

Tropical Leaf Moths

A monograph of the subfamily STRIGLININAE (LEPIDOPTERA : THYRIDIDAE)



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British Museum (Natural History)

Tropical Leaf Moths

Leaf moths (Thyrididae) very frequently mimic leaves, thereby deceiving potential predators. No comprehensive study of leaf moths on a world basis has been made for many years. This volume is a study of the distribution, relationships and taxonomy of one subfamily (Striglinae) of leaf moths. All the species in the subfamily have been studied and many new species are described. Leaf moths are found in the tropics and subtropics of the world, but there are a few species in the temperate parts of North America, Europe and Asia. Very little is known of their biology or life history and it is hoped that the present volume will encourage the study of their larvae and their role in tropical ecology. Some species have a unique scent dispersal mechanism whose exact function is still to be studied. Previous publications in the *Bulletin of the British Museum (Natural History)* (Entomology series) have been concerned with the leaf moths of the African continent and other areas. This book examines one subfamily and studies all the species on a world basis.

All species are illustrated, some in colour, and keys for identification of the genera, species and subspecies are given. Maps are used to illustrate the broader aspects of distribution which is discussed in detail. There is a comprehensive index and an extensive bibliography.

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flora, über die Pflanzengesellschaften der waldfreien alpinen Stufe und über die Entstehung der Alpen und ihrer Flora. Gerade diese Kapitel sind für den Entomologen von besonderem Interesse, will er die mit der Entwicklung der Pflanzengesellschaften aufs engste zusammenhängende Entwicklung der Fauna richtig verstehen. Sehr begrüßenswert ist auch eine neu aufgenommene Farbtafel der wichtigsten Flechten, gestaltet von S. Tatzreiter mit dem entsprechenden Text. Die beiden schon in den letzten Auflagen enthaltenen Farbtafeln geschützter Pflanzen wurden durch Verzeichnisse der geschützten Pflanzen der Bundesrepublik Deutschland, Österreichs, der Schweiz und Südtirols ergänzt.

Wenn der seit Jahrzehnten bewährte „Alpen-Hegi“ noch verbessert werden konnte, so ist es mit dieser neuen Auflage vorbildlich geschehen. Dem trotz der Fülle von Informationen handlichen Büchlein mit dem für das Gebotene bescheidenen Preis ist die wünschenswerte weite Verbreitung sicher. W. Forster

Whalley, P. E. S., Tropical Leaf Moths. British Museum (Natural History) London 1976. 194 Seiten und 68 Tafeln, davon zwei farbig. Preis geb. 25.— Pfund Sterling.

In der vorliegenden Publikation wird die Unterfamilie *Striglinae* der *Thyrididae* behandelt, die 203 Arten und Unterarten umfaßt. Zahlreiche neue Taxa werden beschrieben und viele nomenklatorische Veränderungen vorgenommen, die aus den Untersuchungen zwangsläufig hervorgehen. Die *Thyrididae* bilden eine kleine und recht wenig bekannte Familie, die auch von Sammlern wenig beachtet wird, und die eine hauptsächlich tropische Verbreitung aufweist, hier aber weltweit. Die Arten sind habituell schwer zu unterscheiden und erst die anatomische Untersuchung bringt, wie die Bearbeitung zeigt, ausreichende Merkmale für eine sichere Bestimmung. Es sind deshalb alle Genitalien nach Fotos abgebildet, daneben aber auch Habitusbilder, wobei die besonderen Merkmale im Text hervorgehoben werden. Die Taxa erreicht man nach einer kurzen allgemeinen Einführung mit besonderem tiergeographischen Aspekt über Bestimmungstabellen, die sowohl auf äußeren als auch auf anatomischen Merkmalen begründet sind. Bei der Beschreibung der einzelnen Taxa werden die schon erwähnten Merkmale hervorgehoben, Unterschiede zu den nächstverwandten vermerkt und die Verbreitung dargestellt. Aufgrund der sorgfältigen Bearbeitung bereitet es keine Schwierigkeiten, Tiere aus dieser Gruppe zu bestimmen. W. Dierl

S. Leising: Über Zikaden des zentralalpiner Hochgebirges (Obergurgl, Tirol). 70 Seiten, 2 Figuren, 6 Tabellen. Veröffentlichungen der Universität Innsbruck. 107. Alpin-Biologische Studien geleitet von Heinz Janetschek. 9. Im Kommissionsverlag der Österreichischen Kommissionsbuchhandlung. Innsbruck 1977.

Die Verfasserin stellte sich zur Aufgabe, eine Bestandsaufnahme der Zikadenfauna im Raume Obergurgl in den zentralen Ötztaler Alpen durchzuführen und dabei die Höhenabhängigkeit des Vorkommens der einzelnen Arten festzustellen, ferner die Bindung an spezielle Biotope, das Nährpflanzenspektrum, die Generationenzahl, die Überwinterungsmodi, die Frage von regelmäßigen Zuwanderern und Irrgästen, sowie den Befall durch Parasiten. Wie die vorliegende Arbeit zeigt, wurde die gestellte Aufgabe bestens gelöst. Es wurden für das Gebiet von Obergurgl 50 Arten festgestellt, was etwa 50% der aus entsprechenden Höhenlagen der Ost-

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BY

P. E. S. WHALLEY



BRITISH MUSEUM (NATURAL HISTORY)

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SYNOPSIS

All the species and subspecies in the subfamily Striglininae are dealt with in this work. The subfamily consists of 19 genera, 10 of which are new, and 203 species and subspecies including 67 new ones described here. Their morphology, taxonomy and zoogeography are dealt with and keys to the genera and species are given.

ABBREVIATIONS AND DEFINITIONS

AMNH	American Museum of Natural History, New York	MNHU	Museum für Naturkunde der Humboldt Universität, Berlin
ANIC	Australian National Insect Collection, Canberra	MRAC	Musée Royale de l'Afrique Centrale, Tervuren
BMNH	British Museum (Natural History), London	NM	Naturhistorisches Museum, Vienna
BPBM	Bernice P. Bishop Museum, Honolulu	NMR	National Museum, Bulawayo
CM	Carnegie Museum, Pittsburgh	NR	Naturhistoriska Riksmuseum, Stockholm
CNC	Canadian National Collection, Ottawa	RNH	Rijksmuseum van Natuurlijke Historie, Leiden
DE	Institut für Pflanzenschutzforschung Kleinmachnow (formerly Deutsches Entomologisches Institut), Eberswalde	SAM	South African Museum, Cape Town
MNHN	Muséum National d'Histoire Naturelle, Paris	SAMA	South Australian Museum, Adelaide
		TMP	Transvaal Museum, Pretoria
		UM	University Museum, Oxford
		USNM	National Museum of Natural History, Washington

basal process see median valve process

interfacetal

hairs hairs present between the facets of the eyes

juxta frequently the juxta consists of a median plate and two lateral lobes ('juxta lobes'). The juxta is always separated from the sacculus by a membrane. Different origin from the sacculus process (qv) but similar appearance and perhaps similar function.

median valve any process on the valve other than the one near the base of the valve (basal process) in the male. Usually found near the middle of the valve and usually separated from the apex of the sacculus.

minutely spined used in relation to the spines of the vesica of the male and the bursa of the female when viewed at $\times 100$.

pseudojuxta see sacculus process

sacculus basal elongation, usually paired, of the base of the sacculus, also called a process pseudojuxta, similar in appearance to juxta (qv).

uncus simple refers to the elongate beak-like uncus found in some species.

wing ' \times ' mm wing measurements given were taken from the centre of the mesothorax to the apex of the forewing. The wingspan is slightly less than $2 \times$ this figure.

INTRODUCTION

THE subfamily Striglininae contains many species of diverse morphology. The present study started as a result of work on the African species of Striglininae (Whalley, 1971a) where it became apparent that the species in the genus *Striglina* were morphologically highly complex. The African species were studied in detail but no attempt was made to relate the generic levels of organization. Historically the subfamily and particularly the genus *Striglina* have been used as a convenient repository for species only broadly similar in external appearance.

Material for this study has been borrowed from many institutions (see Acknowledgements) and the holotype specimens of the majority of species have been examined. Of the few holotypes which have not been traced, topotypic material has been used to establish the identity of the species.

One of the major problems was the level at which the generic divisions were to be made. Each species, or species-group, showed so many modifications that it would be possible to erect large numbers of genera, based on one or two characters. However, this seems to obscure the overall pattern of similarity of the species which can be seen in many of the morphological characters. Several genera are thus large and are divided into species-groups each with their own individual peculiarities.

Very little biological or ecological data are available on species in the subfamily. In some of the genera where considerable speciation has taken place on islands biological information would be invaluable for assessing relationships of the various taxa.

Of particular interest are the various morphological developments which show in related species. In many cases these involve structures whose exact function is unknown but nevertheless give an indication of possible evolutionary trends in the group, showing how the structures may have developed and been modified.

The first division of the family Thyrididae (Siculides Guenée) into subfamilies was proposed by Guenée in 1877 and was subsequently used by Pagenstecher in 1892. These divisions were ignored by subsequent authors until recently (Whalley, 1964; 1967; 1971a). The definition of the subfamily Striglininae proposed (Whalley, 1971a : 15) has been modified slightly in the present work; the earlier work was based on the African species only while in the present one all the species in the subfamily have been examined.

MORPHOLOGY

General aspects of the morphology have been dealt with by Whalley (1971a) and Brock (1971).

HEAD. Modifications of the frons are found in *Tristina jucunda* where instead of the usual rounded frons there is a keel in the median line with shallower keels laterally. A species with a striking enlargement of the frons is *Banisia fuliginea* (Whalley, 1971a : pl. 24, figs 127-129) where the whole area is enlarged, otherwise the frons is rounded in the other species in the subfamily. The shape of the frons, pilifers, epipharynx and clypeus varies slightly between species. Pilifers are present in most species but are absent in species in the genus *Mystina* (p. 133) and in the *strigifera*-group in the genus *Striglina*. In some African species in the subfamily the pilifers are also reduced. Further studies of these structures in other groups may well provide useful characters at the generic level. In most of the genera studied in the subfamily the eyes were more or less rounded, only in *Mathoris* are the eyes modified into a slightly reniform shape (Whalley, 1971a : 7). Interfacetal hairs are present on the eyes of species in the following genera: *Telchines*, *Mystina*, *Heteroschista*, *Monodecus* and one species in *Striglina* (*S. eguttalis*). In *Monodecus admirandus* the length of the interfacetal hairs differs between the two subspecies. In all species of the subfamily, the proboscis is fully developed and the maxillary palps are minute, two-lobed structures. The labial palps are always three-segmented (contrast *Cecidothyris* in the Siculinae (Whalley, 1971a) where they are two-segmented) and differ between species in the relative lengths of the 1st and 2nd segments. In some species the second segment is the longest while other species have longer 1st segments. In *Banisia angulata* the second segment is modified and has a large tuft of scales which forms a prominent groove. There are, in many species, differences in length of the palps between the sexes but this is not always true, some species having apparently identical palps. Ocelli are present in species of *Mystina* and, very reduced, in *Heteroschista*, otherwise no trace of ocelli was found in the other species, neither was there any trace of a chaetosema on any of the species examined. The antennae were usually minutely ciliate, occasionally pectinate or ciliate.

THORAX. A study of the sclerites in species in different genera revealed relatively little variation from the typical ditrisian lepidopterous pattern (Brock, 1971).

Prothorax. Relatively little differences in the shape of the patagia were found between species in different genera.

Mesothorax. The extent of the anapleural cleft varied considerably between species but there was little trace of it posteriorly. The length of the parepisternal suture also varied but was clearly visible and sclerotized as indicated by Brock (1971). The extent and shape of the marginopleural was variable.

Metathorax. The scutum, scutellum varied in shape between species and in some a clear sclerotized bar was visible on the anterior margin; this is not the transverse suture referred to by Brock (1971 : 39). The thoracic-abdominal articulation shows some variation between species in the shape of the metathoracic furca. In some species the lamina of the second furcal arm is broader than in others.

LEGS. Little variation was found in the species examined. In *Pentina* there is

only one pair of hind tibial spurs. In many species the apex of the tibial spurs was heavily sclerotized, forming a sharp point. In the *angulata*-group of *Banisia*, the tibia is swollen proximally and articulates laterally with the femora (see Pl. 44, fig. 330). The number of tarsal spines was variable. Generally rows of spines were present along each tarsal segment but in some species these are reduced to three or four spines at the distal end of the segment. No detailed study of the tarsal claws was made but only a single pair was found in all the species examined (contrast *Cecidothyris parobifera* Whalley where the claws are double, Whalley, 1971a : 181).

WINGS. Relatively little variation from the basic venation (Whalley, 1971a : 10) occurs. Stalking of R_2 and R_3 was found in some species and R_3 and R_4 in others. One of the most characteristic features of the genera is the distance between R_4 and R_5 in the forewing; R_3 and R_4 arise close together and run almost parallel to the other margin while there is more than twice the distance between the origins of R_4 and R_5 on the cell than between R_3 and R_4 . The presence of the base of the second anal vein in the forewing varied. In some species, $1A$ and $2A$ forms a loop at the base of the wing with a single vein, $1A + 2A$, running to the wing margin. Frequently the basal part of $2A$ is reduced and appears as a short lateral vein on $1A$; and in some species there was no trace of $2A$. The only other variation in forewing venation was in *Sc* which frequently dipped towards R_1 near the margin of the forewing in most specimens and in some specimens of *Novitina variegata* and *N. nigripuncta*, *Sc* fused with R_1 for a part of its length. The hindwing venation varies mainly in the position of $Sc + R_1$ and Rs , generally these veins run close together, in a few species they anastomose for part of their length but in one species, *Banisia angulata*, $Sc + R_1$ and Rs anastomose and run to the margin as a single vein. In the male the forewing has a small sclerotized hook from the underside of the costal margin; this is used to hold the frenulum. The female lacks this but has tufts of scales performing the same function. The frenulum is single in the male, double or triple in the female. Many species have tufts of modified scales on the wing or patches of scent-scales. In some of the species-groups in *Striglina* these have been modified into large tufts in a fold in the anal area of the hindwing but in the *castaneata*-group these tufts are modified, pointing backwards from the posterior margin of the hindwing. In three species these tufts are inserted into a pouch in the abdomen. An account of these scale pencils and their possible mechanism is given by Whalley (1974a). Typically the wing colours are rather sombre browns with reticulate patterns but there are some brightly coloured exceptions. Because of the colour and patterns found in the various species, often apparently resembling dead leaves, the patterns are regarded as procryptic. There are at present no field observations on the species in the subfamily which either support or deny this impression, which must be regarded as hypothetical at present.

ABDOMEN. In the abdominal-thoracic articulation there was little variation between species. The dorsal apodeme is formed by a sclerotized fold in the tergite. In some species this fold nearly closes, almost forming a hollow tube, but the fold origin of the structure can clearly be seen. The first tergite is generally more heavily sclerotized than the remaining abdominal tergites. Ventrally, the second sternite is more heavily sclerotized in some species, some of them having a small sclerotized

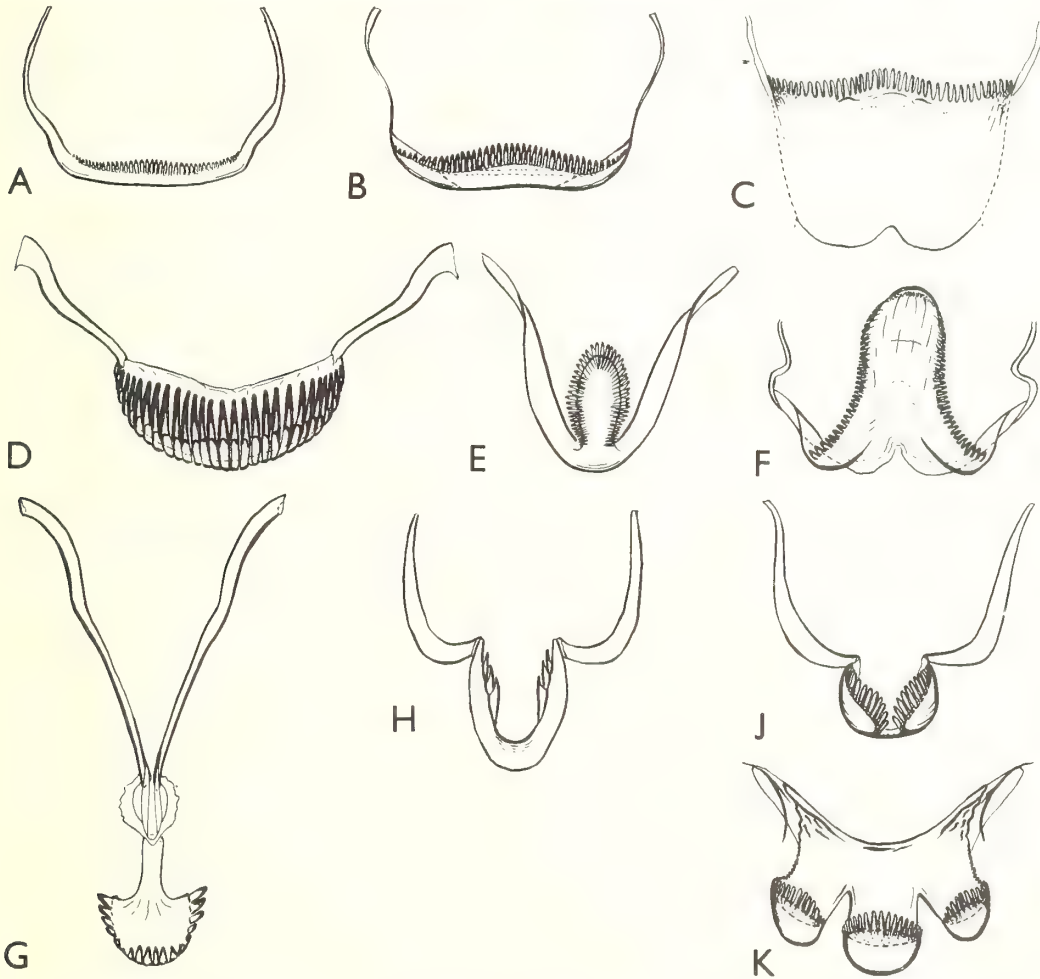
process on the anterior edge of this sclerite. This sternite, and frequently the third, are often enlarged, being posteriorly extended by a fold. This area is usually heavily scaled but the significance of these folds is not known. In many species of *Striglina* there is an anterior projection on either side of the sternite in the form of a slender laminar process. These are very lightly sclerotized and only visible after staining.

Some modifications occur in the sternite of the last abdominal segment of the male and modifications associated with the ostium in the female are common. In the *castaneata*-group of *Striglina*, pouches are present in the abdomen into which a scale pencil, arising from the hindwing, projects. There are no tympanic organs in any species in the subfamily.

GENITALIA. In these structures the species in the subfamily exhibit some of the most extreme modifications found in the whole family Thyrididae. The valves in some species (e.g. in *Striglina*) are reduced to narrow strap-like structures. In this connection it is interesting that in *S. mediofascia* where the valves are greatly reduced, the basal processes of the valves are greatly enlarged and appear to take the place of the reduced valve (Pl. 23, fig. 211). In a similar manner in the support for the aedeagus in the male has been modified. Generally a sclerotized area arises in the membrane round the aedeagus; this forms the juxta. In most species this is attached to the base of the valve by a membrane. In many species of Striglininae the juxta is lost, its place is taken by a modification of the sacculus at the base of the valve which appears to perform the same function as the juxta. This structure is termed here a pseudojuxta or sacculus process. In *Striglina divisata* the transtilla is sclerotized and from it two sclerotized plates, lateral to the arms of the juxta, are firmly attached to the transtilla. They appear to function as part of a juxta, but this normally arises as a sclerotization in the membrane around the aedeagus and not attached to the transtilla. Undoubtedly a study of the development of the genitalia and the relationship of the various parts would help to throw some light on these doubtfully homologous structures. In the absence of such evidence it is difficult to estimate the significance of the presence or absence of these structures in different species. This is rendered more difficult by the lack of any evidence of the functions of some of these structures. This latter is certainly true of the peculiar modifications of the gnathus of Striglininae species where the peg-like gnathus is one of the characters used to define the group. Modified forms of this, where some teeth are present on the gnathus, are found in species of *Telchines*.

There is considerable variation in the shape of the gnathus in species of *Striglina* and a series can be derived showing a possible line of evolutionary development. Text-fig. 1 shows this sequence. The most widespread forms (A-D) have a looped gnathus with a row of teeth along it. This can be modified in various ways (E-J) and finally in one species-group the extreme triple arrangement (K) is found. In a similar way the shape of the uncus differs in different species and a progressive series of these changes can be shown to be derived from a related shape. Whether the species with extreme modifications of the various parts went through a less modified state in their evolution similar to the present condition in their sister-groups cannot be ascertained. Nevertheless, a well ordered sequence can be produced of species

showing a distinct pattern of development. The modifications needed to alter the broad lateral arms of *scitaria* (Pl. 17, figs 169–173) to produce a structure shown in Pl. 18, fig. 178 (*navigatorum*) or the more extreme condition of Pl. 19, fig. 181 (*advena*) even to Pl. 21, fig. 96 (*cymba*) are relatively small (structurally) and intermediates between most of these extreme conditions can be seen in existing species.



FIGS 1A–K. Outline of gnathus of *Striglina* species. A, *scitaria*; B, *burgesi*; C, *opulenta*; D, *atrata*; E, *cymba*; F, *cuticula*; G, *ferula*; H, *suzukii*; J, *divisata*; K, *dactylica*.

Similarly, in the genus *Misalina*, various modifications of the uncus can all be derived from a common plan. It is impossible to say on the evidence available whether the relatively more simple structures should be considered as the primitive state or whether they are the more specialized condition by reduction from the complex condition. Judging from species in this subfamily and from related ones,

there are far more species with wide distribution which have less complex form of genitalia. All intermediate conditions in development of the valves are found from the extreme reductions in species of *Striglina* to a well developed one in species of *Telchines*. Partial reduction of the length of the valve is found in species of *Speculina*. Where the valves are well developed various processes may be found on them or on their margins. Some modifications of the valve margins are found in *Novitina* and in some species of *Banisia*. The sacculus may form a fairly distinct unit and be separated at its apex from the valve itself (*Sonagara*). Generally the aedeagus is a simple structure usually with cornuti, but various modifications occur of a lateral process (Pl. 21, figs 195-199). In *B. flammans* a 'gland' occurs on the anterior margin of the valve with a duct leading to the margin. This has not been found in any other species and its significance is unknown. The socii, which are generally well developed, vary from hairy pads to long tubular outgrowths with spines. Neither the significance nor the function of these structures is known. Similarly, in many species, particularly in *Striglina* and *Misalina* the subscaphium is variously modified, often with long hairs.

The female generally has a strongly sclerotized plate round the ostium. In some species this includes processes which extend backwards (Pl. 45, fig. 333). The shape of the ostium and the plates round it differ between species and have been used as diagnostic characters to separate them. The ductus bursae is frequently coiled and there is often an accessory sac arising from the duct prior to it entering the bursa, apart from a well developed accessory sac on the bursa itself. The bursa in most species in the subfamily is spined and usually has a signum; in many cases this is of a characteristic shape. In *Banisia* the bursa is very large in most species and is made up of a large number of small plates.

DEFINITION OF THE THYRIDIDAE

Proboscis, when present, without scales. Chaetosema absent. Maxillary palps minute, not visible through scale cover. Labial palps usually three-segmented. Forewing with twelve veins, without aereole. Hindwing with two anal veins. Abdomen without tympanal organ. Wings frequently yellowish brown, usually with strongly reticulate pattern. Hind tibia with at least one pair of spurs. Hindwing with $Sc + R_1$ and R_s approaching closely, sometimes joining for part of length.

Details of differences between the Thyrididae and Pyralidae have previously been listed (Whalley, 1971a). No further evidence of their relationship with other families has been forthcoming and the family is retained in the Pyraloidea.

The Thyrididae are a widespread tropical and subtropical family but are poorly represented in the temperate regions. The family is usually represented by very few specimens in collections made in the field by contrast with other lepidopterous families. Duckworth (1971: 6) comments on the relative rareness of species of *Setiostoma* Zeller (Stenomidae) in collections of Lepidoptera made in South America; in this they are similar to species of Thyrididae. This apparent rareness of some species in the field gives an impression of populations far below the normal level of lepidopterous ones and the possibility of different behaviour has to be considered.

This would render them less likely to be caught by the normal methods of collecting Lepidoptera. Many collectors have commented (personal communication) that the Thyrididae, with a few notable exceptions, were only seen in small numbers in the field although they have found no evidence of different behaviour of the ones they have seen. The whole question of the habits and size of the populations of Thyrididae in the field is one which would provide an interesting study. Is the rareness in the field collection a true representation of a small population? Since many species are apparently forest dwellers, is this one of the significant factors in limiting the size of the population? The Thyrididae are separated into four subfamilies (Whalley, 1971a). These are the Argyrotypinae, Striglininae, Pachythyrinae and Siculinae. Some of the morphological differences between these families are large and the impression is given that the Thyrididae are not a monophyletic group. It is possible that the subfamilies are related only in having a few common characters and that they evolved independently, thus their position in relation to one another is merely the result of current taxonomic practice. Unfortunately so little is known about the larvae or the life-history of species in the family that few comparisons can be made. Their larvae are described as 'Pyrroid' and they are generally considered as a family related to the Pyralidae.

STRIGLININAE Guenée

Striglinidae Guenée, 1877 : 287. Type-genus: *Striglina* Guenée.

Striglinae Guenée; Pagenstecher, 1892 : 5. [Incorrect subsequent spelling.]

Striglinae Guenée; Whalley, 1964 : 115.

Striglinae Guenée; Whalley, 1967 : 2.

Striglinae Guenée; Whalley, 1971 : 15.

Labial palps 3-segmented. Maxillary palps minute. Eyes with or without interfacetal hairs. Antennae pectinate, ciliate or minutely ciliate. Fore tibia with epiphysis. Hind tibia usually with two pairs of spurs. Tarsi each with rows of spines or groups of spines. Hindwing with $Sc + R_1$ and R_s often fused for part of length. Frenulum present, single bristle in male, two or three in female. Male genitalia highly modified, uncus often trifold or modified. Socii usually well developed. Valves often reduced or modified. Females usually with well developed and sclerotized ostial plate. Signum usually well developed, spiny, rarely absent.

The moths in this subfamily are generally thickly scaled, often with large scale tufts on the legs. They have complicated genitalia, spiny legs and often some modifications of the venation in the wing. The wing pattern is generally some form of reticulation, generally of a brown or yellowish brown colour. There are certain groupings within the subfamily which seem very homogeneous but inevitably there are some genera which do not exactly 'fit' the definition, but are placed here until more is known of the rest of the family. This is an inevitable consequence of attempts to define grouping at a higher level, it is also true at the generic and even species level but is progressively less difficult at the lower ends of the proposed hierarchy. In assessing the relationships of the species and genera in the subfamily a standard system was adopted. Each specimen was examined in detail and all the information, whether of obvious diagnostic value or apparently merely of morphological interest, was entered on punched-cards. Over a hundred characters

per specimen were listed. Subsequent comparison and the association of specimens into species and species into genera was based on analysis of these punched-cards. This enabled the relatively objective assessment of associations in the first instance and also brought to light morphological characters which were useful indicators for differential diagnostic characters. The use of punched-cards for this data enabled a more flexible look at the groupings which were subsequently made and comparisons between them.

BIOLOGY

Very few species have been bred in the subfamily and no detailed descriptions of larvae are available. The list given below of families of plants on which species have been reared is derived from published records and data on specimens examined.

Leguminosae	<i>Banisia, Striglina</i>
Sapotaceae	<i>Banisia, Mathoris</i>
Eleocarpaceae	<i>Striglina</i>
Melastomataceae	<i>Striglina</i>
Sterculaceae	<i>Striglina</i>
Myrtaceae	<i>Misalina</i>
Ebenaceae	<i>Striglina</i>
Fagaceae	<i>Striglina</i>

Out of the nineteen genera, only four are represented here and only in *Striglina* are more than one or two food plants recorded. Recently M. J. B. Heppner (pers. comm.) sent me specimens of *Banisia furva fracta* (p. 165) reared from *Achras zapota* L. (Sapotaceae) in Florida. This tree is also attacked by the larvae of *B. myrsusalis*.

SPECIES DESCRIBED OR PLACED IN THE STRIGLININAE
AND TRANSFERRED TO OTHER GROUPS

Rhodoneura bivittata bivittata (Moore), **comb. n.** (Siculinae). This taxon, originally described as *Striglina bivittata* Moore, 1883 : 27, is considered to be conspecific with *Rhodoneura bivittata platyntus* Meyrick, 1894 : 479, **stat. n.** previously a monotypic species; the exact generic placing is, however, uncertain. The female holotypes of these two taxa are in the BMNH and have been examined.

Rhodoneura multiguttata (Hampson), **comb. n.** (Siculinae). This was originally described as *Mathoris multiguttata* Hampson, 1906 : 114; the male holotype (in the MNHU) has not been examined, but the transfer is made on the basis of a coloured figure.

Rhodoneura seyrigi (Viette) (Siculinae). This species, originally described as *Striglina seyrigi* Viette, 1957 : 172, was recently transferred to *Rhodoneura* Guenée by Whalley (1967 : 20).

Striglina (?) *schedeli* Gaede, 1917 : 202, **syn. n.** of *Camptochilus divergens* Warren,

1898b : 222 (Siculinae). The female holotype of *schedeli* (in the MNHU) and male holotype of *divergens* (in the BMNH) are both from Japan and have been examined.

Tricentra quadrigata (Felder & Rogenhofer) (Geometridae). This species, originally described as *Acidalia quadrigata* Felder & Rogenhofer, 1864-67 : pl. 128, fig. 9, was included in the Thyrididae (as a species of *Mathoris* Guenée) by Dalla Torre (1914 : 9) and is still sometimes treated thus in the literature, but it was transferred to the Geometridae by Prout (1934 : 29).

CHECKLIST OF THE STRIGLININAE

STRIGLINA Guenée*DARISTANE* Walker*PLAGIOSELLA* Hampson*PLAGIOSELLULA* Strand**scitaria**-group*scitaria scitaria* (Walker)*pyriniata* Walker*reticulata* Walker*lineola* Guenée*scitaria thermesiodes* (Snellen)*scitaria particula* subsp. n.*scitaria restricta* subsp. n.*scitaria iamba* subsp. n.*cinnamomea* (Rothschild)*reticulata* Walker*strigosa* (Moore)*rubicunda* sp. n.*navigatorum navigatorum* (Felder & Rogenhofer)*vauvensis* Hampson **syn. n.***navigatorum superior* (Butler)*navigatorum inversa* Gaede*oecia* Tams **syn. n.***venilia* sp. n.*advena* sp. n.*opulenta opulenta* subsp. n.*opulenta elea* subsp. n.**asinina**-group*asinina* Warren*bivittata fuliginosa* Rothschild **syn. n.***atrata* sp. n.**tibiaria**-group*propatula* Whalley*tibiaria* (Walker)*castaneata castaneata* Hampson*castaneata synthes* West **stat. n.***conjuncta* Swinhoe**rufescens**-group*rufescens* Gaede*cymba* sp. n.*cuticula* sp. n.*sectura* sp. n.**clathrata**-group*clathrata clathrata* (Hampson)*clathrata amani* Whalley*clathrata declivita* Whalley*minutula* (Saalmuller)*aenea* Saalmuller*interrupta* Hampson*eguttalis* Gaede**burgesi**-group*meridiana* sp. n.*burgesi* Gaede*curvilinea* Warren*irresecta irresecta* subsp. n.*irresecta obscura* subsp. n.*fixseni* Alpheraky*nemorosa* sp. n.**venia**-group*venia* sp. n.*cancellata* (Christoph)*mediofascia* Swinhoe**scalata**-group*scalata* Warren*duplicifimbria duplicifimbria* Warren*duplicifimbria certa* subsp. n.*lilacina* Warren*suzukii* Matsumura*abella* sp. n.*dactylica dactylica* subsp. n.*dactylica blaesa* subsp. n.*divisata* Warren**rufivestris**-group*rufivestris rufivestris* (Hampson)*rufivestris sinewiti* subsp. n.*fidelia* sp. n.**strigifera**-group*rothi* Warren*augescere* Whalley*strigifera* Strand*ferula* Whalley*trepida* Whalley

TELCHINES gen. n.

- vialis* (Moore)
henrici (Snellen)
lepides sp. n.

SONAGARA Moore
strigipennis Moore**MISALINA** gen. n.**ochracea**-group

- ochracea* (Warren)
condensata (Warren)
pyromera Warren
dentifascia (Warren)
pseudoscia sp. n.
xanthoscia xanthoscia (Warren)
xanthoscia flavia subsp. n.
xanthoscia aurantia subsp. n.
ignefissa (Warren)
scintillans (Warren)
reversa reversa (Warren)
reversa alternata subsp. n.
metallifera (Warren)
anxia sp. n.
costirufata costirufata (Warren)
costirufata chelydra sp. n.

leprosa-group

- leprosa* (Warren)
floccosa (Warren)
suffusa (Leech)

pyrrhata-group

- pyrrhata* (Walker)
australina Guenée
loxomita Turner **syn. n.**
centiginosa (Lucas)
cypholomia Turner
stramentaria (Lucas)
citrinarius Gaede **syn. n.**
citrodes Turner **syn. n.**
acrocypha Turner **syn. n.**
innotata (Warren)
feruginea sp. n.
parata sp. n.
irias (Meyrick)

glareola-group

- glareola* (Felder & Rogenhofer)
ferocia sp. n.
decussata decussata (Moore)
decussata formosa subsp. n.
decussata popula subsp. n.
decussata derasata (Warren)
decussata straminea (Warren)
industa sp. n.
sordida (Pagenstecher)
gemmulosa sp. n.

ISCALINA gen. n.

- hyperbolica* (Rothschild)
rufocastanea Rothschild **syn. n.**
pallidirufa Hampson
mediosecta (Warren)

NOVITINA gen. n.

- variegata* (Warren)
nigripuncta (Warren)

RHODOGONIA Warren

- miniata* Warren
pyrostola Hampson
medara Schaus
subfusca Warren

PENTINA gen. n.

- xanthopera* (Hampson)
petulina sp. n.
ornata sp. n.
miracula sp. n.
grandaeva sp. n.
lucida Warren

MACROGONIA Herrich-Schäffer

- igniaria* Herrich-Schäffer
major Schaus

SPECULINA gen. n.

- mediaria mediaria* (Walker)
mediaria brunneata (Walker)

TANYODES Möschler

- rufitibia* (Felder & Rogenhofer)
ochracea Möschler

TRISTINA gen. n.

- jucunda* (Warren)
xanthina (Felder & Rogenhofer)
apiceflava Dognin **syn. n.**
eporedia sp. n.

MYSTINA gen. n.

- humeralis* (Whalley)
jaccanda (Whalley)
tincta (Whalley)
guttistigma (Whalley)

JAMBOINA gen. n.

- vindicta vindicta* (Whalley)
vindicta congoensis (Whalley)
vindicta ivoriensis (Whalley)
ramosa ramosa (Whalley)
ramosa orienta subsp. n.

HETEROSCHISTA Warren

- nigranalis* Warren
lenistrialis Hampson
monotonicata Strand

MATHORIS Guenée

- vocata* (Walker)
- roseola* Felder & Rogenhofer
- procurata* (Walker)
- crepuscularia* Guenée
- ignepicta* (Hampson)
- magica* Gaede

CANAEA Walker

- semitessellata* Walker
- similella* Whalley
- complicata* Whalley
- mercurata* Whalley
- ignotalis* (Röber)
- brandti* Whalley
- rusticata rusticata* Whalley
- rusticata aversata* Whalley
- rusticata pallidata* Whalley
- hyalospila hyalospila* (Lower)
- hyalospila fusca* Whalley
- hyalospila monsera* Whalley
- semitessellalis semitessellalis* (Walker)
- semitessellalis caledonia* subsp. n.
- plagiata plagiata* (Warren)
- plagiata albicollaris* (Warren)
- plagiata neoalbicollaris* Whalley
- plagiata propinquita* Whalley

BANISIA Walker

- DURDARA* Moore
- VERNIFILIA* Schultze
- TROPHOESSA* Turner
- NEOBANISIA* Whalley **syn. n.**

myrsusalis-group

- argutula* sp. n.
- anthina anthina* (Tams)
- anthina pervaga* subsp. n.
- anthina bella* subsp. n.
- insignifica* (Rothschild)
- lobata lobata* (Moore)
- lobata caesia* subsp. n.
- lobata ceylonensis* subsp. n.
- placida* sp. n.
- minuta* (Whalley)
- idalialis* (Walker)
- myrsusalis myrsusalis* (Walker)
- radiata* Pagenstecher **syn. n.**
- myrsusalis cinereola* (Felder & Rogenhofer)
- scallula* Guenée
- immaculata* Möschler
- myrsusalis elaralis* (Walker)
- pyraliata* Walker
- zonula* Swinhoe

✓ *myrsusalis sumatrensis* subsp. n.

