀ and 1 ♂; Buitenzorg, 1881, van Nooten, 1 ♂ larva; 1 ♀ larva and 1 ♂ larva.
Borneo: Banjermassin, C. J. Louwerens, 1 ♀ (ex coll. E. Jacobson).
East Indies: Cleintuur don., 1910, 1 ♀.
Locality unknown: Bik don., 1920, 2 ♀♀; ex coll. Bremer, 1 ♀; 2 ♀♀ and 2 ♀ larvae.

Mr. Willemse's Collection:

Sumatra: Fort de Kock, VI 1932, 1 ♂.
Java: Buitenzorg, 2 ♀♀; Bandoeng, 1 V 1936, 1 ♀; Krawang, 1 ♀.

Halle a.d. S. Museum:

Banka: Deissner, 1 ♀ (specimen described by Giebel 1861 as "*Pseudophyllus...*?").

Geneva Museum:

Sumatra: 12 IV 1875, H. de Saussure, 1 ♀.
Java: 1 ♀ and 3 ♂♂.
Borneo: Mr. Winkler, 1 ♀.
Locality unknown: 1 ♀; Sibs, S. E. P., 1 ♂.

In the Netherlands East Indies this is the most common species of the genus *Sathrophyllia* especially on Java and Sumatra.

The species is characterized by the black forehead, brown clypeus, the broadly lobate fore femora and the black knees of the hind femora. The pronotum does not bear a median crest or protuberances. All margins of the femora and the bases of the antennae are distinctly pilose.

The species has often been figured with folded wings to show the protective colour-pattern which makes it resemble to lichens, when at rest on the bark of a tree, but these figures do not show distinctly the venation of the tegmina. This venation is figured here (fig. 11 b).

The figure shows the nearly smooth fore margin which is distinctly different from that in *Olcinia*.

All figures known to me are after the female but of the male no details are found except the descriptions.

For a comparison with other species the end of the abdomen of the male

is figured here (fig. 11 c—e). It is relatively broader than in the closely related genera, e. g., *Olcinia*. The terminal dorsal plate of the abdomen is rather broadly and sinuously incised in the posterior margin.

The supra-anal plate is of a somewhat rectangular shape with rounded hind angles and slightly concave margins. The cerci are of a normal shape, broadest at the base and slightly tapering towards the top, which is curved

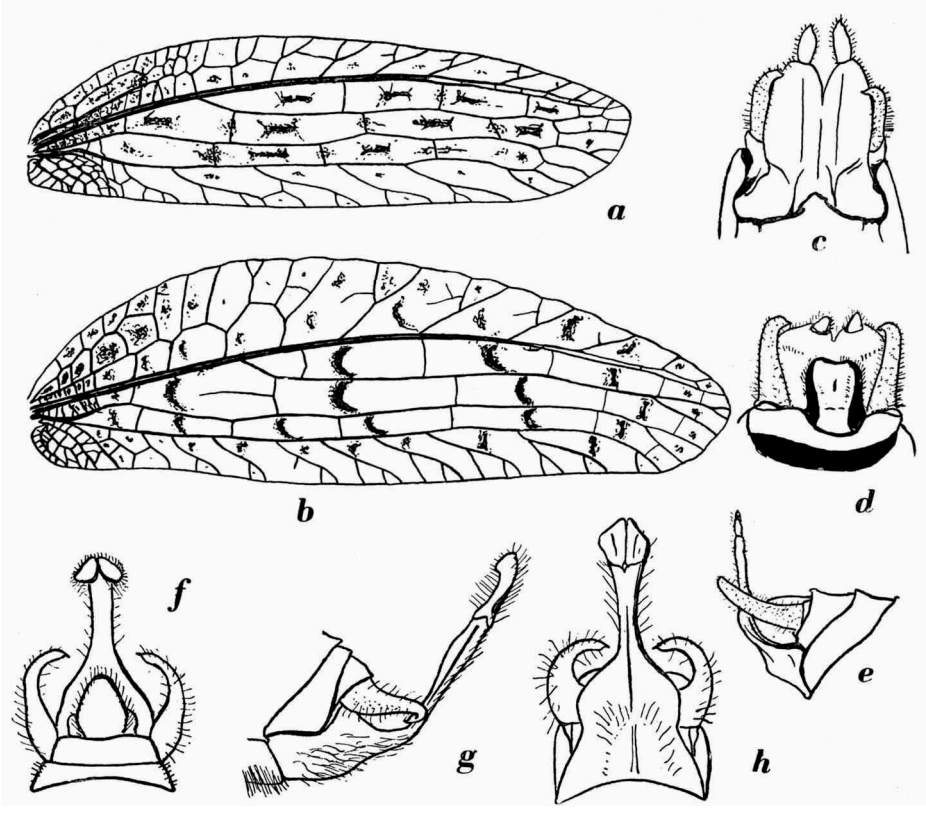

Fig. 11. a, *Sathrophyllia rugosa* (L.) ♀, right tegmen; b—e, *Sathrophyllia femorata* (F.). b, ♀ right tegmen, c—e, ♂, end of abdomen, ventral, dorsal and lateral view; f—h, *Sathrophylliopsis longe-pilosa* (Brunner v. W.) ♂, end of abdomen, dorsal, lateral and ventral view. a and b, × 1½; c—h, × 5¼.

inwards and terminates in a small thorn. The subgenital plate is broad and flat, the side margins are nearly parallel. At the base it is slightly broader than in the apical three quarters which are bent upward and pass between the cerci. The subgenital plate ends into two rounded lobes, on the tops of which the short oval styli are found.

The species is strongly variable and the colour does not give any clue for

specific identification. Generally the basal part of the tegmina is of a darker colour than the rest, the apical third is intermediate in colour between the basal part and the middle part. In most cases the latter is of approximately the same colour as the head and pronotum. To show the variation in colour the colour pattern of three selected specimens is described here.

In the first specimen (Moearalaboeh, Padangsche Bovenlanden, Gooszen leg., 1907) the head, pronotum, legs and the middle part of the tegmina are light green. The tegminal base is dark greyish green and the top is of an intermediate colour.

In the second specimen (Solok, P. O. Stolz, 26 II 1912) the head, pronotum and legs are light green. The tegminal base is adorned with many dark brown and ferrugineous spots. The rest of the tegmina is grey with small red and dark grey figures.

In the third specimen (Sumatra's Westkust, 1922/23, Wittenrood) the head, pronotum and legs are light yellowish green. The basal half of the tegmina is light ferrugineous with greyish black markings, then follows a dark gray transverse band, and the top is white with grey and pinkish patches.

Sathrophyllia rugosa (Linné)

Gryllus Tettigonia rugosa Linné 1758, p. 430; 1764, p. 132.
Conocephalus rugosus Thunberg 1815, p. 278.
Acanthodis rugosa Serville 1839, p. 454.
Locusta rugosa de Haan 1842, p. 201; Karny 1920, pp. 180, 208.
Cymatomera rugosa Walker 1870, p. 456.
Sathrophyllia rugosa Stål 1874, p. 70; Brunner von Wattenwyl 1895, p. 87, pl. 4 fig. 35; Kirby 1906, p. 306; Green 1908, p. 90, fig. 6; Karny 1920, p. 208; 1927, p. 8; Chopard 1924, p. 179; 1937, p. 21; Uvarov 1927, p. 94.

Leiden Museum:

Java: 2 ♀♀.

Mr. Willemse's Collection:

Ceylon: Kandy, 4 ♀♀; Anuradhapura, 1 ♀.
British India: Shembaganur, A. Heyne, 1 ♀.

Geneva Museum:

Ceylon: Landecker, 1 ♀; Morton, 1 ♀; F. M. M., 1 ♀; VII 1889, H. Fruhstorfer, 1 ♀; Humbert, 3 ♀♀.
British India: Calcutta, J. W. M., 1 ♀; ? Deccan, 1 ♀; Bhamo, Burma, VIII 1886, Fea, 1 ♀; ? Meppadi, Malabar, 1 ♀; „Indes inter.", 1 ♀ (ex coll. H. de Saussure); South-India, Pollachi, 1 ♀.

This species can be recognized almost at once by its large, often swollen, median crest on the basal (posterior) part of the pronotum. Linné's (1758)

statement *"Thorax versus apicem crista compressa crenata."* evidently refers to this crest.

The tegmina (fig. 11 a) of this species differ from those of *S. femorata* (F.) in the following characters: the preradial area is much narrower, the fore margin is nearly smooth whereas that in *S. rugosa* shows very faint undulations. These undulations are, however, highly different in shape from those in the genus *Olcinia*. Moreover the dark spots in the cells are more or less round or oval and in *femorata* these markings are of a more or less semilunar shape.

De Haan's diagnosis of *Locusta rugosa* is based especially on the two specimens of the Leiden Museum.

Sathrophyllia rugosa var. **angustata** (Stoll)

Gryllus Tettigonia angustata Stoll 1813, p. 14, pl. 5a fig. 17.
Locusta rugosa var. *angustata* de Haan, 1842, p. 202; Karny 1920, p. 181, 208.
Tegra angustata Kirby 1906, p. 308.

Leiden Museum:

Java: 1 ♀ (holotype).

Geneva Museum:

Ceylon: ? 1 ♀.
Locality unknown: 1 ♀.

The specimen in the Leiden Museum is labeled: "Specimen Stollii". This may mean that it is the type of Stoll's *Gryllus (Tettigonia) angustata.* Evidence for this view is further given by the fact that Stoll's figure corresponds in nearly every detail with the specimen.

