STUDIES ON MALAYAN BLATTIDAE

by

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INTRODUCTION

The Blattid fauna of the Malayan subregion is very rich, accordingly since the earliest period of orthopterology students of Blattids have described and mentioned specimens from this region. Consequently the literature on Malayan Blattidae is greatly scattered, and though some of the authors did a considerable amount of work in compiling the most important contributions on the present subject, there is still much to be done in unravelling synonymy and distinguishing generic units and subfamilies.

Brunner (1865) already described a great number of Malayan Blattidae. The descriptions of new species by Walker (1868, 1869 and 1871) are very vague and full of mistakes, giving rise to a great deal of confusion. Shelford largely restored the systematics of the group to good order by examining the species in the large collections which were at his disposal, including the types of Walker. After Shelford, Hanitsch published a large series of contributions on Malayan Blattidae, some of which (Hanitsch, 1915, 1923) contain a compilation of nearly the whole literature on this subject known at these times. In these and many other publications he also described numerous new species, but he scarcely made an attempt to arrange the unnatural aggregations of species into distinct, logical genera. Hebard (1929) on the other hand admirably succeeded in establishing numerous cases of synonymy and in describing new genera on a scientific base. Therefore it is largely due to him that the greater part of the confusion which occurred mainly in the Ectobiinae and Pseudomopinae has been cleared.

In the present paper an attempt has been made to continue the work along the principles put forward by Hebard.

The material on which the present studies are based for the greater part belongs to the Rijksmuseum van Natuurlijke Historie. I want to express

my thanks to Professor H. Boschma and Dr. H. C. Blöte for encouragement and advice during my researches. Moreover I am strongly indebted to Professor L. F. de Beaufort and Mr. J. B. Corporaal, who kindly placed the important material of the group from the Amsterdam Zoological Museum at my disposal.

The present paper is meant as a critical compilation of the literature on Malayan Blattidae, to which are added descriptions of new genera and species. All the species known until now from the Malayan Archipelago are mentioned, including those I have not seen. In those cases in which the generic position is uncertain, the original name is used, accompanied by suggestions for the probable generic position. Some keys are given for a general view of the characters of genera in large subfamilies.

In the present paper the Malayan subregion is considered to include Java, Sumatra, Borneo, the Malay Peninsula as far as the Isthmus of Kra, and also the smaller adjacent islands. From this region numerous species of Blattids have been described, but the Blattid fauna as a whole is still insufficiently known. The described species form only a part of the vast number which occurs in the Malayan region. Moreover the series in the collections generally are too small to enable a definite realisation of the degree of variation in the characters used as generic and specific criteria.

The most important collections of Blattidae from this region are in the collections of the Oxford University Museum, the British Museum, the Leiden and Amsterdam Museums, the Sarawak Museum, the Buitenzorg Museum, the Raffles Museum. In a former paper (Bruijning, 1947) an account was given of the Blattidae from the Austromalayan region of the Archipelago (including Celebes, New Guinea and the Moluccas). The two papers together give a general survey of the Blattid fauna of the whole of the East Indian Archipelago.

THE WING VENATION

The system of the Pterygota is largely based on the wing venation. Reasons for the great taxonomic value of the wing venation are:

1. The wings are extremely complicated organs and many variations in the structure of the venation are possible. Consequently it often happens that narrowly related species show, besides great similarities also small differences in wing venation.

2. Of fossil insects many times only the wings or fragments of these have been preserved in sufficient condition, and therefore the classification of these insects often must be founded on the wing venation.

3. The wings are freely expanded organs and therefore they are easy

of observation; it is less troublesome to see small differences in the wings than in other parts of the body.

Small species with wings which are folded in parts like a fan, when at rest, however, offer some difficulties as the wings have to be stretched in order to observe the veins. On p. 31 a method is described for this procedure.

4. The wings of the Pterygota are organs of such importance, that the whole organic structure of the insects is influenced by them.

5. As the fundamental structures of insects were established long before the wings were evolved, the latter are the most suitable organs for studying the evolution of the Pterygota.

With regard to the foregoing it is clear, that the taxonomist must pay special attention to the wing venation, when classifying Pterygota. He has to determine the wing vein homologies in the various orders of insects. Eidmann (1941, p. 94) expresses this when he remarks: "Die Homologisierung und einheitliche Benennung der einzelnen Komponenten des Flügelgeäders ist daher eine wichtige Aufgabe der Insektenmorphologie". Previously Comstock (1918, p. 15) already clearly put forward the nucleus of the problem in the following words: "The most important result obtained by the study of the tracheation of the wings of nymphs and the pupae was the demonstration of the truth of the conclusion, already reached by the study of the wings of adults, that the wings of all orders of insects are modifications of a single primitive type; and that consequently it is possible to homologize the wing-veins of any of the orders with those of any other order".

Before the interesting studies of Comstock and Needham, some entomologists had already tried to establish a uniform nomenclature of wing venation, applicable to all orders of insects.

One of the first authors was Hagen (1870) who recognized a system of six longitudinal veins, which may serve as a scheme from which the venation of all insects can be derived.

The names applied to these veins were: 1, subcosta; 2, mediana; 3, posterior branch of the mediana; 4, anterior branch of the submediana; 5, submediana; 6, postcosta.

In 1879 a new contribution on this subject appeared by Adolph. According to his theory convex and concave veins alternate in the wing. This theory was based on the fact, that as the result of corrugation of the wings some veins lie high and others low. According to Adolph, the position of the concave veins is determined by the wing tracheae, which are transformed into concave veins by strong chitinisation. In the wing membranes there appear linear chitinous thickenings which finally form the secondary or

convex veins. Consequently the two types of veins differ strongly in the way in which they arise.

Since it appeared that the position of homologous veins can be along raised lines (convex veins) as well as along sunken lines (concave veins) and that they are formed in the same way, the theory of Adolph cannot be maintained.

Modern students of the wing venation have shown, that the distribution of veins is largely determined by the demands of a most effective mechanical fulfilment of their function. This means that homologous veins can be represented either by a convex or by a concave vein in various insects.

A great progress in the study of the wing venation was the establishment of Redtenbacher's uniform terminology (1886). This author was strongly influenced by Adolph's theory. He recognized five convex veins in the wings, which he belived to alternate with five concave ones. To the convex veins Redtenbacher applied the following names and Roman characters: Costa (I), Radius (III), Media (V), Cubitus (VII), and anal vein (IX). The concave veins were designated by even Roman characters (II, IV, VI, VIII, X), only vein II was also given a name (Subcosta). To the branches of the principal veins Arabic numerals were added. It is Redtenbacher's great merit that he recognized the homologies of the principal veins.

In a paper which appeared two years later in cooperation with Brauer (Brauer and Redtenbacher, 1888) he abandoned the theory of the different origin of convex and concave veins, but gave no new modification of his terminology.

The papers by Haase (1891 and 1893) and by Spuler (1892) contain modifications of Redtenbacher's terminology.

Haase regarded the so-called first anal vein of *Papilio machaon* as a branch of the cubitus, while its trachea is associated proximally with the trachea of the latter. He recognized the following veins: 1, Subcostalis; 2, Radialis; 3, Mediana; 4, Cubitalis; 5, Dorsalis (= 2nd anal vein of Comstock and Needham). Like Brauer and Redtenbacher and Spuler he regarded the costa not as a vein but as a thickened margin only.

Spuler recognized two areas in the wing, namely an anterior unfolded area ("Spreitentheil") and a posterior folded area ("Faltentheil"). The veins in the anterior area (beginning with the subcosta) were numbered with Roman numerals, those of the posterior area with Greek letters. The most caudal vein of the "Spreitentheil" is the first anal of Comstock and Needham. Like Haase, Spuler points out that there is a distinct difference between the vein which later was called the first anal by Comstock and Needham and the following anal veins.

In contradistinction to Haase and Spuler, Comstock (1892, 1893, 1895) and Comstock and Needham (1898-1899) do not discriminate the so-called first anal vein against the other anal veins. These authors based their theory partly on investigations of the wings of adults and partly on the examination of the wings of pupae and nymphs. They demonstrated that the costa is a real vein and that the veins IV and VI of Redtenbacher's system do not exist.

Consequently a modification of Redtenbacher's system was desirable. There were already some modifications of this system in use, viz., those by Spuler and Haase, systems in which the costa was not regarded as a vein. If Comstock and Needham designated the veins by numbering them, their starting point (the costa) would be different from that of Haase and Spuler (the subcosta). For the sake of uniformity in the nomenclature of the veins they used only the names adopted by Redtenbacher and did not number the principal veins. The names used by them were as follows: 1, Costa (C); 2, Subcosta (Sc); 3, Radius (R); 4, Media (M); 5, Cubitus (Cu); 6, the anal veins (A). The demonstration that the costa is a real vein was a progress in the knowledge of the wing venation, but the designation of the first vein following the cubitus as an anal vein for a long time retarded this progress.

Following the results obtained by studying the venation of imagoes and the tracheation of nymphs and pupae Comstock and Needham established a hypothetical type of primitive wing venation (fig. 1 a). They believed that from his type the wings of all orders had been evolved.

These authors laid too much stress on the value of the tracheae in determining the homologies of veins. They knew that in some cases the tracheation of the wings can be deceptive for establishing homologies, but did not sufficiently consider other factors.

According to Chapman (see Comstock, 1918, pp. 27-51) there are two groups of wing tracheae, viz., the costo-radial tracheae and the cubito-anal tracheae. The former group arises from the anterior stem and the latter from the posterior stem of the leg tracheae. In most cases, the principal veins are formed along the tracheae. The tracheae of the costo-radial group precede the costa, subcosta, radial and media and those of the cubito-anal group, the cubital, postcubital and anal veins. The two groups, however, in most cases are connected by a transverse basal trachea and then the base of the medial trachea migrates towards the cubito-anal group and often becomes associated with that group.

In the Blattidae the condition of the wing tracheation is very similar to the typical condition given by Comstock. In most cockroaches the basal

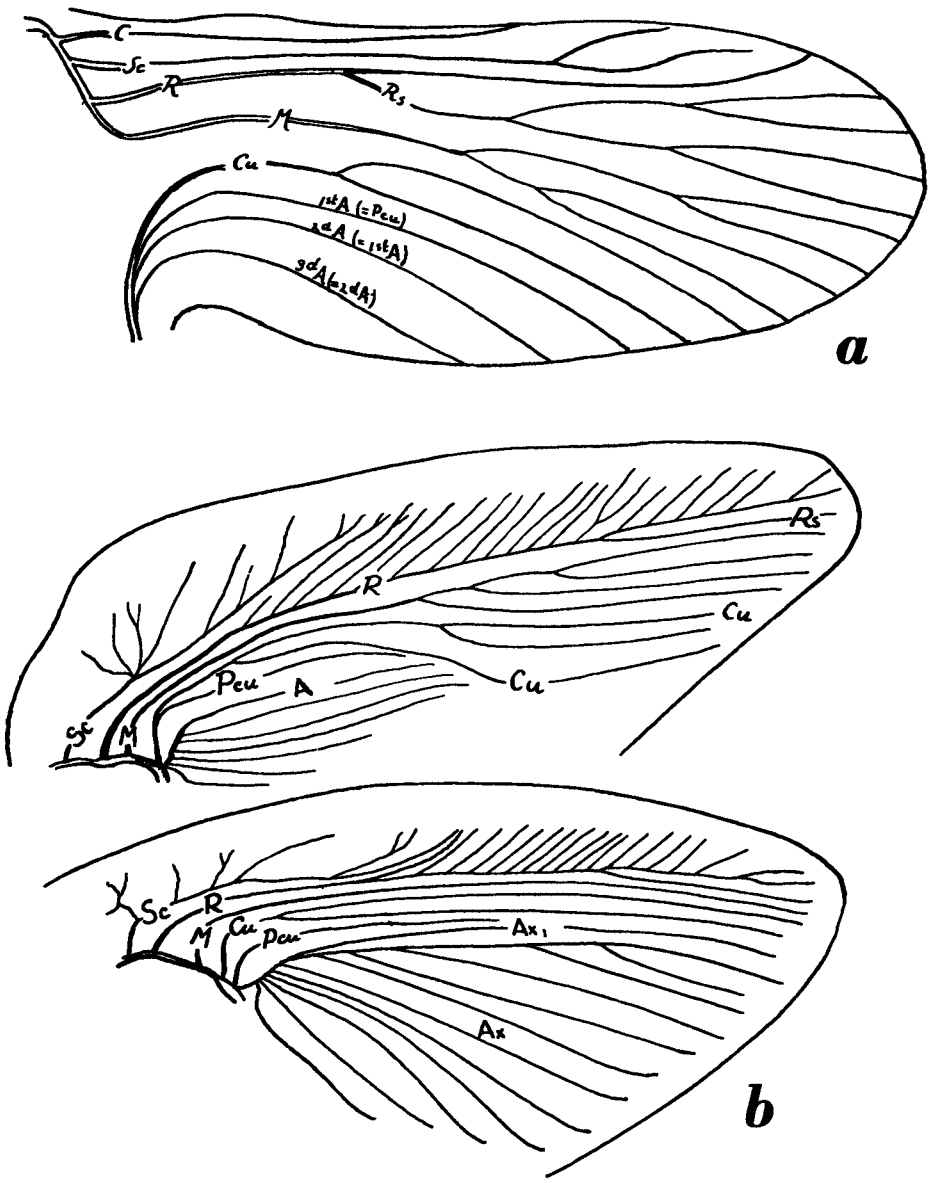

Fig. 1. a, diagram of the hypothetical tracheation; b, wings of a nymph of a cockroach. After Comstock and Needham (1898), but with alterations in the nomenclature. A, anal vein; Ax, axillary vein; C, costal vein; Cu, cubital vein; M, median vein; Pcu, post-cubital vein; R, radial vein; Rs, branch of the radius; Sc, subcostal vein.

transverse trachea has developed but there are some cockroaches in which the two groups are not connected.

The wing venation of cockroaches agrees closely with the hypothetical primitive type of Comstock, but differs by strong reduction of the costa, the radial sector and the media, and in the folded fan-like anal area of the hind wing.

From Comstock and Needham's description and their figures of wings and nymphs it appears that the so-called 1st anal trachea never coalesces with the main anal trachea (fig. 1 b), but these authors did not conclude that the so-called first anal is an independent vein. As far as concerns the Blattidae, the results obtained by Comstock and Needham are not satisfying, as they studied only a small number of species.

Contrary to the conclusion of Comstock and Needham it is not possible to homologize the wing veins of all orders by using the scheme of their hypothetical primitive type, as this is largely based on recent Perlids. The recent Perlids are already too much differentiated to be used as a reliable basis for comparison. Consequently quite different veins were homologized and this happened especially in Ephemerids and Odonata. For this reason Lameere (1922) tried to find another scheme which might be used as a basis for comparison. This scheme is based on fossil Ephemerids, Odonata and Protohemiptera of the coal measures. These insects had not only a branched radius (R and its sector Rs) but also a media which forks near its base. The two branches were termed anterior median (convex) and posterior median (concave) by Lameere. The latter can be considered as the sector of the former and is lost in all Orthoptera, Perlids and Holometabola (see Tillyard). In the above named fossil insects the cubitus is forked in the same way as the media, and consists of a convex anterior cubitus and a concave posterior cubitus. Thus in primitive insects the radius, media and cubitus consist of a convex vein and its concave sector. The anal veins were also branched in an upper vein and a lower sector. Lameere's scheme contains six convex principal veins each with its own concave sector. The convex veins are: the costal, the radial, the median (which all belong to the anterior group), and the cubital, the first anal = penultimate, the third anal = ultimate (which all belong to the posterior group).

Imms (1937) gives a diagram of this scheme of the hypothetical wing venation and of his own interpretation (fig. 2).

Thus Lameere returns to Adolph's theory and to the nomenclature of Redtenbacher and Brongniart (by numbering the veins I-XII, the odd numbers for the principal veins, the even for their sectors).

In the wings of the Spilapteridae (carboniferous Ephemeroptera) the

venation agrees completely with Lameere's scheme. The Blattids, however, differ from this scheme as they never have a "submedian" and the alternation of convex and concave veins is not regular.

According to Lameere the general evolution of the wing consists in lengthening which is concurrent with a diminution of the breadth and the

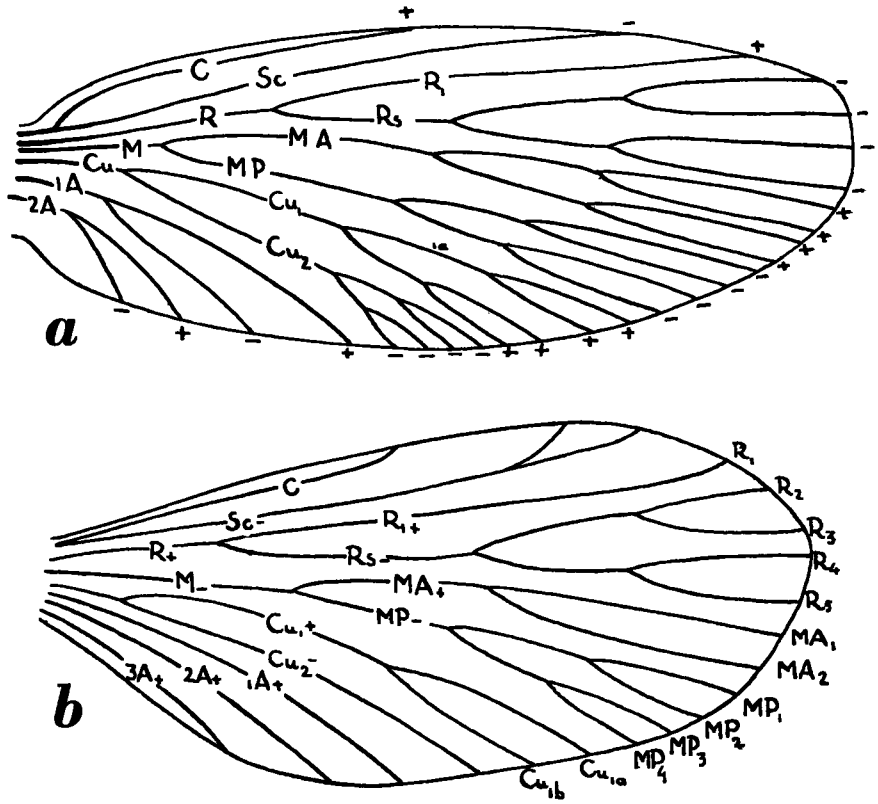

Fig. 2. a, diagram of the hypothetical venation according to Lameere; b, diagram of the hypothetical venation according to Imms. After Imms (1944). A, anal vein; C, costal vein; Cu, cubital vein; M, median vein; MA, anterior median vein; MP, posterior median vein; R, radial vein; Rs, branch of the radial vein; Sc, subcostal vein.

disappearance of certain longitudinal nervures. These veins are not the same in the Ectoblastic and Endoblastic insects and consequently this fact has caused a great deal of confusion in the nomenclature of the wing venation.

There is much to criticize in Lameere's theory. Martynov (1938) pointed out, that in the Euthygrammidae the media is a convex and the submedia

a concave vein, contrary to Lameere's theory. Moreover in the Tettigoniidae, the Haglidae and the Gryllidae the "Cu A" is concave and the "subcubitus" convex, which also disagrees with the rule of Lameere.

Zalessky (1944) noted that in the genus *Aeshna* and in the fossil *Doropteron mirum* Zalessky the costa is convex as far as the nodulus and concave beyond the latter.

From these facts it appears that there consists no strict connection between the convex and the concave position of the veins and their homology, and according to Zalessky the position is only determined by "the demands of mechanics and the requirements of the wing construction for the most efficient fulfilment of their function" (Zalessky, 1944, p. 39). Martynov (1925) also tried to explain the structures of wing venation functionally. Only when the veins have attained a definite alternation within the range of a certain group, can the convex or concave situation be of use in homologizing these veins with those of related forms of this group.

The ideas of Comstock concerning the great significance of the wing tracheation for the localisation of veins are not in agreement with those of Martynov (1924) and Zalessky (1944). The facts which brought the latter authors to the opinion that the tracheae are of less importance in determining veins are:

1. There are veins without tracheae.
2. There does not always exist complete conformity between tracheation and venation.
3. In holometabolous insects the veins are often formed in advance of tracheae.

In primitive insects like the Blattidae, however, the tracheation coincides with the venation, and consequently ontogenetic studies in tracheation are of great importance in this group.

According to Comstock and Needham the wings of insects differentiated in two different ways, viz., a, by reduction of the number of veins; b, by increase of the number of veins.

a. The former process, which is termed "the specialization by reduction" is clearly demonstrated in the evolution of the wings. The earliest known insects (i.e., the carboniferous Palaeodictyoptera) had a highly complicated system of wing venation. By union of some veins and atrophy of others the number of the veins decreased.

b. The latter progress, termed the "specialization by addition" is hypothetical and cannot be proven. The multiplication would be due either to an increase of the branches or to the development of secondary longitudinal

veins, but in no case to an increase in the number of principal veins (Comstock, 1918, p. 70).

In the anal area of the Orthoptera, the number of veins has strongly increased. Martynov (1924) who does not believe in the specialization by addition developed a theory to explain this. He distinguishes two different types in insect wings, which developed in an early stage of the evolution. The first type we only find in the Odonata and Agnatha to-day and Martynov joins these groups together in the division of the "Palaeoptera". The second type may be found in all other living orders of the Pterygota, which form the division of the "Neoptera". The latter group consists of insects which are able to lay the wings on the back when at rest. In this group the posterior part of the hind wing often forms a fan-like expansion, which according to Martynov is formed by the anal area and the strongly developed jugum. Thus the fan-like area contains veins which originate partly from the anal and partly from the jugal area. The latter area is called "Neala", the remainder of the wing "Palaeala". In the Blattidae the neala of the hind wing is relatively small, while the number of anal veins is large. The way in which this large number of anal veins of Blattidae has developed is not explained by Martynov's theory. The anal veins arise from one common tracheal stem and are associated at their base with the third axillary. The jugal veins, however, are often joined at their base with the anal veins and consequently hardly to be distinguished. In the latter case I propose to call all the veins of the fan axiliar veins. Thus the axillar veins consist of anal and jugal veins.

The most primitive situation of the fan is found in the genus *Heterogamia,* where the fan is small and consists of the enlarged region of the third anal vein. The jugal is represented only by a small membrane at the base of the wing. This area contains a few small vein-like thickenings from which the real jugal veins originate. The jugal area is more highly developed in the Blaberinae, Blattinae and other groups. Martynov believed that in the higher specialized Pseudomopinae most of the fan area was taken up by the jugal veins. This author distinguishes two superordines, viz., the Blattopteroidea and the Orthopteroidea, the former group having a small, the latter a large jugal region, which contains a large number of veins.

The following veins are distinguished by Martynov: 1, Subcosta; 2, Radius; 3, Cubitus (with its sector); 4, Media; 5, Anal veins (A_1, A_2, A_3 and A_4); 6, Jugo-radialia.

Snodgrass (1935, p. 227), however, has shown that in Acridiidae the jugal region is represented by a small membrane, and that the veins of the fan-like area are associated at this base with the third axillary sclerite.

Thus the fan-like area is formed by the anal region and consequently this point of difference between Orthopteroidea and Blattopteroidea does not exist.

Zalessky (1944) pointed out that the radius sector is an independent vein in fossil Pterygota like Palaeodictyoptera, Protorthoptera, Protoblattoidea, and in living Pterygota like Ephemerida, Neuroptera and Lepidoptera. This vein is termed the antemedia by Zalessky.

According to Martynov (1923, p. 96) the radius of the hind wing in Blattidae corresponds to the radius sector of other insects, while the so-called praeradius (P R), which lies in front of the vein, is homologous with the radius of other Pterygota. Consequently, when using Zalessky's nomenclature, the radius in Blattidae must be termed antemedia.

In the region of the cubital vein there also exist two separate morphological structures (as demonstrated in Palaeodictyoptera, Plecoptera and Isoptera) termed by Zalessky: antecubitus (A cu) and cubitus (Cu). The former corresponds with Cu, or Cu A, the latter with Cu_2 or Cu P of other authors.

Zalessky's nomenclature for the Blattid hind wing would be: 1, Costa; 2, Subcosta; 3, Radius (often reduced); 4, Antemedia; 5, Media; 6, Antecubitus; 7, Cubitus; 8, Anales.

Concerning the Blattidae the alterations in the nomenclature of the radius and its sector are based on rather poor researches and consequently I believe we had better use the old names for the time being.

The authors mentioned so far have not used — or only in a low degree — the pteralia, as a help in determining the vein homologies. Snodgrass (1935) was the first who pointed out the great importance of the association of the veins with these sclerites. There exists a constant relation between the veins and the pteralia, which enables us to homologize veins by studying these relations. Snodgrass recognized the so-called first anal of Comstock and Needham as an independent vein.

The names used by this author are as follows (Snodgrass, 1935, pp. 221-224):

1, Costa (C). Commonly marginal; associated at its base with the humeral plate.

2, Subcosta (Sc). Often forked (Sc_1 and Sc_2); associated at its base with the distal end of the first axillary.

3, Radius (R). Strong developed, forks into an undivided branch (R_1) and a sector (Rs) which is strongly branched in most cases; at its base united with the second axillary.

4, Media (M). In most modern insects including the Blattidae the media

is homologous with the media posterior of primitive Pterygota; at its base often united with the radius or otherwise associated with the distal median plate.

5, Cubitus (Cu). Primarily forked near the base and often strongly developed; basally associated with the distal median plate.

6, Postcubitus (Pcu). Unbranched (according to Lameere it is primitively two-branched), proximally associated with the cubitus and never with the third axillary as the anal veins.

Vena dividens. Apparently a secondary vein developed in the fold that sets off the fan-like area from the anterior part of the wing.

7, Vannal veins (1 V to n V). These are the veins which basally associate with the third axillary; usually they arise from a common tracheal stem in nymphal insects; their number varies from 1 to 12.

8, Jugal veins. Sometimes there exist two jugal veins, the first jugal vein (= vena arcuata = 1 J) and the second jugal vein (= vena cardinalis = 2 J).

After a comparative study of the nomenclatures of the most important authors I came to the following terminology of the wing-veins (figs. 3 and 4):

1, Costa (C). Marginal, greatly reduced, proximally associated with the humeral plate.

2, Subcosta (Sc). Slightly curved towards the anterior margin, ends distally before or near the middle of the wing; usually branched; basally associated with the first axillary.

3, Radius (R). A strongly developed vein which runs parallel with the anterior margin and sends numerous branches towards this margin. In most cases forked. Proximally associated with the second axillary.

4, Media (M). This vein is the media posterior of the archetype venation; sometimes forked but in most cases unbranched; associated basally with the distal median plate or united with the radius.

5, Cubitus (Cu). Generally strongly branched, but may be reduced to an unbranched vein. Proximally associated with the distal median plate.

6, Postcubitus (Pcu). In the tegmina strongly curved towards the posterior margin which is reached before the middle.

In the hind wing the Pcu runs parallel to the anal veins. In both wings the postcubitus is unbranched.

7, Anal veins (A). The anal veins are associated proximally with the third axillary. The first anal in the hind wing is branched; the other anals either simple or branched distally.

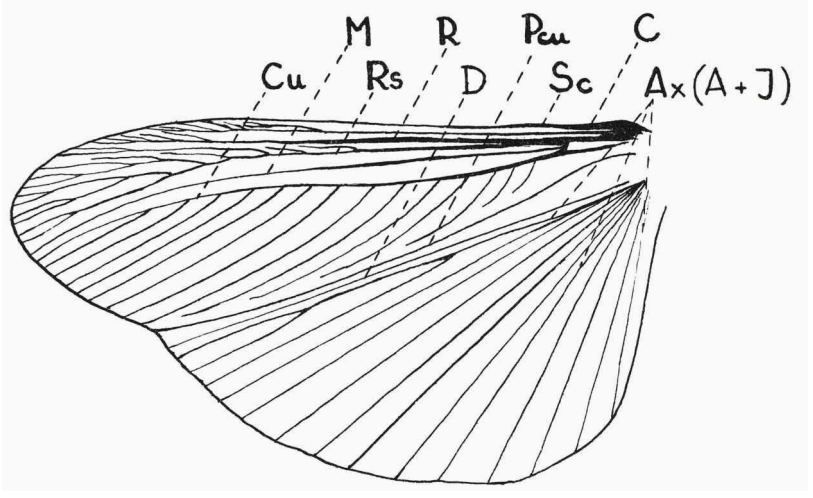

Fig. 3. Diagram of the venation of a fully developed wing (*Blabera* spec.). A, anal vein; Ax, axillary vein; C, costal vein; Cu, cubital vein; J, jugal vein; M, median vein; Pcu, postcubital vein; R, radial vein; Rs, branch of the radial vein; Sc, subcostal vein.

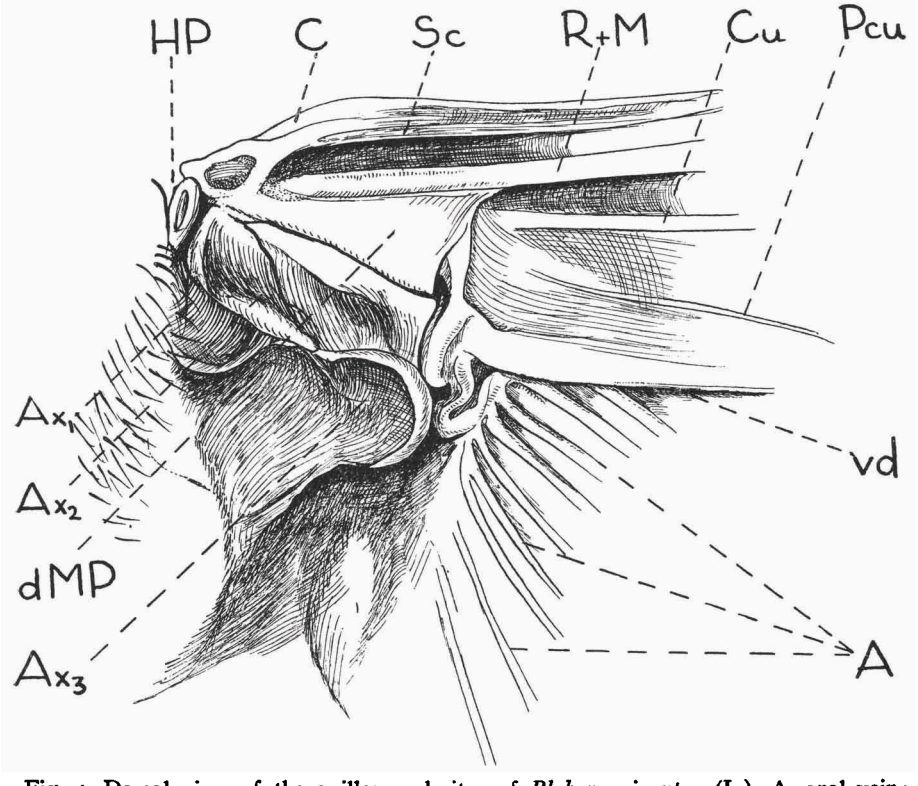

Fig. 4. Dorsal view of the axillary sclerites of *Blabera gigantea* (L.). A, anal vein; Ax, axillary vein; C, costal vein; Cu, cubital vein; dMP distal median plate; HP, humeral plate; M, median vein; R, radial vein; Sc, subcostal vein; vd, vena dividens. Greatly enlarged.

8, Jugal veins (J). In the hind wing of Blattids the jugal region is associated with the anal fan and contains some veins.

9, Axillar veins (Ax). According to Martynov (1924) the first jugal veins often associate basally with the anal veins and consequently it is difficult to distinguish them. In this case we may call the veins of the fan axillar veins.

Between the postcubitus and the first anal vein a vena dividens has developed. This vein is associated basally with the third axillary.

Investigators of Blattidae often have quite different terminologies and it is desirable to compare these in order to know which names were used for homologous veins.

Brunner (1865) distinguished principal veins (= venae) and branches of these, the secondary veins (=rami). The principal veins originate from the wing base and are termed the real veins. The veins which originate from the border and run proximally are termed the false veins (venae spuriae). In the tegmina the following principal veins are distinguished by Brunner: 1, the mediastine vein (vena mediastina) which is homologous with Sc; 2, the scapular vein (vena scapularis) which is homologous with the R; 3, the median vein (vena media) to which Brunner reckoned all veins in the region between the "scapular and first anal"; in species where the "media" is forked, the anterior branch is called the internal median vein (vena interno-media) and the posterior branch the external median vein (vena externo-media), the former being homologous with the M and the latter with the Cu; 4, the anal vein (vena analis), the Pcu of our nomenclature; 5, the axillar veins (venulae axillares), agreeing with the anals in our nomenclature.

According to Brunner the venation of the hind wings differs in some aspects from the tegminal venation, viz., in the region of the media, where two veins are distinguished: 1, the median vein (vena media) which is usually unbranched and 2, the inframedian vein (vena inframediana) which is strongly branched in most cases. The former is homologous with the M, the latter with the Cu. The Pcu of the hind wing is named vena dividens. Brunner's nomenclature is rather simple concerning the medio-cubital region. In his nomenclature of 1882 (fig. 5) the M and Cu are still regarded as branches of one vein. The names of the tegminal veins are: 1, vena mediastina; 2, vena radialis; 3, vena ulnaris anterior which is homologous with the M, and the vena ulnaris posterior which is our Cu; 4, the vena dividens which is the Pcu of our system; 5, the axillares. The veins of the hind wing are designated as follows: 1, vena mediastina; 2, vena radialis; 3, vena ulnaris which is mostly branched and homologous with

the Cu; 4, vena dividens which is homologous with the Pcu. Between the v. radialis and v. ulnaris lies the vena spuria which agrees with our M.

Saussure, another important author on Blattids of the 19th century, also used different nomenclatures. In 1864 the following names were given to the tegminal veins. Principal veins: 1, scapular vein (= vena scapularis), homologous with Sc; 2, humeral vein (= vena humeralis = "nervure principale"), homologous with R; 3, anal vein, homologous with Pcu. The secondary veins: 1, costal nerves (which are branches of Sc and

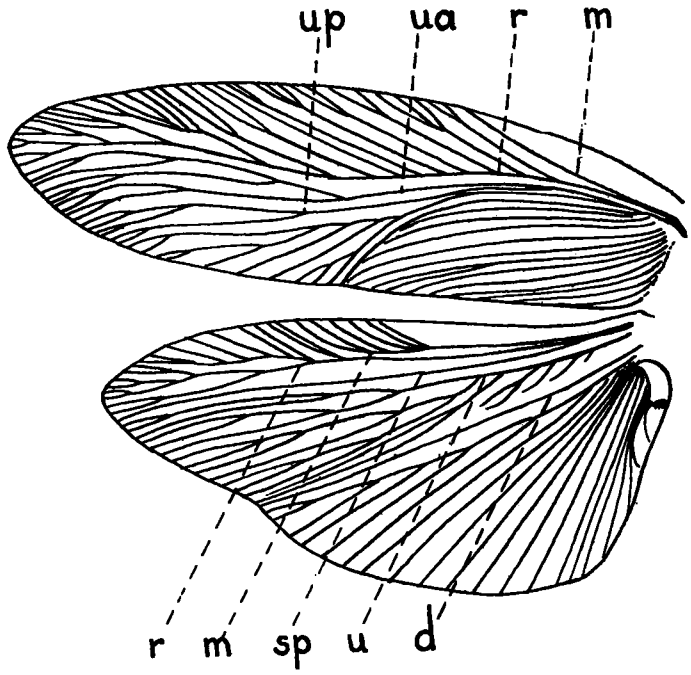

Fig. 5. Diagram of tegmen and wing of *Periplaneta americana* (L.). d, vena dividens; m, vena mediastina; r, vena radialis; sp, vena spuria; u, vena ulnaris; ua, vena ulnaris anterior; up, vena ulnaris posterior. After Brunner (1882).

R); 2, discoidal nerves, homologous with M and Cu. The veins of the hind wing were designated: 1, scapular vein, homologous with Sc; 2, humeral vein, homologous with R; 3, discoidal vein, homologous with Cu; 4, anterior anal vein (vena analis anterioris), homologous with Pcu; 5, posterior anal vein, homologous with the vena dividens; 6, axillar vein (nervae axillares), homologous with A and Ju (fig. 6).

In a later publication (Saussure and Zehntner, 1895b) the designation of the veins is as follows. In the tegmina: 1, mediastinal vein (vena mediastina) = Sc; 2, discoidal vein (vena discoidalis) = R; 3, median

vein (vena media) = Pcu; 6, axillar veins (venae axillares) = A + Ju. In the hind wing: 1, mediastinal vein (vena mediastina) = Sc; 2, discoidal vein (vena discoidalis) = R; 3, median vein (vena media) = M; 4, ulnar vein (vena ulnaris) = Cu, which sometimes consists of a v. ulnaris anterior

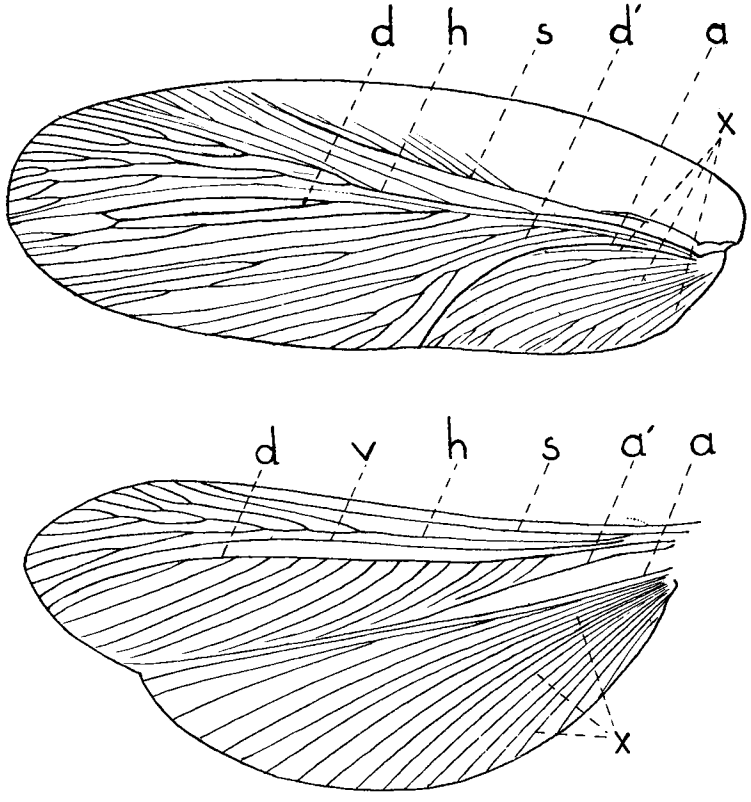

Fig. 6. Diagram of tegmen and wing of *Blabera* spec. a, vena analis; a', vena analis anterior; d, vena discoidalis; d', vena discoidalis 2; h, vena humeralis; s, vena scapularis; v, vena vitrea; x, vena axillaris. After Saussure (1864b).

and a v. ulnaris posterior, the former being homologous with Cu, the latter with Pcu; 5, anal vein (vena analis = v. dividens) which is homologous with Pcu except in those cases when a secondary vena dividens has developed; 6, axillar veins (= venae axillares) = A and Ju.

At the beginning of the 20th century Shelford published a large series of articles on Blattidae. His nomenclature is followed by Hanitsch, who also wrote numerous papers especially about Malayan Blattidae. Their nomenclature is as follows: 1, mediastinal vein = Sc; 2, radial vein = R;

3, median vein = M; 4, ulnar vein = Cu; 5, anal or dividing vein = Pcu; 6, axillary vein = A + J.

American authors (Hebard and Rehn) use the nomenclature of which Hebard (1916) gives a diagram, and which is largely based on that of Saussure and Zehntner (fig. 7). The names used are: 1, mediastine vein

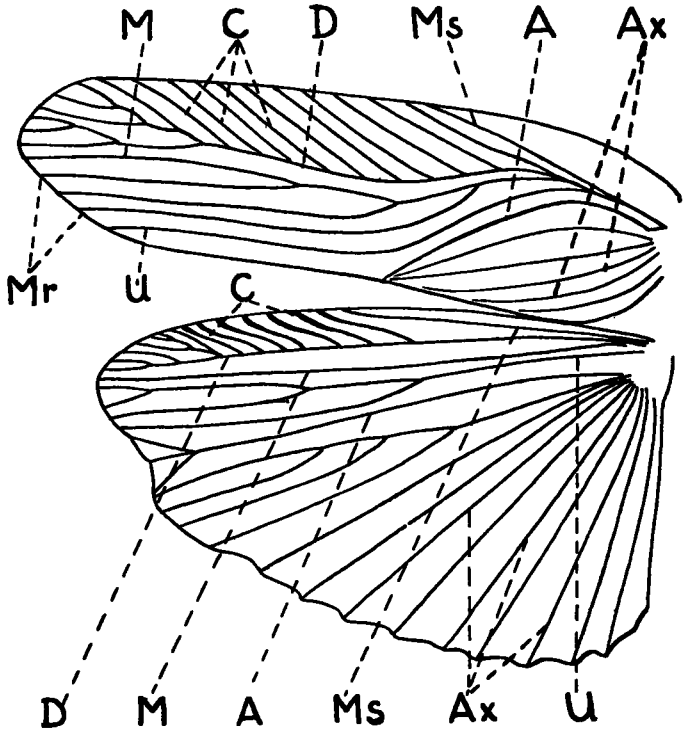

Fig. 7. Diagram of tegmen and wing of *Cariblatta* spec. A, anal vein; Ax, axillary vein; C, costal vein; D, discoidal vein; M, median vein; Mr, branches of median vein; Ms, mediastine vein; U, ulnar vein. After Hebard (1916).

= Sc; 2, discoidal vein = R; 3, median vein = M; 4, ulnar vein = Cu; 5, anal or dividing vein = Pcu; 6, axillary veins = A + Ju veins.

Concerning the tegmen, the nomenclature of Chopard (1922) shows a new aspect, since between the R and M a vein is distinguished by this author which he named media. In most cases, however, this vein has disappeared. In the hind wing the secondary vein which lies behind the Pcu, the so-called dividing vein, is called anal vein. The nomenclature of the tegminal veins after Chopard is as follows: 1, n. médiastine = Sc; 2, n. humerale = R; 3, n. médiane; 4, n. discoidale = M; 5, n. ulnare = Cu; 6, n. anale = divisante = Pcu; 7, n. axillaires = A veins. In the hind wing the veins are designated by the following names: 1, v. médiastine

= Sc; 2, v. humerale = R; 3, v. médiane = M; 4, n. discoidale = Cu; 5, n. ulnare = Pcu; 6, n. anale = dividing vein; 7, n. axillaires = A + Ju veins (fig. 8).

During my study in Blattidae I came to the conclusion that there exist 3 important tendencies in the evolution of the hind wing.

1. The increase of the axillary fan combined with a reduction of the anterior area of the wing.

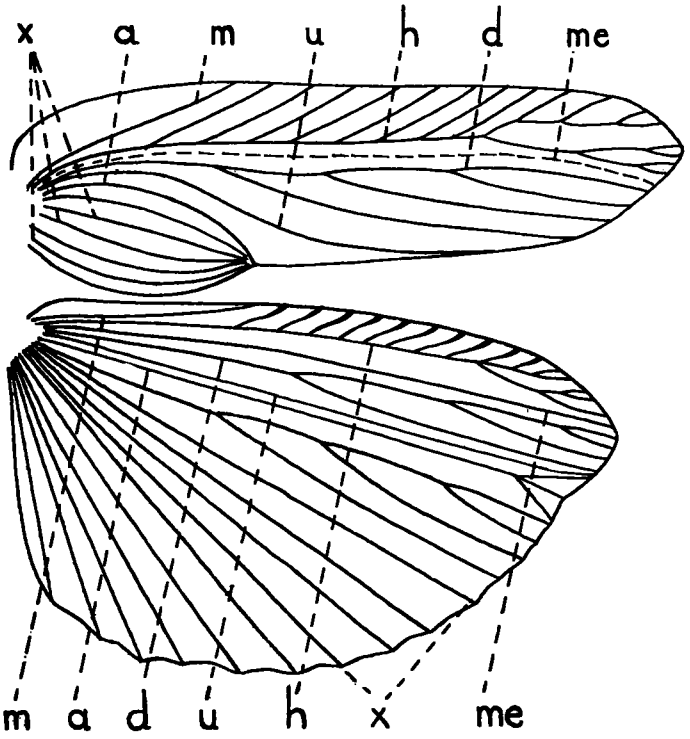

Fig. 8. Diagram of tegmen and wing of a cockroach. a, anal vein; d, discoidal vein; h, humeral vein; m, mediastine vein; me, median vein; u, ulnar vein; x, axillary vein. After Chopard (1922).

2. The lengthening of the wing by means of an apical field.

3. The reduction of the wing.

The first two tendencies often appear side by side.

I. Increase of the axillary fan.

The primitive Pterygota had homonomous wings with a highly complicated system of wing veins. In Palaeodictyoptera there existed only small differences between the fore and hind wings. In some cases the hind wings were broader than the fore wings, as in Lithomantidae. The Palaeodictyoptera must originate from an early date, since as early as the upper

carboniferous period their number declined so strongly that the order became extinct.

In the upper carboniferous times there also existed insects with strongly heteronomous wings. They belonged to the orders of the Protoblattoidea Handlirsch and the Blattoidea Handlirsch. The former must be considered as the ancestors of the latter and they had already an increased axillary area in the hind wing. The number of veins in this area was not very great and the area itself formed only a small part of the wing. The axillary

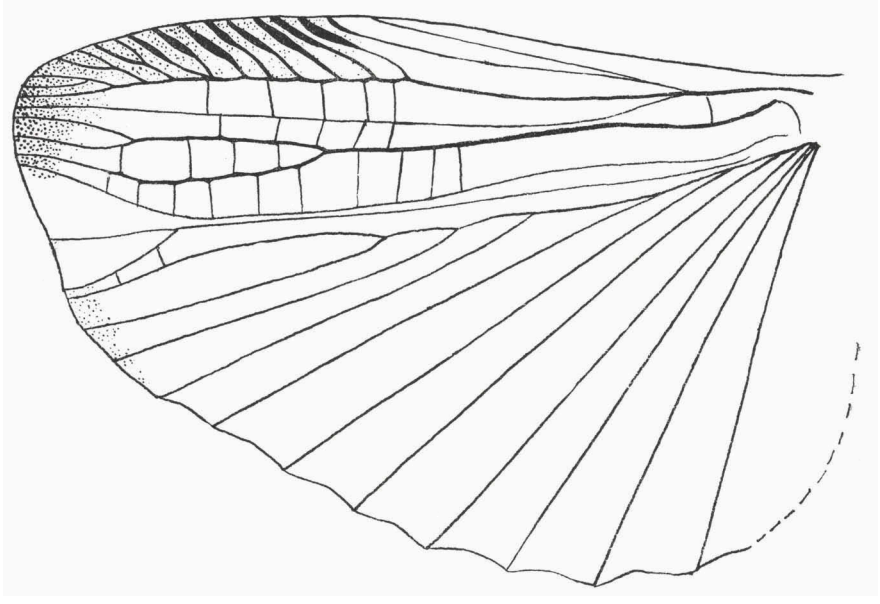

Fig. 9. *Dyakina apicigera* (Walker). Left wing of female. × 12.

areas in the wings of most carboniferous Blattids were also small. In living species various stages in the evolution of this part of the wing are to be found. The increase of the axillary area is connected with the reduction of the greater part of the original wing venation. Especially the region of the cubital vein reduces largely and finally becomes rudimentary. In species with a large axillary area the radial vein is never reduced, but it has a series of anterior branches, which are directed to the anterior margin. Often these short anterior branches are clubbed or thickened, and together with the parallel running veins of the original wing they form a strong, stiffened frontal part of the wing (fig. 9).

Cayley already pointed out, that in wings which are set at an acute angle to the wind, the centre of the pressure lies near the front and consequently this part of the wing has to be stiffened. In the wings of Blattids,

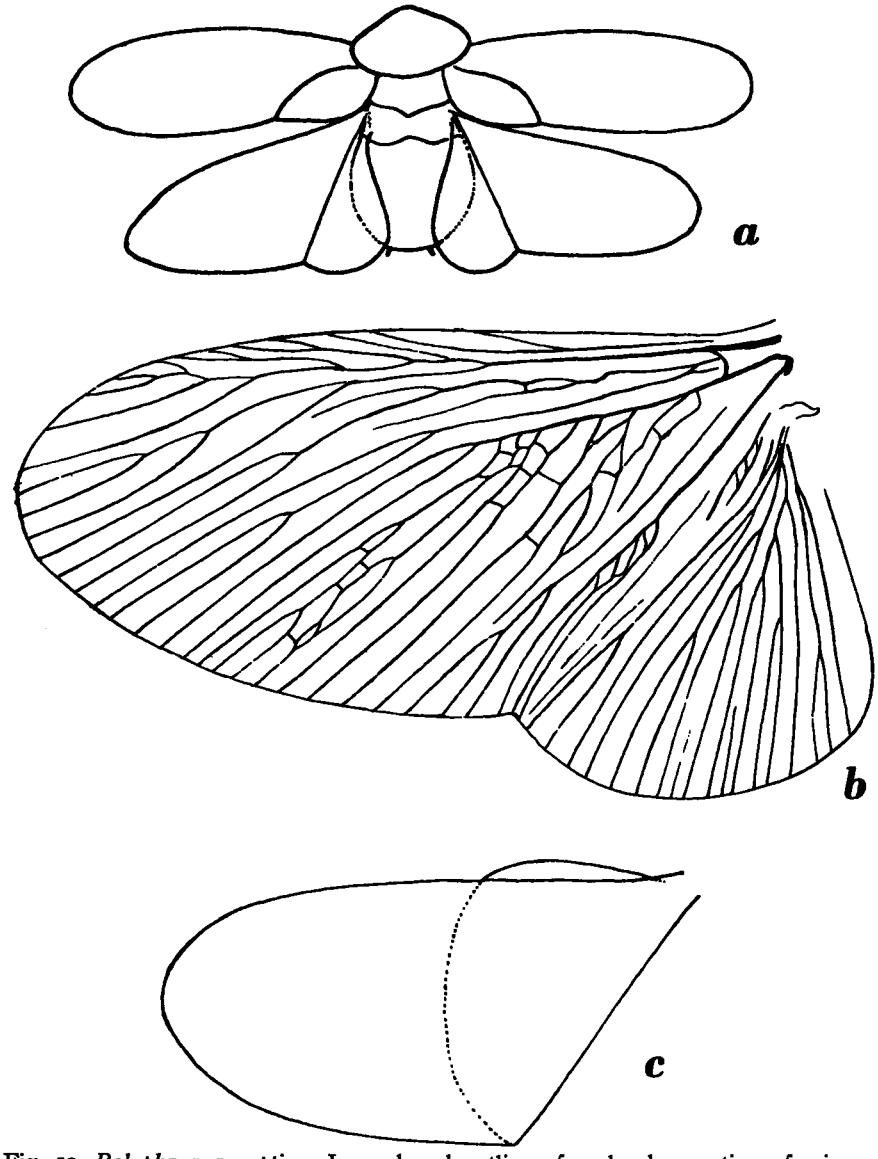

Fig. 10. *Polyphaga aegyptiaca* L. a, dorsal outline of male; b, venation of wing of male; c, diagram of folded wing of male. a, × 1½; b, × 5; c, × 3½.

which possess a very large axillary fan, the reduced original wing functions merely as a stiffened bow whilst the increased axillary fan functions as the bearing plane of the wing.

The subfamilies with large axillary fans (viz., Anaplectinae, Pseudomopinae, Oxyhaloinae) are also specialized in other aspects, namely in the

specialized male abdomen, in the tarsal claws, etc. Consequently we may regard these subfamilies to be the most strongly evolved.

The tendency of the increase of the axillary fan may be demonstrated in the following examples.

In the male Polyphaginae the venation agrees with that of the most primitive fossil Blattids. The axillary area is very small and contains a fairly irregular venation; it cannot be folded together like a fan, but is completely covered by the large anterior part of the wing when at rest (fig. 10). The cubito-postcubital area is large and the cubital vein sends

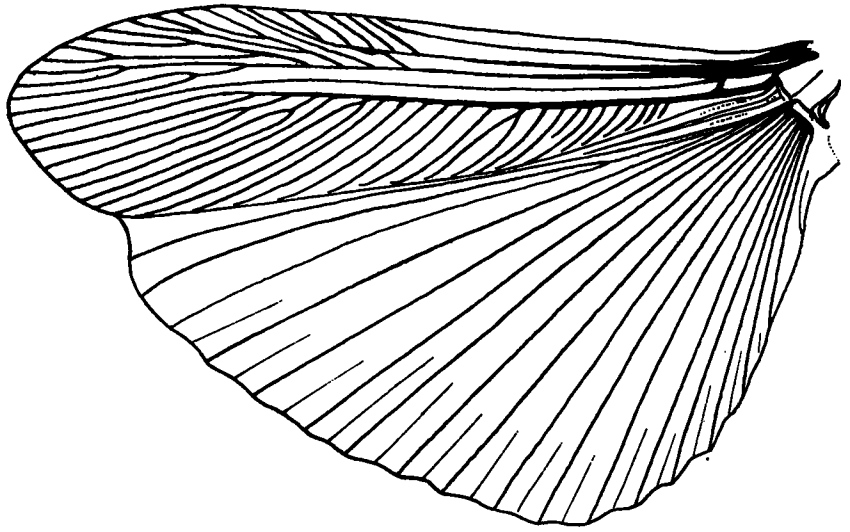

Fig. 11. *Rhabdoblatta buqueti* (Serville). Venation of wing. × 3.

numerous branches to the apex and to the postcubital vein. The branches of the radial vein are irregular and not directed to the anterior margin and only weakly chitinized. *Polyphaga aegyptiaca* L. forms a nice example of this type.

In most species of the subfamilies of the Blaberinae, Epilamprinae, Blattinae, Panchlorinae and Perisphaeriinae, the axillary area is relatively much larger and it can be folded together like a fan. In these subfamilies the cubito-postcubital area is still large, but narrower than in the male Polyphaginae. The number of branches of the radial and subcostal veins increases, and most of these branches are directed to the anterior margin. Some examples of this type are *Rhabdoblatta buqueti* (Serville) (fig. 11), *Blabera gigantea* L. (fig. 4) and *Periplaneta americana* (L.) (fig. 5).

The highest degree of the tendency of increase of the axillary fan is attained in species belonging to the Pseudomopinae, Ectobiinae and Oxy-

haloinae. In these subfamilies a situation is attained in which the anterior part of the wing is smaller than the axillary fan. The cubito-postcubital area then in most cases is largely reduced, and the number of branches of the cubital vein decreases and finally this vein becomes unbranched. The radial vein, however, gets thickened, short branches, which are directed towards the anterior margin. A transverse section of the wing shows, that the region cephalad from the radial vein is the most strongly strengthened area of the wing (fig. 12).

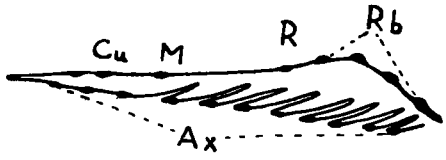

Fig. 12. *Scalida latiusvittata* (Brunner). Transverse section of folded wing. Ax, axillary vein; Cu, cubital vein; M, median vein; R, radial vein; Rb, branch of the radial vein.

Transitions are to be found of wings with a well developed cubito-postcubital area combined with a large axillary fan, to wings with an unbranched cubital vein combined with a very large axillary fan. Examples of the former case are to be found in *Platylestes colombiae* Hebard and *Haplosymploce montis* (Shelford) (fig. 13). Most other species have a

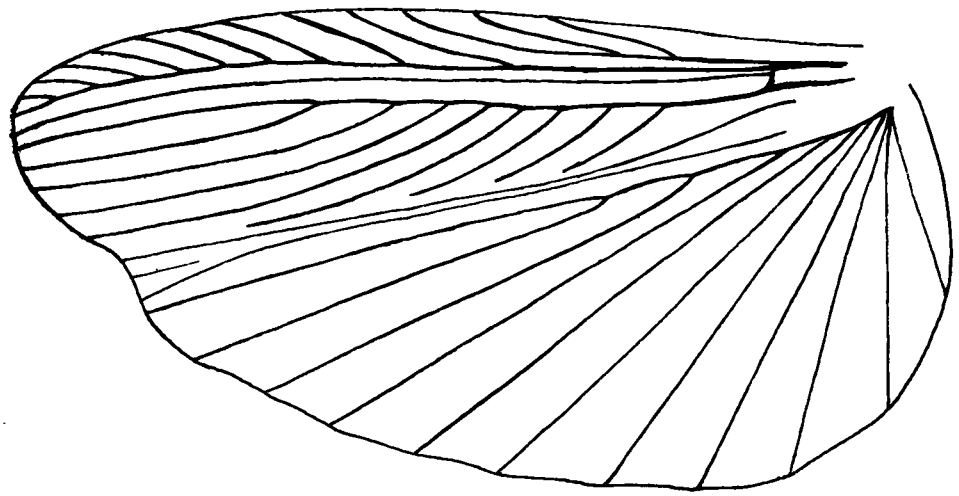

Fig. 13. *Haplosymploce montis* (Shelford). Venation of wing. × 12.

smaller cubito-postcubital area; some examples out of the vast number are *Neoblattella latimarginata* Hebard (Hebard, 1929, pl. 3 fig. 3), *Hebardula jacobsoni* (Hebard) (Hebard, 1929, pl. 2 fig. 1) and *Molestella molesta* (Brunner) (fig. 14). In *Oxyhaloa* spp. the axillary fan is highly developed and the original wing is very narrow, but still the number of branches of the cubital vein is great (fig. 15).

A narrow cubito-postcubital area with only a few or without any branches

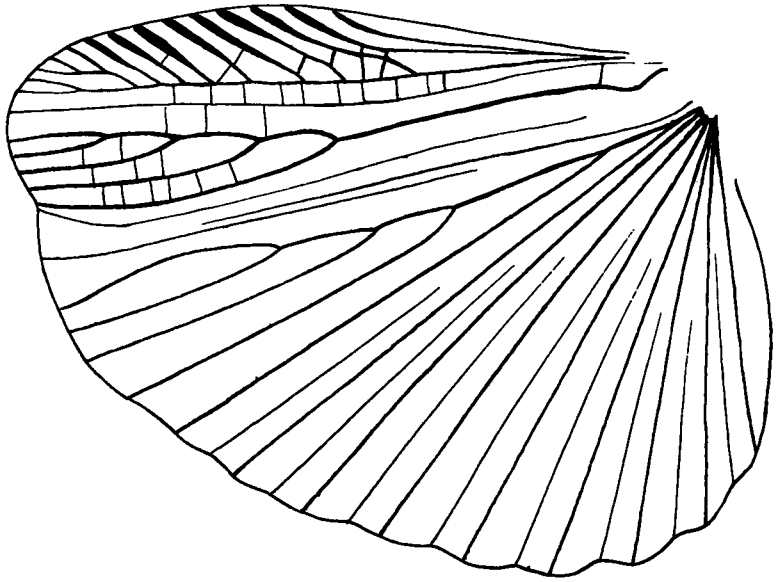

Fig. 14. *Molestella molesta* (Brunner). Venation of wing. × 12.

can be found in *Jacobsonina simplex* Hebard, *Dyakina apicigera* (Walker) (fig. 9), *Scalida javanica* nov. spec. (fig. 16) and *Hemithyrsocera* spp.