- ✓ *tibiale* (Fryer)
- ✓ *apicale* (Fryer)
- ✓ *aldabrana aldabrana* (Fryer)
- ✓ *aldabrana cana* Whalley
- ✓ *hyaena* (Warren)
- ✓ *plagifera* (Butler)
- ✓ *cognata* sp. n.

antiopa-group

- furva furva* (Warren)
- flavalis* Dognin
- ✓ *furva devincta* subsp. n.
- furva epasta* subsp. n.
- ✓ *furva fracta* subsp. n.
- ✓ *furva illicita* subsp. n.
- ✓ *fuliginea* (Whalley)
- ✓ *antiopa* (Viette)
- ✓ *joccatia* (Whalley)
- ✓ *clathrula* (Guenée)
- ✓ *inoptata* (Whalley)
- ✓ *zamia* (Whalley)
- ✓ *venustula* (Warren)

fenestrifera-group

- ✓ *myrtaea* (Drury)
- fenestrata* Moore
- ✓ *fenestrifera fenestrifera* Walker
- fenestrina* Felder & Rogenhofer
- fenestrata* Guenée
- hyalipuncta* Schultze
- ✓ *fenestrifera triferina* subsp. n.
- ✓ *fenestrifera solomonensis* subsp. n.
- ✓ *fenestrifera daphoena* (Turner)
- ✓ *fenestrifera omissina* subsp. n.
- ✓ *intonsa* sp. n.
- ✓ *barbatula* sp. n.
- ✓ *ovifera ovifera* (Butler)
- ✓ *ovifera diversicolor* (Warren)
- ✓ *ovifera praevaria* subsp. n.

angulata-group

- ✓ *angulata* (Warren)
- ✓ *composita* (Warren)

strigigrapha-group

- ✓ *strigigrapha* (Hampson)
- ✓ *orcina* sp. n.
- ✓ *extravagans* (Warren)
- ✓ *messoria* sp. n.
- ✓ *lithophora* (Tams)
- ✓ *flavidiscalis* (Hampson)
- ✓ *cyclothyris* Hampson

uncertain affinities

flammans (Hampson)**MONODECUS** gen. n.

- admirandus admirandus* subsp. n.
- admirandus capillatus* subsp. n.

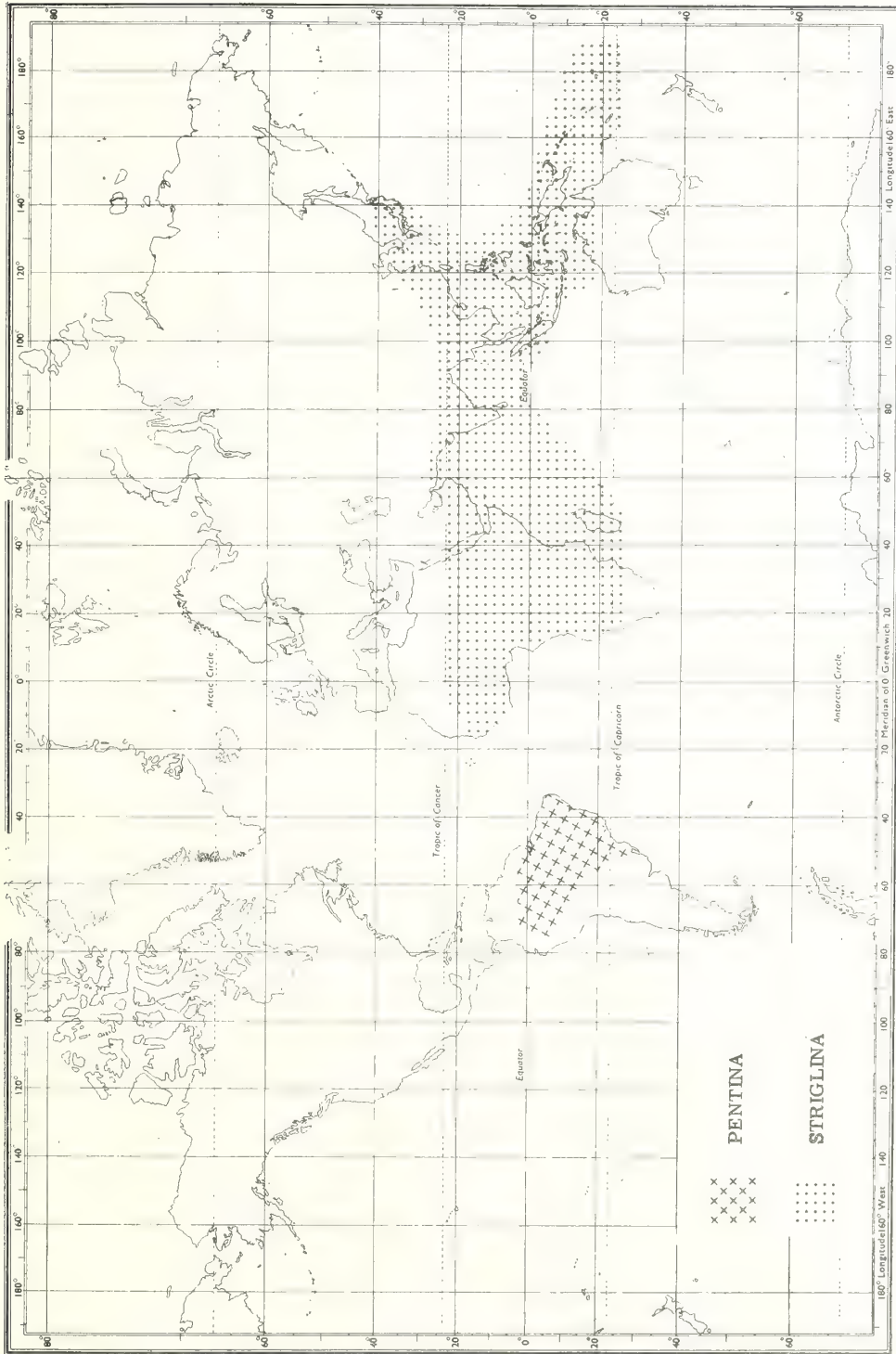
ZOOGEOGRAPHY OF THE STRIGLININAE

There are three main faunal groupings in the Striglininae. These are New World, African (including Madagascar) and Indo-Pacific (including Australia). Over most of the Indo-Pacific region the species and generic groupings show a close morphological similarity with the existence of many sister-groups in the sense of Hennig (1966). The species in many cases are clearly part of a superspecies complex, all of which can be derived from a close common ancestor. The relative homogeneity of the species in the fauna and the close affinities as indicated by the morphological similarities contrasts sharply with the New World species of Striglininae where the generic and specific differences are more distinct. Certainly the New World fauna is not closely related to the Indo-Pacific one and cannot easily be derived from extant species. Similarly the African fauna is very discrete but there are some morphological similarities between it and the Indo-Pacific one. Two genera (*Mathoris*, *Banisia*) which have species in the New and Old World show indications of accidental introductions in relatively recent times (Whalley, 1971a : 58).

The Striglininae are mainly tropical or subtropical in distribution, reaching into the more temperate regions only in east Asia. The distribution of the species in the Indo-Pacific region reflects current ideas on the changes in land masses which are thought to have occurred during the Pleistocene (Zeuner, 1941; Holloway, 1973). The effect of the raising and lowering of the sea level with the possibility for expansion, contraction and fragmentation of the fauna into island groups could have provided a mechanism for speciation in the Striglininae.

There is a tendency in the Striglininae, as in many insects, for the formation of species 'clouds'. These are groups of morphologically similar species derived relatively recently from a common ancestor which are isolated in some way, perhaps geographically, on separate islands. This phenomenon is well illustrated by the *navigatorum*-group of species in *Striglina*. This group includes three very similar species with many common morphological features which occur over roughly the same area of the Papuan subregion but have each developed small differences and are presumably reproductively isolated from one another. Unfortunately no data are available on the biology of these species, for example the importance and functions of the groups of scent scales which are abundant on them and may well play an important part in the isolating mechanism.

In some areas morphologically similar, and presumably related, species apparently occur together in the same area. No ecological data are available on these species; they may well occupy the same area but be isolated by some other mechanism. However, in these cases there is some evidence, as in other moths (e.g. *Endotricha* Zeller, Pyralidae; Whalley, 1963), of two or more invasions of the area. One species spreads to a new area, perhaps at a time of lowered sea level, but is subsequently isolated from the parent population by a rise in sea level. Over the years these two populations become sufficiently differentiated that when changes occur again and the parent population reinvades the new area (or the derived population spreads back) no interbreeding takes place. This gives rise to two or more very similar species occurring together in one area. When it is considered that these tropical species may have three or more generations a year the potential for change



MAP I.

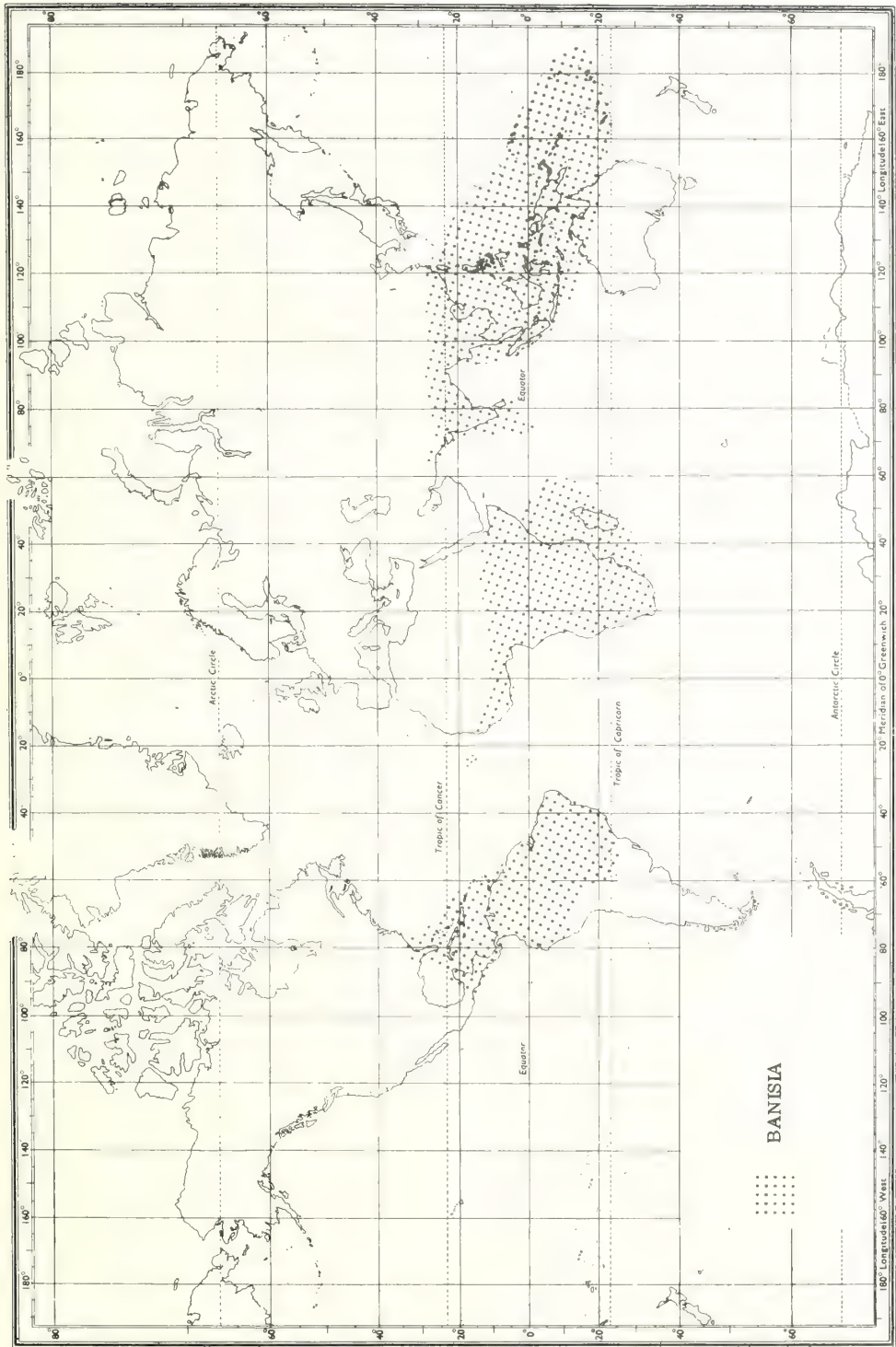
in a mere thirty-four years, with over 100 generations of the insect, must be tremendous. For example, *S. burgesi* is a widespread species from China and Thailand through south-east Asia to Australia. A related species, *S. curvilinea*, morphologically very similar, occurs only in the Solomon Islands alongside *S. burgesi*. This latter species has been collected in north Australia but is not common. Alongside it here is the common species *S. meridiana* which is, in effect, the Australian representative of the widespread *burgesi*-complex. The impression gained from the distribution of *burgesi* and the morphological similarity of the related species suggest that both *curvilinea* and *meridiana* are derived directly from a previous invasion of the area by *burgesi* or a close ancestor. Now that *burgesi* appears to have spread into these areas again, the progeny of the first invasion are sufficiently differentiated not to interbreed.

B. fenestriifera, widespread from India to northern Australia, is probably another species where a similar type of speciation has occurred with two or more invasions of an area where several closely allied species co-exist today. These include *B. intonsa*, very similar to *fenestriifera* but restricted to Malaysia, and *B. barbatula* which is found only in Sulawesi. In the latter case, specimens of *barbatula* and *fenestriifera* were collected from the same area but without data on the ecology of these two species it is not possible to assess the significance of their apparent overlap in distribution.

The formation of local populations on islands or on the mountains of New Guinea is a common phenomenon in the Striglininae. *B. ovifera* which is widespread throughout Malaysia Indonesia, Solomon Islands and New Guinea has several subspecies on different islands but there are even more geographic groupings where, although small morphological changes have occurred, these have not been large enough to be considered as diagnostic of new subspecies. Usually this is because there is some overlap in the occurrence of the characters in the material studied and a possible cline is involved. Further specimens and more data will be necessary to evaluate the significance of these observations.

The following table shows the number of species in different areas in the groupings to be discussed and the generic diversity of these different areas. The areas are based to some extent on the taxonomic homogeneity of the Thyridid fauna of the areas as well as conforming in some cases to the better known zoogeographic areas.

Area	Number of species and subspecies	Number of genera
Palaearctic	8	3
Nearctic	2	1
Neotropical	25	8
Ethiopian (+Madagascan)	31	3
Indo-Malay, Java, Sumatra, Borneo, Sulawesi, Formosa, Philippines	69	9
Australia—New Guinea	54	6
West Pacific islands, New Caledonia, Fiji, Samoa, Solomons, Bismarcks, New Hebrides, Mariana Is., Ogasawara Is. [Bonin Is.]	39	5
Tahiti	0	
Hawaii	0	
New Zealand	0	



MAP 2.

PALAEARCTIC

Two of the genera in this area are represented by one species in each (*Telchines vialis* and *Misalina suffusa*). These species are from central and southern China and represent the most northerly extension of these two genera which are primarily Indo-Australasian. The third genus, *Striglina*, has one species (*suzukii*) in Japan while another (*burgesi*) is a very widespread and common species from Australia throughout SE. Asia to China. Of the remaining species, *fixseni*, *venia* and *cancellata* can be considered, together with *suzukii*, as true Palaearctic species while *mediofascia*, like *burgesi*, is a southern element which has spread into the region.

NEARCTIC

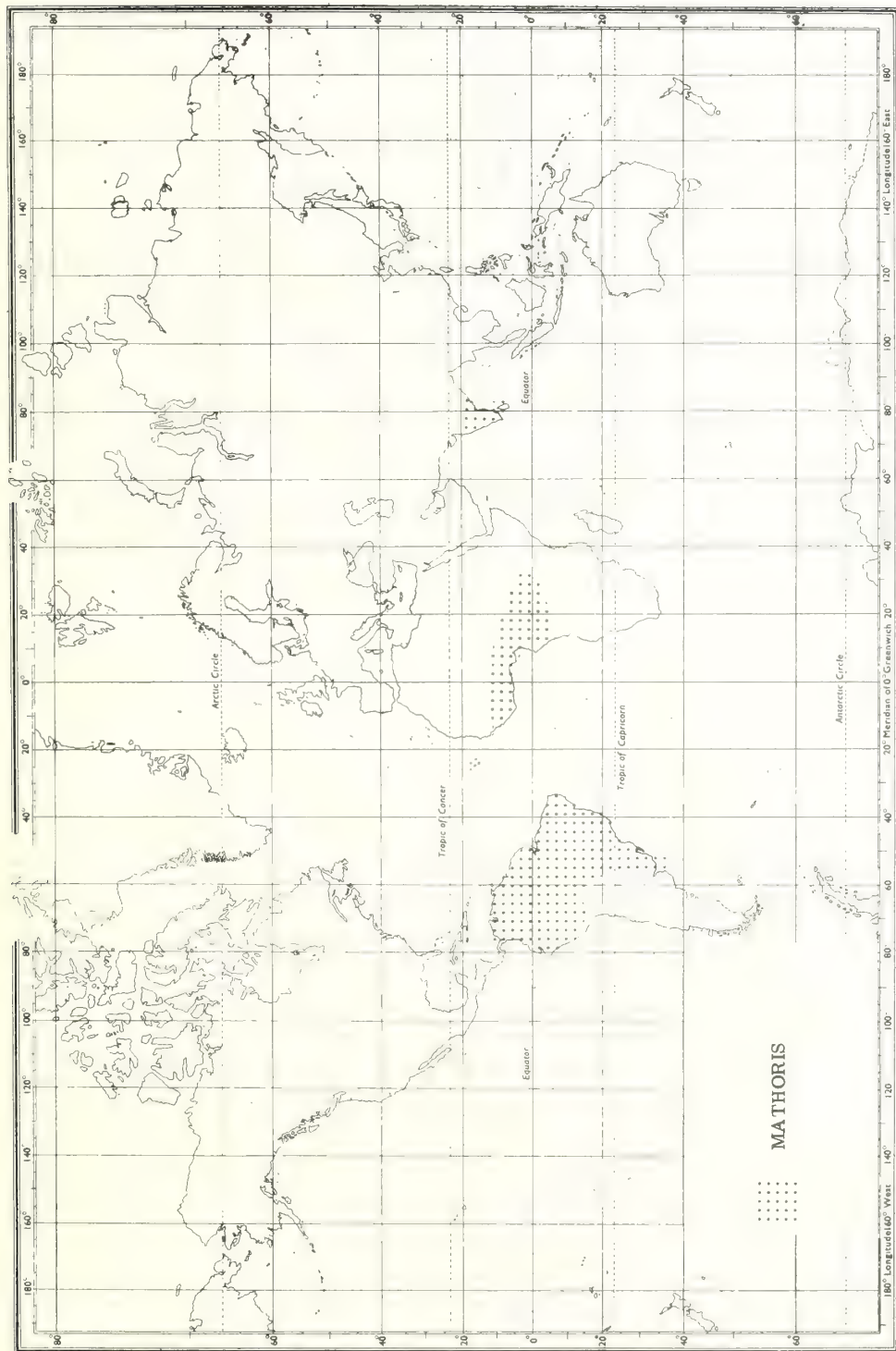
The two species in N. America include an endemic subspecies of a widely distributed Central and South American species. This subspecies (*B. furva fracta*) has almost certainly spread from the south and is at present known only from Florida. The other species is equally widespread but here the subspecies in the United States is not the widespread South American subspecies but one from the West Indies. This subspecies is also known only from Florida in the U.S.A. However, its identity is based on only a single male and it is possible that the more widespread subspecies (*B. myrsusalis cinereola*) may occur in the United States as well as *B. myrsusalis myrsusalis*.

NEOTROPICAL

Most of the species are widely distributed throughout South America north of 40° south. Like most Thyridids, specimens are not common in collections of Lepidoptera. Duckworth (1971:6) comments on the rarity of some groups of Lepidoptera in collections compared with others which are taken in large numbers. He suggested that this is due to the local nature of the species, occurring relatively closely to its food plant and not travelling far, even to be attracted by modern light-traps. Nothing is known of their ecology or their life-history and even locality data are limited. Most of the specimens examined were collected in Brazil but generally the distribution data reflect the visits of collectors even more than in some of the other areas discussed. Table 1 gives a summary of the distribution of the species in South America.

ETHIOPIAN AND MADAGASCAN

This has been dealt with in some detail previously (Whalley, 1967; 1971a) but the relationships of the genera with those outside Africa were not studied in detail. Two genera, *Mathoris* and *Banisia*, have species in Africa, India and America and although species of *Banisia* are probably of Oriental origin, the African and American species show close affinities. *B. furva*, a widespread American species, has some morphological similarities with African species and it is difficult to reconcile some of the more detailed resemblances with convergence and not to ascribe them to a common ancestry. In *B. myrsusalis*, a species occurring in India, Africa and South



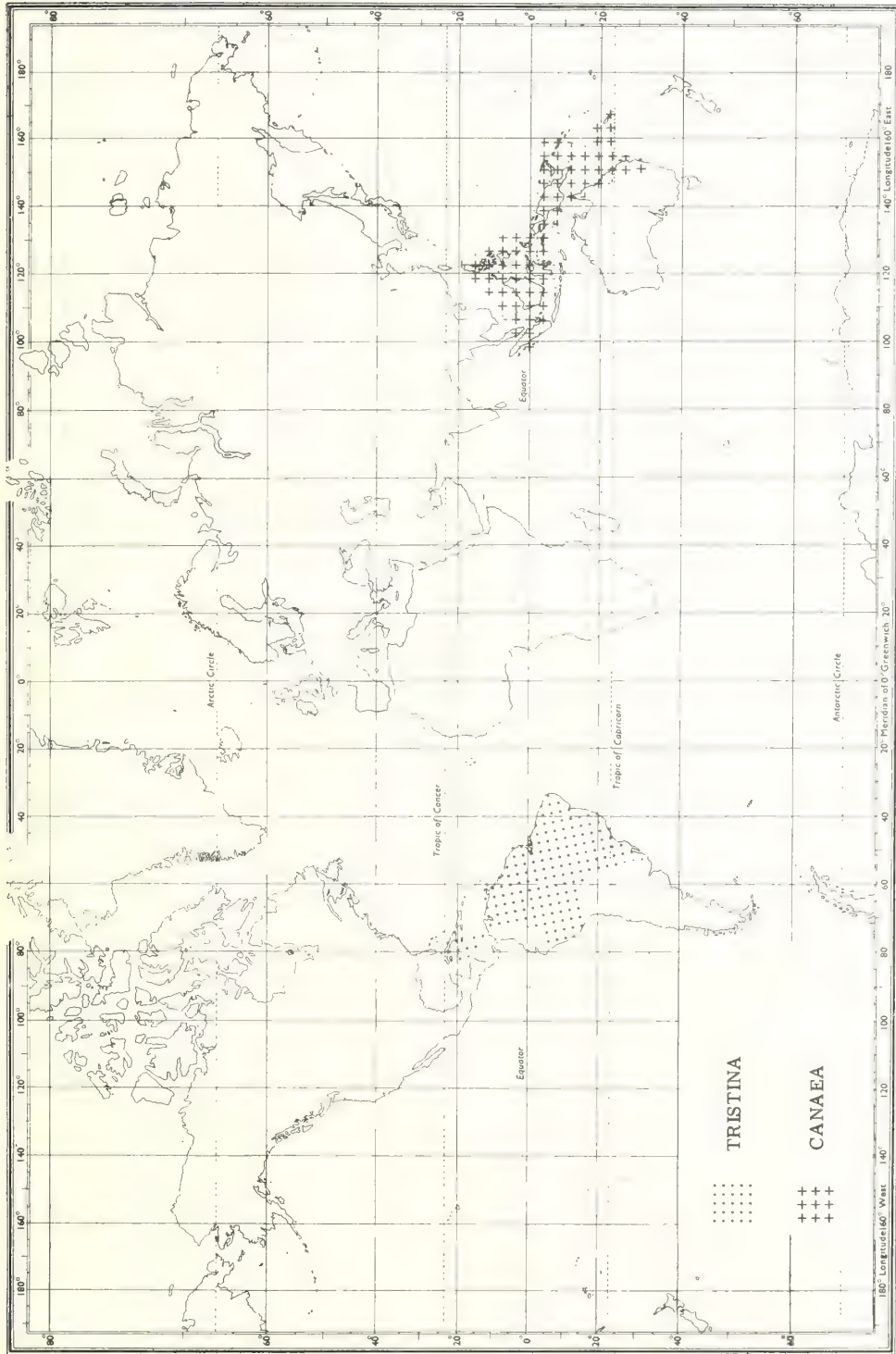
MAP 3.

Table 1.

Distribution of New World Species of Striglininae

SPECIES	Brazil	French Guiana	Surinam	Guyana	Venezuela	Colombia	Ecuador	Peru	Bolivia	Paraguay	Uruguay	Argentina	Chile	Cuba	Dominican Republic	Puerto Rico	Dominica	Costa Rica	Honduras	Mexico	United States	
<i>R. miniata</i>	x	x		x				x														
<i>P. xanthopera</i>	x																					
<i>P. petulina</i>	x																					
<i>P. ornata</i>	x											x										
<i>P. miracula</i>	x																					
<i>P. grandaeva</i>								x														
<i>P. lucida</i>	x							x														
<i>M. igniaria</i>	x	x					x	x										x				
<i>S. madiaria madiaria</i>	x							x														
<i>S. m. brunneata</i>		x		x																		
<i>T. rufitibia</i>	x	x	x	x				x														
<i>T. juncunda</i>	x	x	x					x						x								
<i>T. xanthina</i>	x	x		x																		
<i>T. epovedia</i>		x																				
<i>M. vocata</i>	x	x																				
<i>M. procurata</i>	x			x	x			x														
<i>B. argutula</i>		x	x	x																		
<i>B. myrsusalis cinereola</i>	x	x	x		x		x		x	x								x	x	x		
<i>B. m. myrsusalis</i>														x	x	x	x					x
<i>B. furva furva</i>	x	x	x			x		x														
<i>B. f. devincta</i>	x																					
<i>B. f. epasta</i>																			x			
<i>B. f. illicita</i>																	x					
<i>B. f. fracta</i>																						x
<i>B. extravagans</i>	x	x																				
<i>B. flammans</i>	x							x	x													

America (although as subspecies), the differences between specimens on different continents are very slight and I still consider this a relatively recent, and probably artificially introduced, species over much of its range (Whalley, 1971a : 58). It feeds on *Manilkara zapota* (L.), Sapodillo (Sapotaceae), which has been widely transported and planted (it is a source of chewing-gum) and it is likely that *B.*



MAP 4

myrsusalis was transported with its host plant. This suggests that the species was South American in origin (where *M. zapota* is endemic) and that it has spread widely from there. However, there is little speciation in South America in the *myrsusalis*-group compared with that which occurred in the Oriental Region where several closely allied species have evolved, undoubtedly with close common ancestors to *B. myrsusalis*. This species is also known to feed on other plants in the Sapotaceae in India and it is possible that it spread to the New World from the Orient or Africa rather than the other way around. The species in the Seychelles Islands and Aldabra include endemic species and subspecies in the *myrsusalis*-group (Whalley, 1971a).

INDO-MALAY, JAVA, SUMATRA, BORNEO, SULAWESI, FORMOSA, PHILIPPINES.

This group has a number of species widespread over the whole area while others are apparently restricted to small parts of one island. The group is dealt with under its separate units for comparisons of the fauna. The number of species and subspecies in each area is given after the heading.

Indian subcontinent (north and south), including India, Pakistan, Bangladesh, Assam, Sikkim, Nepal. 21 species and subspecies. Seven of these are endemics while many species are also found in Ceylon and Burma. One species is widespread, reaching to northern Australia. Most of the others are found throughout south-east Asia.

Sri Lanka. 5 species and subspecies.

All these species currently occur on the mainland of India; no endemics are known from the island.

Thailand. 1 species.

Only the widespread *S. burgesi* is at present known from Thailand. This species is widespread over south-east Asia. Further collecting in Thailand, particularly in forested areas will almost certainly reveal more species.

Burma. 6 species and subspecies.

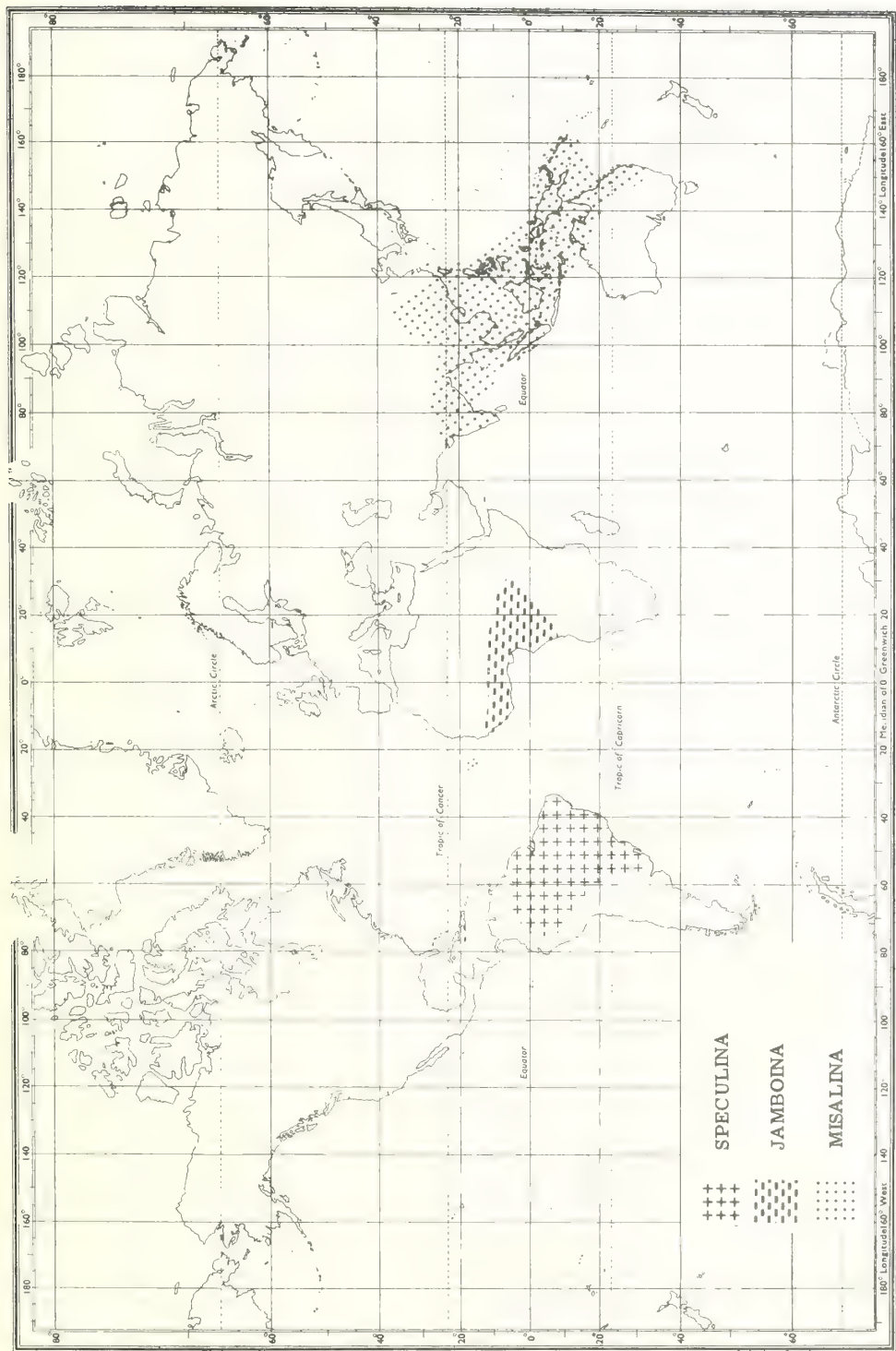
Most of the Burmese species have Indian affinities and only the widespread *S. burgesi* is present from the Papuan element.

Malaya. 26 species and subspecies.

Not surprisingly the Papuan element is small in the fauna but four of the Malayan species are also found in New Guinea. There are four endemic species and nine species found in Malaya which also occur in Borneo. Malaya is also the locality for species which evolved one of the more remarkable scent-scale mechanisms in the Lepidoptera (p. 53).

Sumatra. 16 species and subspecies.

There are three endemic species and two endemic subspecies. Four of the other species have Indian-Burma-Malaya distributions, two more are widespread over south-east Asia and two are species from the Papuan subregion. There are two species which at present are known only from Sumatra and Malaya while one subspecies of a widely distributed species (*B. fenestrifera*) has a Malay-Sumatra-Borneo-Sulawesi distribution.



MAP 5

Java. 5 species and subspecies.

Very little material was available for examination. It is difficult to know if this is a result of under collecting or a depauperated fauna. From the evidence available it seems that the majority of species of the subfamily are forest dwelling species and the availability of forest areas may be a limiting factor. Except for one widespread Papuan-south-east Asian species, the remaining ones are all Indo-Malay species.

Borneo (including Sabah and Sarawak). 20 species and subspecies. Four of the species are endemic, one of these was collected at over 900 m on both Mt Dulit (Sarawak) and Mt Kinabalu (Sabah). Apart from the widespread Indo-Papuan species, most of the Borneo species also occur in Malaya as well as other islands in the area. One species is known at present only from north India and Borneo but this probably represents lack of collecting rather than a disjunct distribution. Two of the species are derived from the Papuan subregion but do not get further north than Borneo. Only four species, all widely distributed, occur on both Borneo and Sulawesi.

Sulawesi (Celebes). 13 species and subspecies.

These include four endemic species and one endemic subspecies. The species which are found in Sulawesi and New Guinea are all widespread ones, as are the only two species which are common to Sulawesi and the Philippines.

Bali. 6 species and subspecies.

Four of these are widespread species from the Papuan fauna. One subspecies is found only in Sulawesi and Bali while another is a subspecies of a widespread Indo-Malaysian species, which is apparently at the extremes of its range and has formed a distinct subspecies on Bali.

Philippines. 7 species and subspecies.

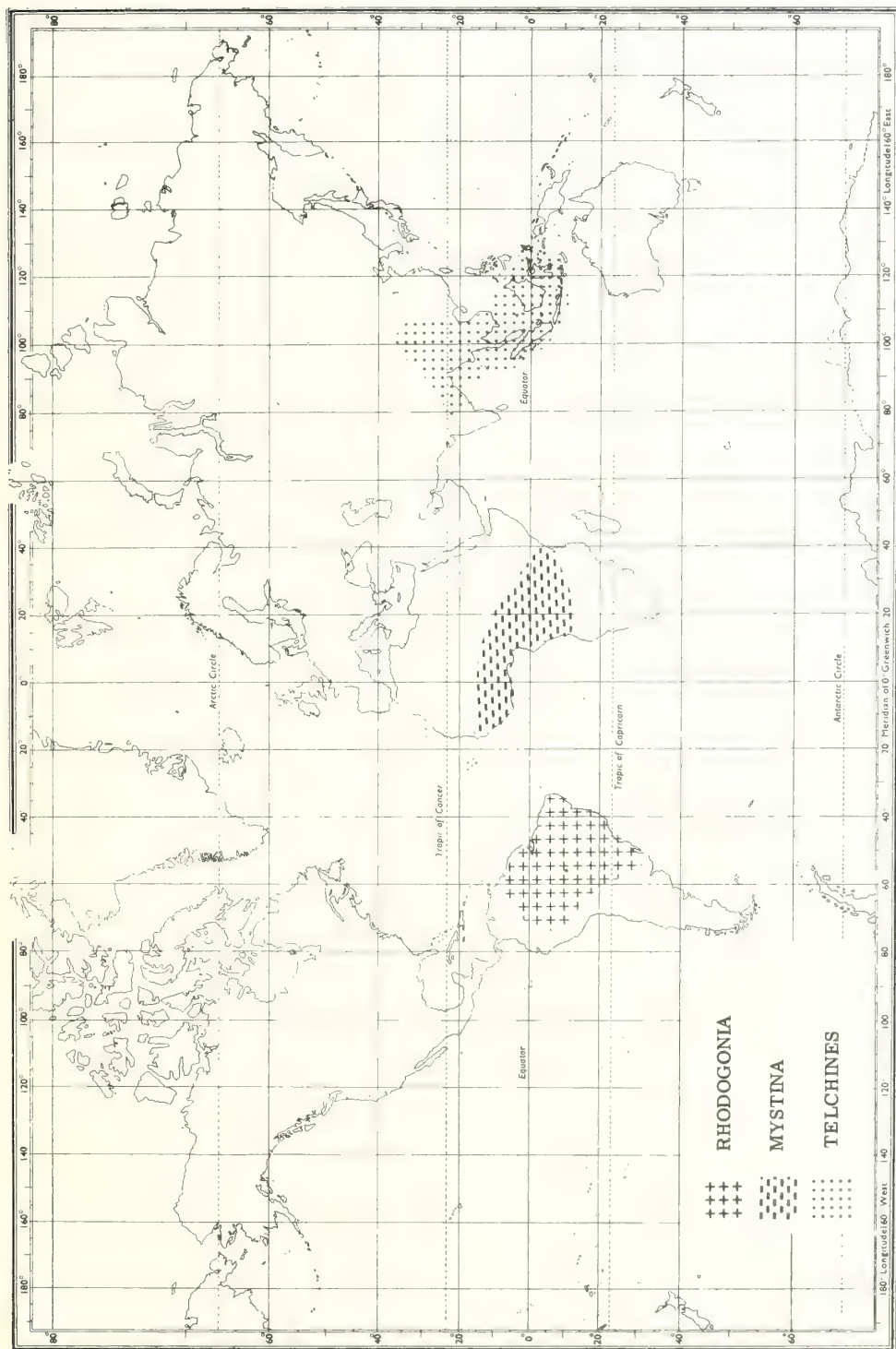
There are two endemic species which are allied to Indo-Malaysian groups and of the remaining species, three are endemic subspecies of Indo-Malaysian species while two species are from the Papuan element. One of these Papuan species has a very wide distribution while the other (*B. insignifica*) appears to have a disjunct distribution of Rennell Island (Solomon Is.), New Guinea and the Philippines.