De Haan classified Stoll's species as a variety of *Sathrophyllia rugosa,* in which in all probability he was right as the animal differs from *S. rugosa* in minor details only, especially by having a longitudinal dark line on each side of the pronotum, which line proceeds on the tegmina. The venation of the tegmina, the shape and colour of the abdomen and the ovipositor, the colour of the face and the armament of the legs of the variety *angustata* correspond closely with that in *S. rugosa.* The well developed crest on the basal part of the pronotum of the latter, however, is much more feebly developed in the variety!

Sathrophyllia torrida Stål

Sathrophyllia torrida Stål 1874, p. 71; Kirby 1906, p. 307; Sjöstedt 1923, p. 11, pl. 10 fig. 1; Hebard 1922, p. 210.

Mr. Willemse's Collection:

Ceylon: Kandy, H. Rolle, 1 ♀.

The description by Stål and the photograph by Sjöstedt of the type specimen give sufficient evidence for the identity of the specimen with *S. torrida.* The species is very similar to *S. rugosa* (L.). In all characters it corresponds with this species except in the posterior part of the pronotum

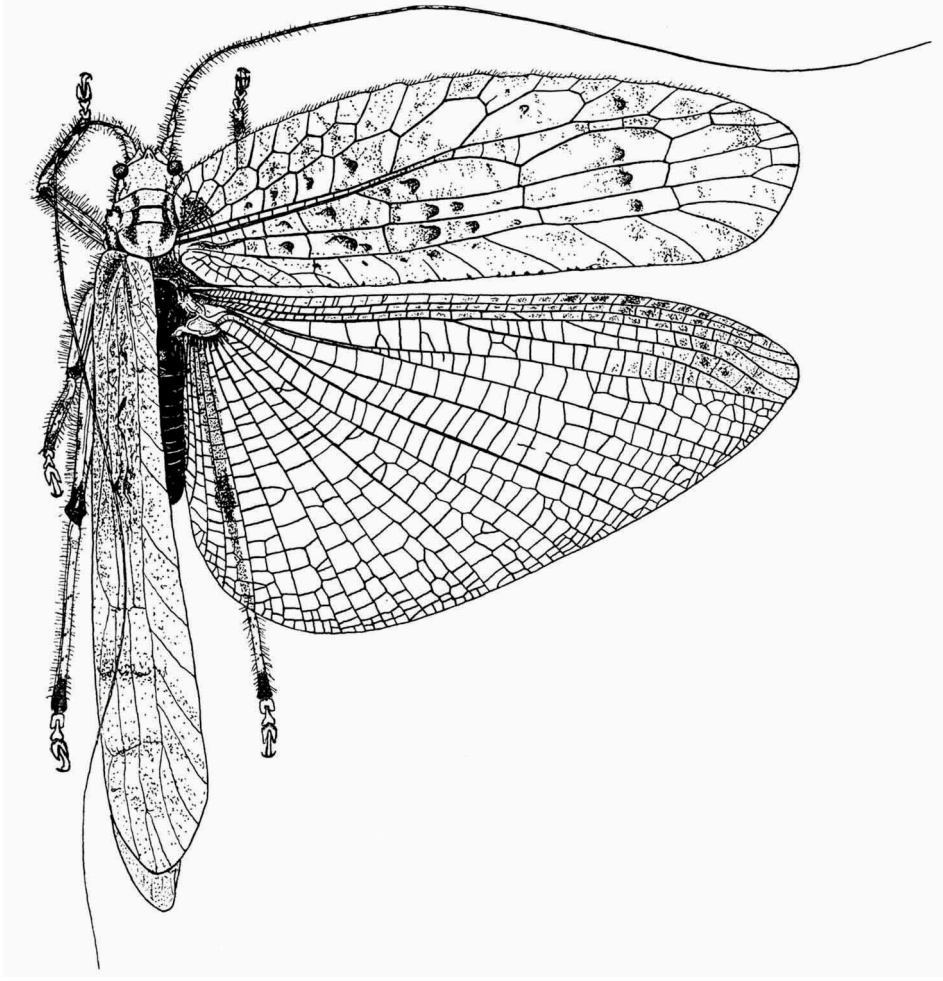

Fig. 12. *Sathrophylliopsis longe-pilosa* (Brunner v. W.) ♀. × 1½.

which bears only a faint elevation in the median line whereas in *rugosa* a rather high, more or less swollen crest is found.

As the specimen dealt with here corresponds in all other details with our specimens of *rugosa,* even in details of the brown and black pattern on the legs and the wings, in the structure of the anterior and lateral parts of the

pronotum, and of the abdomen, I am inclined to regard *S. torrida* Stål as a variety of *S. rugosa* (L.).

Sathrophylliopsis nov. gen.

This genus is established for the species *Tarphe longe-pilosa* Brunner v. W. as this species does not fit in into the genus *Tarphe*. Nor does it belong to the genus *Olcinia* where Karny placed it under the name *Olcinia pilifrons* Karny (1925, pp. 42—45).

The place of this genus is very near *Sathrophyllia* after the general form, near *Tegra* Walker (*Tarphe* Stål) after the almost smooth pronotum and near *Olcinia* Stål after the form of the tegmina.

The most striking characters of the genus are: the femora are not lobate nor broadly dentate as in the other genera mentioned above, but distinctly carinate, the radial vein of the tegmina forms two deep angular curves towards the radial branch vein in its apical half.

The pronotum is nearly smooth, for which reason Brunner von Wattenwyl probably placed it into *Tarphe*.

The ovipositor is of about the same shape as in *Sathrophyllia* and *Olcinia*.

The tegmina in general remind of those of *Sathrophyllia*, sometimes they show a slightly lobate fore margin but then this lobation differs from that in *Olcinia*.

Sathrophylliopsis longe-pilosa (Brunner von Wattenwyl)

Tarphe longe-pilosa Brunner von Wattenwyl 1895, p. 91.
Tegra longepilosa Kirby 1906, p. 308.
Olcinia erosifolia Hebard (per errorem) 1922, p. 211.
Olcinia pilifrons Karny 1925, pp. 42—45, figs. 3 and 4; 1926 b, p. 124.

Leiden Museum:

Sumatra: Solok, Padang, P. O. Stolz, 1 ♀; Tebingtinggi, F. J. Weinman, 1 ♂.
Borneo: Bloe-oe, Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1 ♀.

Amsterdam Museum:

Locality unknown: 1 ♂.

Karny (1925), in his description of *Olcinia pilifrons*, mentions some characters in which his species is different from *Olcinia crenifolia* (de Haan): the pronotum is shorter, even broader than long, less sculptured, broadly rounded at the fore margin and not prolonged into two tubercles as in *crenifolia* and the other species of *Olcinia*, and the legs are not lobate. Karny's figures (1925, figs. 3 a, c, e, 4 c, d) distinctly show these characters, all of which point to the identity of the animal with *Sathrophylliopsis longe-pilosa*.

The species is characterized by the long hairs which cover the legs, the forehead, and the basal part of the antennae. Moreover it is easily recognized by the generic characters: the radial vein which forms two angles pointing posteriorly which reach or nearly reach the radial branch vein, the nearly smooth pronotum and the legs which are not lobate.

The fore margin slightly varies in its undulations from nearly smooth in the specimen from Tebingtinggi to faintly undulate in the specimen from Solok (fig. 12). A comparison of this figure with those of the species of *Olcinia* (e. g., fig. 14 a, b, f) shows that in the present species the undulations are rather insignificant. After Brunner von Wattenwyl's key to the genera, *Olcinia* is distinguished from *Sathrophyllia* and *Tegra* (*Tarphe*) bij: "Margo anticus elytrorum erosulus." against: "Margo anticus elytrorum integer."

In his description of the female of *Tarphe longe-pilosa* Brunner von Wattenwyl mentions the small black spinulae which are found on the ventral margins of the fore femora. This description is almost complete and nothing needs to be added as far as concerns the female. Moreover, Karny (1925) described the female.

In both sexes the general colour is grey with green.

As the male has not yet been described I give here some details. The male differs in the colour of the abdomen which is dark brown dorsally and yellowish ventrally. The two dorsal plates before the end are of a lighter tinge, but the last dorsal plate is almost black. The supra-anal plate is oval, greyish ochraceous, pilose (figs. 11 f, g, h). The brown cerci are strongly curved. The apical thorn points inwards. The base of the cerci is rather broad. The subgenital plate is dark brown with an ochraceous triangular part at the ventral base. In the apical half the subgenital plate is considerably narrowed and it bears a pair of styli on the slightly bifurcated, yellow top of this stalk-like part.

Measurements of the male in mm: length body 22, length pronotum 6, length tegmina 45, breadth tegmina 14, length alae 45, length anterior femora 7½, length posterior femora 14.

Tegra Walker

Tegra Walker 1870, p. 439; Kirby 1906, p. 308; Karny 1923 a, p. 176; 1924, p. 203; 1926 b, p. 123; Chang 1935, p. 39.
Tarphe Stål 1874, p. 54; Brunner von Wattenwyl 1895, pp. 13, 90.

The genus is characterized by the shape of the tegmina which have almost parallel borders and a rather bluntly rounded apex, the relatively narrow, strongly curved ovipositor, the nearly smooth pronotum with

broadly rounded hind border, the nearly subquadratic, coloured mesosternum which is only a little broader than long, the smooth fore femora and the ventrally lobate fore and middle femora.

The genus is easily distinguished from *Sathrophyllia, Sathrophylliopsis* and *Olcinia* by the dark, almost quadratic mesosternum and the strongly curved ovipositor. The differences of *Tegra* with *Tegrolcinia,* the new genus described below, are mentioned in the description of the latter.