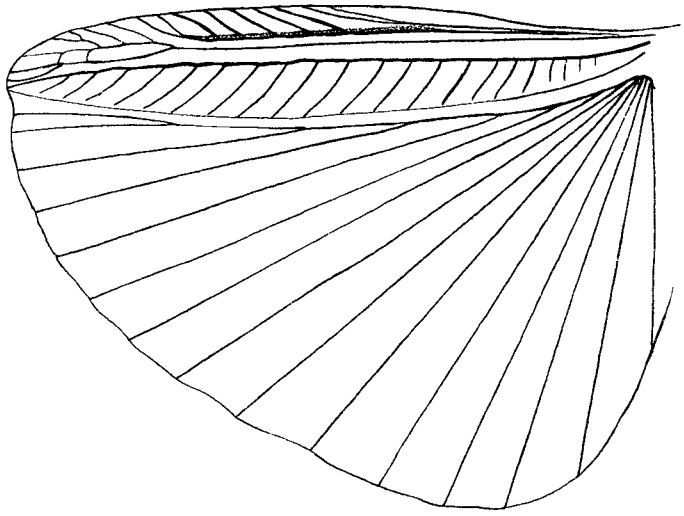

Fig. 15. *Oxyhaloa* spec. Venation of wing. × 5.

From the foregoing it appears, that in all subfamilies there exists the tendency of increase of the axillary fan combined with a reduction of the

anterior area, and that the highest degree of this tendency is attained in the most strongly evolved subfamilies.

I believe that the success of this tendency may be explained functionally, since the axillary fan itself is the result of two, apparently contradictory, tendencies of the wing, viz., to be as small as possible when at rest, and to be large in flight.

The Blattidae live and hide in narrow clefts, in trees, among leaves, etc. Consequently large, delicate unflexible wings are very troublesome. Thus for the insect out of flight it is desirable that the wing area is as small as possible.

Since the wing muscles of the Blattidae are weak, the frequency of

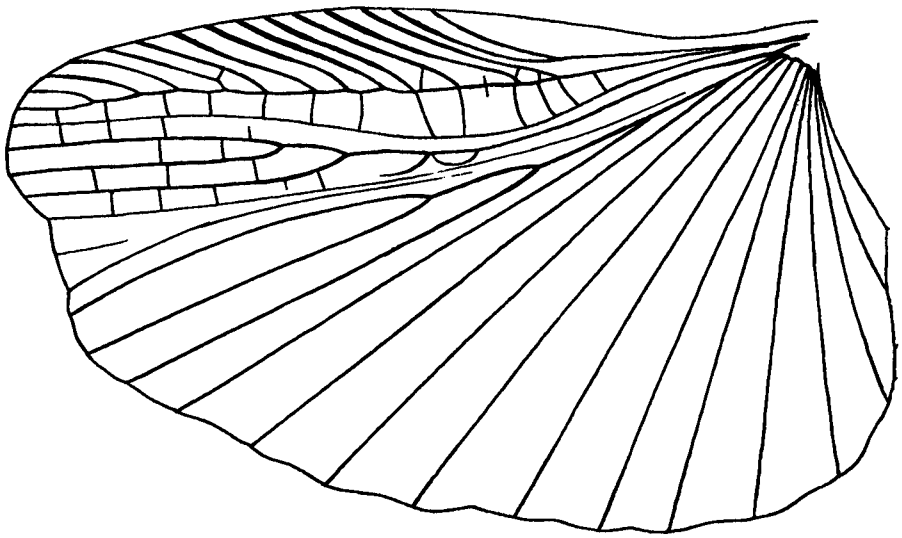

Fig. 16. *Scalida javanica* nov. spec. Venation of wing. × 12.

the wing strokes is low and consequently the wing area has to be large to enable the insect to fly.

The problem of a wing, which has to be large in flight and small at rest, is solved by the flexible wing. A large foldable area enables the wing to be small when at rest.

The increase of the axillary fan must be combined with the reduction of the original wing for two reasons:

1. If the anterior region did not reduce, the axillary fan could extend only in the direction of the median plane, which means over the thorax (fig. 10a). In this case the increased area would be entirely ineffectual as supporting area in flight.

2. Since the size of the area of the wing at rest is determined by the unfoldable anterior area, this area has to decrease.

II. Lengthening of the wing by means of a flexible apical area.

The wing venation functions as the supporting element in the wing, and in wings with an axillary fan we may distinguish two supporting systems, viz., the system of the parallel veins of the anterior area and the system of the radiating veins of the axillary fan. Basally these two systems are distinctly separated. The veins of the axillary fan are united at their base and associate proximally with a strong, chitinized process of the third axillary sclerite. The veins of the anterior region are more or less connected at their base and associate proximally with the humeral plate, the first axillary sclerite, the second axillary sclerite, and the distal median plate (fig. 4).

The two parts of the wing are movable, with regard to each other, by means of the flexor and extensor mechanism. The third axillary is the most active sclerite of the flexor mechanism, as the flexor muscle is

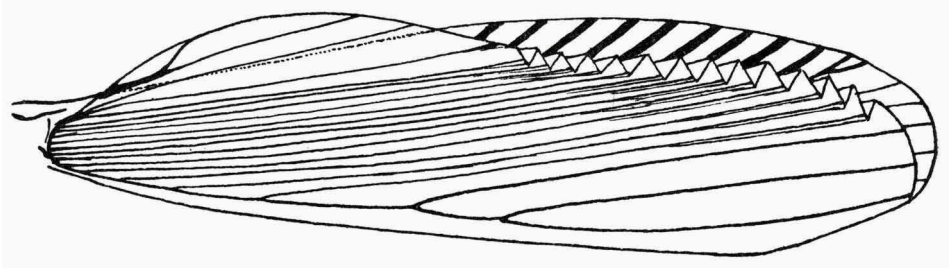

Fig. 17. *Scalida latiusvittata* (Brunner). Left wing, folded and seen from below. × 14½.

inserted on its base. By the movements of the third axillary sclerite the axillary fan (which is folded together like a fan) is deflected against the anterior part of the wing (fig. 17). The wing folds along a line which runs between the postcubital and the first axillary vein. In most cases this fold contains a weakly chitinized secondary vein (vena dividens).

The extension of the wing is only possible after relaxation of the flexor muscle. By the contraction of the basalar and subalar muscle the axillary elements are restored in a horizontal plane and the wing is spread. During the spreading of the wing, the anterior part of the wing and the axillary area are moving in opposite directions. Consequently there exists a tension in the narrow area lying between the two systems of veins. As this area has to be flexible to enable the folding of the wing, it can not be strengthened by strongly chitinized veins. It is clear that at the apex of this area there exists the greatest chance that it will tear. In most Blattids, however, this area widens slightly towards the apex and forms the so called intercalated triangle (figs. 3, 7, 9, 14, 15). The latitude at the apex is highly increased by this triangular widening and consequently the wing will not tear so easily.

The triangular area itself folds between the fan and the anterior area of the wing and in this way the folded wing is rounded at the apex (fig. 17). As the tegmina are also rounded at their apices, the folded wing fits better under them.

From the foregoing it appears, that the intercalated triangle must be regarded as the mechanical result of the peculiar method of wing folding and it may be expected to appear in different subfamilies, which really is the case.

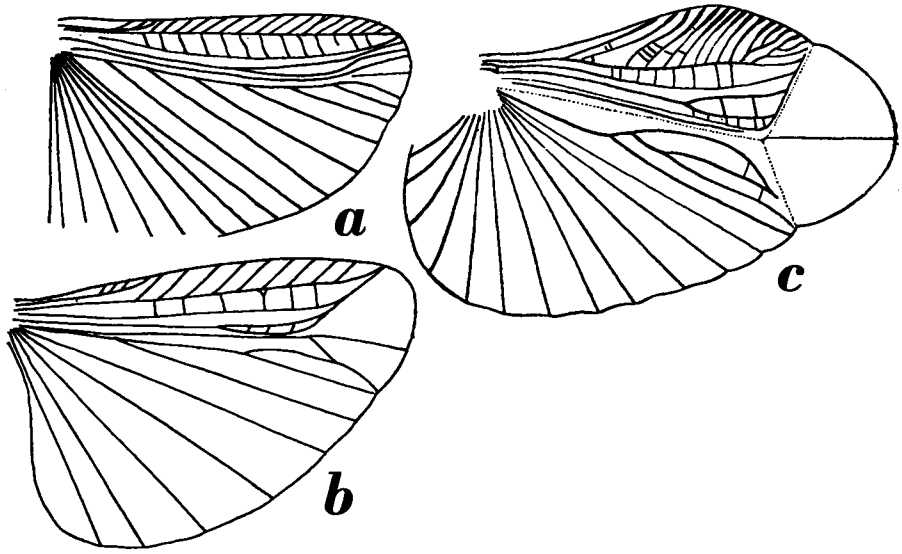

Fig. 18. a, *Theganopteryx nitida.* Borg, venation of wing, after Shelford (1912c); b, *Theganopteryx gambiensis* Shelford, venation of wing, after Shelford (1912c); c, *Malaccina imitans* Hebard, venation of wing, after Hebard (1929).

In some subfamilies there exists the tendency of lengthening of the wing by means of the increased intercalated triangle.

In the Epilamprinae the triangle is small in most cases, but the tendency is evident in the genus *Notolampra,* in which the triangle is evolved in a venated apical field, which can be folded.

In the Pseudomopinae the triangle evolves from a field, which is intercalated between the anterior area of the wing and the axillary fan in a field, which is produced with its distal margin beyond the normal marginal curve. Out of the vast number of species with a moderately developed triangular field, the following examples were chosen: *Molestella molesta* (Brunner) (fig. 14), *Dyakina apicigera* (Walker) (fig. 9), and *Scalida javanica* nov. spec. (fig. 16). In *Parasymploce* spp. and *Hemithyrsocera* spp. the triangle is slightly protruding. In the genus *Theganopteryx* different

stages of the increase of the apical triangle are demonstrated. *Theganopteryx nitida* Berg (fig. 18 a) has only a small apical area, but in *Theganopteryx gambiensis* Shelford this area is large and strongly protruding (fig. 18 b).

A further stage in the evolution of the apical triangle is attained in the Anaplectinae, where it is a large area, which can be reflected against the basal half of the wing when at rest. The triangle can also be folded longitudinally and in this fold a vein develops. In most cases another weakly chitinized vein has developed in this area, but other veins are lacking.

Relatively small apical fields are to be found in the wings of the genera

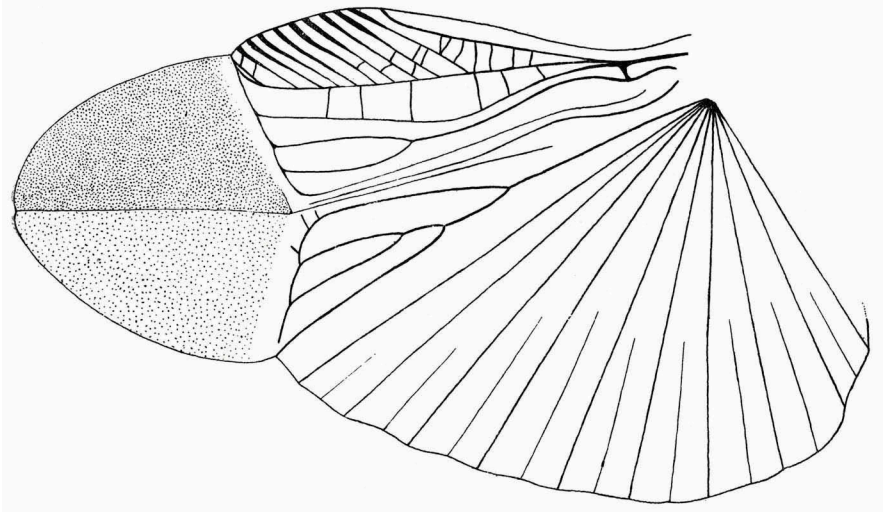

Fig. 19. *Anaplectella vanheurni* nov. spec. Left wing. × 10.

Anaplectoidea Shelford and *Malaccina* Hebard, where the cubito-postcubital area is still of importance (fig. 18 c).

In *Anaplectella* the apical field is larger (fig. 19), but in *Anaplecta* Burmeister this field can be as large as the remainder of the wing; the cubitus is unbranched and the first anal vein has only one or two strongly curved branches (fig. 20).

The large apical area of the so far mentioned Anaplectinae is only strengthened by one or two veins. These insects, however, are very small (only some mm), and since small wings to a lesser degree need the strengthening by the veins than large wings, these two veins suffice. The proximal half of the anterior margin is strengthened by the subcostal and radial veins. Functionally these wings agree with the wings of other small insects, as the small Hymenoptera, in which the venation is limited to the strongly chitinized combination of the subcostal and radial veins. In the wings of large species the venation is always more developed than in small species.

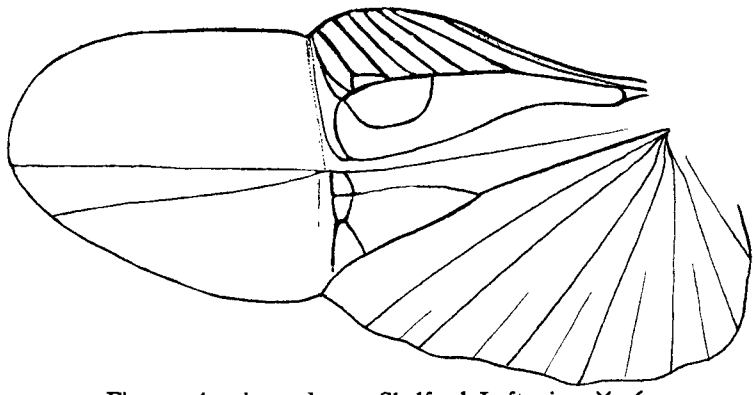

Fig. 20. *Anaplecta obscura* Shelford. Left wing. × 16.

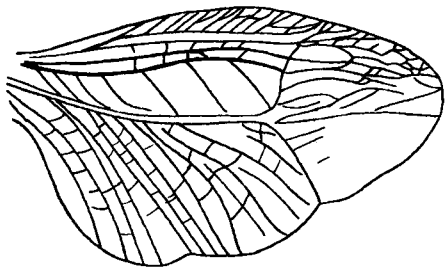

Fig. 21. Venation of wing of the African Anaplectinid no. 13933 of the Brunner collection. After Karny (1921).

In the wing of the African Anaplectinid no. 13933 from the Brunner collection the venation extends into the anterior half of the apical field. The posterior half is not venated (fig. 21). As already mentioned, the greatest pressure lays near the front of the wing and consequently this part must be strengthened. Thus it is clear, that for functional reasons the increased apical area needs the veins mostly in the anterior half. In larger Blattids with an increased apical field as in *Diploptera* spp. the whole apical area is venated (fig. 22).

The latter genus belongs to the subfamily Oxyhaloinae, in which the tendency of increase of the triangular apical area is also clearly demonstrated. In *Oxyhaloa* spp. the triangle is still small (fig. 15), but in *Chorisoneura* spp. various stages of the increase are to be found (figs. 23, 24). In *Areolaria* spp. the apical area is strongly protruding and in *Diploptera* spp. finally, this area is nearly as large as the remainder of the wing. Its anterior half is venated with parallel veins, which are connected by numerous cross veins. These veins are the extended veins of the original wing. The venation of the posterior half is not so regular and not so strongly chitinized.

The increase of the apical field, which can be folded and reflected against the original wing, may be explained in the same way as the increase

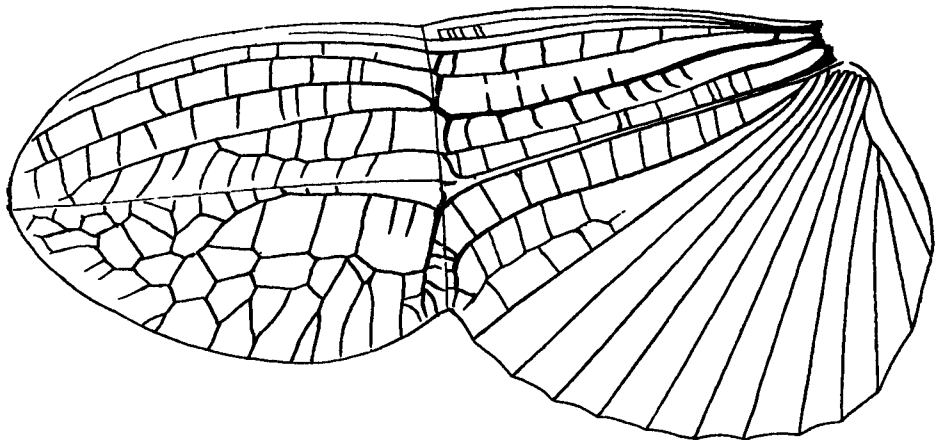

Fig. 22. *Diploptera dytiscoides* (Serville). Venation of wing. × 5.

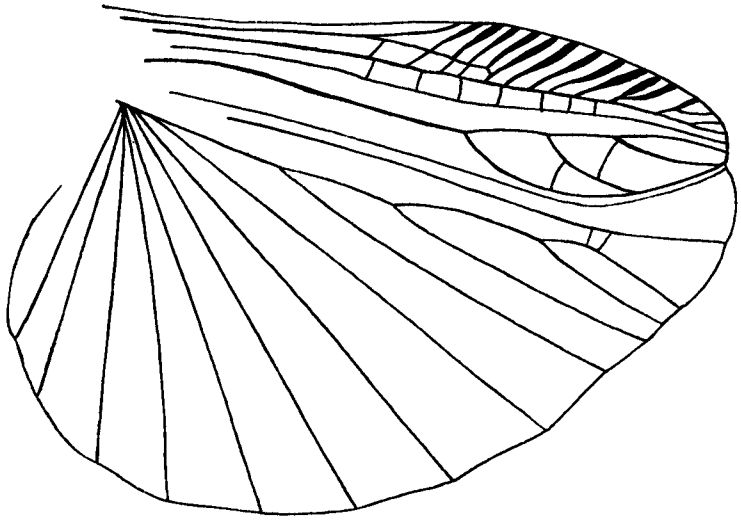

Fig. 23. *Chorisoneura lativitrea* (Walker). Venation of wing. × 10.

of the axillary fan, viz., to enable the wing to be small when at rest and large when in flight.

III. Reduction of the wing.

The reduction of the wing appears in different ways:

a. The anterior part of the wing reduces.

b. The anal area reduces.

c. The venation reduces.

d. The whole wing reduces.

a. As was mentioned already, the extension of the anal area is concurrent with the reduction and narrowing of the anterior part of the wing.

In the Pseudomopinae, the Anaplectinae and the Oxyhaloinae the anterior part of the wing is narrow and its venation is strongly reduced.

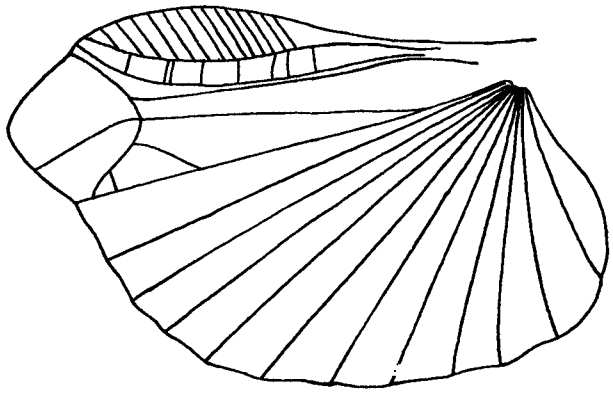

Fig. 24. *Chorisoneura maculata* Hanitsch. Venation of wing. After Hanitsch (1934).

b. If the wing ceases to be an organ of flight, it often reduces. One of the first stages of this reduction is the disappearing of the anal area. This is clearly demonstrated in the wings of *Alluaudellina cavernicola* Shelford, an African cave-dweller. The males of this species can be either macropterous or micropterous. The hind wings of macropterous specimens differ but little from the fore wings, since the anal area of the latter is reduced. In the micropterous specimens the hind wings consist of small lobes only, with a largely reduced venation.

Other examples of the reduction of the anal area may be found in other species belonging to the Corydiinae, viz., *Cardacopsis shelfordi* Karny, *Homopteroidea* spp. and *Cardax willeyi* Shelford.

c. The reduction of an area is always accompanied by a diminution of the veins within this area. In small species, however, the reduction of the venation is often of more importance than that of the wing.

In the genus *Holocompsa* the venation consists only of a strongly chitinized anterior margin (fig. 25). In *Diaphana*, another genus of the Corydiinae, the basal half of the anterior margin is also strongly chitinized, but not all the veins are reduced.

d. Reduction of the whole wing is a common phenomenon in nearly all subfamilies of Blattidae. Often only the ♀♀ are wingless, as in Polyphaginae, most Perisphaeriinae and a large number of Blattinae.

As for my researches on the wing venation it was important to have the wings, which in stored specimens are in a folded condition, entirely spread, at first I met with some difficulties to achieve this, as especially the wings

of the smaller specimens were hard and brittle and easily damaged when handled. Even exposure to humidity for some days did not help in obtaining the wings in the necessary position.

I worked out a new method to spread the wings of small stored specimens. A short description of this method may be given.

First the folded wing is loosened most proximally from the thorax with a dissecting needle or a small forceps. One must take care that the anal area is not torn up basally. The tegmen can be replaced with glue if it is loosened too. Folded hind wing is laid in hot water (I use a test-tube) and after it has soaked for some minutes, it is placed on a moist piece of cardboard. Afterwards the wing, supported by the cardboard and held with a forceps, is placed in a weak jet of water. By the flowing water the wing will be

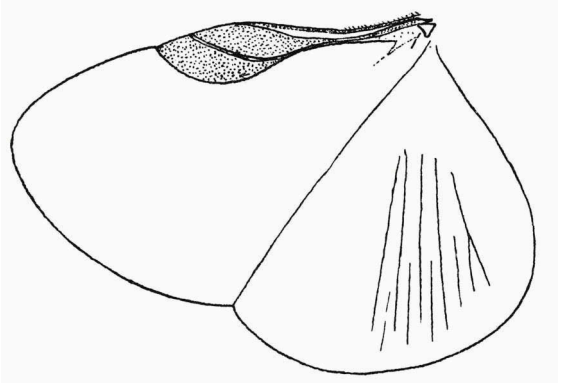

Fig. 25. *Holocompsa debilis* Walker. Left wing. × 15.

spread. Though the binocular microscope it can be observed if it is wholly spread.

The wing must lie with its upper side on the moist cardboard to enable us to put a small drop of glue on its lower side. This done a dry piece of cardboard is pressed gently on the wing, which will stick to it. The wet cardboard can easily be taken away with a forceps.

Very diaphanous wings can be mounted on cellophane; the glue used must be soluble.

This method enabled me to make a preparation of the wings in less than five minutes and when working with old stored material, it is of great value for a swift progress.

Many authors who studied Blattidae have tried to find characters with diagnostic value to distinguish the subfamilies Ectobiinae and Pseu-

domopinae. Shelford (1906, pp. 231-234) already pointed out, that the characters used to discriminate the subfamilies are so "diverse in structure that no reliance can be placed on them as criteria of distinction." He believed, however, to have found a feature of great diagnostic value in the form of the cubital vein. According to Shelford this vein is simple or bifurcate in Ectobiinae and ramose in Pseudomopinae. In the genera *Mareta* Bolivar and *Graptoblatta* Hebard, however, the cubitus is ramose and on the other hand in *Symplocodes* Hebard this vein is simple. Consequently this character has little diagnostic value. Another feature used by Shelford to distinguish the Ectobiinae is the conspicuous triangular apical field. Since the occurrence of a conspicuous triangular apical field and of a reduced cubital area are correlated, one may expect that this feature too has but little diagnostic value. It lacks in genera like *Mareta* Bolivar, *Dyakina* Hebard, *Graptoblatta* Hebard, *Allacta* Saussure and Zehntner, which usually are considered as Ectobiinae.

A short transverse supra-anal plate was regarded by other authors as a diagnostic feature. Many species of *Theganopteryx* Brunner have a produced, triangular supra-anal lamina and consequently this character too is not very important. The sparse armature of the femora, also used as a feature, occurs in both subfamilies, and its diagnostic value is rather poor.

Hebard (1929, p. 5) uses the same characters as mentioned above, but is very vague when saying: "In the Ectobiinae the general structure and ventral spines of the median and caudal femora average more delicate than in the Pseudomopinae, while there is a greater tendency for the supra-anal plate to be transverse."

There are a number of genera, which, according to the diagnosis of Shelford and other authors, can belong to the Ectobiinae or to the Pseudomopinae. In some of his publications Hanitsch placed the genus *Mareta* Bolivar in the Ectobiinae and in other publications in the Pseudomopinae.

Shelford speaks about a "borderland" between the two subfamilies. The Indo-malayan genera of this borderland form gradual transitions between the subfamilies and since it is impossible to find characters with diagnostic value of subfamilar rank, I have transferred all the species to the Pseudomopinae.

In the present paper I have tried to use only those features, which have specific and generic value. Since a character can be of specific or generic significance in one sub-family and have no diagnostic value in another, it must be tried to find the right characters for each group. In most cases

the characters used by Hebard (1929) have proved to be of high diagnostic value.

Since the greatest confusion existed and still exists in the Pseudomopinae, this subfamily had the special attention in Hebard's paper and in the present publication. In this subfamily the following features have generic value.

a. In the tegmina and wings: Whether the radial vein is forked or not in tegmina and wings. If the direction of the sectors if the medio-cubital area (the "discoidal" sectors) is longitudinal, oblique or radiating. Whether or not the median and cubital veins in the wing are sigmoid or straight. Whether or not the apical triangle is conspicuous. Whether or not the subcostal vein reaches as far as the middle of the wing.

b. In the legs: Whether the ventro-cephalic margins of the cephalic femora are armed with a row of heavy spines which decrease gradually in size distad (type A) or with a row of heavy spines followed by a row of piliform spines (type B) or with a row of piliform spines only (type C). Whether this margin has two or three apical spines.

In the tarsal claws three different types are found, which are of great generic value. The claws can be simple and symmetrical or simple and asymmetrical or toothed on the internal margin. These types never occur side by side in a genus.

Another feature of high generic value is whether or not the arolia are well developed.

c. In the abdomen: Whether or not the male abdomen is specialized may be of generic value, but often the specializations have merely specific value. The same may be said about the specialization of the male subgenital plate.

d. In the head: The proportion of the length of the palpal joints may be of generic value, but in most cases this feature is only of specific value. In some cases the palpi are highly specialized and consequently of high diagnostic value. Whether the lateral margins of the face are convergent or vertical to the mouth, whether or not the antennae are plumose are also features of generic value.

In the Anaplectinae most of the features used in the Pseudomopinae have proved to be also of generic value, but the following are the most important. Whether the tarsal claw is toothed on the internal margin or unspecialized; whether or not the cubital vein is branched; the male abdomen being specialized or not; the female subgenital plate valved or not; whether the ventro-cephalic margin of the cephalic femora is armed after type A or type B.

In the Blattinae the wing venation, the specialization of the male

abdomen, the tarsal claws being symmetrical or asymmetrical, whether or not a large arolium is present, whether or not the pulvilli on the four proximal joints of the tarsi are large, whether or not the antennae are plumose, whether or not the tegmina and wings are reduced, whether or not the sexes are similar, are all features which may be of generic value.

In the Epilamprinae the wing venation is of less importance but the outline of the tegmina and the wings being emarginated or not, and truncated or not, the sexes being similar or dissimilar, whether or not the pronotal disk is impresso-punctate, the pronotum being cucullated or not, the subgenital plate being symmetrical or not, the caudal metatarsus being much shorter or nearly as long as the succeeding joints, this metatarsus being armed or not, and the ratio of the palpal joints, are all features of generic value.

In the Panchlorinae, the Corydiinae, the Oxyhaloinae and the Polyphaginae some of the features mentioned so far have generic value. Since these subfamilies have only a small number of species in the Indomalayan region, it is of less importance to discuss them here.

A feature of great generic value in the Panestriinae is whether the lateral margins of the seventh tergite are dentate or not.

TABLE OF DISTRIBUTION

Anaplectinae	Malay Peninsula	Sumatra	Java	Borneo	
Anaplecta malayensis Shelford	x	x	x	x	
Anaplecta sumatrensis Hanitsch	o	x	x	o	
Anaplecta maculifera Hanitsch	o	x	o	x	
Anaplecta ochronotum Hebard	o	x	o	o	
Anaplecta javanica Saussure	o	x	x	o	N. Pagi, Mentawi Islands
Anaplecta humeralis Hanitsch	o	x	o	x	
Anaplecta obscura Shelford	x	o	x	x	
Anaplecta fulva Brunner	o	x	o	o	Burma
Anaplecta cornea Hanitsch	x	o	o	x	
Anaplecta cornea minor Hanitsch	o	x	o	o	
Anaplecta transversa Hanitsch	o	o	o	x	
Anaplecta vittata Hanitsch	x	x	o	o	Rhio Archipelago
Anaplectella smedleyi Hanitsch	o	x	o	o	Sipora, Mentawi Islands; Simalur
Anaplectella mjöbergi Hanitsch	o	x	o	o	
Anaplectella ornata Hanitsch	o	x	o	o	
Anaplectella jacobsoni Hebard	o	x	o	o	
Anaplectella simalur Hebard	o	o	o	o	Simalur
Anaplectella samarindae Hanitsch	o	o	o	x	

	Malay Peninsula	Sumatra	Java	Borneo	
Anaplectella vanheurni nov. spec.	o	o	x	o	
Malaccina imitans Hebard	o	o	o	x	
Malaccina rufella Hebard	x	o	o	o	
Anaplectoidea saundersi Hanitsch	x	o	o	o	Siberut, Sipora, Mentawi Islands
Anaplectoidea lampongensis Hanitsch	o	x	x	o	
Anaplectoidea nitida Shelford	o	x	o	o	Celebes, Batchian
Anaplectoidea hyalina nov. spec.	o	o	x	o	
Anaplectoidea modiglianii Hanitsch	o	o	o	o	Sipora, Mentawi Islands
Pseudomopinae					
Aristiger histrio (Burmeister)	x	x	x	x	Celebes
Hemithyrsocera palliata (Fabricius)	x	x	o	x	Ceylon; India; China; Indo-China; Lower Siam
Hemithyrsocera soror (Brunner)	x	o	x	o	Celebes
Hemithyrsocera lateralis (Walker)	x	o	o	o	Ceylon; India to China
Hemithyrsocera tessellata (Rehn)	x	o	o	o	
Hemithyrsocera fulmeki Hanitsch	o	x	o	o	
Symplocodes ridleyi (Shelford)	x	x	x	x	Buru; Bali; Celebes
Duryodana palpalis (Walker)	o	x	o	x	
Liosilphoidea lata (Hanitsch)	x	x	o	x	
Liosilphoidea longealata (Hanitsch)	o	o	x	o	
Liosilphoidea angustior (Hanitsch)	o	o	o	o	Mentawi Islands
Margattea ceylonica (Saussure)	x	x	x	x	Mentawi Islands, Ceylon
Margattea anceps (Krauss)	x	x	x	x	Mentawi Islands
Margattea crucifera (Hanitsch)	o	o	o	x	
Margattea nebulosa (Shelford)	o	o	o	x	
Margattea contingens (Walker)	o	x	o	x	Buru
Margattea rectangularis Hanitsch	o	x	o	o	
Margattea buitenzorgensis Caudell	o	o	x	o	
Margattea diacantha (Hebard)	o	o	o	x	
Margattea longealata (Brunner)	o	o	o	x	
Margattea setifera Hanitsch	o	x	o	x	
Margattea humeralis (Walker)	x	x	o	o	Mentawi Islands
Margattea? albovittata Hanitsch	o	x	o	o	
Margattea? argentea Hanitsch	o	o	o	o	Siberut, Sipora, N. Pagi, Mentawi Islands
Margattea? aurea Hanitsch	o	o	o	o	Pulau Tello, Batu Islands; Siberut, Mentawi Islands
Margattea? maculata Hanitsch	o	o	o	o	Siberut, N. Pagi, Mentawi Islands
Margattea? vermiculata Hanitsch	o	o	o	o	Siberut, Mentawi Islands
Jacobsonina simplex Hebard	o	x	o	o	
Parasymploce irregularitervittata (Brunner)	o	x	x	x	Sipora, Mentawi Islands
Parasymploce obliqua Hanitsch	o	x	o	o	
Parasymploce sumatrana Hebard	o	x	o	o	
Parasymploce hewitti (Shelford)	x	x	o	x	
Parasymploce penicillata Hebard	x	o	o	x	Celebes
Parasymploce denticauda Hebard	o	o	o	o	Simalur

	Malay Peninsula	Sumatra	Java	Borneo	
Parasymploce interrupta Hanitsch	o	o	o	x	
Parasymploce marginalis Hanitsch	x	o	o	o	
Parasymploce singgalangensis (Hanitsch)	o	x	o	o	
Scalida latiusvittata (Brunner)	x	x	x	o	Celebes; Mentawi Islands
Scalida nigra (Hanitsch)	o	x	o	o	Sipora, Mentawi Islands
Scalida charon (Hanitsch)	o	o	o	x	
Scalida funebris (Walker)	o	o	o	x	
Scalida javanica nov. spec.	o	o	x	o	
Scalida fragilis Hebard	o	x	o	o	
Scalida emarginata nov. spec.	o	x	x	o	
Scalida adversa (Saussure and Zehntner)	o	x	x	o	Siberut, Sipora, Mentawi Islands; Philippines
Scalida immaculata (Hanitsch)	o	x	o	o	
Scalida amplectens (Walker)	x	o	o	o	Morty Islands; Perak
Scalida connectens (Hanitsch)	o	x	o	o	
Molestella molesta (Brunner)	o	x	x	x	
Dyakina apicigera (Walker)	x	x	x	x	
Haplosymploce nigra (Hanitsch)	x	o	o	x	Mentawi Islands
Haplosymploce montis (Shelford)	o	o	o	x	
Haplosymploce reversa (Walker)	x	o	o	x	
Symploce radicifera (Hanitsch)	x	x	o	x	Bali
Symploce larvata (Hanitsch)	o	x	o	x	
Symploce cavernicola (Shelford)	x	x	o	x	
Symploce sundaica Hebard	o	x	x	o	
Symploce javana Hebard	o	o	x	o	
Symploce excavata (Shelford)	o	o	o	x	
Symploce falcifera (Hanitsch)	x	x	o	x	
Symploce breviramis (Hanitsch)	o	x	o	o	
Symploce lugubris (Hanitsch)	o	x	o	o	
Symploce simplex (Hanitsch)	o	x	o	o	
Symploce mjöbergi (Hanitsch)	o	x	o	o	
Symploce incerta (Hanitsch)	o	x	o	o	
Symploce quadripunctata (Hanitsch)	x	o	o	o	
Symploce ridleyi (Shelford)	x	x	o	o	
Symploce? biligata (Walker)	o	x	o	o	Ceylon; India; Celebes
Symploce? mediastina (Hanitsch)	o	o	x	o	
Blattella germanica (Linnaeus)	x	x	x	x	Cosmopolitan
Blattella bisignata (Brunner)	x	x	x	x	Nias; Engano; Celebes
Blattella subvittata Hebard	o	o	x	o	
Blattella cuneivittata (Hanitsch)	o	o	o	x	
Blattella palmeri Caudell	o	o	x	o	
Blattella albomarginata Hanitsch	o	o	x	o	
Pseudoceratinoptera büttikoferi nov. spec.	o	o	x	o	
Pseudoceratinoptera baluensis (Hanitsch)	o	o	o	x	
Pseudoceratinoptera bipunctata (Hanitsch)	o	o	o	x	
Pseudoceratinoptera? microptera (Hanitsch)	o	o	o	x	

	Malay Peninsula	Sumatra	Java	Borneo	
Pseudoceratinoptera? klossi (Hanitsch)	o	x	o	o	
Pseudoceratinoptera? fulva (Brunner)	o	o	x	o	
Pseudoceratinoptera? overbecki (Hanitsch)	o	o	x	o	
Pseudoceratinoptera? parva (Shelford)	o	o	o	x	
Pseudoceratinoptera? raapi (Hanitsch)	o	x	o	o	
Possoina terminalis (Brunner)	x	x	o	x	
Possoina fuscocastanea (Hanitsch)	o	x	o	o	
Possoina latimarginata (Hanitsch)	x	o	o	o	Mentawi Islands
Possoina digitata (Hanitsch)	o	o	o	o	Mentawi Islands
Sundablatta sexpunctata (Hanitsch)	x	x	o	o	
Sundablatta pulcherrima (Shelford)	o	o	o	x	
Pseudophyllodromia laticeps (Walker)	x	x	x	x	
Pseudophyllodromia laticaput (Brunner)	o	o	o	x	
Pseudophyllodromia mentawiensis Hanitsch	o	o	o	o	Mentawi Islands
Pseudophyllodromia poiensis Hanitsch	o	o	o	x	
Pseudochorisoblatta interrupta (Hanitsch)	o	o	x	x	
Pseudochorisoblatta? megaspila (Walker)	x	o	x	x	Mentawi Islands
Pseudochorisoblatta? karnyi (Hanitsch)	o	o	o	o	Mentawi Islands
Pseudochorisoblatta? confluens (Hanitsch)	o	o	o	x	
Pseudochorisoblatta? hamifera (Walker)	x	o	x	x	Lower Siam
Pseudochorisoblatta? marmorata (Walker)	x	o	o	o	
Pseudochorisoblatta? picturata (Shelford)	x	x	o	o	
Hebardula jacobsoni (Hebard)	x	x	o	x	
Pseudothyrsocera xanthophila (Walker)	x	x	o	o	Mentawi Islands; Celebes
Pseudothyrsocera bicolor Shelford	o	o	o	x	
Pseudothyrsocera montana Shelford	o	o	o	x	
Pseudothyrsocera moultoni Hanitsch	o	o	o	x	
Pseudothyrsocera pica (Walker)	x	x	o	o	
Pseudothyrsocera ruficollis Shelford	x	o	o	x	
Pseudothyrsocera scutigera (Walker)	x	o	o	x	
Graptoblatta notulata (Stål)	x	x	x	x	Celebes; New Guinea; Hawaii to Tahiti and Cocos Keeling Islands
Graptoblatta? polygrapha (Walker)	x	o	o	x	Siam
Mareta similis (Saussure)	o	o	o	o	Cocos Keeling Islands; Hawaii Islands; Australia
Mareta parva (Shelford)	o	o	o	x	
Mareta stellata (Hanitsch)	x	o	o	x	
Mareta contigua (Walker)	x	o	x	x	New Guinea; Kei Islands; Mentawi Islands; Buru

	Malay Peninsula	Sumatra	Java	Borneo	
Mareta nodosa (Fritze)	o	o	x	o	
Mareta siccifolia Hanitsch	o	o	o	o	Mentawi Islands
Mareta arborescens Hanitsch	o	o	x	o	
Mareta reticulata (Fabricius)	x	x	o	o	India; Siam
Mareta testacea (Hebard)	o	o	x	o	
Mopsera rectangularitervittata (Brunner)	o	o	o	x	
Mopsera? castanea (Brunner)	o	o	o	x	
Supella supellectilium (Serville)	o	o	o	o	Cosmopolitan
Temnopteryx bimaculata Chopard	o	x	o	o	New Caledonia
Squamoptera fulva nov. spec.	o	x	o	o	
Dictyoblatta bimaculata Hanitsch	o	o	o	x	Mentawi Islands
„Phyllodromia" variegata Brunner	o	o	x	o	
„Phyllodromia" puncticollis Brunner	o	o	o	x	
„Phyllodromia" luteomarginata Hanitsch	x	o	o	o	
„Phyllodromia" diagrammatica Hanitsch	x	x	o	o	
„Phyllodromia" luteomaculata Hanitsch	o	o	o	x	
„Phyllodromia" nitens Brunner	o	o	o	x	
„Phyllodromia" triangularitervittata Brunner	o	o	o	x	
„Blatta" obtusifrons Walker	o	o	o	x	
„Blatta" laterifera Walker	o	o	o	x	
„Blattella" brevialata Caudell	o	o	x	o	
„Blattella" tristis Hanitsch	o	o	o	o	Mentawi Islands
„Ischnoptera" klossi Hanitsch	o	o	o	o	Mentawi Islands
„Ceratinoptera" sundaica Fritze	o	o	x	o	
„Ceratinoptera" variegata Hanitsch	o	o	o	x	
„Scalida" gemmata Hanitsch	o	o	o	x	
„Scalida" pantherina Hanitsch	o	o	o	x	
„Temnopteryx" modiglianii Hanitsch	o	x	o	o	
Blattinae					
Platyzosteria soror (Brunner)	x	x	x	x	Formosa; Melanesia; Polynesia
Cutilia nitida (Brunner)	x	o	x	x	Formosa to Australia
Dorylaea hosei (Shelford)	o	o	o	x	
Dorylaea magna (Shelford)	o	o	o	x	
Dorylaea rhabdotops Hebard	o	x	o	o	Simalur Island
Dorylaea semimarginalis (Hanitsch)	o	o	o	x	
Dorylaea prakkei nov. spec.	o	o	o	x	
Dorylaea heinzei Hanitsch	o	x	o	x	
Dorylaea dacrydii (Hanitsch)	x	o	o	o	
Dorylaea saundersi (Hanitsch)	x	o	o	o	
Dorylaea umbellifera Hanitsch	o	o	o	x	
Dorylaea pallipalpis (Serville)	x	x	x	x	Talaut Islands; Ceram; Buru; Australia

	Malay Peninsula	Sumatra	Java	Borneo	
Dorylaea flavicincta (De Haan)	x	x	x	x	Celebes; Formosa; Madagascar
Dorylaea bryanti Caudell	o	o	x	o	
Thyrsocera spectabilis Burmeister	x	x	o	x	Nepal; Ceylon
Periplaneta lata (Herbst)	x	x	o	x	
Periplaneta americana (Linnaeus)	x	x	x	x	Cosmopolitan
Periplaneta australasiae (Fabricius)	x	x	x	x	Cosmopolitan
Periplaneta banksi Hanitsch	o	x	o	o	Philippines
Periplaneta brunnea Burmeister	o	x	o	o	Cosmopolitan
Periplaneta robinsoni Hanitsch	o	x	o	o	Nias
Periplaneta montana Hanitsch	x	x	x	x	Mentawi Islands
Periplaneta crassa Karny	o	o	o	x	
Periplaneta malaica Karny	o	o	o	x	
Periplaneta regina Saussure	x	o	o	o	
Periplaneta spinosostylata Krauss	o	o	x	o	
Periplaneta floweri Hanitsch	o	x	o	o	Siam
Periplaneta succinea Hanitsch	o	o	o	x	
Periplaneta blattoides Hanitsch	o	o	o	x	
Periplaneta cavernicola Chopard	x	o	o	o	Siam
Scabina horrida Hanitsch	o	o	o	x	
Neostylopyga picea (Brunner)	x	x	o	x	Mentawi Islands; Siam
Neostylopyga semoni (Krauss)	x	x	x	o	
Neostylopyga rhombifolia (Stoll)	x	x	x	x	Tropical cosmopolitan
Neostylopyga atrox (Hanitsch)	o	x	o	o	Sipora, Mentawi Islands
Neostylopyga proposita Shelford	o	x	x	o	
Blattina concinna (De Haan)	x	x	x	x	Japan to India and to Australia
Blatta orientalis Linnaeus	x	x	x	x	Cosmopolitan
Homalosilpha ustulata (Burmeister)	x	x	x	x	
Homalosilpha decorata (Serville)	o	x	o	x	
Homalosilpha bilunata (De Haan)	o	o	x	o	
Eroblatta borneensis (Shelford)	o	o	o	x	
Protagonista lugubris Shelford	x	x	o	x	Tonkin
Archiblatta hoevenii Vollenhoven	x	x	o	o	
Archiblatta beccarii Hanitsch	o	x	o	o	
Catara rugosicollis (Brunner)	x	x	x	x	
Catara minor Krauss	o	o	x	x	
Epilamprinae					
Epilampra albina (Saussure)	x	x	x	x	
Epilampra circumdata Hanitsch	x	x	o	x	
Epilampra deflexa Saussure	o	o	x	o	
Epilampra dytiscoides Hanitsch	x	o	o	o	
Epilampra fervida Walker	x	o	o	x	
Epilampra flavomarginata Shelford	o	o	o	x	
Epilampra geminata Brunner	o	o	o	x	
Epilampra inclarata Walker	o	o	o	x	
Epilampra laevicollis Saussure	o	o	x	o	
Epilampra lyrata Hanitsch	x	x	x	o	
Epilampra plena Walker	x	o	o	x	Celebes; New Guinea
Epilampra puncticollis Walker	x	o	o	x	

	Malay Peninsula	Sumatra	Java	Borneo	
Epilampra quadrinotata Walker	o	o	o	x	
Epilampra ridleyi (Kirby)	x	o	o	o	
Epilampra saravacensis Shelford	x	o	o	x	
Epilampra trongana Rehn	x	o	o	o	
Epilampra varia Walker	o	o	o	x	
Epilampra communis Hanitsch	x	x	o	x	Mentawi Islands; Engano
Epilampra mentawiensis Hanitsch	o	x	o	x	Mentawi Islands
Epilampra intermedia Hanitsch	o	x	o	x	
Epilampra unicolor Hanitsch	o	o	o	x	
Epilampra catori Hanitsch	o	o	o	x	
Epilampra everetti Hanitsch	o	o	o	x	
Epilampra pendleburyi Hanitsch	o	o	o	x	
Epilampra demergens Hanitsch	o	o	o	x	
Compsolampra liturata (Serville)	o	x	x	o	China; Japan
Phlebonotus pallens (Serville)	o	o	x	o	Ceylon; Bengal; Assam
Morphna badia (Brunner)	x	x	o	o	Nias; Siam
Morphna dotata (Walker)	x	o	o	x	Siam
Morphna humeralis nov. spec.	o	x	o	o	
Morphna maculata (Brunner)	x	o	o	x	
Morphna pustulata Hanitsch	o	x	o	o	
Morphnodes goliath (Shelford)	o	o	o	x	
Stictomorphna mjöbergi (Hanitsch)	o	o	o	x	
Stictomorphna parvimaculata nov. spec.	o	o	o	x	
Stictomorphna ? miranda (Shelford)	o	o	o	x	
Apsidopis wallacei Shelford	o	o	o	x	
Apsidopis oxyptera (Walker)	x	o	o	x	
Apsidopis cyclops Saussure	o	o	o	x	
Pseudophoraspis nebulosa (Burmeister)	x	x	x	x	
Pseudophoraspis emarginata Hanitsch	o	o	o	x	
Pseudophoraspis testudinaria Hanitsch	o	o	o	x	
Pseudophoraspis lacrimans Hanitsch	o	o	o	x	
Pseudophoraspis uniformis Hanitsch	o	o	o	x	
Pseudophoraspis proximata nov. spec.	o	o	o	x	
Pseudophoraspis weynmani nov. spec.	o	x	o	o	
Pseudophoraspis obtecta (Hanitsch)	x	o	o	o	
Cyrtonota lata Hanitsch	o	x	o	o	
Haanina adusta (Walker)	x	x	x	x	
Haanina karnyi (Hanitsch)	o	x	o	o	Mentawi Islands
Haanina mitschkei (Hanitsch)	o	o	o	o	Nias
Rhabdoblatta buqueti (Serville)	x	x	x	x	Bangka
Rhabdoblatta procera (Brunner)	x	x	x	x	Nias
Rhabdoblatta structilis (Rehn)	o	x	o	o	
Rhabdoblatta concinnula (Walker)	o	o	o	x	Timor; Buru
Rhabdoblatta parvicollis (Walker)	o	o	o	x	
Rhabdoblatta pondokensis nov. spec.	o	o	o	x	
Rhabdoblatta javanica (Saussure)	o	o	x	o	
Rhabdoblatta horologica (Kirby)	o	o	x	o	Bengal
Rhicnoda rugosa Brunner	x	x	x	x	Halmahera; Celebes; Burma
Rhicnoda natatrix Shelford	o	o	o	x	

	Malay Peninsula	Sumatra	Java	Borneo	
Rhicnoda decidiosa Rehn	x	o	o	o	
Stictolampra lurida (Burmeister)	x	x	x	x	India; Celebes
Stictolampra moultoni (Hanitsch)	o	o	o	x	
Stictolampra funebris (Hanitsch)	o	o	o	x	
Opisthoplatia orientalis (Burmeister)	o	o	x	o	China; Japan; India; Brazil?
Calolampra guttifera Hanitsch	o	o	o	x	
Calolampra limbata Hanitsch	x	o	o	o	
Calolampra nitida Hanitsch	o	o	o	x	
Calolampra pedisque Rehn	x	o	o	o	Siam
Panchlorinae					
Leucophaea maderae (Fabricius)	o	x	x	o	Tropical cosmopolitan
Pycnoscelus surinamensis (Linnaeus)	x	x	x	x	Cosmopolitan
Pycnoscelus striatus (Kirby)	x	x	o	o	
Pycnoscelus niger (Brunner)	x	x	x	o	Burma
Pycnoscelus micropterus Hanitsch	o	o	o	x	
Nauphoeta cinerea (Olivier)	x	x	o	o	Tropical cosmopolitan
Oniscosoma granicollis (Saussure)	o	o	x	o	Australia
Corydiinae					
Homopteroidea nigra Shelford	o	x	o	x	Mentawi Islands
Homopteroidea shelfordi Hanitsch	o	x	o	x	
Homopteroidea maculata Hanitsch	o	x	x	o	
Holocompsa debilis Walker	x	x	x	x	Philippines; Ceylon
Ctenoneura fulva Hanitsch	o	o	o	x	
Ctenoneura brunnea Hanitsch	o	x	o	o	
Ctenoneura major Hanitsch	o	x	o	x	Siam
Ctenoneura aberrans Hanitsch	o	x	o	o	Mentawi Islands
Ctenoneura biguttata Hanitsch	o	x	o	o	
Eucorydia westwoodi (Gerstäcker)	o	x	o	x	Assam
Eucorydia gemma Hebard	o	x	o	o	
Eucorydia tristis Hanitsch	o	x	o	o	
Eucorydia forceps (Hanitsch)	x	o	o	o	
Eucorydia coerulea (Shelford)	o	o	o	x	
Eucorydia multimaculata nov. spec.	o	x	o	o	
Miroblatta petrophila Shelford	o	o	o	x	
Cardacopsis shelfordi Karny	o	o	x	o	
Oxyhaloinae					
Diploptera dytiscoides Serville	x	x	x	x	Ceylon; Australia; Philippines; Cambodia
Diploptera bicolor Hanitsch	o	o	o	x	
Diploptera maculata Hanitsch	o	o	o	x	
Diploptera minor Brunner	o	o	x	o	Philippines
Areolaria fieberi Brunner	x	x	x	o	
Areolaria signata Shelford	o	x	o	x	Mentawi Islands
Areolaria sumatrana Shelford	o	x	o	o	
Areolaria consocia (Walker)	x	o	o	o	

	Malay Peninsula	Sumatra	Java	Borneo	
Areolaria uniformis Hebard	x	o	o	x	
Areolaria jacobsoni Hanitsch	o	x	o	o	
Prosoplecta dexteralleni Hanitsch	x	o	o	o	
Chorisoneura lativitrea (Walker)	x	x	x	x	Cambodia; New Caledonia
Chorisoneura apicalis Hanitsch	o	x	o	o	
Sorineuchora javanica Caudell	x	x	x	x	Burma
Polyphaginae					
Dyscologamia pilosa (Walker)	x	x	x	x	Siam
Dyscologamia funebris Hanitsch	o	o	o	x	
Perisphaerinae					
Paranauphoeta basalis (Serville)	x	x	x	x	
Paranauphoeta brunneri Shelford	x	o	o	x	
Paranauphoeta circumdata (De Haan)	o	x	o	x	Cambodia; Assam
Paranauphoeta javanica Saussure	o	x	x	o	
Paranauphoeta rufipes Brunner	o	o	x	o	Ternate; Aru; Waigiou; Batchian; New Guinea
Paranauphoeta lyrata Burmeister	x	x	x	x	India; Celebes; Philippines
Stilpnoblatta malaya Hebard	o	o	x	o	
Glyptopeltis couloniana Saussure	ɔ	o	?	o	
Glyptopeltis biguttata Saussure	o	o	x	o	
Glyptopeltis wallacei Hanitsch	o	o	o	x	Amboina
Pseudoglomeris aterrima (Herbst)	o	o	x	o	
Pseudoglomeris flavicornis (Burmeister)	x	o	x	x	India; Assam; Tenasserim; Cambodia
Pseudoglomeris planiuscula Brunner	x	o	o	o	Burma; Tonkin; Formosa
Pseudoglomeris flexicollis (Walker)	x	o	o	o	
Pseudoglomeris wellingtoni Hanitsch	o	o	o	x	
Perisphaeria armadillo Serville	x	x	x	x	Timor; New Guinea; Celebes; Aru; Amboina
Perisphaeria glomeriformis Lucas	x	x	o	o	Aru; Philippines
Perisphaeria lucasiana Saussure and Zehntner	x	x	x	o	Mentawi Islands
Perisphaeria inaequalis Hanitsch	o	o	o	x	
Perisphaeria rubescens Hanitsch	o	o	o	x	
Gromphadorhina javanica Hanitsch	o	o	x	o	
Panesthiinae					
Dolichosphaeria polita (Krauss)	x	x	x	x	Mentawi Islands
Dolichosphaeria deplanata Hanitsch	o	x	o	x	
Panesthia angustipennis (Illiger)	x	x	x	x	Austromalayan subregion; Philippines
Panesthia wallacei Wood-Mason	x	o	o	x	Sinkep; Mentawi Islands; Celebes
Panesthia sinuata Saussure	x	o	o	x	
Panesthia monstruosa Wood-Mason	x	o	o	o	India
Panesthia ruficeps Kirby	o	o	o	o	Christmas Island

	Malay Peninsula	Sumatra	Java	Borneo	
Panesthia biglumis Saussure	o	o	?	o	India; Sikkim
Panesthia nicobarensis Saussure	o	o	o	o	Nicobars
Panesthia ferruginipes Brunner	o	o	x	x	
Panesthia brevipennis Brunner	o	o	x	x	Amboina; Ceram
Panesthia pilosa Hanitsch	o	o	o	x	
Panesthia transversa Burmeister	x	x	x	o	Bangka; Burma; China
Panesthia bramina Saussure	x	o	o	o	India
Panesthia hilaris Kirby	x	x	o	x	Mentawi Islands
Panesthia ornata Saussure	o	o	x	o	China?
Panesthia bakeri Caudell	o	o	o	x	Philippines
Panesthia shelfordi Hanitsch	o	o	o	x	
Panesthia modiglianii Hanitsch	o	x	o	o	
Panesthia bifasciata Hanitsch	o	o	o	x	
Miopanesthia discoidalis Saussure	x	o	x	o	Annam
Miopanesthia stenotarsis Saussure	o	o	x	x	
Salganea morio (Burmeister)	x	x	x	x	Burma; Cambodia; Philippines
Salganea amboinica Brunner	o	x	x	x	Austromalayan subregion
Salganea inaequaliterspinosa Hanitsch	o	o	o	x	
Mylacrina wrayi Kirby	x	o	o	o	
Neocaeparia saussurii Wood-Mason	o	o	o	o	„East Indies"; Sikkim
Neocaeparia crenulata nov. spec.	o	x	o	o	

SYSTEMATICAL PART

ANAPLECTINAE

Key to the Malayan genera of Anaplectinae (chiefly after Hebard, 1929).

1 a. Tarsal claws not heavily dentated at inner margins. Cubital vein of wings simple. Female subgenital plate valved; male with supra-anal plate specialized. Ventro-cephalic margin of cephalic femora armed with a few large spines followed by a row of minute piliform spines, terminating in two large elongate spines. *Anaplecta* Burmeister.

b. Tarsal claws with inner margins heavily dentate. Cubital vein of wings branched. Female subgenital plate simple. Male with sixth tergite specialized. ..... 2.

2 a. Ventro-cephalic margin of cephalic femora armed with a few heavy spines, followed by a row of minute piliform spines and terminating in two elongate spines. Cubital vein of wing forked once. *Anaplectella* Hanitsch.

b. Ventro-cephalic margin of cephalic femora with a row of heavy spines which gradually decrease in size, the subapical being virtually piliform, terminating in two elongate spines. ..... 3.

3 a. Cubital vein of wings with one or two forks but without additional imcomplete branches. Apical field of wings ample, slightly reduced. *Malaccina* Hebard.

b. Cubital vein of wings with four or six branches, the distal running to the margin of the apical field, the proximal incomplete, terminating at the postcubital vein. Apical field distinctly angulate proximad, more reduced. *Anaplectoidea* Shelford.

Anaplecta malayensis Shelford (fig. 26)

Anaplecta malayensis Shelford, 1906, p. 242, pl. 15 fig. 10; Shelford, 1907 b, p. 10; Hanitsch, 1915, p. 31; Hanitsch, 1925, p. 79; Hanitsch, 1929 a, p. 5; Hanitsch, 1930 a, p. 179; Hanitsch, 1932 c, p. 55.

Anaplecta borneensis Shelford, 1906, p. 242, pl. 15 fig. 11; Shelford, 1907 b, p. 10; Hanitsch, 1915, p. 32, Hanitsch, 1925, p. 78; Hebard, 1929, p. 29.

Type: ♂, ♀, Malay Peninsula, Errington de la Croix and P. Chapé, 1899; Paris Museum.

Leiden Museum:

Medan, Sumatra, W. Dates, 2 ♀♀, 3 ??; Rawas, Sumatra Exp., May 1878, 1 ♂; Sambas, Borneo, Dr. J. Bosscha, 1891, 1 ♂, 1 ♀; ibidem, Th. F. Lucassen, 1890, 2 ♂♂, 1 ♀.

Amsterdam Museum:

Negri Bahru, Sumatra, Mrs. Pfister, 2 ♂♂, 1 ♀, 2 ? ?.

The two species *A. malayensis* Shelford and *A. borneensis* Shelford were regarded distinct on account of differences in the number of the so called costal veins and the number of cross veins in the medio-radial area, but since these characters have no specific value and transitions are to be found (fig. 26), the two names undoubtedly are synonyms.

Most of the specimens are smaller than the type, but they agree in all other aspects. The four specimens of the Amsterdam Museum were identified by Hanitsch in 1935.