Formosa. 2 species and subspecies.

One species occurs on the mainland of China, the other is an endemic subspecies of a widespread Indo-Papuan species.

AUSTRALIA AND NEW GUINEA (including West Irian and Papua).

Ten of the twenty species found in Australia are endemic while there are three endemic subspecies of New Guinea species. The species *S. meridiana* is interesting in providing a possible link in the general morphological features between the *burgesi*-group and the *scitaria*-group in the genus *Striglina*. It appears to be more closely derived from the *burgesi*-group rather than the more northerly *scitaria*-group. The majority of the Australian species are placed in the genus *Misalina* which has radiated and speciated widely, mostly in northern Australia. *B. myrsusalis elaralis*, which is widespread in the Indo-Pacific region but has not yet been recorded in New Guinea, is found in Australia, perhaps as a fairly recent introduction. Many



MAP 6

of the Australian species are represented by distinct subspecies in New Guinea, one species is known from Australia, New Hebrides and the Solomon Islands, while one is known from Australia with a subspecies on New Caledonia. In New Guinea 23 out of the 41 species known from the island are endemic. This is unequalled in the subfamily by any area of equal size. It reflects the condition found in other Lepidoptera (e.g. *Oreta* Walker, Drepanidae, Watson, 1967) where six out of the seven species are endemic to New Guinea. The D'Entrecasteaux Islands have a typical New Guinea fauna with eight species recorded from the islands. The Trobriand Islands, which are further away from New Guinea than the D'Entrecasteaux group, have three species, two of which are common in New Guinea while one is an endemic subspecies of a New Guinea species. The Louisiade Archipelago has seven species all of which are widespread on New Guinea.

WEST PACIFIC ISLANDS, NEW CALEDONIA, FIJI, SAMOA, SOLOMONS, BISMARCKS, NEW HEBRIDES, MARIANA IS., OGASAWARA IS. [BONIN IS.]

The islands will be dealt with separately although their fauna is often closely related and can be derived from common ancestral groupings.

Fiji. 4 species and subspecies.

One species occurs on Samoa, New Hebrides and Tonga while the others are endemic subspecies of Samoan or Tongan species. *B. messoria* on Fiji is an endemic species which shows morphological similarities with a species from Borneo but even more striking external resemblance to a South American species. It is possible, since little material is available, that the external similarities between these two geographically widely separated species is due to convergence but no data on either species are available.

Samoa. 4 species and subspecies.

There is one endemic species (*B. lithophora*) which is of uncertain affinity and is at present known only from the holotype female. Two endemic subspecies of Solomon-Fijian species and one species which is known on Fiji, New Hebrides and Tonga make up the fauna.

Ogasawara Is. [Bonin Is.]. 1 species.

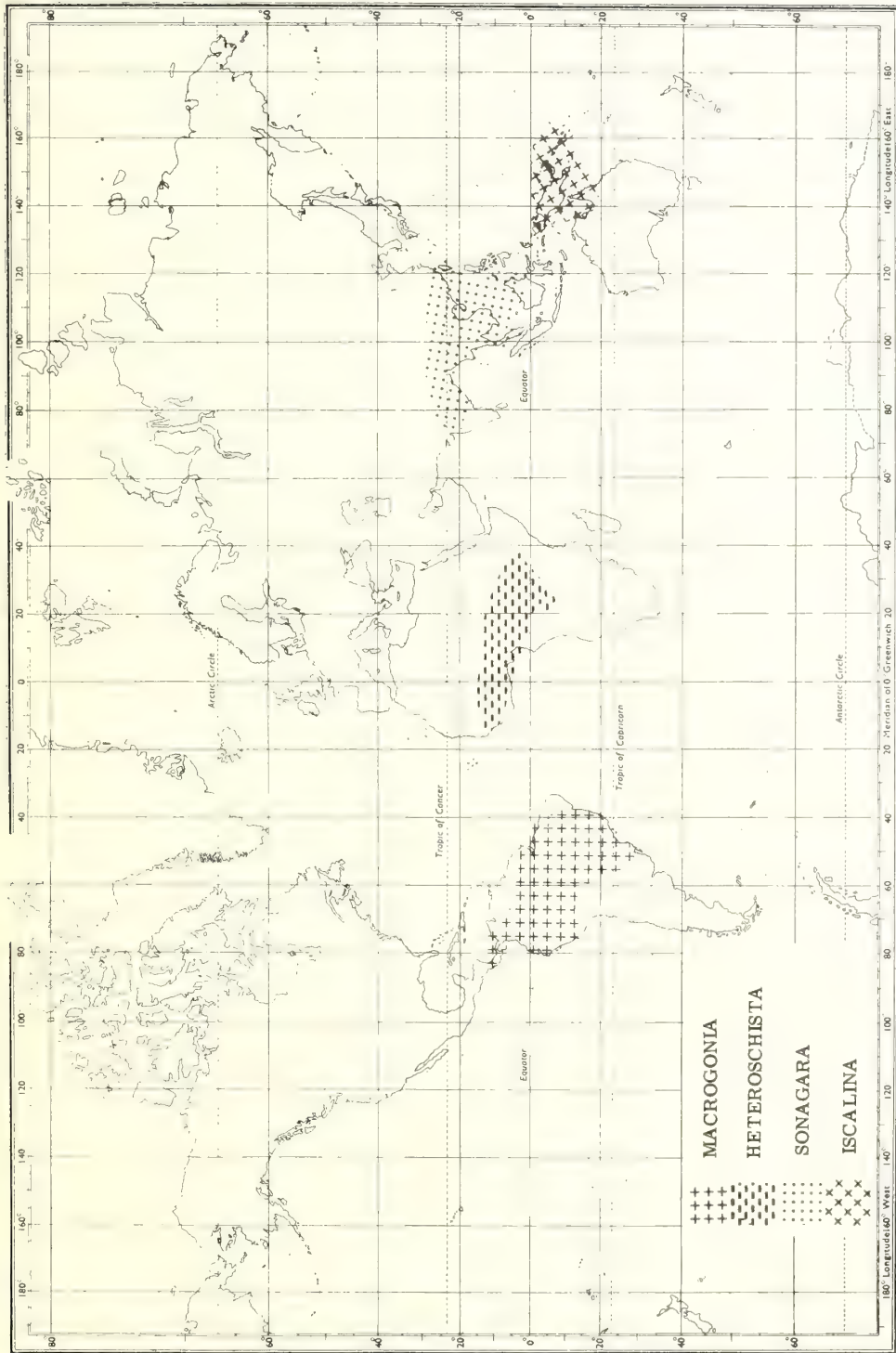
B. plagifera occurs here but as an endemic subspecies (not yet described). The nominate subspecies occurs farther south in Tonga and Fiji.

Mariana Islands. 1 species.

There is a single endemic species (*B. cognata*) which is related to *B. placida* from the Bismarck Archipelago. *B. cognata* on the Marianas has differentiated widely from others in the genus, suggesting that it has been isolated for a longer period than the others (unless the rate of evolution is different on the Marianas!)

New Hebrides. 4 species and subspecies.

B. anthina, which occurs as distinct subspecies on Fiji and Samoa has an endemic subspecies in the New Hebrides. *B. plagifera*, which occurs on Samoa, Fiji and Tonga, has also been collected in the New Hebrides. There is one endemic species (*S. venilia*) which is related to *S. navigatorum* and has probably been derived from that species and can be considered as a Solomons derivative of the fauna. *B.*

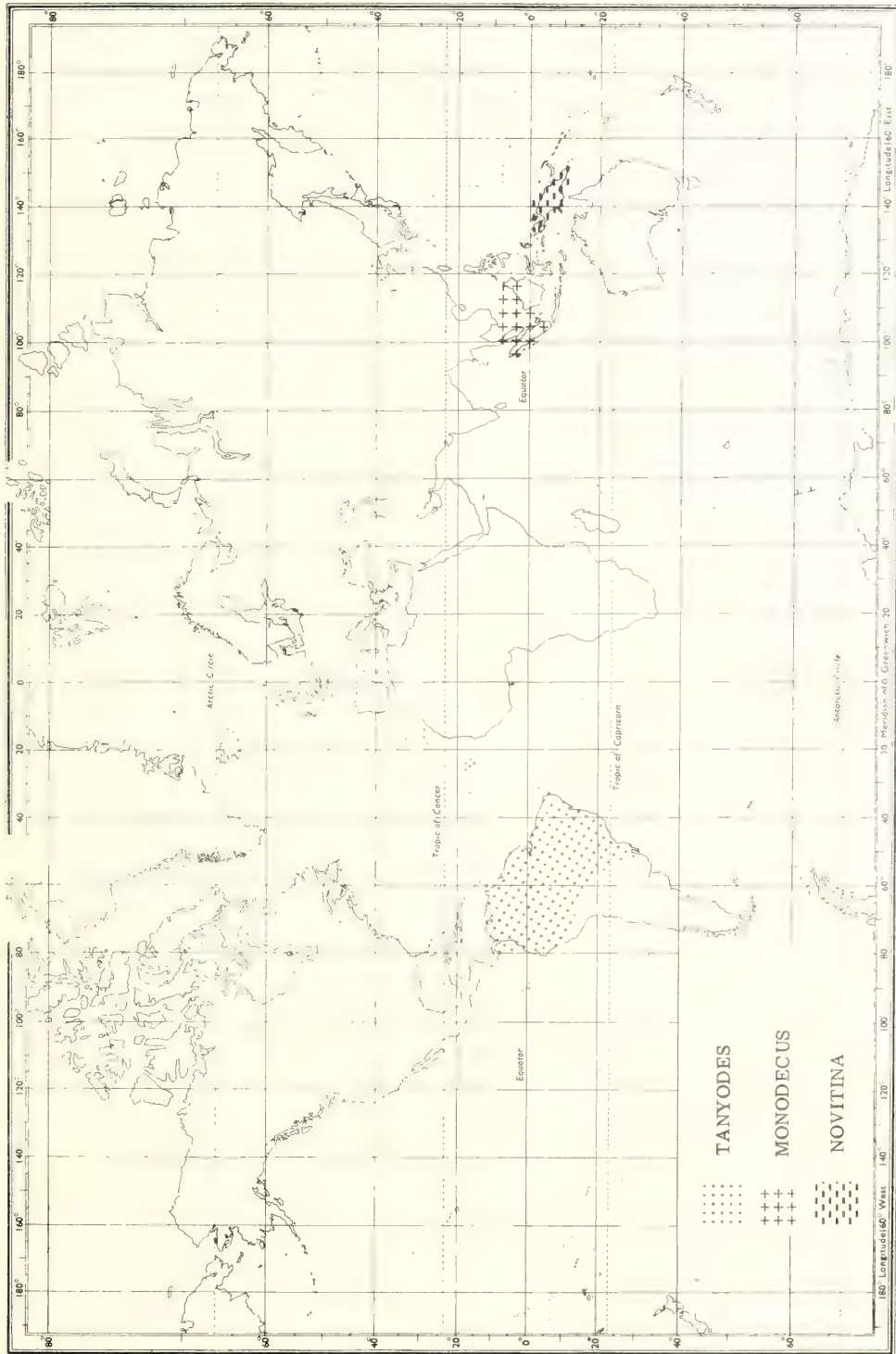


MAP 7

Table 2.
Distribution of Solomon Island Species of Striglininae

SPECIES ON SOLOMON ISLANDS	DISTRIBUTION																											
	Rennell*	Alu*	Bogainville*	Choisul*	Florida I.*	Guadalcanal*	Gizo*	Isabel*	New Georgia*	Rendova*	San Cristobal*	San Jorge*	Treasury I.*	Tugela*	Vella Lavella*	New Guinea + Islands	Bismarck Archip.	Louisiade Archip.	Australia	Fiji	Samoa	New Caledonia	New Hebrides	Sulawesi	Borneo	Indo-Malay-Java-Sumatra	Philippines	
<i>B. placida</i>						X										X	X		X					X	X			
<i>B. lobata lobata</i>						X													X					X	X			
<i>B. l. caesia</i>							X															X						
<i>B. hyaena</i>							X				X														X			
<i>B. fenestrifera solomensis</i>						X	X					X													X			
<i>B. ovifera praevaria</i>						X	X					X													X			
<i>B. minuta</i>			X																									
<i>B. insignifica</i>		X																									X	
<i>C. ruscicata pallidata</i>			X												X								X					
<i>C. semitessellatis caledonia</i>															X							X						
<i>I. hyperbolica</i>													X															
<i>S. burgesi</i>						X													X					X				
<i>S. curvilinea</i>		X																	X									
<i>S. cinnamomea</i>																			X					X				
<i>S. advena</i>						X								X														
<i>S. navigatorum superior</i>	X	X	X	X				X	X						X		X	X										
<i>S. scalata</i>	X	X	X	X		X	X	X	X						X		X	X										

*Solomon Islands



MAP 8

placida which occurs in the New Hebrides is also found in the Solomons and Australia.

New Caledonia. 2 subspecies.

Both the subspecies here are endemic. One is a subspecies of *B. lobata*, a widespread Indian and south-east Asian species which is probably at the extreme of its range on the island. The other subspecies, *C. semitessellalis caledonia*, is derived from the Australian mainland where the nominate subspecies is widespread in Queensland.

Solomon Islands. 15 species and subspecies.

The distribution of the species on the Solomon Islands is given in Table 2. Two endemic species have developed on the islands and there are several endemic subspecies. Most of the species in the fauna have affinities with New Guinea.

KEY TO THE GENERA OF STRIGLININAE, BASED ON MALES

- | | | |
|----|---|---------------------------------|
| 1 | Tarsi with 2 or 3 spines at apex of segments 1-4, often with more spines on segment 5 (apical) | 2 |
| - | Tarsi with rows of spines on each segment | 11 |
| 2 | (1) Eyes distinctly reniform or slightly truncate posteriorly | <i>MATHORIS</i> (p. 135) |
| - | Eyes more or less round in outline, not truncate posteriorly | 3 |
| 3 | (2) Eyes with long or short interfacetal hairs | 4 |
| - | Eyes without interfacetal hairs | 6 |
| 4 | (3) Gnathus in male with regularly toothed margin | <i>STRIGLINA</i> (part) (p. 33) |
| - | Gnathus without toothed margin | 5 |
| 5 | (4) Valves reduced or highly modified, African species | <i>MYSTINA</i> (p. 133) |
| - | Valve slender, simple in outline, Oriental species | <i>MONODECUS</i> (p. 187) |
| 6 | (3) Forewings with R_2 and R_3 with common stalk | 7 |
| - | Forewings with R_2 - R_3 separately from cell, sometimes with $R_4 + R_5$ | 8 |
| 7 | (6) Gnathus with regular teeth on median process | <i>STRIGLINA</i> (part) (p. 33) |
| - | Gnathus without regular teeth, or with patch of spines on gnathus. | |
| | | <i>BANISIA</i> (part) (p. 141) |
| 8 | (6) Antennae pectinate or monopectinate | <i>CANAEA</i> (part) (p. 139) |
| - | Antennae simple, shortly ciliate or ciliate | 9 |
| 9 | (8) Valves with long process on anterior and posterior margins | <i>NOVITINA</i> (p. 117) |
| - | Valves without marginal processes, or if present at base of valve only | 10 |
| 10 | (9) Wings with strong reticulated pattern of brown and yellow-brown. Uncus clavate, strongly sclerotized process near base of valve or very elongate basal sacculus process | <i>CANAEA</i> (part) (p. 139) |
| - | Variouly patterned wings. Uncus often bifid, if clavate then with hair or serrate uncus | <i>BANISIA</i> (part) (p. 141) |
| 11 | (1) Labial palps short, generally without long scales. Base of sacculus not enlarged into long process, juxta with clearly sclerotized lateral arms. New World species | 12 |
| - | Labial palps often reaching to vertex. Usually well scaled. Base of sacculus forming pseudojuxta, juxta, if visible, generally membranous. Old World species | 17 |
| 12 | (11) One pair of spurs on hind tibia | 13 |
| - | Two pairs of spurs on hind tibia | 14 |
| 13 | (12) Antennae strongly ciliate. Apex of valve rounded with strong hairs. | |
| | | <i>RHODOGONIA</i> (p. 119) |
| - | Antennae not ciliate or only shortly ciliate. Apex of valves indented or modified | <i>PENTINA</i> (p. 121) |

14 (12)	Forewings with two radial veins joined	16
-	Forewings with R_2 to R_3 from cell	15
15 (14)	Base of valve toothed. Antennae strongly ciliate	TANYODES (p. 129)
-	Base of valve not toothed. Antennae shortly ciliate	MACROGONIA (p. 125)
16 (14)	Forewings with $R_3 + R_4$	SPECULINA (p. 127)
-	Forewings with $R_2 + R_3$	TRISTINA (p. 130)
17 (11)	Hindwings with $Sc + R_1$ and R_s joining for a short length	18
-	Hindwings with $Sc + R_1$ and R_s close but not joining	19
18 (17)	Eyes with interfacetal hairs	HETEROSCHISTA (p. 135)
-	Eyes without interfacetal hairs	STRIGLINA (part) (p. 33)
19 (17)	Eyes with interfacetal hairs	TELCHINES (p. 79)
-	Eyes without interfacetal hairs	20
20 (19)	Gnathus with rows of peg-like teeth	STRIGLINA (part) (p. 33)
-	Gnathus absent or otherwise modified	21
21 (20)	Forewings with radial veins R_2 to R_5 from cell	22
-	Forewings with $R_4 + R_5$ or $R_2 + R_3$	MISALINA (part) (p. 84)
22 (21)	Valve reduced in various ways	23
-	Valve not reduced, or simple in outline, never strap-like	24
23 (22)	Subscaphium hairy. Base of sacculus spiny or with long branched process.	
-	African species	JAMBOINA (p. 133)
-	Subscaphium sclerotized but not hairy. Base of sacculus with 3 or 4 or more long processes. Oriental species	ISCALINA (p. 115)
24 (22)	Sacculus ending in slender spine towards apex of valve	SONAGARA (p. 82)
-	Sacculus not so modified towards apical end	MISALINA (part) (p. 84)

TAXONOMIC SECTION

STRIGLINA Guenée

Daristane Walker, 1859 : 193. Type-species: *Daristane tibiaria* Walker, by monotypy. [Name to be placed on the Official List of Generic Names in Zoology (Whalley, 1973).]

Striglina Guenée, 1877 : 283. Type-species: *Striglina lineola* Guenée, by subsequent designation, Whalley, 1964 : 126. [Name to be placed on the Official List of Generic Names in Zoology (Whalley, 1973).]

Striglina Guenée; Meyrick 1887 : 199.

Striglina Guenée; Pagenstecher, 1892 : 37.

Striglina Guenée; Hampson, 1897 : 612.

Plagiosella Hampson, 1897 : 625. Type-species: *Plagiosella clathrata* Hampson, by monotypy. [Synonymised by Whalley, 1967 : 42.]

Striglina Guenée; Turner, 1904 : 110.

Striglina Guenée; Turner, 1911 : 100.

Striglina Guenée; Gaede, 1912 : 273.

Plagiosellula Strand, 1913 : 62. Type-species: *Plagiosellula strigifera* Strand, by monotypy. [Synonymised by Gaede, 1917 : 372.]

Striglina Guenée; Dalla Torre, 1914 : 10.

Striglina Guenée, Gaede, 1922 : 26.

Striglina Guenée; Gaede, 1932 : 747.

Striglina Guenée; Whalley, 1964 : 126.

Striglina Guenée; Whalley, 1967 : 42.

Striglina Guenée; Whalley, 1971a : 64.

Striglina Guenée; Whalley, 1973 : 61.

Daristane Walker; Whalley, 1973 : 61.

Striglina Guenée; Whalley, 1974a : 121.

Striglina Guenée; Nye, 1974 : 141.

Striglina Guenée; Whalley, 1974b : 173.

Daristane Walker; Whalley, 1974b : 173.

The generic name *Daristane* Walker, which antedates *Striglina* Guenée, is not used, in accordance with the current application to the International Commission on Zoological Nomenclature for its suppression except for purposes of homonymy. The Commission have suggested that *Striglina* is placed on the Official List, which would leave *Daristane* permanently as a junior synonym of it, but available as a subgeneric name should one be needed. The Walker species, *Daristane tibiaria*, was described in the Geometridae, where it has remained as an unknown taxon until the holotype was rediscovered (Whalley, 1973). Then it was found that the taxon should be transferred to the Thyrididae and would be congeneric with *Striglina lineola* Guenée, the type-species of *Striglina*. To avoid replacing the better known *Striglina* by the unknown *Daristane* the application to the Commission was made and a ruling is now awaited.

Species in the genus *Striglina* are widespread in the tropics and subtropics from Africa to Australia but at present no New World species are known. The genus is here divided into eleven species-groups. Morphologically some of these groups are fairly distinct and could be considered subgeneric. However, there are a series of characters which link these groups together and the homogeneity of the genus is emphasized more by this treatment. The groups differ slightly in aspects of their morphology but all are believed to be derived from common ancestors. The species-groups fall into two main divisions based mainly on the presence of a large scale tuft on the anal area of the hindwing.

When more is known about the biology and ecology of the species in *Striglina*, some of these species-groups, based entirely on morphological considerations, may need modifications. The genus as defined here is considerably narrower in concept than that used by previous authors.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae usually minutely ciliate. Proboscis present. Labial palps 3-segmented. Fore tibia with epiphysis. Hind tibia with 2 pairs spines. Tarsi with spines, usually rows, sometimes apical groups of three. Hindwing with $Sc + R_1$ and R_s free, occasionally joined for part of length. Uncus modified. Gnathus with peg-like teeth. Valve reduced. Subscaphium with long scales or strongly sclerotized. Female with triple frenulum, rarely double. Ostial plate highly sclerotized. Bursa duct often long, convolute. Spiny signum usually present in bursa.

DISTRIBUTION (Map 1). Old world tropics and subtropics to Australia. Temperate Asia to Japan.

BIOLOGY. Food plants are known for a few species in the genus and include plants in the families Leguminosae, Eleocarpaceae, Melastomataceae, Sterculaceae, Ebenaceae and Fagaceae. Larvae of the Japanese species have been illustrated (Esaki, 1957) but few other descriptions of larvae have been given. Those that are known are mentioned under the relevant species.

KEY TO THE SPECIES OF *Striglina* (males)

- 1 One or two veins stalked in the forewing 2
 - Veins R_2 to R_5 arising separately from cell 10
 2 (1) $R_4 + R_5$ and $R_2 + R_3$ stalked in forewing *rothi* (p. 79)
 - $R_4 + R_5$ only stalked in forewing 3
 3 (2) Valves broad, not reduced but gnathus with some indication of teeth (see also
Telchines p. 79) 4
 - Valves strap-like, very reduced or with narrow apical part and broad base 6
 4 (3) Valves with large, toothed and sclerotized median process (Pl. 25, fig. 220).
rufivestris (p. 76)
 - Valve otherwise modified 5
 5 (4) Gnathus with two lateral process. Sacculus with spines at apex *fidelia* (p. 78)
 - Gnathus without lateral processes. Sacculus not so modified.
Misalina suffusa (p. 100)
 6 (3) Valves with broad base and narrow pointed apical part 7
 - Valve strap-like without pointed apical part 9
 7 (6) Uncus with four long processes (*trepida*, p. 79) or uncus with three processes
(*augescere*, p. 79).
 - Uncus with two long processes only or two long and two short processes 8
 8 (7) Uncus with two long processes *strigifera* (p. 79)
 - Uncus with two long and two short processes *ferula* (p. 79)
 9 (6) Aedeagus with cornuti, sacculus process short, not reaching to gnathus.
clathrata (p. 61)
 - Aedeagus without cornuti. Sacculus process long, reaching almost to gnathus.
minutula (p. 61)
 10 (1) Hindwing of male with hair-pencil, either inserted into abdomen or along side it 11
 - Hindwing with scale pencil, absent, or where present, in fold in wing 14
 11 (10) Hair pencil on hindwing inserted into pouch laterally on abdomen 12
 - Hair-pencil on hindwing inserted in shallow groove along abdomen *propatula* (p. 56)
 12 (11) Sacculus process branched and toothed 13
 - Sacculus process long, slender, unbranched *conjuncta* (p. 57)
 13 (12) Lateral process of uncus long. Subscaphium with long stout scales (Pl. 20,
 fig. 189) *tibiaria* (p. 53)
 - Lateral process of uncus short. Subscaphium with shorter, slender scales
 (Pl. 20, fig. 191) *castaneata* (p. 54)
 14 (10) Eyes without inter-facetal hairs 15
 - Eyes with inter-facetal hairs *eguttalis* (p. 61)
 15 (14) Lateral processes on aedeagus 16
 - No lateral processes on aedeagus, though often cornuti 21
 16 (15) Lateral process on aedeagus short, blunt (Pl. 19, fig. 187). Sacculus process
 long, curved at apex *atrata* (p. 52)
 - Lateral process on aedeagus longer, usually curved. Sacculus long but not
 curved round at apex 17
 17 (16) Lateral process of aedeagus long, curved, reaching towards apex. (Pl. 24,
 fig. 215) *suzukii* (p. 72)
 - Lateral process not reaching to apex 18
 18 (17) Lateral process a curved sclerotized spine. Genitalia as in Pl. 21, fig. 196
cymba (p. 58)
 - Lateral process broader, more membranous. Genitalia not as in Pl. 21, fig. 196 19
 19 (18) Apex of aedeagus with two strong laterally projecting spines *sectura* (p. 59)
 - Apex with cornuti, but without apical spur 20
 20 (19) Sacculus process toothed and branched *cuticula* (p. 60)
 - Sacculus process long, unbranched *rufescens* (p. 58)

21	(15)	Apex of aedeagus modified, usually with apical process, often thorn-like	22
-		Apex of aedeagus unmodified, or with only spines from vesica	32
22	(21)	Sacculus process with branches, often toothed	23
-		Sacculus process toothed, but not branched, may be long and slender	29
23	(22)	Lateral process of uncus branched or toothed at apex	24
-		Lateral process of uncus simple	26
24	(23)	Lateral process of uncus strongly toothed. Apex of aedeagus with broad process <i>cinnamomea</i> (p. 41)	
-		Lateral process of uncus bifurcate, or only slightly toothed	25
25	(24)	Median uncus process broadly Y-shaped. Gnathus with teeth along margin, median part of gnathus not enlarged <i>venilia</i> (p. 48)	
-		Median process of uncus narrowing, Y-shaped. Median part of toothed gnathus enlarged <i>navigatorum</i> (p. 45)	
26	(23)	Uncus strongly Y-shaped. Median part of gnathus not enlarged <i>venilia</i> (p. 48)	
-		Uncus not or only slightly indent. Gnathus often slightly swollen in middle, if not swollen, then uncus without lateral process	27
27	(26)	Lateral process reduced. Apex of aedeagus without curved lateral process	28
-		Lateral process of uncus short, median slightly indent. Apex of aedeagus with strong curved process <i>opulenta</i> (p. 49)	
28	(27)	Sacculus with 2 arms and other lateral ones (Pl. 24, fig. 213). Apex of uncus slightly indent. Median valve process toothed <i>duplicifimbria</i> (p. 71)	
-		Sacculus with several arms. Apex of uncus usually indent, no lateral arms. Median valve process hardly toothed <i>scalata</i> (p. 70)	
29	(22)	Sacculus process long and thread-like <i>asinina</i> (p. 51)	
-		Sacculus process otherwise shaped	30
30	(29)	Sacculus process curved, often toothed near apex. Broad lateral process to uncus <i>scitaria</i> (p. 37)	
-		Sacculus process usually straight, often broad, may be somewhat reduced. Lateral processes on uncus absent or very reduced	31
31	(30)	Gnathus strongly indent, toothed, sacculus process broad <i>divisata</i> (p. 75)	
-		Gnathus a simple toothed curve. Sacculus process short <i>curvilinea</i> (p. 63)	
32	(21)	Gnathus a relatively simple toothed loop	43
-		Gnathus usually with several toothed processes	33
33	(32)	Gnathus with three large toothed processes <i>dactylica</i> (p. 74)	
-		Gnathus with two small toothed processes <i>abella</i> (p. 73)	
34	(32)	Uncus a slender, relatively simple median process, no lateral processes	35
-		Uncus usually with lateral processes, complicated structure	36
35	(34)	Sacculus process long, reaching into median valve process. Uncus rather rounded <i>venia</i> (p. 67)	
-		Sacculus process short, not reaching median valve process. Uncus slender, slightly indent at apex <i>cancellata</i> (p. 68)	
36	(34)	Median valve process very large and sclerotized (Pl. 23, fig. 211) <i>mediofascia</i> (p. 69)	
-		Median valve process smaller, not heavily sclerotized	37
37	(36)	Lateral process of uncus toothed (Pl. 22, fig. 206) <i>meridiana</i> (p. 62)	
-		Lateral process of uncus (where present) slender, curved or broad	38
38	(37)	Lateral arms of uncus (where present) slender, curved	39
-		Lateral arms of uncus broad or absent	40
39	(38)	Sacculus process long, apex swollen, toothed. Uncus with two small processes at apex of median part. Aedeagus without cornuti <i>burgesi</i> (p. 62)	
-		Sacculus process short, apex lightly curved. Uncus with Y-shaped process. Aedeagus with many cornuti <i>irresecta</i> (p. 64)	
40	(38)	Median process of uncus V-shaped (Pl. 18, fig. 175). Sacculus process with long spines <i>strigosa</i> (p. 43)	
-		Not as in Pl. 18, fig. 175	41

- 41 (40) Uncus with rounded processes posteriorly and laterally. Sacculus process long, slender, covered with spines. Aedeagus broad at apex with cornuti (Pl. 18, fig. 176) *rubicunda* (p. 44)
 - Uncus usually pointed, variously shaped, not as in Pl. 18, fig. 176. 42
 42 (41) Uncus with narrow median lobe and broad lateral lobes. Sacculus toothed near apex (Pl. 23, fig. 208) *nemorosa* (p. 66)
 - Uncus with broad median lobe. Sacculus with long spines (Pl. 19, fig. 181) *advena* (p. 49)

THE SCITARIA-GROUP

This group of species, all rather similar in wing pattern, are characterized by the general form of the male genitalia. This group centres around *S. scitaria* and species mostly have a prominent fold in the anal area of the hindwing with a bundle of scales in it. The species in the group are probably closely related and some species (*navigatorum*, *cinnamomea*) have so many similar features that they are clearly sibling species.

Striglina scitaria (Walker)

(Pl. 2, fig. A; Pl. 3, figs 1-4; Pl. 17, figs 169-173; Pl. 45, figs 332, 333; Pl. 54, figs 439, 440; Pl. 64, figs 531, 532)

Drepanodes scitaria Walker, 1862 : 1488.

[*Timandra* (?) *cancellata* Christoph; Hampson, 1897 : 613. Misidentification.]

Sonagara scitaria Walker; Moore, 1885 : 206.

Striglina scitaria Walker; Meyrick, 1889 : 504.

Sonagara scitaria Walker; Swinhoe, 1890 : 206.

Striglina lineola Guenée; Pagenstecher, 1892 : 42.

Striglina scitaria Walker; Pagenstecher, 1892 : 44.

Striglina scitaria Walker; Staudinger, 1892 : 36.

Striglina scitaria Walker; Hampson, 1893 : 354.

Striglina reticulata Walker; Meyrick, 1897 : 91.

Striglina scitaria Walker; Hampson, 1897 : 613.

Striglina scitaria Walker; Gaede, 1912 : 373.

Striglina scitaria Walker; Dalla Torre, 1914 : 12.

Striglina scitaria Walker; Gaede, 1922 : 26.

Striglina scitaria Walker; Bose, 1936 : 741.

This species is characterized by the relative position of the radial veins in the forewing and the characteristic shape of the male and female genitalia. In the forewing, veins R_5 and R_4 arise close together from the cell and are more widely separated from R_2 and R_3 which are themselves close to one another. The species is widespread, from the Oriental region as far east as the Philippines, as far south as New Guinea and westwards to the Seychelles. *S. scitaria* is separated here into five subspecies based primarily on differences in the male genitalia, with slight differences in the females. *S. scitaria* has been bred on several occasions and these data are mentioned under the relevant subspecies. Little variation in pattern was found in the specimens over a wide area in either sex.

At present few female specimens are known and no key for them has been constructed.

KEY TO THE SUBSPECIES OF *Striglina scitaria* (males)

1	Wingspan under 12.0 mm	<i>s. restricta</i> (p. 40)
-	Wingspan 12.5 mm or over	2
2	(1) Apex of aedeagus with prominent pointed process.	3
-	Apex of aedeagus with small rounded process	<i>s. iambia</i> (p. 41)
3	(2) Median process of valve (Pl. 17, fig. 171) small, peg-like.	<i>s. particula</i> (p. 40)
-	Median process of valve large and spiny	4
4	(3) Median process board, parallel-sided, curved at apex. Sacculus process curved, one slightly shorter than the other	<i>s. thermesiodes</i> (p. 39)
-	Median process narrower, sides not parallel, pointed. Sacculus process curved, one much shorter than the other	<i>s. scitaria</i> (p. 38)

Striglina scitaria scitaria (Walker)

(Pl. 2, fig. A; Pl. 17, fig. 169; Pl. 45, fig. 332; Pl. 54, fig. 439; Pl. 64, fig. 532)

Drepanodes scitaria Walker, 1862 : 1488. Holotype ♂, CEYLON (BMNH) [examined].

Anisodes pyrinata Walker, 1862 : 1582. Holotype ♀, INDIA (BMNH) [examined].

Thermesia reticulata Walker, 1865 : 1062. Holotype ♀, INDIA (BMNH) [examined].

Striglina lineola Guenée, 1877 : 284. Holotype ♂, INDIA (BMNH) [examined].

Striglina scitaria Walker; Whalley, 1964 : 126.

Striglina lineola Guenée; Whalley, 1967 : 42.

Striglina lineola Guenée; Whalley, 1971a : 72.

♂. Wing, 13.0–15.0 mm. Vertex brown, tuft of scales projecting slightly between eyes. Third segment of labial palp quarter length of second. Thorax brown, patagia brown extending to hind margin of metathorax. Forewing, pattern as in Pl. 2, fig. A, brown with darker reddish brown striations and reddish brown fascia from apex of forewing to middle of hind margin of wing. Five or six small black marks on costal margin. Underside, paler, black costal marks near apex prominent. Discal black spot. Radial veins R_2 – R_5 from cell. Hindwing, colour as forewing, underside with median transverse fascia broader than upperside.

Genitalia ♂ (Pl. 17, fig. 169). Lateral expansions of uncus broad. Median uncus lobe slightly forked. Sacculus process sclerotized, spiny, narrowing to point. One process much shorter than other. Aedeagus with prominent apical process.

♀. Wing, 14–16 mm. Colour and pattern as male. Labial palps with third segment one-third length of second.

Genitalia ♀ (Pl. 45, fig. 332; Pl. 54, fig. 439; Pl. 64, fig. 532). Anal papillae short. Ostium heavily sclerotized with two, posteriorly pointing, spines. Duct convolute. Single toothed signum in bursa.

DISCUSSION. This subspecies is differentiated from the others by the strongly asymmetrical sacculus process and the more slender median valve process. In the female, the shape of the ostium and spines in the bursa differ from the other species. This subspecies is common in collections from India and Ceylon; in this it differs from the majority of Thyridids which tend to be uncommon in general collections of Lepidoptera. Very little variation was found in the specimens examined.

BIOLOGY. Moore (1867 : 77) records the larvae as feeding on *Elaeocarpus serratus* (L.) (Elaeocarpaceae). Bose (1936 : 741) gives Dhaincha (*Sesbania aculeata* (Persoon) (Leguminosae) as the larval food at Coimbatore. Beeson (1941) records *Striglina scitaria* as widespread and feeding on foliage of various trees and shrubs including: *Albizia procera* (Bentham) (Leguminosae), *Bauhinia racemosa* (Lamarck)

(Leguminosae), *Cassia fistula* (L.) (Leguminosae), *Careya arborea* (Roxburgh) (Leguminosae), *Derris elliptica* (Bentham) (Leguminosae), *Melastoma malabathricum* (L.) (Melastomataceae), *Millettia atropurpurea* (Bentham) (Leguminosae), *Xylia dolabriformis* (Bentham) (Leguminosae). On all these plants the larvae feed on leaves, frequently tying them together. In Burma it is recorded as defoliating *X. dolabriformis*. In Ceylon adults have been collected in i, iii, v, vi, x, xi, xii. In the Andaman Islands the adults have been collected in viii.

DISTRIBUTION. Seychelles (Mahé); Ceylon; South India; Maldive Islands.

MATERIAL EXAMINED.