Tegra novae-hollandiae (de Haan)

Locusta novae-hollandiae de Haan 1842, pp. 201, 202, pl. 19 fig. 4; Karny 1920, p. 208.
Tegra novae-hollandiae Walker 1870, p. 439; Kirby 1906, p. 308; Karny 1920, pp. 181, 208; 1923 a, p. 176; 1924, p. 203; 1926 a, p. 276; 1926 b, p. 123; 1927, p. 8; Uvarov 1927, p. 94.
Tarphe novae-hollandiae Stål 1874, p. 72; Brunner von Wattenwyl 1893, p. 177; 1895, p. 90, pl. 4 fig. 37.

Leiden Museum:

Sumatra: Padang, 1 ♀ (cotype); Palembang, 1 ♀.
Java: Toeban, Piepers, 1 ♀.
Australia: Port Jackson, 1 ♀ (cotype).

Amsterdam Museum:

Sumatra: Lahat, Palembang, Giesbers don., 5 IV 1874, 1 ♀.

Mr. Willemse's Collection:

Sumatra: Oeloe Ajer, Pajakombo, 1 ♀.

Geneva Museum:

Java: Soekaboemi, M. E. Walsh, 3 ♀♀.

The species is characterized by the nearly smooth, flat posterior part of the pronotum, which bears only a faint median carina. The anterior part is indistinctly nodulous and bears two crenules on the fore margin which is slightly prolonged over the occiput. The lateral lobes are lobate ventrally. The head is very dark brown with a tinge of olivaceous colour. The forehead is of nearly the same colour. The antennae are black, ringed with yellow. All the femora are dark blackish brown and smooth dorsally. The rest of the legs is dark brown. The fore femora have broad but relatively short ventral lobes. The middle femora have broad, rounded ventral lobes. The hind femora have broad tooth-shaped lobes on the ventral margin.

The tegmina are rather broad, the fore and hind margin run parallel till near the top which is broadly rounded. In the basal part the colour is grey with indistinct blackish patches. In the apical part the colour is nearly black with a greyish tinge. The whole surface is covered with a number of black or very dark brown, more or less elevated spots, the greater part of which

are situated in the cell-centres. The alae are broadly infumated along the transverse veins.

The abdomen and the ovipositor are nearly black. The abdomen is carinate dorsally. The ovipositor is rather long and distinctly curved upwards.

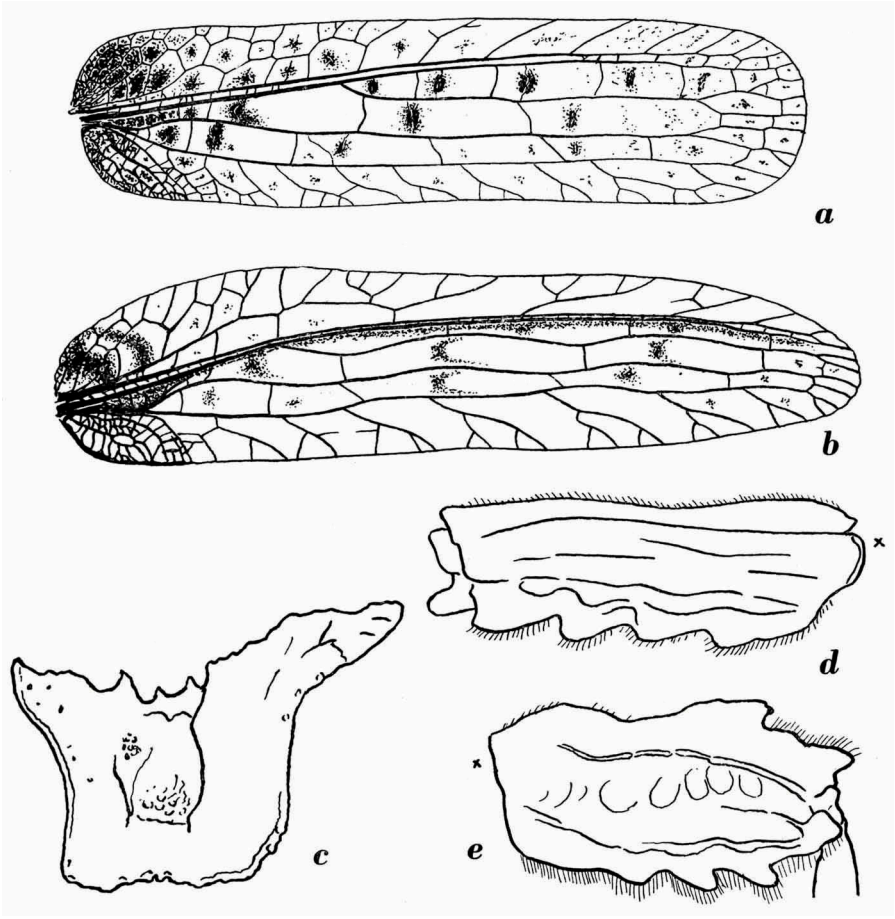

Fig. 13. a, *Tegra novae-hollandiae* (de Haan) ♀ (cotype), right tegmen; b—e, *Tegrolcinia superba* nov. spec. ♀ (holotype), b, right tegmen, c, pronotum, lateral view, d, left fore femur, e, left middle femur. a and b, × 1½; c—e, × 5¼.
In this and in following figures the proximal end of the femora is indicated with ×.

Tegra novae-hollandiae var. **albostriata** nov. var.

Leiden Museum:

Sumatra: Air Koemanis, III 1914, E. Jacobson, 1 ♀ (holotype); Baloen, Padangsche Bovenlanden, VI 1914, E. Jacobson, 1 ♀ (allotype); Tebingtinggi, F. J. Weynman, 1 ♀ (allotype).

Mr. Willemse's Collection:

Sumatra: Padang, 1 ♀ (allotype).

This variety has dark legs like the typical form but on the tegmina it has a rather broad whitish stripe along the radial vein, situated for the greater part in the preradial area and for about 1 mm in the postradial area. This stripe reaches to about one fifth from the top of the tegmina. At the base its breadth is about 3 mm but it decreases towards the top. No structural differences with the typical form are found.

Tegra novae-hollandiae var. **vittifemur** nov. var.

Leiden Museum:

Sumatra: Pladjoe, 1923/26, Ir. P. van Hemert leg., Dr. C. R. Bakker don., 1 ♀ (paratype).
Borneo: Long Bloe-oe, I 1899, Borneo Expedition Dr. Nieuwenhuis, 1 ♀ (holotype).

Amsterdam Museum:

Sumatra: Oeloe Ajer, 940 m, Pajakombo, leg. J. Pauw, 1932, 1 ♀ (paratype).

Geneva Museum:

Assam: Naga Hills, 1 ♀ (paratype).

This variety, like the preceding, shows no structural differences with the typical form. The only differences are found in the colour pattern. All the legs are blackish brown like in the typical form except the middle femora which bear a characteristic broad milk-white transverse stripe on the oral surface.

The tegmina show a broad, light brown marking along the radial vein, which is more or less extended over the preradial area. Some irregular light brown patches are also found in the postradial area.

Tegra viridi-notata (Stål)

Tarphe viridi-notata Stål 1874, p. 72; Brunner von Wattenwyl 1895, pp. 91, 92; Sjöstedt 1933, p. 11, pl. 9 fig. 1.
Tegra viridinotata Kirby 1906, p. 308.

Mr. Willemse's Collection:

Tonkin: Than-Moi, 1 ♀.

Geneva Museum:

British India: Calcutta, 1 ♀; Silhet, 2 ♀♀; Naga Hills, 1 ♀.

The specimen from Tonkin agrees in nearly every detail with the description and with the photograph of the type specimen.

Tegrolcinia nov. gen.

The genus is more or less intermediate between *Tegra* Walker and *Olcinia* Stål. With *Tegra* it corresponds in the general habitus and in the following details: the shape of the mesosternum and the metasternum, the shape and venation of the alae and the rather strongly curved ovipositor. With *Olcinia* it corresponds in the shape of the pronotum and of the legs. In the shape and venation of the tegmina the new genus is distinctly different from both genera.

The type species of the genus is *Tegrolcinia superba* nov. spec.

Tegrolcinia superba nov. spec.

Leiden Museum:

Sumatra: Moearalaboe, Sumatra Expedition, 1877/78, (labeled: Ma La 11—17), 1 ♀ (holotype) (from the collection of Dr. H. J. Veth).

The following description is based on the only available female specimen.

The general colour is light reddish brown with dark brown patches. The tegmina are rather slender, almost five times as long as broad (fig. 13 b). The fore margin is smooth, curved at the base and at the top. The middle part of the fore margin is almost parallel with the faintly sinuate hind margin. The tegmina are broadest at about one fourth of the length and faintly diminish in breadth towards the ovate top, which is narrower than in *Tegra novae-hollandiae* (de Haan). The subcostal and radial veins are slightly curved and run together till about one fifth from the top. Then they diverge and have a more or less parallel course to the apical end of the fore margin. The radial branch vein begins at one third from the base. It ends in the apex. The preradial field and the field along the hind margin are of about equal breadth and of a lighter colour than the rest of the tegmina. The preradial area contains many cells, as only very few branches of the subcostal vein reach the fore margin without ramifications. Behind the radial vein the tegmina bear a dark line from the base to the top with an elevated nodus at the base. Moreover a number of smaller elevated nodes are found in the cells between the radial vein and the posterior branch of the medial vein (M2), one in every cell.

The large longitudinal veins in the postradial area have a sinuous course (fig. 13 b). The three longitudinal areas between the radial vein and the posterior medial branch vein are about equally broad and together they are only slightly broader than the postmedial area.