A. malayensis is narrowly related to *A. javanica* Saussure.

Measurements: total length 4.2-5 mm, length of tegmina 3.4-4 mm.

Anaplecta sumatrensis Hanitsch (figs. 27, 28)

Anaplecta sumatrensis Hanitsch, 1929 a, p. 5, fig. 1; Hanitsch, 1929 b, p. 267; Sjöstedt, 1934, p. 2.

Type: ♂, Medan, Dr. E. Mjöberg; Stockholm Museum.

Leiden Museum:

Bungamas, Palembang, Sumatra, J. C. van Hasselt, 1882, 1 ♂; Rawas, Sumatra Exp., May 1878, 1 ♂; Surul angun, Sumatra Exp., April 1878, 1 ?; Koto Alam, Sumatra, E. Jacobson, 1 ♀; Banjuwangi, Java, MacGillavry, 1909, 3 ♂♂, 3 ♀♀; ibidem, 1910, 1 ♂, 2 ♀♀, 1 ?; ibidem, 1911, 4 ♂♂, 1 ♀; Sumber Pakel, Java, MacGillavry, 1919, 1 ♂, 1 ♀; Wonosobo, Java, E. Jacobson, April 1909, 1 ♀.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1924, 1 ♀; ibidem, E. Jacobson, 1925, 1 ♂, 2 ♀♀.

In this species too the venation of the hind wings varies widely; especially the number of cross-veinlets in the radio-median area differs strongly

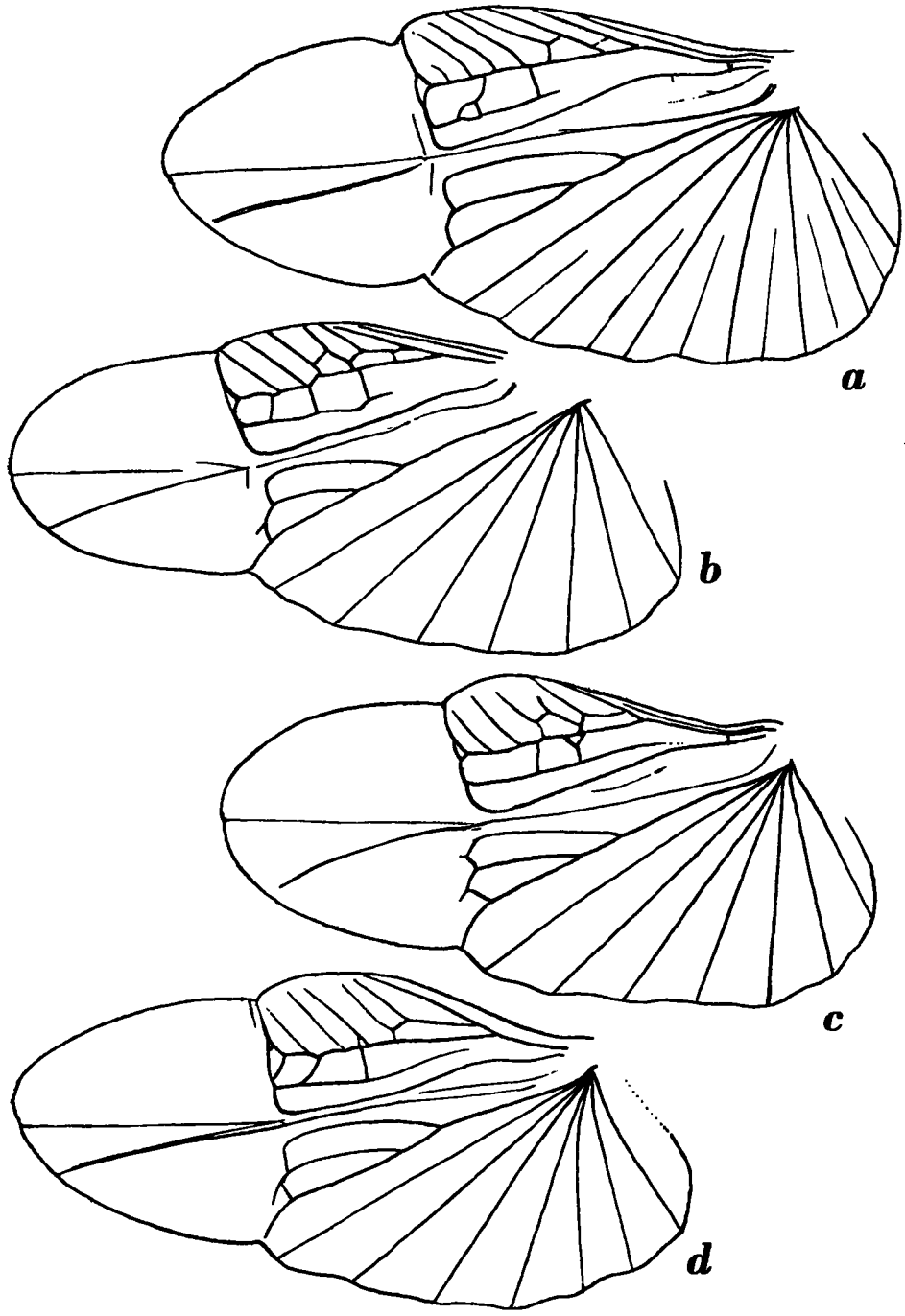

Fig. 26. *Anaplecta malayensis* Shelford. Left wing of various specimens. a, from Medan; b, from Sambas; c and d, from Negri Bahru. × 16.

(figs. 27, 28). The intensity of the coloration also shows some variation, but only in a slight degree. The rufous median streak of the pronotum is slightly darkened in the specimen from Bungamas and strongly darkened in the specimens from Fort de Kock. This may be the reason why Hanitsch identified the latter as *A. malayensis* Shelford, although they are larger than this species.

Measurements: total length 6 mm, tegmina 5.3 mm.

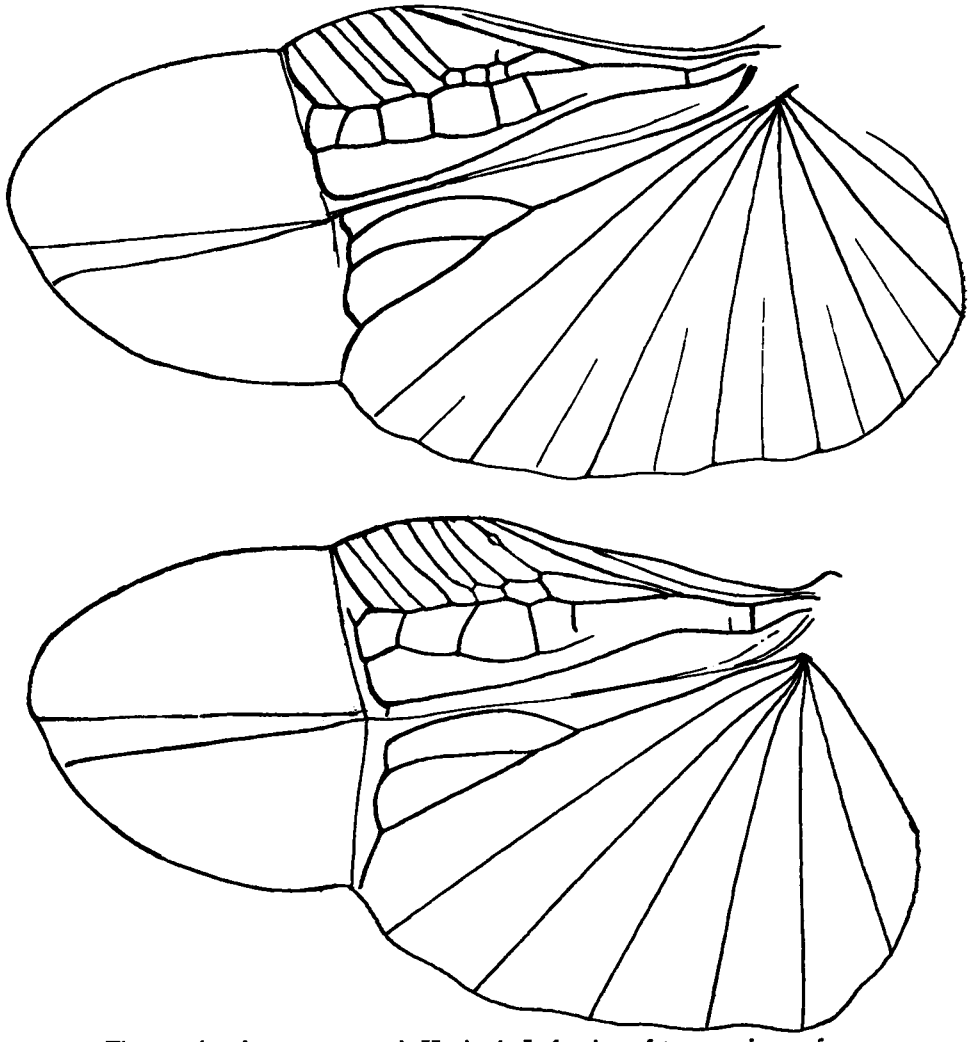

Fig. 27. *Anaplecta sumatrensis* Hanitsch. Left wing of two specimens from Banjuwangi. × 16.

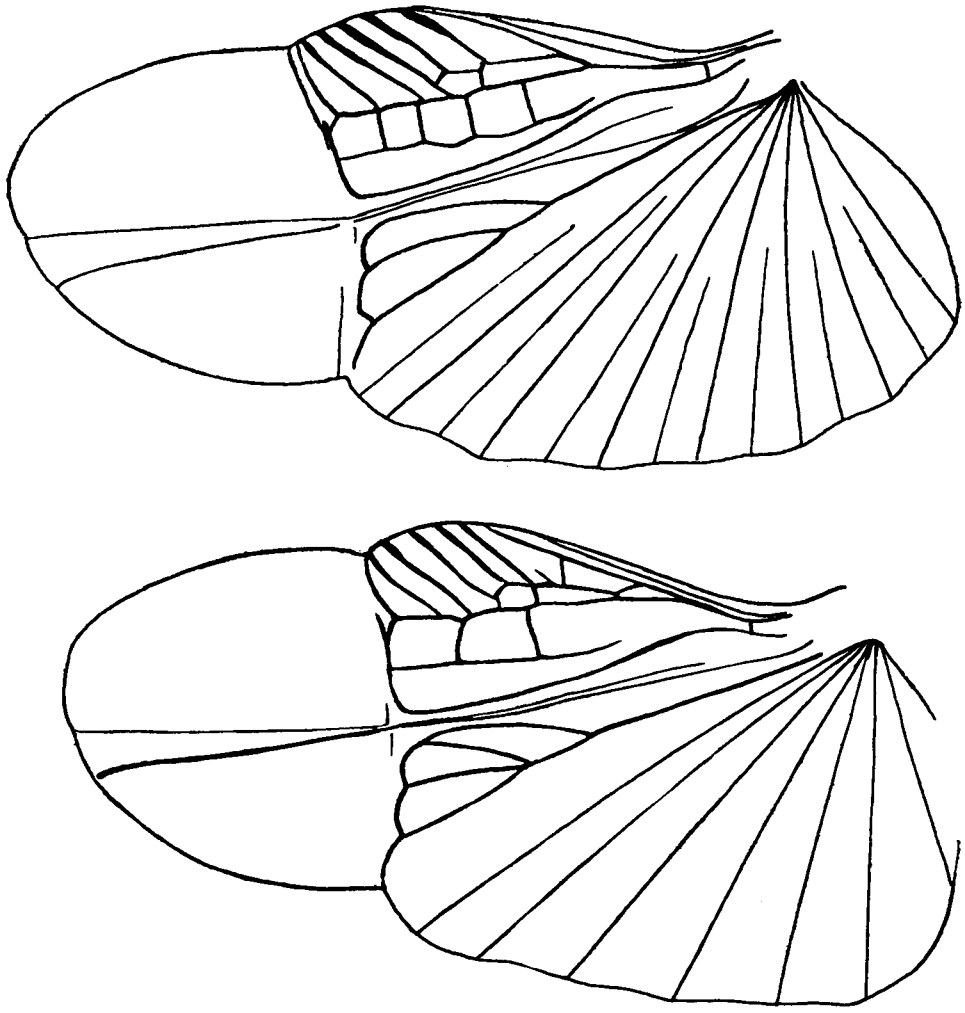

Fig. 28. *Anaplecta sumatrensis* Hanitsch. Left wing of two specimens from Fort de Kock. × 16.

Anaplecta maculifera Hanitsch (fig. 29)

Anaplecta maculifera Hanitsch, 1925, p. 80, fig. 2; Hanitsch, 1929 b, p. 266; Hanitsch, 1932 c, p. 55; Hanitsch, 1933 a, p. 306.

Type: ♂, ♀, Mt. Murud, Sarawak, Borneo, Dr. E. Mjöberg, 1922-1923; University Museum Oxford.

Amsterdam Museum:

Gunung Singgalang, Sumatra, E. Jacobson, 1925, 1 ♂, 3 ♀♀, 1 ?.

According to Hanitsch (1925, p. 80) this species is closely allied to *A. maculata* Shelford (1906, p. 240, pl. 15 fig. 7) but differs in the number of the branches of the radial vein (the so called costal veins). This character, however, has been proven to be of minor value in the genus *Anaplecta*.

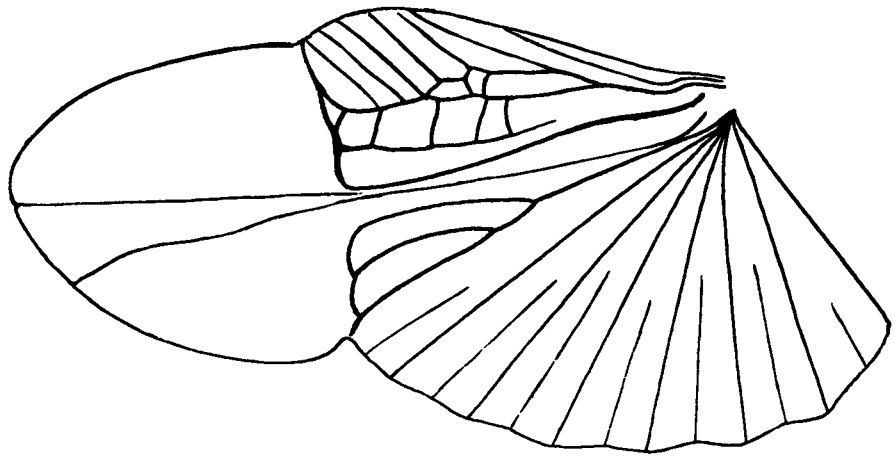

Fig. 29. *Anaplecta maculifera* Hanitsch. Left wing. × 12.

Anaplecta ochronotum Hebard (fig. 30)

Anaplecta ochronotum Hebard, 1929, p. 30, pl. 1 fig. 3;
Anaplecta fulvicollis Hanitsch, 1929 b, p. 267, fig. 1; Hanitsch, 1932 c, p. 56.
Type: ♀, Fort de Kock, Sumatra, E. Jacobson, 1921; Hebard Collection, type no. 1133.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1925, 1 ♂, 2 ♀♀.

Shortly after Hebard's description of *A. ochronotum* Hanitsch described his *A. fulvicollis*, which agrees closely with the former. The only difference can be found in the costo-radial area in which the branches of the radius run in a slightly different way, but since these differences have no specific value, we must consider the two species to be synonyms. Between the media and the cubitus there is one cross-veinlet.

The left and right hind wing of one specimen are figured to show the variation in venation.

This species is narrowly related to *A. maculifera* Hanitsch, but differs in having a paler anterior half of the pronotum and in possessing a cross-vein between media and cubitus.

Anaplecta javanica Saussure

Anaplecta javanica Saussure, 1895, p. 71, Kirby, 1904, p. 66; Shelford, 1907 b, p. 10; Hanitsch, 1915, p. 32; Caudell, 1928, p. 11; Hanitsch, 1928, p. 11, pl. 1 fig. 1; Hebard, 1929, p. 29.

Type: ♀, Batavia, Java, Genoa Museum.

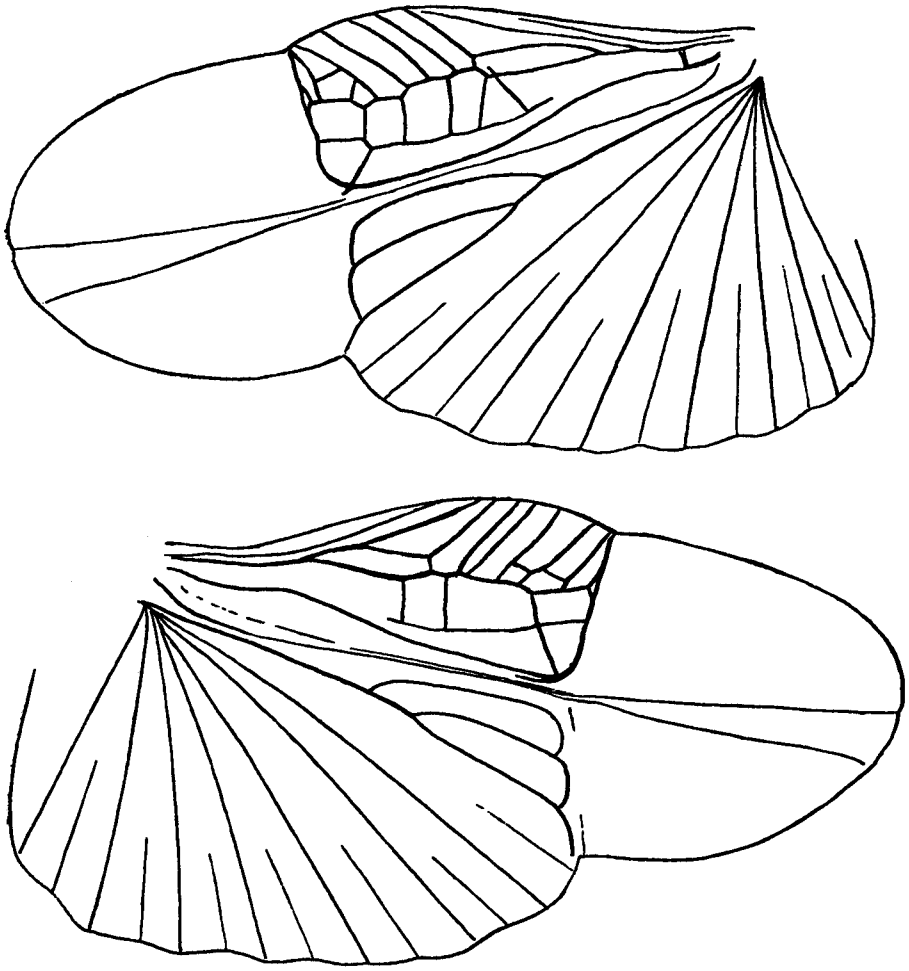

Fig. 30. *Anaplecta ochronotum* Hebard. Left and right wing of one specimen. × 14.

In the collections no specimens are present, which agree in all aspects with the description of Saussure. Some of the specimens of *A. malayensis*, however, have only two distinct cross-veins in the medio-radial area and consequently show a very close resemblance to *A. javanica*.

It is quite possible that *A. javanica* and *A. malayensis* are synonyms, but

since I have not seen Saussure's type, it is not possible for me to draw a definite conclusion.

Anaplecta humeralis Hanitsch

Anaplecta humeralis Hanitsch, 1933 c, p. 236.
Type: ♂, Pajau River, E. Borneo, E. Mjöberg; Stockholm Museum.

This species is easily to be distinguished by the brownish blotch occupying the anal area of the orange tegmina.

Anaplecta obscura Shelford (fig. 20)

Anaplecta obscura Shelford, 1906, p. 242, pl. 15 fig. 12; Shelford 1907 b, p. 10; Hanitsch, 1915, p. 31; Hanitsch, 1925, p. 79; Hanitsch, 1930 a, p. 179.
Type: ♀, Malay Peninsula, Errington de la Croix and P. Chapé, 1899; Paris Museum.

Leiden Museum:

Banjuwangi, Java, MacGillavry, 1909, 1 ♂, 2 ♀♀; ibidem, MacGillavry, 1910, 2 ♀♀; ibidem, MacGillavry, 1911, 3 ♂♂.

In this small species the venation, though greatly reduced, is very characteristic.

It is highly probable that *A. obscura* occurs on Sumatra, since it is known from the Malay Peninsula, Java and Borneo.

Measurements: total length 3.8-4.4 mm, length of tegmina 3.5-3.7 mm.

Anaplecta fulva Brunner

Anaplecta fulva Brunner, 1893, p. 12; Kirby, 1904, p. 66; Shelford, 1907 b, p. 10; Hanitsch, 1929 a, p. 6; Hanitsch, 1932 c, p. 55.
Type: ♂, ♀, Burma, Tenasserim; Genoa Museum.

This species is very closely related to *A. cornea minor* Hanitsch and differs only in the bilobated subgenital lamina.

Anaplecta cornea Hanitsch

Anaplecta cornea Hanitsch, 1925, p. 79; 1933 a, p. 306.
Type: ♂, Mt. Murud, E. Mjöberg, 1922-1923; in Oxford University Museum.

Anaplecta cornea minor Hanitsch

Anaplecta cornea minor Hanitsch, 1929 b, p. 267.
Type: ♂, Fort de Kock, E. Jacobson, 1925; Oxford University Museum.

Leiden Museum:

Air Njuruk, Dempu, Sumatra, E. Jacobson, 1926, 1 ♂, 1 ♀.

Our specimens agree fully with the original description. The female is paler than the male.

Measurements: total length 6.2-6.1 mm, length of tegmina 5.2-5.3 mm.

Anaplecta transversa Hanitsch

Anaplecta transversa Hanitsch, 1925, p. 81, fig. 3.
Type: ♀, Mt. Dulit, E. Mjöberg, 1922-1923; Oxford University Museum.

Leiden Museum:

Gunung Kenepai, Pondok, Borneo Exp., January 1894, 1 ?.

This species seems to be rare, since the only specimens known are the types and the specimen in the Leiden Museum. The latter is badly damaged.

Measurements: total length 6.2 mm, length of the tegmina 5.2 mm.

Anaplecta vittata Hanitsch

Anaplecta vittata Hanitsch, 1923 b, p. 396, fig. 1.
Type: ♀, Singapore; Oxford University Museum.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, February 1921, 1 ♂; Bintang, Rhio Archipelago, A. van der Heyde, 1935, 1 ♂.

A. vittata is closely related to *A. transversa* but differs in the pronotum, which according to the description is orange in *vittata* and testaceous with a fuscous anterior half in *transversa*. The specimen from Medan, however, has the pronotum suffused with brown in the anterior half.

The close relationship with *A. calosoma* Shelf. was already discussed in my paper on Austromalayan Blattidae (Bruijning, 1947, p. 215).

Measurements: total length 4.8-5.3 mm, length of tegmina 4.3-4.5 mm.

Key to the Malayan species of *Anaplectella* Hanitsch.

1 a. Wings suffused with orange, abdomen above and below deep orange. *A. aurea* Hanitsch.
b. Wings suffused with brown; abdomen with brown maculae. 2
2 a. Pronotal disk ferruginous, tegmina strawcoloured. *A. mjöbergi* Hanitsch.
b. Pronotal disk and/or tegmina not unicolourous. 3
3 a. Tegmina testaceous with a brown suffusion on the humeral trunk. 4
b. Tegmina otherwise 5
4 a. Pronotal disk with design of dark-castaneous lines. *A. ornata* Hanitsch.
b. Pronotal disk slightly mottled with dark reddish brown or castaneous with a small buffy fleck meso-cephalad. *A. jacobsoni* Hebard.
5 a. Tegmina mottled with castaneous flecks along the veins. *A. vanheurni* nov. spec.
b. Tegmina castaneous or fuscous. 6
6 a. Tegmina dark castaneous with 13 "costal" veins. *A. smedleyi* Hanitsch.
b. Tegmina fuscous with a brown suffusion on the humeral trunk. *A. simalur* Hebard.

Anaplectella smedleyi Hanitsch

Anaplectella smedleyi Hanitsch, 1928, p. 12, pl. 1 fig. 2; Hebard, 1929, p. 32, pl. 1 figs. 4, 5, 6; Hanitsch, 1930 a, p. 180; Hanitsch, 1932 c, p. 56.
Type: ♂, Sipora, Mentawi Islands, Boden Kloss Exp.; Oxford University Museum.

In the additional description given by Hebard the specific characters are distinctly given.

Anaplectella mjöbergi Hanitsch

Anaplectella mjöbergi Hanitsch, 1929 a, p. 7; Hanitsch, 1930 a, p. 180; Sjöstedt, 1934, p. 2.
Type: ♂, Medan, Sumatra, Dr. E. Mjöberg, 1919-1921; Stockholm Museum.

Anaplectella ornata Hanitsch

Anaplectella ornata Hanitsch, 1929 a, p. 7; Hanitsch, 1930, p. 180; Sjöstedt, 1934, p. 2.
Type: ♀, Medan, Sumatra, Dr. E. Mjöberg, 1919-1921; Stockholm Museum.

Anaplectella jacobsoni Hebard

Anaplectella jacobsoni Hebard, 1929, p. 33, pl. 1 figs. 7, 8, 9; Hanitsch, 1930 a, p. 180.
Type: ♂, Fort de Kock, Sumatra, E. Jacobson, January 1921; Hebard Collection, type no. 1131.

Leiden Museum:
Kalung, Sumatra, E. Jacobson, 1913, 1 ♀.

This species is narrowly related to *A. simalur* Hebard, *A. smedleyi* Hanitsch and *A. ornata* Hanitsch.

Measurements: total length 7.0 mm, length of tegmina 5.8 mm.

Anaplectella simalur Hebard

Anaplectella simalur Hebard, 1929, p. 34, pl. 1 figs. 10, 11; Hanitsch, 1930 a, p. 180.
Type: ♂, Sinabang, Simalur Islands, Sumatra, E. Jacobson, April 1913; Hebard Collection, type no. 1132.

Anaplectella samarindae Hanitsch

Anaplectella samarindae Hanitsch, 1930 a, p. 179, 180.
Type: ♂, Samarinda, E. Borneo, Dresden Museum.

Aanaplectella aurea Hanitsch

Anaplectella aurea Hanitsch, 1931 a, p. 387.
Type: ♀, Singapore, H. N. Ridley, 1897; British Museum (Natural History).

This species is easily to be distinguished by its orange colour and golden-orange wings.

Anaplectella vanheurni nov. spec. (figs. 19, 31)

Leiden Museum:
Ardjuna, S. of Gunung Papandajan, W. Java, W. C. van Heurn, 6 December 1931, 1 ♂ (holotype), 1 ♀ (allotype).

♂. Interocular space distinctly narrower than that between antennal sockets. Palpi with ultimate and penultimate joints nearly equal in length. Pronotum transverse. Tegmina fully developed, surpassing apex of abdomen, narrower than in *A. jacobsoni* Hebard, margins slightly converging towards the apex, which is sharply rounded. Costo-radial field with 13-14 oblique "costal" veins (one forking on each side); five moderately oblique discoidal sectors, anal sulcus impressed. Wings with nine "costal" veins, which are clubbed distad; medio-radial area with 5-6 transverse veins, cubital vein prominently forked once; the first anal vein with two anterior branches, the second of which forks again; apical field slightly longer than broad, about two-fifths as long as wing, its basal margin strongly obtuse-angulate, the post-cubital vein following the median fold.

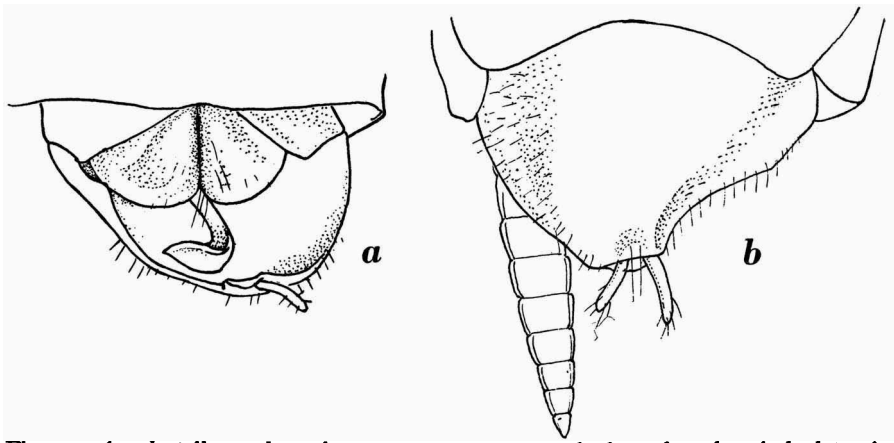

Fig. 31. *Anaplectella vanheurni* nov. spec. a, supra-anal plate; b, subgenital plate ♂. × 40.

Sixth abdominal tergite with two pits near the median, which are agglutinated with hairs meso-caudad. Supra-anal plate bilobated, with a medial furrow which runs to the base of the plate (fig. 31 a). Subgenital plate asymmetrical, surface convex, sinistral margin first straight then convexly emarginated towards the apex, dextral margin gradually rounding towards the apical margin, which is transverse, but has a small triangular plate projecting slightly beyond the margin (fig. 31 b). Styles finger-like, situated at distal margin, the dextral near the median and the sinistral near the extremity. Head testaceous with castaneous flecks between the eyes and below the antennal sockets. Antennae buffy. First abdominal sternites castaneous, the other testaceous flecked with castaneous. Lateral portions of pronotum transparent, pronotal disk with a design of dark castaneous flecks. Tegmina testaceous, transparent, mottled with numerous translucent

castaneous brown flecks along the testaceous veins; costo-subcostal field transparent. Tergites of meso- and metathorax dark castaneous except a whitish median field. Abdominal tergites testaceous suffused with castaneous. Coxae testaceous but largely suffused with brown, limbs elsewhere testaceous but tibiae flecked with brown at the base of the testaceous spines. Wings weakly suffused with brown, subcosta, radial field and anterior portion apical field castaneous, posterior portion of that field paler castaneous.

♀. Agrees closely with male, differing in following aspects.

Sixth abdominal tergite not specialized. Supra-anal plate with margins strongly sinuate, convergent to the rounded, slightly emarginated apex. Subgenital plate slightly asymmetrical, broadly rounded.

Measurements:	♂	♀
Total length	7.5 mm	8.3 mm
Length of body	6.8 mm	6.6 mm
Length of pronotum	1.5 mm	1.7 mm
Width of pronotum	2.2 mm	2.6 mm
Length of tegmen	6.6 mm	7.0 mm
Width of tegmen	2.1 mm	2.3 mm
Length of the wing (from the base to the apex)	8.1 mm	8.3 mm

Malaccina imitans Hebard (fig. 18 c)

Malaccina imitans Hebard, 1929, p. 35, pl. 1 figs. 12, 13.
Type: ♀, Sandakan, N. Borneo, C. F. Baker; Hebard collection, type no. 1136.

Malaccina rufella Hebard

Malaccina rufella Hebard, 1929, p. 36, pl. 1 figs. 14, 15.
Type: ♀, Singapore, C. F. Baker; Hebard collection, type no. 1137.

No material of the former and this species was available to me. According to Hebard the genus *Malaccina* is annectant between *Anaplectella* Hanitsch and *Anaplectoidea* Shelford, agreeing with the former in venation of the wings and with the latter in limb armament. The types of the two species are unique.

Anaplectoidea saundersi Hanitsch

Anaplectoidea saundersi Hanitsch, 1928, p. 12, pl. 1 figs. 3, 4, 5; Hanitsch, 1932 c, p. 58.
Type: 1 ♂, 3 ♀♀, Siberut; 1 ♂, Sipora; Boden Kloss; Oxford University Museum.

The cubital vein of the hind wing branches two or three times in *A. saundersi* Hanitsch. The species is to be distinguished from the other

species of *Anaplectoidea* Shelford by its pronotal design, which is pale orange with two comma-like black spots.

Anaplectoidea lampongensis Hanitsch

Anaplectoidea lampongensis Hanitsch, 1932 c, p. 56, fig. 2.
Type: 2 ♂♂, 1 ♀ Wai Lima, Lampong, Sumatra, H. H. Karny, Nov.-Dec. 1921; Oxford University Museum.

Leiden Museum:
Banjuwangi, Java, MacGillavry, 1911, 1 ♂.

Though the apical field in the specimen of the Leiden Museum is larger than in the type (in the former $^1/_4$ of the length, in the latter $^1/_5$) it agrees in all other aspects.

Measurements: total length 8.3 mm, length tegmina 7.0 mm.

Anaplectoidea nitida Shelford

Anaplectoidea nitida Shelford, 1906, p. 248, pl. 16 figs. 8, 9; Hanitsch, 1929 a, p. 8; Hanitsch, 1932 c, p. 58; Hanitsch, 1935, p. 14; Bruijning, 1947, p. 215.
Type: ♀ Batchian; ♀ Macassar, Celebes; W. Doherty, 1896; Oxford University Museum.

The specimens from Sumatra are lighter in colour than the rufo-castaneous type (Hanitsch, 1929 a, p. 8).

Anaplectoidea hyalina nov. spec. (figs. 32, 33)

Leiden Museum:
Ardjuna, S. of Gunung Papandajan, W. Java, W. C. van Heurn, December 1931, 1 ♂ (holotype), 1 ♀ (allotype), 2 ♀♀ (paratypes).

♂. Interocular space slightly over half width between the antennal sockets. Palpi with ultimate and penultimate joints equal in length. Pronotum decidedly transverse. Tegmina with sixteen straight anterior subcostal branches (so called "costal" veins) and seven oblique medio cubital sectors (so called "discoidal" sectors). Postcubitus brown, impressed. On the right tegmen an oblique groove margining the area concealed when at rest. Wings with 11 curved anterior branches of the radius, which are clubbed distad. One of the branches forks. Medio-radial area of the left wing crossed by ten, of the right wing by eleven transverse veinlets. Cubital vein of the left wing with four, of the right wing with five branches. Apical field large for the genus, about one-third of the total length of the wing; obtuse angulate at the base. Sixth tergite specialized, with a large impressed hirsute area; the cephalic margin of this area is formed by an elevated transverse ridge; in the area a median evolution runs caudad. Supra-anal

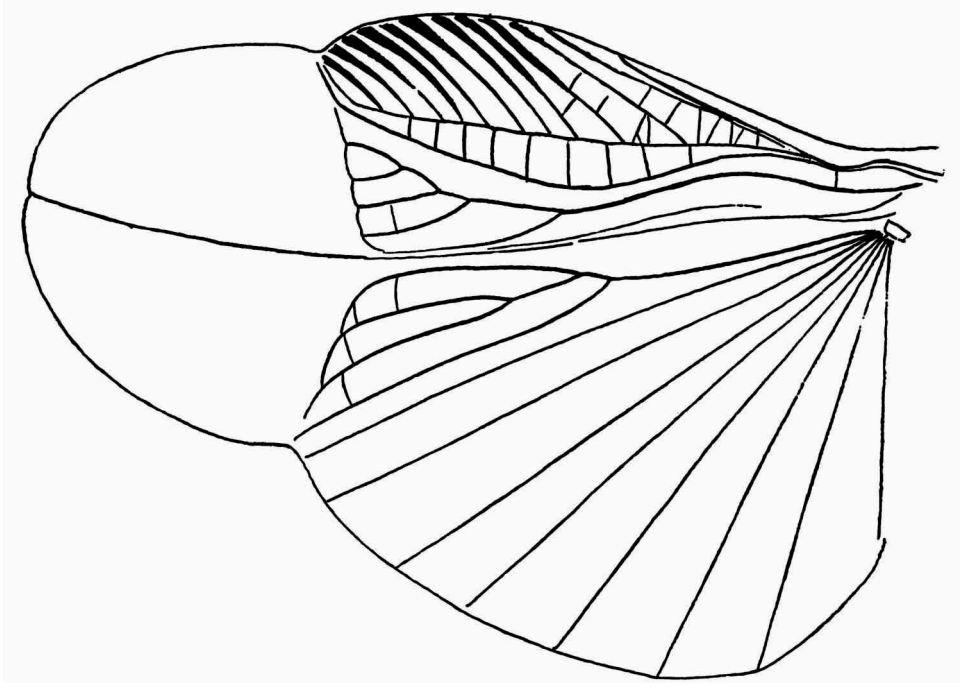

Fig. 32. *Anaplectoidea hyalina* nov. spec. Left wing of allotype.

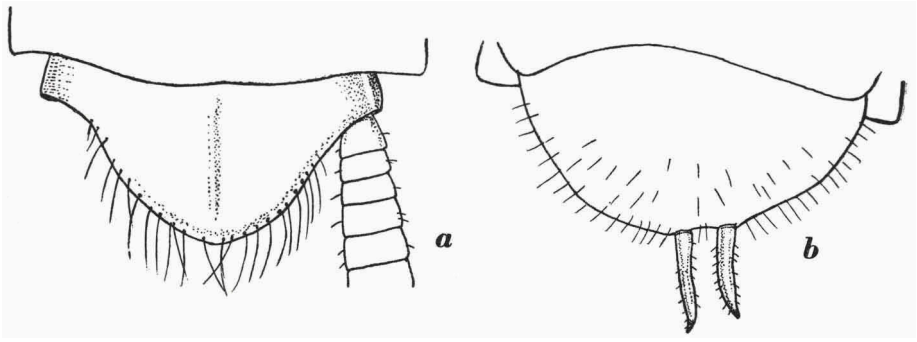

Fig. 33. *Anaplectoidea hyalina* nov. spec. a, supra-anal plate; b, subgenital plate ♂. × 33.

plate transverse, produced between the cerci, there trigonal; sides convex-convergent.

Subgenital plate transverse, slightly asymmetrical, sides weakly convex-convergent to apical portion. Styles finger-like, pointed at apex; distance between them one and a half times as great as their basal width; right style mesad, and slightly longer than left.

General colour ochraceous buff. Pronotal disk mottled with dark orange to pale brown. Tegmina translucent ochraceous buff. Wings hyaline, except costo-radial area and anterior portion of apical field, which are strongly tinged with orange, and the posterior portion of apical field, which is tinged with cinnamon brown.

Antennae and cerci clear testaceous. Abdomen testaceous, laterally suffused with tawny. Limbs ochraceous tawny.

♀. Very similar to male, differing as follows. Sixth tergite unspecialized. Subgenital plate with lateral portions curving to the vertical, free margins sigmoid.

Measurements:	♂	♀
Total length	9 mm	8.5 mm
Length of body	7 mm	6.5 mm
Length of tegmen	7 mm	7 mm
Length of wings	8.5 mm	8.5 mm

This species is narrowly related to *A. nitida* Shelford, but differs in the smaller size, paler coloration, and in the number of cubital branches being five or four, instead of six.

Anaplectoidea modiglianii Hanitsch

Anaplectoidea modiglianii Hanitsch, 1932 c, p. 57.

Type: ♂, Sereinu, Sipora, Mentawi Islands, May to June 1894, E. Modigliani; Oxford University Museum.

In this species the radial vein has only 8 anterior branches ("costal veins"), it can easily be separated from its allies by this character.

PSEUDOMOPINAE

Key to the Malayan genera of Pseudomopinae.

1 a. Antennae strongly plumose. . . . . *Aristiger* Hebard
b. Antennae not strongly plumose. 2
2 a. Head very broad, projecting beyond the transverse pronotum . . . 21
b. Head not very broad, not or only slightly projecting beyond the pronotum 3
3 a. Wings with conspicuous triangular apical field 4
b. Triangular apical field of wings not conspicuous 6
4 a. Tarsal claws dentate . . . . . *Symplocodes* Hebard
b. Tarsal claws unspecialized 5
5 a. "Discoidal" sectors of tegmina longitudinal . . *Hemithyrsocera* Saussure
b. "Discoidal" sectors of tegmina oblique . . . *Liosilphoidea* Hanitsch
6 a. Wings strongly reduced 30
b. Wings not or weakly reduced 7
7 a. Tarsal claws symmetrical 8
b. Tarsal claws asymmetrical 24
8 a. Tegmina with longitudinal "discoidal" sectors 9

b. Tegmina with oblique "discoidal" sectors 26
9 a. Cubital vein of tegmina not angulate but rounded beyond apex of anal area in tegmina 10
b. Cubital vein of tegmina angulate just beyond apex of anal area; wings narrow 29
10 a. Ventro-cephalic margin of cephalic femora armed after type B. . . . 11
b. Ventro-cephalic margin of cephalic femora armed after type A . . . 19
11 a. Ventro-cephalic margin of cephalic femora armed distad with two heavy spines (B_2) 12
b. This margin armed after type B_3 15
12 a. Palpi with fourth and fifth joints enormously expanded and lamellate . . . . . *Duryodana* Kirby
b. Palpi otherwise 13
13 a. Median and cubital veins of wings sigmoid; the latter with one incomplete and two complete branches. . . . . *Parasigmoidella* Hanitsch
b. Median and cubital vein not sigmoid 13
14 a. Cubitus of wings with one or two branches; ventro-cephalic margin of cephalic femora proximad with one or two larger spines . *Dyakina* Hebard
b. Cubitus of wings with more than two branches; ventro-cephalic margin of cephalic femora proximad with four larger spines *Margattea* Shelford
15 a. Radial vein of tegmina simple 16
b. Radial vein of tegmina forking decidedly before distal portion; male subgenital plate weakly asymmetrical, without styles . *Jacobsonina* Hebard
16 a. Median and cubital vein of wings sigmoid, the latter with two or more complete branches . . . . . *Scalida* Hebard
b. Median and cubital vein of wings straight or feebly curved . . . 17
17 a. Cubital vein of wings with more than two complete branches; subgenital plate male symmetrical . . . . . *Molestella* nov. gen.
b. Cubital vein of wing simple or terminally forked 18
18 a. Wings not reduced, male subgenital plate symmetrical, bearing no styles . . . . . *Parascalida* Hanitsch
b. Wings reduced . . . . . *Pseudoceratinoptera* Hanitsch
19 a. Radial vein of tegmina and wings simple or irregularly branching towards the apex 20
b. Radial vein of tegmina and wings forked considerably before apical portion 21
20 a. Cubital vein of wing sigmoid, with one or more incomplete branches *Haplosymploce* Hanitsch
b. Cubital vein of wing practically straight, without incomplete branches *Possoina* Strand
21 a. Cubital vein of wings well curved, with two complete branches; apical triangular field well developed . . . . . *Parasymploce* Hebard
b. Cubital vein of wings straight or feebly curved, apical triangular area narrow 22
22 a. Cubital vein of wings without incomplete branches, but with transverse veinlets in that area . . . . . *Blattella* Caudell
b. Cubital vein of wings with one to six incomplete branches *Symploce* Hebard
23 a. "Discoidal" sectors of tegmina oblique; interocular space very wide; ventro-cephalic margin of cephalic femora armed with a series of piliform spines, terminating in two elongate distal spines . . . *Sundablatta* Hebard
b. "Discoidal" sectors of tegmina longitudinal; interocular space narrow; cephalic femora armed after type B_3 . . . *Pseudophyllodromia* Brunner
24 a. Cephalic femora armed after type B_3; cubital vein with (four) complete branches . . . . . *Graptoblatta* Hebard

b. Cephalic femora armed after type C 25
25 a. Pronotal disk with colour pattern; small pulvilli present on four proximal tarsal joints. . . . . *Hebardula* Uvarov
b. Pronotal disk without distinctive colour pattern; pulvilli on the four proximal joints larger . . . . . *Mareta* Bolivar
26 a. Cephalic femora armed after type A . . . . . *Supella* Shelford
b. Cephalic femora armed after type B 27
27 a. Tarsal claws with inner margins strongly pectinate . *Chorisoblatta* Shelford
b. Tarsal claws not pectinate 28
28 a. Wings with anterior field broadly rounded; cubital vein bifurcate or ramose; subgenital plate of male asymmetrical *Allacta* Saussure and Zehntner
b. Wings with anterior field not broadly rounded; cubital vein with several distinct branches; subgenital plate of male symmetrical, styli being reniform . . . . . *Pseudochorisoblatta* nov. gen.
29 a. Radial vein of wings not forked . . . . . *Mopsera* Hebard
b. Radial vein of wing forked mesodistad . . . *Pseudothyrsocera* Shelford
30 a. Cephalic femora armed after type A; arolium present . . . . . *Temnopteryx* Brunner
b. Cephalic femora armed after type C; arolium not present . . . . . *Squamoptera* nov. gen.

Aristiger Hebard

Plumiger Hebard, 1929, p. 22.
Aristiger Hebard, 1940, p. 139.

Aristiger histrio (Burmeister)

Thyrsocera histrio Burmeister, 1838, p. 449; Rehn, 1904, p. 545.
Blatta lateralis Serville, 1839, p. 107.
Phyllodromia inversa Brunner, 1865, p. 96.
Pseudomops fissa Walker, 1868, p. 213.
Theganopteryx jucunda Saussure, 1869, p. 232.
Thyrsocera lineaticollis Bolivar, 1890, p. 302.
Thyrsocera fissa, Kirby, 1904, p. 78.
Hemithyrsocera histrio, Shelford, 1907b, p. 8; Hanitsch, 1915, p. 27, pl. 3 fig. 13; Hanitsch, 1919, p. 67; Hanitsch, 1923a, p. 197; Karny, 1925, p. 191, pl. fig. 3; Hanitsch, 1929a, p. 4; Hanitsch, 1932a, p. 1.
Plumiger histrio, Hebard, 1929, p. 23; Hanitsch, 1932c, p. 54; Hanitsch, 1933a, p. 305; Hanitsch, 1933b, p. 125; Hanitsch, 1933c, p. 231; Hanitsch, 1934, p. 114; Bruijning, 1947, p. 214.
Type: ?, Java.

Leiden Museum:

Tandjong Morawa, Serdang, Sumatra, Dr. Hagen, 4 ♂♂, 12 ♀♀; Surulangun, Sumatra Exp., April 1878, 2 ♂♂, 4 ♀♀; Rawas, Sumatra Exp., 1 ♂, 2 ♀♀; Sungei Simaung, Sumatra Exp., June 1877, 1 ?; Buo, Padang, Sumatra, E. Jacobson, February 1914, 1 ♀, 1 larva; Soropai, Sumatra, E. Jacobson, July 1915, 1 ♀; Palembang, Sumatra, Keil, 1 ?; Srondol, Samarang, Java, E. Jacobson, December 1909, 1 larva; Samarang, Java, E. Jacobson, July 1909, 1 ♂; Ardjasari, Java, Kerkhoven, 1921, 1 ♂; Java, Mulié, 1907, 1 ♂, 1 ♀; Java, 1 ♀; Balik Papan, Borneo, July 1912, 1 ♀; locality unknown, 2 ♂♂.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, 1920-1921, 3 ♂♂, 3 ♀♀.

A. histrio (Burmeister) is a rather common species on Sumatra and Java.

Hemithyrsocera palliata (Fabricius)

Blatta palliata Fabricius, 1798, p. 186.

Thyrsocera nigra Brunner, 1865, p. 120; Brunner, 1893, p. 21; Rehn, 1904, p. 545; Rehn, 1909, p. 178.

Ellipsidium subcinctum Walker, 1868, p. 85.

Theganopteryx indica Saussure, 1869, p. 230, pl. 3 fig. 16.

Hemithyrsocera nigra, Kirby, 1904, p. 77; Shelford, 1907b, p. 8; Hanitsch, 1927, p. 33.

Hemithyrsocera palliata, Shelford, 1907c, p. 14; Hanitsch, 1915, p. 28; Hanitsch, 1923b, p. 395, pl. 12 fig. 3; Hanitsch, 1925, p. 78; Hebard, 1929, p. 23; Hanitsch, 1929a, p. 4; Hanitsch, 1931a, p. 43; Hanitsch, 1932a, p. 1.

Type: Tranquebar.

Leiden Museum:

Java, Piepers, 1 ♀; Ladak, Felder, 1 ♀.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, July 1920, 1 ♀, 1 ?; Liberia, Sumatra, J. B. Corporaal, May 1921, 1 ♂; Bandar, Sumatra, J. B. Corporaal, April 1920, 1 ♀, 1 ?; Bulu Tjina, Sumatra, J. B. Corporaal, August 1921, 1 ♀; Bindjei, Medan, Sumatra, Dr. C. R. Pfister, 1 ♀.

H. palliata (Fabricius) is widely distributed on the Asiatic continent and is rather common on Sumatra, but had not been recorded from Java. The specimen in the Leiden Museum is the first record from Java.

Most of the specimens have shining dark castaneous to black tegmina, but one of the females and the male have smoky brown coloured tegmina.

Wings with the intercalated field slightly prominent. Subcostal vein nearly reaching the median point. Radial vein forking mesad and sending eleven to twelve branches to the anterior margin. Median and cubital vein unbranched. The whole wing has a brownish tinge, except the strongly darkened anterior field.

Measurements:	♂	♀
Total length	11.0 mm	9.5-12.5 mm
Length of pronotum	2.2 mm	2.0-3.0 mm
Width of pronotum	3.5 mm	2.6-4.5 mm
Length of tegmina	9.5 mm	8.0-9.5 mm

Hemithyrsocera soror (Brunner)

Thyrsocera soror Brunner, 1865, p. 120.

Hemithyrsocera soror, Kirby, 1904, p. 77; Shelford, 1907b, p. 88; Hanitsch, 1915, p. 29; Hanitsch, 1923a, p. 396; Bruijning, 1947, p. 215.

Type: ♂, Celebes.

H. soror (Brunner) is narrowly related to *H. palliata* (Fabricius). The latter species varies strongly in intensity of the colouration and in its measurements. It is quite possible that the two species are synonyms since the differences between them are very slight.

Hemithyrsocera lateralis (Walker)

Ellipsidium laterale Walker, 1868, p. 213.
Thyrsocera major Brunner, 1893, p. 22, pl. 1 fig. 7.
Hemithyrsocera lateralis, Kirby, 1904, p. 77; Shelford, 1907b, p. 8, pl. 1 fig. 2; Hanitsch, 1915, p. 28; Hanitsch, 1923b, p. 395, pl. 12 fig. 2; Hanitsch, 1927, p. 33.
Type: ♂, Siam; British Museum.

Hemithyrsocera tessellata (Rehn)

Thyrsocera tessellata Rehn, 1904, p. 545.
?Hemithyrsocera tessellata, Shelford, 1907b, p. 8; Hanitsch, 1915, p. 29.
Hemithyrsocera tessellata, Hanitsch, 1927, p. 33.
Type: ♂ (immature), Trong, Lower Siam, Dr. W. L. Abbott; U. S. Nat. Museum, cat. no. 6946.

Hemithyrsocera fulmeki Hanitsch

Hemithyrsocera fulmeki Hanitsch, 1932a, p. 2.
Type: ♂ ♂, Medan and Klumpang, Sumatra.

Symplocodes ridleyi (Shelford)

Hemithyrsocera ridleyi Shelford, 1921c, p. 660, pl. 80 fig. 15; Hanitsch, 1923b, p. 396.
Symplocodes ridleyi, Hebard, 1929, p. 75; Hanitsch, 1931a, p. 45; Hanitsch, 1932a, p. 4; Hanitsch, 1933c, p. 232; Hanitsch, 1934, p. 117; Hanitsch, 1936, p. 392; Bruijning, 1947, p. 223.
Type: ♂, Singapore, H. N. Ridley, 1908; Oxford University Museum.

Leiden Museum:

Rawas, Sumatra Exp., May 1878, 1 ♂; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♀; Srondol, Samarang, Java, E. Jacobson, August 1909, 1 ♂; Tandjong Priok, Java, P. Buitendijk, July 1907, 1 ♂, 1 ♀; Batavia, Java, E. Jacobson, December 1907, 2 ♀♀; Borneo, 1 ♂.

Amsterdam Museum:

Pagar Marbau, Sumatra, J. B. Corporaal, August 1920—July 1921, 2 ♀♀.

The females agree closely with the males, but differ in the unspecialized abdomen and the symmetrical subgenital lamina, which is broad, convergent to the emarginated apical margin.

Measurements:	♂	♀
Total length	12.8-13.8 mm	12.0-13.5 mm
Length of tegmina	10.5-11.6 mm	9.7-11.6 mm
Pronotum	2.5 × 3.3-2.6 × 3.4 mm	2.5 × 3.3-2.9 × 3.7 mm

Duryodana palpalis (Walker)

Blatta palpalis Walker, 1868, p. 225.
Phyllodromia palpata, Brunner, 1898, p. 207, pl. 16 fig. 13.
Duryodana palpalis, Kirby, 1903b, p. 274; Kirby, 1904, p. 101; Shelford, 1908 a, p. 15, pl. 1 figs. 10, 11; Hanitsch, 1915, p. 58; Hanitsch, 1925, p. 89; Hebard, 1929, p. 46.
Type: ♂, Sarawak, Borneo, Wallace; Oxford University Museum.

Leiden Museum:

Djambi, Sumatra, E. Douglas, 1914, 1 ♀.

This species was only known from Borneo. The specimen in the Leiden Museum is the first record from outside Borneo.

Measurements: total length 15.3 mm, length tegmina 12.2 mm, pronotum 3.4 × 3.8 mm.

Liosilphoidea lata (Hanitsch)

Liosilpha lata Hanitsch, 1923 b, p. 416, fig. 14.
Liosilphoidea lata, Hanitsch, 1931 a, p. 48; Hanitsch, 1931 b, p. 393; Bruijning, 1947, p. 226.
Type: ♂, Gunung Angsi, R. Hanitsch, April 1918; Oxford University Museum.

Liosilphoidea longealata (Hanitsch)

Liosilpha longe-alata Hanitsch, 1923 b, p. 417.
Liosilphoidea longe-alata, Hanitsch, 1931 a, p. 48.
Type: ♀, Java; Oxford University Museum.

Liosilphoidea angustior (Hanitsch)

Liosilpha angustior Hanitsch, 1928, p. 28.
Liosilphoidea angustior, Hanitsch, 1931a, p. 48.
Type: ♂, Mentawi Islands; Oxford University Museum.

Margattea ceylonica (Saussure)

Blatta ceylonica Saussure, 1868, p. 355; Saussure, 1869, p. 247.
Allacta ceylanica, Kirby, 1904, p. 100.
Phyllodromia nimbata Shelford, 1907 a, p. 31; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 57.
Phyllodromia ceylanica, Shelford, 1908, p. 2.
Margattea ceylonica, Shelford, 1911 b, p. 155; Hanitsch, 1933 a, p. 392; Hanitsch, 1933 c, p. 232; Hanitsch, 1934, p. 118; Hanitsch, 1936, p. 392; Bruijning, 1947, p. 221.
Margattea nimbata, Hanitsch, 1928, p. 23; Hanitsch, 1929 a, p. 13; Hanitsch, 1931 b, p. 392.
Kuchinga nimbata, Hebard, 1929, p. 42.
Type: ♀, Ceylon, Prof. A. Humbert.

Leiden Museum:

Samarang, Java, E. Jacobson, November 1909, 1 ♂; Weleri, Java, Van Leeuwen, October 1910, 1 ♂; Batavia, Java, E. Jacobson, June 1908, 1 ♀; Ardja Sari, Preanger, Java, 1 ♀; Batavia, Java, 1 ?; Krakatau, E. Jacobson, May 1908, 1 ♀.

This species until now was not mentioned from Java. The specimens agree with the description by Shelford (1907 a, p. 31), but the measurements vary.

Measurements:	♂	♀
Total length	8.6-11.5 mm	9.5-11.5 mm
Length of tegmina	7.0-9.0 mm	7.0-9.0 mm

Margattea anceps (Krauss)

Blatta anceps Krauss, 1903, p. 749.
Phyllodromia anceps, Shelford, 1908 a, p. 14; Hanitsch, 1925, p. 50.
Phyllodromia nigro-vittata Hanitsch, 1925, p. 88.
Margattea anceps, Caudell, 1927, p. 12; Hanitsch, 1928, p. 23; Hanitsch, 1929 b, p. 276; Hanitsch, 1932 c, p. 61; Hanitsch, 1933 c, p. 232.
Kuchinga anceps, Hebard, 1929, p. 42.
Type: ♀, Tjibodas, Java.

Leiden Museum:
Sindanglaja, Java, W. Baerts, 1 ♂.

This species is easily distinguishable by its tegminal darkening in the area between the post-cubital and the radial vein.

Measurements:	♂
Total length	12.7 mm
Length of tegmina	11.5 mm
Pronotum	2.1 × 2.9 mm

Margattea crucifera (Hanitsch)

Phyllodromia crucifera Hanitsch, 1925, p. 85.
Margattea crucifera, Hanitsch, 1933 a, p. 310, fig. 4; Hanitsch, 1933 c, p. 232.
Type: ♂, Mt. Murud, ♀, Mt. Dulit, Sarawak, Borneo, Dr. E. Mjöberg, 1922-1923; Oxford University Museum.

Margattea nebulosa (Shelford)

Phyllodromia nebulosa Shelford, 1907 a, p. 32; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 51.
Margattea nebulosa, Hanitsch, 1933 a, p. 311.
Type: ♂, ♀, Kuching, Sarawak, Borneo; Oxford University Museum.

Margattea contingens (Walker)

Blatta contingens Walker, 1868, p. 229.
Phyllodromia contingens, Kirby, 1904, p. 92; Shelford, 1906, p. 490, pl. 30 fig. 4; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 45; Hanitsch, 1923 a, p. 198; Hanitsch, 1923 b, p. 402.
Kuchinga contingens, Hebard, 1929, p. 45.
Margattea contingens, Hanitsch, 1929 a, p. 13; Hanitsch, 1936, p. 392.
Type: ♀, Sarawak; Oxford University Museum.

Margattea rectangularis Hanitsch

Margattea rectangularis Hanitsch, 1932 c, p. 61, figs. 4-5.
Type: ♂, Si-Rambé, Sumatra, E. Modigliani, December 1890 to March 1891; Oxford University Museum.

Margattea buitenzorgensis Caudell

Margattea buitenzorgensis Caudell, 1927, p. 12, fig. 2.
Type: ♂, Buitenzorg, Bryant and Palmer, March 1909; United States National Museum, Washington.

Margattea diacantha (Hebard)

Kuchinga diacantha Hebard, 1929, p. 43, pl. 2 figs. 2-3.
Type: ♂, Sandakan, North Borneo, C. F. Baker; Hebard Collection, no. 1139.

Margattea longealata (Brunner)

Phyllodromia longe-alata Brunner, 1898, p. 205, pl. 16 fig. 9; Kirby, 1904, p. 92; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 42; Hanitsch, 1925, p. 83.
Kuchinga longealata, Hebard, 1929, p. 46.
Margattea longealata, Hanitsch, 1933 c, p. 232.
Type: ♀, Sarawak, Borneo, Prof. Dr. W. Kükenthal, 1893-1894; Senckenberg Museum, Frankfort.

Margattea setifera Hanitsch

Margattea setifera Hanitsch, 1929 a, p. 14.
Margallea setifera, Sjöstedt, 1934, p. 5.
Type: ♀, Medan, Dr. E. Mjöberg, 1919-1921; Stockholm Museum.