Holotype ♂ (*scitaria*), CEYLON: BM slide no. 8402, in BMNH. Holotype ♀ (*pyrinia*), INDIA: Canara (S. N. Ward), in BMNH (no abdomen). Holotype ♀ (*reticulata*), INDIA: S. Indostan, BM slide no. 10184, in BMNH. Holotype ♂ (*lineola*), INDIA: Bengal (ex Paravicini coll.), BM slide no. 9553, in BMNH.

84 specimens BMNH; 2 specimens, USNM.

Striglina scitaria thermesiodes Snellen stat. n.

(Pl. 3, fig. 1; Pl. 17, fig. 170; Pl. 45, fig. 333; Pl. 54, fig. 440; Pl. 64, fig. 531)

Homodes (?) *thermesiodes* Snellen, 1877 : 28. Holotype ♂, JAVA (RNH) [examined].

Striglina thermesiodes Snellen; Gaede, 1922 : 31.

Striglina thermesiodes Snellen; Karlshoven, 1950 : 74.

Striglina scitaria Walker; auctt.

♂. Wing, 12.5–15.0 mm. Externally similar to nominate subspecies (Pl. 3, fig. 1).

Genitalia ♂ (Pl. 17, fig. 170). As nominate subspecies, differing in shape of sacculus process which is approximately symmetrical.

♀. Wing, 14.0–16.5 mm. As nominate subspecies.

Genitalia ♀ (Pl. 45, fig. 33; Pl. 54, fig. 440; Pl. 64, fig. 531). As nominate subspecies, differing in shape of ostium and in large patch of spines on each side of signum.

DISCUSSION. This is a widespread subspecies with very little variation in colour or pattern over the whole range. Most published records, where specimens have been available for examination, of '*S. scitaria*' in fact refer to this subspecies. Small differences were apparent in the genitalia of specimens from the extremes of the range of this widespread subspecies but sufficient material was not available to consider further subspeciation of these specimens.

BIOLOGY. Karlshoven (1950) gives the following details: 'The larva has been observed here [Indonesia] first repeatedly, sometimes in large numbers on 'dadap' (*Erythrina*) used for shade in coffee plantations. Since the start of planting of Derris the larva can be found regularly in this culture. Outside Indonesia the species has also been found on *Bauhinia* and *Canavallia*.

The larvae curl the edge of the leaf along the sides by pulling it with bundles of spun threads and make a more or less deep cut at the basal part of the leaf edge so that only the top portion of the leaf forms a roll; in there [the larvae] live, feeding on rolled tissue.' (I am indebted to Dr A. Diakonoff, Leiden, for this translation.)

Adults have been collected as follows: Hainan, vi; vii; Sulawesi, ii; iii; iv; Sumatra, xi: Bali, vi, xi; Selaya, xii; Java, iii; iv; v; vii; Borneo, iv; vii.

DISTRIBUTION. New Guinea; Indonesia; Sulawesi, Selaya, Bali, Tambora, Borneo, Natuna I., Sumatra; Malaysia: Malaya; Burma; Hainan.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Java, BM slide no. 13740, in RNH.
132 specimens, BMNH.

Striglina scitaria particula subsp. n.

(Pl. 3, fig. 2; Pl. 17, fig. 171)

♂. Wing, 13.5–15.0 mm. As nominate subspecies (Pl. 3, fig. 2).

Genitalia ♂ (Pl. 17, fig. 171). As nominate subspecies but with reduced median valve process. Uncus shorter and broader, process at apex of uncus longer and more pointed than in nominate subspecies.

♀. Unknown.

DISCUSSION. Apart from the proportions of the uncus the main difference between this subspecies and the nominate one lies in the shape of the median process of the valve. *S. s. thermesioides* also occurs in Sulawesi and may perhaps be spreading there from the surrounding areas where it is common. The differences in the genitalia between this subspecies and the nominate one, while constant, are slight and further investigation of the status of this subspecies is needed. It is possible that *S. s. particula* is a seasonal or even an altitudinal form, but data on these aspects are not available.

BIOLOGY. Not recorded. Adults collected in i; ii; v; vi; ix.

DISTRIBUTION. Indonesia: Sulawesi.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sulawesi [Celebes], G. Lampobattang, Parang-bobo-Goa, 1500 m, v. 1938 (*Kalis*), BM slide no. 13638, in BMNH.

Paratypes. INDONESIA: 2♂, data as holotype; 1♂, W. Sulawesi, Sidaonta, Paloe, 135 m, vi. 1937 (*Kalis*); 1♂, West Sulawesi, G. Tompoe, Paloe, 810 m, i. 1937 (*Kalis*); 1♂, West Sulawesi, Lolá, Paloe, 1200 m, v. 1937 (*Kalis*); 1♂, West Sulawesi, Koelawi, Paloe, iii, 1937, (*Kalis*); 1♂, Tawaya, N. of Paloe 5.ix.1896 (*Doherty*). All paratypes in BMNH.

Striglina scitaria restricta subsp. n.

(Pl. 3, fig. 3; Pl. 17, fig. 172)

♂. Wing, 10 mm. Colour and pattern as nominate subspecies.

Genitalia ♂ (Pl. 17, fig. 172). Apex of uncus not as bifid as nominate. Median process of valve membranous. Sacculus process strongly forked at apex, symmetrical. Aedeagus with small sclerotized protuberance at apex.

♀. Unknown.

DISCUSSION. This subspecies is smaller than the others and the Y-shaped apex to the sacculus process separates this readily from the other subspecies. Although only two specimens are known at present they are sufficiently distinct from the other to be regarded as subspecies.

BIOLOGY. Not recorded.

DISTRIBUTION. Indonesia, Bali.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: West Bali, Prapetagoeng, 450 m, v. 1936 (*Kalis*), BM slide no. 13634, in BMNH.

Paratype. 1 ♂, data as holotype, in BMNH.

Striglina scitaria iambia subsp. n.

(Pl. 3, fig. 4; Pl. 17, fig. 173)

♂. Wing, 13-15 mm. Externally similar to nominate subspecies.

Genitalia ♂ (Pl. 17, fig. 173). Similar to nominate subspecies, differing in shape of sacculus processes and in shape of apex of aedeagus, which is only slightly produced. Median process as nominate subspecies.

♀. Wing, 14.5 mm. Externally similar to the nominate subspecies.

Genitalia. Similar to the nominate subspecies but differing in the pointed lateral processes of the ostial plate. In *S. scitaria* these are single, in *S. iambia* clearly bifid.

DISCUSSION. The sacculus processes are more slender than in the nominate subspecies but the most striking difference is the very much reduced apical process on the aedeagus in this subspecies. It is not possible to reliably separate this subspecies externally from the nominate one although generally it is slightly darker than *S. s. scitaria*.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv; v; vii; viii; xi.

DISTRIBUTION. Philippines.

MATERIAL EXAMINED.

Holotype ♂, PHILIPPINES: Taytay, Palawan plains, 6.v.1913 (*Wileman*), BM slide no. 13632, in BMNH.

Paratypes. PHILIPPINES: 3 ♂, Klondyke, 240 m, Benguet, Luzon, 7.iv.1912 (*Wileman*), in BMNH; 2 ♂, Kolambugan, Lanao plains, Mindanao, v. 1914 (*Wileman*), in BMNH; 1 ♂, Santa Ana, Manila, vii. 1912 (*Wileman*), in BMNH; 1 ♂, Baguio, Benguet, Luzon, 1500 m, xi. 1912 (*Wileman*), in BMNH; 1 ♂, Los Banôs (*Baker*), in USNM; 1 ♂, San Miguel, iii. 1916 (*Clark*), in USNM; 1 ♂, Albany, Luzon, ii. 1916 (*Clark*), in USNM; 2 ♂, 1 ♀, Mt Makiling, Luzon (*Baker*), in USNM; 1 ♂, Surigao, Mindanao, viii (*Clark*), in USNM.

Striglina cinnamomea (Rothschild)

(Pl. 3, fig. 5; Pl. 17, fig. 174; Pl. 45, fig. 334; Pl. 54, fig. 441; Pl. 64, fig. 533)

Laginia reticulata Walker, 1866: 1560. Holotype ♀, NEW GUINEA (UM) [examined]. [Secondary homonym of *Striglina reticulata* Walker, 1865.]

Plagiosella cinnamomea Rothschild, 1915 : 109. Holotype ♂, NEW GUINEA (BMNH) [examined].
Plagiosella cinnamomea Rothschild; Gaede, 1932 : 767.
Striglina scitaria Walker; auctt.

♂. Wing, 14–17 mm. Vertex dark brown. Third segment of labial palp one-quarter length of second, upturned, just reaching vertex. Frons round. Thorax dark brown. Inner spur on proximal pair on hind tibia reaching almost to tip of shortest distal spur. Forewing pattern as in Pl. 3, fig. 5, dark brown with darker brown transverse lines and brown reticulations. Hindwing similar. Underside paler, more orange-brown with black discal spot on fore and hind wing (usually not visible from dorsal side).

Genitalia ♂ (Pl. 17, fig. 174). Uncus bifid, lateral processes broad, variably toothed. Gnathus toothed. Median valve process slender. Sacculus process sclerotized, Y-shaped. Juxta small, membranous. Aedeagus with prominent cornuti, apical process strap-like, rounded, curving round aedeagus.

♀. Wing, 16–17 mm. Colour and pattern as male. Labial palp longer than male, third segment half length of second. Frenulum triple.

Genitalia ♀ (Pl. 45, fig. 334; Pl. 54, fig. 441; Pl. 64, fig. 533). Anal papillae short. Lateral processes of ostium broad basally, narrower distally, heavily sclerotized. Duct convolute. Signum strongly sclerotized, spiny, constricted in middle.

DISCUSSION. This is a widespread species with some variation in intensity of colour pattern but generally is a very dark brown or reddish brown species. There is some variation in the genitalia between specimens from widely separate localities but it has not been possible to associate this variation with any particular geographical region or other factors, and all intermediates have been found. The shape of the uncus and lateral process are particularly prone to variation. When more material is available it may be more practical to split this species into subspecies. Other differences found occur, for example, in the sacculus process which differs slightly between Australian and Solomon Island specimens, but again intermediates in shape were found. This species is interesting in that it occurs over a wide area in a relatively undifferentiated condition.

S. cinnamomea is close to *S. navigatorum* and while generally darker coloured than that species and lacking the dark spots on the hindwing, can only be reliably separated on male genitalia. This species could probably be considered as a subspecies of *navigatorum* but the two occur together (as far as the data on the specimens show) on Bougainville in the Solomons. Further investigation of the biology of these two species might throw some light on this problem. The most useful character for separating the two species is in the apex of the aedeagus; in *navigatorum* this is pointed and hooked, in *cinnamomea* it is long and strap-like. Specimens of *cinnamomea* from the Moluccas show some small differences in the genitalia in the shape of the lateral processes of the uncus, the sacculus process but with a similar median valve process to those from the Solomon island. These could represent the extreme of a cline extending from the New Guinea area.

BIOLOGY. Not recorded. Adults collected in i; iii; iv; v; vi; vii; viii and xii.

DISTRIBUTION. Australia: Queensland; New Guinea; Rook I.; Sudest I.; Russell I.; Indonesia; Amboyna, Key Is., Halmahera, Buru; Solomon Is.

MATERIAL EXAMINED.

Holotype ♂? (*cinnamomea*), INDONESIA: New Guinea, Canoe camp, Utakwa R.,

Dutch New Guinea, xii. 1912 (Wollaston), BM slide no. 13497, in BMNH. Holotype ♀ (*reticulata*), NEW GUINEA (Wallace coll.), in UM.

81 specimens, BMNH; 9 specimens, ANIC.

Striglina strigosa (Moore)

(Pl. 3, fig. 6; Pl. 18, fig. 175; Pl. 45, fig. 335; Pl. 54, fig. 442; Pl. 64, fig. 534)

Sonagara strigosa Moore, 1888^c: 180. Holotype ♂, INDIA: Calcutta (MNHU) [not examined].

Striglina strigosa Moore; Pagenstecher, 1892: 45.

[*Striglina scitaria* Walker; Hampson, 1897: 613. Misidentification.]

[*Striglina scitaria* Walker; Gaede, 1912: 373. Misidentification.]

[*Striglina scitaria* Walker; Dalla Torre, 1914: 13. Misidentification.]

Striglina strigosa Moore; Gaede, 1922: 27, fig. 2.

♂. Wing, 10–12 mm. Vertex yellowish brown. Labial palps with third segment quarter length of second. Thorax brown. Hind tibia with outer spur of distal pair two-thirds length of inner spur. Forewing, pattern as in Pl. 3, fig. 6, dark brown with blackish brown marks. Underside of forewing with patches of black scales between veins.

Genitalia ♂ (Pl. 18, fig. 175). Tegumen produced into two lateral pointed arms. Median plate-like uncus with anteriorly projecting hairy process (? fused socii). Subscaphium of long scales. Sacculus process sclerotized with long spines. Median valve process sclerotized and hooked. Aedeagus with minute spines in vesica.

♀. Wing, 12.5–14.0 mm. Pattern and colour as male.

Genitalia ♀ (Pl. 45, fig. 335; Pl. 54, fig. 442; Pl. 64, fig. 534). Anal papillae short. Ostium strongly sclerotized. Duct long, convolute. Bursa spinose, signum a transverse plate.

DISCUSSION. Similarly patterned to *S. burgesi* although darker, this species has very distinct genitalia. Gaede (1922) figures the genitalia of the type and this figure was used for identification of the Indian specimens. Little variation was found amongst the specimens examined. The reduction in the shape of the uncus separates this species from the others in the group.

BIOLOGY. Not recorded but a manuscript account by T. R. Bell (BMNH, mss.) gives the following details of the larvae which were reared to adults; these specimens are in the BMNH collection.

'[larva] yellow ochreous all over with the food contents showing dark through the skin everywhere except at tubercles, swellings 2 and 12; ventrum ochreous. L.17.5 mm. Habits; the young larvae make a conical cell by cutting from the edge of a piece [of leaf] and fixing it to the underside of leaf so that the cone has a mouth closed by the undersurface of the leaf against which it is fixed—funnel shaped with the mouth closed, one might call it. In the mature stage forms a spiral cell much in the same way, longer and of several spirals; in this it pupates. The caterpillar eats the substance of the leaf inside the cell leaving the outside cuticle.' (T. R. Bell, mss.)

The larva feeds on *Diospyros candolleana* (Wight) (Ebenaceae). Bell was not able to identify the moths he bred out from these larvae but wrote 'I do not in the least know what this moth is . . . but I fancy it must be common enough judging by all the ones one sees' (Bell, 16.1.1926, mss., Kanara, South India.)

Adult moths collected in iv; ix; x.

DISTRIBUTION. South India; Ceylon.

MATERIAL EXAMINED.

48 specimens, BMNH; 1 specimen, USNM.

Striglina rubicunda sp. n.

(Pl. 2, fig. G; Pl. 18, fig. 176; Pl. 45, fig. 336; Pl. 55, figs 446, 447)

♂. Wing, 16–18 mm. Vertex reddish brown. Labial palp with third segment quarter length of second. Frons rounded. Thorax reddish brown. Forewing, pattern as in Pl. 2, fig. G, reddish brown with darker red-brown median fascia. Wings speckled with darker brown spots. Hindwing similar. Underside paler, dark spot over apex of cell and some darker marks in median area.

Genitalia ♂ (Pl. 18, fig. 176). Uncus with swollen lateral margins sclerotized. Prominent ventral median spiny pad. Two main lateral projections, two smaller median ones. Sub-scapium lightly hairy. Gnathus strongly toothed and sclerotized. Valve reduced, median valve process sclerotized, curved. Saccus process long, strongly spined near apex, reaching to gnathus. Aedeagus with swollen and spiny apex, no cornuti.

♀. Wing, 18 mm. Much darker reddish brown than male, without prominent median fascia. Underside similar with dark spot over cell. Labial palp with third segment half length of second.

Genitalia ♀ (Pl. 45, fig. 336; Pl. 55, figs 446, 447). Anal papillae short. Ostium strongly sclerotized, covered with minute spines. Duct narrow. Signum, two very small patches of spines.

DISCUSSION. This species is quite distinct in the genitalia from the others in the genus and externally can be separated from the larger reddish brown species (*navigatorium*, *cinnamomea*) in the male by the median brown fascia. The female is generally darker than in those species. This species, which is close to *strigosa*, can be separated from that species by the much larger size and differences in the genitalia of *rubicunda*. *S. rubicunda* is one of the few species in the genus where the signum in the bursa of the female is very reduced. The main variation between specimens of *rubicunda* is in the colour, some of the specimens are very pale and there is slight variation in the extent of the pattern. Other aspects of the morphology are constant, however.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv; v; vi.

DISTRIBUTION. Indonesia: Sulawesi.

MATERIAL EXAMINED

Holotype ♂, INDONESIA: Sulawesi [Celebes], G. Tompoe, Paloe, W. Celebes, 810 m, ii. 1937 (*Kalis*), BM slide no. 13966, in BMNH.

Paratypes. INDONESIA: 4 ♂, Sulawesi, Sidaonta, Paloe, W. Celebes, 1350 m, vi. 1937 (*Kalis*); 14 ♂, Sulawesi, Boda, Paloe, W. Celebes, 1200 m, v. 1937 (*Kalis*); 13 ♂, 3 ♀, Lindoe, Paloe, 1110 m, iv. 1937 (*Kalis*); 7 ♂, 1 ♀, Sulawesi, G. Tompoe, Paloe, W. Celebes, ii. 1937 (*Kalis*); 17 ♂, 1 ♀, Sulawesi, Koelawi, Paloe, 930 m, W. Celebes, iii. 1937 (*Kalis*); 7 ♀, Sulawesi, SW. Celebes, Pangean near Maros, 600 m, iii. 1938 (*Kalis*); 18 ♂, 1 ♀, Sulawesi, SW. Celebes, Tjamba, near Maros, 450 m,

ii. 1938 (*Kalis*); 17 ♂, 1 ♀, Sulawesi, Sidaonta Paloe, W. Celebes, 1350 m, vi. 1937 (*Kalis*). All paratypes in BMNH.

***Striglina navigatorum* Felder & Rogenhofer**

(Pl. 1, fig. A; Pl. 3, figs 7, 8, 9; Pl. 18, figs 178-180; Pl. 45, figs 337-339; Pl. 54, figs 443-445; Pl. 64, figs 535-537)

Azazia (?) *navigatorum* Felder & Rogenhofer, 1873 : pl. 117, fig. 24.

This species is separated here into three subspecies. One interesting point to emerge from a study of specimens of this species collected over many years was the constancy of the structure of the genitalia. Specimens from islands where this degree of constancy occurs show clearly the evolution of small differences in populations from neighbouring islands. The subspecies can be roughly separated on colour and pattern but in a final analysis the structures in the genitalia must be used. This species is allied to *advena* and *venilia* but can be separated from these by the characters given in the key (p. 35). *S. navigatorum*, *S. venilia* and *S. advena* can be considered as part of a superspecies. Basically they are morphologically similar but have speciated on different islands; Tams (1935 : 184) suggested close relationship between the species of *Striglina* from Fiji, Tonga and Samoa.

KEY TO THE SUBSPECIES OF *Striglina navigatorum* (males)

1. Lateral process of uncus simple, pointed. Median valve process Y-shaped ***n. inversa*** (p. 47)
- Lateral processes of uncus forked. Median valve process simple 2
- 2 (1) Sacculus process strongly toothed. Median valve process strongly spined. Aedeagus with large group (over 26) cornuti and small apical tooth ***n. superior*** (p. 46)
- Sacculus process less strongly toothed. Median valve process less strongly spined. Aedeagus with smaller group of cornuti (less than 20) and long, slightly curved apical tooth ***n. navigatorum*** (p. 45)

***Striglina navigatorum navigatorum* Felder & Rogenhofer**

(Pl. 3, figs 7, 8; Pl. 18, fig. 178; Pl. 45, fig. 338; Pl. 54, fig. 443; Pl. 64, fig. 535)

Azazia (?) *navigatorum* Felder & Rogenhofer, 1873 : pl. 117, fig. 24. Holotype ♀, FIJI (BMNH) [examined].

Striglina vavauensis Hampson, 1914 : 109. LECTOTYPE ♂, here designated, FRIENDLY ISLANDS [Tonga]: (BMNH) [examined]. **Syn. n.**

Striglina navigatorum Felder & Rogenhofer; Guenée, 1877 : 284.

Striglina navigatorum Felder & Rogenhofer; Pagenstecher, 1892 : 42.

[*Striglina scitavia* Walker; Hampson 1897 : 613. Misidentification.]

[*Striglina scitavia* Walker; Gaede, 1912 : 373. Misidentification.]

[*Striglina scitavia* Walker; Dalla Torre, 1914 : 13. Misidentification.]

[*Striglina scitavia* Walker; auctt. Misidentification.]

♂. Wing, 14-17 mm. Vertex brown. Third segment of labial palp one-quarter length of

second, reaching slightly above vertex. Frons rounded, not projecting between eyes. Thorax pale brown. Hind tibia with inner spine of proximal pair reaching almost to tip of shorter distal. Forewing, pattern as in Pl. 3, figs 7, 8, brown with reddish brown or red spots forming incomplete transverse fascia. Slightly larger discal spot. Hindwing similar, conspicuous black mark outside cell between M_1 and M_2 . Underside, similar, paler.

Genitalia ♂ (Pl. 18, fig. 178). Uncus forked, lateral processes forked or simple. Gnathus strongly toothed. Valves reduced, median valve process sclerotized, narrow, pointed. Sacculus process elongate, strongly sclerotized, and forked. Juxta membranous. Subscaphium very scaly, with long modified scales. Aedeagus with group of spines forming cornutus, strong, pointed apical spine on aedeagus.

♀. Wing, 15–18 mm. Similar colour and pattern to male but labial palps longer.

Genitalia ♀ (Pl. 45, fig. 338; Pl. 54, fig. 443; Pl. 64, fig. 535). Anal papillae short. Ostium strongly sclerotized. Prominent spined signum. VIII segment elongate, swollen near middle.

DISCUSSION. This species is variable in colour and intensity of pattern, some heavily marked specimens looking strikingly different from the more common, lightly marked, form. No evidence of seasonal variation, which might be responsible for this, is available. This subspecies can be separated from *n. superior* by the generally darker colour, larger apical process of the aedeagus and other differences in the genitalia. The points on the lateral process of the uncus are noticeably fewer in *n. superior* than in *n. navigatorum*. From the Tongan Islands only two specimens were available and these are smaller than the smallest specimen from Fiji (12–13 mm). The differences are slight and there are too few specimens from Tonga to consider them as subspecific and therefore I synonymize the Hampson species *vavauensis*. A longer series may show that this size and other small differences are constant and that the Tongan specimens do represent a good subspecies. *S. n. navigatorum* is separated from *n. inversa* by the shape of the median valve process which is prominently forked. Specimens of *n. inversa* from Samoa tend to be smaller and darker than the Fijian subspecies. This species is polyphagous in Fiji.

BIOLOGY. Leaf roller on *Pongamia pinnata* (Forster) (Leguminosae) (BMNH specimen). This species has also been bred from *Cassia fistula* L., *Heritiera littoralis* (Aiton), *Inocarpus fagiferus* (Parkinson), *Phaseolus vulgaris* L., *Pometia pinnata* (Forster). Adults collected in iv; vi; vii; viii; xi; xii.

DISTRIBUTION. Fiji; Friendly Is. (Tonga).

MATERIAL EXAMINED.

Holotype ♀ (*navigatorum*), FIJI: BM slide no. 8537², in BMNH. Lectotype ♂ (*vavauensis*), FRIENDLY IS.: Vavau group, Eclipse exped., 1911, BM slide no. 8527, in BMNH.

29 specimens, BMNH.

Striglina navigatorum superior (Butler) stat. n.

(Pl. 3, fig. 9; Pl. 18, fig. 179; Pl. 45, fig. 337; Pl. 54, fig. 444; Pl. 64, fig. 536)

Sonagara superior Butler, 1887 : 433. Holotype ♂, SOLOMON IS. (BMNH) [examined].

[*Striglina scitavia* Walker; Hampson, 1897 : 613. Misidentification.]

[*Striglina scitavia* Walker; Dalla Torre, 1914 : 13. Misidentification.]

Striglina superior (Butler); Whalley, 1962 : 118.

♂. Wing, 13.5–16 mm. Morphologically as nominate subspecies. Generally paler coloured. Usually black patch of scales on abdomen of male on VII and VIII segments.

Genitalia ♂ (Pl. 18, fig. 179). Aedeagus with more cornuti than *n. navigatorum*. Sacculus process, median valve process differ slightly from nominate. Otherwise genitalia similar.

♀. Wing, 14–18 mm. As female *n. navigatorum*.

Genitalia ♀ (Pl. 45, fig. 337; Pl. 54, fig. 444; Pl. 64, fig. 536). Sclerotized VIII segment and ostium slightly different shape from nominate. Otherwise similar.

DISCUSSION. This subspecies is widespread in the Solomon Islands, and is generally paler than the nominate form. Specimens from Rennell I. tend to be slightly smaller and paler than the others of *n. superior*. On New Britain and New Ireland this subspecies is replaced by *S. cinnamomea*. Apart from the darker colouring of the latter species, there are also differences in the genitalia which are reliable for separating the species. Other than the variation in size and colour mentioned, the rest of the morphology of this subspecies is very constant.

BIOLOGY. Not recorded. Adults collected in i; ii; iv, v, vii, viii, ix, x, xi, xii.

DISTRIBUTION. Solomon Is.: Isabel, Choiseul, Vella Lavella, Gizo, Alu, Rennell, Rendova, Bougainville, New Georgia; Bismarck Archipelago: New Hannover, Rook I.; Admiralty Is.: Vulcan I.; Dampier I.

MATERIAL EXAMINED.

Holotype ♂, SOLOMON IS.: Alu, BM slide no. 8524, in BMNH.

117 specimens, BMNH.

Striglina navigatorum inversa Gaede stat. n.

(Pl. 1, fig. A; Pl. 18, fig. 180; Pl. 45, fig. 339; Pl. 54, fig. 445; Pl. 64, fig. 537)

Striglina inversa Gaede, 1922 : 33. Holotype ♀, SAMOA (MNHU) [examined].

Striglina inversa Gaede; Gaede, 1932 : 747.

Striglina oecia Tams, 1935 : 244. Holotype ♂, SAMOA (BMNH) [examined]. **Syn. n.**

♂. Wing, 13–15 mm. Morphologically similar to nominate subspecies. Rather more yellowish brown than nominate, darker than *n. superior*.

Genitalia ♂ (Pl. 18, fig. 180). Broadly similar to nominate subspecies. Central process of uncus more slender. Sacculus process small. Median process of valve long and bifurcate. Lateral uncus process single.

♀. Wing, 14–16 mm. Median transverse fascia broader and more conspicuous than in nominate subspecies.

Genitalia ♀ (Pl. 45, fig. 339; Pl. 54, fig. 445; Pl. 64, fig. 537). Differing from nominate subspecies in shape of VIII segment and shape of ostium.

DISCUSSION. This subspecies differs more from the nominate one than *n. superior*. *S. n. inversa* is generally more heavily patterned than the other subspecies but the colour and pattern vary considerably from specimen to specimen. The most striking difference is in the male genitalia where the larger development of the median valve process differs from the other two subspecies.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; vii; x; xi; xii.

DISTRIBUTION. Samoa.

MATERIAL EXAMINED.

Holotype ♀ (*inversa*), SAMOA: B.M. slide no. 10892, in MNHU. Holotype ♂ (*oecia*), SAMOA: Apia, 27.i.1924 (*Buxton*), BM slide no. 8526, in BMNH.

17 specimens, BMNH.

Striglina venilia sp. n.

(Pl. 3, fig. 10; Pl. 18, fig. 177; Pl. 45, fig. 340; Pl. 55, fig. 448)

♂. Wing, 17–18 mm. Vertex brown. Third segment of labial palp one-quarter length second segment, upturned, reaching slightly above vertex. Thorax brown. Hind tibia with inner spur of proximal pair almost reaching apex of shortest distal spur. Forewing, pattern as in Pl. 3, fig. 10, brown with reddish brown transverse line from just below apex. Reddish spots all over wing, some forming interrupted transverse fasciae. Hindwing similar. Prominent black spot in median fascia. Underside similar, paler, main transverse fascia less distinct than upper side.

Genitalia ♂ (Pl. 18, fig. 177). Uncus widely bifid, lateral processes with or without small teeth. Median valve process strongly curved. Sacculus process strongly forked. Gnathus toothed. Aedeagus with group of cornuti, broad terminal sclerotization.

♀. Wing, 17–19 mm. As male, but labial palps longer, third segment one-third length of second.

Genitalia ♀ (Pl. 45, fig. 340; Pl. 55, fig. 448). Anal papillae short. Ostium sclerotized, lateral ostial processes prominently toothed posteriad.

DISCUSSION. This species is slightly larger than *navigatorum* and the black mark on the hindwing is larger and more conspicuous. In the male the differences in the shape of the apical sclerotization of the aedeagus (rounded in *venilia*, pointed in *navigatorum*) and in the female the shape of the lateral ostial processes are characteristic. *S. venilia* is restricted to the New Hebrides and probably differentiated from *S. advena* which has a similar type of aedeagus but shows other differences. These species all form part of a superspecies complex with the preceding two species. There is some variation in the shape of apex of the lateral process of the uncus, some specimens have a number of teeth at the apex, and in the shape of the median valve process.

BIOLOGY. Not recorded. Adults collected in iii; iv; v; vi.

DISTRIBUTION. New Hebrides.

MATERIAL EXAMINED.

Holotype ♂, NEW HEBRIDES: Aneityum, Red Crest, 366 m, NE. Anelgauhat, vi. 1955 (*Cheeseman*), BM slide no. 13942, in BMNH.

Paratypes. NEW HEBRIDES, 10 ♂, 1 ♀, data as holotype; 1 ♂, Malekula, Ounua, iii–iv. 1929 (*Cheeseman*), in BMNH; 1 ♂ Espiritu Santo I., Narango, South Coast, 24.5–25 : 7. 1960 (*Brandt*) in ANIC; 1 ♂ Aneityum I., Agathis Camp. 21.vii.1971, 1150 ft (*Robinson*), in BMNH.

Striglina advena sp. n.

(Pl. 2, fig. M, Pl. 19, fig. 181; Pl. 45, fig. 341; Pl. 55, fig. 449; Pl. 64, fig. 538)

♂. Wing, 17-19 mm. Vertex brown. Labial palp with third segment one-quarter length of second, upturned, just reaching vertex. Thorax dark brown. Inner spur of proximal pair on hind tibia reaching almost to apex of shortest distal spur. Forewing, pattern as in Pl. 2, fig. M, dark reddish brown with interrupted brown transverse markings. Prominent dark spot in centre of hindwing. Underside paler, black spot more clearly defined than on upperside.

Genitalia ♂ (Pl. 19, fig. 181). Uncus short, bifid. Lateral processes reduced. Sacculus sclerotized, strongly toothed. Gnathus with rows of small teeth. Aedeagus with mass of cornuti, apical sclerotized part broad, slightly upturned.

♀. Wing, 20 mm. Colour and pattern as male. Labial palps longer, third segment one-third length of second.

Genitalia ♀ (Pl. 45, fig. 341; Pl. 55, fig. 449; Pl. 64, fig. 538). Anal papillae short. Ostium sclerotized, edges of ostium strongly folded. Lateral ostial processes slender.

DISCUSSION. This large species is much darker in colour than *navigatorum* or *venilia* to which it is closely allied. It can be separated from both of these species by the shape of the uncus in the male and the ostium in the female.

BIOLOGY. Not recorded. Adults collected in i; iv; xi; xii.

DISTRIBUTION. Solomon Is.: Choiseul, Guadalcanal, Tugela.

MATERIAL EXAMINED.

Holotype ♂, SOLOMON IS.; North side of Choiseul I., xii. 1903 (*Meek*), BM slide no. 13944, in BMNH.

Paratypes. SOLOMON IS.: 2 ♂, 2 ♀, data as holotype, in BMNH; 1 ♂, 1 ♀, Guadalcanal, v. 1901 (*Meek*), in BMNH; 1 ♂, Guadalcanal, Popomanasia, Black Light, 1320 m, 9.xii.1965; 1 ♂, Tugela (*Woodford*), in BMNH; 4 ♂, Bougainville, Kukugai Village, 17.10.1960-2.2.1961 (*Brandt*), in ANIC.

Striglina opulenta sp. n.

(Pl. 3, figs 11, 12; Pl. 19, figs 182 183; Pl. 45, figs 342, 343; Pl. 55, figs 450, 451; Pl. 64, figs 539, 540)

This species is rather similar externally to *S. navigatorum* and belongs to the same superspecies complex. It can be separated from *navigatorum* in the male by the shape of the uncus, which can be made visible by brushing the apex of the abdomen, although more clearly seen in slide preparations. *S. opulenta* is separated into two subspecies, again mainly on structures in the male genitalia but with associated trends in external colour and pattern. However, for the identification of the subspecies a dissection is needed. The species is apparently restricted to the Bismarck Archipelago and is clearly related to *navigatorum*. No information is available on the biology.

KEY TO THE SUBSPECIES OF *Striglina opulenta* (males)

- 1 Sacculus process with long pointed arms. Median valve process long sclerotized, pointed teeth *o. opulenta* (p. 50)
 - Sacculus process mostly short teeth. Median valve process small, lightly sclerotized *o. elea* (p. 50)

Striglina opulenta opulenta subsp. n.

(Pl. 3, fig. 11; Pl. 19, fig. 182; Pl. 45, fig. 342; Pl. 55, fig. 450; Pl. 64, fig. 539)

♂. Wing, 14-15 mm. Vertex brown. Third segment of labial palp one quarter length second, upturned, just reaching vertex. Thorax dark brown. Inner spur of proximal pair on hind tibia almost reaching apex of shortest distal spur. Forewing, pattern as in Pl. 3, fig. 11, reddish brown with reddish suffusion and darker reticulations. Dark transverse fascia from near apex of forewing to middle of hind margin of forewing. Hindwing similar. Black spot near apex of cell. Underside similar, paler, black spot visible in discal cell in forewing on underside.

Genitalia ♂ (Pl. 19, fig. 182). Uncus broad with lateral apical points. Lateral processes pointed. Valve slender but with broader sacculus. Gnathus toothed. Median valve process spiny. Sacculus process sclerotized and branched. Aedeagus with numerous cornuti. Sclerotized, peg-like, apical projection.

♀. Wing, 15-16 mm. Colour and pattern as male. Labial palps with third segment one-third length second.

Genitalia ♀ (Pl. 45, fig. 342; Pl. 55, fig. 450; Pl. 64, fig. 539). Anal papillae short. Ostium broad, sclerotized, Y-shaped. Segment VIII lightly sclerotized.

DISCUSSION. This species is separated from the others in the group by the shape of the gnathus and uncus and the shape of the ostium in the female. *S. opulenta* is probably related to *S. advena* from the Solomons where the general shape of the uncus is similar, but is more reduced in *S. advena*. *S. o. opulenta* can be separated from *S. o. elea* by the more pointed lateral processes on the uncus and the differences in shape of the median valve process. The females are similar but the sclerotized neck of the ostium in *elea* is longer than in the nominate subspecies.

BIOLOGY. Not recorded. Adults collected in iii; vi; xi; xii.

DISTRIBUTION. Bismarck Archipelago: New Ireland, New Hannover.

MATERIAL EXAMINED.

Holotype ♂, BISMARCK ARCHIPELAGO: New Ireland (*Eichhorn*), xi. 1923, BM slide no. 13959, in BMNH.

Paratypes. BISMARCK ARCHIPELAGO: 1 ♂, 2 ♀, New Ireland xii. 1923 (*Eichhorn*); 1 ♀, New Hannover, v. 1924 (*Eichhorn*); 1 ♀, New Hannover, iii. 1923 (*Meek*). All in BMNH.

Striglina opulenta elea subsp. n.

(Pl. 3, fig. 12; Pl. 19, fig. 183; Pl. 45, fig. 343; Pl. 55, fig. 451; Pl. 64, fig. 540)

♂. Wing, 15 mm. Colour and pattern as nominate subspecies.

Genitalia ♂ (Pl. 19, fig. 183). As nominate subspecies but lateral processes of uncus more rounded. Median valve process very reduced.

♀. Wing, 16 mm. Similar to nominate subspecies.

Genitalia ♀ (Pl. 45, fig. 343; Pl. 55, fig. 451; Pl. 64, fig. 540). Similar to nominate subspecies but differing in shape of ostium.

DISCUSSION. This subspecies can be separated from the nominate one by the characters in the genitalia in both sexes. Although relatively few specimens of this

subspecies were available for examination, the differences were constant between the specimens of *elea* and those of *opulenta*. The specimens of *elea* collected at thirty-year intervals were also identical with no apparent morphological variation.

BIOLOGY. Not recorded. Adults collected in ii; xi.

DISTRIBUTION. Bismarck Archipelago: New Britain.

MATERIAL EXAMINED.

Holotype ♂, BISMARCK ARCHIPELAGO: New Britain, Taleŕā, ii. 1925 (*Eichhorn*), BM slide no. 13987, in BMNH.

Paratypes. BISMARCK ARCHIPELAGO: New Britain, 1 ♂, 1 ♀, data as type, in BMNH; 3 ♂, New Britain, nr Keravat, xi. 1957, in CNC.