The alae are of the same length as the tegmina. They are light smoky

brown and beautifully marbled with darker brown along the secondary and tertiary veins. The cells in the preradial area of the alae are clear, semi-transparent along the secondary veins and bear a large brown spot in their centres. The number of veins in the anal part of the alae is somewhat larger than that in the corresponding part of *Tegra novae-hollandiae* (de Haan).

The fore femora (fig. 13 d) have a dorsal carina which is broadest at the base. The ventral margin is broadly quadrilobate. The fore tibiae have a flattened fore surface with faintly lobate lateral carinae.

The middle femora (fig. 13 e) dorsally and ventrally are considerably broadened. Both margins bear broad lobes. The middle tibiae are also lobated along the dorsal margin. In *Tegra novae-hollandiae* (de Haan) the middle tibiae bear crests and are broadened but are not lobated.

The hind femora are carinate dorsally and broadly serrate ventrally. The hind tibiae are compressed laterally and bear broadened, irregularly serrated carinae on the dorsal and ventral margins.

No special colour pattern is found on the legs.

The pronotum is saddle-shaped. It is not nearly smooth as in *T. novae-hollandiae*. It has tubercles, crests and crenulations where *T. novae-hollandiae* has only indications of such. The pronotum has a crenulated median line which is slightly elevated on the caudal half of the disc. The disc is covered with little thorns and crenules all over the surface. The fore margin is curved anteriorly and bears two thorns near the middle. The fore border of the disc and also all borders of the lateral lobes are minutely crenulated. The hind border of the disc and of the lateral lobes are provided with a number of small crests which stand perpendicularly on the margin. The basal part of the pronotum is slightly swollen and bears a transverse ridge. Two transverse grooves are found in the middle of the disc. Two indistinct longitudinal dark lateral lines are found on the disc, and a thin whitish line, which begins on the vertex of the head, is prolonged on the pronotum.

The head is of the same shape as that of *T. novae-hollandiae*. The fastigium verticis surmounts the antennal scrobes, it is not swollen at the base. It is carinate dorsally, the top is very faintly bifurcated. The eyes are ochraceous, globular. The antennae slightly surpass the tip of the tegmina. At their inner apex the basal joints bear a thorn. The antennal scrobes are swollen at their ventral (frontal) bases and bear a transverse crest. In consequence the upper part appears slightly excavated. The forehead is brown for the greater part, darkest near the clypeus and growing paler towards the vertex. The forehead is slightly but distinctly transversely carinated just below the antennal scrobes. The part of the forehead between this carina, the antennal scrobes, and the vertex has a yellow colour. The clypeus and

the mandibles are brown for the greater part, but have a few paler spots.

The genae and the rest of the head are pale yellow, marbled with brown. From the dorsal margin of the eyes two brown lines run backward.

The prosternum bears two small spines which point obliquely forwards. The mesosternum is a little broader than long, the fore margin is straight with rounded angles. The colour is ochraceous with a brown caudal half.

The metasternum is slightly broader than the mesonotum, but it is shorter. The colour is ochraceous with brown borders.

The mesonotum is light yellow. The metanotum is black in the foremost part, then there follows a yellow transverse band, and the caudal part is dark brown.

The first abdominal segment is dark brown along the base rimmed with brown dorsally and with yellow laterally. The next two segments are orange-brown and the rest of the abdomen, except the ventral surface, is dark brown.

The supra-anal plate is ovate with a slightly incised hind border, the colour is dark brown. The cerci are robust, dark brown, curved at the light brown top.

The ovipositor is of a light brown colour. The upper margin is distinctly curved upward. The form is exactly the same as in *T. novaehollandiae*. The swollen base of the ovipositor is blackish brown. The subgenital plate is of the same colour and is broadly incised at the top.

Measurements in mm: length body 37½; length pronotum 10; length tegmina 69; breadth tegmina 16; length alae 69; length anterior femora 11; length posterior femora 19½; length ovipositor 19.

Olcinia Stål

Olcinia Stål 1877, p. 45; Brunner von Wattenwyl 1895, pp. 13, 92; Kirby 1906, p. 308; Karny 1923 a, p. 177; 1924, p. 203; 1925, p. 42; 1926 b, p. 123.

The genus was founded for the species *Olcinia erosifolia* Stål and *Locusta crenifolia* de Haan. A number of species have been added since.

By their distinctly crenulated costal margin of the tegmina the species of the genus *Olcinia* are easily distinguished from allied genera. Sometimes in *Sathrophylliopsis* too an irregular tegminal fore margin occurs, but these specimens are distinct from *Olcinia* by their almost smooth femora.

In *Olcinia* the tegmina are broadest in or before the middle, tapering slightly towards the apex.

The tegminal apex is broadly rounded or broadly truncated. The preradial area of the alae is more broadly rounded than in *Sathrophyllia*.

Olcinia crenifolia (de Haan)

Locusta crenifolia de Haan 1842, p. 201, pl. 19 fig. 6; Karny 1920, p. 208.
Meroncidius? crenifolia Walker 1870, p. 454.
Olcinia crenifolia Stål 1877, p. 45; Brunner von Wattenwyl 1895, pp. 92, 93, pl. 4 fig. 38; Karny 1920, p. 208; 1923 a, p. 177; 1924, p. 203; 1925, p. 42, figs. 3 b and d, 4 a, b; 1926 b, p. 124.

Leiden Museum:

Borneo: Loetoentoer, 1 ♀ (holotype); Loetoentoer, 1 ♂ larva (paratype); Mahakam River, Borneo Expedition Dr. Nieuwenhuis 1894, 1 ♂ (plesioallotype).
Java: Piepers, 1 ♀.

The following description contains some details of the female which have not or not distinctly been put forward in de Haan's paper, and particulars of the male, which is described for the first time.

In both sexes the tegmina are strongly crenulated at the fore margin (figs. 14 a, b). The hind margin is nearly straight, only faintly sinuate. The broadest part of the tegmina is found at one fourth of the length in the female and at one third in the male. In both sexes the preradial area is rather broad. It takes one quarter of the total surface of the tegmina in the female and one third in the male. The subcostal and the radial veins run together to about the middle of the tegmina, then they diverge slightly and touch again at a short distance. The subcostal vein ends in the fore margin before the apex. The radial vein and its branch end in the apex. The branch of the radial vein is slightly angular. The anterior branch (M 1) of the medial vein is sinuate, the posterior branch (M 2) is nearly straight in the female but in the male it is sinuate like the anterior branch. In the basal part of the preradial area a number of closed cells are formed by the branches of the costa and the subcosta but more apically the cells are open to the fore margin. Nearly all cells of the tegmina and those of the coloured top of the alae show a central dark patch. The four longitudinal zones formed by the large veins all are of nearly equal breadth. The apex of the tegmina and the coloured part of the alae are obtusely rounded. In *Sathrophyllia* the latter part is more acute.

The fore femora are smooth dorsally with a faint broadening at the base. Ventrally they are quadrilobate. The middle femora dorsally bear a broad, almost smooth crest, and four tooth-shaped lobes ventrally. The hind femora are carinate dorsally and provided ventrally with four or five long lobes. All the legs are marbled with dark brown.

The pronotum is rugulose. The hind margin is rounded, smooth. The fore margin bears two blunt spines near the middle. On the middle of the disc at the left and the right of the median line a small protuberance with a sharp dorsal crest is found. The ventral borders of the lateral lobes bear two incisions.