Leiden Museum:

Borneo, Schwaner, 1 ♀.

The specimen in the Leiden Museum is a great deal smaller than the type, but agrees in all other aspects.

Measurements: total length 8.8 mm, length of tegmina 7.3 mm, pronotum 2 × 2.9 mm.

Margattea humeralis (Walker)

Blatta humeralis Walker, 1869, p. 140.
Phyllodromia contingens, Shelford (partim), 1906, p. 490, pl. 30 fig. 4; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 45; Hanitsch, 1923 b, p. 402.
Phyllodromia abrupta Hanitsch, 1923 b, p. 399, figs. 2-3.
Margattea humeralis, Hanitsch, 1928, p. 21.
Kuchinga humeralis, Hebard, 1929, p. 45.
Type: ♂, Singapore, Wallace; Oxford University Museum.

Margattea ? albovittata Hanitsch

Margattea albo-vittata Hanitsch, 1929 b, p. 276.
Type: 1 ♂, 1 ♀, Padang, Sumatra, E. Jacobson; Oxford University Museum.

Since Hanitsch erroneously placed some species in the genus *Margattea,*

I am not sure of the generic position of his new species described before 1930.

Margattea ? argentea Hanitsch

Margattea argentea Hanitsch, 1928, p. 24.
Type: ♂, Mentawi Islands; Oxford University Museum.

Margattea ? aurea Hanitsch

Margattea aurea Hanitsch, 1928, p. 25.
Type: ♂, Mentawi Islands; Oxford University Museum.

Margattea ? maculata Hanitsch

Margattea maculata Hanitsch, 1928, p. 25.
Type: ♀, Siberut, Mentawi Islands; Oxford University Museum.

Margattea ? vermiculata Hanitsch

Margattea vermiculata Hanitsch, 1928, p. 26.
Type: ♀, Siberut, Mentawi Islands; Oxford University Museum.

Jacobsonina simplex Hebard

Jacobsonina simplex Hebard, 1929, p. 57, pl. 4 figs. 1-2.
Margattea pulchra Hanitsch, 1929 b, p. 278.
Type: ♂, Fort de Kock, Sumatra, E. Jacobson, December 1921; Hebard Collection, type no. 1140.

Amsterdam Museum:
Fort de Kock, Sumatra, E. Jacobson, 1924, 1 ♂.

The specimen in the Amsterdam collection bears a label written by Hanitsch with the name *Margattea pulchra* n. sp. ♂, and consequently the synonymy leaves no doubt. It agrees in all aspects with the original description and figures of Hebard.

Measurements: total length 12.4 mm, length of tegmina 10.9 mm, length of body 10.1 mm, pronotum 2.2 × 2.9 mm.

Parasymploce irregularitervittata (Brunner)

Phyllodromia irregulariter-vittata Brunner, 1898, p. 202, pl. 16 fig. 1; Kirby, 1904, p. 90; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 46.
Neoblattella irregulariter-vittata, Hanitsch, 1928, p. 17; Hanitsch, 1929b, p. 273.
Parasymploce dichroa Hebard, 1929, p. 73, pl. 4 fig. 10.
Parasymploce irregulariter-vittata, Hanitsch, 1932 c, p. 59; Hanitsch, 1933 c, p. 232.
Type: ♀, Borneo and Java; Brunner Collection.

Leiden Museum:
Gunung Teleman, Sumatra, E. Jacobson, June 1917, 1 ♂; Air Njuruk, Dempu,

Sumatra, E. Jacobson, August 1916, 1 ?; Suban Ajam, Sumatra, E. Jacobson, July 1916, 1 ♀.

One of our specimens has not only the broad lateral longitudinal bands blackish brown, but also a median narrow band in the same colour, which forks cephalad.

Parasymploce obliqua Hanitsch

Parasymploce obliqua Hanitsch, 1932 c, p. 60, fig. 3.
Type: ♂, ♀, Si-Rambé, Sumatra, E. Modigliani, December 1890—March 1891; Oxford University Museum.

P. obliqua can easily be recognized by the shape of the subgenital plate in the male.

Parasymploce sumatrana Hebard

Parasymploce sumatrana Hebard, 1929, p. 69, pl. 4 fig. 6, pl. 5 figs. 4—5; Hanitsch, 1932 c, p. 61.
Type: ♂, Fort de Kock, Sumatra, E. Jacobson, November 1921; Hebard Collection.

Parasymploce hewitti (Shelford)

Phyllodromia hewitti Shelford, 1907 a, p. 33; Shelford, 1908 a, p. 14; Hanitsch, 1915, p. 54; Hanitsch, 1925, p. 83.
Neoblattella hewitti, Hanitsch, 1928, p. 18.
Parasymploce hewitti, Hanitsch, 1933 a, p. 308.
Type: ♂, Kuching, Sarawak, Borneo; Oxford University Museum.

Leiden Museum:
Suban Ajam, Sumatra, E. Jacobson, July 1916, 1 ♀.

Amsterdam Museum:
Pajang River, Borneo, E. Mjöberg, 1 ♀.

Measurements: total length 16.0-16.5 mm, length of tegmina 13.9-14.5 mm, pronotum 2.9 × 3.6-3.3 × 4.2 mm.

Parasymploce penicillata Hebard

Parasymploce penicillata Hebard, 1929, p. 71, pl. 4 fig. 7; Hanitsch, 1932 c, p. 61; Hanitsch, 1933 b, p. 131; Hanitsch, 1933 c, p. 232; Hanitsch, 1936 a, p. 391; Bruijning, 1947, p. 220.
Type: ♂, Islands of Jarak, West coast of Malay Peninsula, V. Knight, April 1921; Oxford University Museum.

Parasymploce denticauda Hebard

Parasymploce denticauda Hebard, 1929, p. 72, pl. 4 figs. 8-9; Hanitsch, 1932 c, p. 61.
Type: ♂, Laut Tawas, Island of Simalur, E. Jacobson, August 1913; Hebard Collection.

Parasymploce interrupta Hanitsch

Parasymploce interrupta Hanitsch, 1933 a, p. 308, fig. 2.
Type: ♂, Kenokok, Mt. Kinabalu, H.M. Pendlebury, 1929; Oxford University Museum.

Parasymploce marginalis Hanitsch

Parasymploce marginalis Hanitsch, 1933 a, p. 310, fig. 3.
Type: ♀, Kedah, Malay Peninsula, H.M. Pendlebury, 1928; Oxford University Museum.

This species differs only in the fulvous border of the pronotum being not interrupted by the black macula. Since the pronotal design in related species varies, I believe *P. marginalis* Hanitsch merely to be a synonym of *P. interrupta* Hanitsch.

Parasymploce singgalangensis (Hanitsch)

Neoblattella singgalangensis Hanitsch, 1929 b, p. 275.
Type: ♀, Gunung Singgalang, Sumatra, E. Jacobson, 1925; Oxford University Museum.

Amsterdam Museum:
Gunung Singgalang, Sumatra, E. Jacobson, 1925, 1 ♀.

The specimen in the collection of the Amsterdam Museum was identified by Hanitsch as *Neoblattella singgalangensis*. From its tegminal and wing venation and the way in which the cephalic femora are armed it appears that *singgalangensis* belongs to the genus *Parasymploce*.

Measurements: total length 14.1 mm, length of body 12.5 mm, length of tegmina 11.8 mm, pronotum 3.1 × 3.7 mm.

Scalida Hebard

Scalida Hebard, 1929, p. 50.
Sigmoidella Hebard, 1929, p. 55.
Sigmella Hebard, 1940, p. 236.

After Hebard established the genera *Scalida* and *Sigmoidella* in 1929 (Hebard, 1929), there remained some confusion about these genera. The reason may be found in the unsufficient generic diagnosis of Hebard. The characterizations of these genera was given in a key to the genera belonging to the *Symploce* group (Hebard, 1929, p. 39). According to this key the median and cubital veins in *Scalida* are "normal, weakly curved, the latter with two complete branches". In the genotype and in some of the new species described by Hebard, however, these veins are strongly sigmoid. Moreover the number of complete and incomplete branches of the cubitus varies in both genera widely. In the specimen recorded by Hebard as

Scalida funebris (Hebard, 1929, p. 55) this vein has three complete and two incomplete branches, and in *Scalida fragilis* (Hebard, 1929, p. 51) there are one incomplete and three complete branches. In *Sigmella adversa* (Saussure and Zehntner) the number of cubital branches varies from two to five (Hebard, 1929, p. 56).

From the foregoing it appears that neither the sinuation of the median and cubital veins, nor the number of branches of the latter enables us to distinguish the two genera. I tried to find other features, but since there consist transitions in all characters which might be of generic value, I have drawn the conclusion that *Scalida* Hebard and *Sigmella* Hebard are names for one and the same genus.

From descriptions of Hanitsch it appears that this author had aberrant views concerning the genus *Scalida*. He placed two of his new species, viz., "*Scalida*" *gemmata* and "*Scalida*" *pantherina* (Hanitsch, 1933 c, pp. 237-238) with oblique "discoidal" sectors in the genus *Scalida*, which, as all the genera belonging to the "*Symploce* group", has longitudinal "discoidal" sectors.

Considering the foregoing it is desirable to give a new diagnosis of *Scalida* Hebard:

Size from medium to above medium, shape in most cases slender. Face with lateral margins decidedly converging ventrad; palpi with third and fourth joints comparatively short. Tegmina with radial vein unbranched; discoidal sectors longitudinal. Wings with sigmoid median and cubital veins; the latter with two to five complete and none, one or two incomplete branches. Male subgenital plate strongly asymmetrical. Cephalic femora armed after type B_3. Tarsal claws simple, symmetrical.

Scalida latiusvittata (Brunner) (figs. 12, 17)

Phyllodromia latius-vittata Brunner, 1898, p. 202, pl. 16 fig. 2; Kirby, 1904, p. 90; Shelford, 1908 a, p. 14; Hanitsch, 1915, p. 42.

Margattea latiusvittata, Hanitsch, 1928, p. 23; Hanitsch, 1929 a, p. 13; Hanitsch, 1929 b, p. 276.

Scalida latiusvittata, Hebard, 1929, p. 53; Hanitsch, 1933 b, p. 133; Bruijning, 1947, p. 220.

Type: ♂, Buitenzorg, Java; Senckenberg Museum.

Leiden Museum:

Batavia, Java, E. Jacobson, November 1907, 1 ♂; ibidem, E. Jacobson, August 1908, 1 ♂; Garut, Java, W. C. van Heurn, 1929, 1 ♂; Buitenzorg, Dr. H. W. van der Weele, July 1909, 1 ♀.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1924, 1 ♂; ibidem, E. Jacobson, 1925, 3 ♂ ♂, 1 ♀; Taluk, Sumatra, Kleiweg de Zwaan, 1907, 2 ♂ ♂, 1 ♀.

This species is rather common in the Malayan region of the Archipelago. It can easily be recognized by the black horseshoe shaped design of the pronotum.

Measurements:	♂	♀
Total length	10.6-11.4 mm	11.0 mm
Length of tegmina	8.8-9.0 mm	8.9 mm
Pronotum	2.4 × 3.3-2.5 × 3.3 mm	2.4 × 3.0 mm

Scalida nigra (Hanitsch)

Margattea nigra Hanitsch, 1929 b, p. 277.
Sigmoidella nigra Hanitsch, 1932 c, p. 63.
Type: ♂, Fort de Kock, Sumatra, E. Jacobson, 1924; Oxford University Museum.

Amsterdam Museum:
Anai Cleft, Sumatra, E. Jacobson, 1926, 1 ♀.

The present species agrees closely with the genotype of *Scalida* Hebard, viz., *Scalida latiusvittata* (Brunner), and with *Scalida fragilis* Hebard; especially in its wing venation it is narrowly related with the latter species. The specimen in the Amsterdam Museum was identified by Hanitsch as *Margattea nigra* Hanitsch, a species which later was placed in the genus *Sigmoidella* Hebard by its author.

Measurements: total length 9.5 mm, length of tegmina ?, pronotum 2.2 × 2.8 mm.

Scalida charon (Hanitsch)

Scalida charon Hanitsch, 1933 c, p. 239.
Type: 1 ♂, Pajan River, East Borneo, E. Mjöberg; Stockholm Museum.

From the number of branches of the cubital vein it appears that the present species belongs to the genus *Scalida* Hebard.

Scalida funebris (Walker)

Blatta funebris Walker, 1868, p. 225.
Allacta funebris, Kirby, 1904, p. 99.
Phyllodromia funebris, Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 43.
Scalida funebris, Hebard, 1929, p. 55.
Type: ♀, Sarawak, Borneo.

Scalida javanica nov. spec. (figs. 16, 34)

Leiden Museum:

Banjuwangi, Java, MacGillavry, 1910, 1 ♂ (holotype); Buitenzorg, Java, W. C. van Heurn, 1931, 1 ♀ (allotype); Weltevreden, Java, Dr. P. Buitendijk, January 1919, 1 ♂; Gunung Ungara, Java, E. Jacobson, September 1910, 1 ♂.

♂. Size medium for the genus. Interocular space one-fifth wider than that between the antennal sockets; ocellar spots distinct. Palpi with third and fourth joints of equal length; fifth joint longer (as five to four) and expanding to near the base. Pronotum with deflexed lateral portions, the caudal margin convex. Tegmina and wings fully developed. The former with one forked and sixteen regular branches of the radial vein. The latter with fourteen anterior branches of the radial and subcostal veins; cubital vein with two complete and two incomplete branches, the proximal being very indistinct (fig. 16). Abdomen with median segment specialized in nearly the same way as in *S. fragilis*. This specialisation formed by a depressed median subchitinous area. Supra-anal plate symmetrical, rounded obtuse angulate. Subgenital plate asymmetrical, dextral margin rounded, with a spinulated produced portion just dorsad from the dextral style. The

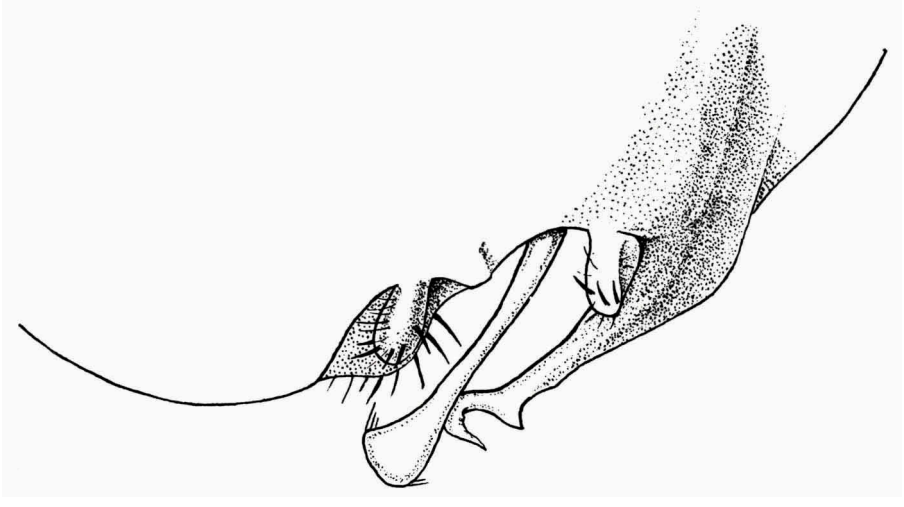

Fig. 34. *Scalida javanica* nov. spec. Subgenital plate ♂, ventro-caudal view. Greatly enlarged.

dextral style, a stout but small thumb-like procession with strong spines and long hairs, is placed near the median point. The sinistral style is also stout and broadly rounded, with strong hook-like spines and long hairs. The sinistral portion of the subgenital plate is produced into a long process which runs in the direction of the dextral style; the end of the process is formed by a strongly curved hook (fig. 34).

Colour dark castaneous; the narrow lateral portions of the pronotum and tegmina are transparent. Legs testaceous.

♀. Agrees closely with male, differing in the unspecialized abdomen, in

the symmetrical, broadly rounded subgenital plate and in the tegmina surpassing the apex of abdomen by a shorter distance.

Measurements:	♂	♀
Total length	11.1 mm	10.0 mm
Length of tegmina	9.4 mm	7.9 mm
Length of wings	8.6 mm	7.4 mm
Length of body	(cerci damaged)	7.4 mm
Pronotum	2.2 × 2.9 mm	2.1 × 2.5 mm

Scalida javanica nov. spec. is related to *Scalida fragilis* Hebard, but differs in the specialisation of the male subgenital plate and in the cubital vein having only two instead of three branches.

Scalida fragilis Hebard

Scalida fragilis Hebard, 1929, p. 51, pl. 2 figs. 4-5.
Type: ♂, Lubuk Sulasik, Sumatra, E. Jacobson, September 1920; Hebard collection.

Judging by the descriptions by Hebard and Hanitsch *Scalida fragilis* Hebard and *Scalida nigra* (Hanitsch) are closely related.

Scalida emarginata nov. spec. (fig. 35)

Leiden Museum:

Sungal Kumbang, Sumatra, E. Jacobson, September 1915, 1 ♂ (holotype); Air Njuruk, Dempu, Sumatra, E. Jacobson, August 1916, 1 ♀ (allotype); Sumber Pakel, Dampit, Java, MacGillavry, 1919, 1 ♂; Suban Ajam, Sumatra, E. Jacobson, 1916, 1 ♂; Gunung Teleman, Sumatra, E. Jacobson, 1917, 1 ♀.

Amsterdam Museum:

Brastagi, Sumatra, J. B. Corporaal, February 1921, 1 ♂, 5 ♀♀.

♂. Size medium for the genus. Space between eyes nearly as wide as that between antennal sockets (as 23 to 25). Palpi medium for genus; third and fourth joints equal in length, fifth joint distinctly longer (as four to four to five). Pronotum with convex cephalic margin gradually rounding into the lateral margins, caudal margin very weakly convex. Tegmina and wings fully developed; the radial vein of the former with fifteen unbranched and two forked branches. Wings with fifteen branches of subcostal and radial veins (so called "costal" veins), the proximal ten of which are thickened; cubital vein with three complete and two distinct incomplete branches; proximad from the latter a varying number of indistinct incomplete branches can be formed. Abdomen with median segment specialized in the same way as in *S. fragilis* (a subchitinous meso-cephalic area, which is slightly depressed); sixth tergite specialized, the specialisation

consisting of two circular, depressed areas separated by a median ridge. Supra-anal plate transverse, nearly symmetrical; the anterior half elevated, the caudal margin of this elevation emarginated mesad; the margin of the supra-anal plate bears a forceps-like projection with two stout strongly chitinized spines (fig. 35 b). Subgenital plate strongly asymmetrical, sinistral margin produced into a curved narrow lamina; dextral margin roundly produced; between the two margins the subgenital plate is deeply

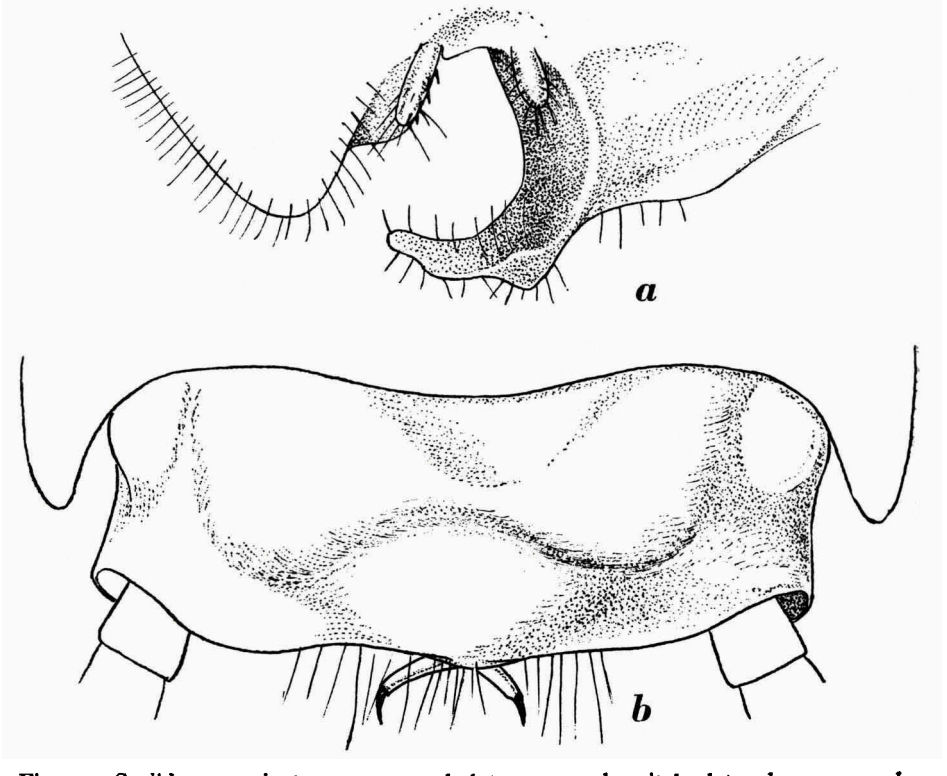

Fig. 35. *Scalida emarginata* nov. spec., holotype. a, subgenital plate; b, supra-anal plate. Greatly enlarged.

emarginated. Styles stout claviform, placed near the median point in the emargination (fig. 35 a).

♀. Agrees closely with male, differing in the unspecialized abdomen and the symmetrical, broadly rounded subgenital plate.

General coloration ochraceous-tawny. Pronotum with lateral portions ochraceous. Tegmina transparent, lateral portions ochraceous. Head, ventral surface of abdomen and legs testaceous. Eyes black. Dorsal surface of abdomen ochraceous-tawny.

Measurements:	♂	♀
Total length	14.4 mm	12.5 mm
Length of tegmen	11.5 mm	10.0 mm
Length of wings	10.6 mm	9.1 mm
Length of body	10.6 mm	10.6 mm
Pronotum	2.8 × 3.6 mm	2.5 × 3.0 mm

The subgenital plate shows some variation in the male specimen. The elongated sinistral margin and the styles differ slightly, but are all built after the same type. In two of the males (viz., from Suban Ajam and from Brastagi) the supra-anal plate is without the median projection, which probably is the result of damage.

Scalida adversa (Saussure and Zehntner)

Blatta adversa Saussure and Zehntner, 1895 a, p. 33, pl. 1 fig. 9.
Blatta secura Krauss, 1903, p. 749.
Ischnoptera klossi Hanitsch, 1928, p. 14.
Sigmoidella adversa, Hebard, 1929, p. 56.
Sigmella adversa, Hebard, 1940, p. 236.
Type: ♂, ♀, Java.

Leiden Museum:

Suban Ajam, Sumatra, E. Jacobson, July 1916, 1 ♂; Java, 1 ♀; Buitenzorg, Java, Dr. H. W. van der Weele, July 1909, 1 ♂. Also a specimen from Australia.

Hebard (1929, p. 56) regarded *Sigmella adversa* (Saussure and Zehntner) and *Parasymploce irregulariter-vittata* (Brunner) as synonyms, though he did not know the types and there was no Malayan material at his disposal. Hanitsch (1932 c, p. 59), however, based his identification of the latter species upon a specimen named by Shelford and he believed that the species have nothing to do with each other.

Measurements:	♂	♀
Total length	16.4 mm	15.5 mm
Length of tegmina	14.3 mm	13.4 mm
Pronotum	3.2 × 4.2 mm	3.1 × 3.5 mm

Scalida immaculata (Hanitsch)

Sigmoidella immaculata Hanitsch, 1932 c, p. 63, fig. 6.
Type: 1 ♀, Si-Rambé, Sumatra, E. Modigliani, December 1890 to March 1891; Oxford University Museum.

Scalida amplectens (Walker)

Blatta amplectens Walker, 1868, p. 223.
Phyllodromia amplectens, Kirby, 1904, p. 93; Shelford, 1908 a, p. 14, Hanitsch, 1923 b, p. 400, figs. 4-5.

Sigmoidella amplectens, Hanitsch, 1932 c, p. 63.
Type: ?, Morty Island, Wallace; Oxford University Museum.

Scalida connectens (Hanitsch)

Ischnoptera connectens Hanitsch, 1929 b, p. 270.
Type: ♂, Anai Cleft, Sumatra, E. Jacobson, 1926; Oxford University Museum.

Judging by the description of Hanitsch, this species belongs to the genus *Scalida* Hebard.

Molestella nov. gen.

Generic characters: Form of the body elliptical. Head with sides convergent; distance between the eyes broad; palpi with fifth joint shorter than fourth and third. Pronotum conspicuously transverse, lateral margins strongly convex; caudal margin with a weak convexity mesad. Tegmina with longitudinal to slightly radiating discoidal fields; radial vein not forked. Wings with unforked radial vein, anterior branches of this vein clubbed; median vein straight; cubital vein straight to slightly curved but never sigmoid, with more than two branches; margin of anterior field broadly rounding towards the slightly protruding apical triangle.

Dorsal surface of male abdomen unspecialized. Supra-anal plate transverse. Subgenital plate symmetrical, cerci long. Ventro-cephalic margin of cephalic femora armed with heavy spines followed by a series of piliform spines and distad three heavy spines (type B_3).

Genotype: *Phyllodromia molesta* Brunner, 1898, p. 203, fig. 5.

Molestella molesta (Brunner) (fig. 14)

Phyllodromia molesta Brunner, 1898, p. 203, pl. 16 fig. 5; Kirby, 1904, p. 92; Shelford, 1908 a, p. 14; Hanitsch, 1923 b, p. 408.
Type: ♂, ♀, Palabuan, Java, Prof. Dr. W. Kükenthal, 1893-1894; Senckenberg Museum.

Leiden Museum:

Batavia, Java, E. Jacobson, October 1907, 1 ♂; Srondol, Samarang, Java, E. Jacobson, August 1909, 1 ♂; Banjermasin, Borneo, 1 ♂.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, March 1920, 1 ♀, 1 ?.

The specimens in the Leiden and Amsterdam Museum agree in most aspects with the original description. They only differ in the colour of the femora, which are testaceous and not black. Since Brunner's diagnosis is short and vague, the following redescription is given:

♂. Face broad with sides strongly convergent; interocular space wide, slightly wider than width between antennal sockets (as 42 to 39). Ocellar

spots small, palpi with fifth joint shorter than fourth, which itself is slightly shorter than third (as 21 to 25 to 27). Tegmina and wings fully developed; the cubital vein of the latter with four complete branches; the anterior branches of the radial vein are clubbed; the whole wing is darkened especially in the subcosto-radial region (fig. 14). Dorsal surface of male unspecialized. Supra-anal plate narrow, strongly transverse, its caudal margin broadly rounded. Subgenital plate symmetrical, its lateral margins broadly turned upwards; two equal finger-like styles are placed near the median, the small portion between the styles is semi-circular and also curled upwards. Cerci strongly developed.

♀. Agrees closely with male; differing in the subgenital plate, which is broadly rounded and in the tegmina and wings, which are shorter.

General coloration fulvo-castaneous. Head fulvo-castaneous with a testaceous band between the eyes and a band of the same colour on the proximal part of the labrum. Palpi testaceous but suffused with fulvous. Abdomen below fulvo-castaneous with laterad suffusions of testaceous and with the caudal margins narrowly lined with testaceous. Coxae castaneous, their margins testaceous; femora, tibiae and tarsi testaceous with suffusions of fulvous, at the spinal bases the tibiae are flecked castaneous. Pronotum with caudal and lateral angles broadly hyaline. Tegmina rufo-castaneous, the costo-subcostal area transparent. Basal half of dorsal surface of cerci castaneous, the apical half testaceous.

Measurements:	♂	♀
Total length	11.8 mm	10.6 mm
Length of tegmina	10.1 mm	8.5 mm
Length of wings	9.6 mm	8.1 mm
Pronotum	2.8 × 3.6 mm	2.8 × 3.6 mm
Length of cerci	2.5 mm	damaged.

Dyakina apicigera (Walker) (figs. 9, 36)

Blatta apicigera Walker, 1868, p. 227.
Phyllodromia apicigera, Kirby, 1904, p. 91.
Theganopteryx apicigera, Shelford, 1906, p. 235; Shelford, 1907 b, p. 7; Hanitsch, 1915, p. 26; Hanitsch, 1923 b, p. 395, pl. 12 fig. 1; Hanitsch, 1925, p. 76; Hanitsch, 1929 b, p. 266.
Dyakina apicigera, Hebard, 1929, p. 18; Hanitsch, 1932 c, p. 52.
Type: ♂, Java.

Leiden Museum:

Rimbo Pangadang, Sumatra, E. Jacobson, June 1916, 1 ♀; Java, 2 ♀♀.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1924, 1 ♀; Lau Rakit, Sumatra, J. B. Corporaal, August 1921, 1 ♂.

This species is rather common in the Malayan region of the archipelago. One of the specimens (the female from Fort de Kock) is very pale and only the tips of the wings are slightly darkened. The other specimens have a distinct apical darkening of the tegmina and the wings (fig. 9) and also a dark macula on the pronotum. The male is smaller than the females.

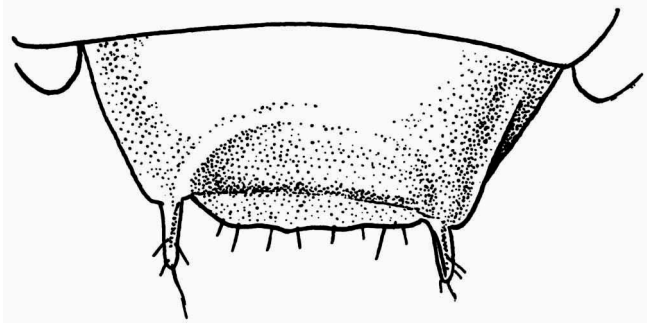

Fig. 36. *Dyakina apicigera* (Walker). Subgenital plate ♂. Greatly enlarged.

To the generic description of Hebard the following features may be added. Male subgenital plate symmetrical, transverse, trapezoidal; the margin between the styles is slightly rounded; the styles are equal in length (fig. 36).

Measurements:	♂	♀
Total length	9.5 mm	11.2-11.5 mm
Length of tegmina	7.2 mm	9.5-10.0 mm
Pronotum	1.9 × 2.2 mm	2.1 × 2.7-2.2 × 2.6 mm

Haplosymploce nigra (Hanitsch)

Ischnoptera nigra Hanitsch, 1928, p. 15, pl. 1 fig. 6.
Haplosymploce nigra, Hanitsch, 1933 c, p. 237.
Type: ♂, Mentawi Islands; Oxford University Museum.

Haplosymploce montis (Shelford) (figs. 13, 37)

Ischnoptera montis Shelford, 1906, p. 266, pl. 16 fig. 10; Shelford, 1908 a, p. 7; Hanitsch, 1915, p. 39.
Type: ♂, Mount Matang, Sarawak; Oxford University Museum.

Leiden Museum:
Tanangtalu, Sumatra, E. Jacobson, May 1915, 1 ♂.

Amsterdam Museum:
Bandar Baru, Sumatra, J. B. Corporaal, February 1921, 1 ♂.

Since the original description is insufficient, it may be supplied with the following redescription.

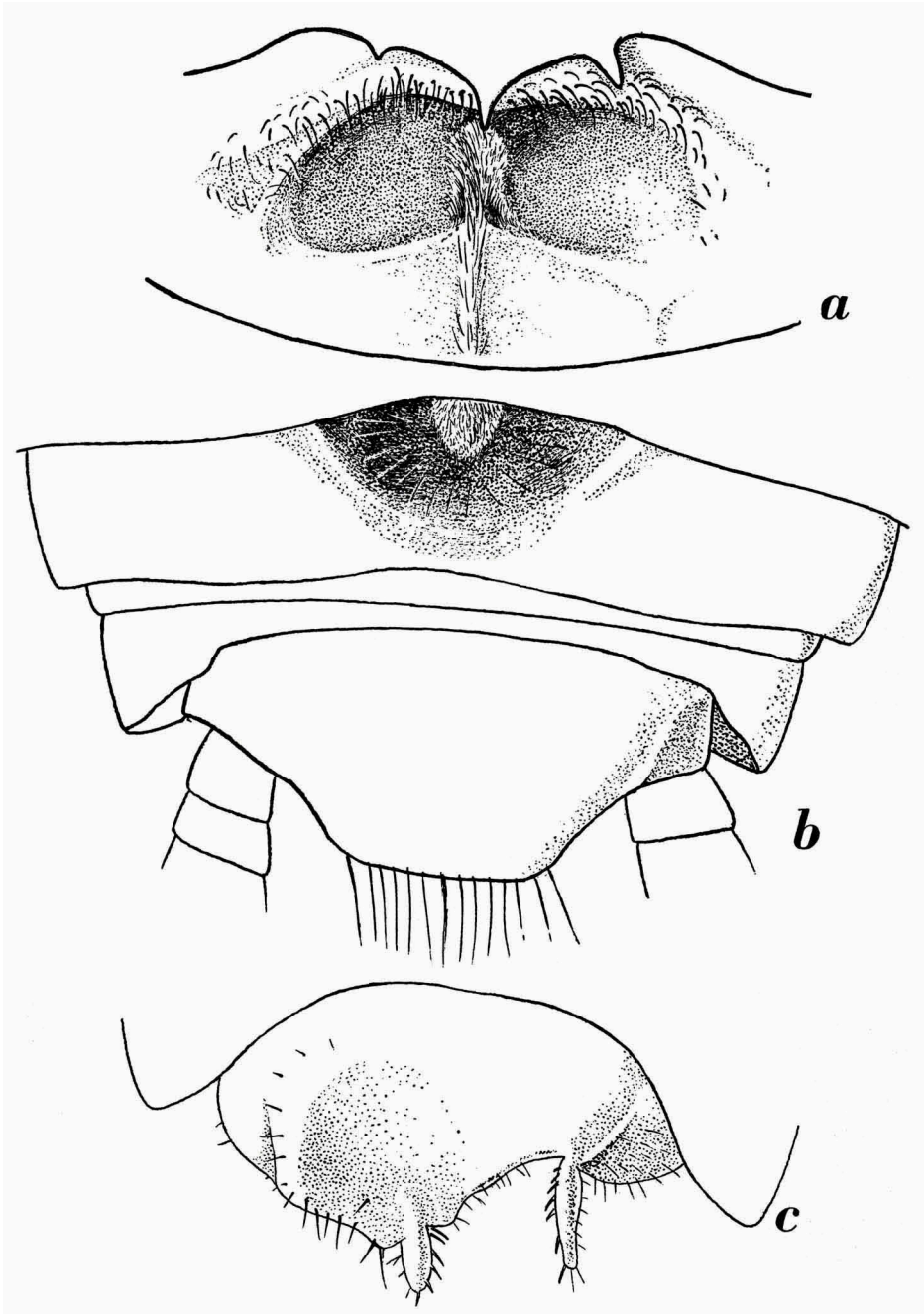

Fig. 37. *Haplosymploce montis* (Shelford). a, median segment abdomen ♂ ; b, extremity of abdomen, dorsal view; c, subgenital plate. Greatly enlarged.

Head pyriform in outline. Interocular space five-fourth width between antennal sockets. Ocellar spots large and well divided. Palpi short, fourth joint distinctly shorter than third, fifth longer than third in same ratio.

Pronotum moderately ample, with broad but shallow latero-caudal impressions; caudal margin weakly produced.

Tegmina and wings elongate and narrow. The former with ten anterior branches of the radial vein and seven longitudinal "discoidal" sectors. Anal field very elongate. Wings with narrow anterior field, and with eleven anterior branches of the radial vein, which are not thickened, and two anterior branches of the subcostal vein. Cubital vein with four incomplete and four complete branches. Intercalated triangle almost obsolete. First anal vein with three branches (fig. 13).

Supra-anal plate produced between the cerci and rounded symmetrically trapezoidal. Median and sixth dorsal segment specialized (fig. 37 a-b). Subgenital plate asymmetrical, bearing two spined styles; its dextral part produced; sinistral part emarginated (fig. 37 c).

Measurements: ♂, total length 19 mm, length of tegmina 15 mm, length of body 14 mm, pronotum 3.8 × 4.5 mm.

Haplosymploce reversa (Walker) (fig. 38)

Ischnoptera reversa Walker, 1869, p. 147; Kirby, 1904, p. 81; Shelford, 1906, p. 489; Shelford, 1908 a, p. 7; Hanitsch, 1915, p. 37.

Type: ♂, Singapore; Oxford University Museum.

Amsterdam Museum:

1 ♂ from Medan, Sumatra, which according to Hanitsch is near *H. reversa* (Walker) (fig. 38).

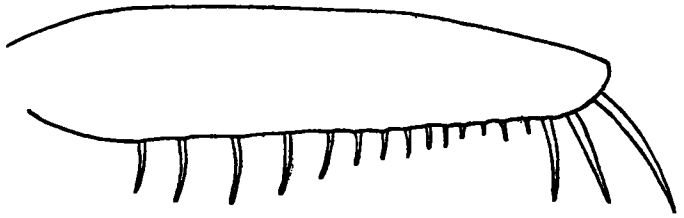

Fig. 38. *Haplosymploce reversa* (Walker). Cephalic femur. × 40.

Symploce radicifera (Hanitsch)

Neoblattella radicifera Hanitsch, 1928, p. 20; Hanitsch, 1929 a, p. 12; Hanitsch, 1929 b, p. 274.

Symploce radicifera, Hebard, 1929, p. 61, pl. 4 fig. 4; Hanitsch, 1931 a, p. 45; Hanitsch, 1931 b, p. 391; Hanitsch, 1932 a, p. 4; Hanitsch, 1932 c, p. 59; Hanitsch, 1933 a, p. 308; Hanitsch, 1933 c, p. 232.

Type: ♀, Fort de Kock, Sumatra, E. Jacobson, 1924; Oxford University Museum.

Leiden Museum:

Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♀; Fort de Kock, Sumatra, E. Jacobson, 1914, 1 ♂; Surulangun, Sumatra Exp., July 1877, 2 ♀♀; Sumatra, Sumatra Exp., 1 ♂; Java, Piepers, 1 ♂; Dampit, Sumber Pakel, Java, MacGillavry, 1919, 1 ♂; Borneo, 1 ♂.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1926, 1 ♀; ibidem, E. Jacobson, 1925, 1 ♂; Gunung Singgalang, Sumatra, E. Jacobson, 1925, 1 ♀; Lau Rakit, Sumatra, J. B. Corporaal, 1921, 1 ♂.

The number and the direction of the incomplete branches of the cubital vein varies strongly in *Symploce radicifera* (Hanitsch).

The two specimens from Fort de Kock in the collection of the Amsterdam Museum were identified by Hanitsch.

Measurements:	♂	♀
Total length	13.3-14.8 mm	14.2-15.0 mm
Length of the tegmina	11.8-12.7 mm	12.4-13.0 mm
Pronotum	2.4 × 3.4-2.7 × 4.0 mm	2.8 × 3.5-2.9 × 4.0 mm

Symploce larvata (Hanitsch)

Neoblattella larvata Hanitsch, 1929 a, p. 12, fig. 3.
Type: ♀, Tjinta Radja, Sumatra, Dr. E. Mjöberg; Stockholm Museum.

Leiden Museum:

Sengangi, Kelongai Mountains, Borneo Exp., August 1894, 1 ♂.

Remarks: Hanitsch's description was based on a specimen in which the fore legs were missing. The front femora of the specimen in the Leiden Museum are armed after type A_3. This specimen differs in following aspects from the type: the radial vein is not simple but forked at about four-fifths of its length, the cubital vein has two complete and about eight incomplete branches. In his description Hanitsch remarks that the venation is "very similar to that of *N. radicifera*". The wing venation of our specimen and the spination of the frontal femora indicates that *N. larvata* Hanitsch belongs to the genus *Symploce*.

Measurements: ♀. Total length 16.3 mm, length of tegmina 13.3 mm, pronotum 3.4-4.2 mm.

Symploce cavernicola (Shelford)

Ischnoptera cavernicola Shelford, 1907 a, p. 27; Shelford, 1908 a, p. 7; Hanitsch, 1915, p. 38; Hanitsch, 1923 b, p. 398.
Phyllodromia nigrocincta Chopard, 1919, p. 343, fig. 1, pl. 12 figs. 1-3.
Symploce cavernicola, Hebard, 1929, p. 66; Hanitsch, 1931 a, p. 44; Hanitsch, 1932 a, p. 3.
Ischnoptera bi-oculata Hanitsch, 1929 a, p. 8.

Type: ♂, Cave at Bidi, Sarawak, Borneo, R. Shelford; Oxford University Museum.

Leiden Museum:

Cave at Buo, Sumatra, E. Jacobson, March 1914, 3 ♂♂, 3 ♀♀; ibidem, Sumatra Exp., 1877—1878, 2 ♀♀.

This species, which only was found in caves (Cave at Bidi, Borneo; Cave at Goah Glap, Jalor; Cave at Buo; Cave at Jibong, Sarawak; and Mount Start Cave, Sarawak) can be easily recognized by the rufous pronotum bordered with dark castaneous. Its wings and eyes are fully developed and not reduced like in most other Blattids which live in caves.

Measurements:	♂	♀
Total length	13.0-14.2 mm	15.0-16.8 mm
Length of tegmina	11.1-11.9 mm	12.7-13.8 mm
Pronotum	2.5 × 3.7-2.7 × 3.8 mm	3.4 × 4.0-3.1 × 4.2 mm

Symploce sundaica Hebard

Symploce sundaica Hebard, 1929, p. 64, pl. 4 fig. 5, pl. 5 fig. 2.
Type: ♂, Fort de Kock, Sumatra, E. Jacobson, December 1922; Hebard Collection, type no. 1145.

Leiden Museum:

Sinabang, Simalur, Sumatra, E. Jacobson, January 1913, 1 ♂; ibidem, E. Jacobson, February 1913, 2 ♂♂, 3 ♀♀; ibidem, E. Jacobson, May 1913, 1 ♂; Fort de Kock, Sumatra, E. Jacobson, November 1913, 1 ♂; Muara Kiawai, Sumatra, E. Jacobson, June 1915, 1 ♀; Garut, Java, W. C. van Heurn, 1928, 2 ♂♂, 5 ♀♀; Tegal, Java, V. Lucassen, December 1915, 1 ♀; Batavia, Java, Semmelink, 1882, 1 ♂; Salatiga, Java, Docters van Leeuwen, 1907, 1 ♂; Surabaya, Java, MacGillavry, 1914, 1 ♂.

Amsterdam Museum:

Pagar Marbau, Sumatra, J. B. Corporaal, December 1919, 1 ♂; Medan, Sumatra, J. B. Corporaal, June, 1921, 2 ♀♀.

The specimens of the Leiden Museum agree in all aspects with the original description.

Measurements:	♂	♀
Total length	13.7-14.9 mm	14.0-14.9 mm
Length of tegmina	11.9-12.4 mm	11.5-12.0 mm
Pronotum	2.9 × 3.7-3.0 × 3.9 mm	3.2 × 4.0-3.3 × 4.2 mm

Symploce javana Hebard (fig. 39)

Symploce javana Hebard 1929, p. 65, pl. 5 fig. 2.
Type: ♂, Java; Hebard Collection, type no. 1146.

Leiden Museum:

Tosari, Java, Kohlbrugge, 1 ♂; Java, Dr. H. W. van der Weele, December 1909,

1 ♂; Tjinjiruan, Malabar Mountains, Java, Dr. H. W. van der Weele, December 1909, 1 ♂.

Since the variability in this species is great and the original description was based on a damaged specimen, a redescription is desirable.

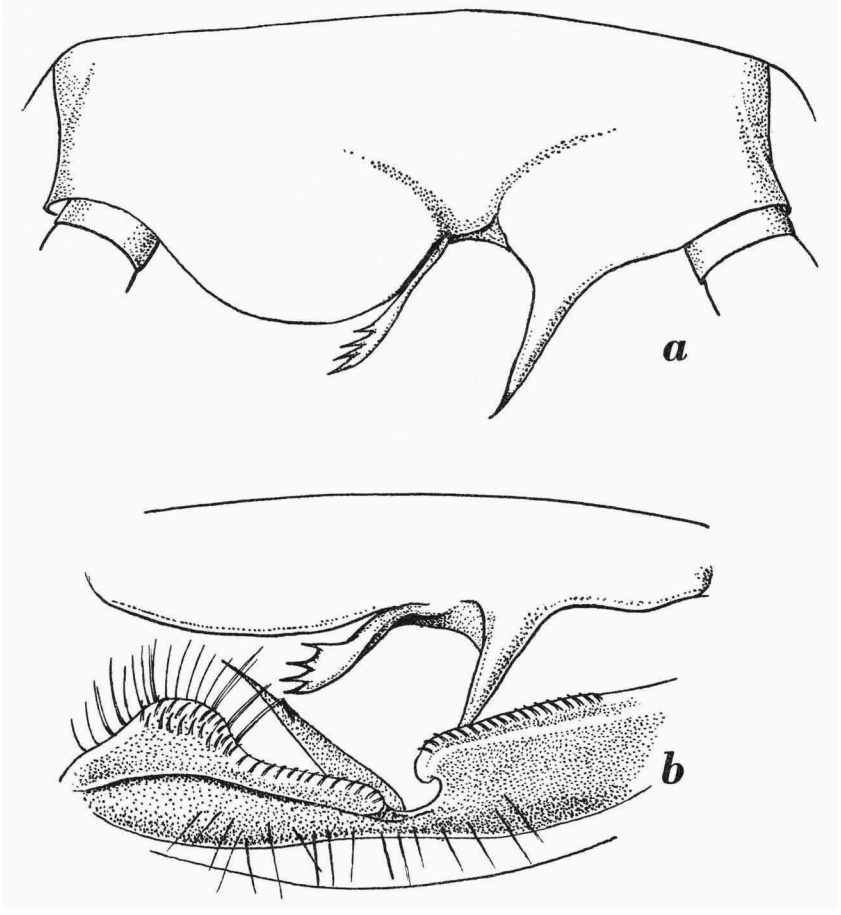

Fig. 39. *Symploce javana* Hebard. a, supra-anal plate in caudo-dorsal view; b, supra-anal plate and subgenital plate in caudal view. × 45.

♂. Size large for the genus. Palpi with fifth (distal) joint slightly longer than third, fourth decidedly shorter than third. Interocular space slightly more than three-quarters of width between antennal sockets (as 13 to 16). Ocellar spots large, rounded.

Tegmina and wings fully developed; cubital vein in the latter with five to seven incomplete and two or three complete branches.

Dorsal surface of abdomen unspecialized to sixth tergite, the tergites with latero-caudal angles slightly roundly produced; the sixth tergite cephalad with two depressed areas, its caudal margin mesad roundly emarginated and elevated; seventh and eight segments very narrow, the latter with latero-caudal angles strongly produced; ninth tergite (supra-anal plate) strongly specialized, asymmetrical, sinistral half of the caudal margin roundly produced, mesad strongly emarginated and the dextral half produced in a stout, finger-like spine, which is directed ventrad; from the median emargination a flat rounded process with four stout spines originates (fig. 39 a). Subgenital lamina asymmetrical, sinistral and dextral portions curved dorsad; the curved margins with numerous chaetiform spines directing to the interior of the anal chamber; no styles; within the anal chamber a strong spine, which directs sinistrad and apparently springs from the subgenital plate (fig. 39 b).

For the description of the coloration see Hebard (1929, p. 66).

Measurements: ♂, total length 15.8-19.5 mm, length of tegmina 13.1-16.7 mm, pronotum 3.4 ×3.6-4.2 × 5.1 mm.

Symploce excavata (Shelford)

Ischnoptera excavata Shelford, 1906, p. 265, pl. 16 fig. 11; Shelford, 1908 a, p. 7; Hanitsch, 1915, p. 38.

Symploce excavata, Hebard, 1929, p. 68; Hanitsch, 1933 a, p. 307; Hanitsch, 1933 c, p. 231; Bruijning, 1947, p. 219.

Type: ♂, Kuching, Sarawak, Borneo, March 1899; Oxford University Museum.

The specialized subgenital lamina forms a distinct specific character.

Symploce falcifera (Hanitsch)

Ischnoptera falcifera Hanitsch, 1925, p. 81, fig. 4.

Symploce falcifera, Hanitsch, 1931 b, p. 392; Hanitsch, 1933 a, p. 307; Hanitsch, 1933 c, p. 232.

Type: ♂, Mt. Dulit, Sarawak, Borneo, Dr. E. Mjöberg, October 1922—January 1923; Oxford University Museum.

Symploce breviramis (Hanitsch)

Ischnoptera breviramis Hanitsch, 1929 a, p. 10.

Symploce breviramis, Hanitsch, 1932 a, p. 4; Hanitsch, 1932 b, 265; Hanitsch, 1933 c, p. 231; Bruijning, 1947, p. 219.

Type: ♂, Medan, Sumatra, Dr. E. Mjöberg; Stockholm Museum.

Symploce lugubris (Hanitsch)

Ischnoptera lugubris Hanitsch, 1929 b, p. 271.

Type: ♀, Fort de Kock, E. Jacobson, 1926; Oxford University Museum.

The bifurcate radial vein of tegmina and wings, the cephalic femora being armed after type A, the large number of incomplete branches of the cubital vein, and the apical triangle being merely indicated, are characters that place this species in the genus *Symploce* Hebard.

Symploce simplex (Hanitsch)

Ischnoptera simplex Hanitsch, 1929 b, p. 272.
Type: ♂, Fort de Kock, E. Jacobson, 1925; Oxford University Museum.

The same characters as mentioned in the former species place *I. simplex* Hanitsch in *Symploce* Hebard.

Symploce mjöbergi (Hanitsch)

Ischnoptera mjöbergi Hanitsch, 1929 a, p. 9.
Type: ♂, Bah Lias; ♂, Tjinta Radja, Sumatra, E. Mjöberg, 1919—1921; Stockholm Museum.

See remarks under *S. lugubris.*

Symploce incerta (Hanitsch)

Ischnoptera incerta Hanitsch, 1929 a, p. 11.
Type: ?, Medan, Sumatra, E. Mjöberg, 1919-1921; Stockholm Museum.

See remarks under *S. lugubris.*

Symploce quadripunctata (Hanitsch)

Phyllodromia quadri-punctata Hanitsch, 1915, p. 57, pl. 1 fig. 1.
Ischnoptera quadri-punctata, Hanitsch, 1929 a, p. 11.
Type: ♀, Semengko Pass, Selangor, March 1912; Bukit Kutu, Selangor, April 1915; Raffles Museum.

Symploce ridleyi (Shelford)

Ischnoptera ridleyi Shelford, 1907 a, p. 26; Shelford, 1908 a, p. 7; Hanitsch, 1915, p. 39.
Symploce ridleyi, Hanitsch, 1932 a, p. 3; Hanitsch, 1933 c, p. 231.
Type: ♂, Singapore, H. N. Ridley, March to May 1906; Oxford University Museum.

Symploce ? biligata (Walker)

Ischnoptera biligata Walker, 1868, p. 123; Shelford, 1908 a, p. 7; Hanitsch, 1929 b, p. 269.
Blatta biligata Walker, 1868, p. 227.
Phyllodromia biligata, Kirby, 1904, p. 91.

Judging by the redescription of Hanitsch I believe that *biligata* belongs to *Symploce.*

Symploce ? mediastina (Hanitsch)

Neoblattella mediastina Hanitsch, 1930 a, p. 182, fig. 1.
Type: ?, Sarangan, Java, H. Overbeck; Dresden Museum.

This species probably belongs to *Symploce,* but it differs from the other species of this genus in the small number of branches of the radial vein and in the cubital vein forking only once. Since I know this species only from Hanitsch's description it is impossible for me to place it definitely in the proper genus.

Blattella germanica (Linnaeus) [1]

Blatta germanica Linnaeus, 1767, p. 688.
Phyllodromia germanica, Hanitsch, 1915, p. 45; Hanitsch, 1919, p. 67; Hanitsch, 1923 a, p. 198; Hanitsch, 1925, p. 83.
Blattella germanica, Hanitsch, 1928, p. 15; Hanitsch, 1929 a, p. 12; Hebard, 1929, p. 60; Hanitsch, 1929 b, p. 272; Hanitsch, 1930 a, p. 181; Hanitsch, 1931 a, p. 44; Hanitsch, 1931 b, p. 389, figs. 3-4; Hanitsch, 1933 c, p. 126; Bruijning, 1947, p. 217.
Type: Denmark.

Leiden Museum:

Kutur, Sumatra Exp., June 1878, 1 ♀; Silago, Sumatra Exp., June 1877, 1 ♀; ?, Sumatra Exp., 1 ♀; Sindanglaya, Java, W. Baerts, 1 ♀; Sambas, Borneo, Dr. Hallier, 1 ♀; Borneo, 1 ♂, 2 ♀♀; Belang, 1 ♀.

Blattella bisignata (Brunner)

Phyllodromia bisignata Brunner, 1893, p. 15, pl. 1 fig. 1; Kirby, 1904, p. 90.
Blatta bisignata, Saussure and Zehntner, 1895, p. 28.
Blattella bisignata, Hebard, 1929, p. 60; Hanitsch, 1931 b, p. 390; Hanitsch, 1932 a, p. 3; Hanitsch, 1932 c, p. 58; Hanitsch, 1933 a, p. 306; Hanitsch, 1933 b, p. 126; Bruijning, 1947, p. 218.
Type: ♂, ♀, Bhamo, Birma; Genoa Museum.

Leiden Museum:

Singapore, P. Buitendijk, 1 ♂; Deli, Sumatra, De Bussy, 3 ♀♀; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 3 ♂♂, 1 ♀; Muara Labu, Sumatra Exp., November 1877, 1 ♂; Rawas, Sumatra Exp., May 1878, 1 ♀; Padang, Sumatra, De Groot, 1919, 1 ♀; Java, Piepers, 1 ♀; Gunung Gedeh, Java, E. Jacobson, March 1911, 1 ♀; Malang, Java, P. Buitendijk, 1919, 1 ♀; Batavia, Java, E. Jacobson, 1907, 1 ♂, 5 ♀♀, Nongkodjadjar, Java, E. Jacobson, January 1911, 1 ♂; Banjuwangi, Java, MacGillavry, 1909, 1 ♂; ibidem, MacGillavry, 1911, 1 ♂, 4 ♀♀.

B. germanica (L.), *B. subvittata* Hebard and *B. bisignata* (Brunner) are narrowly related. In the collection of the Leiden Museum there is a large series of the former species, which was captured on board H. M. S. Snellius (probably in the eastern part of the Malay Archipelago). In some of the specimens of this series the darkening of the face is largely reduced and

1) Only the papers recording specimens from the Indo-Malayan region are mentioned.

the pronotal vittae are narrower; consequently these specimens strongly resemble *B. bisignata* (Brunner). This series contains also a specimen in which the pronotal vittae and the brown interocular band have disappeared, and which therefore is closely similar to *B. subvittata* Hebard. From the foregoing it appears that the pronotal and facial design are not of high diagnostic value.

Blattella subvittata Hebard

Blattella subvittata Hebard, 1929, p. 58, pl. 4 fig. 3, pl. 5 fig. 1.
Type: ♂, Pasuruan, Java; Acad. Nat. Sci. Philadelphia.

Blattella cuneivittata (Hanitsch)

Phyllodromia cunei-vittata Hanitsch, 1925, p. 86.
Blattella cunei-vittata, Hanitsch, 1933 a, p. 306, fig. 1.
Type: ♀, Mt. Dulit, Sarawak, Dr. E. Mjöberg, October 1922—January 1923; Oxford University Museum.

Blattella palmeri Caudell

Blattella palmeri Caudell, 1927, p. 10, fig. 1.
Type: ♂, Tjibodas, Mount Gedeh, Java, April 1920; United States National Museum.

Blattella albomarginata Hanitsch

Blattella albo-marginata Hanitsch, 1930a, p. 181; Hanitsch, 1931 b, p. 391.
Type: ♂, Samarang, Java; Dresden Museum.

Pseudoceratinoptera büttikoferi nov. spec. (fig. 40)

Leiden Museum:
Gunung Gedeh, Java, J. Büttikofer, 12-XI-1893, 1 ♂ (holotype).

♂. Size small, but shape stout. Face with sides convexly convergent; interocular space about seven sixteenth greatest width of face and about seven sixth width between antennal sockets. Palpi with third joint slightly longer than fourth which is decidedly longer than fifth (as 29 to 27 to 23). Pronotum transverse, greatest width near caudal margin; anterior margin very feebly convex, gradually rounding in the convex lateral margins; caudal margin mesad feebly convex; the centre and meso-cephalic portion of the disk slightly elevated. Tegmina reduced, nearly reaching the apex of cerci; radial vein with nine anterior branches (one of which forks) in the left tegmen and six anterior branches (of which three forks) in the right tegmen; the three or four discoidal sectors are longitudinal but slightly curved (fig. 40 a). Wings reduced, nearly reaching the base of the cerci; radial vein with five anterior branches, which are clubbed, one

of the branches is forked; median and cubital vein forked near the apex of wing (fig. 40 b). Abdomen specialized; median segment with a sigmoid elevation; caudal margins of sixth tergite thickened along a median, circular emargination; margin of seventh tergite reflexed in the broad median emargination and bearing numerous hairs mesad (fig. 40 c). Supra-anal plate transverse, its caudal margin convex. Ventro-cephalic margin of cephalic femora armed after type B.

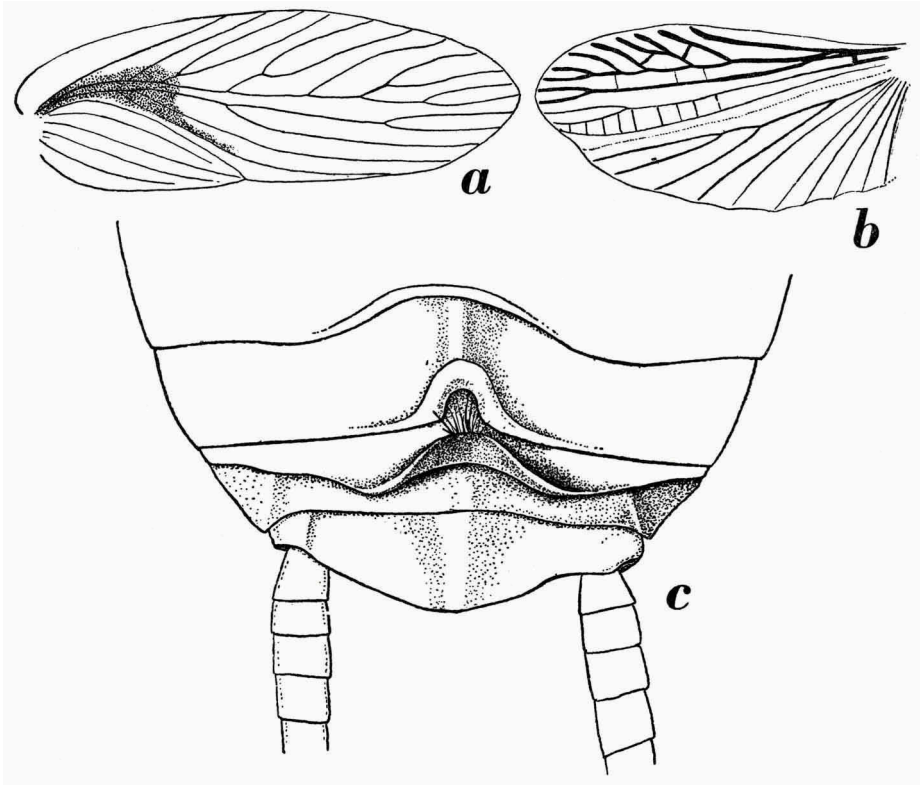

Fig. 40. *Pseudoceratinoptera büttikoferi* nov. spec. a, right tegmen; b, left wing; c, extremity of male abdomen, dorsal view. a and b, × 10½; c, greatly enlarged.