THE *ASININA*-GROUP

This is a group of dark species where the male genitalia are modified in a slightly different way from the others in the genus. The sacculus process is produced and becomes so elongate that it coils round the aedeagus. This appears to offer extra support to the aedeagus and is the extreme case of the development of the sacculus for this purpose in the absence of a separately sclerotized juxta. There are two species in this group (*asinina*, *atrata*).

Striglina asinina Warren

(Pl. 4, fig. 13; Pl. 19, figs 184-186; Pl. 46, fig. 344; Pl. 55, fig. 452; Pl. 64, fig. 541)

Striglina asinina Warren, 1899a : 8. LECTOTYPE ♂, here designated, INDONESIA (BMNH) [examined].

Striglina asinina Warren; Dalla Torre, 1914 : 10.

Striglina bivittata fuliginosa Rothschild, 1915 : 110. Holotype ♀, NEW GUINEA (BMNH) [examined]. **Syn. n.**

Striglina asinina Warren; Gaede, 1932 : 747.

♂. Wing, 14.0-15.5 mm. Vertex dark brown-black. Third segment labial palp one-quarter length of second. Thorax black. Forewing, pattern as in Pl. 4, fig. 13, black or brownish black with slight purple iridescence. White fringe. Black spots along costa. Indistinct black spots over whole wing. Hindwing similar. Underside, yellow-orange with prominent brown terminal margin and brown spots. Hindwing similar.

Genitalia ♂ (Pl. 19, figs 184-186). Uncus bifid, short strap-like process below. Valves reduced. Subscaphium with long scales. Gnathus strongly toothed. Sacculus process very long, slender, coiled at apex. Aedeagus with minute spines in vesica, apex with curved process.

♀. Wing, 14.0-15.5 mm. Generally less black than male. Labial palps with third segment one-half length of second.

Genitalia ♀ (Pl. 46, fig. 344; Pl. 55, fig. 452; Pl. 64, fig. 541). Anal papillae short. Ostium broad, sclerotized, first part of ductus sclerotized with conspicuous sclerotized bar on wall. Duct convolute. Single, prominent spiny signum.

DISCUSSION. This widespread species varies considerably in the colour of the upper and lower surfaces of the wings. In some specimens the bright orange-yellow is replaced by a pale brown colour. There is also some variation in shape

in the process below the uncus and it is probable that some of this is subspecific variation, but for the present no subspecies are described. The dark coloration, often with the brightly coloured underside, make this species easily recognizable. The females are also distinct in colour and the sclerotized bar on the neck of the duct of the bursa separates the female from the females of other species.

BIOLOGY. Leaf-roller on *Theobroma cacao* L., Papua (BMNH specimen.) Adults collected in iii, Trobriand Is.; Borneo; x, Sula Mangoli; v, xi, Sulawesi; i, xi, xii, New Guinea; ii, New Britain.

DISTRIBUTION. Malaysia: Sarawak; Singapore; Indonesia: Sulawesi, Kiriwini I., Java, Sula Mangoli; Philippines; New Guinea; Trobriand Is.; Admiralty I.; D'Entrecasteau Is.; Louisiade Archipelago; Australia (Queensland).

MATERIAL EXAMINED.

Lectotype ♂ (*asinina*), INDONESIA: Sula Mangoli, x. [18]97 (*Doherty*), BM slide no. 13318, in BMNH. Holotype ♀ (*fuliginosa*), INDONESIA: West Irian, Utakwa R., Base Camp, sea level, Dutch New Guinea (*Wollaston*), BM slide no. 13505, in BMNH. 17 specimens BMNH; 19 specimens, USNM; 4 specimens, ANIC.

***Striglina atrata* sp. n.**

(Pl. 4, fig. 14; Pl. 19, fig. 87; Pl. 46, fig. 345; Pl. 55, fig. 453; Pl. 65, fig. 542)

♂. Wing, 15-17 mm. Vertex grey-brown. Labial palp with third segment one-quarter length of second. Frons rounded. Thorax grey-brown. Hind tibia with inner spur of proximal pair almost reaching tip of shortest distal spur. Forewing, pattern as in Pl. 4, fig. 14, black-brown mottled with prominent interrupted black lines, wing with slightly reddish tinge. Hindwing similar, less reddish brown tinge. Underside paler, pattern prominent. Two reddish brown spots, one at base of cell, one near apex of cell on underside. Dark fascia from near apex of forewing transversely across wing on upperside prominent.

Genitalia ♂ (Pl. 19, fig. 187). Uncus a broad process, curved, partially obscured by prominent tufts of scales ventrally. Subscaphium highly modified with prominent, elongate scales. Valves reduced. Gnathus with very prominent toothed median part. One sacculus process very long, slender, coiled round aedeagus, other shorter, slender, not coiled at apex. Aedeagus prominent toothed process dorsally, no cornutus.

♀. Wing, 16.5-18.5 mm. Pattern as male but more reddish brown. Underside with single reddish brown mark at apex of cell, rest paler than upperside, but strongly patterned.

Genitalia ♀ (Pl. 46, fig. 345; Pl. 55, fig. 453; Pl. 65, fig. 452). Anal papillae short, ostium broad, lightly sclerotized. First part of duct broad and strongly sclerotized, rest convolute. Bursa large, with large toothed transverse signum.

DISCUSSION. Externally this species is like a larger and paler *S. asinina* to which it is closely related, but with the prominent transverse fascia in *atrata* as a clear mark of separation. In the structure of the genitalia it is basically similar to *asinina* but all the characters of that species are more emphasized in *atrata*. Even the coiled apex of the sacculus process, while basically similar to *asinina*, is more pronounced and has a spine on the aedeagus against which the coiled apex appears to fit.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv; viii; ix; xi.

DISTRIBUTION. Indonesia: Sulawesi.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sulawesi, Koelawi, Paloe, 930 m, W. Celebes, iii. 1937 (*Kalis*), BM slide no. 13953, in BMNH.

Paratypes. INDONESIA: 1 ♂, Sulawesi, W. Celebes, Lindoe, Paloe, iv. 1937 (*Kalis*); 1 ♂, SW. Celebes, Tjamba near Maros, 450 m, ii. 1938 (*Kalis*); 1 ♀, SW. Celebes, Pangean near Maros, 600 m, iii. 1938 (*Kalis*); 1 ♂, S. Celebes, viii-ix. [18]91 (*Doherty*); 1 ♂, W. Celebes, G. Rangkoenau Paloe, 270 m, xi. 1936 (*Kalis*); 1 ♀, W. Celebes, G. Tompoe Paloe, 210 m, ii. 1937 (*Kalis*); 1 ♂, Célèbes Merid., région basse entre Maros et Tjamba, 1896 (*Doherty*). All in BMNH.

THE *TIBIARIA*-GROUP

The species in this group possess one of the more remarkable scent dispersal mechanisms in the Lepidoptera (Whalley, 1974). The presence of a sac containing scent scales in the abdomen is not unusual in Lepidoptera and mechanisms to disperse this scent vary in different groups. In the *tibiaria*-group, a mechanism has evolved in three species in the shape of a brush of scales from the hindwing which is either inserted into an abdominal sac or in a special groove along the abdomen. Presumably when the wings are moved, the brush stirs up the scent scales in the abdomen. This then releases the scent when the brush is removed from the pouch. This mechanism is only found in males and it is reasonable to assume that a sex attractant is produced. A detailed account of the structure and the mechanism will be found in Whalley (1974).

Other aspects of the morphology of the species in this group are typical of the genus *Striglina*.

Striglina tibiaria (Walker)

(Pl. 20, fig. 189)

Daristane tibiaria Walker, 1859 : 194. Holotype ♂, SINGAPORE (BMNH) [examined].

Striglina tibiaria Walker; Whalley, 1974 : 122.

♂. Wing, 12 mm. Vertex grey-brown. Frons rounded. Forewing, pattern similar to Pl. 1, fig. G (*castaneata*), grey-brown, speckled with black. Underside paler. Hindwing similar, with prominent hair-pencil from hind margin projecting posteriad and usually inserted into abdominal pouch; in fourth segment, each pouch covered by scale-plates. The adult is broadly similar to *castaneata* (Pl. 1, fig. G) but is too badly damaged to be figured.

Genitalia ♂ (Pl. 19, fig. 189). Uncus broad, two lateral sclerotized processes each bifurcate at apex. Median process bifurcate, hairy ventrally. Subscaphium hairy, with some strongly sclerotized scales. Gnathus strongly toothed. Valve reduced. Median valve process small, pointed. Sacculus process long, strongly forked and spiny. Aedeagus with lateral swelling and large group cornuti.

♀. Unknown.

DISCUSSION. Only the holotype is known and this specimen is damaged. While

this is basically similar to *S. castaneata* there are very striking differences in detail of the genitalia. Although both this species and *castaneata* were described from Singapore no information is available on the time of year the *tibiaria* specimen was collected. It is possible that this is a seasonal form of *castaneata* but usually seasonally different genitalia in a species show only one character difference and there are several between *tibiaria* and *castaneata*. Their exact relationship will have to await a study of the species in their natural environment; this will also shed light on the method used with the scent scale brushes on the hindwing. A further pointer to suggest that two species are involved is shown by a study of specimens of *castaneata*. These were collected at different times of year and show relatively little variation in the genitalia.

The specimen of *Striglina tibiaria* had remained unrecognized until recently. The species was described in 1859 in the Geometridae by Walker, but with the transfer of the species to the Thyrididae, the generic name *Daristane* became available and could replace *Striglina*. This was the basic reason for the application to the International Commission for Zoological Nomenclature to stabilize the position and to reject the virtually unknown name *Daristane* (see Whalley, 1973; Nye, 1974).

BIOLOGY. Unrecorded. No data on holotype.

DISTRIBUTION. Singapore.

MATERIAL EXAMINED.

Holotype ♂, [SINGAPORE] (ex Saunders coll.), BM slide no. 14224, in BMNH.

Striglina castaneata Hampson

(Pl. 1, fig. G; Pl. 4, fig. 15; Pl. 20, figs 191, 192)

Striglina castaneata Hampson, 1914 : 119.

This species is separated into two subspecies primarily on the wing pattern. Both subspecies have the modified scale brush from the hindwing inserted into an abdominal pouch.

KEY TO THE SUBSPECIES OF *Striglina castaneata* (males)

- 1 Dark brown, finely reticulate. No transverse fascia on wing *c. castaneata* (p. 54)
 - Pale brown, finely reticulate. Transverse fascia on forewing and hindwing
c. synethes (p. 55)

Striglina castaneata castaneata Hampson

(Pl. 1, fig. G; Pl. 20, fig. 191; Pl. 46, fig. 346; Pl. 55, fig. 454; Pl. 65, fig. 543)

Striglina castaneata Hampson, 1914 : 119. LECTOTYPE ♂, here designated, SINGAPORE (BMNH) [examined].

Striglina castaneata Hampson; Gaede, 1932 : 747.

Striglina castaneata Hampson; Whalley, 1974 : 122.

♂. Wing, 12–14 mm. Vertex reddish brown. Third segment one-quarter length of second. Thorax brown. Forewing, pattern as in Pl. 1, fig. G, dark brown with darker black, fine, reticulations. Underside more orange-brown. Hindwings similar. Long hair pencil from hind margin of hindwing which may or may not be inserted into pouch in abdomen. Abdomen with modified scales laterally to accommodate hair-pencil from hindwing. Two large pouches in abdomen, one on each side of segment 4.

Genitalia ♂ (Pl. 20, fig. 191). Uncus with two lateral processes, hairy median ventral process. Subscaphium with fine scales. Gnathus strongly toothed. Median valve process sclerotized. Sacculus process forked with two long and two shorter processes. Aedeagus broad with long slender cornuti.

♀. Wing, 11–14 mm. Colour and pattern as male. Labial palps with third segment one-half length of second. Hindwing with normal fringe, no scale-pencil.

Genitalia ♀ (Pl. 46, fig. 346; Pl. 55, fig. 454; Pl. 65, fig. 543). Anal papillae short. Ostium sclerotized and spiny. Prominent double signum. No pouches in abdomen.

DISCUSSION. Although a rather nondescript brown moth, the remarkable character in the hindwing of the male separates this species from most others in the genus. Investigation of the action of the hair-pencil in the living insect would be interesting. It appears from the structure of the scales along the sides of the abdomen that the hair pencil can be removed from the pouch and replaced in it. This would enable the scent to be dispersed efficiently from the brush when it was removed from the pouch and would enable it to be 'recharged' by replacing it in the pouch for subsequent reuse. Further discussion on this see Whalley (1974: 121). The pattern of this species is variable with some specimens showing a more obvious reticulate pattern and transverse fascia than the holotype. Two specimens from the type-locality also have pattern differences at the apex of the forewings, with areas of (?) bleached scales. There is no evidence of damage to the wing and this could be a natural phenomenon but possibly it might have occurred after capture. I have also seen a similar feature on the wing of *M. ignifissa* (p. 92). *S. c. castaneata* differs from *S. c. synethes* from the Philippines primarily in the prominent transverse fascia on the wing of *synethes*; the genitalia are similar.

BIOLOGY. Not recorded. Adults collected in Singapore in i; in India in vii; in Borneo in iv.

DISTRIBUTION. Singapore; India: Khasia Hills; Sikkim: Jaintai Hills; Indonesia: Borneo.

MATERIAL EXAMINED.

Lectotype ♂, SINGAPORE: 30.i.1908 (*Meade-Waldo*), BM slide no. 13319, in BMNH. 15 specimens, BMNH.

Striglina castaneata synethes West

(Pl. 4, fig. 15; Pl. 20, fig. 192)

Striglina synethes West, 1932 : 7. Holotype ♂, PHILIPPINES (BMNH) [examined].

Striglina castaneata synethes West; Whalley 1974 : 122.

♂. Wing, 13.0–14.5 mm. As nominate subspecies, differing in wing pattern. *S. c. synethes* has a prominent line from the apex of the forewing, across the wing, continuing on the hindwing.

This pattern is visible on the underside. Generally paler than the nominate subspecies and slightly larger.

♀. Unknown.

Genitalia ♂ (Pl. 20, fig. 192). As nominate subspecies with small differences in some structures.

DISCUSSION. This species is separated from the nominate one primarily on the pattern differences. It has the remarkable scale-pencil from the hind margin of the hindwing shown by the nominate subspecies. Both in this and in the specimens of *c. castaneata* there is some variation; for example, the Khasis hill specimens of *c. castaneata* differs slightly from the holotype from Singapore. Relatively few specimens are available of both these subspecies but it is possible that further subspecies may be found when more specimens are available for examination. Again the study of the biology of this subspecies would shed light on the remarkable scent dispersal mechanism.

BIOLOGY. Not recorded. Adults collected in i; vi; xii.

DISTRIBUTION. Philippines.

MATERIAL EXAMINED.

Holotype ♂, PHILIPPINES: Benguet, Luzon, 600 m, 28.xii.1912 (*Wileman*), BM slide no. 10880, in BMNH.

3 specimens, BMNH; 2 specimens, USNM.

Striglina propatula Whalley

(Pl. 20, fig. 188)

Striglina propatula Whalley, 1974 : 122. Holotype ♂, INDIA (BMNH) [examined].

♂. Wing, 12.5–13.5 mm. As this species was recently described in detail, only the main diagnostic features will be repeated here. Forewing, pattern similar to Pl. 1, fig. 1 for *S. scitavia*, reddish brown with narrow dark transverse fascia across forewing and hindwing. Hair pencil on hindwing margin.

Genitalia ♂ (Pl. 20, fig. 188). Uncus with narrow forked median process and two lateral processes. Sacculus process elongate, strongly toothed, produced posteriad to saccus. Aedeagus with two large patches of spines.

♀. Unknown.

DISCUSSION. Although this species has the hair pencil on the hindwing similar to the others in the group, it is not inserted into a pouch in the abdomen. Instead it runs in a groove along the abdomen with modified scales along this. This type of structure is regarded as the intermediate condition between the hair-pencil-pouch condition and the hair-pencil which is merely present in a hindwing fold and does not project posteriad from the wing (Whalley, 1974).

BIOLOGY. Not recorded. Adults collected in xi.

DISTRIBUTION. India (north).

MATERIAL EXAMINED.

Holotype ♂, INDIA: Assam, Jaintia Hills (*Swinhoe* coll.), ex Oberthür coll., BM slide no. 13653, in BMNH.

2 specimens, BMNH.

Striglina conjuncta Swinhoe

(Pl. 4, fig. 16; Pl. 20, fig. 190)

Striglina conjuncta Swinhoe, 1906 : 381. LECTOTYPE ♂, here designated, INDIA (BMNH) [examined].

Striglina conjuncta Swinhoe; Gaede, 1932 : 743.

Striglina conjugata [sic] Swinhoe; Whalley 1974 : 122.

♂. Wing, 14.0–14.5 mm. Vertex brown. Third segment of labial palp one quarter length of second. Thorax brown with white line across prothorax. Forewing, pattern as in Pl. 4, fig. 16, brown with lighter, often slightly orange coloured, patches. Reticulate pattern indistinct on upper surface. Hindwing similar, without patches. Prominent hair-pencil from hindwing fringe which projects posteriorly and is inserted into pouch in abdomen.

Genitalia ♂ (Pl. 20, fig. 190). Uncus with two pointed lateral processes and median process with two small lateral points. Prominent subscaphium with rows of pointed scales. Long, curved and pointed median valve process. Sacculus processes long, asymmetrical, anteriorly produced, one very long, reaching beyond gnathus, other short, truncate, reaching just to median process. Aedeagus with small sclerotized plate in vesica. Abdomen with two large pouches.

♀. Unknown.

DISCUSSION. The similarity of the scent dispersal mechanism between *conjuncta* and *castaneata* suggests a close relationship between them, apart from other morphological similarities. It is interesting that the genitalia of these two species, although basically similar, show wide differences of structure. This supports the idea that the male genitalia in *Striglina* are highly modified specifically and do not produce such good generic characters as in some other genera.

BIOLOGY. Not recorded. No data on specimens.

DISTRIBUTION. India (north).

MATERIAL EXAMINED.

Lectotype ♂, INDIA: Khasis (Native coll.), BM slide no. 13499, in BMNH.

4 specimens, BMNH.

THE *RUFESCENS*-GROUP

This group is characterized by the process on the aedeagus. This process is in a dorsal position in its normal orientation in the insect. The significance of these structures is not known. A roughly similar structure occurs in species in the African genus *Chrysotypus* (Whalley, 1971a). The species in the *rufescens*-group consist of rather similar, dark-coloured species.

Striglina rufescens Gaede

(Pl. 1, fig. M; Pl. 21, fig. 194, 195; Pl. 46, fig. 347)

Striglina rufescens Gaede, 1922 : 29. Holotype ♂, INDIA (MNHU) [examined].
 [*Striglina bivittata* Moore; Gaede, 1932 : 747. Misidentification.]

♂. Wing, 12.5-14.0 mm. Vertex brown. Labial palps with third segment one-quarter length of second. Thorax brown. Forewing, pattern as in Pl. 1, fig. M, dark orange-brown with darker reticulations. Discal mark dark. Brown fascia in posterior part of median area. Hindwing similar. Underside paler, markings more distinct.

Genitalia ♂ (Pl. 21, fig. 194). Uncus deeply bifurcate with two broad lateral arms and prominent median process. Subscaphium hairy. Gnathus with prominent median process, covered with short teeth. Median valve process strongly bifurcate. Sacculus process very elongate, strongly out-curved for part of length. Aedeagus with cornuti and with strong lateral hairy process, sclerotized near base.

♀. Wing, 12 mm. Colour and pattern as male. Frenulum double.

Genitalia ♀ (Pl. 46, fig. 347). Anal papillae short. Strongly sclerotized ostium and area round anal papillae. Two prominent, sclerotized, pointed processes on each side of ostium. No signum.

DISCUSSION. At present the only specimen from North India is the holotype and this differs slightly from the other specimens in the shape of the gnathus, otherwise these specimens from the East Indies are similar to the holotype. The single female of this species examined differed from most others in the genus in lacking a signum. The males of the Borneo specimens have a slightly more slender sacculus process than the others, and the spines on the base of the lateral process of the aedeagus are more prominent than the type. Until more specimens are available it is not worth considering them subspecific. This species differs from *S. cymba* in the shape of the uncus and the lack of the large lateral spines on the aedeagus in *rufescens*.

BIOLOGY. Not recorded. Adults collected in iv; viii.

DISTRIBUTION. Assam; Burma; Indonesia: Borneo; Malaysia: Sarawak.

MATERIAL EXAMINED.

Holotype ♂, INDIA: Upper Assam, BM slide no. 10885, in MNHU.

10 specimens, BMNH.

Striglina cymba sp. n.

(Pl. 4, fig. 17; Pl. 21, figs 196, 197)

♂. Wing, 13 mm. Vertex brown. Third segment of labial palp one-quarter length second. Thorax brown. Forewing, pattern as in Pl. 4, fig. 17, reddish brown with darker reticulations. Hindwings similar. Two dark patches on forewing in median area. Underside, pattern more distinct than upperside.

Genitalia ♂ (Pl. 21, fig. 196). Uncus deeply bifurcate with pointed lateral processes and ventral hairy median process with short projections. Gnathus with prominent median process covered with short teeth. Median valve process heavily sclerotized, bifurcate. Sacculus

process strongly sclerotized, enlarged and spiny, one-third from apex. Aedeagus with long cornutus, short lateral hairy process and very long lateral spine.

♀. Unknown.

DISCUSSION. Externally this species is similar to *rufescens* to which this species is closely related. The genitalia, with pointed lateral uncus lobes, shape of sacculus process and the large spine on the aedeagus separate it from *rufescens*. Possibly *S. cymba* could be considered as a subspecies of *rufescens* but the differences between them are more striking than some of the subspecific differences in other species. The remarkable lateral process on the aedeagus of *cymba* is clearly an extreme development of the small patch of spines present in *rufescens*.

BIOLOGY. Not recorded. Adults collected in i, vi; xii.

DISTRIBUTION. Philippines.

MATERIAL EXAMINED.

Holotype ♂, PHILIPPINES: Benguet, Luzon, 600 m, 27.xii.1912 (*Wileman*), BM slide no. 14009, in BMNH.

Paratypes. PHILIPPINES: 2 ♂, Palali, 600 m, Benguet, Luzon, i. 1913 (*Wileman*), in BMNH; 1 ♂, Kolambugan, Lanao, Mindanao, 22.vi.1914 (*Wileman*), in BMNH; 7 ♂, Mt Makiling, Luzon (*Baker*), in USNM; 2 ♂, Mt Makiling, Luzon (*Baker*), in CNC.

Striglina sectura sp. n.

(Pl. 4, fig. 19; Pl. 26, figs 223, Pl. 56 fig. 455)

♂. Wing, 14 mm. Vertex red-brown. Antennae minutely ciliate. Labial palp with third segment one quarter length second. Thorax red-brown. Fore tibia with epiphysis. Hind tibia with two pairs spurs. Hind tarsi each with row of spines. Forewing, pattern as in Pl. 4, fig. 19, red-brown with a few yellow scales. Prominent transverse fascia from near apex to centre of hind margin of forewing. Hindwing similar, with prominent medial and less distinct submedial line. Underside paler, black transverse line present. Prominent black spot at apex of cell of forewing. Veins R_2 - R_5 in forewing separately from cell.

Genitalia ♂ (Pl. 26, fig. 223). Uncus bifid, branched (broken in only male). Gnathus with prominent toothed median process. Subscaphium hairy. Valve reduced, median basal process sclerotized, bifid. Sacculus process long, sclerotized, Y-shaped, covered with small spines. Aedeagus with spiny vesica, two strong spines near apex and prominent lateral process, part sclerotized, part covered in spines.

♀. Wing, 14 mm. Colour and pattern as male. Frenulum double.

Genitalia ♀ (Pl. 56, fig. 455). Anal papillae short. Ostium with strongly sclerotized bar all round. Duct convolute. Bursa without signum.

DISCUSSION. Externally this species is different from the others in the *rufescens*-group, being much more red-brown and with a prominent transverse line on the wings. In this pattern it is similar to *fidelia* but the genitalia are quite distinct. *S. sectura* is related to *S. cuticula* but can be distinguished from that species by the shape of the uncus, the shape of the lateral process of the aedeagus and the prominent apical spines on the aedeagus. Both species have a similar branched sacculus process and broadly similar genitalia. The female of *cuticula* is unknown, but the

female of *sectura* and *rufescens*, both of which are without signa, can be separated by the shape of the sclerotized bar round the ostium.

BIOLOGY. Not recorded. Adults collected in iii; iv; vii; x.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♂, NEW GUINEA: Kiunga, Fly River, 2. vii-x. 1957 (*Brandt*), BM slide no. 14734, in ANIC.

Paratype. NEW GUINEA: 1 ♀, Ekeikei 450 m, iii-iv. 1903, BM slide no. 4737, in BMNH.

***Striglina cuticula* sp. n.**

(Pl. 4, fig. 18; Pl. 21, figs 198, 199)

♂. Wing, 13.5 mm. Vertex brown. Third segment of labial palp one-quarter second. Thorax brown. Forewing, pattern as in Pl. 4, fig. 18, reddish brown with darker median area and dark spots on wing. Hindwing similar, uniformly mottled. Underside paler, more reddish brown. Median dark area more prominent.

Genitalia ♂ (Pl. 21, fig. 198). Uncus with two slender lateral processes and four more ventrally placed ones, two slightly truncate. Prominent ventral hairy process below uncus. Gnathus enlarged, very prominent with toothed edges. Median valve process a strongly sclerotized hook with broader sclerotized plate dorsally. Sacculus process branched and strongly toothed. Aedeagus with cornuti and strongly sclerotized lateral process, slightly clavate and covered with small spines.

♀. Unknown.

DISCUSSION. Although only two specimens of this species are known (one without abdomen), the genitalia are distinct with numerous processes round the uncus and the strongly toothed and branched sacculus process. This separates it clearly from *rufescens* although externally they are very similar, and are probably related. This species shows a similar type of lateral modification in the aedeagus to the others in the group.

BIOLOGY. Not recorded. Adults collected in iii; xi.

DISTRIBUTION. Indonesia: Sulawesi.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sulawesi, Koelawi, Paloe, 930 m, W. Celebes, iii. 1937 (*Kalis*), BM slide no. 14026, in BMNH.

Paratype. INDONESIA: 1 ♂, Sulawesi, Paloe, W. Celebes, 270 m, xi. 1936 (*Kalis*), in BMNH.

THE *CLATHRATA*-GROUP

This group of African species was revised recently (Whalley, 1971) and only additional information will be given here.

The species all have veins $Sc + R_1$ and Rs running to the margin of the hindwing

separately. This group contains the following species. *S. clathrata*, *S. minutula* and *S. eguttalis*. *Striglina rothi*, which was placed in this group previously (Whalley, 1971 : 68) is here transferred to the *strigifera*-group (p. 78). Within the *clathrata*-group it is possible to make further subdivisions which separate *eguttalis* from the other two species because of some different characters. These are the presence of interfacetal hairs, veins R_2 - R_5 separately from the cell and less tarsal spines on each segment in *eguttalis* than in the other two species. In *S. clathrata* and *S. minutula* the frenulum in the female is reduced to two bristles, while in *eguttalis* it is three. The males of all three species have a single bristle. *S. eguttalis* probably should be separated from the other two species, but relatively few specimens of this species are known, so that for the present it is retained here.

Striglina clathrata (Hampson)

(Pl. 1, fig. B)

Plagiosella clathrata Hampson, 1897 : 626.

Striglina clathrata clathrata Hampson; Whalley, 1971a : 70. Holotype ♂, GHANA (BMNH) [examined].

DISTRIBUTION. West and East Africa.

Striglina clathrata declivita Whalley, 1971a : 72. Holotype ♂, KENYA (BMNH) [examined].

DISTRIBUTION. Kenya.

Striglina clathrata amani Whalley, 1971a : 71. Holotype ♂, TANZANIA (BMNH) [examined].

DISTRIBUTION. Tanzania.

Striglina minutula (Saalmüller)

(Pl. 4, fig. 20; Pl. 20, fig. 193)

Betousa minutula Saalmüller, 1880 : 295. Neotype ♂, MADAGASCAR (Senckenberg Mus., Frankfurt am Main) [examined].

Siculodes aenea Saalmüller, 1884 : 215. Neotype ♂, MADAGASCAR (Senckenberg Mus., Frankfurt am Main) [examined].

Plagiosella interrupta Hampson, 1897 : 626. Holotype ♂, MADAGASCAR [BMNH] [examined].

Striglina minutula Saalmüller; Whalley, 1967 : 43.

DISTRIBUTION. Madagascar.

Striglina eguttalis Gaede

(Pl. 4, fig. 21)

Striglina eguttalis Gaede, 1917 : 378. Holotype ♂, GABON (MNHU) [examined].

Striglina eguttalis Gaede; Whalley, 1971a : 67.

DISTRIBUTION. Cameroun; Gabon; Zaire.

THE *BURGESI*-GROUP

The following species, *S. meridiana*, forms a link between the preceding groups and the following ones. Although placed in the *burgesi*-group, with which it has more characters in common, it also has some in common with the preceding groups, particularly in the morphology of the genitalia. Most of them have the hair pencil either as a group of scales rolled up in the posterior margin of the hind wing or as a projection from it. Neither the *burgesi*-group nor the subsequent groups in the genus have a hair pencil in this position.

Striglina meridiana sp. n.

(Pl. 4, fig. 22; Pl. 22, fig. 206; Pl. 46, fig. 348; Pl. 56, fig. 456; Pl. 65, fig. 544)

♂. Wing, 10–12 mm. Vertex brown. Forewing, pattern as in Pl. 4, fig. 22, brown with prominent transverse lines and brown reticulations.

Genitalia ♂ (Pl. 22, fig. 206). Uncus elongate, slightly bifurcate. Lateral process strongly toothed. Median valve process small, sclerotized. Saccus process large, symmetrical, toothed at apex. Aedeagus without spines on manica but with small lateral projection.

♀. Wing, 10–13 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 46, fig. 348; Pl. 56, fig. 456; Pl. 65, fig. 544). Anal papillae short. Ostium with two lateral rounded plates, toothed posteriorly. Duct broad. Bursa spinose, prominent signum, covered with spines.

DISCUSSION. This species is allied to *S. burgesi* and forms the link between this species and the *scitaria*-group. The uncus, aedeagus and some other characters are similar to *burgesi*, while more flattened lateral processes of the uncus are like *scitaria*. It is possible to consider this species as a subspecies of *burgesi* but the two have some very different characters. *S. meridiana* can be separated from other species in the group by the broad and strongly toothed lateral processes of the uncus.

BIOLOGY. Not recorded. No dates on specimens examined.

DISTRIBUTION. Australia.

MATERIAL EXAMINED.

Holotype ♂, AUSTRALIA: Cedar Bay, S. of Cooktown (*Meek*), BM slide no. 13643, in BMNH.

Paratypes. AUSTRALIA: 10 ♂, 3 ♀, data as holotype; 4 ♂, Queensland (*Swinhoe coll.*).

Striglina burgesi Gaede

(Pl. 4, fig. 23; Pl. 22, figs 201–203; Pl. 46, figs 349, 350; Pl. 56, fig. 457; Pl. 65, fig. 545)

Striglina burgesi Gaede, 1922 : 29. LECTOTYPE ♂, here designated, NEW GUINEA (MNHU) [examined].

[*Striglina scitaria* Gaede form *burgesi* Gaede; Gaede, 1932 : 746. Misidentification].

♂. Wing, 8.5–13.0 mm. Vertex brown. Labial palps with third segment one quarter length of second. Tegulae brown, reaching beyond metathorax. Forewing, pattern as in

Pl. 4, fig. 23, reddish brown with darker reticulations. Hindwings, similar to forewings. Underside paler with spot in discal area of forewing.

Genitalia ♂ (Pl. 22, figs 201–203). Uncus bifid, lateral processes slender. Median valve process a small spiny papilla, strongly sclerotized. Sacculus process curved, posterior ends enlarged and spiny. Aedeagus without spines on manica.

♀. Wing, 10–12 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 46, figs 349, 350; Pl. 56, fig. 457; Pl. 65, fig. 545). Anal papillae short. Ostium strongly sclerotized, lateral plates round ostium enlarged, toothed and with several long spines projecting posteriad. Spiny, sclerotized transverse signum.

DISCUSSION. Wide variation in size and intensity of colour and pattern make this species difficult to separate externally from *meridiana* and *curvilinea*. The genitalia of the male are, however, quite distinct, but the females are less so. With the correct association of males and females of these species, always difficult in the absence of bred material, the association has been done by locality and general appearance. In *burgesi* the spines which project posteriad from the lateral plates round the ostium are conspicuous and usually give a guide to this species. Some specimens examined had rather broader spines, but these did not approach those in *curvilinea*, where these plates are toothed, sometimes with broad spines. In *meridiana*, the teeth on the ostial plate are generally shorter than the others. In the male some variation exists in the genitalia between specimens examined and it is probable that this species will be separated into several subspecies when more information and specimens are available. This species is very widespread over the Oriental and Australasian regions. Frequently this species has been misidentified, generally as *scitaria* which it externally resembles. The Australian records of this species are based on one specimen from Valla Beach, near Coff's Harbour in New South Wales, collected in January 1963, and two specimens from Cape York (Queensland), one in 1963, one 1964.

BIOLOGY. Not recorded. Adults collected Thailand, ii; Formosa, vii; Philippines, iv; xii; Sulawesi, i; v; ix; xi; xii; Bali, v; New Guinea, xi; x; xi; Australia, i; iii; vii.

DISTRIBUTION. Australia: New South Wales, Queensland; New Guinea; Indonesia: Sulawesi, Bali, Lombok, Sumatra, Java; Malaysia: Malaya; Solomon Is.; Moluccas; Ternate; Selayar; Dampier; Sudest I.; St. Matthias; Vulcan I.; Burma; Thailand; Formosa; Philippines; China (Tonkin); New Ireland.

MATERIAL EXAMINED. Lectotype ♂, NEW GUINEA: BM slide no. 10891.

162 specimens, BMNH; 5 specimens, USNM; 2 specimens, ANIC.

Striglina curvilinea Warren

(Pl. 4, fig. 24; Pl. 23, fig. 207; Pl. 46, fig. 351; Pl. 56, fig. 458; Pl. 65, fig. 546)

Striglina curvilinea Warren, 1905b : 411. Holotype ♂ SOLOMON IS. (BMNH) [examined].

Striglina curvilinea Warren; Dalla Torre, 1914 : 11.

Striglina curvilinea Warren; Gaede, 1932 : 743.

♂. Wing, 12.0–12.5 mm. Vertex yellow-brown. Thorax light brown. Forewing, pattern as in Pl. 4, fig. 24, brown with darker brown reticulations. Prominent line from apex of forewing to hind margin of forewing, shorter line at angle to this one-third below apex to

terminal margin. Hindwing similar, with transverse fascia in antemedial position. Underside similar, paler.

Genitalia ♂ (Pl. 23, fig. 207). Uncus conical, flattened at apex with two flat rounded lateral lobes. Subscaphium hairy, elongate. Gnathus with broad median area with long teeth. Median valve process lightly sclerotized. Sacculus process elongate and upturned into sclerotized process. Aedeagus with lateral point and strongly sclerotized apex, large patch of cornuti.

♀. Wing, 12.5–13.5 mm. Colour and pattern as male. Labial palp with third segment one-third length of second.

Genitalia ♀ (Pl. 46, fig. 351; Pl. 56, fig. 458; Pl. 65, fig. 456). Anal papillae short. Ostium strongly sclerotized with prominent sclerotized plates round signum, covered with spines. Sclerotized transverse signum in bursa.

DISCUSSION. Very little variation exists in the small series examined. The shape of the uncus is characteristic and separates it from the others in the genus. The females which are similar to *burgesi* are discussed under that species. The single male from New Guinea was collected at Kiungu, Fly River in 1957. It is indistinguishable from the Solomon Is. specimens.

BIOLOGY. Not recorded. Adults collected in ii; iv; viii; xii.

DISTRIBUTION. Solomon Is.: Bougainville; Rendova; Niisan; New Guinea.

MATERIAL EXAMINED.

Holotype ♂, SOLOMON IS.: Bougainville, iv. 1904, in BMNH (lacks abdomen).
9 specimens, BMNH; 4 specimens, ANIC.

Striglina irresecta sp. n.

(Pl. 5, figs 25, 26; Pl. 22, figs 204, 205; Pl. 46, fig. 352; Pl. 56, fig. 459; Pl. 65, fig. 547)

This species is larger than *S. scitaria* which it externally resembles. It can be separated from that species in the male by the shape of the genitalia. The strongly Y-shaped central part of the uncus is visible after brushing the abdomen, although a slide preparation is needed to identify the subspecies. In the female the structure of the ostium and the shape of the bursa separate this from *S. scitaria*. In spite of its external similarity to *scitaria* the structure of the genitalia of both sexes suggests a closer affinity with *burgesi*. *S. irresecta* is separated into two subspecies on the basis of differences in the genitalia. Whether these are seasonal forms is not clear from the data available but they are geographically isolated from one another.

KEY TO THE SUBSPECIES OF *Striglina irresecta* (males)

- | | | |
|---|---|-----------------------------|
| 1 | Sacculus process short, rounded with small apical process . . . | <i>i. irresecta</i> (p. 64) |
| – | Sacculus process slender, elongate with long apical process . . . | <i>i. obscura</i> (p. 65) |

Striglina irresecta irresecta subsp. n.