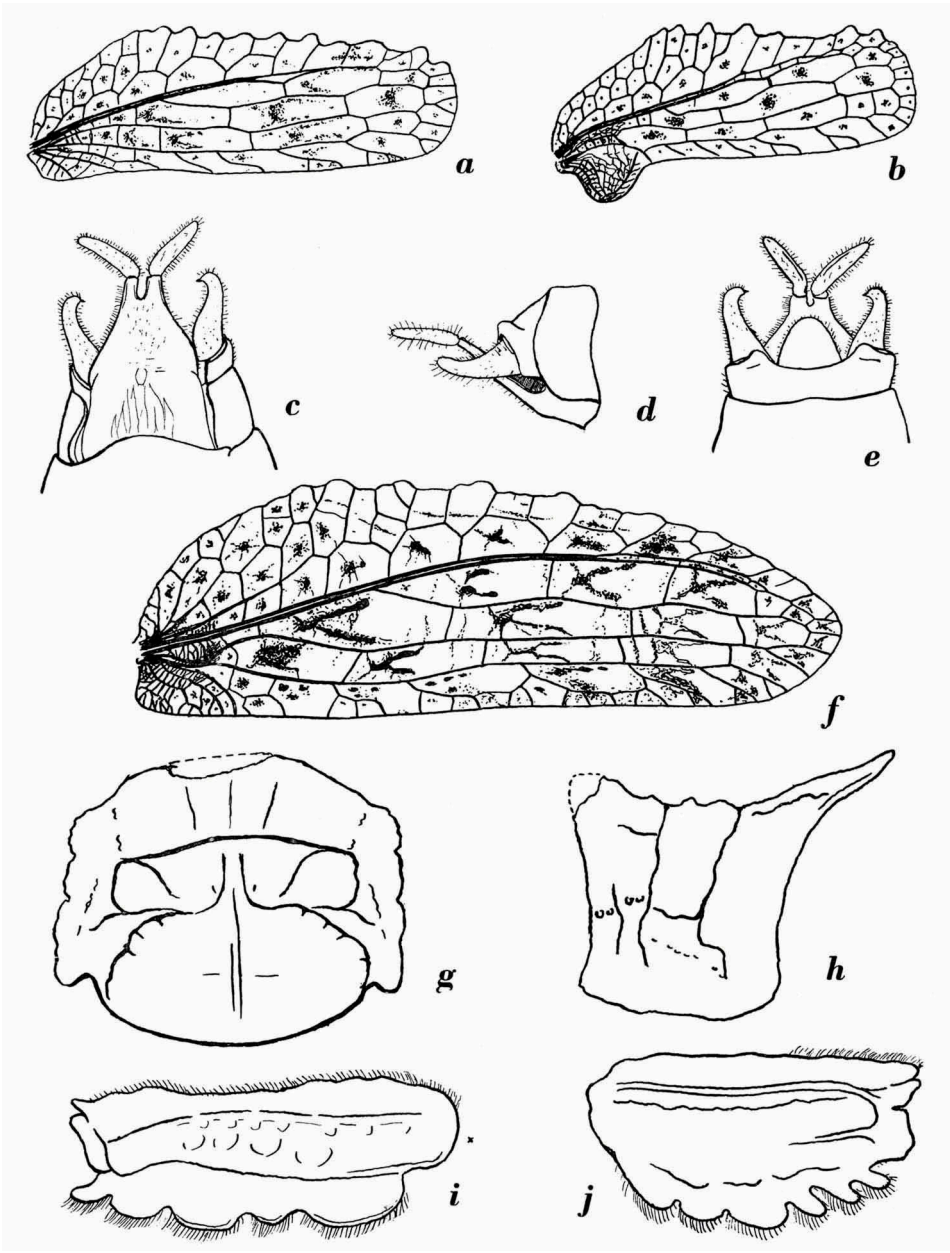

Fig. 14. a—e, *Olcinia crenifolia* (de Haan), a, ♀ (holotype), right tegmen, b, ♂ (plesioallotype), right tegmen, c—e, ♂ (plesioallotype), end of abdomen, ventral, lateral and dorsal view; f—j, *Olcinia grandis* nov. spec. ♀ (holotype), f, right tegmen, g and h, pronotum, dorsal and lateral view, i, left fore femur, j, left middle femur. a, b and f, × 1½; c—e and g—j, × 5¼.

The prosternum is unarmed. The fore border of the mesosternum is concave with rounded angles. Its middle surface bears a brown patch. The metasternum is brown in the middle too. Both meso- and metasternum are broader than long.

In the female the abdomen is dark brown at the base and at the apex. The dark base of the abdomen is also found in the male, but here the top is of the same yellowish colour as the rest of the body.

The supra-anal plate of the female is triangular with a rounded apex, triangularly carinate on the dorsal surface. The cerci are dark brown, almost straight and slightly curved upwards at the top. The ovipositor is light brown, the sides of the base and the borders are dark brown. The subgenital plate is broadly triangular with a rectangular incision at the top. The subgenital plate and the ventral base of the ovipositor are ochraceous like the body.

The supra-anal plate of the male (fig. 14 e) is of the same shape as that of the female but ochraceous and not dark brown. The cerci (fig. 14 c—e) are strongly curved at the top and end in a sharp dark tooth. The subgenital plate is rugous basally. It diminishes in breadth towards the apex. The apex is incised for about 1 mm. The lobes bear the long, ovate styli.

The head is marbled with dark brown. The eyes are globular, prominent and of a brownish colour. The vertex is prolonged conically, sulcate above. The blunt apex surpasses the antennal scrobes. The forehead is dark brown, except a triangular yellowish spot between the antennal scrobes. The clypeus and the genae are ochraceous. The antennae are annulated with brown.

Measurements in mm (those of the male in parentheses): length body 28½ (31); length pronotum 8½ (7); length tegmina 38 (30); breadth tegmina 13 (11½); length alae 39 (29½); length anterior femora 8½ (7½); length posterior femora 15½ (14); length antennae — (105); length ovipositor 17½.

The female specimen collected by Piepers on Java differs from the type specimen by the dark brown abdomen. As no structural differences are to be found I regard the specimen as belonging to *O. crenifolia.*

Olcinia grandis nov. spec.

Leiden Museum:

Borneo: Bloe-oe, Mahakam, Borneo Expedition Dr. Nieuwenhuis, XI 1896, 1 ♀ (holotype).

The general colour is greyish brown. The tegmina are adorned with indistinct reddish brown markings with brown V-shaped centres. The

tegmina are semitransparent. The fore margin is crenulated (fig. 14 f). The preradial area is strongly broadened at the base. It contains several rows of closed cells, especially at the base. The subcostal and radial veins run together till about two thirds of their length, then they diverge slightly. The radial vein ends just before the apex of the tegmina. The branch vein, which proceeds from the radial vein at about one third of its length, ends just behind the apex. The longitudinal zones which are formed by the large veins in the postradial area are of about equal breadth, except the area between the branches of the medial vein, which is slightly narrower than the other two. The distribution of the dark V-shaped markings on the tegmina is about the same as in *Olcinia excisa* (Karny 1923 a, pl. 2 fig. 4). A large elevation is found at the base of the tegmina between the radial and the medial veins.

The alae are transparent. The transverse veins are bordered with a scarcely perceivable infumation. The base of the alae is black. The top of the coloured part of the alae is acute.

All legs bear a black spot at the apex of the inner side of the femora and also on the tibiae near the top. The fore femora have a dorsal crest which is slightly higher at the base. The ventral margin is broadly lobated (fig. 14 i). The middle femora are carinate dorsally and broadly lobate ventrally (fig. 14 j). The middle tibiae are lobate dorsally and bear a small white tubercle near the base. They are provided with a smooth crest ventrally. The hind femora are carinate dorsally but smooth, ventrally they are broadly serrate. The hind tibiae are armed with 5 to 7 small black thorns on both ventral crests.

The pronotum is broadly saddle-shaped. The disc is crenulated and possesses two transverse grooves, one before and one in the middle of the length (fig. 14 g, h). The fore margin is irregularly crenulated (damaged in the middle in the unique type). The hind margin is broadly curved with a blunt thorn on the side angles. The lateral lobes bear a number of distinct small thorns at the fore angle. The crenulated ventral border is faintly curved. The hind border and the faintly excavated humeral sinus are almost smooth.

The head is of a broadly rounded form. The fastigium verticis is rather large and longer than the antennal scrobes. It is sulcate dorsally and slightly bifurcate at the top. A blunt protuberance is found at its base. The antennal scrobes bear a row of black spots dorsally, they are pale ochraceous at the frontal surface. The basal point of the antennae bears two thorns at the top, one at the inner side and one at the outer side. The antennae are annulated with light yellow and dark brown, they are about as long as the whole

animal. The brown eyes are globular, prominent. From the hind margin of the eyes two black lines run backwards. The forehead is pale ochraceous with a narrow black line along the clypeus. The clypeus is brown. The labrum is ivory white with light brown shades at the base and at the fore margin. The mandibulae are of the same colour.

The ventral surface of the whole animal is ochraceous including the ventral base of the ovipositor.

The prosternum is bare, without spines. The mesosternum is a little more than half as long as broad. The fore margin is concave with broadly rounded angles. The metasternum is about as long as broad, it has rounded hind angles.

All abdominal segments are blackish brown dorsally and laterally. Ventrally they are ochraceous. The sides on the metathorax are black with a large ivory-white patch.

The supra-anal plate is long-ovate, dorsally carinate and faintly incised at the top. The cerci are light brown, curved upwards in the apical half. The ovipositor is light brown, also at the swollen base. The ventral margin and the apical half of the dorsal margin are dark brown. The ventral margin is slightly curved upwards, the dorsal margin is obliquely, though faintly, truncated from the middle to the top of the ovipositor. This apical half of the dorsal margin is minutely serrulated. The subgenital plate is broadly triangular and rectangularly incised at the top.

The species is very closely related to *Olcinia erosifolia* Stål. The photograph of the type specimen of this species (Sjöstedt, 1933, pl. 10 fig. 2) distinctly shows that there are important differences between the two. In the new species the tegmina have a more acute apex. The subcostal and the radial veins have a different course in their apical part. Moreover the first row of cells in the alae of the new species is much narrower than in *Olcinia erosifolia* and the general shape of the alae is different. In the new species the preradial area is comparatively smaller. The anal field is broadly developed. The greatest width is found at about one fifth from the base and in *erosifolia* the greatest width is found in the middle of the alae.

Measurements in mm: length body 42; length pronotum 8; length tegmina 64; breadth tegmina 20; length alae 64; breadth alae 34½; length anterior femora 8½; length posterior femora 20½; length ovipositor 24½.

Olcinia dentata nov. spec.

Leiden Museum:

Borneo: Kalao, Bloe-oe, 19 IX 1894, Borneo Expedition Dr. Nieuwenhuis, 1 ♀ (holotype).

This species is closely related to the preceding. Differences are found in the dorsal pattern of the pronotum, in the course of the radial branch vein of the tegmina and in the lobation of the femora. The name is after the broad tooth-shaped lobes of the fore femora.

The general colour is grey with V-shaped, brown markings and pinkish patches on the tegmina and a greenish tinge on the disc of the pronotum.

The tegmina are semitransparent. The fore margin is crenulated (fig. 15 a), and evenly curved from the base to the apex. The hind margin is almost straight but rounded at the apex of the tegmina. The radial branch vein is directed towards the centre of the apex. The preradial area which takes up about one third of the total surface, is divided into many closed cells. The subcostal vein and the radial vein run almost straight for about half the tegminal length, then they diverge and run in the direction of the apex, slightly curved and nearly parallel with each other. They end in the fore margin before reaching the apex. The radial vein emits its branch at about two fifth of its length. The postradial area is divided by the large veins into four longitudinal fields not strongly differing in size. Only the area between the two medial veins is a little narrower than the other three fields. A number of more or less nodulous elevations is found in the dark markings in the cell-centres in the tegmina. The distribution of the dark markings on the tegmina is about the same as in *Olcinia grandis,* described above.