General coloration amber. Face with a band of suffused prouts brown between the eyes, Pronotum with lyriform design of prouts brown. Tegmina with a suffusion of prouts brown between the subcostal and post-cubital veins. Dorsal surface of abdomen with suffusion of prouts brown, ventral surface of abdomen with suffusions of fulvous. Legs testaceous.

Measurements: ♂, total length 8.2 mm, length of tegmina 6.4 mm, length of wings 4.9 mm, pronotum 2.2 × 3.2 mm.

Pseudoceratinoptera baluensis (Hanitsch)

Ceratinoptera baluensis Hanitsch, 1933 a, p. 314, figs. 8-10.
Type: ♂, Mount Kinabalu, Borneo, Captain H.M. Pendlebury, 1929; Oxford University Museum.

From the description it appears that this species belongs to *Pseudoceratinoptera* Hanitsch.

Pseudoceratinoptera bipunctata (Hanitsch)

Ceratinoptera bipunctata Hanitsch, 1933 a, p. 316, fig. 11.
Type: ♀, Kamborangah, Borneo, Captain H.M. Pendlebury, 1929; Oxford University Museum.

Pseudoceratinoptera ? microptera (Hanitsch)

Allacta microptera Hanitsch, 1925, p. 89.
Ceratinoptera (Allacta) microptera, Hanitsch, 1933 a, p. 316.
Type: ♂, Mount Murud, Borneo, Dr. E. Mjöberg, October 1922—January 1923; Oxford University Museum.

According to Hanitsch *"Allacta" microptera* Hanitsch and *"Ceratinoptera" baluensis* Hanitsch are closely allied.

Pseudoceratinoptera ? klossi (Hanitsch)

Ceratinoptera klossi Hanitsch, 1919, p. 68; Hanitsch, 1923 b, p. 419; Hanitsch 1929 a, p. 15.
Type: ♂, Sungei Kring, Korinchi Peak, H. C. Robinson and C. Boden Kloss, May 1914; Federated Malay States Museums.

Pseudoceratinoptera ? fulva (Brunner)

Temnopteryx fulva Brunner, 1865, p. 85; Kirby, 1904, p. 104.
Ceratinoptera fulva, Shelford, 1908 a, p. 19; Hanitsch, 1915, p. 62.
Type: ♂, Java; Brussels Museum.

Pseudoceratinoptera ? overbecki (Hanitsch)

Allacta overbecki Hanitsch, 1930 a, p. 184, figs. 4-5.
Type: ♀, Java, Dresden Museum.

Judging by the description this species belongs to the genus *Pseudoceratinoptera.*

Pseudoceratinoptera ? parva (Shelford)

Allacta parva Shelford, 1906, p. 268; Shelford, 1908 a, p. 18; Hanitsch, 1915, p. 63; Hanitsch, 1932 c, p. 67.
Type: ♂, Kuching, Sarawak; Oxford University Museum.

According to Hanitsch (1932 c, p. 67) the present species is allied to his species *"Allacta" raapi* and *"Allacta" overbecki.*

Pseudoceratinoptera ? raapi (Hanitsch)

Allacta raapi Hanitsch, 1932 c, p. 66, fig. 8.
Type: ♀, Batu Island, W. Sumatra, H. Raap, 1896-1897; Oxford University Museum.

Judging by the description and the figure I believe that the present species also belongs to *Pseudoceratinoptera.*

Possoina terminalis (Brunner)

Phyllodromia terminalis Brunner, 1898, p. 206, pl. 16 fig. 11; Kirby, 1904, p. 93; Shelford, 1908 a, p. 13; Hanitsch, 1923 b, p. 414.
Neoblattella terminalis, Hanitsch, 1929 b, p. 273.
Ebnerella terminalis, Hanitsch, 1935, p. 14.
Type: ♀, Borneo, Senckenberg Museum.

Possoina fuscocastanea (Hanitsch)

Shelfordella terminalis, Hebard (per err.), 1929, p. 47, pl. 3 figs. 1-2.
Neoblattella fusco-castanea Hanitsch, 1929 b, p. 274.
Ebnerella fusco-castanea, Hanitsch, 1935, p. 14.
Type: ♂, Fort de Kock, E. Jacobson, 1926; Oxford University Museum.

Leiden Museum:
Agam, Sumatra Exp., March 1877, 1 ♂.

The specimen from the collection of the Leiden Museum agrees with the descriptions given by Hanitsch and Hebard. The subgenital plate with the styles and the finger-like appendages is a feature of great diagnostic value.

Measurements: ♂, total length 15.8 mm, length of tegmina 13.2 mm, length of wings 12.6 mm, pronotum 3.2 × 4.1 mm.

Possoina latimarginata (Hanitsch)

Neoblattella latimarginata Hanitsch, 1928, p. 19.
Shelfordina jarakae Hebard, 1929, p. 48, pl. 3 figs. 3-4.
Shelfordella latimarginata, Hanitsch, 1933 b, p. 126.
Ebnerella latimarginata, Hanitsch, 1935, p. 14.
Type: ♂, ♀, Mentawi Islands; Oxford University Museum.

According to the original description of Hanitsch the median vein of the wing is bifurcate, but from Hebard's description and his figure it appears that Hanitsch erroneously described the median vein as bifurcate.

Possoina digitata (Hanitsch)

Neoblattella digitata Hanitsch, 1928, p. 18, pl. 1 fig. 7.
Shelfordella digitata, Hanitsch, 1933 b, p. 127.
Ebnerella digitata, Hanitsch, 1935, p. 14.
Type: ♂, ♀, Mentawi Islands; Oxford University Museum.

Sundablatta sexpunctata (Hanitsch)

Pseudophyllodromia sexpunctata Hanitsch, 1923 b, p. 418, fig. 15.
Sundablatta sexpunctata, Hebard, 1929, p. 76.
Type; ♂, ♀, Bukit Kutu, Selangor; Penang Hill, Pulo Penang; Kledang, Perak; Oxford University Museum.

Leiden Museum:

Lussum, Sumatra, Dr. B. Hagen, 3—7 December 1883, 1 ♂.

This remarkable insect can easily be recognized by its distinctive colour pattern.

Measurements: ♂, total length 7.7 mm, length of tegmina 5.5 mm, length of wings 4.5 mm, pronotum 2.3 × 3.4 mm.

Sundablatta pulcherrima (Shelford)

Pseudophyllodromia pulcherrima Shelford, 1906, p. 266, pl. 15 fig. 3; Shelford, 1908 a, p. 17; Hanitsch, 1915, p. 59, pl. 3 fig. 15; Hanitsch, 1925, p. 89; Hanitsch, 1933 a, p. 314; Hanitsch, 1933 c, p. 232.
Sundablatta pulcherrima, Hebard, 1929, p. 76.
Type: ♂, ♀, Kuching, Borneo; Oxford University Museum.

Pseudophyllodromia laticeps (Walker)

Blatta laticeps Walker, 1869, p. 77.
Phyllodromia laticeps, Kirby, 1904, p. 91; Hanitsch, 1915, p. 60, pl. 1 fig. 3; Hanitsch, 1919, p. 67.
Pseudophyllodromia laticeps, Shelford, 1908 a, p. 16, pl. 1 fig. 8; Hanitsch, 1923 b, p. 417; Hanitsch, 1925, p. 89; Hanitsch, 1928, p. 29 (per err.); Hebard, 1929, p. 45; Hanitsch, 1931 a, p. 45; Hanitsch, 1932 c, p. 64; Hanitsch, 1933 a, pp. 312-313, fig. 6.
Type: ♀, Singapore; British Museum.

Leiden Museum:

Aur Kumanis, Sumatra, E. Jacobson, March 1914, 1 ♂; Mesauw, Sumatra Exp., July 1878, 1 ♀; Kutur, Sumatra Exp., June 1878, 1 ♂, 1 ♀; Java, 1 ♂.

Amsterdam Museum:

Lau Rakit, Sumatra, J. B. Corporaal, February 1921, 1 ♀.

Since Hanitsch based his 2 new species of the genus *Pseudophyllodromia* on characters of no great specific value (whether or not the pronotal vitta reaches as far as the cephalic and the caudal margin; whether the apical joint of the palp is black or white) I believe these species merely to be subspecies. The same may be said about Brunner's *"laticaput"*. Lack of material, however, makes it impossible for me to draw definite conclusions.

The specimen from Java is the first record from the island.

Measurements:	♂	♀
Total length	11.9 mm	10.2 mm
Length of tegmina	9.8 mm	8.1 mm
Pronotum	2.8 × 3.9 mm	2.5 × 3.7 mm

Pseudophyllodromia laticaput (Brunner)

Phyllodromia laticaput Brunner, 1898, p. 205, pl. 16 fig. 8, Kirby, 1904, p. 93.
Pseudophyllodromia laticaput, Shelford, (partly) 1908, p. 16.
Pseudophyllodromia laticaput, Hanitsch, 1933 a, p. 311, fig. 5; Hanitsch, 1933 c, p. 232.
Type: ♂, Brunei, Borneo, Prof. Dr. W. Kükenthal; Senckenberg Museum.

Pseudophyllodromia mentawiensis Hanitsch

Pseudophyllodromia laticeps, Hanitsch, 1928, p. 29 (partim).
Pseudophyllodromia mentawiensis Hanitsch, 1933 a, p. 313.
Type: 4 ♀ ♀, Mentawi Islands; Oxford University Museum.

Pseudophyllodromia poiensis Hanitsch

Pseudophyllodromia poiensis Hanitsch, 1933 a, p. 313, fig. 7.
Type: 2 ♀ ♀, Mount Poi, Sarawak, E. Mjöberg, 1924; Oxford University Museum.

Pseudochorisoblatta nov. gen.

Generic characters: Fully alate in both sexes; shape of male elongate, slender; shape of female shorter and broader.

Head pyriform in outline. Antennae setaceous to sparsely and briefly subplumose. Pronotum trapezoidal with rounded angles or with a parabolic anterior border.

Tegmina of male elongate, apex rounded, exceeding that of abdomen; tegmina of female barely exceeding the apex of the cerci; "discoidal" sectors oblique; radial vein irregularly branching or sometimes bifurcate beyond median point; anal field elongate pyriform, sharply defined. Wings with radial vein forking towards the apex; cubital vein with branches; intercalated triangle distinct.

Abdomen of male unspecialized; ultimate tergite (supra-anal plate) transverse, narrow, caudal margin obtuse angulate; ultimate sternite (subgenital plate) trigonal, symmetrical, meso-caudad forming a ridge. Styli broad, reniform.

Cephalic femora with ventro-cephalic margin armed with stout spines, succeeded by a row of minute, well-spaced piliform spines, terminating distad in three heavy elongate spines (type B_3). Other femora with ventral margins sparsely spined with strong spines. Tarsal claws equal in length; internal margins unspecialized. Arolia present.

Genotype: *Phyllodromia interrupta* Hanitsch.

The new genus is narrowly related with *Chorisoblatta* Shelford, but differs in the unspecialized tarsal claws.

Pseudochorisoblatta interrupta (Hanitsch) (fig. 41)

Phyllodromia interrupta Hanitsch, 1928, p. 87.
Type: ♀, Kalabit, Sarawak, Dr. E. Mjöberg; Oxford University Museum.

Leiden Museum:

Samarang, Java, E. Jacobson, October 1909, 1 ♂; Batavia, E. Jacobson, November 1907, 1 ♂; Banjuwangi, Java, MacGillavry, 1911, 1 ♂.

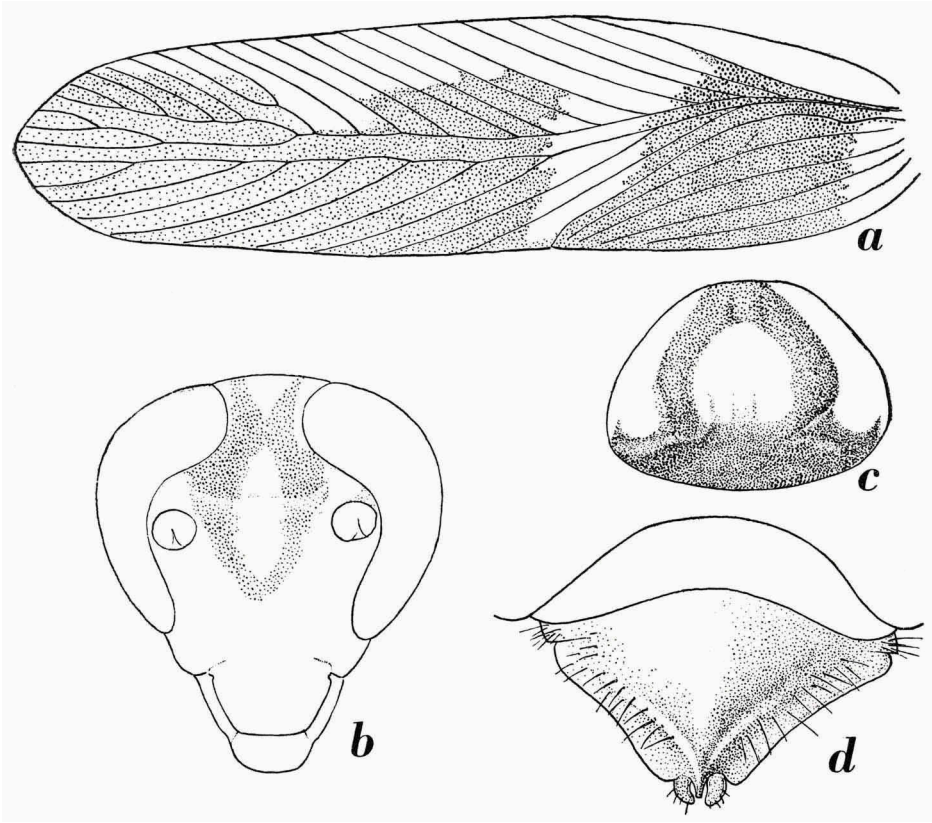

Fig. 41. *Pseudochorisoblatta interrupta* (Hanitsch). a, left tegmen; b, head; c, pronotum; d, subgenital plate ♂. a, × 15; b, × 35; c, × 15; d, × 35.

Described by Hanitsch, this species never was mentioned again. The distinctive colour pattern of face, pronotum and tegmina (see the figures in the present paper) make this species easily to be distinguished from its allies.

Measurements: ♂, total length 12.5 mm, length of tegmina 11.7 mm, pronotum 2.9 × 4.0 mm.

Pseudochorisoblatta ? **megaspila** (Walker)

Blatta megaspila Walker, 1868, p. 98.
Blatta arborifera Walker, 1868, p. 100.
Allacta megaspila, Kirby, 1904, p. 100.
Phyllodromia megaspila, Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 52.
Chorisoblatta megaspila, Hanitsch, 1928, p. 27; Hanitsch, 1933 c, p. 232; Hanitsch, 1934, p. 121.
Type: ♀, Java; British Museum.

Amsterdam Museum:
Locality unknown, 1 ♀.

The specimen in the collection of the Amsterdam Museum is badly damaged; the head, most of the legs and the left wing are missing. Since the tegminal and wing venation and the tarsal claws agree with those of the genotype I believe that *megaspila* belongs to the genus *Pseudochorisoblatta.*

Pseudochorisoblatta ? **karnyi** (Hanitsch)

Chorisoblatta Karnyi Hanitsch, 1928, p. 27, pl. 1 fig. 8.
Type: ♀, Siberut, Mentawi Islands; Oxford University Museum.

According to Hanitsch, this species is narrowly related with Walker's *megaspila* (Hanitsch, 1928 p. 28).

Pseudochorisoblatta ? **confluens** (Hanitsch)

Phyllodromia confluens Hanitsch, 1925, p. 85, fig. 6.
Chorisoblatta confluens, Hanitsch, 1933 a, p. 314.
Type: ♀, Mount Murud, Sarawak, Dr. E. Mjöberg; Oxford University Museum.

The oblique "discoidal" sectors, the front femora being armed after type B, the cubital vein being 5-ramose and the unspecialized tarsal claws make it very probable that this species belongs to *Pseudochorisoblatta.*

Pseudochorisoblatta ? **hamifera** (Walker)

Blatta hamifera Walker, 1868, p. 224.
Allacta hamifera, Kirby, 1904, p. 100.
Phyllodromia hamifera, Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 43, pl. III fig. 14; Hanitsch, 1923 b, p. 406.
Type: ♂, Sarawak; Oxford University Museum.

Leiden Museum:
Djasinga, Tjibarangbang, Java, Dr. J. van der Vecht, November 1936, 1 ♀.

Judging by the tegminal and wing venation of the specimen in our collection, this species belongs to the genus *Pseudochorisoblatta.* Since no male specimens are known to me I place this species in *Pseudochorisoblatta*

for the time being. Hanitsch (1925, p. 88) pointed out that *P. confluens* Hanitsch and *P. interrupta* Hanitsch are closely allied to *P. hamifera* (Walker).

This is the first record from Java.

Pseudochorisoblatta ? marmorata (Walker)

Blatta marmorata Walker, 1869, p. 140.
Allacta marmorata, Kirby, 1904, p. 100.
Phyllodromia marmorata, Shelford, 1908 a, p. 13, pl. 2 fig. 1; Hanitsch, 1915, p. 53.
Type: ♀, Mount Ophir, Malay Peninsula; Oxford University Museum.

Pseudochorisoblatta ? picturata (Shelford)

Phyllodromia picturata, Shelford, 1907 a, p. 30; Shelford, 1908 a, p. 13.
Chorisoblatta picturata, Hanitsch, 1929 a, p. 15.
Type: ♂, Singapore, Botanic Gardens, H. N. Ridley; Oxford University Museum.

Hebardula Uvarov

Hebardula Uvarov, 1939, p. 457.
Allactina Hebard, 1929, p. 18.

Hebardula jacobsoni (Hebard)

Allactina jacobsoni Hebard, 1929, p. 19, pl. 2 fig. 1.
Chorisoblatta jacobsoni, Hanitsch, 1929 b, p. 279.
Mareta jacobsoni, Hanitsch, 1933 a, p. 305; Bruijning, 1947, p. 213.
Type: ♀, Fort de Kock, Sumatra, E. Jacobson, December 1920, Hebard collection, type no. 1129.

Leiden Museum:

Baso, Sumatra, E. Jacobson, October 1913, 1 ♀.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1924, 1 ♀; Barabei, S. E. Borneo, A. Pool, 1883, 1 ♀.

The specimens agree in all aspects with the type.

Measurements: total length 11.8-12.6 mm, length of tegmina 10.2-10.5 mm, pronotum 2.0 × 3.1-2.1 × 3.3 mm.

Pseudothyrsocera xanthophila (Walker) (fig. 42)

Blatta xanthophila Walker, 1868, p. 230.
Thyrsocera xanthophila, Kirby, 1904, p. 78.
Pseudothyrsocera xanthophila, Shelford, 1906, p. 250; Shelford, 1908 a, p. 5; Hanitsch, 1929 b, p. 268; Hanitsch, 1933 b, p. 135; Bruijning, 1947, p. 226.
Phyllodromia rubro-nigra Hanitsch, 1923 b, p. 412, figs. 11-12.
Pseudothyrsocera rubro-nigra, Hanitsch, 1928, p. 14; Hanitsch, 1929 b, p. 268; Hanitsch, 1932 c, p. 64.
Pseudothyrsocera fulva, Hebard, 1929, p. 79, pl. 6 fig. 2.
Type: ♂, Menado, Celebes, Wallace; Oxford University Museum.

Leiden Museum:

Fort de Kock, Sumatra, E. Jacobson, 1926, 2 ♀♀, Suban Ajam, Sumatra, E. Jacobson, 1916, 1 ♀; Sumatra, Sumatra Exp., 1 ♂, 1 ♀, 1 ?; Belang, Forsten, 1 ♂, 1 ?.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1925, 2 ♂♂, 4 ♀♀; ibidem, E. Jacobson, 1926, 2 ♀♀.

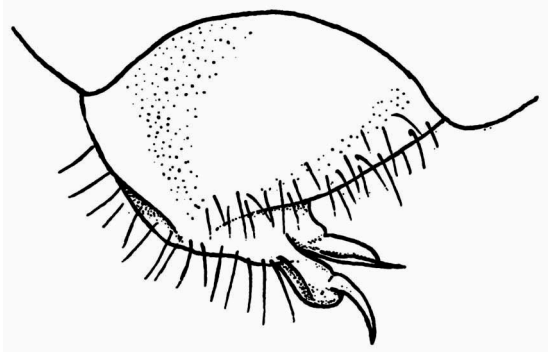

Fig. 42. *Pseudothyrsocera xanthophila* (Walker).
Subgenital plate ♂. Greatly enlarged.

Hanitsch established the synonymy of his species *P. rubronigra* and *P. fulva* Hebard (Hanitsch, 1932 c, p. 64). In a former paper (Hanitsch, 1929 b, pp. 268-269) this author recorded *P. xanthophila* (Walker) and *P. rubro-nigra* Hanitsch from the same locality. The only feature in which the two species differ is the much darker colour of the latter. They agree in the shape of the subgenital plate (fig. 42).

In the series of the Amsterdam Museum (also from the same locality as Hanitsch's material) there are specimens which were identified by Hanitsch as *P. xanthophila* and others as *P. rubro-nigra*. Since the intensity of the coloration varies widely and transitions are to be found from dark specimens I believe that *P. rubro-nigra* Hanitsch is merely a dark variety of *P. xanthophila* Walker and consequently synonymous with the latter.

Measurements:	♂	♀
Total length	13.0-13.4 mm	13.7-14.4 mm
Length of tegmina	10.9-11.4 mm	11.3-11.9 mm
Pronotum	3.3 × 3.6-3.4 × 3.7 mm	3.5 × 3.7-3.7 × 3.9 mm

Pseudothyrsocera bicolor Shelford

Pseudothyrsocera bicolor Shelford, 1909 a, p. 612; Hanitsch, 1915, p. 36.
Type: ♂, Mt. Matang, Sarawak, Borneo; Oxford University Museum.

Pseudothyrsocera montana Shelford

Pseudothyrsocera montana Shelford, 1906, p. 251; Shelford, 1908 a, p. 5; Hanitsch, 1915, p. 35.
Type: ♂, Mt. Matang, Sarawak, Borneo; Oxford University Museum.

Pseudothyrsocera moultoni Hanitsch

Pseudothyrsocera moultoni Hanitsch, 1915, p. 36, pl. 3 fig. 16.
Type: ♀, Mt. Merinjah, Sarawak, Borneo, Moulton, May 29th 1914; Oxford University Museum.

Pseudothyrsocera pica (Walker)

Pseudomops pica Walker, 1868, p. 213.
Thyrsocera pica, Kirby, 1904, p. 78.
Pseudothyrsocera pica, Shelford, 1906, p. 250; Shelford, 1908 a, p. 5, pl. 1 fig. 3; Hanitsch, 1915, p. 34, pl. 7 fig. 37.
Type: ♂, Singapore, Sumatra; Sarawak Museum.

Pseudothyrsocera ruficollis Shelford

Pseudothyrsocera ruficollis Shelford, 1906, p. 251, pl. 14 fig. 6; Shelford, 1908 a, p. 5; Hanitsch, 1915, p. 35, pl. 7 fig. 36.
Type: ♂, Penang.

Pseudothyrsocera scutigera (Walker)

Pseudomops scutigera Walker, 1868, p. 212.
Hemithyrsocera scutigera, Kirby, 1904, p. 77.
Pseudothyrsocera scutigera, Shelford, 1906, p. 250; Shelford, 1908 a, p. 5; Hanitsch, 1915, p. 34; Hanitsch, 1923 b, p. 397.
Type: ♂, Sarawak; Oxford University Museum.

Leiden Museum:

Orut Ratuna, Van Hasselt, May 1895, 1 ♂.

Measurements: total length 13.2 mm, length of tegmina 11.1 mm, pronotum 3.1 × 3.2 mm.

Graptoblatta notulata (Stål)

Blatta notulata Stål, 1860, p. 308.
Phyllodromia hieroglyphica Brunner, 1865, p. 105.
Allacta notulata, Kirby, 1904, p. 100.
Phyllodromia notulata, Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 49, pl. 1 fig. 2; Hanitsch, 1923 a, p. 198; Hanitsch, 1923 b, p. 411.
Eoblatta notulata, Shelford, 1911 b, p. 155; Hebard, 1922, p. 329, pl. 26 fig. 11; Hanitsch, 1929 a, p. 14.
Graptoblatta notulata, Hebard, 1929, p. 26; Hanitsch, 1929 b, p. 279; Hanitsch, 1933 c, p. 231; Hanitsch, 1934, p. 114; Hebard, 1935, p. 117; Hebard, 1936, p. 146.
Type: ♂, Tahiti.

Leiden Museum:

Solok, Sumatra Exp., April 1877, 2 ♀♀, 1 ?; Java, Muller, 2 ♂♂, 2 ♀♀; Bata-

via, Java, Dr. Govers, 1 ♀; Garut, Java, W. C. van Heurn, 1 ♀. Also a specimen from Obi Fatu and one from Samoa.

G. notulata (Stål) is widely distributed (see list of species).

Graptoblatta ? polygrapha (Walker)

Blatta polygrapha Walker, 1868, p. 222.
Allacta polygrapha, Kirby, 1904, p. 100.
Phyllodromia polygrapha, Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 49; Hanitsch, 1923 b, p. 411; Hanitsch, 1927, p. 36.
Graptoblatta ? pylographa, Hebard, 1929, p. 8.
Type: ♀, Chau-ti-bon, Siam; Oxford University Museum.

Mareta similis (Saussure) (fig. 43)

Blatta similis Saussure, 1869, p. 245.
Blatta patula Walker, 1869, p. 143.
Apolyta pallida Tepper, 1893, p. 46.
Phyllodromia obtusata Brunner, 1895, p. 892; Shelford, 1908 a, p. 14.
Allacta obtusata, Kirby, 1904, p. 100; Kirby, 1909.
Allacta similis, Shelford, 1908 a, p. 73; Hebard, 1922, p. 327; Hanitsch, 1923 b, p. 420.
Mareta similis, Hebard, 1929, p. 8; Hanitsch, 1931 b, p. 387.
Type: ♂, ?

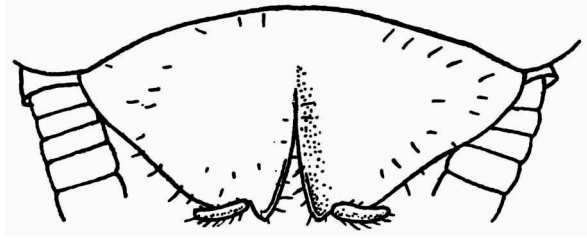

Fig. 43. *Mareta similis* (Saussure). Subgenital plate ♂. × 45.

Leiden Museum:
Only a specimen from Kupang and two specimens from Wettar.

The subgenital plate is characteristic for the genus (fig. 43).

Mareta parva (Shelford)

Allacta parva Shelford, 1906, p. 268; Shelford, 1908 a, p. 18; Hanitsch, 1915, p. 63.
Mareta parva, Hebard, 1929, p. 8.
Type: ♂, Kuching, Borneo; Oxford University Museum.

This seems to be a smaller species. According to Shelford the total length is 8 mm. The two castaneous vittae on the frons form a valuable specific character.

Mareta stellata (Hanitsch)

Phyllodromia stellata Hanitsch, 1923 b, p. 413, fig. 13.
Mareta ? stellata, Hebard, 1929, p. 8.

Mareta stellata, Hanitsch, 1931 b, p. 388, figs. 1-2; Hanitsch, 1933 a, p. 305.
Type: ♀, Gunung Kledang, Perak, R. Hanitsch, November 1916; Oxford University Museum.

Mareta contigua (Walker)

Blatta contigua Walker, 1868, p. 228.
Phyllodromia contigua, Kirby, 1904, p. 93; Shelford, 1908 a, p. 14; Hanitsch, 1925, p. 82.
Margattea contigua, Hanitsch, 1928, p. 21.
Mareta contigua, Hanitsch, 1931 b, p. 388; Hanitsch, 1932 a, p. 2; Hanitsch, 1936, p. 391; Bruijning, 1947, p. 214.
Type: ♀, New Guinea; Oxford University Museum.

Leiden Museum:
Java, 1 ♀.

The whitish cross-bar, just above the antennal sockets, is very distinct in this specimen.

Measurements: ♀, total length 14.8 mm, length of tegmina 12.7 mm, pronotum 3.4 × 4.9 mm.

Mareta nodosa (Fritze)

Blatta nodosa Fritze, 1899, p. 335.
Phyllodromia nodosa, Kirby, 1904, p. 91; Shelford, 1908 a, p. 13; Hanitsch, 1923 b, p. 410.
Graptoblatta nodosa, Hebard, 1929, p. 26.
Type: ♂, Java.

Leiden Museum:
Java, 1 ♂; Weleri, Java, Van Leeuwen, October 1910, 1 ♂; Garut, Java, W. C. van Heurn, 1928, 1 ♂; Ardjuno, Gunung Papandajan, W. C. van Heurn, 1931, 1 ♂.

From the deeply divided, symmetrical male subgenital plate and the strongly asymmetrical tarsal claws it appears that *nodosa* belongs to the genus *Mareta* Bolivar.

The wings and tegmina are strongly elongate.

Measurements: ♂, total length 17.6-19.0 mm, length of tegmina 15.1-16.7 mm, pronotum 2.9 × 4.3-3.2 × 5.1 mm.

Mareta siccifolia Hanitsch

Mareta siccifolia Hanitsch, 1932 c, p. 53, fig. 1.
Type: ♀, Sipora, Mentawi Islands, E. Modigliani, May to June 1894; Oxford University Museum.

Mareta arborescens Hanitsch

Mareta arborescens Hanitsch, 1930 a, p. 183, figs. 2-3.
Type: ♂, Samarang, Java; Dresden Museum.

Mareta reticulata (Fabricius)

Blatta reticulata Fabricius, 1798, p. 186.
Phyllodromia reticulata, Shelford, 1908 a, p. 12; Hanitsch, 1927, p. 11.
Margattea reticulata, Hanitsch, 1929 a, p. 13.
Mareta reticulata, Hanitsch, 1931 b, p. 387.
Type: "India".

Mareta testacea (Hebard)

Graptoblatta testacea Hebard, 1929, p. 25, pl. 1 fig. 2.
Type: ♂, Pasuruan, Java; Hebard Collection, type no. 1138.

Leiden Museum:

Malang, Java, P. Buitendijk, December 1919, 1 ♂; Gunung Gedeh, Java, E. Jacobson, March 1911, 1 ♂; Samarang, Java, E. Jacobson, September 1909, 1 ♀; Samarang, Java, E. Jacobson, January 1910, 1 ♀; Batavia, Java, E. Jacobson, October 1907, 1 ♀.

This species was erroneously placed in *Graptoblatta* by Hebard. The deeply cleft, symmetrical male subgenital plate, the strongly asymmetrical tarsal claws and the armament of the cephalic femora place this species in *Mareta* Bolivar.

The number of branches of the cubital vein of the wing varies in this species; in one of the specimens two of them are forked.

Measurements:	♂	♀
Total length	11.9-12.8 mm	13.2-14.1 mm
Length of tegmina	10.2-10.5 mm	10.3-11.7 mm
Pronotum	2.3 × 3.2-2.5 × 3.7 mm	2.8 × 4.0-2.9 × 4.4 mm

Mopsera rectangularitervittata (Brunner)

Phyllodromia rectangulariter-vittata Brunner, 1898, p. 203, pl. 16 fig. 3; Kirby, 1904, p. 411; Shelford, 1908 a, p. 13; Hanitsch, 1923 b, p. 411.
Mopsera rectangulariter-vittata, Hebard, 1929, p. 78, pl. 5 fig. 6, pl. 6 fig. 1.
Type: ♀, Borneo; Brunner Collection.

Mopsera ? castanea (Brunner)

Phyllodromia castanea Brunner, 1898, p. 204, pl. 16 fig. 7; Kirby, 1904, p. 93; Shelford, 1908 a, p. 13; Hanitsch, 1923 b, p. 402.
Mopsera ? castanea, Hebard, 1929, p. 78.
Type: ♂, Brunei, Borneo; Brunner Collection.

Supella supellectilium (Serville)

Blatta supellectilium Serville, 1839, p. 114.
Phyllodromia supellectilium, Hanitsch, 1915, p. 56.
Supella supellectilium, Hanitsch, 1934, p. 117.
Type: ♂, ♀, "Ile de France".

This cosmopolitan species has not been recorded from the Indomalayan subregion, but may be expected, since it is known from numerous localities in the tropics.

Temnopteryx bimaculata Chopard

Temnopteryx bimaculata Chopard, 1924, p. 319, fig. 27, pl. 4 fig. 2.
Scabina transversa Hanitsch, 1932 c, p. 72, fig. 13.
Type: ♂, Koné, New Caledonia, Sarasin and Roux, March 25 1911; Basel Museum.
Leiden Museum:
Solok, Sumatra, Exp. Kleiweg de Zwaan, 1907, 1 ♀; Ambarawah, Java, Ludeking, 1 ♀.

This species was erroneously placed by Hanitsch in the subfamily Blattinae, but since the female subgenital plate is not valved it cannot belong to the Blattinae.

It can easily be distinguished by its remarkable coloration. It is very remarkable that this species has only been recorded from New-Caledonia, Sumatra and Java.

Measurements: ♀, total length without cerci 9.0 mm, length of tegmina 2.6 mm, pronotum 2.6 × 3.6 mm.

Squamoptera nov. gen.

Size below medium, form decidedly stout. Head with interocular space broad. General outline of face oviform. Pronotum broad, slightly cucullate. Tegmina abbreviated, reaching as far as the sixth abdominal segment. Wings largely reduced to small lateral scales. Dorsal surface of male abdomen unspecialized. Supra-anal plate broadly trigonal. Subgenital plate of male symmetrical, bearing styles. Ventro-cephalic margin of cephalic femora armed with a large series of piliform spines; distad only one heavy spine. No pulvillus between the simple symmetrical claws.

Genotype: *Squamoptera fulva* nov. spec.

Squamoptera fulva nov. spec.

Leiden Museum:
Padang, Sumatra, 1 ♂ (holotype).

Interocular space very broad, interval between antennal sockets only half as broad. Ocellar spots well defined. Palpi well developed, fifth joint decidedly longer than third, third distinctly longer than fourth. Antennae damaged. Sides of face converging ventrad. Pronotum broad, nearly semicircular with two distinct but shallow impressions; anterior margin convex, gradually rounding into the lateral margins; latero-caudal angles rounded;

the caudal margin is slightly emarginated. Tegmina rounded rectangulate; the sinistral and dextral nearly reaching each other in the median; the radial, median, cubital and postcubital veins well developed but abbreviated. Wings very small and scale-like; only one vein developed. Ventro-cephalic margin of cephalic femora armed with a long row of piliform spines terminating in one large distal spine; proximally this margin forms a trigonal elevation. Tibiae of the frontal legs small; the ventro-cephalic margin distad with a large, curved spine. Tarsal claws symmetrical; arolium absent. Supra-anal plate broadly trigonal; apex rounded; the margin slightly emarginated. Subgenital plate symmetrical, trigonal with rounded apex; two styles near the apex. Cerci long, distad acuminate.

General coloration fulvous; lateral margins of pronotum testaceous and transparent.

Measurements: ♂, total length 10.2 mm, length of tegmina 4.3 mm, length of wings 1.5 mm, pronotum 3.2 × 4.3 mm.

Dictyoblatta Hanitsch

The place of this genus is not clear. According to Hanitsch it is allied to *Mareta* Bolivar, its front femora being armed after type C, and its subgenital plate being bifid. It differs, however, in the absence of an apical triangle.

Dictyoblatta bimaculata Hanitsch

Dictyoblatta bimaculata Hanitsch, 1932 c, p. 67, figs. 9-11; Hanitsch, 1933 a, p. 317.
Type: ♀, Si Oban, Mentawi Islands, E. Modigliani, April-August 1894; Oxford University Museum.

"**Phyllodromia**" **variegata** Brunner

Phyllodromia variegata Brunner, 1898, p. 205, pl. 16 fig. 10; Kirby, 1904, p. 48; Shelford, 1908 a, p. 14; Hanitsch, 1915, p. 48.
Graptoblatta ? variegata, Hebard, 1929, p. 8.
Type: ♀, Java, Senckenberg Museum.

Since from Brunner's figure it appears that the "discoidal" sectors of the tegmina are strongly oblique, this species cannot belong to *Graptoblatta.* From the vague description no conclusions can be drawn, but I believe that this and the following species belong to a genus which is narrowly related to *Pseudochorisoblatta.*

"**Phyllodromia**" **puncticollis** Brunner

Phyllodromia puncticollis Brunner, 1898, p. 205, pl. 16 fig. 12; Kirby, 1904, p. 93; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 49.
Graptoblatta ? puncticollis, Hebard, 1929, p. 8.
Type: ♀, Borneo; Senckenberg Museum.

"**Phyllodromia**" **luteomarginata** Hanitsch

Phyllodromia luteo-marginata Hanitsch, 1923 b, p. 407, fig. 10.
Type: ♂, Botanic Gardens, Singapore, H. N. Ridley, 1906; Oxford University Museum.

"**Phyllodromia**" **diagrammatica** Hanitsch (fig. 44)

Phyllodromia diagrammatica Hanitsch, 1923 a, pp. 198-200, fig. 1; Hanitsch, 1923 b, pp. 404-406, figs. 6-8.
Chorisoblatta diagrammatica, Hanitsch, 1928, p. 27; Hanitsch, 1929 a, p. 15.
Type: ♀, Kuala Lumpur, C. Boden Kloss, January 1918; Raffles Museum, Singapore.

Amsterdam Museum:
Pakan Baru, Sumatra, J. B. Corporaal, December 1919, 1 ♀.

This species with its specialized wings and remarkable tarsal claws (see fig. 44) probable belongs to a distinct genus. Since the only specimen

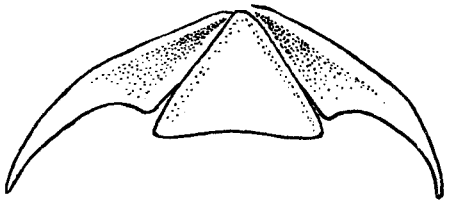

Fig. 44. *"Phyllodromia" diagrammatica* Hanitsch. Tarsal claw. Greatly enlarged.

available to me is badly damaged, I can only say that it belongs to a genus which is related to *Pseudochorisoblatta.*

"**Phyllodromia**" **luteomaculata** Hanitsch

Phyllodromia luteo-maculata Hanitsch, 1925, p. 88.
Type: ♂, Mount Murud, Sarawak, Dr. E. Mjöberg; Oxford University Museum.

"**Phyllodromia**" **nitens** Brunner

Phyllodromia nitens Brunner, 1898, p. 204, pl. 16 fig. 6; Kirby, 1904, p. 93; Shelford, 1908 a, p. 13; Hanitsch, 1923 b, p. 410.
Type: ♀, Brunei, Borneo; Brunner Collection.

"**Phyllodromia**" **triangularitervittata** Brunner

Phyllodromia triangulariter-vittata Brunner, 1898, p. 203, pl. 16 fig. 4; Kirby, 1904, p. 91; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 41.
Type: ♀, Baram, Borneo.

"**Blatta**" **obtusifrons** Walker

Blatta obtusifrons Walker, 1868, p. 226.
Ischnoptera obtusifrons, Kirby, 1904, p. 81.

Phyllodromia obtusifrons, Shelford, 1906, p. 493; Shelford, 1908 a p. 13; Hanitsch, 1915, p. 51; Hanitsch, 1925, p. 84.
Type: ♂, Sarawak; Oxford University Museum.

"Blatta" laterifera Walker

Blatta laterifera Walker, 1868, p. 231.
Phyllodromia laterifera, Kirby. 1904, p. 92; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 48; Hanitsch, 1923 b, p. 406, fig. 9; Hanitsch, 1927, p. 11.
Type: ♀, Sarawak; Oxford University Museum.

"Blattella" brevialata Caudell

Blattella brevialata Caudell, 1927, p. 9.
Type: ♀, Buitenzorg, Java, Bryant and Palmer, March 1909; United States National Museum.

From the strongly abbreviated wings and the tegminal and wing venation it appears that this species does not belong to *Blattella* Caudell.

"Blattella" tristis Hanitsch

Blattella tristis Hanitsch, 1928, p. 16; Hanitsch, 1929 a, p. 12.
Type: ♂, Siberut, E. Mjöberg; Oxford University Museum.

This species cannot belong to the genus *Blattella* as its radial vein is not forked but simple.

"Ischnoptera" klossi Hanitsch

Ischnoptera klossi Hanitsch, 1928, p. 14.
Type: ♂ ♂, ♀ ♀, Mentawi Islands; Oxford University Museum.

The description is vague and no conclusions can be drawn from it.

"Ceratinoptera" sundaica Fritze

Ceratinoptera sundaica Fritze, 1899, p. 338; Kirby, 1904, p. 62; Shelford, 1908 a, p. 19; Hanitsch, 1915, p. 62.
Type: ♀, Java, Bedot and Pictet; Geneva Museum.

"Ceratinoptera" variegata Hanitsch

Ceratinoptera variegata Hanitsch, 1933 c, p. 240.
Type: ♂, Mount Tibang, Sarawak, Dr. E. Mjöberg; Stockholm Museum.

"Scalida" gemmata Hanitsch

Scalida gemmata Hanitsch, 1933 c, p. 237, pl. 12 fig. 1.
Type: ♀, Pajau River, Borneo, E. Mjöberg; Stockholm Museum.

Since this and the following species have oblique "discoidal" sectors in the tegmina they cannot belong to the genus *Scalida* Hebard (see remarks under *Scalida,* p. 67).

"Scalida" pantherina Hanitsch

Scalida pantherina Hanitsch, 1933 c, p. 238.
Type: ♂, Mount Tibang, Sarawak; ♂, Pajau River, Dutch Borneo, E. Mjöberg; Stockholm Museum.

"Temnopteryx" modiglianii Hanitsch

Temnopteryx modiglianii Hanitsch, 1932 c, p. 65, fig. 7.
Type: ♂, Si-Rambé, Sumatra, E. Modigliani, December 1890 to March 1891; Oxford University Museum.

Since the front femora of this species are armed after type B, it cannot belong to *Temnopteryx* Brunner, in which the front femora are armed after type A (see Hanitsch, 1936 b, p. 105). According to Hanitsch *"Temnopteryx" modiglianii* is narrowly related and perhaps identical with *"Temnopteryx" fulva* (Brunner).

BLATTINAE

Platyzosteria soror (Brunner)

Polyzosteria soror Brunner, 1865, p. 219; Saussure, 1869, p. 107.
Periplaneta semicincta Walker, 1868, p. 140.
Cutilia soror, Kirby, 1904, p. 134; Chopard, 1924, p. 326, fig. 43; Hebard, 1929, p. 11.
Platyzosteria soror, Shelford, 1909 b, p. 285, pl. 8 fig. 24a-24b; Shelford, 1910 b, p. 7; Hanitsch, 1915, p. 98, pl. 5 fig. 29; Hanitsch, 1929 a, p. 16; Hanitsch, 1931 a, p. 55; Hanitsch, 1932 a, p. 5; Hanitsch, 1933 b, p. 138; Hanitsch, 1933 c, p. 233; Hanitsch, 1936, p. 397; Bruijning, 1947, p. 233.
Type: ♂, Amboina; Vienna Museum.

Leiden Museum:

Palembang, Sumatra, J. C. van Hasselt, 1882, 2 ♀♀; Solok, Sumatra Exp., April 1877-1878, 1 ♀; Sumatra Exp., 1877-1878, 1 ♀. Also ten specimens from the Austro-malayan region.

This remarkable species is easily to be distinguished by the luteous margins of the pronotum, metanotum and tegmina. The first abdominal tergites may also have a luteous vitta near the lateral margins. In the specimens of the Leiden Museum the number of abdominal tergites with these vittae varies from none to five.

Measurements:	♂	♀
Total length	cerci damaged	21.5 mm
Length of tegmina	4.0 mm	3.5 mm
Pronotum	5.7 × 9.2 mm	5.7 × 9.0 mm

Cutilia nitida (Brunner)

Platyzosteria nitida Brunner, 1865, p. 214.
Periplaneta polita Walker, 1868, p. 139.

Polyzosteria (*Platyzosteria*) ***nitida,*** Saussure, 1872, p. 112.
Cutilia tartarea Stål, 1877, p. 36.
Melanozostera nitida, Kirby, 1904, p. 129.
Cutilia nitida, Shelford, 1910 b, p. 8; Hanitsch, 1915, p. 99; Hanitsch, 1923 a, p. 207; Hanitsch, 1923 b, p. 433, pl. 13 fig. 8; Shaw, 1925, p. 188; Hebard, 1929, p. 11; Hanitsch, 1931 a, p. 55; Hanitsch, 1933 b, p. 139; Hanitsch, 1934, p. 123; Hanitsch, 1936, p. 397; Bruijning, 1947, p. 233.
Type: ♂, ♀, Amboina; Vienna Museum.

Leiden Museum:

Sintang, Borneo Exp., 1894, 3 ♂♂, 4 ♀♀; Sanggang Kapuas, Borneo, Westenenk, 1894, 1 ♀. Also 55 specimens from the Austromalayan region.

This species is very common in the Austromalayan region.

Measurements:	♂	♀
Total length	29.8 mm	30.0 mm
Length of tegmina	5 mm	5 mm
Pronotum	8.5 × 13.5 mm	8.7 × 13.8 mm

Dorylaea hosei (Shelford)

Methana hosei Shelford, 1909 b, p. 309; Shelford, 1910 b, p. 11; Hanitsch, 1915, p. 101.
Dorylaea hosei, Hebard, 1929, p. 11; Hanitsch, 1930 a, p. 190.
Type: ♀, Baran, Sarawak, C. Hose; Oxford University Museum.

Dorylaea magna (Shelford)

Methana magna Shelford, 1909 b, p. 307; Shelford, 1910 b, p. 11; Hanitsch, 1915, p. 100.
Dorylaea? magna, Hebard, 1929, p. 11.
Dorylaea magna, Hanitsch, 1930 a, p. 190; Hanitsch, 1931 b, p. 398.
Type: ♂, Kuching, Sarawak, R. Shelford; Oxford University Museum.

Dorylaea rhabdotops Hebard

Dorylaea rhabdotops Hebard, 1929, p. 80, pl. 6 fig. 3; Hanitsch, 1929 b, p. 284, fig. 3; Hanitsch, 1930 a, p. 190.
Type: ♂, Simalur Island, west coast of Sumatra, E. Jacobson, October 1913; Hebard Collection, type no. 1147.

Dorylaea semimarginalis (Hanitsch)

Methana semimarginalis Hanitsch, 1915, p. 101, pl. 5 fig. 28; Hanitsch, 1923 b, p. 436.
Dorylaea semimarginalis, Hebard, 1929, p. 80; Hanitsch, 1930 a, p. 190.
Type: ♀, Kuching, Sarawak, 1898; Oxford University Museum.

Dorylaea prakkei nov. spec. (fig. 45)

Leiden Museum:

Sugut, Sandakan Bay, north east Borneo, Prakke, 1 ♂ (holotype).

Size large for the genus, shape broad. Head short. Interocular space slightly narrower than that between antennal sockets. Face convex. Ocellar spots nearly obsolete. Palpi with fifth and third joints equal in length, fourth decidedly shorter (as 17 to 12). Pronotum transverse; caudal margin truncate, only slightly convex; cephalic margin slightly convex, broadly rounding into the convex lateral margins. Tegmina and wings not reaching

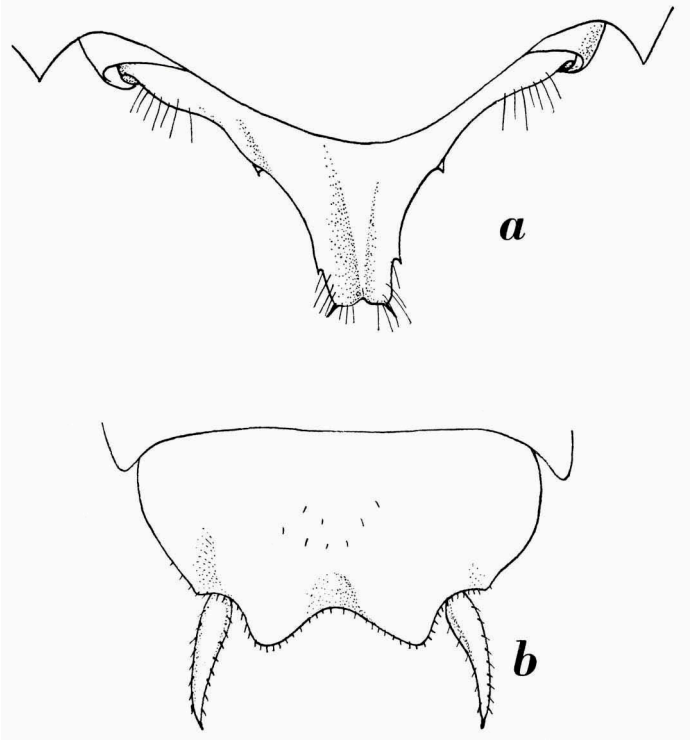

Fig. 45. *Dorylaea prakkei* nov. spec. a, supra-anal plate ♂ ; b, subgenital plate ♂. × 10½.

to apices of cerci, apices of former broadly rounded. Median segment of dorsal abdomen with a small meso-cephalic impression in which there is an agglutination of shining testaceous hairs. Latero-caudal angles of tergites sharply acute-angulately produced; the tergites bearing small piliform hairs along its margins. Seventh tergite trigonally produced. Supra-anal plate elongate with lateral margins concavely convergent towards the narrow, emarginated caudal margin; bearing two spines on each lateral margin and one spine on each caudo-lateral angle (fig. 45 a). Subgenital plate transverse, symmetrical; lateral margins short, strongly convex to the style sockets, then concave till the caudo-lateral angles; the caudal margin is

strongly emarginated; the concave parts of the lateral margins and the caudal margin bearing piliform spines (fig. 45 b). Styles elongate, curved slightly toward the median, apex sharply pointed. Ventro-cephalic margin of cephalic femora with heavy spines only. Caudal metatarsus longer than the combined length of succeeding joints. Small arolium present between the symmetrical tarsal claws.

Head wholly blackish brown; palpi also blackish brown except the apex of the penultimate and ultimate joints, which are fulvo-testaceous. Pronotum blackish castaneous with cephalic and lateral margins fulvo-orange. Tegmina also blackish castaneous, at apex castaneously transparent. Wings with anterior region fulvo-orange; the posterior region suffused with fulvous; veins castaneous. Legs and abdomen blackish castaneous.

Measurements: ♂, total length 27.0 mm, length of tegmina 19.9 mm, pronotum 8.4 × 10.9 mm.

This species is nearest to *D. semimarginalis* (Hanitsch) but differs in the larger size, the black head and the somewhat greater reduction of the organs of flight.

Dorylaea heinzei Hanitsch

Dorylaea heinzei Hanitsch, 1930 a, p. 189, figs. 7-8.
Type: ♂, Tandjong Pura, Sumatra, R. Heinze; Dresden Museum.

Leiden Museum:

Sugut, Sandakan Bay, north east Borneo, Prakke, 1 ♀.

The specimen in the collection of the Leiden Museum agrees closely with the description given by Hanitsch. It differs only in some minor aspects. The black transverse bar ventrad from the antennal sockets is broader than in the type, the cephalic margin of the pronotum is not parabolic but subtruncate and the organs of flight are not surpassing the apex of the cerci.

Measurements: ♀, total length 22.5 mm, length of tegmina 17.5 mm, pronotum 6.9 × 8.7 mm.

Dorylaea dacrydii (Hanitsch)

Methana dacrydii Hanitsch, 1923 b, p. 434, pl. 13 fig. 9.
Dorylaea dacrydii, Hebard, 1929, p. 11; Hanitsch, 1930 a, p. 190.
Type: ♂, ♀, Penang Hill, R. Hanitsch, May 1917; Oxford University Museum.

Dorylaea saundersi (Hanitsch)

Methana saundersi Hanitsch, 1923 b, p. 435, pl. 13 fig. 10.
Dorylaea saundersi, Hebard, 1929, p. 11; Hanitsch 1930 a, p. 190.
Type: ♂, ♀, Tanglin, Singapore, C. J. Saunders, June 1917 and February 1918; Oxford University Museum.

Dorylaea umbellifera Hanitsch

Dorylaea umbellifera Hanitsch, 1933 c, p. 242, pl. 12 fig. 3.
Type: ♀, Pajau River, east Borneo, E. Mjöberg; Stockholm Museum.

Dorylaea pallipalpis (Serville)

Kakerlac pallipalpis Serville, 1839, p. 71.
Periplaneta pallipalpis, De Haan, 1842, p. 49; Brunner, 1865, p. 238; Saussure, 1869, p. 262; Rehn, 1904, p. 555.
Methana pallipalpis, Kirby, 1904, p. 136; Shelford, 1909 b, p. 309; Shelford, 1910 b, p. 11; Hanitsch, 1915, p. 100; Hanitsch, 1923 b, p. 434; Hanitsch, 1925, p. 94.
Dorylaea unicolor Shelford, 1910 b, p. 14.
Dorylaea atro-caput Hanitsch, 1925, p. 94, fig. 8.
Dorylaea pallipalpis, Hanitsch, 1928, p. 34; Hebard, 1929, p. 11; Hanitsch, 1929 b, p. 283; Hanitsch, 1930 a, p. 190; Hanitsch, 1933 c, p. 241; Hanitsch, 1936, p. 397; Bruijning, 1947, p. 234.
Type: ?, Java.

Leiden Museum:

Padang, 3 ♀♀; Tjigembong, Preanger, Java, J. B. Corporaal, May 1915, 2 ♀♀; Java, Blume, 2 ♂♂. One specimen from Celebes.

This species varies in the intensity of the coloration and in the measurements.

Measurements:	♂	♀
Total length	23.0 mm	29.9 mm
Length of tegmina	16.8 mm	19.4 mm
Pronotum	7.3 × 9.4 mm	8.0 × 11.1 mm

Dorylaea flavicincta (De Haan)

Blatta (Periplaneta) flavicincta De Haan, 1842, p. 50.
Periplaneta flavicincta, Brunner, 1865, p. 231; Walker, 1868, p. 131.
Methana flavicincta, Saussure and Zehntner, 1895 b, p. 72; Kirby, 1904, p. 136; Rehn, 1909, p. 179.
Methana zehntneri Kirby, 1903 c, p. 374.
Dorylaea flavicincta, Shelford, 1910 b, p. 13; Hanitsch, 1915, p. 102; Karny, 1915, p. 97; Hanitsch, 1928, p. 34; Hanitsch, 1931 a, p. 55; Hanitsch, 1932 c, p. 7; Hanitsch, 1933 b, p. 138; Hanitsch, 1933 c, p. 233; Bruijning, 1947, p. 234.
Type: Java, Leiden Museum.

Leiden Museum:

Java, 1 ♂, 1 ♀, 2 ??; Wonosobo, Java, E. Jacobson, May, 1909, 1 ♀; Preanger, Java, V. Lucassen, December 1915, 1 ♀; Solok, Sumatra Exp., April 1877, 1 larva; Supajang, Sumatra Exp., April 1877, 2 ♂♂; Surian, Sumatra Exp., January 1878, 1 ♂; Nias, E. Schrader, 1 ♀; Nias, Kleiweg de Zwaan, 1911, 1 ♀, 1 larva.

This species also varies strongly in measurements and in the intensity of the coloration.

Measurements:	♂	♀
Total length	19.2-22.1 mm	20.9-23.6 mm
Length of tegmina	10.1-11.4 mm	10.3-11.9 mm
Pronotum	5.1 × 7.9-6.7 × 8.3 mm	6.2 × 8.5-6.8 × 8.9 mm

Dorylaea bryanti Caudell

Dorylaea bryanti Caudell, 1927, p. 4.
Type: ♂, Buitenzorg, Java, Bryant, March 1909; United States National Museum, Washington.

Thyrsocera spectabilis Burmeister (fig. 46)

Thyrsocera spectabilis Burmeister, 1838, p. 498; Brunner, 1865, p. 121; Kirby, 1904, p. 78; Shelford, 1906, p. 250; Shelford, 1910 b, p. 12; Hanitsch, 1915, p. 114; Hebard, 1929, p. 82; Hanitsch, 1930 a, p. 191.
Ellipsidium speciosum Walker, 1868, p. 214.
Thyrsocera speciosum, Shelford, 1906, p. 250, pl. 14 fig. 5; Shelford, 1910 b, p. 12; Hanitsch, 1915, p. 114;
Type: Nepal.

Leiden Museum:

Serdang, Sumatra, Schagen van Leeuwen, 1 ?; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♀; Long-Blu-u, Dr. Nieuwenhuis, Borneo Exp., November 1898, 1 ♀; Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 2 ♀♀, 1 ?.

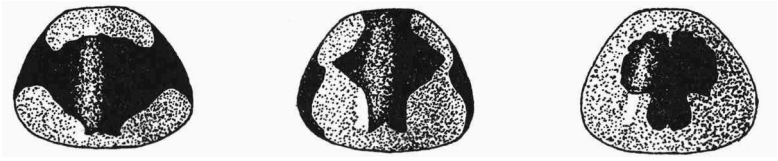

Fig. 46. *Thyrsocera spectabilis* Burmeister. Pronotum of three specimens. a, from Mahakkam; b, from Long Blu-u; c, from Tandjong Morawa. × 4.

Kirby already regarded *Thyrsocera spectabilis* Burmeister and *T. speciosum* (Walker) as synonyms. Shelford, however, distinguished these species by their pronotal design and the number of white joints beyond the antennal tuft. In *spectabilis* the pronotum would be margined with yellow all round its border and three antennal joints beyond the tuft would be white. In *speciosum* the posterior margin and two antero-lateral spots would be yellow and the only two antennal joints beyond the tuft would be white. The collection of the Leiden Museum contains two specimens (from Sumatra) with a pronotal design which agrees closely with the description given by Shelford for *spectabilis* (pronotum broadly margined with yellow all

round its border, leaving a trefoil-shaped black centre) (fig. 46 c). Three other specimens (form Mahakkam, Borneo) have only the anterior and posterior margin yellow leaving a black centre which narrows laterad (fig. 46 a). In two of these specimens the antennae are damaged but in the third specimen there are three white antennal joints beyond the tuft. Finally in the specimen from Long-Blu-u, Borneo, the pronotal design is nearly the same as that described by Shelford for *speciosum*. However, the yellow antero-lateral spots and the yellow caudal margin are connected (fig. 46 b).