(Pl. 5, fig. 25; Pl. 22, fig. 204)

♂. Wing, 14.4–16.0 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Forewing, pattern as in Pl. 5, fig. 25, brownish yellow with darker reticulations.

Hindwing, colour and pattern as forewing. Underside paler, discal spot prominent on underside of forewing.

Genitalia ♂ (Pl. 22, fig. 204). Uncus bifid, two slender lateral arms. Subscaphium hairy. Gnathus toothed. Median valve process short. Sacculus process sclerotized, prominent. Aedeagus with two prominent rings of cornuti.

♀. Unknown.

DISCUSSION. Slight variation in the shape of the uncus was found in specimens from East Pegu (Burma) but these were similar to those from the Khasis hills. This subspecies is separated from *i. obscura* by the darker colour and the lack of the posterior projection from the sacculus process.

BIOLOGY. Not recorded. Adults collected in iii; iv.

DISTRIBUTION. India: Khasis; Burma: East Pegu.

MATERIAL EXAMINED.

Holotype ♂, BURMA: East Pegu, 1200–1500 m, iii; iv. 1890 (*Doherty*), BM slide no. 13619, in BMNH.

Paratypes. BURMA: 3 ♂, data as holotype, in BMNH. INDIA: 4 ♂, Khasia Hills, Assam (*Nissary*), in BMNH.

Striglina irresecta obscura subsp. n.

(Pl. 5, fig. 26; Pl. 22, fig. 205; Pl. 46, fig. 352; Pl. 56, fig. 459; Pl. 65, fig. 547)

♂. Wing, 14–15 mm. As nominate subspecies but paler.

Genitalia ♂ (Pl. 22, fig. 205). Similar to nominate subspecies. Differing in the shape of the sacculus process which has an elongate lobe extending to median valve process.

♀. Wing, 16 mm. As male but darker brown, not as dark as nominate subspecies.

Genitalia ♀ (Pl. 46, fig. 352; Pl. 56, fig. 459; Pl. 65, fig. 547). Anal papillae short. Ostium broad with lightly sclerotized lobes, slightly sinuate posteriad. First part of duct enlarged, sclerotized, rest of duct convolute. Bursa spinose, prominent narrow transverse signum with small teeth.

DISCUSSION. Indistinguishable externally from the nominate subspecies, it differs only in details of the male genitalia, particularly in the enlargement of the sacculus process. Although a reasonable series of the nominate subspecies was available for examination, only the Burmese specimens had collection data; they were taken in March and April. It is possible that the subspecies *obscura* may represent a seasonal form but no data are available on this. Seasonal differences in the shape of the juxta are well documented (Rupert, 1949; Munroe, 1959) and there is no reason why this seasonal variation should not be found in the sacculus process, particularly since in these species they appear to be performing the function of a juxta. The type-locality is variously spelt Phedong or Pedong on the specimens.

BIOLOGY. Not recorded. No data on flight period.

DISTRIBUTION. India.

MATERIAL EXAMINED.

Holotype ♂, [INDIA] Pedong (*Desgodins*), BM slide no. 13640, in BMNH.

Paratypes. INDIA: 5 ♂, 1 ♀, data as holotype, in BMNH.

Striglina fixseni Alpheraky

(Pl. 5, fig. 27; Pl. 46, fig. 353; Pl. 56, fig. 460; Pl. 65, fig. 549)

Striglina fixseni Alpheraky, 1897 : 167. 2 syntypes, KOREA (not traced).*Striglina fixseni* Alpheraky; Dalla Torre, 1914 : 11.

♀. Wing, 17 mm. Vertex brown. Antennae shortly ciliate. Thorax brownish white. Forewing, pattern as in Pl. 5, fig. 27, brown with paler costal margin and brown transverse lines and reticulations. Underside similar, forewing with squarish discal spot.

Genitalia ♀ (Pl. 46, fig. 353; Pl. 56, fig. 460; Pl. 65, fig. 549). Anal papillae short. Ostium sclerotized. Duct with prominent longitudinal ridges, largest near ostium. Bursa with two large toothed signa and two large sclerotized patches covered with minute spines.

♂. Unknown.

DISCUSSION. The syntypes of this species have not been traced but a single specimen from Korea (the type-locality) agrees with the original coloured figure of *fixseni*. This species is probably related to *S. burgesi* but differs from the female of that species in having shortly ciliate antennae (minutely ciliate in *burgesi*). Until more specimens are available no neotype is proposed for this species.

BIOLOGY. Not recorded. Adult collected in vii.

DISTRIBUTION. Korea.

MATERIAL EXAMINED.

KOREA: 1 ♀, Gensan [Chemulpho] (*Leech*), in BMNH.

Striglina nemorosa sp. n.

(Pl. 5, fig. 28; Pl. 23, fig. 208)

♂. Wing, 15.5 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax brown. Forewings, pattern as in Pl. 5, fig. 28, brown in subterminal area and hindwings. Prominent dark reticulations and dark patch in median area. Hindwings reticulate. Underside more orange-brown, pattern more distinct than upperside.

Genitalia ♂ (Pl. 23, fig. 208). Uncus with two broad lateral lobes and narrow median projection. Prominent subscaphium with long anteriorly pointing hairs. Gnathus strongly toothed. Median valve process sclerotized and strongly hooked. Juxta with two lightly sclerotized shallow lobes. Sacculus process strongly sclerotized and toothed extending laterally. Aedeagus with group of cornuti.

♀. Unknown.

DISCUSSION. The genitalia of this species are quite distinct and the species is larger than most others in the group. Externally the pattern is similar to *rufescens* but the internal morphology suggests that it is more closely allied to *burgesi*. Although only one specimen is known, it is described because it is so distinct from the others in the genus.

BIOLOGY. Not recorded. Adult collected v-vi.

DISTRIBUTION. India.

MATERIAL EXAMINED.

Holotype ♂, INDIA: Darjeeling, 2250 m, v-vi. 1889 (*Knyvett*), BM slide no. 13781, in BMNH.

THE *VENIA*-GROUP

The following two species differ from most others in the genus in the absence of the lateral processes on the uncus, otherwise the genitalia are typical of the genus. Externally they are similar to *burgesi* and cannot be reliably separated on these characters. Both *S. venia* and *S. cancellata* are only separable on genitalia differences. The actual relationship between these two species is not clear, but they apparently occur together in China; however, until more is known, I have kept them as separate species rather than as subspecies. In the male of this group the cornuti in the aedeagus are strongly dehiscent. Specimens have been examined with a large patch of spines in the aedeagus, while others have been found without spines or with very few. Several females have been examined which had large patches of spines in the bursa, obviously derived from a male. It appears that these spines are transferred during copulation.

Striglina venia sp. n.

(Pl. 5, fig. 29; Pl. 23, fig. 209; Pl. 46, fig. 354; Pl. 56, fig. 461; Pl. 65, fig. 548)

♂. Wing, 10.0–11.0 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Scales projecting slightly in tuft between eyes. Thorax brown. Forewing, pattern as in Pl. 5, fig. 29, reddish brown with oblique brown line from below apex to middle of hind margin. Indistinct reticulate pattern. Hindwing, pattern and colour as forewing. Underside, prominent discal spot on forewing, oblique fascia shorter than on upperside.

Genitalia ♂ (Pl. 23, fig. 209). Uncus broader next apex. Median valve process with strong spines laterally. Gnathus strongly toothed. Sacculus process long, curved at apex, reaching posteriad to median valve process. Aedeagus with large group of cornuti, sometimes represented by cornuti bases only.

♀. Wing, 12 mm. Pattern as male but darker brown.

Genitalia ♀ (Pl. 46, fig. 354; Pl. 56, fig. 461; Pl. 65, fig. 548). Anal papillae short. Lateral process of ostium triangular, with slender apex. Prominent transverse signum.

DISCUSSION. The association of the single female with this species is uncertain. Both this species and *S. cancellata* were collected in China at Sia-Lou and thus the female described above may belong to *cancellata*. No convincing differences were found between this specimen and females of *cancellata* in the genitalia structure, but externally it looked more like *S. venia*. The dehiscent nature of the cornuti in the aedeagus gives a superficially different appearance but the basal attachments of these spines can be seen on closer inspection.

BIOLOGY. Not recorded. Adults collected in vi; vii; viii.

DISTRIBUTION. China.

MATERIAL EXAMINED.

Holotype ♂, CHINA: Env. de Changhai [Shanghai], 1895 (*Baumert*), BM slide no. 13596, in BMNH.

Paratypes. CHINA: 2 ♂, 1 ♀, Sia Lou, 1903 (*Dejean*), in BMNH; 1 ♂, Ichang, vi. 1888 (*Pratt*), in BMNH; 1 ♂, Ichang Gorge (*Pratt*) viii. 1887, in BMNH; 1 ♂, Foochow, 1937 (*Yang*), in BMNH; 1 ♂, Yao Gi, 1440 m (*Graham*), in CNC; 1 ♂, Mt Omei, Szechwan, 1320 m (*Graham*), in CNC.

Striglina cancellata (Christoph)

(Pl. 5, fig. 30; Pl. 23, fig. 210; Pl. 46, figs 355, 356; Pl. 65, fig. 550)

Timandra (?) *cancellata* Christoph, 1881 : 23⁵⁵. Holotype ♀, U.S.S.R.: Amur (not traced).[*Striglina scitaria* Walker; Pagenstecher, 1892 : 44. Misidentification.]*Idiodes cancellata* Christoph, 1893 : 35.[*Striglina scitaria* Walker; Hampson, 1897 : 613. Misidentification.]*Striglina cancellata* Christoph; Dalla Torre, 1914 : 13.[*Striglina scitaria* Walker; Gaede, 1912 : 373. Misidentification.]

♂. Wing, 10–13 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Tuft of scales projecting slightly between eyes. Thorax brown. Forewing, pattern as in Pl. 5, fig. 30, reddish brown, oblique darker line from below apex to middle of hind margin of forewing. Reticulate pattern distinct. Hindwing slightly less reddish than forewing. Underside with prominent discal spot in forewing. Oblique line indistinct below apex on underside.

Genitalia ♂ (Pl. 23, fig. 210). Uncus broader near apex, often slightly indented at apex. Gnathus strongly toothed. Median valve process sclerotized, with hairs. Sacculus process sclerotized, not curved at apex, not reaching median process of valve. Aedeagus with or without large group of cornuti.

♀. Wing, 11.0–13.5 mm. Colour and pattern as male. Labial palp with third segment almost half length of second.

Genitalia ♀ (Pl. 46, figs 355, 356; Pl. 65, fig. 550). Lateral margins of ostium triangular, often with slender apices. Prominent transverse signum.

DISCUSSION. There is some variation in the genitalia of this species although no distinct trends could be found. A few specimens from Japan were paler than the others but the typical dark reddish form occurs there. The cornuti are dehiscent; in 19 males dissected, eight were without cornuti (although the insertions could be seen when closely studied), nine had large bundles of cornuti and two had obviously lost some of their bunches of cornuti. Cornuti were found in the bursae and ductus bursae of the females (Pl. 46, fig. 356). This species was common in Korea at Suweon (nr Seoul) in June and July 1974. It was readily attracted to light but only in small numbers. It was also collected during the day but this was unusual. The moths sit on trees with their wings flat over their backs, with apices of the forewings projecting on each side, giving a triangular shape to the insect at rest.

Although the holotype of this species has not been traced it seems reasonable to consider this species as the one described by Christoph and to use his name rather than to propose a new name for this taxon.

BIOLOGY. Adults collected in China in vii; in Japan, v; vi; v; Korea, vi; vii. In Japan this species has been bred from the leaves of *Quercus* and *Castanea* (Fagaceae).

DISTRIBUTION. China: Hopeh, Szechwan, Kwanshien, Tibet; Japan: Okinawa; Korea; U.S.S.R.: Amur.

MATERIAL EXAMINED.

48 specimens, BMNH; 6 specimens, USNM.

THE *MEDIOFASCIA*-GROUP

Only one species is included in this group which is separated from the others in the genus by the structure of the genitalia. In *mediofascia* the median valve process is greatly enlarged and appears to have taken over the function of the reduced valves. There is a tendency in the genus for the valves to be reduced with attendant enlargement of other parts. The extreme condition of this is seen in *mediofascia*.

Striglina mediofascia Swinhoe

(Pl. 5, figs 31, 32; Pl. 23, fig. 211; Pl. 47, fig. 357; Pl. 56, fig. 462; Pl. 65, fig. 551)

Striglina mediofascia Swinhoe, 1906 : 381. LECTOTYPE ♂, here designated, INDIA (BMNH) [examined].

Striglina mediofascia Swinhoe; Gaede, 1932 : 747.

♂. Wing, 13-16 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax, prothorax, with white scales posteriorly, giving transverse line, rest of thorax brown. Forewing, pattern as in Pl. 5, figs 31, 32, reddish brown in median and basal area. Terminal margin with reddish suffusion. Reticulate pattern with darker patches in median area. Hindwings similar, less reddish brown. Underside paler, more strongly marked.

Genitalia ♂ (Pl. 23, fig. 211). Uncus triple with two lateral and a median lobe, latter with hairy ventral part. Gnathus strongly toothed. Subscaphium hairy. Median basal process large, toothed. Sacculus process elongate, sclerotized, pointed. Aedeagus short, broad, two large patches of cornuti.

♀. Wing, 15-17 mm. Colour and pattern as male, although pattern often more prominent.

Genitalia ♀ (Pl. 47, fig. 357; Pl. 56, fig. 462; Pl. 65, fig. 551). Anal papillae short. Anterior margin of ostium sclerotized with small spines, posterior enlarged, rather membranous. Prominent double signum.

DISCUSSION. Depending on the amount of reddish brown suffusion, the pattern may be more or less obscured. Some specimens are as heavily patterned as *duplicifimbria* but, in the females, the lack of the spines on each side of the anal papilla separates these two species. In the male, the trifold appearance of the uncus can be seen by brushing the scales at the tip of the abdomen. Generally the Indian specimens are more suffused with reddish brown than the Chinese or Formosan specimens but no other constant differences were found.

BIOLOGY. Not recorded. Adults collected in India in iii; in Formosa, viii.

DISTRIBUTION. China, Hopeh; India (north); Formosa.

MATERIAL EXAMINED.

Lectotype ♂, INDIA: Khasis, BM slide no. 13511, in BMNH.

17 specimens, BMNH; 1 specimen, USNM.

THE *SCALATA*-GROUP

The next species-group, while not completely homogeneous, has a number of closely allied species which form a fairly well defined group. Generally species in the group look similar externally and have genitalia based on a similar pattern.

Striglina scalata Warren

(Pl. 5, fig. 33; Pl. 23, fig. 212; Pl. 47, fig. 358; Pl. 56, fig. 463; Pl. 65, fig. 552)

Striglina scalata Warren, 1903 : 257. Holotype ♂, SOLOMON IS. (BMNH) [examined].*Striglina scalata ab. nigrata* Warren, 1905b : 411.*Striglina scalata* Warren; Dalla Torre, 1914 : 12.

♂. Wing, 15-16 mm. Vertex pale yellow-brown. Third segment of labial palp one-quarter length of second. Thorax pale yellow-brown. Forewing, pattern as in Pl. 5, fig. 33, pale yellow-ochre with black reticulations. Costal margin reddish brown. Underside, as upper but paler.

Genitalia ♂ (Pl. 23, fig. 212). Uncus pointed with long hairy ventral lobe. Gnathus a prominent toothed band. Sacculus process prominent, toothed. Aedeagus with strongly sclerotized, pointed, anterior part.

♀. Wing, 17-18 mm. Pattern as male but darker colour. Third segment of labial palp half length of second.

Genitalia ♀ (Pl. 47, fig. 358; Pl. 56, fig. 463; Pl. 65, fig. 552). Anal papillae short. Ostium heavily sclerotized, with small spines. Duct slightly convolute. Prominent twin signum in bursa.

DISCUSSION. This species varies in colour and intensity of pattern. It is unusual in having both a juxta and a sacculus process. The juxta is represented by a sclerotized portion of the membrane dorsal to the aedeagus, while the sacculus process is well developed ventrally, where the membrane round the aedeagus is unsclerotized. The males from New Ireland tend to be even paler in colour than the others from the Solomons and could represent a new subspecies, but the rest of their morphology is similar.

BIOLOGY. Not recorded. Adults collected in i; iii; iv; v; vi; xi; xii.

DISTRIBUTION. Solomon Is.: Isabel, Bougainville, Choiseul; New Ireland; New Hannover; New Britain.

MATERIAL EXAMINED.

Holotype ♂, SOLOMON IS.: Isabel, 4 vi.-9. vii.[19]10 (*Meek*), BM slide no. 13515, in BMNH.

25 specimens, BMNH.

Striglina duplicifimbria Warren

(Pl. 5, figs 34-36; Pl. 24, figs 213, 214; Pl. 47, fig. 359; Pl. 57, fig. 464; Pl. 65, fig. 553)

Striglina duplicifimbria Warren, 1896 : 22.[*Striglina glareola* Felder & Rogenhofer; Dalle Torre, 1914 : 11. Misidentification.]

This is a strongly patterned, brown, species. Although the pattern is basically similar to the others in the group, the moth is generally much more reddish brown than the others and the genitalia are quite distinct. This species is separated into two subspecies, although for one of these only one specimen is known, this latter is separated on genitalia differences quite outside the range of variation of the other specimens.

KEY TO THE SUBSPECIES OF *Striglina duplicifimbria* (males)

- 1 Sacculus process reaching half way to median valve process. Aedeagus with long curved apical process *d. certa* (p. 71)
 - Sacculus process reaching two-thirds way to median valve process. Aedeagus with short, almost straight apical process *d. duplicifimbria* (p. 71)

Striglina duplicifimbria duplicifimbria Warren

(Pl. 5, figs 34, 35; Pl. 24, fig. 213, Pl. 47, fig. 359; Pl. 57, fig. 464; Pl. 65, fig. 553)

Striglina duplicifimbria Warren, 1896 : 227. LECTOTYPE ♂, here designated, INDIA (BMNH) [examined].

♂. Wing, 11.5-14.5 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax brown. Forewing, pattern as in Pl. 5, figs 34, 35, reddish brown with darker markings. Costa reddish brown, two prominent rounded black spots in median area, one anterior to the other. Black spots between M_1 and M_2 and one between R_5 and M_1 . One black spot costad of these two between M_2 and M_4 . Hindwing patterned, black patch near hind margin in median area. Underside paler, spots prominent.

Genitalia ♂ (Pl. 24, fig. 213). Apex of uncus with round cleft. Prominent hairy ventral process. Gnathus transverse band, spiny at edges, centre part without spines. Median valve process toothed. Juxta lightly sclerotized, anterior to sacculus process. Sacculus process elongate, bifid with second lateral process on each side. Aedeagus with prominent pointed apical process.

♀. Wing, 14-15 mm. Pattern as male but generally darker coloured.

Genitalia ♀ (Pl. 47, fig. 359; Pl. 57, fig. 464; Pl. 65, fig. 553). Anal papillae short. Sclerotized plate round ostium with long spines. Posterior projecting spine from ostial plate. Prominent double signum in bursa.

DISCUSSION. This species varies in the intensity of colour, with the females being a much darker brown than the males. In the females the long posterior spines on each side of the anal papillae can easily be seen by brushing a few scales from the tip of the abdomen. This subspecies differs from *d. certa* in the shape of the sacculus process and the process at the apex of the aedeagus.

BIOLOGY. Not recorded. Adults collected in vii.

DISTRIBUTION. India (north).

MATERIAL EXAMINED.

Lectotype ♂, INDIA: Khasia Hills, Assam, BM slide no. 13504, in BMNH.
 20 specimens, BMNH.

Striglina duplicifimbria certa subsp. n.

(Pl. 5, fig. 36; Pl. 24, fig. 214)

♂. Wing, 15 mm. Head as in nominate. Colour and pattern similar but subterminal brown spots more elongate.

Genitalia ♂ (Pl. 24, fig. 214). Uncus very slightly indent with prominent lateral processes. Sacculus process with two long processes and two short lateral processes. Aedeagus with strongly sclerotized and curved apical process, apex broader and toothed.

♀. Unknown.

DISCUSSION. Only one specimen of this subspecies is known which looks externally similar to the nominate subspecies. It is separated by differences in the genitalia, the sacculus process and the apex of the aedeagus differing in both subspecies. The differences are striking and it is possible that this should be regarded as a distinct species, but this will have to await examination of more material.

BIOLOGY. Not recorded.

DISTRIBUTION. Malaya.

MATERIAL EXAMINED.

Holotype ♂, MALAYA (*Tayleur*), BM slide no. 13790, in BMNH.

Striglina lilacina Warren

(Pl. 6, fig. 37; Pl. 47, fig. 360; Pl. 57, fig. 465; Pl. 65, fig. 554)

Striglina lilacina Warren, 1898b : 225. Holotype ♀, MALAYA (BMNH) [examined].

Striglina lilacina Warren; Dalla Torre, 1914 : 12.

Striglina lilacina Warren; Gaede, 1932 : 748.

♀. Wing, 14–16 mm. Vertex brown. Third segment of labial palp almost half length of second. Thorax brown. Forewing, pattern as in Pl. 6, fig. 37, brown with obscure reddish brown markings. Reticulations indistinct. Underside similar, paler, reticulations more distinct than on upperside.

Genitalia ♀ (Pl. 47, fig. 360; Pl. 57, fig. 465; Pl. 65, fig. 554). Anal papillae short. Strongly sclerotized posterior pointing projection from last segment. Ostium strongly sclerotized. Large double signum in bursa.

♂. Unknown.

DISCUSSION. The genitalia of this species are similar to *duplicifimbria*. There is some variation in the amount of sclerotization of the neck of the ductus bursae amongst specimens examined and it is possible that these are subspecific differences. Further material is needed. The posterior projections on each side of the anal papillae are similar to those in *duplicifimbria*.

BIOLOGY. Not recorded. Adults collected in iii.

DISTRIBUTION. Java; Malaya.

MATERIAL EXAMINED.

Holotype ♀, MALAYA: Penang (*Curtis*), BM slide no. 13315, in BMNH.
3 specimens, BMNH.

Striglina suzukii Matsumura

(Pl. 6, fig. 38; Pl. 24, fig. 215; Pl. 47, fig. 361; Pl. 57, fig. 466; Pl. 65, fig. 555)

Striglina suzukii Matsumura, 1931 : ⁷⁵⁰565. Holotype ♀, JAPAN [not traced].

Striglina suzukii Matsumura; Esaki, 1957 : 148.

♂. Wing, 12–13 mm. Vertex white. Third segment of labial palp one-quarter length of second. Thorax brownish white. Forewing, pattern as in Pl. 6, fig. 38, brownish white with

prominent spots. Large, slightly rectangular discal spot and patch in median position on hind margin. Hindwing similarly coloured, complete dark median fascia. Underside with more reddish brown.

Genitalia ♂ (Pl. 24, fig. 215). Uncus hood-shaped, incurved at apex with small median hairy ventral process. Subscaphium lightly hairy. Gnathus lightly sclerotized with very small teeth each side of apical indentation. Median valve process large, toothed. Sacculus process elongate, sclerotized, with serrate margin. Aedeagus with long curved sclerotized tip with strong, laterally placed, curved process.

♀. Wing, 14 mm. Similar pattern to male but more reddish brown colour.

Genitalia ♀ (Pl. 47, fig. 361; Pl. 57, fig. 466; Pl. 65, fig. 555). Anal papillae short. Strongly sclerotized ostium with two sclerotized processes. Laterally two long spines projecting posteriorly. Duct convolute, two spiny signa in bursa.

DISCUSSION. This species is closely allied to *duplicifimbria* from India. These two are sister species, probably recently derived from a common ancestor. In the males the length of the apical process is different and in the female the shape of the sclerotized processes round the ostium can be used to separate them. The overall morphology of these two species is very similar but with such distinct modifications in both I prefer to regard them as species rather than subspecies.

BIOLOGY. Leaf roller on Persimmon (*Diospyros*, Ebenaceae) (H. Kuroko, personal communication). Adults collected in v; vii; ix.

DISTRIBUTION. Japan.

MATERIAL EXAMINED.

10 specimens, in BMNH.

Striglina abella sp. n.

(Pl. 6, fig. 39; Pl. 24, fig. 216)

♂. Wing, 11.5–12.5 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax brown, irrorate with white. Forewing pattern as in Pl. 6, fig. 39, reddish brown with prominent median transverse band and large brown discal spot. Hindwing, similar, underside paler.

Genitalia ♂ (Pl. 24, fig. 216). Uncus with short point and large ventral lobes. Two small anterior lobes with teeth arising near apex of lightly sclerotized gnathus. Median valve process with two prominent sclerotized teeth. Sacculus process long, heavily sclerotized and strongly toothed. Aedeagus with elongate, sclerotized and upturned apex. Posterior end of aedeagus with lateral lobe.

♀. Unknown.

DISCUSSION. Because the morphology of this species is so distinct it is described as new even though there are only two specimens. The shape of the uncus and the reduction of the gnathus to two small toothed lobes separates this species from *divisata*.

BIOLOGY. Not recorded. Adults collected in i; ii.

DISTRIBUTION. Malaya; Indonesia; Sumatra.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sumatra, Lebong Tandai, 28.i.-i.ii.1922 (*Brook*^s), BM slide no. 14237, in BMNH.

Paratype. MALAYSIA: 1 ♂, Perak, 600-1050 m (*Doherty*), in BMNH.

Striglina dactylica sp. n.

(Pl. 6, figs 40, 41; Pl. 24, figs 217, 218)

This species is separated from the others in the genus by the shape of structures in the genitalia. Externally it is similar to many others in the genus with a reddish brown reticulate pattern and transverse fascia. So few specimens are available that only two subspecies are described rather than two distinct species, even though some of the differences in the genitalia are quite large.

KEY TO THE SUBSPECIES OF *Striglina dactylica* (males)

- 1 Uncus with two apical, claw-like processes *d. dactylica* (p. 74)
 - Uncus with rather square apical plate with two small lateral processes *d. blaesa* (p. 75)

Striglina dactylica dactylica subsp. n.

(Pl. 6, fig. 40; Pl. 24, fig. 217)

♂. Wing, 11.0-12.5 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax yellow-brown. Forewing, pattern as in Pl. 6, fig. 40, reddish brown with darker reticulations.

Genitalia ♂ (Pl. 24, fig. 217). Uncus with two apically bifid lateral arms. Gnathus trifold, with toothed ends. Aedeagus with cornuti.

♀. Unknown.

DISCUSSION. This subspecies differs from *d. blaesa* in the shape of the uncus. Externally both subspecies look like *S. scitaria* in general pattern, but are distinct on genitalia.

BIOLOGY. Not recorded. Adults collected in Sumatra in vi; in Sarawak in xi.

DISTRIBUTION. New Guinea; Indonesia: Sumatra; Malaysia: Sarawak.

MATERIAL EXAMINED.

Holotype ♂^N, NEW GUINEA: BM slide no. 13608, in BMNH.

Paratypes.^N NEW GUINEA: 2 ♂, data as holotype.

Material not included in type-series. MALAYSIA: Sarawak, 1 ♂, foot of Mt Dulit, junction of Rivers Tinjar and Lejok, 24.xi.1932. INDONESIA: 1 ♂, West Sumatra, Setinjak, vi. [18]98 (*Ericsson*). All in BMNH.

Striglina dactylica blaesa subsp. n.

(Pl. 6, fig. 41; Pl. 24, fig. 218)

♂. Wing, 11.5–12.0 mm. Colour and pattern as nominate subspecies, generally larger. Separated by differences in the genitalia.

Genitalia ♂ (Pl. 24, fig. 218). Uncus broad, with two lateral processes. Scaphium hairy, lobed, subscleritiform with long scales. Gnathus with three toothed processes. Median valve process lightly sclerotized. Saccus process with toothed apex. Aedeagus with slender spines in vesica. Last sternal plate of abdomen deeply incised.

♀. Unknown.

DISCUSSION. This species can only reliably be separated from the nominate one by differences in the genitalia. It appears to be endemic to Sulawesi. The intensity of colour varied amongst the specimens examined.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; v; vi; vii.

DISTRIBUTION. Indonesia: Sulawesi.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sulawesi, West Celebes, G. Tompoe Paloe, 810 m ii. 1937 (*Kalis*), BM slide no. 13675, in BMNH.

Paratypes. INDONESIA: 1 ♂, data as holotype; 1 ♂, West Celebes, Loda, Paloe, 1200 m, v. 1937 (*Kalis*); 1 ♀, Celebes, Ulu Kolaka, 500 m, v–vi. 1939 (*Kalis*); 1 ♂, Celebes, G. Tompoe Paloe, 810 m, i. 1937 (*Kalis*); 1 ♂, SW Celebes, Pangean near Maros, 600 m, iii. 1938 (*Kalis*); 1 ♂, West Celebes, Koelawi, Paloe, iii. 1937 (*Kalis*); 1 ♂, Bothain, 900–2100 m (*Doherty*). All in BMNH.

Striglina divisata Warren

(Pl. 2, fig. L; Pl. 25, fig. 219; Pl. 47, fig. 362; Pl. 57, fig. 467; Pl. 65, fig. 556)

Striglina divisata Warren, 1904 : 484. LECTOTYPE ♂, here designated, INDONESIA: (Natuna I.) (BMNH) [examined].

Striglina divisata Warren; Dalla Torre, 1914 : 11.

Striglina divisata Warren; Gaede, 1932 : 747.

♂. Wing, 12.5–14.5 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax brown. Forewing, pattern as in Pl. 2, fig. L, brown with prominent black rounded discal spot and transverse black line in median area, continued from forewing to hindwing, edge of line on terminal side with darker brown. Costal margin reddish brown. Hindwing, similar, both forewings and hindwings with dark reticulations. Underside paler, transverse line and discal spot prominent.

Genitalia ♂ (Pl. 25, fig. 219). Uncus rounded, prominent hairy ventral process. Uncus with toothed lateral part to median lobe. Prominent, toothed, median valve process. Saccus process broad, toothed at apex. Juxta sclerotized, arising near valve process, with two lateral plates. Aedeagus with sclerotized point at apex and enlarged and clavate sclerotized process.

♀. Wing, 13.5–15.0 mm. Similar to male. Median brown transverse band often broader than male.

Genitalia ♀ (Pl. 47, fig. 362; Pl. 57, fig. 467; Pl. 65, fig. 556). Anal papillae short, ostium strongly sclerotized, opening into sclerotized pouch. Whole area with small or minute spines. Signum in bursa more rounded than others in species-group.

DISCUSSION. Externally there is some variation in the colour of specimens examined. In the males there are small differences in the shape of the process ventral to the uncus which may indicate subspecific differences between the Borneo and Malaysian specimens. The pattern of the species is generally strongly marked and can normally be used to separate this from other species in the genus.

BIOLOGY. Not recorded. Adults collected in Bunguran in vii.; in Sulawesi in vii; in Borneo in xi.

DISTRIBUTION. Indonesia: Bunguran I. (Natuna I.), Sulawesi; Malaysia: Borneo, Malaya, Sarawak; Singapore.

MATERIAL EXAMINED.

Lectotype ♂, INDONESIA: Natuna I. [Bunguran], vii-x.[18]94, BM slide no. 10879, in BMNH.

33 specimens, BMNH.

THE *RUFIVESTRIS*-GROUP

This is not a natural grouping and the two species here are both rather anomalous in some aspects of their morphology. Probably they should be removed from *Striglina* Guenée sensu stricto, but no satisfactory position for them has been found. Their relationship with the others in the group is not clear although there are some aspects of their morphology which are found in species of *Striglina*.

Striglina rufivestris (Hampson)

(Pl. 6, figs 42, 43; Pl. 25, figs 220, 222)

Plagiosella rufivestris Hampson, 1914 : 108.

Although not a particularly conspicuous species externally the remarkable modification of the valve of the male makes this easily identified. The two subspecies are known from only a few specimens and both show this characteristic valve shape.

KEY TO THE SUBSPECIES OF *Striglina rufivestris* (males)

- | | | |
|---|--|-------------------------------|
| 1 | Lateral processes of uncus short. Strongly curved and sclerotized process on valve | <i>r. sinewiti</i> (p. 77) |
| - | Lateral process on uncus long. Valve process strongly sclerotized, mostly straight and toothed | <i>r. rufivestris</i> (p. 76) |

Striglina rufivestris rufivestris (Hampson)

(Pl. 6, fig. 42; Pl. 25, fig. 220)

Plagiosella rufivestris Hampson, 1914 : 108. Holotype ♂, INDONESIA (West Irian) (BMNH) [examined].

♂. Wing, 11 mm. Vertex reddish brown, white anteriorly. Antennae shortly ciliate.

Labial palp strongly upturned, third segment one-quarter length of second, reaching vertex. Thorax brown. Forewing, pattern as in Pl. 6, fig. 42, reddish brown, with darker anterior-posterior marks. Hindwing similar, underside, similar, paler. Veins R_5 and R_4 with common stem ($R_4 + R_5$) in forewing.

Genitalia ♂ (Pl. 25, fig. 220). Uncus hood-like, slightly pointed. Two lateral processes slightly ventral to main part of uncus. Subscaphium with long hairs. Gnathus with toothed median part. Valve broad, strongly modified with sclerotized teeth posteriorly. Juxta membranous, with two hairy lateral processes. Aedeagus with numerous strong cornuti.

♀. Wing, 12 mm. Colour as male, pattern slightly less heavily marked. Abdomen missing.

DISCUSSION. Only four specimens of this species are known and while unspectacular externally, the genitalia of the male are remarkably modified.

The valve is a more normal width and not as reduced as in other species of *Striglina*. The position of this species in the genus is uncertain, the uncus is broadly similar to some of the *xanthoscia*-group in the genus *Misalina* but *rufivestris* has the toothed gnathus characteristic of *Striglina*. There is some variation in the shape of the valve process in specimens from different localities.

BIOLOGY. Not recorded. Adults collected in ix-xii. at 690 m

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: West Irian, Fak-Fak, Dutch N. Guinea, xii.[19]07, BM slide no. 13521, in BMNH.

2 specimens, BMNH; 1 specimen, ANIC.

Striglina rufivestris sinewiti subsp. n.

(Pl. 6, fig. 43, Pl. 25, fig. 222)

♂. Wing, 11 mm. Colour and pattern as nominate subspecies, slightly larger transverse black mark. $R_4 + R_5$ shortly stalked in forewing.

Genitalia ♂ (Pl. 25, fig. 222). Broadly similar to nominate subspecies. Apex of uncus with small ventral process, lateral processes broad, rounded. Gnathus toothed. Valve broad. Two curved sclerotized processes on valve, longer one with short lateral process. Aedeagus with long cornuti.

♀. Unknown.

DISCUSSION. This subspecies can be separated from the nominate one by the shorter lateral processes on the uncus and particularly by the different shape of the median process of the valve. There are also slight differences in the sclerotization of the last sternite on the abdomen. The specimens of the nominate subspecies are from the west of New Guinea but are indistinguishable externally from this subspecies.

BIOLOGY. Not recorded. Adults collected in vi-ix; xii.

DISTRIBUTION. New Britain.

MATERIAL EXAMINED.

Holotype ♂, NEW BRITAIN: Mt Sinewit, 1050 m, 27.vi-17.ix.1963 (*Brandt*), BM slide no. 14736, in ANIC.

Paratype. NEW BRITAIN: 1 ♂, data as type.

Striglina fidelia sp. n.

(Pl. 6, fig. 44; Pl. 25, fig. 221; Pl. 47, fig. 363; Pl. 57, fig. 468, Pl. 65, fig. 557)

♂. Wing, 14.5 mm. Vertex reddish brown. Third segment of labial palp one-quarter length of second, upturned, reaching slightly above vertex. Thorax reddish brown. Forewing, pattern as in Pl. 6, fig. 44, reddish brown with prominent brown transverse lines from apex of forewing. Median and basal areas with more red scales. Underside with transverse line prominent and prominent discal spot. Fore tibia with two brown and white lines running along length, mid and hind tibia with two brown and single white line along length.

Genitalia ♂ (Pl. 25, fig. 221). Uncus (?) two elongate lightly sclerotized processes, with two lateral slender processes. Subscaphium covered in long scales. Gnathus with median process, toothed round edges, and long lateral posterior projecting process on either side of mid gnathus process. Valves slender at apex, prominent apical sacculus process near middle of valve. Sacculus processes small, juxta lightly sclerotized. Aedeagus with small apical process and a few small spines in vesica.

♀. Wing, 16.0-17.5 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 47, fig. 363; Pl. 57, fig. 468; Pl. 65, fig. 557). Anal papillae short. Ostial plate highly modified and sclerotized with spiny ostium. Duct slender. Bursa with two barely separated, rather squarish, spiny signa.

DISCUSSION. This species has a more reddish tinge than *scitaria* which it externally resembles but the genitalia are quite distinct. *S. fidelia* shows some similarity to *Sonagara strigipennis* in the development of the apical sacculus process and to species of *Striglina* in the shape of the gnathus. Until more material is available this anomalous species is tentatively placed in the *rufivestris*-group. The spined ostium and the shape of the ostial plate are characteristic. Although the females associated with the males here are not from the same locality they are externally similar and, I think, correctly associated.