The alae are transparent. The secondary veins are dark brown and distinctly accompanied by smoky lines. The small coloured part at the tip is acutely rounded.

The fore femora bear a narrow crest dorsally which is irregularly interrupted (fig. 15 e). The ventral margin is broadened and forms five dentiform lobes. The middle femora (fig. 15 d) are of about the same shape as the fore femora but they are provided with four ventral lobes and bear a dark spot on the outer surface.

The fore and middle tibiae are ochraceous, marbled with brown, and black near the apex. The middle tibiae are compressed laterally and bear only one little white thorn on the base of the dorsal surface between the two crests. These crests bear small black thorns.

The hind femora in their basal half possess a dorsal crest; ventrally they have a row of rather sharp lobes. The lobes which are situated more basally are provided with hairs. The tibiae bear 6 or 7 black spines along the ventral crests.

The pronotum is saddle-shaped (fig. 15 b, c). It has two transverse grooves in the middle of the disc and an indication of a third on the caudal

part, but this third groove is caused by a row of irregular crenules. The fore margin of the pronotum is slightly prolonged over the occiput. This prolongation is truncated at the top and ends into two tubercles which are the foremost of two rows of tubercles running backwards along half the length of the pronotum. In the middle of the pronotum a thin dorsal carina

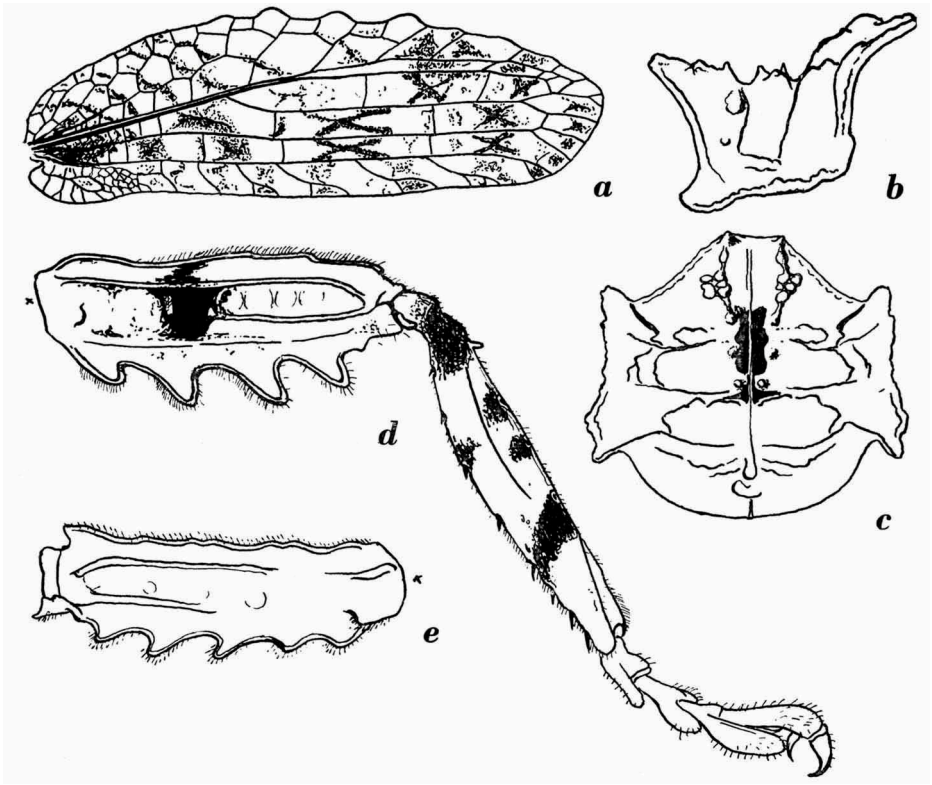

Fig. 15. *Olcinia dentata* nov. spec. ♀ (holotype), a, right tegmen, b and c, pronotum, lateral and dorsal view; d, left middle leg, e, left fore femur. a, × 1½; b—e, × 5¼.

is found which ends into a rather large conical protuberance near the hind border. On both sides of this carina there is a dark line, which runs from the fore margin till a little behind the second transverse groove. The hind border is evenly curved and almost smooth. It is very faintly crenulated, as is the fore margin. The ventral fore angle of the lateral lobes is acute, but not spiniform. The ventral border is crenulated and faintly sinuous. The hind angle of the lateral lobes is bluntly truncated. The humeral sinus is excavated.

The entire ventral surface of the animal is ochraceous.

The prosternum is not armed. The mesosternum has a concave fore border with obliquely truncated angles. It is about twice as broad as long. The metasternum has a straight fore border and it is slightly broader than the mesosternum. The lateral margins run obliquely backwards to the concave hind border.

The pronotum, the head and the legs are marbled with numerous small black spots.

The head is of the normal shape in the genus. The fastigium verticis is slightly sulcate above and it is distinctly incised at the yellow top. It surmounts the antennal scrobes which dorsally are orange-brown with some black spots. The long antennae are annulated with dark brown and light yellow. They are about one and a third times as long as the animal. At the top of the basal joint there is a thorn at the inner side. The forehead is pale yellowish. Only a few longitudinal greyish lines are found below the antennal scrobes. Anteriorly the antennal scrobes are pale yellowish with two brown patches. The genae are yellowish white.

The abdomen is dark brown dorsally.

The oval supra-anal plate is rounded at the top and bears a dorsal median crest. The yellowish brown cerci are curved upwards in their apical half. The ovipositor is rather long. The dorsal margin is almost straight. The ventral margin is curved upwards towards the top. The dorsal margin is minutely serrulated in the apical half. Near the middle this serrulation can be seen by the naked eye. The ovipositor is dark chestnut brown with blackish brown borders. The base is swollen. The ventral base of the ovipositor is ochraceous, i. e., of the same colour as the rest of the ventral surface of the abdomen. The subgenital plate is light brown. It is rather broad and shows only an indication of an incision in the rounded hind margin. Its surface bears transverse striae.

Measurements in mm: length body 31½; length pronotum 6½; length tegmina 51; breadth tegmina 14½; length alae 52; length anterior femora 9; length posterior femora 17½; length ovipositor 22½.

Olcinia mahakamensis nov. spec.

Leiden Museum:

Borneo: All specimens from the Borneo Expeditions of Dr. Nieuwenhuis: Mahakam, 1894, 1 ♀ (holotype); Mahakam, 1894, 1 ♂ (allotype); Mahakam, 1894, 1 ♀ (paratype); Mahakam river, 1894, 1 ♀ (paratype); Long Bloe-oe, 1898, 1 ♀ (paratype); Mahakam, 1894, 1 ♀ larva.

In both the female and the male the general colour is light greyish brown with V-shaped dark brown and irregular ferrugineous markings on the tegmina.

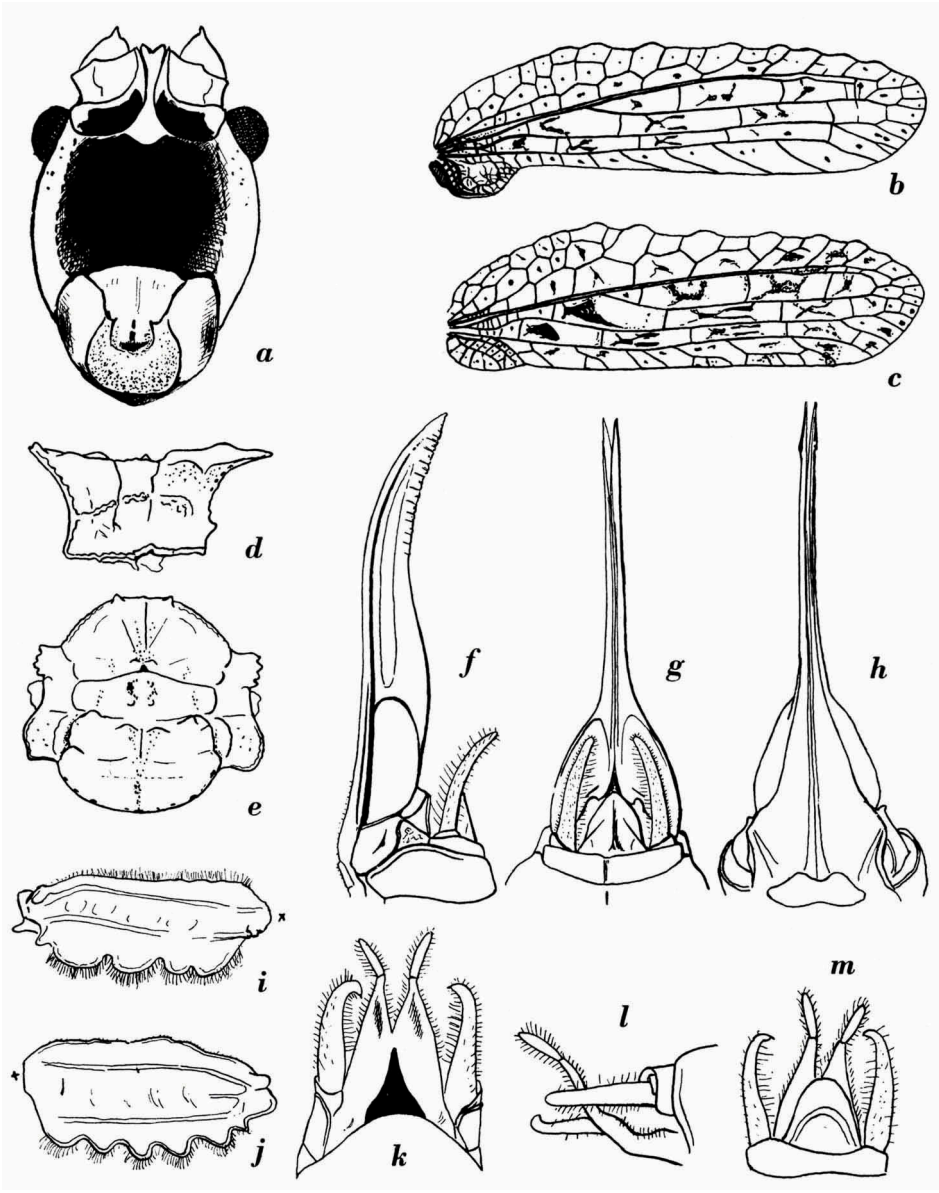

Fig. 16. *Olcinia mahakamensis* nov. spec., a, c—j, ♀ (holotype), a, face, c, right tegmen, d and e, pronotum, lateral and dorsal view, f—h, end of abdomen, lateral, dorsal, and ventral view, i, left fore femur, j, left middle femur; b, k—m, ♂ (allotype), b, right tegmen, k—m, end of abdomen, ventral, lateral and dorsal view. a, × 6; b, × 2; c, × 1 1/3; d—m, × 4 2/3.