Since from our material it appears that neither the pronotal design nor the number of white joints are of specific value, *speciosum* has to be regarded as a synonym of *spectabilis*.

Measurements; ♀, total length 16.7-19.2 mm, length of tegmina 13.5-14.8 mm, pronotum 4.6 × 6.2-5.3 × 6.8 mm.

Periplaneta lata (Herbst)

Blatta lata Herbst, 1786, p. 185, pl. 49 fig. 6; Herbst, 1794, p. 171.
Periplaneta lata, Kirby, 1904, p. 141; Shelford, 1910 b, p. 18, pl. 2 fig. 16; Hanitsch, 1915, p. 109; Hanitsch, 1923 a, p. 208; Hanitsch, 1923 b, p. 438, figs. 23-24; Hebard, 1929, p. 82; Hanitsch, 1929 b, p. 286.
Type: "East Indies".

Leiden Museum:

Mahakkam, Dr. Nieuwenhuis, Borneo Exp., November 1898, 1 ♂.

Amsterdam Museum:

Tandjong Merah, Sumatra, J. B. Corporaal, August 1921, 1 ♂.

The subgenital plate agrees closely with the figure given by Hanitsch.

Measurements: ♂, total length 34.1 mm, length of tegmina 27.5 mm, pronotum 8.3 × 11.2 mm.

Periplaneta americana (Linnaeus) [1]) (fig. 5)

Blatta americana Linnaeus, 1758, p. 424.

Leiden Museum:

Solok, Padang, Sumatra, P. O. Stolz, 1907, 1 ♂; Solok, Sumatra Exp., April 1877, 1 larva; Padang, Sumatra, De Groot, 1919, 1 ♂; Sawahluntu, Padang, Sumatra, Miss Delprat, 1 ♂; Medan, Sumatra, Van Loghem, 1909, 1 ♀; Atjeh, Sumatra, W. Baerts, 1 ♀; Java, 2 ♀♀, 2 larvae; Java, D. G. Vreedenburg, 1 ♂; East Java, P. Buitendijk, February 1909, 2 ♂♂, 2 ♀♀; Buitenzorg, Java, W. C. van Heurn, 1931, 2 ♂♂; Weltevreden, Java, F. Weehuizen, October 1929, 1 ♀; Babakan, Banjumas, Java, E. Jacobson, March 1911, 4 ♂♂; Samarang, P. Buitendijk, June 1924, 1 ♂; Garut, Java, W. C. van Heurn, 1923, 1 ♀; Garut, Java, W. C. van Heurn, 1931, 1 ♂; Tosari, Java, Dr. Kohlbrugge, 1 ♀; Pulu Weh, Dr. P. Buitendijk, March 1916, 1 ♂, 1 ♀;

1) Of this cosmopolitan species no synonymy is given.

Pulu Weh, Dr. P. Buitendijk, May, 1922, 1 ♀; s.s. Willem II, Java, Dr. P. Buitendijk, 1 ♂; Sintang, Borneo Exp., 1894, 11 ♂♂, 9 ♀♀, 5 ??; Sugut, Sandakan Bay, Borneo, Prakke, 1 ♀.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, 1921, 2 ♂♂, 3 ♀♀; Bintjang, Rhio Archipelago, A. van der Heyde, December 1935, 1 ♂.

Periplaneta australasiae (Fabricius) [1])

Blatta australasiae Fabricius, 1775, p. 271.

Leiden Museum:

Sinabang, Simalur, Sumatra, E. Jacobson, 1913, 1 ♂, 1 ♀; Rawas, Sumatra Exp., May 1878, 2 ♂♂, 2 larvae; Surian, Sumatra Exp., January 1878, 1 ♀; Solok, Sumatra Exp., April 1877, 1 larva; Supajang, Sumatra Exp., April 1877, 1 larva; Muara Labu, Sumatra Exp., November 1877, 1 ♂; Bua, Sumatra Exp., March 1877, 1 ♀; Sumatra, Sumatra Exp., 1878, 2 larvae; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♀; Kajutanem, Padang, Sumatra, A. ter Meulen, July 1893, 2 ♀♀; Padang, 1 ♂; Medan, Sumatra, Van Loghem, 1909, 1 ♀; Queda, Malay Peninsula, P. J. van der Does de Beye, 4 ♀♀, 2 larvae; Pulu Weh, P. Buitendijk, 1922, 2 ♀♀; Pulu Weh, P. Buitendijk, 1927, 1 larva; Nias, Kleiweg de Zwaan, 1911, 2 ♀♀, 1 ?, 2 larvae; Nias, E. Schrader, 1908, 1 ♀, 2 larvae; Garut, Java, W. C. van Heurn, 1928, 2 ♀♀; Garut, Java, W. C. van Heurn, 1931, 1 ♀, 2 larvae; Tjibadak, Java, W. C. van Heurn, 1909, 1 ♂; Buitenzorg, Java, Dr. P. Buitendijk, April 1922, 1 ♀; Weltevreden, Java, Dr. P. Buitendijk, 1915, 1 larva; Dampit, Sumber Pakel, Java, MacGillavry, 1916, 1 ♀; Wonosobo, Java, E. Jacobson, April 1909, 1 ♀; Sintang, Borneo Exp., 1894, 1 ♂, 1 ♀, 7 ??, 4 larvae; Long-Blu-u, Mahakkam, Borneo Exp., November 1898, 2 ♂♂, 5 ♀♀, 7 larvae; Upper Mahakkam, Borneo Exp., 1894, 2 ♀♀, 2 larvae; Sugut, Sandakan bay, Borneo, Prakke, 1 ?; Borneo, Schwaner, 1 ?; Borneo, Semmelink, 1866, 1 larva; Sanggan, Kapuas, Borneo, Westenenk, 1894, 1 larva; Balik Papan, Borneo, M. D. Horst, 1911, 2 larvae; Banjermasin, 1 ♂, 1 ♀.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, 1921, 3 ♀♀.

Periplaneta banksi Hanitsch

Periplaneta banksi Hanitsch, 1931 b, p. 401.
Type: ♀, Philippines, C. S. Banks, 1908; British Museum.

Leiden Museum:

Sinabang, Simalur, Sumatra, E. Jacobson, 1913, 1 ♀.

P. lata (Herbst), *P. brunnea* (Burm.), *P. regina* Saussure, *P. cavernicola* Chopard and *P. banksi* Hanitsch are all narrowly related and possibly some of them are synonymous.

The present species may be distinguished by its deeply divided pubescent supra-anal plate, the strongly pubescent vulvae, the elongated axillary area of the tegmina.

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1) Of this cosmopolitan species no synonymy is given.

Measurements: ♀, total length 43.4 mm, length of tegmina 34.2 mm, length of body 40.1 mm, pronotum 11.2 × 14.4 mm.

Periplaneta brunnea Burmeister

Periplaneta brunnea Burmeister, 1838, p. 503; Kirby, 1904, p. 142; Hebard, 1929, p. 83.

Periplaneta truncata Krauss, 1892, p. 165; Rehn, 1904, p. 555; Shelford, 1910 b, p. 19; Hanitsch, 1915, p. 111; Caudell, 1927, p. 6; Hanitsch, 1929 a, p. 16; Hanitsch, 1931 a, p. 56.

Type: Chile; Demarara.

Leiden Museum:

Taluk, Sumatra, Exp. Kleiweg de Zwaan, 1907, 1 ♀.

In this species the female supra-anal plate is not pubescent and the axillar area of the tegmina not elongated.

Measurements: ♀, total length 40.0 mm, length of tegmina 31.5 mm, pronotum 9.8 × 13.3 mm.

Periplaneta robinsoni Hanitsch

Periplaneta robinsoni Hanitsch, 1915, p. 111, pl. 4 fig. 23; Hanitsch, 1919, p. 69; Hanitsch, 1929 a, p. 16; Hanitsch, 1932 c, p. 75.

Type: ♀, Sandaran, Korinchi Valley, Sumatra, H. C. Robinson and C. Boden Kloss, June 1914; Oxford University Museum.

Periplaneta montana Hanitsch

Periplaneta montana Hanitsch, 1923 b, p. 440, figs. 25-26; Hanitsch, 1928, p. 35; Hebard, 1929, p. 12; Hanitsch, 1929 b, p. 286; Hanitsch, 1933 a, p. 326; Hanitsch, 1933 c, p. 234.

Type: ♀, Gunong Kledang, Perak, R. Hanitsch, November 1916; Oxford University Museum.

Periplaneta crassa Karny

Periplaneta crassa Karny, 1908, p. 19; Shelford, 1910 b, p. 18; Hanitsch, 1915, p. 109.

Type: ♀, Borneo.

Periplaneta malaica Karny

Periplaneta malaica Karny, 1908, p. 19; Shelford, 1910 b, p. 18; Hanitsch, 1915, p. 110.

Type: ♂, Siley; Banguey, Borneo; Brunner Collection.

Periplaneta regina Saussure

Periplaneta regina Saussure, 1864 a, p. 320; Shelford, 1910 b, p. 18; Hanitsch, 1915, p. 110.

Type: ♂, Malacca.

Judging by the description this species agrees closely with *P. banksi* Hanitsch.

Periplaneta spinosostylata Krauss

Periplaneta spinosostylata Krauss, 1903, p. 752, pl. 67 fig. 2; Shelford, 1910 b, p. 18; Hanitsch, 1915, p. 109.
Type: ♂, Tjibodas.

Periplaneta floweri Hanitsch

Periplaneta floweri Hanitsch, 1931 b, p. 5; Hanitsch, 1932 a, p. 5; Hanitsch, 1932 c, p. 75.
Type: ♂, Bangkok, S. P. Flower, 1898; British Museum.

Amsterdam Museum:
Medan, Sumatra, J. B. Corporaal, September 1920, 1 ♂.

The specimen of the Amsterdam Museum bears a label written by Hanitsch with the words "near *Ischnoptera reversa* Walker". In the original description Hanitsch says "This species has superficially quite the appearance of an "*Ischnoptera*", but an examination of its subgenital lamina and other characters readily show its true affinity".

Measurements: ♂, total length 16.8 mm, length of tegmina 13.5 mm, pronotum 3.5 × 4.6 mm.

Periplaneta succinea Hanitsch

Periplaneta succinea Hanitsch, 1925, p. 96, fig. 10; Hanitsch, 1933 a, p. 326; Hanitsch, 1933 c, p. 234.
Type: ♂ ♂, Mount Dulit and Mount Murud, Sarawak, Borneo, Dr. E. Mjöberg, 1922-1923; Oxford University Museum.

Periplaneta blattoides Hanitsch

Periplaneta blattoides Hanitsch, 1933 a, p. 327, fig. 21.
Type: ♂, Lumu Lumu, Mount Kinabalu, Borneo, H. M. Pendlebury, 1929; Oxford University Museum.

Periplaneta cavernicola Chopard

Periplaneta cavernicola Chopard, 1919, p. 347, pl. 12 figs. 4-9; Hanitsch, 1923 b, p. 437; Hebard, 1929, p. 12.
Type: ♂, ♀, Goah Glap, Bukit Tapang, Biserat, Jalor, N. Annandale, February 4th 1916.

Scabina horrida Hanitsch

Scabina horrida Hanitsch, 1923 a, p. 207, fig. 8; Hanitsch, 1923 b, p. 441, fig. 27.
Type: ♂, Mohari, North Borneo, 1912; Buitenzorg Museum.

Neostylopyga picea (Brunner)

Periplaneta picea Brunner, 1865, p. 223.
Blatta picea, Kirby, 1904, p. 138.
Dorylaea picea, Rehn, 1904, p. 553.

Stylopyga picea, Shelford, 1910 b, p. 14; Hanitsch, 1915, p. 106; Hanitsch, 1923 a, p. 209; Hanitsch, 1923 b, p. 436; Hanitsch, 1928, p. 35.
Neostylopyga picea, Hebard, 1929, p. 83.
Type: ♂, Sambelong Islands, Nicobar Group.

Leiden Museum:

Long-Blu-u, Mahakkam, Borneo Exp., 1894, 2 ♂♂, 1 ?; Blu-u, Upper Mahakkam, Borneo Exp., 1898, 1 ♀; Sambas, Dr. Hallier, Borneo Exp., 1893, 2 ♂♂.

N. picea (Brunner) and *N. semoni* (Krauss) are narrowly related. The former species, however, is larger and its flat male supra-anal plate bears two stout spines on each caudo-lateral angle. In the latter species the sides of the male supra-anal plate are strongly deflexed and the caudo-lateral angles are without a stout spine.

The measurements vary widely, a fact already pointed out by Hanitsch and Hebard.

Measurements:	♂	♀
Total length	20.1-33.7 mm	28.8 mm
Length of tegmina	3.5- 5.1 mm	4.5 mm
Pronotum	6.3 × 9.5-8.5 × 10.9 mm	7.2 × 9.9 mm

Neostylopyga semoni (Krauss)

Stylopyga semoni Krauss, 1903, p. 751; Shelford, 1910 b, p. 14; Hanitsch, 1915, p. 106; Hanitsch, 1932 c, p. 74, fig. 16.
Neosteleopyga semoni, Caudell, 1927, p. 6.
Neostylopyga semoni, Hebard, 1929, p. 83.
Type: ♂, ♀, Tjibodas, Java.

Leiden Museum:

Garut, Java, W. C. van Heurn, May-July 1929, 1 ♀; Garut, Java, W. C. van Heurn, February-March, 1931, 3 ♂♂, 2 ♀♀, 1 larva; Buitenzorg, Java, W. C. van Heurn, 1931, 2 ♀♀; Ardjuna, South from Gunung Papandajan, Java, W. C. van Heurn, 1931, 1 ♂, 1 ♀.

This small species seems to be fairly common on Java.

Measurements:	♂	♀
Total length	16.4-18.9 mm	17.7-19.9 mm
Length of tegmina	2.4- 2.5 mm	2.3- 3.1 mm
Pronotum	5.0 × 6.5-5.6 × 7.3 mm	5.4 × 6.8-6.1 × 8.2 mm

Neostylopyga rhombifolia (Stoll)

Blatta rhombifolia Stoll, 1813, p. 5, pl. 3 d fig. 13.
Periplaneta histrio Saussure, 1864 a, p. 318; Saussure, 1864 b, p. 73; Walker, 1868, p. 130.
Periplaneta decorata Brunner, 1865, p. 224.
Periplaneta rhombifolia, Saussure, 1869, p. 260.

Polyzosteria heterospila Walker, 1871, p. 35.
Stylopyga decorata, Brunner, 1893, p. 35.
Dorylaea rhombifolia, Saussure and Zehntner, 1895 b, p. 73; Rehn, 1904, p. 553.
Stylopyga rhombifolia, Shelford, 1910 b, p. 14; Hanitsch, 1915, p. 105, pl. 5 fig. 24; Hanitsch, 1923 d, p. 209; Hanitsch, 1930 a, p. 191; Hanitsch, 1932 c, p. 73; Hanitsch, 1933 c, p. 234; Hanitsch, 1934, p. 123.
Neostylopyga rhombifolia, Hebard, 1929, p. 84; Bruijning, 1947, p. 235.
Type: Apparently immature, no locality.

Leiden Museum:

Medan, Sumatra, Van Loghem, 1909, 1 ♀, 1 larva; Queda, Malay Peninsula, P. J. van der Does de Bye, 1 ♀; Meester Cornelis, Java, Dr. P. Buitendijk, December 5 1912, 1 ♀; Buitenzorg, Java, Van der Hoeven, 1 ♀; Weltevreden, Java, Dr. P. Buitendijk, January 1919, 1 ♂; Ambarawa, Java, Ludeking, 4 larvae; Tegal, Java, V. Lucassen, December 1915, 1 ♀; Samarang, Java, E. Jacobson, November 1909, 1 ♀; Batavia, Java, 1 ♀; Garut, Java, W. C. van Heurn, 1928, 1 ♂, 1 ♀; Garut, Java, W. C. van Heurn, February-March 1931, 1 ♀; Sindanglaya, Java, Dr. Bolsius, 1 larva; Surabaya, Dr. P. Buitendijk, June 1920, 1 larva; East Java, Hekmeyer, 1872, 1 larva; Madura, G. J. A. Steen, October 1903, 1 ♀; Banjermasin, Borneo, 2 ♀♀, 1 larva; Smitau, Velthuyzen, Borneo Exp., 1894, 1 ♀; Pontianak, M. Weber, Borneo Exp., 1 ♀; Pulu Weh, Dr. P. Buitendijk, January 1922, 2 ♀♀. Also twenty two specimens from outside the Indomalayan subregion.

Neostylopyga atrox (Hanitsch)

Stylopyga atrox Hanitsch, 1928, p. 36, pl. 2 fig. 5.
Type: ♀, Sipora, Mentawi Islands, C. Boden Kloss; Oxford University Museum.

Leiden Museum:

Rawas, Sumatra Exp., May 1878, 1 ♂.

This is the first record after Hanitsch described this species. *N. atrox* (Hanitsch) is very easily to distinguish from its allies.

Measurements: ♂, total length 25.6 mm, length of temina 8.5 mm, length of wings 5.3 mm, pronotum 7.9 × 10.9 mm.

Neostylopyga proposita (Shelford)

Stylopyga proposita Shelford, 1911 a, p. 5, pl. 1 fig. 1; Hanitsch, 1915, p. 107; Hanitsch, 1932 c, p. 73, figs. 14-15.
Neosteleopyga proposita, Caudell, 1927, p. 6.
Neostylopyga proposita, Hebard, 1929, p. 12.
Type: ♂, Java, Batavia, P. Serre, 1904; Paris Museum.

Leiden Museum:

Pulu Weh, Dr. P. Buitendijk, January 1910, 1 ♀; Queda, Malay Peninsula, P. J. van der Does de Bye, 2 larvae.

Measurements: ♀, total length 23.8 mm, pronotum 7.8 × 9.8 mm.

Blattina concinna (De Haan)

Blatta (Periplaneta) concinna De Haan, 1842, p. 50.
Periplaneta concinna, Brunner, 1865, p. 229; Tepper, 1893, p. 102.

Periplaneta pallipalpis, var. (?), Walker, 1868, p. 132.
Periplaneta borrei Saussure, 1872, p. 113, pl. 10 fig. 38.
Stylopyga concinna, Krauss, 1903, p. 747.
Stylopyga borrei, Krauss, 1903, p. 748.
Blatta brunneri Kirby, 1903 c, p. 375.
Methana concinna, Kirby, 1904, p. 136.
Blatta concinna, Shelford, 1910 b, p. 15; Hanitsch, 1915, p. 104, pl. 1 fig. 6; Hanitsch, 1927, p. 23; Hanitsch, 1929 a, p. 16; Hanitsch, 1929 b, p. 285; Hanitsch, 1930 a, p. 191; Hanitsch, 1931 a, p. 55; Hanitsch, 1932 a, p. 5; Hanitsch, 1932 c, p. 76; Hanitsch, 1933 a, p. 326; Hanitsch, 1933 c, p. 234.
Periplaneta niveipalpis Hanitsch, 1925, p. 96; Hanitsch, 1927, p. 24; Hanitsch, 1929 a, p. 16; Hanitsch, 1933 c, p. 234.
Blattina concinna, Hebard, 1929, p. 84.
Type: ♂, ♀, Java.

Leiden Museum:

Kutur, Sumatra Exp., June 1878, 1 ♀; Krakatau, E. Jacobson, May 1908, 1 ♂; Java, 2 ♂♂, 3 ♀♀, 1 larva, 1 ?; Java, E. Jacobson, December 1917, 1 ♀; Samarang, Java, E. Jacobson, October 1909, 1 ♂; Meester Cornelis, Sonneveldt, February 11 1929, 1 ♂; Tjibodas, Java, Dr. J. F. van Bemmelen, 2 ♀♀; Garut, Java, W. C. van Heurn, 1 ♂, 1 ♀; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp. 1894, 3 ♂♂, 7 ♀♀; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp. 1898, 1 ♀; Pleihari, Borneo, Semmelink, 1866, 1 ♀.

In this species the length of the wings and tegmina varies widely. Besides brachypterous specimens there also occur macropterous specimens. Hanitsch described the latter as *Periplaneta niveipalpis.*

The following list may give an impression of the diversity in tegminal length in this species: 7.8 mm, 8.6 mm, 8.7 mm, 8.8 mm, 8.9 mm, 9.1 mm, 9.1 mm, 9.3 mm, 9.3 mm, 9.7 mm, 10.0 mm, 10.1 mm, 10.2 mm, 10.3 mm, 10.5 mm, 10.5 mm, 10.6 mm, 10.7 mm, 10.7 mm, 11.1 mm, 13.5 mm, 13.9 mm, 14.9 mm, 16.2 mm, 16.4 mm, 16.5 mm.

Blatta orientalis Linnaeus [1])

Blatta orientalis Linnaeus, 1758, p. 424.
Type: "America, Oriente".

Leiden Museum:

Samarang, Java, E. Jacobson, 9 ♂♂, 27 ♀♀, 4 larvae. Also 90 specimens from outside the Indomalayan subregion.

Homalosilpha ustulata (Burmeister)

Periplaneta ustulata Burmeister, 1838, p. 503; Brunner, 1865, p. 235.
Kakerlac thoracica Serville, 1839, p. 69, pl. 2 fig. 1.
Periplaneta configurata Walker, 1868, p. 145.
Homalosilpha ustulata, Stål, 1874, p. 13; Kirby, 1904, p. 143; Shelford, 1910 b, p. 19; Hanitsch, 1915, p. 112, pl. 7 fig. 38; Bruijning, 1947, p. 238.
Type: ♂, ♀ Java.

1) Of this cosmopolitan species no synonymy is given.

Leiden Museum:

Padang, Sumatra, 1 ♀; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 2 ♀♀; Sumatra, Sumatra Exp., 1877, 1 ♀; Palembang, Sumatra Exp., May-June 1878, 1 larva; Sipirok, Sumatra, A. D. van Hasselt, 1 ♀; Buitenzorg, Java, W. C. van Heurn, 1931, 1 ♀; Ardja Sari, Preanger, Java, 2 ♀♀; Java, 2 ♂♂; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♂, 1 larva; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 3 ♂♂, 2 ♀♀, 1 larva; Banjermasin, 1 ♀; Borneo, Schwaner, 1 ♂, 2 ♀♀; Sambas, Borneo, Dr. J. Bosscha, 1 ♂; Kenepai Mountains, Moret, Borneo Exp., 1894, 1 ♂; Ind. orient., 1 larva. Also seven specimens from outside the Indomalayan subregion.

Amsterdam Museum:

Tandjong Merah, Sumatra, J. B. Corporaal, August 4, 1921, 1 ♂.

This species is easily distinguished by its rearkable pronotal design.

Measurements:	♂	♀
Total length	28.4-41.9 mm	29.4-40.9 mm
Length of tegmina	23.3-35.0 mm	24.3-33.8 mm
Pronotum	5.6 × 7.9-7.3 × 11.8 mm	6.4 × 8.9-9.5 × 13.6 mm

Homalosilpha decorata (Serville)

Blatta decorata Serville, 1839, p. 99.
Homalosilpha decorata, Shelford, 1906, p. 270, pl. 14 fig. 8; Shelford, 1910 b. p. 19; Hanitsch, 1915, p. 112; Hanitsch, 1929 a, p. 17; Hanitsch, 1929 b, p. 286.
Type: ♀, ?; Marchal Collection, Oxford University Museum.

Leiden Museum:

Fort de Kock, Sumatra, E. Jacobson, April 1914, 1 ♂; Alahan Pandjang, Sumatra Exp., September-October 1877, 3 ♂♂.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, July 1922, 1 ♂.

This species is easily recognized by its dark castaneous pronotum with the lateral curved orange vittae.

Measurements: ♂, total length 21.6-25.3 mm, length of tegmina 18.3-21.7 mm, pronotum 3.7 × 4.8-4.0 × 5.7 mm.

Homalosilpha bilunata (De Haan)

Blatta (Nauphoeta) bilunata, De Haan, 1842, p. 51.
Paranauphoeta bilunata, Brunner, 1865, p. 402; Kirby, 1904, p. 180; Hanitsch, 1915, p. 140.
Type: ♂, Java, Blume; Leiden Museum.

Leiden Museum:

Java, Blume, 1 ♂, 2 ♀♀.

Since the female subgenital plate is valved, this species has to be transferred to the Blattinae. It is narrowly related to *Homalosilpha decorata*

(Serville), but differs in the broader pronotum, in the narrow orange bilunar vittae, which are not marginal.

Measurements:	♂	♀
Total length	—	26 mm
Length of tegmina	23.7 mm	22 mm
Pronotum	5.5 × 7.0 mm	5.6 × 7.3 mm

Eroblatta borneensis (Shelford)

Protagonista borneensis Shelford, 1908 b, p. 159, pl. 9 fig. 2.
Eroblatta borneensis, Shelford, 1910 b, p. 20; Hanitsch, 1915, p. 113.
Type: ♂, Sarawak, Borneo, R. Shelford; Oxford University Museum.

Protagonista Shelford

Hanitsch described four new species in this genus, viz., *P. fusca* (♂, Sarawak), *P. laeta* (♂, Singapore), *P. pertristis* (♀, Malay Peninsula) and *P. aterrima* (♀, Sumatra). Since the characters used are not of specific value I believe these names merely to be synonyms of Shelford's *P. lugubris.*

In Hanitsch's description of *P. fusca* (♂, Sarawak) he remarks: "Closely allied to *P. pertristis* mihi, from the Malay Peninsula, of which only 1 ♀ is known. Indeed additional material shows that the two species are identical" (Hanitsch, 1925, p. 98).

Hanitsch himself suppressed *P. aterrima* as a synonym of *P. fusca* (Hanitsch, 1932 c,p. 79).

P. aterrima is also "closely allied to *P. pertristis*", but "differing from it by its black, instead of casteneous, tegmina" (Hanitsch, 1929 a, p. 17). In a ♀ specimen of the Leiden Museum the tegmina are blackish castaneous and thus it appears that this character has no value.

P. laeta is "readily distinguished by its cinnamon or reddish castaneous tint from the four other known species of *Protagonista,* those others being black or fuscous in colour." (Hanitsch, 1931 b, p. 402). In this description once again Hanitsch regards a slightly differing coloration as an important specific character.

Protagonista lugubris Shelford

Protagonista lugubris Shelford, 1908 b, p. 158, pl. 9 fig. 1; Hanitsch, 1927, p. 40.
Protagonista pertristis Hanitsch, 1923 b, p. 444, fig. 28; Hanitsch, 1929 a, p. 18.
Protagonista fusca Hanitsch, 1925, p. 97, fig. 11; Hanitsch, 1929 a, p. 17; Hanitsch, 1932 c, p. 78.
Protagonista aterrima Hanitsch, 1929 a, p. 17.
Protagonista laeta Hanitsch, 1931 b, p. 401.
Type: ♂, Manson Mountains, Tonkin; Oxford University Museum.

Leiden Museum:

Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀.

Measurements: total length 17.8 mm, length of tegmina 5.5 mm, pronotum 5.3 × 5.1 mm.

Archiblatta hoevenii Vollenhoven

Archiblatta hoevenii Vollenhoven, 1862, p. 106, pl. 6 figs. 1-2; Brunner, 1865, p. 249, pl. 8 figs. 39 A-E; Tepper, 1894, p. 185; Kirby, 1904, p. 148; Shelford, 1910 b, p. 22; Hanitsch, 1915, p. 116, pl. 5 fig. 25; Hanitsch, 1929 a, p. 17; Hanitsch, 1929 b, p. 287; Hanitsch, 1932 c, p. 76.

Planetica aranea Saussure, 1863, p. 166, pl. 1 fig. 23.

Type: ♀, Agam, Padang, Sumatra, E. W. A. Ludeking; Leiden Museum.

Leiden Museum:

Agam, Padang, Sumatra, E. W. A. Ludeking, 1 ♀; Rimbo Pengadang, Sumatra, E. Jacobson, June 1916, 1 ♂; Sidempuan, Padang, Sumatra, J. D. Pasteur, 1 larva; Tebing-Tinggi, Sumatra, F. J. Weynman, 1 ♂, 2 ♀♀, 2 larvae; Engano, Sumatra, Wienecke, 1 ♀.

This remarkable insect is easily recognized by the shape of its head, pronotum, antennae and the female metanotum.

Measurements:	♂	♀
Total length	54.2 mm	49.5 mm
Length of body	36.3 mm	49.5 mm
Length of tegmina	46.5 mm	—
Pronotum	10.2 × 11.1 mm	13.9 × 13.6 mm
Width of abdomen	15.8 mm	23.5 mm

Archiblatta beccarii Hanitsch

Archiblatta beccarii Hanitsch, 1932 c, p. 76, fig. 17.

Type: ♂, Mount Singalang, Sumatra, O. Beccari, July 1878; Oxford University Museum.

A. beccarii Hanitsch is narrowly related to *A. hoevenii* Vollenhoven, differing in being apterous, in the uniformly coloured antennae, in the pronotum being only slightly rugose and in the meso- and metanotum being only slightly produced.

Catara rugosicollis (Brunner)

Deropeltis rugosicollis Brunner, 1865, p. 245.

Catara rugosicollis, Walker, 1868, p. 53; Kirby, 1904, p. 148; Shelford, 1910 b, p. 22, pl. 2 fig. 19; Hanitsch, 1915, p. 117, pl. 5 figs. 26-27; Hanitsch, 1919, p. 70; Hanitsch, 1923 a, p. 210; Hanitsch, 1923 b, p. 442; Hanitsch, 1925, p. 97; Hebard, 1929, p. 85; Hanitsch, 1929 b, p. 287; Hanitsch, 1932 c, p. 76; Hanitsch, 1933 a, p. 327; Hanitsch, 1933 c, p. 234.

Archiblatta valvularia Saussure, 1872, p. 118, pl. 10 fig. 40.
Type: ♂, Java.

Leiden Museum:

Malay Peninsula, Van der Does de Bye, 1 ♀; Palembang, Sumatra Exp., May-June 1878, 2 ♀♀; Pladju, Palembang, Sumatra, D. Houwing, 1920, 1 ♂; Pladju, Sumatra, P. van den Hemert, 1923-1926, 1 ♂; Tandjung Merah, Sumatra, J. H. Houwing, 1914, 1 ♂; Megamendung, Java, J. A. Pasteur, 1 ♂; Java, 1 ♂; Kenepai, Pondok, Borneo, January 1894, 1 ♀; Upper Mahakkam, Borneo, Dr. Nieuwenhuis, Borneo Exp., 1894, 3 ♂♂, 13 ♀♀, 4 larvae; Long Blu-u, Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 3 ♂♂, 18 ♀♀, 11 larvae; Sambas, Dr. Hallier, Borneo Exp., 1893, 1 larva; Ketingau, M. Moret, Borneo Exp., 1894, 1 ♀; Mount Tilung, Borneo, Büttikofer, March 1894, 1 larva.

C. rugosicollis (Brunner) is a common species in the Indo-malayan subregion.

Measurements:	♂	♀
Total length	26.6-30.2 mm	16.6-24.8 mm
Length of tegmina	23.8-27.3 mm	—
Pronotum	5.4 × 6.8-6.4 × 8.2 mm	5.0 × 7.9-8.8 × 12.8 mm

Catara minor Krauss

Catara minor Krauss, 1903, p. 753, pl. 67 fig. 3; Shelford, 1910 b, p. 22; Hanitsch, 1915, p. 118; Hanitsch, 1925, p. 97; Hebard, 1929, p. 85.
Type: ♂, ♀, Tjibodas, Java, Semon.

EPILAMPRINAE

The number of species described in this subfamily is very large. Especially the genus *Epilampra* contains numerous species. The characters on which these species were based, are often of minor specific significance, since they are due to individual variation. The variability of the species, and the large number of vague descriptions make it desirable to monograph this very difficult group.

The following survey of the Indo-malayan species belonging to the genus *Epilampra* has to be regarded merely as a compilation of the very scattered literature. The genus is still an unnatural aggregation of species and only after a study of large series and of the types one may unravel the synonymy and distinguish the generic units.

In the other genera of the Epilamprinae there exists less confusion.

Epilampra albina (Saussure)

Hedaia albina Saussure, 1895 a, p. 351; Kirby, 1904, p. 123.
Epilampra albina, Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 88; Hebard, 1929, p. 12; Hanitsch, 1930 a, p. 188; Hanitsch, 1933 a, p. 320.
Type: ♂, ♀, Java.

Leiden Museum:

Dampit, Sumber Pakel, Java, MacGillavry, 1916, 2 ♂♂, 4 ♀♀; ibidem, MacGillavry, 1919, 3 ♂♂, 1 ♀; ibidem, MacGillavry, 1920, 3 ♀♀; Tjiliwung, near Buitenzorg, Java, W. C. van Heurn, 1932, 5 ♂♂, 1 ♀; Java, 1 ♂, 3 ♀♀; Surulangun, Sumatra Exp., January 1878, 1 ♀; Queda, Malay Peninsula, P. J. van der Does de Bye, 1 ♀.

Amsterdam Museum:

Bandar Baru, Sumatra, J. B. Corporaal, February 1921, 1 ♂.

E. albina varies widely in its coloration, viz., from ivory yellow to ochraceous-tawny. The pale specimens are speckled with very small castaneous dots; in the other specimens the dots are larger. In some specimens the anal sulcus is black.

Measurements:	♂	♀
Total length	29.6 mm	39.5 mm
Length of tegmina	26.5 mm	34.6 mm
Pronotum	6.0 × 7.0 mm	8.7 × 10.6 mm

Epilampra circumdata Hanitsch

Epilampra circumdata Hanitsch, 1915, p. 84, pl. 1 fig. 5; Hanitsch, 1925, p. 92; Hebard, 1929, p. 87.

Type: ♂, ♀, Singapore; Bukit Tunah, Singapore; Maxwell's Hill, Perak; Bukit Kutu, Selangor.

Epilampra deflexa Saussure

Epilampra deflexa Saussure, 1872, p. 126, pl. 10 fig. 43; Shelford, 1910a, p. 15; Hanitsch, 1915, p. 86.

Heterolampra deflexa, Kirby, 1904, p. 122.

Type: ♀, Java.

Epilampra dytiscoides Hanitsch

Epilampra dytiscoides Hanitsch, 1915, p. 32, pl. 7 fig. 35.

Epilampra dytiscoides var. *celebensis* Hanitsch, 1933 b, p. 136; Bruijning, 1947, p. 229.

Type: ♂, ♀, Bukit Kutu, Selangor, April 1915; Oxford University Museum.

Epilampra fervida Walker

Epilampra fervida Walker, 1868, p. 211; Hebard, 1929, p. 86; Hanitsch, 1931 b, p. 394; Hanitsch, 1933 b, p. 136; Bruijning, 1947, p. 229.

Heterolampra fervida, Kirby, 1904, p. 122.

Type: ♂, Borneo; British Museum.

Epilampra flavomarginata Shelford

Epilampra flavomarginata Shelford, 1906, p. 270; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 84; Hebard, 1929, p. 87.

Type: ♂, ♀, Kuching, Borneo; Oxford University Museum.

Epilampra geminata Brunner

Epilampra geminata Brunner, 1898, p. 208; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 87.

Heterolampra geminata, Kirby, 1904, p. 122.

Type: ♂, ♀, Mount Kina Balu and Brunei, Borneo; Senckenberg Museum.

Epilampra inclarata Walker

Epilampra inclarata Walker, 1868, p. 198; Shelford, 1906, p. 498; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 85.
Heterolampra inclarata, Kirby, 1904, p. 121.
Type: ♀, Sarawak, Wallace; British Museum.

Epilampra laevicollis Saussure

Epilampra laevicollis Saussure, 1872, p. 129, pl. 10 fig. 45; Krauss, 1903, p. 750; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 89.
Heterolampra laevicollis, Kirby, 1904, p. 122.
Type: ♀, Java.

Epilampra lyrata Hanitsch

Epilampra lyrata Hanitsch, 1923 b, p. 430.
Type: ♀, Gunung Angsi, Negri Sembilan, R. Hanitsch, April 1918; Oxford University Museum.

Leiden Museum:

Java, 1 ♀, 1 ?.

Measurements: ♀, total length 27.1 mm, length of tegmina 22.7 mm, pronotum 6.1 × 7.5 mm.

Epilampra plena Walker

Epilampra plena Walker, 1868, p. 210; Shelford, 1906, p. 499; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 79; Hanitsch, 1923 b, p. 430; Hanitsch, 1925, p. 92; Hanitsch, 1933 b, p. 136; Bruijning, 1947, p. 228.
Heterolampra plena, Kirby, 1904, p. 122.
Type: ♀, Menado, Celebes; Saunder's collection, British Museum.

Leiden Museum:

Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀. Also a female from unknown locality.

Measurements: ♀, total length 24.2 mm, length of tegmina 21.0 mm, pronotum 5.0 × 5.9 mm.

Epilampra puncticollis Walker

Epilampra puncticollis Walker, 1868, p. 74; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 80; Hanitsch, 1923 b, p. 431, pl. 12 fig. 6; Hanitsch, 1931 b, p. 395.
Heterolampra puncticollis, Kirby, 1904, p. 122.
Type: ♂, Sarawak, Wallace; British Museum.

Epilampra quadrinotata Walker

Epilampra quadrinotata Walker, 1868, p. 209; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 78; Hebard, 1929, p. 87.
Heterolampra quadrinotata, Kirby, 1904, p. 122.
Type: ♀, Sarawak, Wallace; British Museum.

Epilampra ridleyi (Kirby)

Heterolampra ridleyi Kirby, 1903 b, p. 278.
Epilampra ridleyi, Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 86.
Type: ♀, Singapore, H. N. Ridley; British Museum.

Epilampra saravacensis Shelford

Epilampra saravacensis Shelford, 1906, p. 268; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 83; Hanitsch, 1923 b, p. 431; Hanitsch, 1933 c, p. 233.
Type: ♀, Lingga, Batang Lupar River; Oxford University Museum.

Epilampra trongana Rehn

Epilampra trongana Rehn, 1904, p. 548; Shelford, 1910 a, p. 14; Hanitsch, 1915, p. 89.
Type: ♂, ♀, Malay Peninsula, Trang, Lower Siam, Dr. W. L. Abbott; United States National Museum.

Epilampra varia Walker

Epilampra varia Walker, 1869, p. 130; Shelford, 1906, p. 500, pl. 30 fig. 9; Shelford, 1910 a, p. 15; Hanitsch, 1915, p. 81.
Heterolampra varia, Kirby, 1904, p. 121.
Type: ♂, Sarawak, Wallace; British Museum.

Epilampra communis Hanitsch

Epilampra communis Hanitsch, 1928, p. 32; Hanitsch, 1932 c, p. 70; Hanitsch, 1933 a, p. 320.
Type: ♂♂, ♀♀, Mentawi Islands, C. Boden Kloss; Oxford University Museum.

Epilampra mentawiensis Hanitsch (figs. 47, 48)

Epilampra mentawiensis Hanitsch, 1928, p. 33, pl. 2 fig. 4.
Type: ♂, ♀♀, Mentawi Islands, C. Boden Kloss; Oxford University Museum.

Leiden Museum:

Pladju, Sumatra, P. J. van den Hemert, 1923-1926, 1 ♂; Sambas, Dr. Hallier, Borneo Exp., 1893, 1 ♂.

The specimens agree in most aspects with the description by Hanitsch, but differ in the subgenital plate which is trapezoidal in stead of triangular (fig. 48 a).

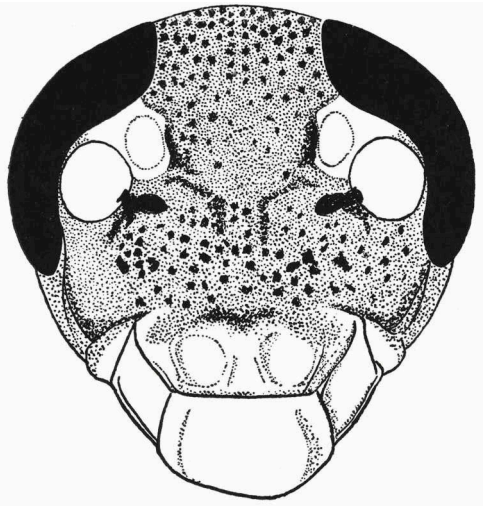

Fig. 47. *Epilampra mentawiensis* Hanitsch. Head. × 15.

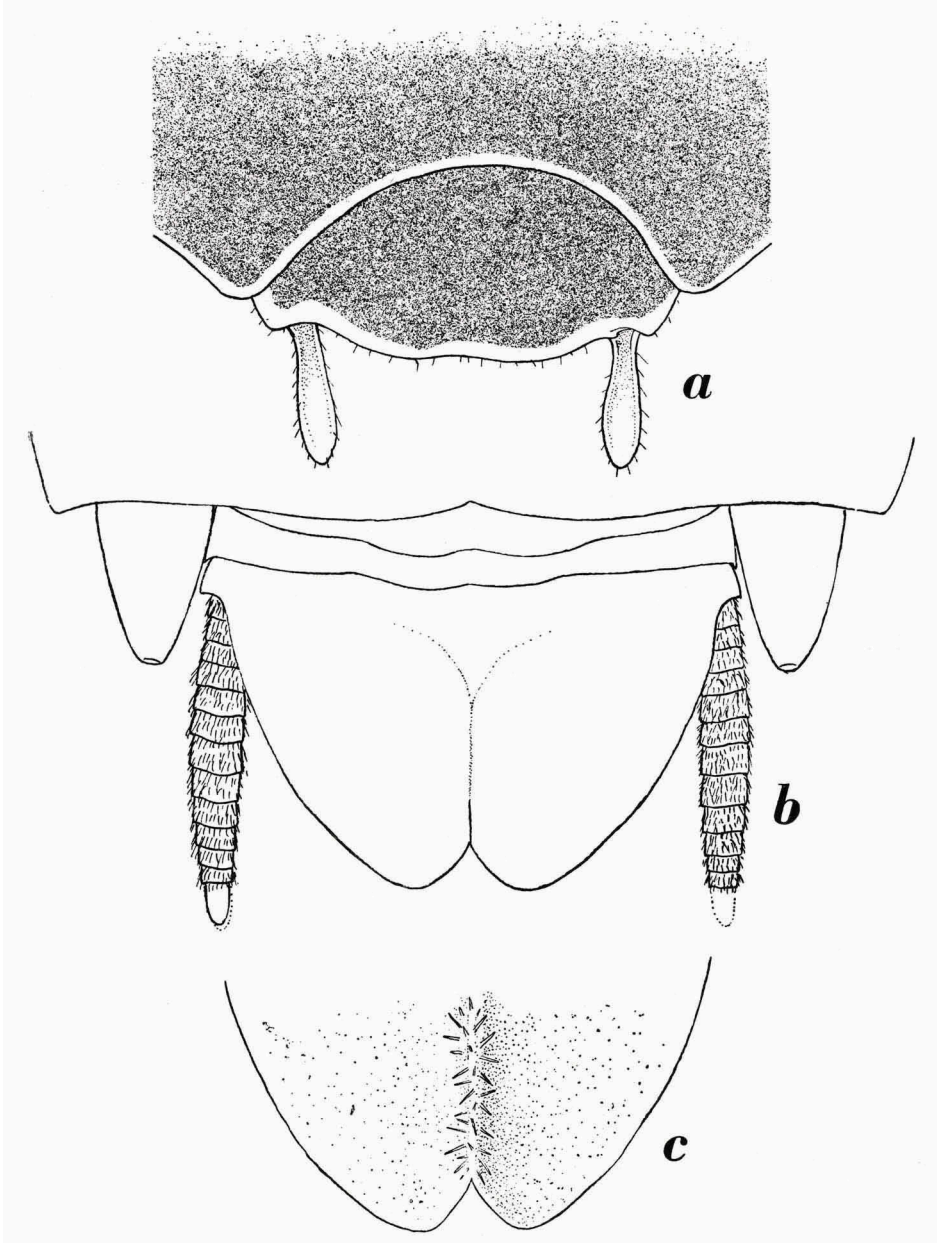

Fig. 48. *Epilampra mentawiensis* Hanitsch. a, subgenital plate ♂ ; b, supra-anal plate ♂, dorsal view; c, supra-anal plate ♂, ventral view. × 12.

The supra-anal plate is bilobed; below its median line it is densely arranged with piliform spines (fig. 48 c). The face of one of the specimens

is spotted with black (fig. 47); in the other specimen these spots are very vague.

E. mentawiensis is allied to *E. ridleyi* (Kirby) and *E. saravacensis* Shelford, and it is quite possible that it is synonymous with the latter.

Measurements: ♂, total length 43.3-49.0 mm, length of body 36.0-42.7 mm, length of tegmina 37.1-42.7 mm, pronotum 8.2 × 11.1-13.7 mm.

Epilampra intermedia Hanitsch

Epilampra intermedia Hanitsch, 1925, p. 93; Hanitsch, 1932 c, p. 69.
Type: ♀, Mount Dulit, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Epilampra unicolor Hanitsch

Epilampra unicolor Hanitsch, 1925, p. 93.
Type: ♀, Mount Dulit, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Epilampra catori Hanitsch

Epilampra catori Hanitsch, 1931 b, p. 395, fig. 5.
Type: ♂, Sandakan, Borneo, D. Cator, 1895; British Museum.

Epilampra everetti Hanitsch

Epilampra everetti Hanitsch, 1931 b, p. 396, fig. 6.
Type: ♀, N. Borneo, Everett, 1903; British Museum.

Epilampra modiglianii Hanitsch

Epilampra modiglianii Hanitsch, 1932 c, p. 70, fig. 12.
Type: ♀, Si-Rambé, Sumatra, E. Modigliani, December 1890 to March 1891; Oxford University Museum.

Epilampra pendleburyi Hanitsch

Epilampra pendleburyi Hanitsch, 1933 a, p. 320.
Type: ♂ ♂, ♀, Kiau, Mount Kinabalu, Borneo, H. M. Pendlebury, 1929; Oxford University Museum.

Leiden Museum:

Siniai River, Büttikofer, Borneo Exp., 1 ♀.

The present specimen agrees closely with the description given by Hanitsch. The left tegmen is missing.

Measurements: ♀, total length 47.3 mm, length of body 35.8 mm, length of tegmina 39.0 mm, pronotum 9.6 × 11.7 mm.

Epilampra demergens Hanitsch

Epilampra demergens Hanitsch, 1933 a, p. 321, figs. 13-16.
Type: ♂ ♂, ♀ ♀, Kamborangah, Borneo, H. M. Pendlebury, 1929; Oxford University Museum.

Compsolampra liturata Serville

Blatta liturata Serville, 1839, p. 103; De Haan, 1842, p. 58, pl. 18 fig. 8.
Opisthoplatia liturata, Brunner, 1865, p. 201.
Periplaneta insolita Walker, 1868, p. 146.
Epilampra quadrata Saussure, 1872, p. 129.
Compsolampra liturata, Saussure, 1895 a, p. 343; Kirby, 1904, p. 116; Shelford, 1910 a, p. 6, pl. 1 fig. 6; Hanitsch, 1915, p. 68; Hanitsch, 1923 a, p. 202; Hebard, 1929, p. 93.
Calolampra quadrata, Kirby, 1904, p. 117.
Type: Java.

Leiden Museum:

Padang, Sumatra, 2 ♀♀; Java, 1 ♂, 1 ♀.
Also a female from Japan.

Amsterdam Museum:

Locality unknown, 1 ♀.

The colour of the pronotal design varies from rufous to blackish castaneous. In one of the specimens from Padang the centre of the blackish castaneous design is rufous.

Measurements:	♂	♀
Total length	18.7 mm	22.8-25.2 mm
Length of tegmina	5.8 mm	6.3-8.1 mm
Pronotum	5.9 × 7.2 mm	7.2 × 9.3-7.6 × 9.7 mm

Phlebonotus pallens (Serville)

Phoraspis pallens Serville, 1831, p. 43; Serville, 1839, p. 125, pl. 3 fig. 4; Blanchard, 1837, p. 286, pl. 10 fig. 1; Burmeister, 1838, p. 492; Brunner, 1865, p. 165; Saussure, 1869, p. 205.
Epilampra cribrata Saussure, 1863, p. 144, pl. 1 figs. 10-10a; Saussure, 1869, p. 264.
Planes cribrata, Kirby, 1904, p. 111.
Type: Java.

Leiden Museum:

Java, 1 ♀.

The specimen from the Leiden Museum is slightly damaged. Femur and tibia of one of the anterior legs, one of the middle legs and the tibiae of the posterior legs are missing. The antennae are also damaged.

Measurements: ♀, total length 21.7 mm, length of tegmina 17.9 mm, length of wings 13.0 mm, pronotum 6.5 × 9.3 mm.

Morphna badia (Brunner)

Epilampra badia Brunner, 1865, p. 189; Rehn, 1909, p. 178.
Epilampra ramifera Walker, 1869, p. 132.
Molytria badia, Kirby, 1904, p. 114.
Molytria ramifera, Kirby 1904, p. 114.

Morphna badia, Shelford, 1910 a, p. 7; Hanitsch, 1915, p. 66, pl. 4 fig. 20; Hanitsch, 1923 b, p. 422; Hebard, 1929, p. 94; Hanitsch, 1929 b, p. 280.
Type: ♂, ♀, "probably Java".

Leiden Museum:

Sumatra, J. D. Pasteur, 1 ♀; Tebing Tinggi, F. J. Weynmann, 2 ♂♂, 1 ?, 1 ♀.

Amsterdam Museum:

Sibolangit, Sumatra, J. A. Loerzing, 1917, 1 ♀.

This beautiful insect is readily distinguished by its shining, rufo-castaneous tegmina, the testaceous antennae, the uniform castaneous pronotum.

Measurements:	♂	♀
Total length	49.6-51.8 mm	48.2-50.8 mm
Length of body	40.0-42.4 mm	40.1-40.3 mm
Length of tegmina	44.5-45.7 mm	41.7-44.5 mm
Pronotum	10.3 × 14.2-11.0 × 15.1 mm	11.3 × 14.9-11.6 × 16.2 mm

Morphna dotata (Walker) (fig. 49 a)

Epilampra dotata Walker, 1869, p. 130.
Morphna dotata, Hanitsch, 1923 b, p. 420; Hebard, 1929, p. 94.
Type: ♂, Sarawak, Borneo; British Museum.

Leiden Museum:

Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 4 ♀♀.

The castaneous tegmina with the testaceous ocellar spots, the dark proximal portion of the antennae, the dark castaneous dorsal surface of the caudal tibiae and the dark median line of the second to the fifth abdominal sternites make *M. dotata* easily to be distinguished from its relatives (fig. 49 a).

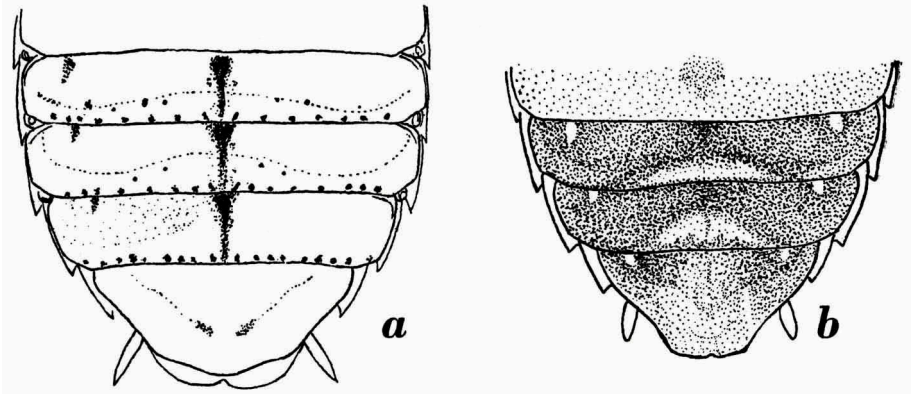

Fig. 49. a, *Morphna dotata* (Walker), distal half of abdomen ♀, ventral view. b, *Morphna humeralis* nov. spec., distal half of abdomen ♀, ventral view. × 2.

Measurements: ♀, total length 57.5-58.3 mm, length of body 49.6-52.5 mm, length of tegmina 47.9-50.1 mm, pronotum 13.0 × 19.1-13.1 × 19.7 mm.

Morphna humeralis nov. spec. (fig. 49 b)

Leiden Museum:

Kenepai, Korinchi, Sumatra, E. Jacobson, July 1915, 1 ♀ (holotype).

Large for the genus. Head with sides converging. Interocular space two thirds of space between antennal sockets. Palpi with fifth joints longer than fourth and third, which are equal in length (as 5 to 4 to 4). Pronotum and tegmina of the same shape as in the other species belonging to the genus *Morphna*.

General coloration castaneous. Face testaceous, eyes castaneous. Antennae unicolourous, testaceous. Pronotum rufo-castaneous; the anterior and lateral margins narrowly bordered with testaceous. Tegmina paler; castaneous with numerous irregular testaceous spots which grow larger to the apex; the basal half of the radial vein is deeply rufo-castaneous. Abdominal sternites castaneous; the second to the fifth have a testaceous vitta on each side, the fourth and the fifth a medio-caudal suffusion of the same colour (fig. 49 b). Legs testaceous to rufo-testaceous.

Measurements: ♀, total length 59.4 mm, length of body 50.3 mm, length of tegmina 49.8 mm, pronotum 13.4 × 18.4 mm.

M. humeralis nov. spec. is narrowly related to *M. dotata* (Walker), but differs in the uniformly coloured antennae and legs, in the dark castaneous basal half of the radial vein and in the design of the abdominal sternites.

Morphna maculata (Brunner)

Epilampra maculata Brunner, 1865, p. 179.
Epilampra polyspila Walker, 1868, p. 197.
Molytria maculata, Kirby, 1903 b, p. 275; Kirby, 1904, p. 114.
Morphna maculata, Shelford, 1910 a, p. 6, pl. 1 figs. 7-7a; Hanitsch, 1915, p. 65, pl. 4 fig. 19; Hebard, 1929, p. 94; Hanitsch, 1933 c, p. 233.
Type: ♂, "probably Java".

Leiden Museum:

Lubu Bangku, Sumatra, J. Menzel, May 1905, 1 ♀; Pladju, Sumatra, P. van den Hemert, 1923-1926, 2 ♀♀; Kenepai Mountains, Moret, Borneo Exp., 1894, 1 ♂, 3 ♀♀.

Amsterdam Museum:

Taluk, Sumatra, Kleiweg de Zwaan, 1907, 1 ♂.

This very nice species is readily distinguished by its pronotal and tegminal design.

Measurements:	♂	♀
Total length	48.7 mm	53.6-55.3 mm
Length of tegmina	40.5 mm	46.5-48.1 mm
Pronotum	11.8 × 18.4 mm	13.2 × 18.3-13.2 × 19.6 mm

Morphna pustulata Hanitsch

Morphna pustulata Hanitsch, 1930 a, p. 185, fig. 6; Hanitsch, 1931 a, p. 49, pl. 1 fig. 1.
Type: ♂, ♀, Tandjong Pura, Sumatra, R. Heinze; Dresden Museum.

Distinguished by the bicoloured pronotum and uniformly coloured tegmina.

Morphnodes goliath (Shelford)

Epilampra goliath Shelford, 1906, p. 269; Shelford, 1910 a, p. 15, pl. 2 fig. 6; Hanitsch, 1915, p. 83.
Morphnodes goliath, Hebard, 1929, p. 14.
Type: ♂, Mount Matang; Oxford University Museum.

Leiden Museum:

Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♂, 1 ♀; Long Blu-u, Dr. Nieuwenhuis, Borneo Exp., 1899, 1 ♀; Balik Papan, Borneo, Kampmeinert, July 1912, 1 ♀.

Hebard (1929, p. 93) established a new genus, *Morphnodes*, to which this species belongs. It differs from *Morphna* in the biseriately spined caudal metatarsus and in the impressed latero-cephalad pronotal impressions.

Measurements:	♂	♀
Total length	51.2 mm	56.6 mm
Length of tegmina	44.2 mm	48.7 mm
Pronotum	12.1 × 17.8 mm	13.0 × 19.8 mm

Stictomorphna nov. gen.

Pronotal disk deeply punctured and impressed latero-cephalad; strongly cucullate in front. Tegmina broadly rounded at apex; costo-subcostal field nearly half as broad as the tegmina. Caudal metatarsus nearly as long as the remaining joints, biseriately spined ventrad. Form depressed.

The new genus is related to *Morphna* and to *Morphnodes,* differing from the former in the punctured pronotal disk and the spined caudal metatarsus and from the latter in the punctured pronotal disk.

Genotype: *Morphna mjöbergi* Hanitsch.

Stictomorphna mjöbergi (Hanitsch) (fig. 50 a)

Morphna mjöbergi Hanitsch, 1925, p. 90, fig. 7; Hanitsch, 1933 c, p. 233.
Type: ♂ ♂, Mount Dulit, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Leiden Museum:

Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 2 ♀♀.

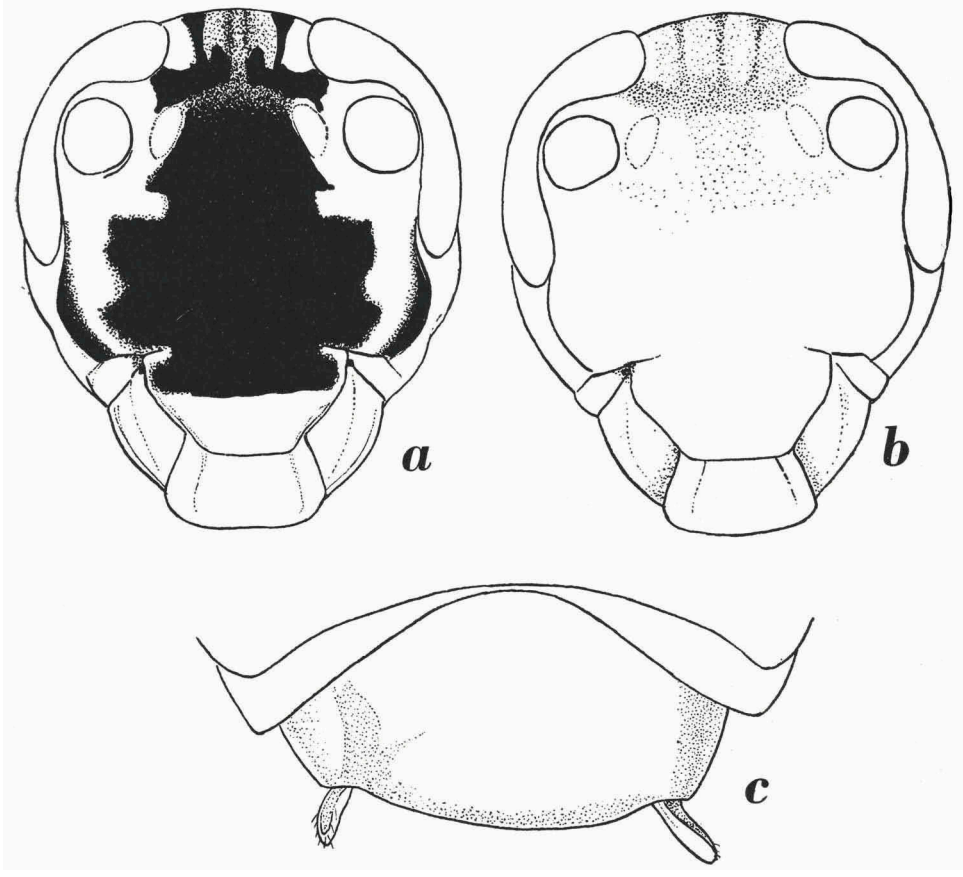

Fig. 50. a, *Stictomorphna mjöbergi* (Hanitsch). Head in cephalic aspect. b-c, *Stictomorphna parvimaculata* nov. spec. b, head in cephalic aspect; c, subgenital plate ♂. a, b, × 9; c, × 11.