BIOLOGY. Not recorded. Adults collected in Sumatra in xi; in Singapore in v.

DISTRIBUTION. Malaysia; Singapore; Indonesia: Sumatra.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sumatra, Lebong Tandai, 3.ix.1921 (*Brooks*), BM slide no. 13703, in BMNH.

Paratypes. SINGAPORE: 1 ♂, 16.v.1953 (*North*), in BMNH. MALAYSIA: 1 ♀, N. Borneo, 300-1200 m (*Hesse*), Mt Mulu, in BMNH; 1 ♂, Spitang, iv.[18]95 (*Everett*), in BMNH.

THE STRIGIFERA-GROUP

After examination of all the species in the subfamily the *strigifera*-group is modified slightly from the original definition (Whalley, 1971a : 72) where it seemed slightly anomalous. All the species in the group have modified valves and a triple frenulum in the female (two of the three species in the *clathrata*-group have a double frenulum). The shape of the gnathus, with the teeth on a plate, is a similar development to that found in the *rufescens*-group. All the species in the *strigifera*-group are African. A further peculiarity of the group is the lack of pilifers which are absent from all species in the group, a structure otherwise only lacking in species in the genus *Mystina* (p. 133).

Striglina rothi Warren

(Pl. 6, fig. 45; Pl. 26, fig. 224)

Striglina rothi Warren, 1898b : 226, Lectotype ♂, NIGERIA (BMNH) [examined].*Plagiosellula clathratipennis* Strand, 1913 : 61. Holotype ♂, RIO MUNI (MNHU) [examined].*Striglina rothi* Warren; Whalley, 1971a : 68. [Details of synonymy and distribution.]

DISTRIBUTION. East and West Africa.

ADDITIONAL MATERIAL.

ZAIRE: 1 ♀, Sankuru (MRAC).

Striglina augescere Whalley

(Pl. 6, fig. 46)

Striglina augescere Whalley, 1971a : 75. Holotype ♂, ZAIRE (BMNH) [examined].

DISTRIBUTION. Zaire; Gabon; Zambia.

Striglina strigifera (Strand)

(Pl. 6, fig. 47)

Plagiosellula strigifera Strand, 1913 : 62. Holotype ♂, RIO MUNI (MNHU) [examined].*Striglina strigifera* Strand; Whalley, 1971a : 73.

DISTRIBUTION. West and East Africa.

Striglina ferula Whalley

(Pl. 6, fig. 48)

Striglina ferula Whalley, 1971a : 74. Holotype ♂, ZAIRE (BMNH) [examined].

DISTRIBUTION. Zaire.

Striglina trepida Whalley

(Pl. 7, fig. 49)

Striglina trepida Whalley, 1971a : 75. Holotype ♂, UGANDA (BMNH) [examined].

DISTRIBUTION. Zaire; Uganda; Rwanda.

TELCHINES gen. n.Type-species: *Sonagara vialis* Moore.

This genus is closely related to *Striglina* and has some of the characters of that genus. It is separated from *Striglina* by the presence, in both sexes, of interfacetal

hairs on the eyes. The males have an unreduced valve and their antennae are ciliate. It is possible to consider this as a subgenus of *Striglina* but it is a more discrete group than any of the *Striglina* species-groups.

GENERIC DESCRIPTION. Antennae ciliate or pectinate. Radial veins R_2 to R_5 separately from cell. Hindwing with $Sc + R_1$ and R_5 approaching closely but not joining. Eyes with long interfacetal hairs. Hind tibia with two pairs of spurs. Tarsi each with rows of spines. Males with valve simple in outline, not reduced. Two pockets of spines below apex of uncus. Gnathus with small teeth. Female with triple frenulum and strongly sclerotized and modified ostium.

DISTRIBUTION (Map 6). India; China; Malaysia; Indonesia.

BIOLOGY. Not recorded.

KEY TO SPECIES OF *Telchines* (males)

1	Uncus with lateral process double (Pl. 26, fig. 228)	<i>lepides</i> (p. 82)
-	Uncus without double lateral process	2
2	Uncus broad with two processes (Pl. 26, fig. 226)	<i>vialis</i> (p. 80)
-	Uncus narrower, indented (Pl. 26, fig. 227)	<i>henrici</i> (p. 81)

Telchines vialis (Moore) **comb. n.**

(Pl. 7, fig. 50; Pl. 26, figs 225, 226; Pl. 47, fig. 364; Pl. 57, fig. 469)

Sonagara vialis Moore, 1883 : 27. Holotype ♂, INDIA: Himalaya (BMNH) [examined].

Striglina vialis Moore; Pagenstecher, 1892: 46.

[*Striglina scitaria* Walker; Hampson, 1897 : 613. Misidentification.]

[*Striglina scitaria* Walker; Dalla Torre, 1914 : 13. Misidentification.]

Striglina vialis Moore; Gaede, 1922 : 28.

Striglina vialis Moore; Gaede, 1932 : 746.

♂. Wing, 18–22 mm. Vertex yellowish brown. Antennae ciliate. Third segment of labial palp one-quarter length of second. Thorax reddish brown. Forewing, pattern as in Pl. 7, fig. 50, reddish brown with brown reticulations and prominent brown line edged with red from apex of forewing to hind margin, continued by similar line on hindwing. Dark discal spot. Underside similar, paler, slight mauvish tinge under forewing.

Genitalia ♂ (Pl. 26, figs 225, 226). Uncus broad with two sclerotized, pointed and laterally expanded processes, covered in fine hair. Two large spine-filled sacs below apex of uncus, opening ventrally with funnel-shaped orifice. Gnathus with sclerotized lateral arms and central toothed projection. Subscaphium hairy. Valves entire. Sacculus process a sclerotized, ribbed process. Juxta membranous with two sclerotized lateral processes. Aedeagus with two groups of cornuti.

♀. Wing, 23 mm. Colour and pattern as male. Antennae minutely ciliate. Labial palp with third segment nearly half length of second. Frenulum triple.

Genitalia ♀ (Pl. 47, fig. 364; Pl. 57, fig. 469). Anal papillae short, strongly sclerotized. Ostium sclerotized and enlarged, covered with minute spines. Duct convolute, bursa with two spiny signa and several prominent patches of spines on bursa.

DISCUSSION. This species varies in colour and pattern over its range, and may well be divided into subspecies when more material is available. Although the specimens from China are broadly similar in genitalia to the others, the pattern on the wings is slightly different with a recurved line from below the apex of the forewing

to the costal margin rather similar to *Sonagara strigipennis*. The Chinese specimens also tend to be more brown than the other specimens. The intensity of the ground colour of the wings also varies considerably amongst the specimens examined and although some fading of specimens has taken place, some of the variation is not due to this. The pockets of spines under the uncus of the male are characteristic of the species in this group. *T. vialis* is of a duller hue than *T. lepides* and lacks the double process on the uncus of that species.

BIOLOGY. Not recorded. Adults collected in Malaya in vii; in China in vii; viii; in Java in iv; v; vi; in Sumatra in vi.

DISTRIBUTION. India (north); China; Malaysia; Indonesia: Java, Sumatra, Borneo.

MATERIAL EXAMINED.

Holotype ♂, INDIA: Himalaya (*Moore* coll.), BM slide no. 10881, in BMNH.
51 specimens, BMNH; 1 specimen, CNC.

***Telchines henrici* (Snellen) comb. n.**

(Pl. 7, fig. 51; Pl. 26, fig. 227)

Azazia henrici Snellen, 1889 : 1. Holotype ♂, SUMATRA (RNH) [examined].

[*Striglina vialis* Moore; Pagenstecher, 1892 : 46. Misidentification.]

[*Striglina scitaria* Walker; Dalla Torre, 1914 : 13. Misidentification.]

[*Striglina vialis* Moore; Gaede, 1932 : 746. Misidentification.]

♂. Wing, 20 mm. Vertex reddish brown. Antennae strongly pectinate. Third segment of labial palp one-quarter length of second. Thorax reddish brown. Legs with prominent patches of white scales, large patch on fore tibia. Forewing, pattern as in Pl. 7, fig. 51, reddish brown with brown and orange reticulations. Prominent transverse fascia from costa to hind margin of forewing, continued on hindwing. Discal spot prominent. Underside paler, pinky-red suffusion under costa of forewing.

Genitalia ♂ (Pl. 26, fig. 227). Uncus broad with extended lateral lobes and median notch. Large patch of hairs on uncus and spiny sac on each side. Subscaphium hairy. Gnathus with sclerotized lateral arms and median toothed projection. Valves entire. Sacculus process strongly sclerotized. Juxta membranous, with two lateral processes. Aedeagus with a few small spines.

♀. Unknown.

DISCUSSION. This species is closely allied to *vialis*, differing in the deeper orange-red colour of the wings and the shape of the uncus, where the prominent posterior sclerotized spines are lacking. It could be considered a subspecies of *vialis* but occurs in Sumatra in the same locality as *vialis*. Until more is known about the ecology of *henrici* it is retained as a separate species. The white patch on the fore tibia is very prominent and gives a remarkable 'headlight' effect when the insect is viewed from the front. These white patches reflect light when viewed in a darkened room and may be connected with some protection of the insect, being more conspicuous than the more vulnerable parts of the body. From *lepides* which also occurs in Sumatra this species can be separated by its darker colour and by the shape of the uncus and juxta. Only the holotype specimen is known.

BIOLOGY. Not recorded. Adult collected in viii-ix.

DISTRIBUTION. Indonesia: Sumatra. (Type specimen labelled Sumatra but type-locality published as Java.)

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sumatra, BM slide no. 13741, in RNH.

Telchines lepides sp. n.

(Pl. 2, fig. C; Pl. 26, fig. 228)

♂. Wing, 19-20 mm. Vertex reddish brown. Antennae ciliate. Third segment of labial palp one-quarter length of second. Thorax orange-brown. Forewing, pattern as in Pl. 2, fig. C, orange-brown with prominent brown line from apex of forewing to hind margin of forewing, line edged with red, continued across hindwing. Hindwing similar colour. Pink tinge to fringe on hindwing.

Genitalia ♂ (Pl. 26, fig. 228). Uncus broad, two small posterior processes and two prominent lateral spiny processes. Gnathus with sclerotized arms and median toothed process. Subscaphium prominent, hairy. Two prominent spiny pockets below uncus. Juxta membranous with prominent broad lateral arms. Aedeagus with circle of small cornuti.

♀. Unknown.

DISCUSSION. This species can be separated from the others in the genus by the bright orange-brown colour and in the genitalia by the shape of the uncus and juxta. It is related to *vialis* and more information about *lepides* might show that it was a subspecies of *vialis*, but the differences are considerable. Also specimens of *vialis* have been collected in the same locality in Sumatra as *lepides*.

BIOLOGY. Not recorded. Adults collected in iii; x; xi; xii.

DISTRIBUTION. Indonesia: Sumatra.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sumatra, Barisan Range, western slopes, SW Sumatra, 750 m, x-xi.1921 (*Pratt*), BM slide no. 14041, in BMNH.

Paratypes. INDONESIA: 1 ♂, Sumatra, Lebong Tandai, W. Sumatra, 13.xii.1921 (*Brooks*), in BMNH; 1 ♂, Sumatra, Lebong Tandai, 1.iii.1922 (*Brooks*), in BMNH.

SONAGARA Moore **gen. rev.**

Sonagara Moore, 1882 : 179. Type-species: *Sonagara strigipennis*, by original designation.

[*Striglina* Guenée; Hampson, 1893 : 354. Misidentification.]

[*Plagiosella* Hampson; auct. Misidentification.]

[*Striglina* Guenée; auct. Misidentification.]

This genus is primarily separated from *Striglina* by the lack of the peg-like gnathus which is typical of that genus, and the enlarged atrium of the female. *Sonagara* is close to *Misalina* and forms a link between that genus and *Striglina*.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi each with rows of spines. Forewing with veins M_1 to R_3

separately from cell. Hindwing with $Sc + R_1$ and R_s approaching but not touching. Uncus modified with two lateral processes. Gnathus modified, without peg-like teeth. Valve with prominent apical sacculus process. Female with double frenulum, sometimes triple. Ostial plate relatively simple. Signum in bursa.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 7). India; Pakistan; Formosa; Malaysia: Sarawak; [Hainan].

Sonagara strigipennis Moore

(Pl. 7, fig. 52; Pl. 26, fig. 229; Pl. 57, figs 470, 471; Pl. 65, fig. 558)

Sonagara strigipennis Moore, 1879-1888 : 180. LECTOTYPE ♀, here designated, INDIA (BMNH) [examined].

Strigina scitaria Walker; auct. Misidentification.]

♂. Wing, 16-19 mm. Vertex yellowish brown. Antennae minutely ciliate. Third segment of labial palp one-quarter length second. Thorax yellowish brown. Forewing, pattern as in Pl. 7, fig. 52, pale yellow-brown with darker reticulations. Transverse brown line from apex of forewing to hind margin, continued on hindwing. Second brown line half way from apex to posterior angle of termen. Hindwing with second more slender line subterminally. Underside paler.

Genitalia ♂ (Pl. 26, fig. 229). Uncus with two median processes and two longer slender lateral processes. Subscaphium hairy. Gnathus with sclerotized arms and long, slender median process, minutely toothed. Valve entire but with prominent sclerotized sacculus with long apical spine. Juxta lightly sclerotized with two lateral lobes. Aedeagus with large group of cornuti, some strongly hooked.

♀. Wing, 18-20 mm. Colour and pattern as male. Third segment of labial palp nearly one-half length of second. Frenulum triple.

Genitalia ♀ (Pl. 57, figs 470, 471; Pl. 65, fig. 558). Anal papillae short. Strongly sclerotized ostial plate, with broad sclerotized duct leading to convolute and broader duct, rest of duct less sclerotized, convolute. Two prominent signa in bursa.

DISCUSSION. Specimens in the series examined varied in the intensity of the colour. This species is clearly separated from those in related genera by the unusual apical point on the sacculus, which is free from the valve. The enlarged atrium immediately posterior to the ostium is characteristic of the female of this species. The single specimen from Hainan is a female with some differences from the others and is only doubtfully included here. A single male (in coll. Inoue) from Formosa has proved to be indistinguishable from specimens from the type-locality. I am indebted to Dr H. Inoue for permission to examine this specimen.

BIOLOGY. Not recorded.

DISTRIBUTION. India: Darjeeling; Sikkim; Formosa; Malaysia: Sarawak; [Hainan].

MATERIAL EXAMINED.

Lectotype ♀, SIKKIM: (Moore coll.), BM slide no. 9033, in BMNH.
5 specimens, BMNH; 1 specimen, collection Dr H. Inoue, Tokyo.

MISALINA gen. n.[*Plagiosella* Hampson; auct. Misidentification.][*Striglina* Guenée; auct. Misidentification.]Type-species: *Plagiosella ochracea* Warren.

This is a widespread genus with species from India to Australia. It is separated into four species-groups. The *ochracea*-group contains species found mainly in New Guinea and has some of the more colourful species in the genus. The *leprosa*-group has species from Malaysia to New Guinea while the *pyrrhata*-group is entirely Australian in distribution. The final species-group, the *glareola*-group, is mainly Indian with species in the Philippines and south to Borneo but not across Wallace's line. Generally species of *Misalina* have R_4 and R_5 joined for part of their length in the forewing.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae ciliate or minutely ciliate. Hind tibia with two pairs of spurs. Fore tibia with epiphysis. Tarsi usually with rows of spines. Forewing with $R_4 + R_5$. Hindwing with $Sc + R_1$ and R_s free. Uncus modified, usually with lateral process. Valve entire, sacculus not separately developed. Gnathus variously modified, never with peg-like teeth. Subscaphium with large patch modified scales. Female with double or triple frenulum. Ostium weakly sclerotized, signum present or absent, if present usually small.

BIOLOGY. One species (*M. floccosa*) has been recorded as a defoliator of *Eucalyptus*; host plants of the other species are unknown.

DISTRIBUTION (Map 5). India; Indonesia; New Guinea; Australia; China.

KEY TO THE SPECIES OF *Misalina* (males)

- | | | |
|---|--|-------------------------------------|
| 1 | Forewing with $R_4 + R_5$ | 1 |
| - | Forewing with R_2 to R_5 arising separately from cell or $R_2 + R_3$ | 2 |
| 2 | (1) Forewing with $R_2 + R_3$. Large species (23-30 mm wing), | <i>gemmulosa</i> (p. 114) |
| - | Forewing with R_2 to R_5 arising separately from cell | 3 |
| 3 | (2) Uncus with six points, subscaphium hairy, broad. Gnathus arms (brachia) not meeting in mid-line | <i>ferocia</i> (p. 107) |
| - | Uncus with one to four points or processes. Gnathus usually well developed, often with central process | 4 |
| 4 | (3) Uncus with prominent single median process and two lateral ones at right-angles (Pl. 31, fig. 257). Gnathus truncate at apex of median process | <i>sordida</i> (p. 113) |
| - | Uncus not as above, usually two or four processes projecting roughly parallel. Gnathus generally pointed at apex | 5 |
| 5 | (4) Wing 16 mm or over. Generally pale lilac-grey species. Apical processes of uncus slightly toothed | <i>irias</i> (p. 105) |
| - | Wing 15 mm or under. Otherwise coloured, usually brown or reddish brown. Apical process of uncus usually smooth | 6 |
| 6 | (5) Uncus with two short median processes. Lateral processes reduced to small lobes (Pl. 30, fig. 248) | <i>centiginosa</i> (p. 101) |
| - | Uncus with four processes | 7 |
| 7 | (6) Median process of uncus generally shallowly indented | <i>parata</i> (p. 105) |
| - | Median process of uncus generally deeply indented | 8 |
| 8 | (7) Median process of uncus elongate, deeply indented. Median process of gnathus broad (Pl. 30, fig. 249) | <i>stramentaria</i> (p. 102) |

- Median process of uncus less elongate (Pl. 29, fig. 247). Median process of gnathus slender *pyrrhata* (p. 101)
- 9 (1) Antennae strongly ciliate 10
- Antennae minutely ciliate. 13
- 10 (9) Valve with several sclerotized and toothed processes (Pl. 25, fig. 220) *Striglina rufivestris* (p. 76)
- Valve without these processes 11
- 11 (10) Uncus with four processes *suffusa* (p. 100)
- Uncus with three processes 12
- 12 (11) Yellowish species with pinky-red fascia on hindwing. Forewing usually contrasting with darker hindwing. Apex of valve more slender (Pl. 29, fig. 244) *leprosa* (p. 98)
- Orange-brown species. Fore- and hindwings generally similarly coloured. Valves very round at apex (Pl. 29, fig. 245) *floccosa* (p. 99)
- 13 (9) Uncus without lateral process or lateral processes very reduced, usually small swellings. Uncus sometimes only lightly indented at apex or uncus a single process (which may be indented at apex) 14
- Uncus with lateral processes 15
- 14 (13) Uncus elongate, strongly bifid Y-shaped (Pl. 28, fig. 239) *reversa* (p. 93)
- Uncus only slightly indented at apex (Pl. 31, fig. 256) *industa* (p. 113)
- 15 (13) Yellow-brown species with prominent rounded reticulations (Pl. 7, fig. 53). Median process of valve indented. Gnathus without median process (Pl. 27, fig. 230) *ochracea* (p. 86)
- Generally without round reticulations. Median process on gnathus present or absent 16
- 16 (15) Grey or yellow-brown species. Pattern as in Pl. 8, fig. 70, Pl. 9, figs 73-78. Uncus with two short lateral points, often with two small processes or enlarged areas on either side of uncus 17
- Otherwise coloured. Uncus usually with two long lateral processes 18
- 17 (16) Two lateral processes on each side of uncus (Pl. 31, fig. 254) *glareola* (p. 106)
- Two small processes on uncus and one or more smaller lateral processes or small lateral swellings (Pl. 32, figs 259-263) *decusata* (p. 108)
- 18 (16) Terminal wing margin angular (Pl. 8, fig. 66). Genitalia as in Pl. 30, fig. 250 *innotata* (p. 103)
- Terminal wing margin rounded. Genitalia not as in Pl. 30, fig. 250 19
- 19 (18) Brightly coloured reddish brown and yellow species. Prominently patterned (Pl. 1, fig. C) 20
- Otherwise coloured, if red and yellow then yellow in slender lines 22
- 20 (19) Median process of uncus broad at apex, thin basally 21
- Median process of uncus roughly parallel-sided *xanthoscia* (p. 89)
- 21 (20) Lateral processes of uncus pointed. Subscaphium hairy, broad (Pl. 27, fig. 232) *pseudoscia* (p. 88)
- Lateral processes of uncus rounded. Subscaphium hairy, narrowly elongate (Pl. 27, fig. 231) *condensata* (p. 87)
- 22 (19) Reddish species with thin yellow lines across wing (Pl. 1, fig. O). Genitalia as in Pl. 28, fig. 237, lateral process of uncus very long *ignefissa* (p. 92)
- Not as above 23
- 23 (22) Reddish brown species (Pl. 8, fig. 67). Genitalia as in Pl. 30, fig. 252 *ferruginea* (p. 104)
- Red, orange- or grey-brown species, often with prominent fascia on wings 24
- 24 (23) Red- or orange-brown species 25
- Grey- or yellow-brown species 26
- 25 (24) Strongly marked fascia on forewing (Pl. 7, figs 59, 60). Genitalia as in Pl. 29, fig. 242 *anxia* (p. 96)

- Fascia less conspicuous (Pl. 1, fig. D). Genitalia as in Pl. 28, fig. 238
scintillans (p. 93)
- 26 (24) Apex of valves rather pointed. Gnathus with spiny median lobe
costirufata (p. 97)
- Apex of valve rounded. Median lobe of gnathus smooth .
metallifera (p. 95)

THE OCHRACEA-GROUP

This group is mainly confined to New Guinea. They are amongst the more colourful species and form a relatively compact group with rather similar genitalia. The male has a single frenulum but in the female the frenulum is double. There is some sexual dimorphism in the colour pattern of some of the species. Generally the forewing has R_4 and R_5 stalked in the forewing. Except for the last species in the group all have a similar basic pattern and are probably closely related.

Misalina ochracea (Warren) **comb. n.**

(Pl. 7, fig. 53; Pl. 27, fig. 230; Pl. 47, fig. 365)

Plagiosella ochracea Warren, 1908 : 345. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Plagiosella ochracea Warren; Dalla Torre, 1914 : 39.

Plagiosella ochracea Warren; Gaede, 1932 : 767.

♂. Wing, 13-14 mm. Vertex yellow-brown. Third segment of labial palp one-quarter length second. Thorax yellow-brown. Forewing, pattern as in Pl. 7, fig. 53, yellow-brown with conspicuous brown reticulations, larger reticulations forming rounded pattern on forewing. Hindwing, similar. Underside paler, pattern less distinct.

Genitalia ♂ (Pl. 27, fig. 230). Uncus broad with four lobes, two lateral and two shorter central lobes. Subscaphium broad, spiny. Gnathus with small central lobe with smaller spines. Valve entire, small sclerotized sacculus process in form of hook. Juxta two simple lateral lobes. Saccus slightly elongate. Aedeagus with small plate covered with minute spines in vesica.

♀. Wing, 15 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 47, fig. 365). Anal papillae short. Ostium lightly sclerotized. Duct convolute. Bursa without signum.

DISCUSSION. Few specimens were available for examination but very little variation in pattern was found. There are some slight differences in the shape of the uncus in specimens from east and west New Guinea which are probably subspecific.

BIOLOGY. Not recorded. Adults collected in i; iv; xi.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Biagi Mambare R., 1500 m, B.N. Guinea, iv.[19]06 (Meek), BM slide no. 13578, in BMNH.

4 specimens, BMNH.

***Misalina condensata* (Warren) comb. n.**

(Pl. 1, fig. H; Pl. 27, fig. 231; Pl. 47, fig. 366)

Striglina condensata Warren, 1908 : 105. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].*Striglina condensata* Warren; Dalla Torre, 1914 : 11.*Plagiosella condensata* Warren; Gaede, 1932 : 768.

♂. Wing, 1.0–12.5 mm. Vertex yellow-orange. Labial palp with third sement less than one-quarter length second, upturned, reaching vertex. Thorax yellow with orange scales. Forewing, pattern as in Pl. 1, fig. H, basically yellow with orange spots. Median and terminal area mauve with small orange-yellow apical portion. Hindwing similar. Underside paler.

Genitalia ♂ (Pl. 27, fig. 231). Uncus with two lateral processes and tessellated median process enlarged and slightly indent at apex. Valve simple. Median basal process with broadly flattened plate. Subscaphium large with prominent median process. Juxta two lateral lobes. Aedeagus with small sclerotized plate with spines.

♀. Wing, 13–15 mm. Vertex orange with white scales. Thorax yellow-orange. Forewing, orange with small yellow patches surrounded by orange. Medial area faintly mauve, apex with orange and yellow patches. Terminal and subterminal area orange-brown, conspicuous black spot near base of wing. Hindwing, orange-brown suffused with mauve. Underside, relatively unmarked, pale orange-yellow, sometimes with upper wing pattern faintly visible. Labial palps upturned, reaching above vertex, as in male.

Genitalia ♀ (Pl. 47, fig. 366). Anal papillae short. Ostium spiny but not heavily sclerotized. Minute spines on first part of duct, duct very restricted by opening of ductus seminalis. Rest of duct broader. Bursa smooth, no signum.

DISCUSSION. Small variation exists in the valve shape in specimens from different localities, with specimens from the Cyclops Mountains tending to be larger than those from the Mambare River area. More material may show evidence of subspeciation. The yellow colouration and the yellow-orange of the females, both with a conspicuous spot at the base of the forewing, make this species easily recognized. The strong sexual dimorphism in colour is particularly striking. At present this species is known only from West Irian, in the Cyclops Mountains and the Weyland Mountains, and in New Guinea in the Mambare River Area.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; v; vii; xi; xii.

DISTRIBUTION. West Irian; New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA, Biagi, Mambare R., 1500 m, B.N. Guinea, iii.[19]06 (Meek), BM slide no. 13498, in BMNH.

14 specimens, BMNH.

***Misalina dentifascia* (Warren) comb. n.**

(Pl. 1, fig. I; Pl. 47, fig. 367)

Striglina dentifascia Warren, 1908 : 106. Holotype ♀, NEW GUINEA (BMNH) [examined].*Striglina dentifascia* Warren; Dalla Torre, 1914 : 11.*Striglina dentifascia* Warren; Gaede, 1932 : 768.

♀. Wing 16–17 mm. Vertex red. Labial palps with third segment one-quarter length of

second. Antennae minutely ciliate. Thorax reddish brown. Forewing, pattern as in Pl. 1, fig. 1, red with small flecks of yellow in basal area, similar small patch subapically. Veins $R_4 + R_5$ with common stem. Median area brown, terminal area reddish brown. Hindwing reddish brown, flecked with yellow.

Genitalia ♀ (Pl. 47, fig. 367). Anal papillae short, broad. Ostium covered with minute spines, not heavily sclerotized. Bursa minutely spined, no signum.

♂. Unknown.

DISCUSSION. This is a strikingly coloured species, with red on the forewings. The three known specimens are all females but from a knowledge of sexual dimorphism in the allied species (*xanthoscia*) the males probably differ from the female and may well be yellow rather than red in colour. *M. dentifascia* is closely allied to *xanthoscia* and could even be a subspecies of it but since it is sympatric it is here regarded as one of the closely allied *pseudoscia-xanthoscia-condensata*-group. The lack of the strongly sclerotized plate in the ostium separates this species from *xanthoscia*; in this it is similar to *pseudoscia*. It can be separated from the latter by the red colour of the wings and by the more strongly spiny ostium. The males when discovered I expect to be morphologically close to *xanthoscia*.

BIOLOGY. Not recorded. Adults collected in i; iv; xii.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♀ (not ♂ as given in original description), NEW GUINEA: Biagi, Mambare R., 1500 m, B.N. Guinea, iv.[19]06 (*Meek*) (abdomen missing), in BMNH.
3 specimens, BMNH.

Misalina pseudoscia sp. n.

(Pl. 1, fig. N; Pl. 7, fig. 55; Pl. 27, fig. 232; Pl. 48, fig. 369)

♂. Wing, 14–15 mm. Vertex yellow-brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length second, upturned, reaching above vertex. Second segment of labial palp broad. Thorax yellowish brown with some pink scales. Forewing pattern as in Pl. 7, fig. 55, yellow with brown areas. Veins R_4 and R_5 in forewing with common stalk. Underside pale, without pattern. Hindwing as forewing, $Sc + R_1 + Rs$ close but not touching.

Genitalia ♂ (Pl. 27, fig. 232). Uncus broad, slightly indent at apex, narrowing behind. One lateral process on each side of uncus. Subscaphium hairy, broad. Gnathus lightly sclerotized with median process. Valve narrow in apical half. Broad median process ending in rounded plate. Sacculus process flat, broad, hairy. Aedeagus with small sclerotized plate with teeth.

♀. Wing, 15–17 mm. Pattern similar to male but orange-brown with small yellow areas (Pl. 1, fig. N). Large brown patch with slightly mauvish tinge. Labial palps as male. Frenulum bifid.

Genitalia ♀ (Pl. 48, fig. 369). Anal papilla short. Ostium spiny, not strongly sclerotized. Duct minutely spined, bursa without signum but covered with minute spines.

DISCUSSION. This species is similar externally to *xanthoscia*. It can be separated by the proportionally longer and broader labial palps in the male. This is also true of the females but the differences are less conspicuous. In the genitalia, the

broad uncus of *pseudoscia*, narrowing behind, and the shape of the process near the base of the valves are very different from those of *xanthoscia*. The females are similar but can be separated by the lack of the sclerotized process in the ostium in *pseudoscia*. Although there is only one area where this species and *xanthoscia* appear to fly together, I am still not entirely certain of the relationship of these two species. Because of this sympatric occurrence, I am describing *pseudoscia* as a distinct species. While there are genitalia differences between the two species, their similarities are so striking that if they had been allopatric, I would have possibly considered them subspecies. There is no doubt that the two species *pseudoscia* and *xanthoscia* are very closely allied. Some of the specimens of *pseudoscia* were collected at a considerable altitude (1800 m) and most were collected over 1200 m. It seems probable that speciation has taken place on the mountain tops in New Guinea; this has been found in a number of other genera (e.g. *Endotricha* Zeller, Whalley, 1963).

BIOLOGY. Not recorded. Adults collected in i; ii; iii; vii; xi; xii.

DISTRIBUTION. West Irian; New Guinea.

MATERIAL EXAMINED.

Holotype ♂, NEW GUINEA: Biagi, Mambare River, 1500 m, B.N.G. ii.[19]06 (*Meek*), BM slide no. 14057, in BMNH.

Paratypes. NEW GUINEA: 1 ♂, 2 ♀, data as holotype; 4 ♂, 2 ♀, data as holotype, iii[19]06; 1 ♂, Buntibasa Distr., Kratke Mts, 1200–1500 m (*Shaw-Meyer*). INDONESIA: West Irian, 1800 m, Dutch N. Guinea, xii:[19]20–i[19]21 (*Pratt*); West Irian, 2 ♂, 4 ♀, Mt Kunupi, Menoo Valley, Weyland Mts, 1800 m, Dutch N. Guinea, xii. 1920–i. 1921. All in BMNH.

Misalina xanthoscia (Warren) **comb. n.**

(Pl. 1, fig. C; Pl. 7, fig. 54; Pl. 27, figs 233–235; Pl. 47, fig. 368; Pl. 57, figs 472, 473)

Striglina xanthoscia Warren, 1903 : 257.

This is a very striking yellow and brown species; at present there are only two other similar looking species in the family (*M. condensata* and *M. pseudoscia*). From these species it can be separated by the genitalia in both sexes. There are also a number of differences between the subspecies of *xanthoscia* in the genitalia but only the more obvious ones are given in the key. It is possible, that when more specimens are available, of both sexes, that the two subspecies may be regarded as distinct species. This is particularly true when considering the relationship between *xanthoscia* subspecies and *pseudoscia*. It is possible that *xanthoscia* subspecies might be considered as distinct species or that *pseudoscia* will be considered a subspecies of *xanthoscia*, instead of a distinct species as treated here. The three subspecies of *xanthoscia* cannot be separated on external characters.

KEY TO THE SUBSPECIES OF *Striglina xanthoscia* (males)

1	Aedeagus with prominent sclerotized cornutus	2
-	Aedeagus with lightly sclerotized cornutus	<i>x. flavia</i> (p. 91)
2 (1)	Aedeagus with many teeth on cornutus	<i>x. xanthoscia</i> (p. 90)
-	Aedeagus with teeth at end of cornutus only	<i>x. aurantia</i> (p. 91)

Misalina xanthoscia xanthoscia Warren

(Pl. 1, fig. C; Pl. 27, fig. 233; Pl. 47, fig. 368; Pl. 57, fig. 472, 473)

Striglina xanthoscia Warren, 1903 : 257. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].*Plagiosella pyromera* Warren, 1914 : 108. Holotype ♀, NEW GUINEA (BMNH) [examined].**Syn. n.***Striglina xanthoscia* Warren; Dalla Torre, 1914 : 14.*Plagiosella pyromera* Warren; Gaede, 1932 : 768.*Plagiosella xanthoscia* Warren; Gaede, 1932 : 767.

♂. Wing, 12-15 mm. Vertex reddish brown. Third segment of labial palp one-quarter length second. Thorax reddish brown. Forewing, pattern as in Pl. 1, fig. C, yellow with red-brown patches. Yellow apical and basal areas. Rest of wing reddish brown, terminal margin darker. Underside paler, practically unpatterned. Forewing with $R_4 + R_5$.

Genitalia ♂ (Pl. 27, fig. 233). Uncus broad, roughly parallel-sided with apical indentation. Two lateral arms. Strongly spiny, rounded subsclaphium. Gnathus weakly sclerotized with small median process. Valve entire. Strongly sclerotized median valve process enlarged to form hook near posterior margin of valve. Juxta membranous with two slender sclerotized lobes. Aedeagus with minutely spined manica and spiny plate, covered with small teeth, forming cornutus.

♀. Wing, 15 mm. Labial palp with third segment one-quarter length of second. Forewing orange-brown, brown median band with slightly mauvish tinge. Strongly reticulate pattern. Hindwing similar. Fringe greyish.

Genitalia ♀ (Pl. 47, fig. 368; Pl. 57, figs 472, 473). Anal papillae short. Ostium sclerotized, spiny, with distinct, shallow, bilobed plate. Bursa without signum, strongly spined, usually with lateral diverticulum.

DISCUSSION. This subspecies is bright yellow and reddish brown and, although difficult to separate from its subspecies and *pseudoscia* externally, is otherwise easily recognized as one of this small complex. The genitalia of the male, with relatively parallel-sided uncus, narrow process on the valve and slender sacculus process make it quite distinct from *pseudoscia*. The females are more difficult to separate. Basically the difference is in the ostium. The sclerotized, slightly bilobed plate of *xanthoscia* (Pl. 57, fig. 473) is lacking from the ostium of *pseudoscia*. The bursa in *pseudoscia* tends to be more laterally elongate whereas in *xanthoscia* the bursa is elongate in the anterior-posterior plane. I have specimens of both species from the same locality in New Guinea at the Mambare River but otherwise the two species are allopatric. It is possible that they may be subspecies of one species, but with this overlap in distribution and morphological differences between them in both sexes, I am considering them as distinct species. Some of the specimens of this subspecies from Goodenough Is. differ only slightly from those on mainland New Guinea.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; v; vi; viii; ix; x; xii.

DISTRIBUTION. New Guinea; Indonesia: West Irian.

MATERIAL EXAMINED.

Lectotype ♂ (*xanthoscia*), NEW GUINEA: Holnicote B. to Owen Stanley Range (*Rohu*), BM slide no. 13526, in BMNH. Holotype ♀ (*pyromera*), INDONESIA: West Irian, Fak-fak, Dutch New Guinea, xii[19]07 (*Pratt*), BM slide no. 13519, in BMNH. 53 specimens, BMNH.

Misalina xathoscia flavia subsp. n.

(Pl. 7, fig. 54; Pl. 27, fig. 234)

♂. Wing, 14–15 mm. Colour and pattern as nominate subspecies. Venation similar.

Genitalia ♂ (Pl. 27, fig. 234). As nominate subspecies. Differing as follows. Uncus with prominent median ridge. Subscaphium more elongate. Juxta shorter, not reaching transtilla. Median valve process with teeth. Sacculus process more spiny at apex. Aedeagus with smaller and less spiny cornutus.

♀. Unknown.

DISCUSSION. In spite of the variation in the nominate subspecies, with suggestions of incipient subspeciation on different mountain ranges, the specimens of *x. flavia* from the Cyclops Mountains are the most distinct, and are therefore described and named. The shape of the median valve process, while variable in the nominate subspecies, is never as prominently toothed as the specimens from the Cyclops Mountains.

BIOLOGY. Not recorded. Adults collected in iii.

DISTRIBUTION. Indonesia: West Irian.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: West Irian [Dutch New Guinea], Cyclops Mts, Mt Lina, 1050 m, iii. 1936 (*Cheesman*), BM slide no. 14060, in BMNH.

Paratypes. INDONESIA: 3 ♂, data as holotype, in BMNH.

Misalina xanthoscia aurantia subsp. n.

(Pl. 27, fig. 235)

♂. Wing, 13–14 mm. Colour and pattern as nominate subspecies (Pl. 1, fig. C).