The tegmina are transparent. The fore margin has the faint but distinct crenulation which is a character of *Olcinia* (fig. 16 b, c). In the basal half the fore border is broadened. The preradial area occupies about one third of the whole surface of the tegmina. The hind margin of the tegmina is almost straight except the protrusion of the stridulation-region in the male. The subcostal vein and the radial vein run together for about two thirds of their length, then they diverge slightly. Both veins end in the fore margin before the apex of the tegmina. They are slightly curved for the whole of their length. The greater part of the preradial area is divided into numerous cells as almost all transverse veins are ramified towards the fore margin. The branch of the radial vein begins at about one third of the length, it ends in the apex. The area between the radial vein and its branch is about one and a half times as broad as each of the two following longitudinal areas. The area between the posterior branch of the medial vein and the hind border is nearly one and a quarter of this width.

The general colouration reminds of the bark of a tree. In the larger cells more or less V- or X-shaped brown markings are found. Between these markings there are irregular reddish patches. There seems to be some regularity in the place of the dark couloured markings: those in the area between the radial vein and its branch alternate with those in the next two areas, in which they are situated at almost corresponding places.

In many details, especially in the structure of the tegmina, the present species resembles *Olcinia excisa* (Karny, 1923 a, p. 177, pl. 2 fig. 4). It differs, however, in the shape of the pronotum which is not incised in the posterior margin as is emphasized by Karny as characteristic for his species. The coloured plate of *Olcinia excisa* in Karny's paper shows exactly the same pattern as the species described here. A row of spots stretches along the border of the tegmina from the apex backward till the rounded hind angle. At the base of the tegmina an elevation is found between the radial vein and the caudal branch of the medial vein. Moreover some of the centres of the cells are more or less elevated.

The tops of the alae are coloured in nearly the same way as the tegmina. A number of cells in this part possess a dark spot in their centres. This coloured part is rather acutely rounded at the apex. The rest of the alae is hyaline, the secondary veins only are slightly infumated.

The fore femora dorsally bear a faintly lobate crest which is strongly provided with hairs (fig. 16 i), ventrally they are broadly lobate. The middle femora (fig. 16 j) dorsally bear a broad crest which shows an indication of lobation, ventrally they are broadly lobate. The hind femora are carinate in their dorsal base, ventrally they are broadly serrate. They

show a dark patch at the outer base, and have dark knees. The fore tibiae too are dark brown near the top.

The middle part of the smooth hind border of the pronotum (fig. 16 d, e) is faintly angulate. It is nearly evenly rounded. The borders of the lateral lobes are crenulate. The dorsal front border is smooth with the exception of two small conical thorns. The disc bears two indistinct transverse grooves. Irregular crenules are found in rows on the sides of the pronotum and there is an indication of a dorsal longitudinal crest on the disc.

The prosternum is unarmed. The concave fore border of the mesosternum has rounded angles on which there is a thorn pointing downwards. The mesosternum is smooth and about twice as broad as long. The metasternum is broader than the mesosternum. The mesosternum and the metasternum both are light ochraceous like the legs and the whole ventral surface of the animal. The episterna of the mesothorax and of the metathorax are dark brown.

The head too is ochraceous but adorned on its upper surface with very small black spots and two black (or dark brown) lines running from the dorsal rim of the eyes backwards. The fastigium verticis is slightly bifurcate at the top. Its dorsal surface is sulcate with a blunt dentiform protuberance at its base. It is slightly longer than the antennal scrobes. The antennae are about one and a fifth times as long as the animal. They are irregularly annulated with dark brown and covered all over with thin setae. The basal joint ventrally is dark brown at the base, it possesses two thorns at its top. The frontal surface of the antennal scrobes (fig. 16 a) too is partly dark brown. The forehead is dark brown, darkest in the middle near the clypeus, which is yellowish and which bears two thin black lines medially. The most dorsal part of the forehead between the antennal scrobes is yellow. The genae and the mandibulae are light ochraceous.

The mesonotum too is ochraceous and the metanotum is of a dark brown colour.

The abdomen of the females is ochraceous except the fore border of the basal segment and the dorsal and lateral parts of 5 caudal segments, which are dark brown. The entire ventral surface is yellowish.

The supra-anal plate of the female is ovate (fig. 16 f, g, h), crested medially and of a blackish brown colour. The cerci are brown. They are rather slender and slightly curved upwards. The dorsal margin of the chestnut brown ovipositor is faintly curved upwards. It is minutely crenulated. The sinuate, smooth ventral border and the sides of the swollen base are of a very dark brown. The ventral base is ochraceous. The subgenital plate is broadly incised at the top.

The whole of the abdomen of the male (fig. 16 k, l, m) is ochraceous, except the sides of the 5 caudal abdominal segments which are bordered with brown. The supra-anal plate is ovate. The cerci are strongly curved at the top, ending in a sharp, dark brown thorn pointing inwards. The subgenital plate is broadest at the base and diminishes in breadth towards the apex which is slightly turned upwards. The apex is somewhat incised, the two lobes bear the long ovate styli.

Measurements in mm (those of the male in parentheses): length body 30—32 (22½); length pronotum 6.2—6½ (5); length tegmina 44—45½ (33); breadth tegmina 12—14 (9); length alae 44—45½ (33); length anterior femora 7—8 (6); length posterior femora 14—15½ (11); length ovipositor 12½—14.

Olcinia tuberculata nov. spec.

Leiden Museum:

Borneo: Sugut, Pandakan Bay, Prakke, 1 ♀ (holotype).
Locality unknown: 1 ♀ (paratype) (this specimen is badly damaged).

The specimens which probably have been in alcohol for some time, undoubtedly have lost a good deal of their original colour. In the present condition the general colour is of a yellowish brown. The tegmina bear darker brown markings. The fore margin is crenulated in the usual way (fig. 18 a). The hind border is almost straight. The fore and hind border are subparallel, converging slightly towards the top. The maximum width of the tegmina is found at about one fourth from the base. At about three fourth form the base the fore margin gradually slopes to the apex. The anterior branch of the medial vein points in the direction of the apex. The preradial area is broadest near the base of the tegmina but diminishes towards the apex. The branch of the radial vein is emitted at one third from the base. The area between the radial vein and its branch and the

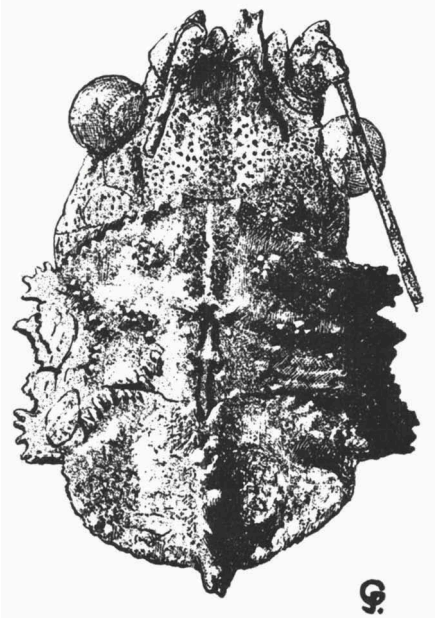

Fig. 17. *Olcinia tuberculata* nov. spec. ♀ (holotype), head and pronotum, dorsal view. × 7.

following area are about of the same breadth. The next two areas are narrower. In the preradial field several rows of cells are found near the base. Almost all the branches of the subcostal vein towards the fore margin are bifurcated. All the cells of the tegmina and also a number of cells near the apex of the alae bear a dark marking in their centres, which after the form of the cells is of different shape. The V-shaped markings and the dark spots at the base of the tegmina are slightly elevated as in *Tegra novae-hollandiae* (de Haan).