The specimens agree closely with the original description. In all the specimens the second to the fifth sternites have a dark median line.

The face is covered by a large black macula (fig. 50 a).

Measurements: ♀, total length 54.6 mm, length of tegmina 47.3 mm, pronotum 10.9 × 16.2 mm.

Stictomorphna parvimaculata nov. spec. (fig. 50 b-c)

Leiden Museum:

Borneo, Büttikofer, 1 ♂ (holotype).

Head not covered by the pronotum; palpi with third, fourth and fifth joints nearly equal in length. Ventro-cephalic margin of cephalic femora with six strong spines, followed by a series of piliform spines and distad two strong spines. Pronotum transverse; anterior margin truncate, posterior margin obtusely trigonally produced; the disk is deeply punctured except a narrow area along the latero-cephalic margins. Tegmina exceeding the abdomen; narrow; apex broadly rounded. Supra-anal plate semicircular, its caudal margin trigonally emarginated. Subgenital plate slightly asymmetrical; styles small (fig. 50 c).

Head testaceous with three longitudinal, castaneous lines on the vertex; face testaceous, suffused with fulvous (fig. 50 b). Pronotum testaceous, marked with numerous dark castaneous punctures, and with a castaneous macula which occupies the caudal half of the centre of the disk and about ten small castaneous maculae along the caudal margin.

The costo-subcostal area of the tegmina testaceous with rufo-castaneous blotches; remainder of tegmina rufo-castaneous with numerous small, testaceous blotches basally and some large ocellar spots of the same colour near the apex; the humeral trunk is dark castaneous.

Legs and ventral surface of abdomen testaceous, the latter suffused with fulvous. The abdominal sternites with a black spot on either side.

Measurements: ♂, total length 51.2 mm, length of tegmina 43.3 mm, pronotum 10.5 × 15.0 mm.

This species is narrowly related to *S. mjöbergi* (Hanitsch), but differs in the pronotal design, in the testaceous face, in the dark tegmina and in the absence of the dark median line on the abdominal sternites.

Stictomorphna ? miranda (Shelford)

Epilampra miranda Shelford, 1906, p. 269.
Pseudophoraspis miranda, Shelford, 1910 a, p. 12; Hanitsch, 1915, p. 73.
Morphnodes miranda, Hebard, 1929, p. 13.
Type: ♂, Mount Penrissen, R. Shelford; Oxford University Museum.

On account of the punctured, impressed pronotum and the broad costo-subcostal region this species has to be placed in *Stictomorphna.*

Apsidopis wallacei Shelford

Apsidopis wallacei Shelford, 1907 a, p. 38; Shelford, 1910 a, p. 6; Hanitsch, 1915, p. 69.
Type: ♀, Sarawak, Wallace; Oxford University Museum.

Apsidopis oxyptera (Walker)

Epilampra oxyptera Walker, 1868, p. 199.
Derocardia oxyptera, Kirby, 1904, p. 119.

Apsidopis oxyptera, Shelford, 1910 a, p. 6, pl. 1 fig. 5; Hanitsch, 1915, p. 70; Hanitsch, 1923 b, p. 424.
Type: ♂, Sarawak, Wallace; Oxford University Museum.

Apsidopis cyclops Saussure

Apsidopis cyclops Saussure, 1895 a, p. 338, pl. 9 fig. 7; Kirby, 1904, p. 119; Shelford, 1910 a, p. 6; Hanitsch, 1915, p. 71; Hanitsch, 1923 b, p. 424; Hanitsch, 1931 b, p. 394.
Type: ♂, Borneo; Geneva Museum.

Leiden Museum:

Sambas, Borneo, Dr. J. Bosscha, 1891, 1 ♂.

The species belonging to the genus *Apsidopis* seem to be very rare. The number recorded so far is small, viz., one specimen of *wallacei,* three specimens of *oxyptera* and four specimens of *cyclops.*

Measurements: ♂, total length 25.0 mm, length of tegmina 21.2 mm, pronotum 5.8 × 7.3 mm.

Pseudophoraspis nebulosa (Burmeister)

Epilampra nebulosa Burmeister, 1838, p. 505; Brunner, 1865, p. 193, pl. 4 figs. 19 A-E; Walker, 1868, p. 194; Krauss, 1903, p. 747.
Blatta jaspidea Serville, 1839, p. 88.
Epilampra jaspidea, Brunner, 1865, p. 184; Saussure, 1864 b, p. 138; Walker, 1868, p. 193.
Epilampra congrua Walker, 1868, p. 199.
Epilampra conformis Walker, 1868, p. 200.
Epilampra scita Walker, 1868, p. 200.
Epilampra deplanata Walker, 1868, p. 200.
Pseudophoraspis nebulosa, Kirby, 1904, pl. 119; Shelford, 1910 a, p. 12, pl. 2 fig. 4; Hanitsch, 1915, p. 72, pl. 5 fig. 4; Hanitsch, 1923 a, p. 203; Hanitsch, 1923 b, p. 425, pl. 12 fig. 4; Hanitsch, 1928, p. 30; Hebard, 1929, p. 91; Hanitsch, 1929 a, p. 15; Hanitsch, 1930 a, p. 188; Hanitsch, 1931 b, p. 394; Hanitsch, 1932 c, p. 69; Hanitsch, 1933 a, p. 317; Hanitsch, 1933 c, p. 233; Hanitsch, 1934, p. 121; Bruijning, 1947, p. 230.
Type: Java.

Leiden Museum:

Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1882, 1 ♂; Tebing-Tinggi, Sumatra, F. J. Weynman, 1 ♂; Balunkuara Labu, Sumatra, E. Jacobson, July 1914, 1 ♂; Java, Muller, 2 ♂♂, 4 ♀♀; Buitenzorg, Java, H. W. van der Weele, 1909, 1 ♂, 3 ♀♀; Buitenzorg, Java, Dr. W. C. van Heurn, December 1931, 1 ♂; Sukabumi, Java, E. Jacobson, December, 1907, 1 ♀; Sumatra or Java, A. G. Vorderman, 1 ♀; Malay Peninsula, Van der Does de Bye, 2 ♀♀; Pulu Weh, Dr. P. Buitendijk, January 1913, 1 ♀; Nias, J. D. Pasteur, 1 ♂; Banka, H. W. van der Weele, 1 ♂; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 1 ♂, 1 ♀; Sintang, Borneo Exp., 1894, 1 ♀; Balik Papan, Borneo, Kampmeinert, July 1912, 1 ♂; Upper Mahakkam, Borneo, Kampmeinert, December 1912, 1 ♂; Banjirmasin, Borneo, 1 ♂, 4 ♀♀. Also two specimens from Celebes.

Amsterdam Museum:

Sibolangit, Sumatra, J. B. Corporaal, April 17 1921, 1 ♂; Buitenzorg, Java, W. C. van Heurn, 1924, 1 ♀; Billiton, 1 ♂; ?, 1 ♂, 1 ♀.

The variability in this species is very large. The coloration varies from rufo-castaneous to testaceous. In most cases, however, the tegmina are marmorated or flecked. The females are convex and the males deplanate.

Measurements:	♂	♀
Total length	32.1-38.9 mm	30.0-40.2 mm
Length of tegmina	28.1-32.1 mm	25.8-33.4 mm
Pronotum	8.2 × 10.3-8.4 × 11.1 mm	8.5 × 11.5-10.0 × 13.2 mm

Pseudophoraspis emarginata Hanitsch

Pseudophoraspis emarginata Hanitsch, 1923 b, p. 424, figs. 16-17; Hanitsch, 1933 a, p. 317.

Type: ♂, Long Akar, Barum River, Sarawak, Borneo, J. C. Moulton, October 1 1920; Oxford University Museum.

Leiden Museum:

G. Kenepai, Pondok, Borneo, January 1894, 2 ♂♂; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 1 ♂; Sambas, Dr. Hallier, Borneo Exp., 1893, 1 ♂.

Two of the specimens have beside the basal black blotch also some castaneous blotches along the radial vein. So far only males have been taken.

According to Hanitsch (1923 b, p. 425) *P. emarginata* is near *P. fruhstorferi* Shelford, from Tonkin, but differs in the emarginate alar organs, in the eyes which are closer together, in the impresso-punctate pronotum, and in the paler pronotum and tegmina.

A character not mentioned by Hanitsch, but of great importance to distinguish the two species, is the design of the face of *fruhstorferi* (fig. 51 d).

Measurements: ♂, total length 41.5-47.1 mm, length of tegmina 36.1-41.2 mm, pronotum 9.0 × 12.0-9.6 × 13.2 mm.

Pseudophoraspis testudinaria Hanitsch

Pseudophoraspis testudinaria Hanitsch, 1925, p. 91; Hanitsch, 1933 a, p. 317.

Type: ♀, Sarawak, Dr. E. Mjöberg, October 1922—January 1923; Oxford University Museum.

In *P. testudinaria* the tegmina and wings are not emarginated at the apex.

Pseudophoraspis lacrimans Hanitsch

Pseudophoraspis lacrimans Hanitsch, 1933 a, p. 318, fig. 12.

Type: ♂, Kiau, Borneo, H. M. Pendlebury, 17-4-1929; Oxford University Museum.

Pseudophoraspis uniformis Hanitsch

Pseudophoraspis uniformis Hanitsch, 1933 a, p. 319.

Type: Tenompok Pass, H. M. Pendlebury, 18-3-1929; Oxford University Museum.

According to Hanitsch *P. lacrimans* and *P. uniformis* are closely allied

and the latter may prove to be the female of the former. In both species the tegmina are rounded at the apex.

Pseudophoraspis proximata nov. spec. (fig. 51 a, b)

Leiden Museum:

G. Kenepai, Pondok, Borneo, 1 ♂ (holotype).

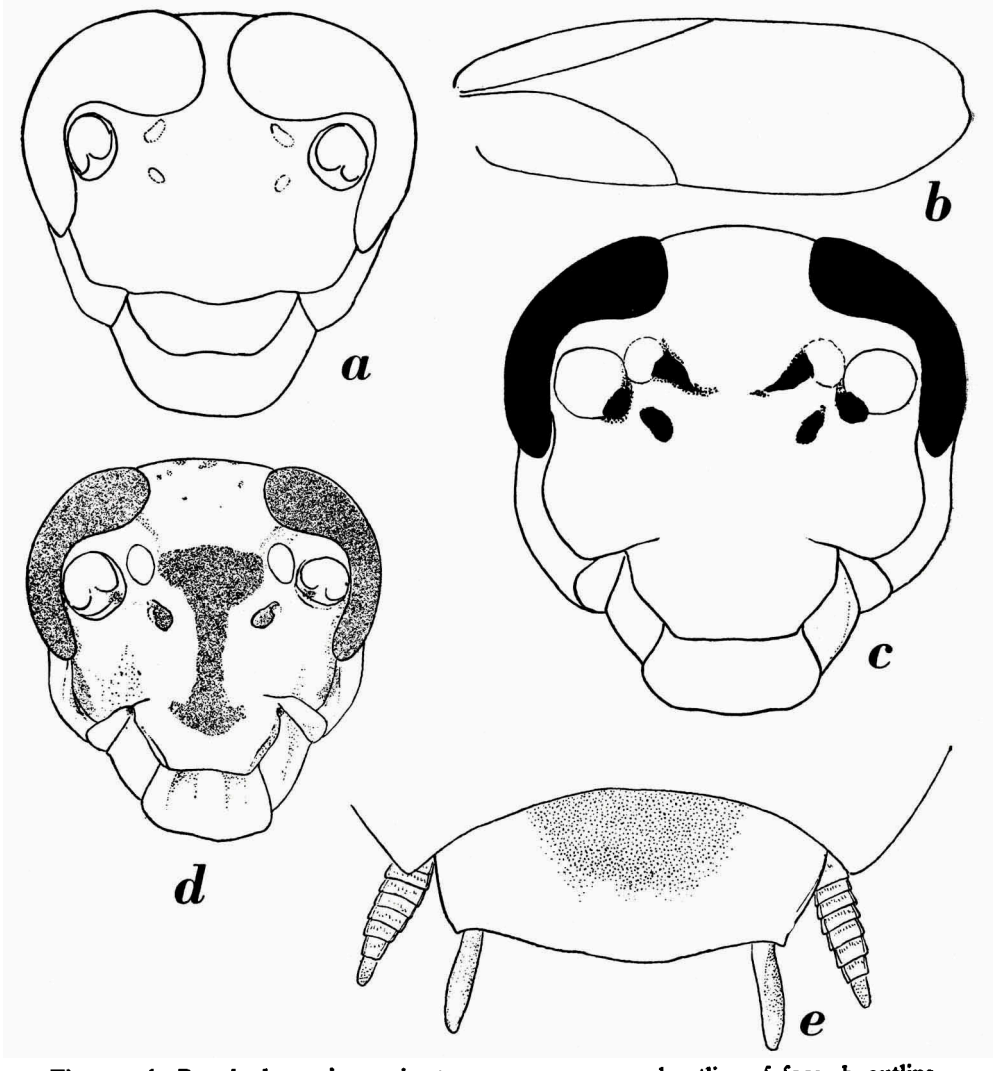

Fig. 51 a-b, *Pseudophoraspis proximata* nov. spec. a, general outline of face; b, outline of dextral tegmen. c, *Pseudophoraspis weynmani* nov. spec., head. d-e, *Pseudophoraspis fruhstorferi* Shelford. d, head; e, subgenital lamina ♂. a, × 12,5; b, × 2.5; c, × 11; d, × 11; e, × 11.

Size small for genus. Head nearly entirely covered by the pronotum; eyes very close together, width between them only one eigth of distance between antennal sockets (fig. 51 a). Palpi with third, fourth and fifth joints nearly equal in length. Two pairs of ocelli. Pronotum. small, transverse, anterior margin gradually rounding into lateral margins; posterior margin obtusely angular. Pronotal disk strongly impressed latero-cephalad, rugose. Tegmina exceeding the abdomen by about one fifth their length; slightly emarginated at apex (fig. 51 b); subcostal vein with about four branches; costo-subcostal area broad, about one third basal width of tegmen. Abdomen slender. Supra-anal plate transverse, emarginated at apex. Subgenital plate transverse, its caudal margin deeply trigonally emarginated; styli slender. Cerci well developed but also slender.

General coloration testaceous. Head with suffusion of fulvous between the castaneous eyes and on the face; the dorsal ocelli are testaceous, the ventral pale shining castaneous.

Pronotum testaceous, the centre suffused with fulvous, along the anterior and posterior margins small dots of the same colour; near the latero-cephalic impressions two castaneous flecks. Tegmina pale testaceous; humeral trunk castaneous; numerous fulvous flecks along the veins. The abdominal sternites with submarginal castaneous spots.

Measurements: ♂, total length 33.8 mm, length of tegmina 29.0 mm, pronotum 6.4 × 8.2 mm.

Narrowly related to *P. emarginata* Hanitsch, but differs in the eyes which are very close together, the tegmina which are less emarginated and in the smaller size.

Pseudophoraspis weynmani nov. spec. (figs. 51 c, 52)

Leiden Museum:

Tebing Tinggi, Sumatra, F. J. Weynman, 1 ♀ (holotype).

Head entirely covered by the pronotum. Interocular space slightly more than half the width between antennal sockets. Palpi with distal joint longer than fourth joint, which is longer than third (as 6 to 5 to 4). Face concave between eyes and ocelli. Pronotum cucullate with shallow latero-cephalic impressions; anterior margin parabolic; posterior margin weakly trigonally produced. Tegmina surpassing the apex of abdomen by about one eighth of their length, strongly emarginated at apex, densely impressed punctate; width of costo-subcostal area two-fifth of width of tegmina at base. Abdomen very broad. Supra-anal plate deeply trigonally emarginated. Subgenital plate transverse trapezoidal with lateral margins broadly emarginated.

Ventro-cephalic margin of cephalic femora with four or five strong spines, followed by a series of piliform spines and distad two strong spines.

Head tawny. Ocelli testaceous. Eyes black. Pronotum rufous to tawny in the centre with paler areas latero-cephalad. The whole disk with numerous small rufo-castaneous spots; the posterior margin with longitudinal castaneous flecks. Tegmina mummy brown, with small rounded testaceous flecks

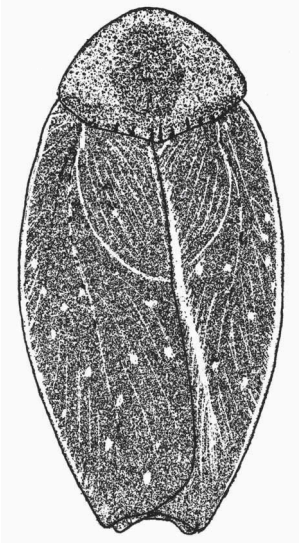

Fig. 52. *Pseudophoraspis weymmani* nov. spec. × 1½.

and a narrow area of the same colour along the anterior margin. On the dextral tegmen a testaceous line, which indicates the area covered by the sinistral tegmen when at rest. Lower surface of tegmina ochraceous with castaneous flecks. Wings testaceous with castaneously darkened apex. Abdominal sternites ochraceous with small castaneous spots, which are longitudinal along the caudal margin. Femora with dorsal surface tawny.

Measurements: ♀, total length 43.7 mm, length of body 39.0 mm, length of tegmina 35.5 mm, pronotum 11.7 × 16.0 mm.

This species is narrowly related to *P. obtecta,* but differs from this species in the abdominal sternites, which have no large blotch in the centre and in the mummy brown tegmina.

Pseudophoraspis obtecta (Hanitsch)

Rhabdoblatta obtecta Hanitsch, 1915, p. 77, pl. 3 fig. 17; Hanitsch, 1923 b, p. 426.
Pseudophoraspis ? obtecta, Hebard, 1929, p. 13.
Type: ♀, Botanic Gardens, Singapore, July 1911; Oxford University Museum.

Cyrtonota lata Hanitsch

Cyrtonota lata Hanitsch, 1929 b, p. 282, fig. 2; Hanitsch, 1932 c, p. 71.
Pseudophoraspis malcolmsmithi, Hebard (erroneously), 1929, p. 90.
Type: ♀, Anei Cleft, Sumatra, E. Jacobson, 1926; Oxford University Museum.

Leiden Museum:
Simau-ung, Sumatra Exp., June 1877, 1 ♀.

Amsterdam Museum:
Taluk, Sumatra, Kleiweg de Zwaan, 1907, 1 ♀.

The tegmina in the specimens of the Leiden Museum and the Amsterdam Museum are longer than in the specimens recorded by Hanitsch, but agree with the specimen erroneously recorded as *Pseudophoraspis malcolmsmithi* by Hebard. In coloration the specimen of the Amsterdam Museum agrees with the type. The specimen of the Leiden Museum, however, is fulvo-testaceous with castaneous blotches on the tegmina and small flecks of the same colour on the centre of the pronotal disk. In other aspects the specimens agree with the type.

Measurements: ♀, total length 32.3-32.5 mm, length of tegmina 23.8-25.2 mm, length of wing 18.3-19.3 mm, pronotum 10.2 × 14.1-10.8 × 15.3 mm.

Haanina adusta (Walker)

Epilampra adusta Walker, 1869, p. 131.
Homalopteryx adusta, Kirby, 1904, p. 115; Shelford, 1906, p. 497, pl. 30 fig. 6; Shelford, 1910 a, p. 8; Hanitsch, 1915, p. 67; Hanitsch, 1923 a, p. 201; Hanitsch, 1923 b, p. 423.
Haanina adusta, Hebard, 1929, p. 90.
Type: ♀, Sarawak, Wallace; Oxford University Museum.

Leiden Museum:
Fort de Kock, Sumatra, E. Jacobson, November 1915, 1 ♂.

Amsterdam Museum:
Solok, Sumatra, Exp. Kleiweg de Zwaan, 1907, 3 ♀♀.

In the male the tegmina and wings surpass the apex of the abdomen, but in the females they are abbreviated.

Measurements:	♂	♀
Total length	24.7 mm	24.3-25.7 mm
Length of tegmina	19.9 mm	18.0-18.4 mm
Pronotum	6.2 × 8.3 mm	7.2 × 10.4-6.9 × 10.3 mm

Haanina karnyi (Hanitsch)

Homalopteryx karnyi Hanitsch, 1928, p. 29, pl. 2 figs. 1-2; Hanitsch, 1929 b, p. 281.
Haanina karnyi, Hebard, 1929, p. 13.
Type: ♂ ♂, Mentawi Islands, C. Boden Kloss; Oxford University Museum.

Haanina mitschkei (Hanitsch)

Homalopteryx mitschkei Hanitsch, 1928, p. 30.
Haanina mitschkei, Hebard, 1929, p. 13.
Type: ♀, Kalim Bungo, Nias, R. Mitschke, 1896; Oxford University Museum.

Rhabdoblatta buqueti (Serville) (figs. 11, 53 c, d)

Blatta buqueti Serville, 1839, p. 93.
Epilampra pfeiferae Brunner, 1865, p. 188; Rehn, 1909, p. 178.
Hedaia buqueti, Kirby, 1904, p. 123.
Hedaia pfeifferae, Kirby, 1904, p. 124.
Rhabdoblatta pfeifferae, Shelford, 1910 a, p. 13.
Rhabdoblatta pfeiferae, Hanitsch, 1915, p. 75; Hanitsch, 1919, p. 68; Hanitsch, 1923 b, p. 426, pl. 12 fig. 5.
Rhabdoblatta buqueti, Hebard, 1929, p. 88.
Type: ♂, Java.

Leiden Museum:

Fort de Kock, Sumatra, E. Jacobson, 1913, 3 ♀♀; Fort de Kock, Sumatra, E. Jacobson, 1914, 1 ♀; Fort de Kock, Sumatra, 1915, 1 ♀; Fort van de Capellen, Sumatra, E. Jacobson, 1911, 1 ♀; Silago, Sumatra Exp. 1877, 3 ♂♂, 5 ♀♀; Bugo Tinggi, Sumatra, J. Menzel, February 1904, 1 ♀; Padang, Sumatra, 1 ♀; Padang, Sumatra, E. Jacobson, 1914, 1 ♀; Padang, Sumatra, J. Büttikofer, 1895, 2 ♀♀; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♀; between Serdang and Lake Toba, Sumatra, Dr. B. Hagen, 1 ♀; Djambi, Sumatra, J. Douglas, 1914, 1 ♀; Palembang, Sumatra, 1 ♀; Bungamas, Palembang, Sumatra, J. C. van Hasselt, 1882, 2 ♀♀, Banka, Vosmaer, November 1885, 1 ♀; Garut, Java, W. C. van Heurn, 1928-1931, 2 ♂♂, 2 ♀♀; Buitenzorg, Java, Dr. J. G. Boerlage, 1 ♀; Buitenzorg, Java, W. C. van Heurn, 1931, 1 ♀; Banjuwangi, Java, MacGillavry, 1909, 1 ♂, 1 ♀; Ardja Sari, Preanger, Java, 1 ♀; Bandung, Java, E. Jacobson, February 1916, 2 ♀♀; Dampit, Sumber Pakel, Java, MacGillavry, 1919, 2 ♀♀; Java, Hasselaar, 1 ♂; Java, 2 ♂♂, 1 ♀; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 2 ♀♀; Long Blu-u, Upper Mahakkam, Borneo Exp., 1894, 1 ♀; Sambas, Borneo, Dr. J. Bosscha, 1891, 1 ♀; Banjirmasin, 1 ♂, 4 ♀♀.

Amsterdam Museum:

Bandar Baru, Sumatra, J. B. Corporaal, February 1921, 1 ♀; Toluk, Sumatra, Kleiweg de Zwaan, 1907, 1 ♀; Sibolangit, Deli, Sumatra, 1926, 1 ♀; Buitenzorg, Java, 1919-1920, 1 ♀; Pontianak, Borneo, 1923, 1 ♂.

As most species of the Epilamprinae, *R. buqueti* (Serville) varies in coloration and measurements. It is one of the most common species in the Indomalayan region.

Judging by the description by Walker, *R. parvicollis* (Walker) is narrowly related to the present species, and it may be that Walker described a male of *buqueti.*

The supra-anal plate and the subgenital plate are shown in figure 53 c and d.

Rhabdoblatta procera (Brunner) (fig. 53 a)

Epilampra procera Brunner, 1865, p. 192.
Epilampra borrei Saussure, 1872, p. 127, pl. 10 fig. 44.
Hedaia procera, Kirby, 1904, p. 124.
Rhabdoblatta procera, Shelford, 1910 a, p. 13; Hanitsch, 1915, p. 77; Hanitsch, 1923 a, p. 203; Hanitsch, 1923 b, p. 426; Hanitsch, 1928, p. 30; Hanitsch, 1929 b, p. 281; Hanitsch, 1930 a, p. 188; Hanitsch, 1931 b, p. 51; Hanitsch, 1932 c, p. 69; Hanitsch, 1933 a, p. 319; Hanitsch, 1933 b, p. 135; Hanitsch, 1933 c, p. 233; Hanitsch, 1934, p. 121; Bruijning, 1947, p. 228.
Epilampra angusta Hanitsch, 1923 a, p. 204, fig. 5; Hanitsch, 1923 b, p. 427, fig. 18.
Type: ♀, Java, Brunner Collection.

Leiden Museum:

Tjinjiruan, Malabar Mountains, western Java, Dr. H. W. van der Weele, 1909, 2 ♂♂, 2 ♀♀; Java, 1 ♀.

In this nice species the coloration of the tegmina varies from testaceous with castaneous dots to castaneous with testaceous dots and the pronotal

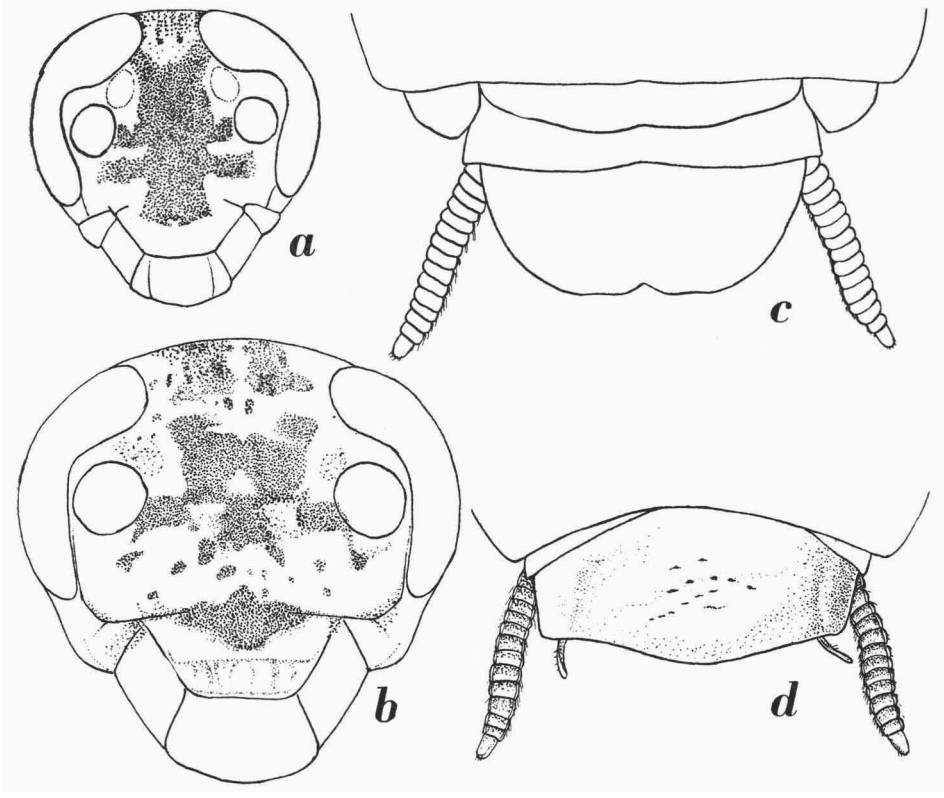

Fig. 53. a, *Rhabdoblatta procera* (Brunner), head. b, *Rhabdoblatta horologica* (Kirby), head. c-d, *Rhabdoblatta buqueti* (Serville); c, supra-anal plate ♂; d, subgenital plate ♂. a, × 7½; b, × 10; c, × 15; d, × 12½.

design from four small castaneous flecks to a complicated figure.

I believe that the specimens recorded by Hanitsch merely belong to *R. buqueti,* since this author had a wrong understanding of this species. This species, however, is easily to be distinguished by the design of its head (fig. 53 a).

Measurements:	♂	♀
Total length	35.5 mm	45.0 mm
Length of tegmina	31.7 mm	40.5 mm
Pronotum	6.1 × 7.8 mm	8.3 × 10.1 mm

Rhabdoblatta structilis (Rehn)

Epilampra structilis Rehn, 1909, p. 178, fig. 1.
Rhabdoblatta structilis, Shelford, 1910 a, p. 13; Hanitsch, 1915, p. 75; Hebard, 1929, p. 13.
Type: ♀ Bencoolen, Sumatra, A. Schmiedell; American Museum of Natural History.

Leiden Museum:
Suban Ajam, Sumatra, E. Jacobson, July 1916, 1 ♂; Padang, Sumatra, 1 ♀.

Amsterdam Museum:
Bandar Baru, Sumatra, J. B. Corporaal, February 1921, 1 ♂.

Narrowly related to *R. procera* (Brunner), but differing in the pronotal design, the smaller size and the form of the fleck on the face.

Measurements:	♂	♀
Total length	30.3 mm	38.5 mm
Length of tegmina	25.7 mm	34.9 mm
Pronotum	6.1 × 7.8 mm	8.2 × 10.1 mm

Rhabdoblatta concinnula (Walker)

Epilampra concinnula Walker, 1869, p. 134.
Heterolampra concinnula, Kirby, 1904, p. 122.
Rhabdoblatta concinnula, Shelford, 1910 a, p. 13; Hanitsch, 1936, p. 395; Bruijning, 1947, p. 227.
Type: ♀, Timor; Oxford University Museum.

Leiden Museum:
Banjermasin, Borneo, 1 ♀. Also five specimens from the Austromalayan subregion.

Measurements: ♀, total length 42.2 mm, length of tegmina 35.7 mm, pronotum 8.4 × 11.3 mm.

Rhabdoblatta parvicollis (Walker)

Epilampra parvicollis Walker, 1869, p. 133.
Hedaia parvicollis, Kirby, 1904, p. 124.

Rhabdoblatta parvicollis, Shelford, 1910a, p. 13; Hanitsch, 1915, p. 76; Hebard, 1929, p. 13.
Type: ♂, Sarawak; Oxford University Museum.

See remark under *R. buqueti* (Serville).

Rhabdoblatta pondokensis nov. spec.

Leiden Museum:
Gunung Kenepai, Pondok, Borneo, Borneo Exp., January 1894, 1 ♂ (holotype).

Medium for the genus. Head freely exposed, its vertex slightly punctured; interocular distance about one third the width between antennal sockets; antennae with proximal twelve annuli shining, remainder pilose. Pronotum nearly as long as broad (as 15 to 17), its anterior margin truncated, gradually rounding into the slightly converging lateral margins; posterior margin angulate. Tegmina and wings strongly emarginated at the apex; tegmina punctured at base. Supra-anal plate semi-circular, slightly emarginated at apex. Subgenital plate transverse, nearly symmetrical. Ventro-cephalic margin of cephalic femora with five strong spines, followed by a series of piliform spinules and distad two strong spines.

Head with dark castaneous eyes; vertex rufo-castaneous, suffused with an irregular black design; face fulvous, shining. Pronotum testaceous, but very densely packed with reddish brown dots, narrowly margined with testaceous. Tegmina orange to rufo-castaneous, with irregular testaceous ocellar dots; also narrowly margined with testaceous; the humeral trunk is castaneous. Wings with area cephalad from the radial vein orange, remainder pale smoky brown. Legs testaceous, suffused with fulvous, the spines are black. Abdomen fulvous, with two lateral castaneous flecks on each sternite.

Measurements: ♂, total length 41.5 mm, length of tegmina 34.8 mm, length of body 32.2 mm, pronotum 7.6 × 8.7 mm.

Narrowly related to *R. pertruncata* Hanitsch, but differs in the larger size, the approximated eyes and the black spines of the legs.

Rhabdoblatta javanica (Saussure)

Epilampra javanica Saussure, 1869, p. 269.
Hedaia javanica, Kirby, 1904, p. 124.
Rhabdoblatta javanica, Shelford, 1910a, p. 13; Hanitsch, 1915, p. 74.
Type: ♀, Java.

Rhabdoblatta horologica (Kirby) fig. 53b)

Hedaia horologica Kirby, 1903b, p. 280; Kirby, 1904, p. 124.
Rhabdoblatta horologica, Shelford, 1910a, p. 13.
Type: ♂, Khasia Hills; British Museum.

Leiden Museum:

Ardjuna, south of Gunung Papandajan, Java, W. C. van Heurn, 1931, 1 ♀. Also a female from Bengal.

This rare species seems to be widely distributed. The broad tegmina and wings are slightly emarginated at the apex. The specimen from Java is darker than the type and the specimen from Bengal. The design of the head is characteristic (fig. 53 b).

Measurements: ♀, total length 40.9 mm, length of tegmina 35.1 mm, pronotum 9.1 × 13.2 mm.

Rhicnoda rugosa Brunner

Rhicnoda rugosa Brunner, 1893, p. 31, pl. 1 figs. 11a—11b; Krauss, 1903, p. 747; Kirby, 1904, p. 552; Rehn, 1909, p. 179; Shelford, 1910 a, p. 9; Hanitsch, 1915, p. 93; Hanitsch, 1923 a, p. 205; Hanitsch, 1929 a, p. 15; Hanitsch, 1929 b, p. 283; Hanitsch, 1933 b, p. 138; Bruijning, 1947, p. 230.

Type: ♀, ♂ (?), Tenasserim; Pegu; Java; Genoa Museum.

Leiden Museum:

Long Blu-u, Dr. Nieuwenhuis, Borneo Exp., January 1894, 1 ♀; Long Blu-u, Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., November 1898, 5 ♀♀; Sambas, Dr. J. Bosscha, Borneo Exp., 1891, 1 ♀; Sambas, Dr. Hallier, Borneo Exp., 1893, 2 ♀♀.

According to Hebard (1929, p. 92-93), the majority of the Malayan records of the present species are referable to the early stages of other Epilamprinae.

Measurements: ♀, total length 33.0-40.2 mm, length of tegmina 8.3-9.7 mm, pronotum 9.7 × 16.0-10.7 × 19.2 mm.

Rhicnoda natatrix Shelford

Rhicnoda natatrix Shelford, 1907 c, p. 226; Shelford, 1910 a, p. 9, pl. 2 fig. 1; Hanitsch, 1915, p. 93.

Type: ♀, Borneo; Oxford University Museum.

According to Hebard (1929, p. 14) *R. natatrix* probably is the immature stage of an Epilamprinid.

Rhicnoda decidiosa Rehn

Rhicnoda decidiosa Rehn, 1904, p. 552; Shelford, 1910 a, p. 9; Hanitsch, 1915, p. 94.

Type: ♀, Malay Peninsula, Trang, Lower Siam, Dr. W. L. Abbott; United States National Museum.

Probably also an immature stage of an Epilamprinid (Hebard, 1929, p. 14).

Stictolampra lurida (Burmeister)

Epilampra lurida Burmeister, 1838, p. 505; De Haan, 1842, p. 50; Brunner, 1865,

p. 185; Rehn, 1909, p. 178; Shelford, 1910 a, p. 14; Hanitsch, 1919, p. 68; Hanitsch, 1923 b, p. 429, pl. 12 fig. 7; Hanitsch, 1925, p. 92; Hebard, 1929, p. 88.

Blatta cribricollis Serville, 1839, p. 93.

Heterolampra lurida, Kirby, 1904, p. 122.

Stictolampra lurida, Hanitsch, 1931 a, p. 52; Hanitsch, 1933 a, p. 319; Hanitsch, 1933 b, p. 137; Hanitsch, 1933 c, p. 233; Bruijning, 1947, p. 230.

Type: Java.

Leiden Museum:

Solok, Padang, Sumatra, P. Stolz, 2 ♀♀; Sungai Penuh, Sumatra, E. Jacobson, September, 1915, 1 ♂, 1 ♀; Muara Sako, Sumatra, E. Jacobson, October 1915, 1 ♀; Sungai Kumbang, Sumatra, E. Jacobson, September 1915, 1 ♂; Pantjurangading, Sumatra, E. Jacobson, 1915, 1 ♀; Java, 2 ♂♂, 1 ♀; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 1 ♂, 1 ♀; Sintang, Goedhuis, Borneo Exp., September 1891, 1 ♀. Also five specimens from Bengal and seven specimens from the Austromalayan subregion.

The present species is easily recognized by the black and white markings on the humeral trunk and the impresso-punctate pronotal disk.

Measurements:	♂	♀
Total length	33.3-35.0 mm	41.0-43.0 mm
Length of tegmina	29.8-30.9 mm	35.4-38.2 mm
Pronotum	6.3 × 8.3-6.4 × 8.6 mm	7.5 × 9.7-8.1 × 11.3 mm

Stictolampra moultoni (Hanitsch)

Epilampra moultoni Hanitsch, 1923 b, p. 429, figs. 19-20.

Stictolampra moultoni, Hanitsch, 1931 a, p. 52.

Type: ♂, Long Ayap, Baram River, Borneo, J. C. Moulton, October 1920; Oxford University Museum.

Stictolampra funebris (Hanitsch)

Epilampra funebris Hanitsch, 1923 b, p. 427.

Stictolampra funebris, Hanitsch, 1931 a, p. 52.

Type: ♀, Long Ayap, Baram River, Borneo, J. C. Moulton, October 1920; Oxford University Museum.

Opisthoplatia orientalis (Burmeister)

Polyzosteria orientalis Burmeister, 1838, p. 482; Saussure, 1864 b, p. 54.

Polyzosteria pictetiana Saussure, 1863, p. 131, pl. 1 fig. 1.

Opisthoplatia orientalis, Brunner, 1865, p. 199, pl. 5 figs. 22A—22B; Kirby, 1904, p. 114; Shelford, 1908 d, p. 27; Shelford, 1910 a, p. 8; Hanitsch, 1930 a, p. 187.

Polyzosteria aegyptiaca (?) Walker, 1868, p. 154.

Type: China.

Leiden Museum:

Only five specimens from China.

The only record from inside the Indomalayan subregion was given by Hanitsch (l.c.), viz., Java.

Calolampra guttifera Hanitsch

Calolampra guttifera Hanitsch, 1933 c, p. 240, pl. XII fig. 2.
Type: 2 ♂♂, Mount Tibang, Sarawak, Dr. E. Mjöberg; Stockholm Museum.

Leiden Museum:

Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1899, 1 specimen (abdomen damaged).

The abdomen of the specimen of the Leiden Museum is damaged, but since the tegmina of the females of this genus are truncated, it is apparently a male. It differs slightly from the types in the coloration of its disk being castaneous instead of black.

Measurements: ♂, total length 19.9 mm, length of tegmina 16.9 mm, pronotum 4.2 × 5.9 mm.

Calolampra limbata Hanitsch

Calolampra limbata Hanitsch, 1923 b, p. 432.
Type: ♀, Impounding Reservoir, Thomson Road, Singapore, January 27th 1923; Oxford University Museum.

According to Hebard (1929, p. 14) the present species probably represents the immature stage of a species belonging to the Epilamprinae.

Calolampra nitida Hanitsch

Calolampra nitida Hanitsch, 1923 b, p. 432.
Type: ♀, Saribas, Sarawak, August 1922; Oxford University Museum.

This species too probably represents the immature stage of an Epilamprinid (Hebard, 1929, p. 14).

Calolampra pedisque Rehn

Calolampra pedisque Rehn, 1904, p. 547; Hanitsch, 1915, p. 96; Hanitsch, 1923 b, p. 433.
Type: ♂, Trong, Lower Siam, Dr. W. L. Abbott; United States National Museum.

Probably also an immature stage of an Epilamprinid (Hebard, 1929, p. 14).

PANCHLORINAE

Leucophaea maderae (Fabricius) [1]

Blatta maderae Fabricius, 1781, p. 341.
Panchlora maderae, Brunner, 1865, p. 282.
Rhyparobia maderae, Hanitsch, 1915, p. 120; Hanitsch, 1930 a, p. 191.
Leucophaea maderae, Hebard, 1929, p. 14.
Type: ♂, ♀, Madera.

Leiden Museum:

Tandjung Merah, Sumatra, J. H. Houwing Jr., 1914, 1 ♀; Ardjuno, Java, 1 ♀. Also 80 specimens from outside the Indomalayan subregion.

Pycnoscelus surinamensis (Linnaeus) [1])

Blatta surinamensis Linnaeus, 1758, p. 424.
Panchlora surinamensis, Brunner, 1865, p. 278, pl. 7 fig. 32.
Panchlora celebesa Walker, 1868, p. 26.
Leucophaea surinamensis, Krauss, 1903, p. 747; Hanitsch, 1915, p. 121, pl. 2 figs. 7-8.
Pycnoscelus surinamensis, Rehn, 1904, p. 558; Rehn, 1909, p. 179; Hanitsch, 1928, p. 36; Hebard, 1929, p. 95; Hanitsch, 1929 a, p. 18; Hanitsch, 1929 b, p. 287; Hanitsch, 1930 a, p. 192; Hanitsch, 1931 a, p. 58; Hanitsch, 1932 a, p. 6; Hanitsch, 1932 b, p. 265; Hanitsch, 1932 c, p. 79; Hanitsch, 1933 c, p. 234; Bruijning, 1947, p. 238.
Type: Surinam.

Leiden Museum:

Padang, Sumatra, De Groot, 1919, 1 ♂; Padang, Sumatra 2 ♀♀; Padang, Deli, Sumatra, Büttikofer, 1895, 2 ♀♀, 2 larvae; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 4 ♀♀, 3 larvae; Kedaton near Tandjong Karang, Sumatra, J. v. d. Vecht, March 1937, 3 ♂♂; Fort de Kock, Sumatra, E. Jacobson, 1913, 2 ♂♂, 1 ♀; ibidem, E. Jacobson, 1 ♀, 1 larva; Rawas, Sumatra Exp., May 1878, 2 ♀♀, 1 larva; Solok, Sumatra Exp., April 1877, 1 ♀; Medan, Sumatra, Van Loghem, 1909, 1 ♀; Sinabang, Simalur, Sumatra, E. Jacobson, 1913, 3 ♀♀; Lasikin, Simalur, Sumatra, E. Jacobson, 1913, 4 ♂♂; Pulu. Weh, Dr. P. Buitendijk, 1907, 2 larvae; ibidem, Dr. P. Buitendijk, 1925, 1 ♀, 7 larvae; Tandjong Priok, Java, Dr. P. Buitendijk, 1907, 1 larva; ibidem, Dr. P. Buitendijk, 1908, 2 ♀♀, 3 larvae; ibidem, Dr. P. Buitendijk, 1909, 2 ♀♀, 3 larvae; ibidem, Dr. P. Buitendijk, 1910, 5 ♂♂, 4 larvae; ibidem, Dr. P. Buitendijk, 1928, 1 ♂, 1 ♀, 2 larvae; Nias, Kleiweg de Zwaan, 2 ♀♀, 3 larvae; Batavia, Java, E. Jacobson, 1907, 1 ♂, 6 ♀♀, 14 larvae; ibidem, E. Jacobson, 2 ♂♂; ibidem, J. Semmelink, 1882, 5 larvae; Banjuwangi, Java, MacGillavry, 1909, 2 ♂♂; ibidem, MacGillavry, 1911, 1 ♀; Buitenzorg, Java, J. van der Vecht, September 1928, 3 ♂♂; ibidem, Van der Hoeven, 1 ♀, 1 larva; Tegal, Java, V. Lucassen, 1 larva; Sindanglaya, Java, Dr. Bolsius, 1 larva; Magelang, Java, E. Jacobson, October 1909, 1 ♂; Tjibadak, Java, W. C. van Heurn, June 1909, 1 ♂; Sukabumi, Java, E. le Moult, February 1926, 1 ♀; Wonosobo, Java, E. Jacobson, May 1909, 1 ♂; Samarang, Java, E. Jacobson, April 1909, 1 ♂; ibidem, E. Jacobson, September 1909, 1 ♀; Samarang, Java, Piepers, 1 ♂; Ardja Sari, Preanger, Java, 1 ♂; Tjigombong, Preanger, Java, J. B. Corporaal, 1915, 1 larva; Preanger, Java, Dr. P. Buitendijk, 1911, 2 larvae; Patuka, Tjigombang, Java, 1 ♂; Panarukan, Java, Dr. P. Buitendijk, October 1908, 1 ♀, 1 larva; Nongkodjajar, Java, MacGillavry, December 1912, 1 ♂; Surabaya, Java, Dr. P. Buitendijk, June 1920, 2 ♀♀, 1 larva; Java, Wienecke, 1 ♀; Java, Piepers, 1 ♂, 1 ♀; Java, Kerkhoven, 1921, 1 ♀, Java, 1 ♂, 4 ♀♀; Garut, Java, W. C. van Heurn, 1928, 4 ♂♂, 2 ♀♀, 7 larvae; ibidem, W. C. van Heurn, 1931, 2 ♂♂, 1 ♀; ibidem, F. Adèr-Verver, 1 larva; Ardjuna, Java, W. C. van Heurn, 1931, 1 ♂; Tjiliwung, S. of Buitenzorg, Java, W. C. van Heurn, 1932, 1 ♂; Weltevreden, Java, Dr. P. Buitendijk, 1919, 2 ♂♂; Banjirmasin, 1 ♀, 1 larva; Sugut, Sandakan Bay, Borneo, Prakke, 2 ♀♀; Sanggan, Borneo, Westenenk, 1894, 1 larva; Sintang, Borneo Exp., 1894, 1 ♀, 1 larva.

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1) Concerning this cosmopolitan species only the papers recording specimens from the Indomalayan region are mentioned.

Amsterdam Museum:

Medan, Sumatra, J. B. Corporaal, 1921, 2 ♂♂, 1 ♀; Sungei Rampah, Sumatra, J. B. Corporaal, 1917, 2 ♀♀.

Pycnoscelus striatus (Kirby)

Leucophaea striata Kirby, 1903 c, p. 378; Kirby, 1904, p. 151; Hanitsch, 1915, p. 122; Chopard, 1919, pp. 358-363, pls. 12-13 figs. 15-20; Hanitsch, 1923 b, p. 445.
Pycnoscelus striatus, Hebard, 1929, p. 95; Hanitsch, 1929 a, p. 18; Hanitsch, 1929 b, p. 287; Hanitsch, 1933 a, p. 327.
Type: ?, Selangor, H. N. Ridley; British Museum.

Pycnoscelus niger (Brunner)

Panchlora nigra Brunner, 1865, p. 280.
Leucophaea nigra, Kirby, 1904, p. 151; Hanitsch, 1915, p. 122.
Pycnoscelus niger, Rehn, 1909, p. 179.
Type: ♀, Burma.

Leiden Museum:

Suban Ajam, Sumatra, E. Jacobson, July 1916, 1 ♀; Pasumah Estate, Palembang, Sumatra, E. Jacobson, August 1916, 2 ♂♂; Ledong Donok, Abdul Rachman, September 1909, 1 ♂; Bungamas, Palembang, Sumatra, J. C. van Hasselt, 1882, 1 ♂; Deli, Padang, J. Büttikofer, 1895, 1 ♀; Solok, Sumatra Exp., April 1877, 1 ♀; Sumatra, Sumatra Exp., November 1877, 1 ♀; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♂, 1 ♀; Tanagtalee, Ophir, Sumatra, A. de Kock, 1915, 1 ♀; Buitenzorg, Java, W. C. van Heurn, 1931, 1 ♀.

Amsterdam Museum:

Padang, Sumatra, E. Jacobson, 1926, 2 ♀♀; Bandar Baru, Sumatra, J. B. Corporaal, 1921, 1 ♂; Brastagi, Sumatra, J. B. Corporaal, 1921, 1 ♀; Medan, Sumatra, J. B. Corporaal, 1921, 1 ♀.

The ventral surface of the abdomen is pale castaneous in most specimens.

Measurements:	♂	♀
Total length	16.8-22.4 mm	18.4-24.1 mm
Length of tegmina	14.1-18.4 mm	15.5-19.5 mm
Length of body	12.2-15.9 mm	16.0-19.9 mm
Pronotum	3.8 × 4.6-4.8 × 5.8 mm	4.6 × 5.3-5.3 × 6.9 mm

Pycnoscelus micropterus Hanitsch

Pycnoscelus micropterus Hanitsch, 1931 b, p. 402, fig. 9.
Type: ♂, ♀♀, Baram, Sarawak, 1890; British Museum.

Leiden Museum:

Ardja-Sari, Preanger, Java, 1 ♀.

The present specimen is much smaller than the allotype described by Hanitsch, but agrees with it in all the other characters.

Measurements: ♀, total length 14.0 mm, length of tegmina 5.5 mm, length of wings 2.8 mm, pronotum 5.2 × 7.0 mm.

Nauphoeta cinerea (Olivier) [1])

Blatta cinerea Olivier, 1789, p. 314.
Epilampra cinerea, Brunner, 1865, p. 182.
Nauphoeta grisea Brunner, 1865, p. 287.
Nauphoeta bivittata Brunner, 1865, p. 287.
Nauphoeta cinerea, Kirby, 1904, p. 156; Hanitsch, 1915, p. 123; Hebard, 1929, p. 96.
Type: Mauritius.

Leiden Museum:

Pulu-Weh, Dr. P. Buitendijk, January 1922, 1 ♂. Also six specimens from outside the Indomalayan subregion.

Oniscosoma granicollis (Saussure)

Zetobora granicollis Saussure, 1862, p. 232; Saussure 1863, p. 161, pl. 1 fig. 21; Saussure, 1864 b, p. 212.
Oniscosoma castanea Brunner, 1865, p. 300, pl. 7 figs. 36 A-E; Tepper, 1893, p. 119; Tepper, 1894, p. 168.
Zetobora antica Walker, 1868, p. 47.
Perisphaeria laminata Walker, 1868, p. 47.
Oniscosoma granicollis, Kirby, 1904, p. 159; Hanitsch, 1930 a, p. 192.
Type: Australia.

Leiden Museum:

Only two specimens from Australia.

CORYDIINAE

Homopteroidea nigra Shelford

Homopteroidea nigra Shelford, 1906, pp. 274-275, pl. 16 figs. 13-14; Hanitsch, 1915, p. 127; Hanitsch, 1928, p. 37; Hebard, 1929, p. 96; Hanitsch, 1932 a, p. 6; Hanitsch, 1932 c, p. 80; Hanitsch, 1933 a, p. 328; Hanitsch, 1933 c, p. 235.
Type: ♀, Kuching, Sarawak; Oxford University Museum.

Amsterdam Museum:

Bandar Negeri, Sumatra, J. B. Corporaal, 9 August 1920, 1 ?.

H. nigra Shelford and *H. shelfordi* Hanitsch are narrowly related, but they differ in the pronotum, which in the former is uniformly opaque and in the latter has broad hyaline lateral margins, and further in the venation of the distal part of the tegmen, which is irregular in the former and regular in the latter.

Measurements: total length 7.8 mm, length of tegmina 6.6 mm, pronotum 1.8 × 2.6 mm.

Homopteroidea shelfordi Hanitsch

Homopteroidea shelfordi Hanitsch, 1925, p. 99, fig. 12; Hanitsch, 1929 b, p. 294,

1) Concerning the cosmopolitan species only the papers recording specimens from the Indomalayan region are mentioned.

fig. 6; Hanitsch, 1932 a, p. 6; Hanitsch, 1932 c, p. 81; Hanitsch, 1933 a, p. 328; Hanitsch, 1933 c, p. 235.

Fulmekia nodipennis Karny, 1927, pp. 152-162, figs. 151-155.

Type: ♂ ♂, ♀ ♀, Mount Murud, Mount Dulit and Tutau River, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Leiden Museum:

Sungar Kumbang, Sumatra, E. Jacobson, August, 1915, 1 ♂; Gunung Teleman, Sumatra, E. Jacobson, June 1917, 1 ♂, 1 ♀; Air Njuruk, Dempu, Sumatra, E. Jacobson, August 1916, 1 ♂, 4 ♀ ♀; Fort de Kock, Sumatra, E. Jacobson, 1925, 1 ♀, 4 ??.

Amsterdam Museum:

Sibolangit, Sumatra, J. B. Corporaal, October 1920, 1 ♀; Gunung Singgalang, Sumatra, E. Jacobson, 1925, 1 ♂, 1 ♀; Fort de Kock, Sumatra, E. Jacobson, 1925, 2 ♂ ♂, 2 ♀ ♀.

In all the specimens the venation of the tegmina agrees closely with the description and the figure of Hanitsch.

Measurements:	♂	♀
Total length	7.9 mm	8.3 mm
Length of tegmina	6.4 mm	6.9 mm
Pronotum	1.6 × 1.9 mm	1.6 × 2.0 mm

Homopteroidea maculata Hanitsch

Homopteroidea maculata Hanitsch, 1929 b, p. 296, figs. 7-9; Hanitsch, 1932 c, p. 81.
Type: ♀, Lubuksikaping, Sumatra, E. Jacobson, 1926; Oxford University Museum.

Leiden Museum:

Tjiliwung, near Buitenzorg, Java, W. C. van Heurn, May or June 1932, 1 ♀.

The maculae of the tegmina are slightly smaller than in the type, but in other aspects the present specimen agrees closely with the description given by Hanitsch.

Measurements: ♀, length of body 4.8 mm, length of tegmina 6.0 mm, pronotum 1.6 × 1.9 mm.

Holocompsa debilis Walker (fig. 25)

Holocompsa debilis Walker, 1868, p. 192; Kirby, 1904, p. 170; Hanitsch, 1915, p. 128; Hanitsch, 1923 a, p. 211; Hanitsch 1923 b, p. 449; Karny, 1925, p. 189, fig. 5; Caudell, 1927, p. 7; Hebard, 1929, p. 96; Hanitsch, 1929 a, p. 18; Hanitsch, 1929 b, p. 299; Hanitsch, 1932 a, p. 7; Hanitsch, 1934, p. 125; Bruijning, 1947, p. 239.

Type: ♂, Sarawak, Borneo; Oxford University Museum.

Leiden Museum:

Deli, Sumatra, De Bussy, 1912, 1 ♂, 5 ♀ ♀; Padang, Sumatra, E. Jacobson, September 1913, 1 ♂; Pasumah Estate, Palembang, Sumatra, E. Jacobson, August 1916, 1 ♀; Sigulé, Sumatra, E. Jacobson, August 1913, 1 ♂; Weltevreden, Java, Neytzel de Wilde, 1918, 1 ♀; Samarang, Java, E. Jacobson, July 1910, 2 ♂ ♂; Batavia, Java, E. Jacobson, November 1907, 1 ♀; Java, Piepers, 1 ♀. Also a female from New Guinea.

Amsterdam Museum:

Deli, Sumatra, De Bussy, 1 ♂, 1 ?.

H. debilis Walker is a fairly common species in the Indomalayan subregion.

Measurements:	♂	♀
Total length	4.5 mm	5.5-6.8 mm
Length of tegmina	4.2 mm	4.4-5.2 mm
Pronotum	1.1 × 1.9 mm	1.3 × 2.2-1.5 × 2.3 mm

Ctenoneura fulva Hanitsch

Ctenoneura fulva Hanitsch, 1925, p. 101, figs. 13-14; Hanitsch, 1929 b, p. 293; Hanitsch, 1933 a, p. 329; Hanitsch, 1933 c, p. 235.

Type: ♂, ♀, Mount Murud, Borneo, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Ctenoneura brunnea Hanitsch

Ctenoneura brunnea Hanitsch, 1929 b, p. 292, fig. 5; Hanitsch, 1932 c, p. 81.

Type: ?, Gunung Singgalang, Sumatra, E. Jacobson, 1925; Oxford University Museum.

Ctenoneura major Hanitsch

Ctenoneura major Hanitsch, 1925, p. 102; Hanitsch, 1927, p. 26; Hanitsch, 1929 a, p. 18; Hanitsch, 1929 b, p. 293.

Type: ♂, ♀, Mount Murud, Borneo, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Ctenoneura aberrans Hanitsch (fig. 54)

Ctenoneura aberrans Hanitsch, 1928, p. 37, pl. 2 figs. 8-9; Hanitsch, 1929 b, p. 293.

Type: ♀, Siberut, Mentawi Islands, C. Boden Kloss, 1923; Oxford University Museum.

Amsterdam Museum:

Bandar Negeri, Sumatra, J. B. Corporaal, August 1920, 1 ?.

The present specimen is slightly larger than the type.

The right tegmen differs strongly from the left, which was figured by

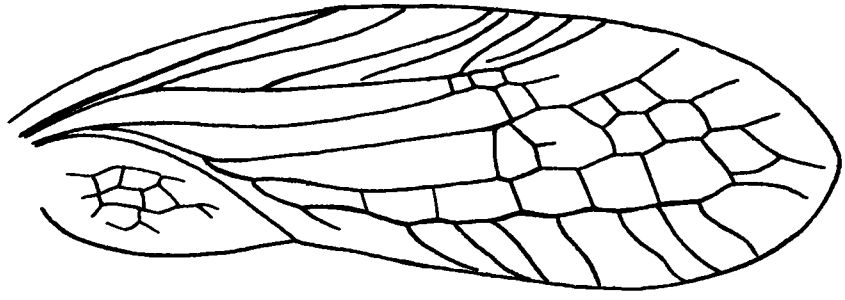

Fig. 54. *Ctenoneura aberrans* Hanitsch. Right tegmen. × 24.

Hanitsch (l.c.), and therefore a figure of the right tegmen is given here (fig. 54).