The alae are of almost the same shape as in *Olcinia crenifolia* (de Haan),

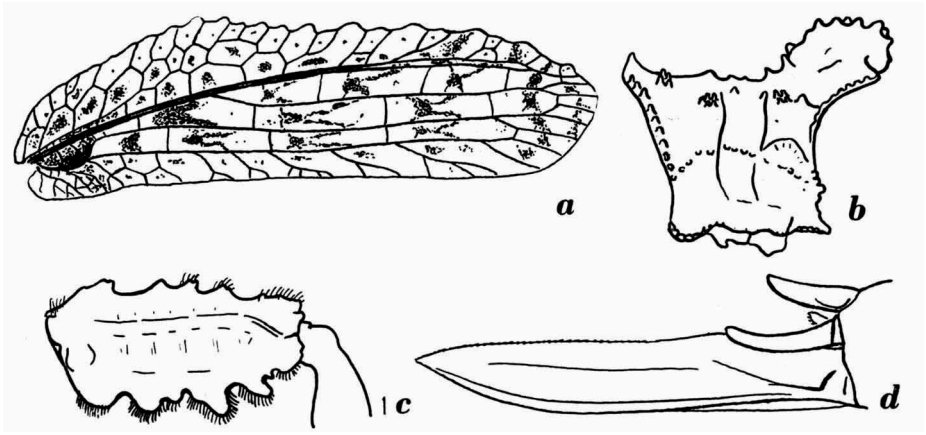

Fig. 18. *Olcinia tuberculata* nov. spec. ♀ (holotype), a, right tegmen, b, pronotum, lateral view, c, left middle femur, d, end of abdomen, lateral view. a, × 1½; b and c, × 5¼; d, × 3½.

the secondary veins are faintly infumated but the form of the coloured part at the apex is not as broadly rounded as in *crenifolia*.

The fore femora dorsally possess a smooth crest with a faint lobe at the base. The ventral broadening has small incisions between the lobes (left and right are often dissimilar). The fore tibiae have swollen auditory organs. The middle femora are compressed laterally and possess broad, lobated dorsal and ventral crests (fig. 18 c). The hind femora bear a broad crest on the proximal half of the dorsal surface, and broad lobes like a coarse denticulation ventrally.

The pronotum (figs. 17 and 18 b) is tuberculate along all its borders, the disc is ornated with groups of small tubercles. A strongly tuberculated longitudinal crest is found on the basal part of the disc. The hind margin is rounded. The disc bears some dark brown spots and markings along the median line. The ventral margins of the lateral lobes are rather irregularly bent and bear many tubercles. The humeral sinuses are distinctly curved.

The head (fig. 17) is ochraceous with minute dark spots on the dorsal half. The vertex is deeply sulcate above, bifurcated at the top, it bears a slight elevation at its base. It proceeds over the borders of the antennal scrobes. All these parts, except the top of the fastigium verticis are adorned with dark punctulations. Moreover the basal joints of the antennae and the genae are punctulated. The forehead is pale ochraceous. The eyes are yellowish, globular. The antennae are yellowish, annulated with dark brown.

The abdominal segments are broadly bordered with brown. The last segment is very dark brown. The supra-anal plate is dark brown, long-ovate, broadest near the base where it is abruptly truncated. The cerci (fig. 18 d) are straight, rather slender and, at the top only, slightly bent upward. Their colour is dark brown dorsally and very light yellowish brown ventrally. The ovipositor is light brown, but the base is almost black. The dorsal margin is nearly straight, the ventral margin is curved upwards.

Measurements of the holotype in mm: length body 22½; length pronotum 7½; length tegmina 47½; breadth tegmina 13; length alae 47; length anterior femora 6½; length posterior femora 15½; length ovipositor 16½.

Typhoptera Kirby

Capnoptera (nec Loew) Brunner von Wattenwyl 1895, pp. 13, 94; Annandale 1900, pp. 854, 855.
Typhoptera Kirby 1906, p. 309; Karny 1923 a, p. 178; 1924, p. 203; 1926 b, p. 124.

Typhoptera quadrituberculata (Westwood)

Pseudophyllus 4-tuberculatus Westwood 1848, p. 34, pl. 16 fig. 3.
Sanaa? quadrituberculatus Walker 1870, p. 438.
Capnoptera quadrituberculata Brunner von Wattenwyl 1895, p. 95.
Typhoptera quadrituberculata Kirby, 1906, p. 309; Karny 1924, p. 203; 1926 b, p. 124; Willemse 1933 b, p. 9.

Leiden Museum:

Sumatra: Poelau Tello, A. L. van Hasselt, 1 ♀; Tebingtinggi, F. J. Weynman, 1 ♂.
Borneo: Long Bloe-oe, Mahakam, Borneo Expedition Dr. Nieuwenhuis, 1898, 1 ♀.

Geneva Museum:

Sumatra: West-Sumatra, Fruhstorfer, 1 ♀; W. Morton, 1 ♀.

The most distinct characters of this species are the yellow-bordered venulae in the preradial area of the tegmina. In Westwood's figure (1848, pl. 16 fig. 3) the venulae in the postradial area too are bordered with yellow. This character, however, appears to be subject to rather considerable variation. In some specimens no such borderings are found but the cell-centres only show yellow spots.

Most of the specimens studied were discoloured and showed a yellowish tinge in the cell-centres. It appears to me that in some specimens the spots in the cell-centres of the postradial area are not yellowish but distinct light blue, about as in *T. staudingeri* (Brunner v. W.). Yet these specimens do not belong to *T. staudingeri* as they possess the yellow borderings of the oblique veins in the preradial area, after which character *T. quadrituberculata* (Westwood) may be distinguished from the other species.

A short description of the tegmina of the specimens examined follows here.

1 ♀ from Poelau Tello. The pattern is nearest that in Westwood's figure, with yellow-bordered venulae in the area between the radial vein and the second medial vein. The spots in the cell-centres are rather diffuse, yellowish.

1 ♀ from Long Bloe-oe, Borneo, and 1 ♂ from Tebingtinggi, Sumatra, show no yellow borderings in the postradial area. Only the spots in the cell-centres are distinct and light blue. These specimens are smaller than the type.

The dried remains of the curious red organ between the head and the pronotum, described in the living animal by Abraham in Karny (1926 b, p. 125) are distinctly visible in the specimen from Poelau Tello.

Typhoptera quadrituberculata var. **nigromaculata** nov. var.

Leiden Museum:

Borneo: 1931, Dr. P. H. van Thiel don., 1 ♀.

This variety differs from the species in the black borderings along the transverse veins in the postradial area of the tegmina and the bright yellow spots in the cell-centres, especially in the area between the radial vein and the first medial vein. Moreover a difference is found in the longitudinal furrow on the disc of the pronotum, which runs from the middle of the disc backwards.

This specimen is nearly of the same size as the type specimen of *T. quadrituberculata* (Westwood).

Typhoptera staudingeri (Brunner von Wattenwyl)

Capnoptera staudingeri Brunner von Wattenwyl 1895, p. 97, pl. 4 fig. 40.
Typhoptera staudingeri Kirby 1906, p. 309; Hebard 1922, p. 211.
Typhoptera schulthessi Karny 1924, p. 204; 1926 b, p. 125, fig. 32.

Leiden Museum:

Borneo: British North Borneo, 1 ♀ and 1 ♂ (cotypes of *T. schulthessi* Karny).

Mr. Willemse's Collection:

Borneo: North Borneo, 2 ♀♀; 2 ♀♀.

After the study of some well-preserved specimens of *Typhoptera staudingeri* Brunner v. W. from Mr. Willemse's Collection I come to the conclusion that the specimens described as *T. schulthessi* Karny are discoloured specimens of the same species. Karny himself remarks that the specimens have been kept in alcohol.

The character of the species is found in the blue lines in the cell-centres of the preradial area. In *T. schulthessi* these markings are described as pale yellow. The structural characters are the same for both species. The only difference is found in the colour of these lines.

Karny (1926 b, p. 125) says, referring to some specimens of *"schulthessi"* that had been preserved in alcohol, that the specimens from British Borneo have pale spots in the cell-centres of the preradial area of the tegmina and that specimens from Dutch North Borneo have broad pale yellow borderings along the transverse veins in the corresponding area.

In my opinion Karny mixed up two species of which the British Bornean form was *T. staudingeri* and the Dutch Bornean form *T. quadrituberculata.*

Typhoptera unicolor (Brunner von Wattenwyl)

Capnoptera unicolor Brunner von Wattenwyl 1895, p. 96.
Capnoptera fusca Fritze 1900, p. 340, pl. 16 fig. 2.
Typhoptera unicolor Kirby 1906, p. 309; Karny 1923 a, p. 178; 1926 b, p. 126, pl. 4 fig. 1.
Typhoptera fusca Kirby 1906, p. 309; Karny 1924, p. 205.

Leiden Museum:

Borneo: Sambas, 1891, Dr. J. Bosscha, 1 ♀.

Amsterdam Museum:

Locality unknown: 1 ♀ (ex coll. E. Jacobson).

Geneva Museum:

Borneo: 1899/1900, A. Pictet, 1 ♀ (type specimen of *Capnoptera fusca* Fritze).

As I had the opportinutiy to examine Fritze's type specimen in the Geneva Museum I can fully confirm the above mentioned synonymy. The species is characterized by the almost unicolorous brown tegmina. The specimens examined agree in every respect with Brunner von Wattenwyl's original description.

In Fritze's plate the figures 2 and 3 have been interchanged.

Sanaa Walker

Sanaa Walker 1870, p. 438; Kirby 1910, p. 572; Hebard, 1922, p. 189.
Termera Stål 1874, p. 54; Brunner von Wattenwyl 1895, pp. 13, 93.
Sanna Kirby 1906, p. 309.

Sanaa imperialis (White)

Locusta Acanthodis imperialis White 1846, p. 23, pl. 1 fig. 1.
Acanthodis imperialis Westwood 1848, p. 51, pl. 5 fig. 1.
Sanaa imperialis Walker 1870, p. 438.
Termera imperialis Stål 1874, p. 72; Brunner von Wattenwyl 1895, p. 94, pl. 4 fig. 39.
Sanna imperialis Kirby 1906, p. 309.

Leiden Museum:

Assam: Shillong, 1936, Morendro Doonai, 2 ♀ ♀.

Geneva Museum:

Assam: Silhet, 1 ♀; Naga Hills, 1 ♀; G. A., 1 ♂.

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