Measurements: total length 5.4 mm, length of tegmina 4.5 mm, pronotum 1.2 × 1.7 mm.

Ctenoneura biguttata Hanitsch

Ctenoneura biguttata Hanitsch, 1932 a, p. 6.
Type: ♂, Brastagi, Sumatra, Dr. L. Fulmek, August 1924.

Eucorydia westwoodi (Gerstäcker)

Corydia westwoodi Gerstäcker, 1861, p. 114.
Corydia maxwelli Hanitsch, 1915, p. 126, pl. 2 fig. 10
Eucorydia westwoodi, Hanitsch, 1932 c, p. 80.
Type: Assam.

Eucorydia gemma Hebard

Eucorydia gemma Hebard, 1929, p. 98; Hanitsch, 1929 b, p. 288.
Type: ♂, Fort de Kock, Sumatra, E. Jacobson, December 1921; Hebard Collection No. 1149.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1925, 2 ♂♂, 1 ♀.

One of the specimens is metallic green, the two other specimens are metallic blue. In all aspects they agree with Hebard's description.

Measurements: ♂, total length 10.4 mm, length of tegmina 8.5 mm, pronotum 2.9 × 4.1 mm.

Eucorydia tristis Hanitsch

Eucorydia tristis Hanitsch, 1929 b, p. 289, fig. 4.
Type: ♀, Fort de Kock, Sumatra, E. Jacobson, 1925; Oxford University Museum.

Eucorydia forceps (Hanitsch)

Corydia forceps Hanitsch, 1915, p. 125, pl. 7 fig. 41; Hanitsch, 1923 b, p. 448.
Type: ♂, Bukit Kutu, Selangor, April 1915; Raffles Museum.

Leiden Museum:

Aur Kumanis, Sumatra, E. Jacobson, March 1914, 1 ♂. Also a female from Belang.

The silvery marking of the tegmina is stronger developed than in the type.

Measurements: ♂, total length 11.0 mm, length of tegmina 9.1 mm, pronotum 3.1 × 4.5 mm.

Eucorydia coerulea (Shelford)

Corydia coerulea Shelford, 1906, p. 272; Hanitsch, 1915, p. 125.
Type: ♂, Mount Matang, Sarawak, Borneo, R. Shelford; Oxford University Museum.

Eucorydia multimaculata nov. spec. (fig. 55)

Amsterdam Museum:

Siantar, Sumatra, J. B. Corporaal, August 1920, 1 ♂ (holotype).

Size medium for the genus; shape normal, moderately broad. Head with occiput irregularly and weakly impresso-punctulate and hirsute; space between the antennal sockets four-fifths of that between the eyes. Ocelli small but distinct, and fully developed. Palpi short, the last joint distinctly longer than the fourth and scarcely longer than the third. Labrum specialized (fig. 55 a). Pronotum nodulose, hirsute; its cephalic margin strongly convex; its caudal margin slightly convex. Tegmina and wings fully developed, considerably surpassing apex of abdomen. Supra-anal plate transverse, its caudal margin emarginate, the caudo-lateral angles rounded. Subgenital plate with transversal, reflexed portion between the styles; rounded trapezoidal in shape; its surface hirsute with stiff black bristles. Styles large, straight, as long as the cerci.

Head blackish brown, antennae also blackish brown, except the eighth and ninth joints, which are yellowish. Abdomen blackish brown with a large longitudinal patch of orange on the lateral portions of the second, third and fourth sternites. Pronotum metallic green but hirsute with orange-yellow hairs. Left tegmen yellow with costo-subcostal area and a patch in the anal area metallic green, and three large irregular patches of purple-brown in the remainder of the wing. The area of the right wing which is covered at rest is bordered by a shining rufo-castaneous line. Wings hyaline, strongly tinged with prouts brown along the anterior margin. Dorsal surface smooth, brilliantly metallic prune-purple.

Measurements: ♂, length of body (wings expanded) 9.5 mm, length of tegmina 9.4 mm, width of tegmina 3.5 mm, pronotum 3.0 × 4.5 mm.

E. multimaculata nov. spec. belongs to Hebard's third group with *E. westwoodi* (Gerstaecker) and *E. forceps* (Hanitsch), by having the pronotum immaculate and the tegmina orange with dark markings.

Miroblatta petrophila Shelford

Miroblatta petrophila Shelford, 1906, p. 272, pl. 14 figs. 4-4 a; Shelford, 1910 b, p. 21; Hanitsch, 1915, p. 115; Hanitsch, 1923 b, p. 446, figs. 29-30; Hebard, 1929, p. 15.
Type: ♂, Mount Santubong, Borneo; Oxford University Museum.

Leiden Museum:

Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., February 1898, 1 ♀.

This remarkable insect originally was placed in the Blattinae by Shelford, but after Chopard found the female of the very narrowly related *M. sil-*

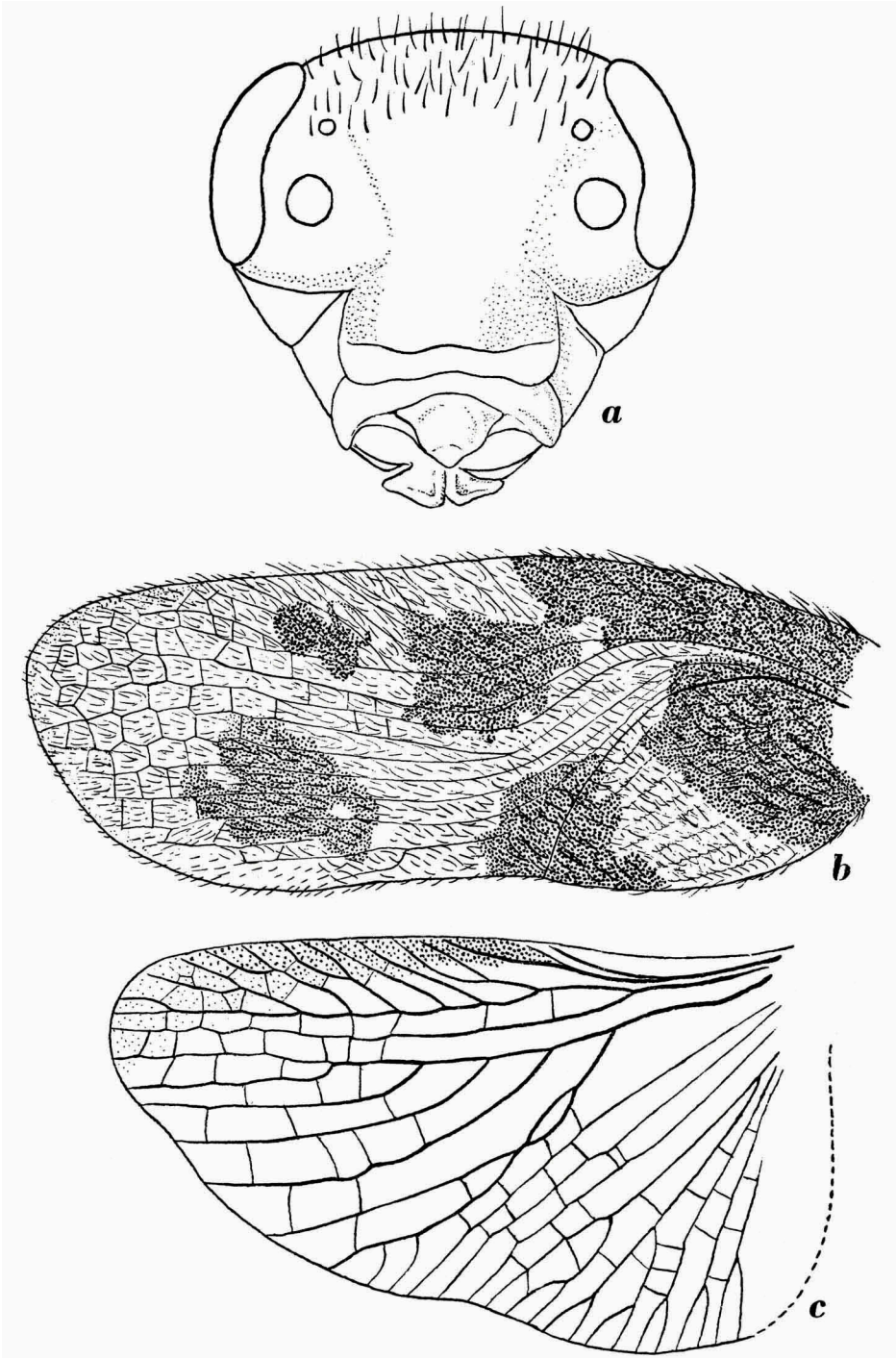

Fig. 55. *Eucorydia multimaculata* nov. spec. a, head; b, left tegmen; c, left wing. a, × 30; b-c. × 12.

phoides, in which the subgenital lamina was not valved, the genus *Miroblatta* was removed from the Blattinae and placed in the Corydiinae. Hebard placed it in the Polyphaginae (1929, p. 15).

Measurements: ♀, total length 42.2 mm, length of tegmina 37.5 mm, pronotum 12.2 × 15.5 mm.

Cardacopsis shelfordi Karny

Cardacopsis shelfordi Karny, 1924, p. 18, fig. 10.
Type: ♂, Buitenzorg, Java, H. H. Karny, March 1922; Buitenzorg Museum.

OXYHALOINAE

Diploptera dytiscoides (Serville) (fig. 22)

Blatta dytiscoides Serville, 1839, p. 102.
Prosoplecta silpha Saussure, 1864 a, p. 325.
Diploptera silpha, Saussure, 1864 b, p. 167, pl. 2 fig. 28.
Eleutheroda dytiscoides, Brunner, 1865, p. 265, pl. 6 figs. 29 A-29 E.
Diploptera dytiscoides, Brunner, 1893, p. 41; Kirby, 1904, p. 176; Hanitsch, 1915. p. 133, pl. 6 fig. 31; Hanitsch, 1923 a, p. 212; Hanitsch, 1923 b, p. 449; Hebard, 1929. p. 100; Hanitsch, 1929 a, p. 18; Hanitsch, 1933 b, p. 142; Hanitsch, 1933 c, p. 235; Hanitsch, 1936, p. 398; Bruijning, 1947, p. 239.
Type: ♂, ♀, Australia.

Leiden Museum:

Lubu Taras, Sumatra Exp., May 1877, 1 ♀; Sumatra, G. W. Schepers, 1 ♀; Batavia, Java, E. Jacobson, 1907, 1 ♂, 2 ♀♀; ibidem, 1908, 1 ♂, 2 ♀♀; Banjuwangi, Java, MacGillavry, 1910, 2 ♂♂, 3 ♀♀; Weltevreden, Java, Dr. P. Buitendijk, 1919, 2 ♀♀; Java, D. G. Vreedenburg, 1 ♀. Also seven specimens from Samoa.

Measurements:	♂	♀
Total length	15.1 mm	18.7 mm
Length of tegmina	10.4 mm	14.8 mm
Length of expanded wing	22.2 mm	23.4 mm
Pronotum	3.8 × 5.9 mm	4.6 × 7.1 mm

Diploptera bicolor Hanitsch

Diploptera bicolor Hanitsch, 1925, p. 102, figs. 15-16.
Type: ♂, Pah Trap. Kalabit country, Borneo, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Diploptera maculata Hanitsch

Diploptera maculata Hanitsch, 1925, p. 104, figs. 17-18.
Type: ♂, Pah Trap, Kalabit country, Borneo, Dr. E. Mjöberg, October 1922-January 1923; Oxford University Museum.

Leiden Museum:

Kenepai, Dr. Nieuwenhuis, Borneo Exp., January 1894, 1 ♀.

The present specimen agrees fully with the description of the type.

Measurements: ♀, total length 14.3 mm, length of tegmina 11.0 mm, length of expanded wing 18.5 mm, pronotum 3.0 × 4.1 mm.

Diploptera minor Brunner

Diploptera minor Brunner, 1865, p. 265; Kirby, 1904, p. 176.
Diploptera silphoides Walker, 1868, p. 57.
Type: ♂, ♀, Philippines; Vienna Museum, Brunner Collection.

Leiden Museum:

Buitenzorg, Java, W. C. van Heurn, 1931, 1 ♂; Batavia, Java, Dr. De Gavere, 2 ♂♂.

This small species is densely yellowish pubescent on the tegmina. The sternites are black, the legs yellow.

Measurements: ♂, total length 8.8 mm, length of tegmina 6.0 mm, length of expanded wing 10.3 mm, pronotum 2.4 × 3.7 mm.

Areolaria fieberi Brunner

Areolaria fieberi Brunner, 1865, p. 260, pl. 6 figs. 27 A-E; Kirby, 1904, p. 177; Hanitsch, 1915, p. 136; Hanitsch, 1923 b, p. 450; Caudell, 1927, p. 7; Hanitsch, 1928, p. 38; Hebard, 1929, p. 101, Hanitsch, 1929 a, p. 19; Hanitsch, 1929 b, p. 300; Hanitsch, 1933 c, p. 235.
Blatta dermestoides Walker, 1868, p. 95.
Type: ♀, Batavia, Java.

Leiden Museum:

Batavia, Java, E. Jacobson, 1907, 1 ♀; ibidem, E. Jacobson, 1908, 1 ♂, 1 ♀; Samarang, Java, E. Jacobson, 1909, 1 ♀; Nusa Kambangan, Java, E. Jacobson, 1912, 1 ♂; Java, Piepers, 1 ?; Banjuwangi, Java, MacGillavry, 1911, 1 ♀; Ardjuna, S. of Gunung Papandajan, W. C. van Heurn, 1931, 1 ♀.

The colour of the pronotal disk varies from castaneous to orange. In some specimens the tegmina are pale.

Measurements:	♂	♀
Total length	9.2 mm	9.5 mm
Length of tegmina	7.4 mm	7.7 mm
Pronotum	1.8 × 3.0 mm	1.8 × 3.0 mm

Areolaria signata Shelford

Areolaria signata Shelford, 1906, p. 273; Hanitsch, 1915, p. 135; Hanitsch, 1928, p. 38; Hanitsch, 1932 c, p. 81.
Type: ♂, ♀, Kuching, Sarawak, R. Shelford; Kina Balu, Borneo; Oxford University Museum.

Leiden Museum:

Palembang, Sumatra, M. Knappert, 1 ♀.

Amsterdam Museum:

Lau Rakit, J. B. Corporaal, 1918, 1 ♂.

In the specimen from Lau Rakit, which was identified by Hanitsch, the transverse black vitta of the tegmina is only vaguely indicated. In the specimen from Palembang, however, these vittae are distinct.

Measurements:	♂	♀
Total length	8.8 mm	8.1 mm
Length of tegmina	7.1 mm	6.5 mm
Pronotum	1.7 × 2.6 mm	1.7 × 2.1 mm

Areolaria sumatrana Shelford

Areolaria sumatrana Shelford, 1909 a, p. 621; Hanitsch, 1915, p. 135; Hanitsch, 1929 b, p. 300.
Type: ♀, Sumatra; Deutsches Entomologisches Institut, Berlin.

Amsterdam Museum:

Lau Rakit, Sumatra, J. B. Corporaal, 1918, 1 ♀.

Measurements: ♀, total length 9.1 mm, length of tegmina 6.9 mm, pronotum 1.8 × 3.0 mm.

Areolaria consocia (Walker)

Blatta consocia Walker, 1868, p. 96.
Areolaria consocia, Kirby, 1904, p. 177; Hanitsch, 1915, p. 136.
Type: ♀, Pulo Penang, J. C. Bowring; British Museum.

Areolaria uniformis Hebard

Areolaria uniformis Hebard, 1929, p. 101; Hanitsch, 1933 c, p. 235.
Areolaria fieberi, Hanitsch (in part, not of Brunner, 1865), 1923 b, p. 450.
Type: ♂, Singapore, British Straits Settlements, C. F. Baker; Hebard Collection, type No. 1150.

Areolaria jacobsoni Hanitsch

Areolaria jacobsoni Hanitsch, 1929 b, p. 299, fig. 10.
Type: ♀, Fort de Kock, Sumatra, E. Jacobson, 1926; Oxford University Museum.

Prosoplecta dexteralleni Hanitsch

Prosoplecta dexteralleni Hanitsch, 1923 b, p. 451, pl. 13 fig. 11.
Type: ♂, Seremban, Malay Peninsula, Rev. G. Dexter Allen, October 25th 1917; Oxford University Museum.

Chorisoneura lativitrea (Walker) (fig. 23)

Blatta lativitrea Walker, 1868, p. 223.
Phyllodromia lativitrea, Kirby, 1904, p. 91.
Chorisoneura lativitrea, Hanitsch, 1915, p. 134; Hanitsch, 1923 b, p. 449; Hebard, 1929, p. 100; Hanitsch, 1929 a, p. 19; Hanitsch, 1929 b, p. 299; Hanitsch, 1931 b, p. 404; Hanitsch, 1933 a, p. 329; Hanitsch, 1933 c, p. 235.
Type: ♀, Cambodia; British Museum.

Leiden Museum:

Batavia, Java, E. Jacobson, August 1907, 1 ?; ibidem, E. Jacobson, August 1908,

1 ♂; Samarang, Java, E. Jacobson, November 1909, 1 ♀; Ardjuna, S. of Gunung Papandajan, Java, W. C. van Heurn, 1931, 1 ♂, 1 ♀.

Amsterdam Museum:

Fort de Kock, Sumatra, E. Jacobson, 1924-1925, 1 ♂, 2 ♀♀.

In one of the specimens there are numerous small flecks along the tegminal veins.

Measurements:	♂	♀
Total length	9.1-9.9 mm	9.8-10.2 mm
Length of tegmina	7.9-8.5 mm	8.2-8.5 mm
Pronotum	1.8 × 3.1 mm	1.8 × 3.1 mm

Chorisoneura apicalis Hanitsch

Chorisoneura apicalis Hanitsch, 1929 a, p. 19; Hanitsch, 1932 a, p. 7; Sjöstedt, 1933, p. 11.

Type: ♂, ♀, Medan; Bulu Tjina, Sumatra, Dr. Mjöberg, 1919-1921; Stockholm Museum.

The differences with *Ch. lativitrea* (Walker) are only of minor importance.

Sorineuchora javanica Caudell

Blatta virescens Walker (not of Thunberg, 1826), 1868, p. 231.

Chorisoneura ? virescens, Kirby, 1904, p. 73.

Phyllodromia virescens, Shelford, 1906, p. 491; Shelford, 1908 a, p. 13; Hanitsch, 1915, p. 47; Hanitsch, 1923 b, p. 415.

Sorineuchora javanica Caudell, 1927, p. 15, figs. 13-14.

Chorisoneura javanica, Hebard, 1929, p. 100.

Chorisoneura virescens, Hanitsch, 1931 b, p. 404; Hanitsch, 1933 c, p. 235.

Type: ♂, Buitenzorg, Java, Bryant and Palmer, April 1909; United States National Museum.

Leiden Museum:

Air Njuruk, Dempu, Sumatra, E. Jacobson, 1916, 1 ♂; Rawas, Sumatra Exp., May 1878, 1 ♀; Java, Muller, 1 ♀, 1 ?; Batavia, Java, E. Jacobson, 1907, 4 ♂♂; ibidem, E. Jacobson, 1908, 4 ♂♂, 1 ♀; Dampit Sumber Pakel, Java, MacGillavry, 1916, 3 ♂♂; Batavia, Java, Dr. De Gavere, 1 ?; Malang, Java, W. Kempers, 1 ♂; Ardja Sari, Preanger, Java, 1 ♂.

Amsterdam Museum:

Java, 1 ?; Pagar Marbau, Sumatra, J. B. Corporaal, 1921, 1 ♂.

The wing venation differs largely from that of *Chorisoneura* spp. The intercalated triangle is small and not conspicuous. Caudell placed this genus in the Pseudomopinae.

Measurements:	♂	♀
Total length	10.0-13.2 mm	10.2-11.9 mm
Length of tegmina	8.3-11.9 mm	8.7-10.0 mm
Pronotum	2.0 × 3.2-2.3 × 3.6 mm	2.1 × 3.2-2.3 × 3.6 mm

POLYPHAGINAE

Dyscologamia pilosa (Walker)

Zetobora pilosa Walker, 1868, p. 187.
Dyscologamia pilosa, Kirby, 1904, p. 174; Hanitsch, 1915, p. 131; Hebard, 1929, p. 103; Hanitsch, 1932 a, p. 7.
Dyscologamia cesticulata Saussure, 1893, p. 298; Kirby, 1903 a, p. 406; Kirby, 1904, p. 173; Rehn, 1904, p. 558; Hanitsch, 1915, p. 130, pl. 6 fig. 30; Hanitsch, 1925, p. 102; Hanitsch, 1929 b, p. 290.
Polyphaga sumatrensis Shelford, 1908 d, p. 33.
Miroblatta silphoides Chopard (not of Walker), 1919, p. 353, pl. 12 figs. 10-14.
Dyscologamia chopardi Hanitsch, 1923 b, p. 447.
Type: ♂, Java; Oxford University Museum.

Leiden Museum:

Java, Teysman, 1 ♂; Guwa Ningrong, Gunung Sewu, Djocja, Java, E. Jacobson, February 1911, 1 larva; Guwa Gremeng, Gunung Sewu, Java, E. Jacobson, February 1911, 1 larva.

Amsterdam Museum:

Tangkuban Prahu, Preanger, Java, F. C. Drescher, September 1928, 1 ♀; ibidem, F. C. Drescher, 1929, 1 ♂; Lau Rakit, Sumatra, J. B. Corporaal, August 1921, 1 larva.

After Hebard (1929, p. 103) suggested that *D. cesticulata* Saussure and *D. chopardi* Hanitsch are synonymous with *D. pilosa* (Walker), Hanitsch established this synonymy after comparing the types.

Measurements:	♂	♀
Total length	28.1 mm	24.9 mm
Length of tegmina	24.0 mm	20.1 mm
Pronotum	6.4 × 10.3 mm	8.3 × 14.3 mm

Dyscologamia funebris Hanitsch

Dyscologamia funebris Hanitsch, 1933 c, p. 242, pl. 12 fig. 4.
Type: ♂, Birang River, East Borneo, Dr. E. Mjöberg; Stockholm Museum.

PERISPHERINAE

Paranauphoeta basalis (Serville)

Blatta basalis Serville, 1839, p. 95.
Blatta (Nauphoeta) basalis, De Haan, 1842, p. 52.
? *Paranauphoeta basalis,* Brunner, 1865, p. 398.
Paranauphoeta basalis, Kirby, 1904, p. 179; Hanitsch, 1915, p. 138, pl. 2 fig. 11; Hanitsch, 1932 c, p. 82.
Paranauphoeta atra Shelford, 1906, p. 275; Hanitsch, 1915, p. 140; Hebard, 1929, p. 103; Hanitsch, 1933 c, p. 235.
Type: Java.

Leiden Museum:

Padang, Sumatra, Muller, 2 ♂♂, 2 ♀♀; Solok, Sumatra, P. O. Stolz, 1910, 2 ♀♀; ibidem, P. O. Stolz, 1913, 1 ♂, 1 ♀.

Amsterdam Museum:

Tandjung Merah, J. B. Corporaal, 1917, 1 ♀.

In three of the specimens from Solok, the basal tegminal vittae are very narrow and nearly obsolete. In the fourth specimen from Solok there are no basal vittae at all and this specimen agrees with the description of *P. atra* Shelford.

The orange vittae of the occiput lack in all the specimens from Solok, and are very vague in the specimen from Tandjung Merah. In one of the specimens from Solok the lateral margins of the pronotum are narrowly bordered with orange; in the other specimens the pronotum is wholly black.

From the foregoing it appears, that between *P. basalis* (Serville) and *P. atra* Shelford there are gradual, transitions and consequently I believe that *atra* is synonymous with *basalis*.

Measurements:	♂	♀
Total length	24.8-27.7 mm	25.8-29.4 mm
Length of tegmina	20.3-22.2 mm	21.8-24.1 mm
Pronotum	5.7 × 7.6-6.0 × 7.7 mm	5.8 × 7.4-6.2 × 8.3 mm

Paranauphoeta brunneri Shelford

Paranauphoeta brunneri Shelford, 1907 a, p. 46; Hanitsch, 1915, p. 139; Hebard, 1929, p. 104; Hanitsch, 1933 c, p. 235.

Type: ♀, Kuching, Sarawak, Borneo, R. Shelford, 1900; Oxford University Museum.

Paranauphoeta circumdata (De Haan)

Blatta (*Nauphoeta*) *circumdata* De Haan, 1842, p. 52.

Paranauphoeta circumdata, Brunner, 1865, p. 399, pl. 13 figs. 59A-E; Kirby, 1904, p. 180; Hanitsch, 1915, p. 138; Hanitsch, 1927, p. 42.

Nauphoeta adjuncta Walker, 1868, p. 38.

Type: ♂, Padang, Sumatra, Leiden Museum.

Leiden Museum:

Padang, Sumatra, 2 ♂♂, 3 ♀♀; Bandjermasin, Borneo, 3 ♀♀; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 1 ♀.

Measuremens:	♂	♀
Total length	22.7 mm	24.0 mm
Length of tegmina	17.5 mm	19.6 mm
Pronotum	4.9 × 7.2 mm	5.1 × 7.7 mm

Paranauphoeta javanica Saussure

Paranauphoeta javanica Saussure, 1872, p. 153; Kirby, 1904, p. 180; Hanitsch, 1915, p. 140; Hanitsch, 1929 a, p. 20.

Type: ♂, Java.

Paranauphoeta rufipes Brunner

Paranauphoeta rufipes Brunner, 1865, p. 400; Kirby, 1904, p. 180; Hanitsch, 1923 a, p. 212; Hanitsch, 1931 a, p. 58, pl. 1 fig. 6; Bruijning, 1947, p. 240.
Nauphoeta discoidalis Walker, 1868, p. 39.
Paranauphoeta rufipes var. *Novae Guineae* Bolivar, 1898, p. 138.
Paranauphoeta discoidalis, Kirby, 1904, p. 180.
Type: ♂, ♀, Ternate; Vienna Museum, Brunner Collection.

Leiden Museum:

Java, W. J. E. Hekmeyer, 2 ♀♀. Also sixteen specimens from the Austromalayan subregion.

Measurements: ♀, total length 24.0 mm, length of tegmina 19.3 mm, pronotum 4.4 × 6.7 mm.

Paranauphoeta lyrata (Burmeister)

Nauphoeta lyrata Burmeister, 1838, p. 508; Walker, 1868, p. 37.
Blatta ornata Serville, 1839, p. 99.
Blatta (Nauphoeta)lyrata, De Haan, 1842, p. 52.
Paranauphoeta lyrata, Brunner, 1865, p. 401; Kirby, 1904, p. 180; Rehn, 1904, p. 559; Rehn, 1909, p. 179; Hanitsch, 1915, p. 139; Hanitsch, 1925, p. 105; Hanitsch, 1927, p. 42; Hebard, 1929, p. 104; Hanitsch, 1929 a, p. 20; Hanitsch, 1930 a, p. 192; Hanitsch, 1932 a, p. 7; Hanitsch, 1932 c, p. 82; Hanitsch, 1933 a, p. 329; Hanitsch, 1933 b, p. 142; Hanitsch, 1933 c, p. 235; Bruijning, 1947, p. 241.
Type: Java.

Leiden Museum:

Queda, Malay Peninsula, P. J. van der Does de Bye, 1 ♀; Kutur, Sumatra Exp., June 1878, 3 ♂♂, 3 ♀♀; Rawas, Sumatra Exp., 1 ♂, 1 larva; Solok, Sumatra, P. O. Stolz, 2 ♀♀; Sibigo, Sumatra, E. Jacobson, August 1913, 1 ♂; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♀; Padang, Sumatra, 2 ♂♂, 2 ♀♀; Ardjuna, Java, Hekmeyer, 1 ♀; Banjermasin, Borneo, 4 ♂♂, 5 ♀♀, 1 larva; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♂, 8 ♀♀; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 4 ♂♂, 7 ♀♀; ibidem, Dr. Nieuwenhuis, Borneo Exp., 1899, 1 ♂, 2 ♀♀, 1 ?.

Amsterdam Museum:

Sibolangit, Sumatra, J. B. Corporaal, October 1921, 1 ♀.

Very common in the Indomalayan subregion.

Measurements:	♂	♀
Total length	15.8-21.4 mm	21.3-25.5 mm
Length of tegmina	12.3-16.8 mm	16.5-19.6 mm
Pronotum	3.2 × 4.6-4.1 × 6.3 mm	4.1 × 6.2-4.9 × 7.4 mm

Stilpnoblatta malaya Hebard

Stilpnoblatta malaya Hebard, 1929, p. 104.
Type: ♀, Pasuruan, Java; Academy of Natural Sciences of Philadelphia, type no. 5473.

Glyptopeltis couloniana Saussure

Glyptopeltis couloniana Saussure, 1872, p. 124, pl. 10 fig. 42; Kirby, 1904, p. 182; Hanitsch, 1915, p. 141.
Type: ♀, Java?.

Glyptopeltis biguttata Saussure

Glyptopeltis biguttata Saussure, 1872, p. 122, pl. 10 fig. 41; Kirby, 1904, p. 182; Hanitsch, 1915, p. 141.
Type: ♂, ♀, Java.

Glyptopeltis wallacei Hanitsch

Glyptopeltis wallacei Hanitsch, 1933 a, p. 331; Hanitsch, 1933 c, p. 235; Bruijning, 1947, p. 242.
Type: ♂, Amboina, Wallace, 1857-1860; Oxford University Museum.

Pseudoglomeris aterrima (Herbst)

Blatta aterrima Herbst, 1786, p. 185, pl. 49 fig. 9.
Derocalymma atra Brunner, 1865, p. 321, pl. 9 fig. 41.
Pseudoglomeris aterrima, Kirby, 1904, p. 190; Hanitsch, 1915, p. 452.
Type: Java; Novara Museum.

Pseudoglomeris flavicornis (Burmeister)

Perisphaeria flavicornis Burmeister, 1838, p. 488.
Derocalymma flavicornis, Brunner, 1865, p. 321.
Pseudoglomeris flavicornis, Bolivar, 1897, p. 300; Kirby, 1904, p. 190; Hanitsch, 1915, p. 143; Hanitsch, 1923 a, p. 213; Hanitsch, 1923 b, p. 452; Hanitsch, 1925, p. 105; Hanitsch, 1927, p. 43; Caudell, 1927, p. 9; Hebard, 1929, p. 104; Hanitsch, 1930 a, p. 192; Hanitsch, 1933a, p. 331.
Type: Java.

Leiden Museum:

Samarang, Java, E. Jacobson, 4 ♂♂, 2 ♀♀; Batavia, Java, 2 ♂♂; Banjuwangi, Java, MacGillavry, 1 ♂, 2 ♀♀; Buitenzorg, Java, Van der Hoeven, 1 ♂; Borneo, 2 ♀♀.

Measurements:	♂	♀
Total length	19.8 mm	15.7 mm
Length of tegmina	16.6 mm	—
Pronotum	4.3 × 6.3 mm	4.8 × 7.8 mm

Pseudoglomeris planiuscula Brunner

Pseudoglomeris planiuscula Brunner, 1893, p. 44; Saussure and Zehntner, 1895 a, p. 41, pl. 1 fig. 14; Kirby, 1904, p. 190; Hanitsch, 1923 b, p. 453; Hanitsch, 1927, p. 43; Hanitsch, 1931 b, 407.
Type: ♂, ♀, Carin Cheba, Bhamo; Catcin Cauri, Mount Mooleyit; L. Fea; Genoa Museum.

Pseudoglomeris flexicollis (Walker)

Zetobora flexicollis Walker, 1868, p. 187.
Pseudoglomeris flexicollis, Kirby, 1904, p. 191; Hanitsch, 1915, p. 144; Hanitsch, 1923 b, p. 453.
Type: ♂, Singapore, Wallace; Oxford University Museum.

Pseudoglomeris wellingtoni Hanitsch

Pseudoglomeris wellingtoni Hanitsch, 1931 b, p. 407, fig. 12.
Type: ♀, Sarawak, A. R. Wellington, 1913; British Museum.

Leiden Museum:

Pulau Sibau, Büttikofer, Borneo Exp., June 1894, 1 ♀; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀, 1 larva.

Measurements: ♀, total length 18.3 mm, pronotum 6.5 × 10.4 mm.

Perisphaeria armadillo Serville

Perisphaeria armadillo Serville, 1839, p. 133, pl. 3 fig. 2; Kirby, 1904, p. 190; Hanitsch, 1915, p. 142, pl. 7 fig. 39; Hanitsch, 1923 a, p. 213; Hanitsch, 1923 b, p. 451; Hanitsch, 1930 a, p. 192; Hanitsch, 1931 b, p. 405; Hanitsch, 1932 c, p. 82; Hanitsch, 1933 a, p. 329; Hanitsch, 1933 b, p. 142; Bruijning, 1947, p. 241.
Derocalymma flavicornis, partly, Brunner, 1865, p. 321.
Perispherus armadillo, Caudell, 1927, p. 9; Hebard, 1929, p. 15.
Type: Java.

Leiden Museum:

Java, 2 ♂♂; Samarang, Java, E. Jacobson, 1 ♀; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀; Long Blu-u, Dr. Nieuwenhuis, Borneo Exp., 1898, 1 ♀. Also a female from Timor.

Measurements:	♂	♀
Total length	23.1 mm	14.0 mm
Length of tegmina	20.4 mm	—
Pronotum	6.3 × 8.0 mm	5.9 × 8.1 mm

Perisphaeria glomeriformis Lucas

Perisphaeria glomeriformis Lucas, 1863, p. 408, pl. 10 figs. 10-10 a; Saussure and Zehntner, 1895 a, p. 37; Kirby, 1904, p. 190; Hanitsch, 1915, p. 142, pl. 7 fig. 40; Hanitsch, 1927, p. 43; Hanitsch, 1932 c, p. 83; Hanitsch, 1933 c, p. 235; Bruijning, 1947, p. 241.
Perispherus glomeriformis, Hebard, 1929, p. 15.
Type: Cochin China and Phillippines.

Leiden Museum:

Pladju, Sumatra, P. van Hemert, 1 ♀. Also three females from the Aru Islands.

Measurements: ♀, total length about 16 mm, pronotum 7.2 × 10.1 mm.

Perisphaeria lucasiana Saussure and Zehntner

Perisphaeria lucasiana Saussure and Zehntner, 1895 a, p. 36; Kirby, 1904, p. 190; Hanitsch, 1915, p. 143; Hanitsch, 1928, p. 38.
Perispherus lucasiana, Hebard, 1929, p. 15.
Type: ♀, Java, Geneva Museum.

Perisphaeria inaequalis Hanitsch

Perisphaeria inaequalis Hanitsch, 1931 b, p. 405, figs. 10-11; Bruijning, 1947, p. 242.
Type: western Borneo, 1886; British Museum.

Perisphaeria rubescens Hanitsch

Perisphaeria rubescens, Hanitsch, 1933 a, p. 330.
Type: ♀ ♀, Mount Kinabalu, Borneo, H. M. Pendlebury, 1929; Oxford University Museum.

Gromphadorhina javanica Hanitsch

Gromphadorhina javanica Hanitsch, 1930 a, p. 192, figs. 9-10.
Type: ♂, Java, Dr. A. Dehne; Dresden Museum.

PANESTHIINAE

Dolichosphaeria polita (Krauss)

Panesthia polita Krauss, 1903, p. 754; Hanitsch, 1915, p. 151; Hanitsch, 1928, p. 39; Hanitsch, 1929 b, p. 302.
Dolichosphaeria arcuata Hanitsch, 1923 b, p. 454, fig. 31.
Dolichosphaeria polita, Hebard, 1929, p. 106.
Type: ♂, ♀, Tjibodas, Java; Borneo.

Leiden Museum:

Padang Sumatra, 1 ♂, 1 ♀, 1 larva; Mount Indrapura, Sumatra Exp., December 1878, 1 ♀; Tandjung Merah Estate, Sumatra, J. H. Houwing, 1914, 1 ♀; Garut, Java, W. C. van Heurn, 1930, 3 ♀ ♀; Upper Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀.

The specimens from Java are smaller and darker than the others.

Measurements:	♂	♀
Total length	21 mm	25 mm
Pronotum	5.8 × 8.0 mm	5.8 × 8.5 mm

Dolichosphaeria deplanata Hanitsch

Dolichosphaeria deplanata Hanitsch, 1923 b, 455; Hanitsch, 1933 a, p. 336.
Type: ♀, Gunung Kledang, Perak, R. Hanitsch, November 1916; Oxford University Museum.

Panesthia angustipennis (Illiger) [1]

Blatta angustipennis Illiger, 1801, p. 185.
Blatta aethiopis Stoll, 1813, p. 3, pl. 1d fig. 3.
Panesthia javanica Serville, 1831, p. 38.
Panesthia saussurii Stål, 1877, p. 37.
Type: ?, Sumatra.

Leiden Museum:

Queda, Malay Peninsula, P. J. van der Does de Bye, 2 ♂ ♂, 2 ♀ ♀, 6 larvae; Nias?, J. D. Pasteur, 3 ♂ ♂, 7 ♀ ♀; Nias, 1 ♀; Banka, J. van der Vecht, 1935, 1 larva; ibidem, Vosmaer, 1885, 1 ♂, 1 ♀; Billiton, A. G. Vorderman, 2 ♀ ♀, 2 larvae; Karimon, Rhio Archipelago, A. L. van Hasselt, 1893-1894, 1 ♂, 1 ♀; Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 5 ♂ ♂, 5 ♀ ♀, 1 larva; Sidempuang, Pa-

1) A complete list of the synonyms of this species was given in a former paper (Bruijning, 1947, p. 244).

dang, Sumatra, J. D. Pasteur, 1 ♂, 2 ♀♀; Padang, Sumatra, 1 larva; Solok, Padang, Sumatra, P. O. Stolz, 2 ♂♂, 7 larvae; ibidem, P. O. Stolz, 1910, 1 ♂, 1 ♀, 2 larvae; ibidem, P. O. Stolz, 1911, 1 ♀; ibidem, P. O. Stolz, 1912, 1 ♂, 3 ♀♀, 3 larvae; ibidem, P. O. Stolz, 6 ♂♂, 14 ♀♀, 6 larvae; Pladju, Sumatra, Ir. P. van Hemert, 1923-1926, 1 ♂, 3 ♀♀, 1 larva; Medan, Sumatra, W. F. van Hell, 1923-1924, 1 ♀; Deli, Sumatra, De Bussy, 1912, 1 ♂, 1 ♀; ibidem, Büttikofer, 1895, 1 ♂, 1 ♀; Palembang, Sumatra, Douglas, 1916, 1 larva; ibidem, 1 ♀; ibidem, Sumatra Exp., May—June 1878, 1 ♂, 2 larvae; Silago, Sumatra Exp., June 1877, 1 ♀; Rawas, Sumatra Exp., May 1878, 6 larvae; Kutur, Sumatra Exp., June 1878, 1 ♂, 3 larvae; Sinabang, Simalur, Sumatra, E. Jacobson, March, 1913, 1 ♂; Tebing Tinggi, Sumatra, F. J. Weynman, 1 ♂, 1 larva; Java, 3 ♂♂, 5 larvae; ibidem, H. van der Weele, 1 ♂; ibidem, J. B. Corporaal, 1 larva; ibidem, Mrs. Adèr, December 1893, 1 ♂, 2 larvae; Ardja Sari, Preanger Java, 3 ♂♂, 1 ♀, 6 larvae; Talun, Preanger, Java, 1 ♂, 1 ♀, 1 larva; Tjigembong, Preanger, Java, J. B. Corporaal, May 1915, 2 larvae; Garut, Java, W. C. van Heurn, 1928, 2 larvae; ibidem, W. C. van Heurn, 1929, 1 ♀, 2 larvae; ibidem, W. C. van Heurn, 1930, 1 ♂, 4 ♀♀, 3 larvae; Ardjuna, South of Gunung Papandajan, Java, W. C. van Heurn, 1931, 1 larva; Buitenzorg, Java, 4 ♂♂, 2 larvae; ibidem, Dr. H. Brumenk, 1 ♀; Idjen Highlands, Java, 2 larvae; Tjinjiruan, Malabar Mountains, Java, Dr. H. W. van der Weele, December 1909, 1 ♀, 3 larvae; Banjuwangi, Java, MacGillavry, 1910, 1 ♀; Sumber Pakel, Dampit, Java, MacGillavry, 1919, 2 ♂♂; Tjibodas, Java, Dr. J. F. van Bemmelen, 2 larvae; Batavia, Java, Dr. J. F. van Bemmelen, March 1892, 1 larva; Sumber Arum Estate, Java, P. Buitendijk, April 1914, 1 ♀, 2 larvae; Gunung Ungaran, Java, E. Jacobson, December 1909, 1 ♂, 2 ♀♀; Nongkodjadjar, Java, E. Jacobson, 1911, 1 ♀; ibidem, MacGillavry, December 1921?, 2 ♂♂, 2 ♀♀, 5 larvae; Mahakkam River, Dr. Nieuwenhuis, Borneo Exp., 1894, 5 ♂♂, 7 ♀♀, 9 larvae; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1898, 6 ♂♂, 4 ♀♀, 9 larvae; ibidem, Dr. Nieuwenhuis, Borneo Exp., 1899, 1 ♂, 2 ♀♀; Sintang, Borneo Exp., 3 ♂♂, 4 ♀♀, 8 larvae; Sugut, Sandakan Bay, Borneo, Prakke, 1 ♀; Banjermasin, Borneo, 1 ♂; Sanggau, Kapuas river, Borneo, Westenenk, 1894, 1 ♂, 1 ♀; Borneo, M. C. Piepers, April 1903, 1 larva; Borneo, Schwaner, 2 larvae; Kenepai Mountains, Moret, Borneo Exp., 1894, 1 ♀; Pondok, Kenepai Mountains, 1894, 1 ♂; Sambas, Dr. Hallier, Borneo Exp., 1893, 1 ♂, 1 larva. Also 52 specimens from outside the Indo-malayan region.

Amsterdam Museum:

Tandjong Merah, Sumatra, J. B. Corporaal, 1918-1919, 2 ♀♀; Sungei Rampah, Sumatra, J. B. Corporaal, 1 ♂, 2 ♀♀; Pakan Baru, J. B. Corporaal, 1919, 1 ♂; Taluk, Sumatra, Kleiweg de Zwaan, 1907, 1 ♂, 1 ♀, 1 larva; Billiton, 1920, 1 ♂, 2 larvae.

In a former paper (Bruijning, 1947, p. 246) the synonymy of *P. angustipennis, P. aethiopis, P. javanica,* and *P. saussurei* was established.

This species is very common in the whole of the Archipelago.

Panesthia wallacei Wood-Mason

Panesthia wallacei Wood-Mason, 1876, p. 189; Kirby, 1904, p. 204; Hanitsch, 1915, p. 152, pl. 2 fig. 12; Caudell, 1924, p. 659; Hanitsch, 1932 c, p. 85, fig. 18; Hanitsch, 1933 b, p. 149; Bruijning, 1947, p. 247.

Panesthia walacei Saussure, 1895 a, p. 323.

Type: ♂, Sinkep near Singapore.

Leiden Museum:

Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1894, 1 ♀.

The tegmina and wings are damaged at their apices.

Measurements: ♀, total length about 50 mm, pronotum 10.0 × 14.4 mm.

Panesthia sinuata Saussure

Panesthia sinuata Saussure, 1895 a, p. 318; Kirby, 1904, p. 203; Hanitsch, 1915, p. 155; Caudell, 1924, p. 658; Hanitsch, 1925, p. 106.
Type: ♂, Singapore.

Panesthia monstruosa Wood-Mason

Panesthia monstruosa Wood-Mason, 1876, p. 189; Wood-Mason, 1877, p. 117; Saussure, 1895 a, p. 311.
Dicellonotus monstruosus, Kirby, 1904, p. 201; Hanitsch, 1923 b, p. 460.
Type: ♂, ♀, Southern India, R. C. Beddome.

Panesthia ruficeps Kirby

Panesthia ruficeps Kirby, 1903a, p. 412; Hanitsch, 1915, p. 148; Caudell, 1924, p. 657.
Type: ♂, ♀, Christmas Island; British Museum.

Panesthia biglumis Saussure

Panesthia biglumis Saussure, 1895 a, p. 319; Kirby, 1904, p. 203; Hanitsch, 1915, p. 150; Caudell, 1924, p. 650.
Type: ♀, India, Sikkim; Calcutta Museum.

Leiden Museum:

Only two specimens from Bengal.

Panesthia nicobarensis Saussure

Panesthia nicobarensis Saussure, 1895 a, p. 316; Kirby, 1904, p. 203; Hanitsch, 1923 b, p. 456.
Type: ♂, ♀, Nicobars.

Saussure expressed the opinion that it is quite possible that *P. nicobarensis* is merely a variety of *P. angustipennis* with truncated wings and tegmina.

Since there are several specimens of *P. angustipennis* with truncated wings and tegmina in the collection of the Leiden Museum, the type of *P. nicobarensis* may be a brachypterous specimen of *P. angustipennis.*

Panesthia ferruginipes Brunner

Panesthia ferruginipes Brunner, 1893, p. 53; Krauss, 1903, p. 754; Kirby, 1904, p. 202; Hanitsch, 1915, p. 152; Caudell, 1924, p. 652.
Type: ♂, ?; Vienna Museum, Brunner Collection.

Caudell (l.c.) says about this species: "This wingless roach may be the nymph of some winged form".

Panesthia brevipennis Brunner

Panesthia brevipennis Brunner, 1893, p. 51; Kirby, 1904, p. 203; Caudell, 1924, p. 651; Hanitsch, 1930 a, p. 195; Hanitsch, 1933 b, p. 150; Bruijning, 1947, p. 248.

Panesthia brevipennis baluensis Hanitsch, 1933 a, p. 334, fig. 23.
Panesthia penrissensis Hanitsch, 1933 a, p. 335, fig. 24.
Type: ♂, Amboina; Vienna Museum, Brunner Collection.

Leiden Museum:

Idjen Highlands, Java, J. van Heurn, 1936, 1 ♂, 1 ♀.

The characters on which Hanitsch based *P. penrissensis* are not of specific value in this genus and consequently I believe that this species is synonymous with *P. brevipennis* Brunner.

It is quite possible that large series will prove that this species is merely a brachypterous form of *P. angustipennis*.

Measurements:	♂	♀
Total length	32.7 mm	34.9 mm
Length of tegmina	10.8 mm	11.7 mm
Pronotum	7.0 × 10.3 mm	7.2 × 10.7 mm

Panesthia pilosa Hanitsch

Panesthia pilosa Hanitsch, 1933 c, p. 245, pl. 12 fig. 7.
Type: ♂, Mount Tibang, Sarawak, Borneo, Dr. E. Mjöberg; Stockholm Museum.

Panesthia transversa Burmeister

Panesthia transversa Burmeister, 1838, p. 513; Brunner, 1893, p. 51; Kirby, 1904, p. 203; Hanitsch, 1915, p. 154; Caudell, 1924, p. 659; Hanitsch, 1932 c, p. 85; Hanitsch, 1933 c, p. 244.
Panesthia mandarinea Saussure, 1863, p. 168, pl. 1 fig. 25; Wood-Mason, 1876, p. 190; Kirby, 1904, p. 204; Hanitsch, 1915, p. 149, female, not pl. 6 fig. 33, male; Caudell, 1924, p. 654; Karny, 1925, p. 190, pl. fig. 18.
Type: ♂ Java.

Leiden Museum:

Tandjong Morawa, Serdang, Sumatra, Dr. B. Hagen, 1 ♂; Bangka, Vosmaer, 1 ♂; Java, 1 ♂, 2 ♀♀.

The apices of the antennae are not yellow as mentioned in Brunner's description, but dark castaneous; the yellow area is subapical.

Measurements:	♂	♀
Total length	32.8 mm	30.9 mm
Length of tegmina	27.9 mm	26.5 mm
Pronotum	6.8 × 11.1 mm	6.3 × 10.7 mm

Panesthia bramina Saussure

Panesthia bramina Saussure, 1895 a, p. 322; Kirby, 1904, p. 203; Hanitsch, 1915, p. 156; Caudell, 1924, p. 650.
Type: ♂, ♀, India.

Panesthia hilaris Kirby

Panesthia hilaris Kirby, 1903 a, p. 413; Kirby, 1904, p. 204; Hanitsch, 1915, p. 153;

Hanitsch, 1923 b, p. 456; Caudell, 1924, p. 652; Hanitsch, 1928, p. 39; Hanitsch, 1933 c, p. 245.
Type: ♀, Sandakan, British North Borneo; British Museum.

Judging by the description this species is narrowly related to *P. transversa* Burmeister.

Panesthia ornata Saussure

Panesthia ornata Saussure, 1872, p. 152, pl. 10 fig. 54; Kirby, 1904, p. 203; Hanitsch, 1915, p. 154; Caudell, 1924, p. 656.
Type: ♂, Java.

Related to *P. transversa* Burmeister, but smaller.

Panesthia bakeri Caudell

? *Panesthia mandarinea,* Hanitsch, 1915, p. 149, pl. 6 fig. 33 (not female).
Panesthia bakeri Caudell, 1924, p. 649.
Type; ♀, "Luzon Benguet, Baguio"; Baker Collection.

Panesthia shelfordi Hanitsch

Panesthia shelfordi Hanitsch, 1923 b, p. 458, fig. 32; Hanitsch, 1933 c, p. 245.
Type: ♂, Mount Penrissen, Sarawak, Borneo, R. Shelford, May 1899; Oxford University Museum.

Panesthia modiglianii Hanitsch

Panesthia modiglianii Hanitsch, 1932 c, p. 88, fig. 19; Hanitsch, 1933 c, p. 245.
Type: ♀, Siboga, Sumatra, E. Modigliani, October 1890—March 1891; Oxford University Museum.

Panesthia bifasciata Hanitsch

Panesthia bifasciata Hanitsch, 1933c, p. 244, pl. 12 fig. 6.
Type: ♀, Mount Tibang, Sarawak, Borneo, Dr. E. Mjöberg; Stockholm Museum.

Miopanesthia discoidalis Saussure

Miopanesthia discoidalis Saussure, 1895 a, p. 326; Kirby, 1904, p. 205; Hanitsch, 1915, p. 157; Caudell, 1924, p. 644; Hanitsch, 1927, p. 32.
Type: ♀, Java.

Miopanesthia stenotarsis Saussure

Miopanesthia stenotarsis Saussure, 1895 a, p. 325, pl. 9 fig. 2; Krauss, 1903, p. 748; Kirby, 1904, p. 205; Hanitsch, 1915, p. 157; Caudell, 1924, p. 644.
Type: ♂, Java.

Salganea morio (Burmeister)

Panesthia morio Burmeister, 1838, p. 513; Brunner, 1865, p. 329.
Panesthia regina Saussure, 1863, p. 167, pl. 1 fig. 24.
Salganea morio, Kirby, 1904, p. 200; Hanitsch, 1915, p. 145; Hanitsch, 1923a, p. 213; Hanitsch, 1923 b, p. 455, pl. 13 fig. 12; Caudell, 1924, p. 663; Hanitsch, 1925, p. 105; Hebard, 1929, p. 107; Hanitsch, 1929 a, p. 20; Hanitsch, 1929 b, p. 301; Hanitsch, 1932 c, p. 83; Hanitsch, 1933 a, p. 332; Hanitsch, 1934, p. 128; Bruijning, 1947, p. 244.
Salganea regina, Kirby, 1904, p. 200.
Type: larva, New Guinea.

Leiden Museum:

Malay Peninsula, P. J. van der Does de Bye, 1 ♀; Padang, Sumatra, 2 ♂♂, 3 ♀♀; Solok, Padang, Sumatra, P. O. Stolz, 2 ♂♂, 1 larva; ibidem, P. O. Stolz, 1913, 3 ♀♀; Mount Madjoran, Sumatra, K. E. Keyl, 1 ♂; Tanangtalu, Ophir, Sumatra, A. de Kock, 1915, 1 ♀; ibidem, E. Jacobson, 1 ♂; Pladju, Sumatra, P. van Hemert, 1923-1926, 1 ♀; Sipirok, Sumatra, A. L. van Hasselt, 1 ♀; Sumatra, J. D. Pasteur, 1 ♀; Palembang, Sumatra Exp., 1878, 1 ♂; Java, Mrs. Adèr, 4 larvae; Tjinjiruan, Malabar Mountains, Dr. H. W. van der Weele, 1909, 6 ♀♀, 3 larvae; Garut, Java, W. C. van Heurn, 1930, 1 ♂, 3 ♀♀; Buitenzorg, W. C. van Heurn, 1931, 1 ♀; Gunung Papandajan, Java, Mrs. A. C. van Heurn-Besier, 2 ♀♀; Tapanuli, Java, Van Hasselt, 1 ♀; Java, 1 ♀; Talun, Preanger, Java, 1 ♀; Preanger, Java, V. Lucassen, 1 ♂; Tjibodas, Java, 1 ♀; Banjermasin, Borneo, 1 ♂; Sintang, Borneo Exp., 1894, 1 ♂, 1 ♀; Long Blu-u, Mahakkam, Dr. Nieuwenhuis, Borneo Exp., 1899, 1 ♂.

Amsterdam Museum:

Sumatra, Veldhuis, 1931, 2 ♂♂, 2 larvae; Tambang Sawah, Bencoolen, Sumatra, E. A. Douglas, 1930, 1 ♀; Sibolangit, Sumatra, J. A. Loerzing, 1917, 1 ♂; Billiton, 1 ♀, 2 larvae.

The size of *S. morio* (Burmeister) varies widely.

Measurements:	♂	♀
Total length	42.4-54.6 mm	42.1-58.0 mm
Length of tegmina	35.5-46.7 mm	35.4-49.9 mm
Pronotum	7.5 × 11.9-10.2 × 14.8 mm	7.4 × 12.2-11.1 × 16.3 mm

Salganea amboinica Brunner

Salganea amboinica Brunner, 1893, p. 47; Kirby, 1904, p. 200; Caudell, 1924, p. 661; Hanitsch, 1933 b, p. 143; Hanitsch, 1936, p. 398, figs. 7-9; Bruijning, 1947, p. 242.

Salganea rugulata Saussure, 1895 a, p. 304; Kirby, 1904, p. 200; Hanitsch, 1915, p. 146; Hanitsch, 1919, p. 70; Hanitsch, 1923 b, p. 456; Caudell, 1924, p. 665; Hebard, 1929, p. 107; Hanitsch, 1929 b, p. 301; Bruijning, 1947, p. 242.

Type: ♂, ♀, Amboina, Vienna Museum, Brunner Collection.

Leiden Museum:

Rawas, Sumatra Exp., May 1878, 3 ♀♀, 7 larvae; Garut, Java, W. C. van Heurn, 1930, 1 ♂; Buitenzorg, Java, W. C. van Heurn, 1931, 1 ♀; Java, 1 ♂, 1 ♀, 1 ?. Also eleven specimens from the Austromalayan subregion.

Amsterdam Museum:

Java or Sumatra, 1 ♀.

Caudell (1924, p. 662) already pointed to the fact that the difference between *S. amboinica* Brunner and *S. rugulata* Saussure is very slight, and says "that they may really be the same species".

Since from the series of the Leiden Museum it appears that the characters used to distinguish these species show transitions, I established the synonymy.

Measurements:	♂	♀
Length of body	22.9 mm	22.3 mm
Length of tegmina	26.1 mm	22.4 mm
Pronotum	5.3 × 8.8 mm	4.8 × 7.9 mm

Salganea inaequaliterspinosa Hanitsch

Salganea inaequaliterspinosa Hanitsch, 1933 a, p. 332, fig. 22.
Type: ♂, Mount Kinabalu, H. M. Pendlebury, 1929; Oxford University Museum.

Mylacrina wrayi Kirby

Mylacrina wrayi Kirby, 1903 a, p. 414; Kirby, 1904, p. 205; Hanitsch, 1915, p. 158; Caudell, 1924, p. 646.
Type: ♀, Perak, Wray; British Museum.

Neocaeparia saussurii (Wood-Mason)

Panesthia mandarinea Saussure, 1869, p. 286, pl. 3 fig. 23.
Panesthia saussurii Wood-Mason, 1876, p. 190; Wood-Mason, 1877, p. 118.
Caeparia mandarinea, Stål, 1877, p. 37; Brunner, 1893, p. 48.
Caeparia saussurii, Kirby, 1904, p. 201; Hanitsch, 1932 c, p. 86.
Neocaeparia saussurei, Caudell, 1924, p. 646.
Type: ♀, "East Indies".

Neocaeparia crenulata nov. spec. (fig. 56)

Leiden Museum:
Mount Indrapura, Sumatra, Sumatra Exp., December 1877, 1 ♂ (holotype).

Size medium for the genus. Head exposed, finely punctured, shining black except two ochraceous buff bands between the antennae and at the base of the clypeus. Ocelli yellow. Antennae black except the terminal portions, which are ochraceous buff. Interocular distance nearly equal to space between the antennal sockets. Pronotum black, deeply and densely punctured, its anterior margin not emarginated; anterior part of the

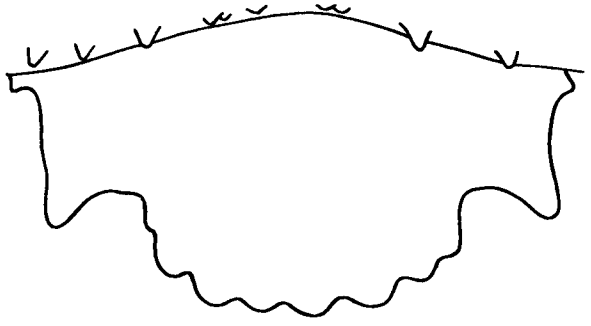

Fig. 56. *Neocaeparia crenulata* nov. spec. Supra-anal lamina. × 10.

pronotum triangularly depressed. Tegmina surpassing the apex of the abdomen, rather narrow; bicolorous with a black area occupying the base of the tegmen, followed by a fulvous area and a broad dark castaneous band and finally a dark fulvous apical area. Abdomen above coarsely punctured, shining black. The posterior margins of the abdominal tergites strongly dentated. The seventh tergite has a semicircular depressed area mesocaudad; the margin of this area is marked with two strong spines; the tergite is laterally serrate with one long and three small teeth. Supra-anal lamina with two large lateral teeth and a median crenulated part; meso-cephalad there is an elevation which separates two depressed areas. Cerci small, black, pubescent. Abdomen below shining black, punctured. Legs shining black except a small distal part of the femora and a proximal part of the tibiae which are orange. Pulvilli ochraceous buff.

Measurements: ♂, total length 35.0 mm, length of body 32.5 mm, length of tegmina 29.7 mm, pronotum 6.2 × 10.5 mm.

Closely related to *Neocaeparia saussurii* Wood-Mason, but differs in the head which is not triply banded with pale testaceous, and in the supra-anal plate which is crenulated and not trilobated.

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