Genitalia ♂ (Pl. 27, fig. 235). As nominate subspecies, differing as follows. Uncus less incised at apex. Gnathus with elongate median process (short in other two subspecies). Median valve process enlarged and broader. Aedeagus with cornutus as in nominate subspecies but with spines restricted to anterior end.

♀. Unknown.

DISCUSSION. This subspecies has only differentiated slightly from the nominate one, but both specimens show the elongate gnathus process which, with the differences

in the shape of the median valve process, separate this subspecies from the Island of Buru from the other two subspecies.

BIOLOGY. Not recorded. Adults collected in v.

DISTRIBUTION. Indonesia: Buru.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Buru, Kako tagalago, Central Buru, 810 m, v.[19]22 (Pratt), BM slide no. 14058, in BMNH.

Paratype. INDONESIA: Buru, 1 ♂, data as holotype, in BMNH.

Misalina ignefissa (Warren) **comb. n.**

(Pl. 1, fig. O; Pl. 7, fig. 56; Pl. 28, fig. 237; Pl. 47, fig. 370; Pl. 58, fig. 474; Pl. 65, fig. 559)

Striglina ignefissa Warren, 1908 : 106. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Striglina ignefissa Warren; Dalla Torre, 1914 : 11.

Plagiosella ignefissa Warren; Gaede, 1932 : 768.

♂. Wing, 11-14 mm. Vertex red with yellow scales. Labial palp with third segment one-quarter length second, upturned, reaching vertex. Thorax orange-brown, with yellow stripes on tegulae meeting posteriorly and continuing along dorsal side of abdomen as yellow line edged with red. Forewing, pattern as in Pl. 1, fig. O, orange-brown with bright yellow lines edged with red, often making rather rectangular patterns. Mauve suffusion over posterior part of forewing from median area outwards. Hindwing as forewing, underside paler, yellowish brown with yellow lines across wing.

Genitalia ♂ (Pl. 28, fig. 237). Uncus with two lateral processes and median process deeply divided into two arms. Subscaphium elongate. Gnathus with elongate median process. Valves entire. Median valve process sclerotized and enlarged. Juxta, two small lateral lobes. Aedeagus with a few small cornuti and spines near apex.

♀. Wing, 14 mm. Pattern of forewing basically similar to male, but entire median area of forewing pale grey-mauve edged with black. Labial palps similar to male.

Genitalia ♀ (Pl. 47, fig. 370; Pl. 58, fig. 474; Pl. 65, fig. 559). Anal papillae short. Ostium broad, with minute spines. Duct slender. Small sclerotized plate with spines forming signum.

DISCUSSION. This species is easily recognized by the bright colours and the rather regular yellow lines patterning the wing. Small variations in pattern and colour were found in the specimens examined, with slight differences in genitalia between specimens from different localities. The female with the large mauve patch, edged with black, is a particularly striking insect.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; viii; xi; xii.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Biagi, Mambare R., 1500 m, B.N. Guinea, iv.[19]06 (Meek), BM slide no. 13508, in BMNH.

18 specimens, BMNH; 1 specimen, CNC.

***Misalina scintillans* (Warren) comb. n.**

(Pl. 1, fig. D; Pl. 28, fig. 238; Pl. 48, fig. 371; Pl. 65, fig. 560)

Striglina scintillans Warren, 1905a : 7. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].*Striglina scintillans* Warren; Dalla Torre, 1914 : 12.*Plagiosella scintillans* Warren; Gaede, 1932 : 767.

♂. Wing, 11–13 mm. Vertex red-brown. Third segment of labial palp one-quarter length second. Thorax orange-red. Forewing, pattern as in Pl. 1, fig. D, orange-red with yellow reticulations, some darker patterning. Terminal and subterminal area with patches of iridescent scales. Hindwing, similar, more patches of iridescent scales. Forewing with $R_4 + R_5$.

Genitalia ♂ (Pl. 28, fig. 238). Uncus elongate, ending in two broad lateral lobes, slightly concave at apex. Ventral side of uncus hairy. Subscaphium with fine hairs. Gnathus with elongate median hook. Valves, modified, short with small apical lobe. Large sclerotized median valve process with toothed edge. Juxta membranous. Aedeagus with curved sclerotized plate forming cornutus.

♀. Wing, 14 mm. Pattern as male, colour often darker red. Third segment of labial palp nearly half length of second.

Genitalia ♀ (Pl. 48, fig. 371; Pl. 65, fig. 560). Anal papillae short. Ostium wide, covered with minute spines. Bursa with large signum with small spines.

DISCUSSION. The colour varies between specimens but is generally more reddish than *costirufata*. A short series of specimens from the Kumusi river area have a differently shaped uncus, but otherwise are similar. One specimen from this locality had a shape intermediate between these and the more typical form. Until further evidence is available I am regarding the Kumusi river specimens as conspecific. The wing pattern and the amount of iridescence varies with some of the more heavily patterned specimens.

BIOLOGY. Not recorded. Adults collected in i; iii; iv; vi; vii; viii; xii.

DISTRIBUTION. Indonesia: West Irian; New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Upper Aroa River, B.N. Guinea, ii.[19]03 (*Meek*), BM slide no. 14120, in BMNH.

41 specimens, BMNH; 2 specimens, CNC.

***Misalina reversa* (Warren) comb. n.**

(Pl. 1, fig. J; Pl. 7, fig. 57; Pl. 28, figs 239, 240; Pl. 48, fig. 372; Pl. 58, fig. 475)

Striglina reversa Warren, 1899b : 318.

This species is similarly coloured to *scintillans*, a rich reddish brown species. It can be separated externally from that species by the prominent transverse fascia on the wings. *M. reversa* is separated into two subspecies; these can be separated by differences in the pattern.

KEY TO THE SUBSPECIES OF *Striglina reversa* (males)

- 1 Dark reddish brown, outer fascia of wing usually only lightly marked. Uncus, U-
or Y-shaped, if latter then arms of Y as long as stalk of Y *r. reversa* (p. 94)
– Reddish brown, outer fascia of wing usually well marked. Uncus long, Y-shaped,
lateral arms of Y very short, much shorter than stalk of Y *r. alternata* (p. 94)

Misalina reversa reversa (Warren)

(Pl. 7, fig. 57; Pl. 28, fig. 239; Pl. 48, fig. 372; Pl. 58, fig. 475)

Striglina reversa Warren, 1899b : 318. LECTOTYPE ♀, here designated, NEW GUINEA (BMNH) [examined].*Striglina reversa* Warren; Dalla Torre, 1914 : 12.*Plagiosella reversa* Warren; Gaede, 1932 : 767.

♂. Wing, 12–15 mm. Vertex orange-brown. Labial palp with third segment less than one-quarter length of second, upturned, reaching above vertex. Prothorax black, rest of thorax orange-brown. Forewing, pattern as in Pl. 7, fig. 57, orange-brown with darker transverse fascia. Underside paler. Forewing with $R_4 + R_5$.

Genitalia ♂ (Pl. 28, fig. 239). Uncus bifid. Subscaphium long. Valve with prominent costal margin. Gnathus arms (brachia) not meeting in middle, curved. Valve with prominent large rounded process from costa and curved, toothed sacculus process. Juxta membranous. Aedeagus pointed, with smaller sclerotized plates.

♀. Wing, 13–16 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 48, fig. 372; Pl. 58, fig. 475). Anal papillae short. Ostium broad, covered with minute spines. Bursa with diamond-shaped signum.

DISCUSSION. This is a very richly coloured species with a slightly silvery appearance to the fascia. The very striking male genitalia are different from all others in the genus, and present extremes in modifications of the various parts. From *r. alternata* the nominate subspecies can be separated by the more reticulate appearance of the pattern and in the male by the shape of the uncus and sacculus process. Both syntypes are females, not males as given in the original description.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; v; vii; x; xi; xii.

DISTRIBUTION. Indonesia: West Irian; New Guinea; Goodenough I.

MATERIAL EXAMINED.

Lectotype ♀, NEW GUINEA: Milne Bay; xi.[18]98 (*Meek*), BM slide no 13520, in BMNH.

42 specimens, BMNH; 2 specimens, ANIC.

Misalina reversa alternata subsp. n.

(Pl. 1, fig. J; Pl. 28, fig. 240)

♂. Wing, 11.5–13.5 mm. Colour and structure similar to nominate subspecies, deep orange-brown. Transverse fascia broader and darker than in the nominate subspecies.

Genitalia ♂ (Pl. 28, fig. 240). Uncus narrowly divided with slightly pointed lateral arms. Gnathus with longer median spines than in nominate subspecies. Sacculus process longer.

♀. Wing, 14–15 mm. Colour and pattern as male.

Genitalia ♀. Similar to nominate subspecies.

DISCUSSION. This subspecies is confined to the islands off New Guinea. It can be separated from the nominate one on the pattern and genitalia. There is some evidence of more subspeciation within the islands but basically the differences are in the genitalia and wing pattern with many intermediate stages. The whole morphology of the island specimens is so similar that at present I regard them all as part of one subspecies.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; vi; vii; viii.

DISTRIBUTION. New Ireland; New Britain; New Hannover; Rook I.

MATERIAL EXAMINED.

Holotype ♂, NEW HANNOVER: iv. 1923 (*Meek*), BM slide no. 14147, in BMNH.

Paratypes. NEW HANNOVER: 3 ♂, 1 ♀, data as holotype, in BMNH. NEW IRELAND: xii. 1923 (*Eichhorn*), in BMNH. NEW BRITAIN: 15 ♂, 2 ♀, Taleša, i-iii. 1925 (*Meek*), in BMNH; 1 ♂, Mt Sinewit, 1050 m (*Brandt*), 27.vi-17.ix.1963, in ANIC. ROOK I., 5 ♂, 1 ♀, vii-viii. 1913 (*Meek*), in BMNH.

Misalina metallifera (Warren) **comb. n.**

(Pl. 7, fig. 58; Pl. 28, fig. 241)

Striglina metallifera Warren, 1908 : 107. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Striglina metallifera Warren; Dalla Torre, 1914 : 12.

Plagiosella metallifera Warren; Gaede, 1932 : 767.

♂. Wing, 10.5-13 mm. Vertex brown. Labial palp with third segment one-quarter length of second. Thorax reddish brown. Forewing, pattern as in Pl. 7, fig. 58, reddish brown, lightly marked with darker brown. Hindwing similar but with prominent red-black scales on inner margin. Iridescent scales scattered over both wings, including on the wing margin. Underside, paler, inner margin of hindwing with whitish scales. Forewing with $R_4 + R_5$.

Genitalia ♂ (Pl. 28, fig. 241). Uncus broad with four lobes, two short central lobes and two long lateral lobes. Subscaphium hairy. Gnathus with small median projection. Valves simple, small upturned median valve process. Juxta two simple lobes. Aedeagus with spiny plate on vesica.

♀. Unknown.

DISCUSSION. Few specimens of this small species are known. The rather uniformly coloured forewing and the prominent black hind margin to the hindwings make this species easily recognized. The genitalia are very similar to *ochracea* but the external appearance is distinct. Specimens from different areas of New Guinea (east and west) differ considerably in external appearance. Those from West Irian are paler and more yellow than those from eastern New Guinea. These probably represent a distinct subspecies but the genitalia are similar.

BIOLOGY. Not recorded. Adults collected in iii; iv.

DISTRIBUTION. Indonesia: West Irian; New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Biagi, Mambare R., 1500 m, B.N. Guinea, iii.[19]06 (Meek), BM slide no. 13512, in BMNH.
6 specimens, BMNH.

Misalina anxia sp. n.

(Pl. 7, figs 59, 60; Pl. 29, fig. 242; Pl. 48, fig. 373; Pl. 58, fig. 476; Pl. 65, fig. 561)

♂. Wing, 10–11 mm. Vertex orange-brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length second. Prothorax orange with dark brown posterior margin. Mesothorax with narrow dark brown line on anterior edge, rest of thorax orange. Hind tarsi each with three apical spines on distal part of each segment. Forewing, pattern as in Pl. 7, figs, 59, 60, orange-brown reticulated with red and yellow, with darker costal margin and transverse marks. Forewing with R_4 and R_5 with common stalk. Hindwing with $Sc + R_1$ and R_s close but not joining.

Genitalia ♂ (Pl. 29, fig. 242). Uncus with four long processes. Valve long, slender. Small spines on subscaphium. Gnathus slender, median process short with one long tooth and some smaller ones. Median valve process lightly sclerotized, pointed. Sacculus process long, slender, hairy. Aedeagus with spined manica.

♀. Wing, 13–14 mm. Dark reddish orange wings with darker patterns and small yellow spots. Labial palp with third segment one half length second. Frenulum double.

Genitalia ♀ (Pl. 48, fig. 373; Pl. 58, fig. 476; Pl. 65, fig. 561). Anal papillae short. Ostium minutely spined, lightly sclerotized. Bursa with double spiny signum.

DISCUSSION. This species is related to *costirufata* from New Guinea. The males can be separated by their more distinct pattern and in the genitalia by the shape of the valves and gnathus. In *anxia* the gnathus has a peg-like tooth from the narrow central process. The female of *costirufata* is unknown, but the wing pattern of the males resembles the females of *anxia*. The complex of species, with very similar male genitalia, form a sister group of closely allied species, which is the *metalliferamstirufata-anxia* species. Nothing is known of their biology which might shed some light on their affinities, thus their actual relationships is still a matter of some speculation.

BIOLOGY. Not recorded. Adults collected in iii; iv; v.

DISTRIBUTION. Australia: Queensland.

MATERIAL EXAMINED.

Holotype ♂, AUSTRALIA: Queensland, 9 ml. N. of Kuranda, Q., 12.iii.1964 (*Common & Upton*), BM slide no. 14740, in ANIC.

Paratypes. AUSTRALIA: 1 ♂, 1 ml. E. Kuranda, Q. 19.iv.1964 (*Common & Upton*); 1 ♂, 1 ♀, Mt Spec Q. 780 m, 4.iii.1964 (*Common & Upton*); 1 ♂, Mt Edith, 29 km NE. Atherton, 18.iii.1964 (*Common & Upton*); 1 ♀, Lake Eacham, Q. 720 m, 2.v.1955 (*Common*), all in ANIC; 1 ♀, Queensland, Kuranda (*Dodd*), in BMNH.

Misalina costirufata (Warren) **comb. n.**

(Pl. I, fig. P; Pl. 29, fig. 243)

Striglina costirufata Warren, 1908: 106.

This species is closely allied to *metallifera* and the Australian species, *M. anxia*. The general shape of the male genitalia suggests a close common ancestor, but the actual relationship is not clear. These species are separated primarily on differences in the genitalia, although there are some external differences. Until longer series are available for examination there is still some doubt on the validity of the differences, they may, for example, be extremes of a more widely distributed cline. This is particularly the case with the two subspecies of *M. costirufata* where they occur at the east and west ends of New Guinea, with no specimens known from the intervening areas.

KEY TO THE SUBSPECIES OF *Misalina costirufata* (males)

- I Wing 11.5 mm or under *c. costirufata* (p. 97)
 - Wing 12.5 mm or over *c. chelydra* (p. 98)

Misalina costirufata costirufata (Warren)

(Pl. 29, fig. 243)

Striglina costirufata Warren, 1908: 106. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Striglina costirufata Warren; Dalle Torre, 1914: 11.

Plagiosella costirufata Warren; Gaede, 1932: 767.

♂. Wing, 11 mm. Vertex orange-red. Labial palp with third segment one-quarter length second. Thorax orange-brown. Forewing, pattern similar to Pl. I, fig. P, orange-brown with black and yellow reticulations. Black spots in median area near hind margin. Underside similar, paler. Forewing with $R_4 + R_5$.

Genitalia ♂ (Pl. 29, fig. 243). Uncus broad, with two lateral processes and two shorter median ones. Gnathus with small median projection covered with minute spines. Subscaphium hairy. Valves entire, with hook-like median process. Sacculus process two slender lobes. Saccus slightly elongate. Aedeagus minutely spined on manica near apex.

♀. Unknown.

DISCUSSION. This subspecies is smaller than *c. chelydra* and generally less orange, even so it is still a distinctly reddish brown species with black spots. At present the subspecies is known only from three specimens collected in 1906 in one locality in New Guinea.

BIOLOGY. Not recorded. Adults collected in iii; iv.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Biagi, Mambare R., 1500 m, B.N. Guinea, iv.[19]06 (*Meek*), BM slide no. 13500, in BMNH.

3 specimens, BMNH.

Misalina costirufata chelydra subsp. n.

(Pl. 1, fig. P)

♂. Wing, 12.5 mm. Colour and pattern as in Pl. 1, fig. P, orange-brown with black marks. Forewing with $R_4 + R_5$.

Genitalia ♂. Similar to nominate subspecies (Pl. 29, fig. 243), differing in shape of uncus lobes which are broader and more hairy and in median valve process which is more strongly sclerotized and with a bifid apex. Sacculus lobes broader than nominate subspecies, more hairy.

♀. Unknown.

DISCUSSION. Very similar to the nominate subspecies in appearance but separated from this by its larger size and differences in the genitalia. This subspecies is known only from one specimen from West Irian whereas the nominate one is from the south-east of Papua. The relationship between the nominate subspecies and this one is not clear. It is possible that with more specimens these may be found to represent the extremes of a cline across New Guinea of one species.

BIOLOGY. Not recorded. Adult collected in xii-i.

DISTRIBUTION. Indonesia: West Irian.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: West Irian, Mt Kunupi, Menoo Valley, Weyland Mts, Dutch N. Guinea, xii.[19]20-i.[19]21, (*Pratt*), BM slide no. 14759, in BMNH.

THE *LEPROSA*-GROUP

Similar to the preceding group with $R_4 + R_5$ in the forewing and a frenulum with two bristles in the female, it differs in the ciliate antennae (minutely ciliate in the *ochracea*-group).

The first two species are closely allied and have a very similar morphology. They are undoubtedly derived from a close common ancestor and are sister-species. The third species (*suffusa*) is from China whereas all the rest of the species in the genus are from New Guinea or the Oriental region. *M. suffusa* is known only from the holotype and its placing in the genus is only tentative, although it shows certain features in common with them.

Misalina leprosa (Warren) comb. n.

(Pl. 2, fig. B; Pl. 8, fig. 61; Pl. 29, fig. 244; Pl. 48, fig. 374)

Striglina leprosa Warren, 1898b : 225. Holotype ♂, NEW GUINEA (BMNH) [examined].

Striglina leprosa Warren; Dalla Torre, 1914 : 12.

Plagiosella leprosa Warren; Gaede, 1932 : 767.

♂. Wing, 15.5-16.5 mm. Vertex purplish brown. Labial palp with third segment one-quarter length of second. Prothorax brown, tegulae and rest of thorax yellow. Legs with white rings near apex of segments. Forewing, pattern as in Pl. 2, fig. B, yellow-ochre with purplish costal margin and silvery spots in line subterminally and (faintly) medially. Terminal margin reddish brown. Hindwing, similar pattern but with large median area of reddish purple.

Fringe pinky brown. Underside, darker, basal area purplish brown. Terminal area yellowish. Hindwing with pink suffusion, pattern more obscure than upperside. Forewing with $R_4 + R_5$.

Genitalia ♂ (Pl. 29, fig. 244). Uncus broad with two long lateral processes and tapering single median process. Arms of gnathus broad in first part from tegumen then narrower part arising with pointed central process. Subscaphium hairy. Valve entire. Prominent sclerotized median valve process. Juxta with spiny apical part. Aedeagus slightly elongate on one side with patch of cornuti.

♀. Wing, 16.5–19.0 mm. Colour similar to male but with more silvery white spots on forewing and with less purplish suffusion on hindwing.

Genitalia ♀ (Pl. 48, fig. 374). Anal papillae short. Ostium sclerotized, covered with minute spines. Duct with distinct longitudinal ridge. Large secondary sac on bursa. Large sclerotized spiny signum.

DISCUSSION. This species is closely allied to *floccosa*; even the genitalia are similar. The two species can be separated by external characters. Some variation in pattern occurs but this is a very distinctive species and little variation was found in the genitalia.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv; v; vii; viii; xi; xii.

DISTRIBUTION. Indonesia: West Irian; New Guinea.

MATERIAL EXAMINED.

Holotype ♂, NEW GUINEA: Mailu, B.N. Guinea, vii.[19]05 (*Anthony*), BM slide no. 13509, in BMNH.

38 specimens, BMNH; 1 specimen, CNC; 4 specimens, ANIC.

Misalina floccosa (Warren) **comb. n.**

(Pl. 2, fig. H; Pl. 29, fig. 245; Pl. 48, fig. 375; Pl. 58, fig. 477; Pl. 65, fig. 562)

Striglina floccosa Warren, 1905a : 7. Holotype ♂, NEW GUINEA (BMNH) [examined].

Striglina floccosa Warren; Dalla Torre, 1914 : 11.

Plagiosella floccosa Warren; Gaede, 1932 : 767.

♂. Wing, 15–20 mm. Vertex reddish brown. Third segment of labial palp one-quarter length of second. Large patch of white scales on fore tibia, other legs with white spots. Forewing, pattern as in Pl. 2, fig. H, orange-brown with darker reticulations. White fringe. Underside paler, mauve suffusion over basal and median areas. Black spot on apex of cell visible on underside. Veins $R_4 + R_5$.

Genitalia ♂ (Pl. 29, fig. 245). Uncus broad, two lateral processes and broader median process with hairy apex. Gnathus with small median projection. Subscaphium broad, hairy. Valve simple. Prominent median valve process. Juxta with two sclerotized lateral lobes, hairy at apex. Aedeagus broad with spiny patch in vesica.

♀. Wing, 16–20 mm. Colour and pattern as male. Labial palp with third segment longer than male. White spot on foreleg not as large as in male.

Genitalia ♀ (Pl. 48, fig. 375; Pl. 58, fig. 477; Pl. 65, fig. 562). Anal papillae short. Ostium minutely spiny. Large signum, prominently toothed in bursa. Large secondary sac arising from middle of bursa on broad duct.

DISCUSSION. The large size and reddish orange colour with the conspicuous white patch on the fore tibia make this species easily recognized. There is some variation in pattern over the range with paler specimens occurring in different areas

in small numbers. Well over 200 specimens of this species were examined. The amount of patterning on the forewing varied but the genitalia were similar in specimens from all over the range, with little signs of incipient subspeciation. From Australia only a single female has been seen but it was similar to the New Guinea specimens.

BIOLOGY. Leaf defoliator, *Eucalyptus* species. Adults collected in Ceram in i; ii; in Buru in v; in New Guinea in ii; iii; iv; v; vii; xi.

DISTRIBUTION. Indonesia: Ceram, Buru; Malaysia: Sarawak; New Hannover; New Guinea; Sudest I.; New Ireland; Australia.

MATERIAL EXAMINED.

Holotype ♂, NEW GUINEA: Upper Aroa R., B.N. Guinea, iv.[19]03 (*Meek*), BM slide no. 13148, in BMNH.

244 specimens, BMNH; 1 specimen, ANIC.

Misalina suffusa (Leech) **comb. n.**

(Pl. 8, fig. 62; Pl. 29, fig. 246)

Striglina suffusa Leech, 1898 : 374. Holotype ♂, CHINA (BMNH) [examined].

Striglina suffusa Leech; Dalla Torre, 1914 : 13.

♂. Wing, 18 mm. Vertex brown. Antennae ciliate. Labial palp with third segment one half length of second. Thorax yellow-brown. Forewing, pattern as in Pl. 8, fig. 62, yellowish brown with prominent slender transverse line of reddish brown. Reticulations reddish brown. Underside similar, paler. Veins $R_4 + R_5$ in forewing.

Genitalia ♂ (Pl. 29, fig. 246). Uncus broad with two processes and two slender lateral processes. Subscaphium hairy. Gnathus with sclerotized median area with minute teeth. Valve entire, median valve process a sclerotized hook. Juxta membranous with two long, slender lateral lobes. Aedeagus with numerous cornuti.

♀. Unknown.

DISCUSSION. Only one specimen of this species is known and it is rather similar to species of *Misalina*. Certain features in the genitalia, however, indicate possible relationship with species in other genera and its present placing is only tentative. It is possible the anatomy of the female will assist in obtaining a more correct generic position.

BIOLOGY. Not recorded. Adult collected in vi.

DISTRIBUTION. China.

MATERIAL EXAMINED.

Holotype ♂, CHINA: Chang Yang, vi, 1898 (*Pratt*), BM slide no. 13524, in BMNH.

THE *PYRRHATA*-GROUP

This group contains the species of *Misalina* where the frenulum in the female is triple. The forewing generally has R_4 and R_5 running separately to the cell and the antennae are minutely ciliate. The species in this group are found in Australia.

***Misalina pyrrhata* (Walker) comb. n.**

(Pl. 8, fig. 63; Pl. 29, fig. 247; Pl. 48, fig. 376; Pl. 66, fig. 563)

- Arhodia pyrrhata* Walker, 1866 : 1575. Holotype ♀, AUSTRALIA (BMNH) [examined].
Striglina australina Guenée, 1877 : 284. Holotype ♂, AUSTRALIA (BMNH) [examined].
Striglina pyrrhata Walker; Meyrick, 1887 : 199.
Striglina pyrrhata Walker; Hampson, 1897 : 613.
Striglina australina Guenée; Hampson, 1897 : 613.
Rhodoneura pyrrhata Walker; Turner, 1904 : 111.
Striglina pyrrhata Walker; Dalla Torre, 1914 : 12.
 [Striglina *ilacina* Warren; Dalla Torre, 1914 : 12. Misidentification.]
Striglina pyrrhata Walker; Gaede, 1932 : 746.
Rhodoneura loxomita Turner, 1906 : 89. LECTOTYPE ♂, here designated, AUSTRALIA (ANIC) [examined]. **Syn. n.**

♂. Wing, 13–14 mm. Vertex brown. Third segment of labial palp one-third length of second. Thorax reddish brown. Forewing, pattern as in Pl. 8, fig. 63, reddish brown with red transverse median fascia, indistinct near apex of forewing. Brown reticulations over whole wing. Hindwing, similar, median fascia slightly angled in middle. Underside, with patches of darker purplish scales near base and in posterior part of median area of forewing. A few darker scales in median fascia in forewing. Terminal and subterminal margins purplish.

Genitalia ♂ (Pl. 29, fig. 247). Uncus with median fork and two lateral processes. Subscaphium hairy. Gnathus with prominent median hook. Valve narrow, median valve process sclerotized, with two points. Juxta with two long, sclerotized lateral arms, apex hairy. Aedeagus with cornuti in two patches.

♀. Wing, 14–17 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 48, fig. 376; Pl. 66, fig. 563). Anal papillae short. Ostium broad, first part of duct with sclerotized plates near ostium. Signum, a large plate, diamond-shaped with small spines.

DISCUSSION. This species is larger than most of the others in the group. Generally the dark patch of scales in the median fascia contrasts with *centiginosa* where they extend to the terminal area. The wing colour varies from reddish brown to a very yellow-brown.

BIOLOGY. Not recorded. Adults collected in i; ix.

DISTRIBUTION. Australia: New South Wales.

MATERIAL EXAMINED.

Holotype ♀ (*pyrrhata*), AUSTRALIA: Moreton Bay, BM slide no. 10882, in BMNH.
 Holotype ♂ (*australina*), AUSTRALIA: BM slide no. 10883, in BMNH. Lectotype ♂ (*loxomita*), AUSTRALIA: Brisbane, i.[19]05, BM slide no. 13676, in ANIC.
 9 specimens, BMNH; 2 specimens, ANIC.

***Misalina centiginosa* (Lucas) comb. n.**

(Pl. 8, fig. 64; Pl. 30, fig. 248; Pl. 48, fig. 377)

- Striglina centiginosa* Lucas, 1898 : 81. ^{Lectotype} Holotype ♂, AUSTRALIA (SAMA) [examined].
Striglina cypholoma Turner, 1904 : 112. Holotype ♀, AUSTRALIA (ANIC) [examined].
Striglina centiginosa Lucas; Dalla Torre, 1914 : 10.
 [Striglina '*striglina*' Turner; Dalla Torre, 1914 : 11. Lapsus.]

Striglina centiginosa Lucas; Turner, 1911 : 100.

Striglina centiginosa Lucas; Gaede, 1932 : 746.

'*Striglina rufescens*' Lower, manuscript name, publication not traced, specimen in SAMA labelled '*Rhodonura rufescens* Lower' by Hampson [examined].

♂. Wing, 12-13 mm. Vertex grey-brown. Antennae shortly ciliate and serrate. Labial palp short, third segment one-third length second. Thorax grey-brown. Forewing, pattern as in Pl. 8, fig. 64, grey-brown with black markings. Veins R_2 - R_5 separately from cell. Hindwing similar, black markings in median area more prominent. Underside purplish grey, dark patch posteriorly terminal and subterminal. Black spots prominent, median fascia of hindwing made up of black spots.

Genitalia ♂ (Pl. 30, fig. 248). Uncus bifurcate with two small lateral processes. Subscaphium hairy. Gnathus with prominent median process, toothed on dorsal surface. Valve with median process with two points, posterior process minutely toothed. Juxta with two prominent lateral processes with hairs near apex. Aedeagus with two patches of cornuti.

♀. Wing, 14 mm. Colour and pattern as male. Antennae minutely ciliate.

Genitalia ♀ (Pl. 48, fig. 377). Anal papillae short. Ostium spiny. Duct narrowing from ostium. Signum diamond-shape with a few small spines.

DISCUSSION. Externally this species is distinguished from *pyrrhata* by the colour (reddish or yellowish brown, *pyrrhata*; grey-brown, *centiginosa*). The male genitalia differ in the shape of the uncus and the second patch of cornuti have more spines than in *pyrrhata*. The colour of specimens of *centiginosa* varies from a pale grey to a rather dark grey-brown. On the underside the dark patch reaches to the terminal area whereas in *pyrrhata* it is restricted to the median area. The name '*Striglina rufescens* Lower' is on a specimen in the South Australian Museum, marked 'type, Lower', from Cooktown and there is a coloured figure of this specimen in the BMNH. I have been unable to trace the publication of this name; the specimen is *centiginosa* Lucas.

BIOLOGY. Not recorded. Adults collected in ii; xi.

DISTRIBUTION. Australia: Queensland.

MATERIAL EXAMINED.

Holotype ♂ (*centiginosa*), AUSTRALIA: Brisbane, in SAMA. Holotype ♀ (*cypholoma*), AUSTRALIA: Brisbane, xi. BM slide no. 14126, in ANIC.

10 specimens, BMNH; 3 specimens, SAMA.

Misalina stramentaria (Lucas) **comb. n.**

(Pl. 8, fig. 65; Pl. 30, fig. 249; Pl. 48, fig. 378; Pl. 58, fig. 478; Pl. 66, fig. 564)

Striglina stramentaria Lucas, 1898 : 81. LECTOTYPE ♂, here designated, AUSTRALIA (SAMA [examined]).

[*Striglina scitaria* Walker; Turner, 1904 : 112. Misidentification.]

Striglina stramentaria Lucas; Dalla Torre, 1914 : 13.

Camptochilus citrinarius Gaede, 1922 : 35. Holotype ♀, AUSTRALIA (MNHU) [examined].

Syn. n.

Striglina citrodes Turner, 1922 : 41. Holotype ♂, AUSTRALIA (ANIC) [examined]. **Syn. n.**

Striglina stramentaria Lucas; Gaede, 1932 : 746.

Striglina acrocypa Turner, 1942 : 80. LECTOTYPE ♂, here designated, AUSTRALIA (ANIC) [examined]. **Syn. n.**

♂. Wing, 14–16 mm. Vertex yellow-brown. Third segment of labial palp one-quarter length of second. Prothorax yellow-brown, rest brown. Forewing, pattern as in Pl. 8, fig. 65, pale yellow brown with faint reticulations. Dark mark along costa. Narrow, brown median fascia. Hindwing, similar. Underside, more heavily patterned than upperside, median fascia broad.

Genitalia ♂ (Pl. 30, fig. 249). Uncus bifurcate with two slender lateral processes. Gnathus with elongate process in mid-line. Subscaphium hairy. Valves slender. Median valve process sclerotized. Juxta two sclerotized and hairy arms. Aedeagus with group of cornuti.

♀. Wing, 16 mm. Colour and pattern as male. Third segment of labial palp one-third length second.

Genitalia ♀ (Pl. 48, fig. 378; Pl. 58, fig. 478; Pl. 66, fig. 564). Anal papillae short. Ostium broad, lightly sclerotized, covered with minute spines. Duct broad. Bursa with double spiny signum.

DISCUSSION. This species is variable in pattern, some specimens have a pale yellowish colouration and relatively unpatterned appearance, others are quite well marked with prominent lines from the apex of the forewing. The genitalia of the male are characteristic with the four processes on the uncus; in this it is similar to *pyrrhata* but in this latter species the lateral processes of the uncus are broader and there are more cornuti in the aedeagus. *M. stramentaria* is part of the species-group, *pyrrhata-centiginosa* series. All are characterized by the presence of a well developed pattern on the underside of the wing and other morphological features.

BIOLOGY. Not recorded. Adults collected in i; xi.

DISTRIBUTION. Australia: Queensland, New South Wales.

MATERIAL EXAMINED.

Lectotype ♂ (*stramentaria*), AUSTRALIA: Queensland, Brisbane, Caboolture, in SAMA (lacks abdomen). Holotype ♀ (*citrinarius*), AUSTRALIA: New South Wales (*Staudinger*), in MNHU. Holotype ♂ (*citrodes*), AUSTRALIA: Queensland, Mt Tambourine, xi.[19]06, BM slide no. 14125, in ANIC. Lectotype ♂, (*acrocypha*), AUSTRALIA: National Park, Q., 900 m, Ecl. D.x. 5.i.[19]41, BM slide no. 14129, in ANIC.

1 specimen, BMNH; 3 specimens, ANIC; 2 specimens, SAMA.

Misalina innotata (Warren) **comb. n.**

(Pl. 8, fig. 66; Pl. 30, fig. 250; Pl. 48, fig. 379)

Morova (?) *innotata* Warren, 1904 : 483. LECTOTYPE ♂, here designated, AUSTRALIA (BMNH) [examined].

Morova innotata Warren; Dalla Torre, 1914 : 45.

[*Striglina centiginosa* Lucas; Turner, 1922 : 42. Misidentification.]

♂. Wing, 10–11 mm. Vertex reddish brown. Antennae shortly ciliate. Labial palps with third segment one-third length second. Thorax reddish brown. Forewing, pattern as in Pl. 8, fig. 66, reddish brown, terminal margin sinuate. Fringe dark with white apex. Costal margin with light and dark patches. Reticulations indistinct. Underside purplish brown, brown patches of scales in basal and median areas. Terminal and subterminal area without spots. Hindwing with dark patches on anterior margin. Vein $R_4 + R_5$ in forewing, shortly stalked.

Genitalia ♂ (Pl. 30, fig. 250). Uncus with shallow apical incision. Two lateral processes. Subscaphium hairy. Gnathus with prominent median hook. Valve slender, median valve process sclerotized, rounded. Juxta with two short, roughly triangular, lateral processes. Aedeagus with one patch of cornuti.

♀. Wing, 13 mm. Colour and pattern as male. Antennae shortly ciliate.

Genitalia ♀ (Pl. 48, fig. 379). Anal papillae short. Ostium with minute spines. First part of duct broader than rest. Signum a rather elongate diamond-shaped plate with small spines.

DISCUSSION. The dark fringes with white tips makes the sinuous shape of the termen conspicuous, more so than in *centiginosa*. The latter species is greyer and well marked whereas *innotata* is reddish brown and relatively unmarked on the upper side. The male genitalia are quite distinct and in the female the signum is much more elongate than in *pyrrhata* or *centiginosa*. In a few specimens the underside pattern is visible through the upperside, but generally this is obscured. This species forms a link with the *ochracea*-group in having R_4 and R_5 stalked in the forewing but has a triple frenulum in the female (double in the *ochracea*-group).

BIOLOGY. Not recorded. Adults collected in i; ii.

DISTRIBUTION. Australia: Queensland.

MATERIAL EXAMINED.

Lectotype ♂, AUSTRALIA: Queensland, Townsville (*Dodd*), BM slide no. 13316, in BMNH.

6 specimens, BMNH; 3 specimens, ANIC.

Misalina ferruginea sp. n.

(Pl. 8, fig. 67; Pl. 30, fig. 252)

♂. Wing, 10 mm. Vertex brown. Antennae minutely ciliate. Labial palp upturned, third segment one-quarter length second. Thorax brown. Legs brown with white rings round apex of segments. Forewing, pattern as in Pl. 8, fig. 67, brown with black reticulations, relatively even over fore- and hindwing. Underside similar, incomplete median fascia. Forewing with R_4 and R_5 stalked. Hindwing with $Sc + R_1$ and Rs close but not touching.

Genitalia ♂ (Pl. 30, fig. 252). Uncus with four processes, two short median and two long lateral processes. Subscaphium hairy. Gnathus a sclerotized ring with small central process. Valve thicker in apical third, median valve process sclerotized with rows of small teeth. Sacculus process with two clavate lobes. Aedeagus with two small groups of cornuti.

♀. Unknown.

DISCUSSION. This species is characterized by the shape of the valves, with the broader apical third. It is related to *innotata* but can be distinguished from that species by the shape of the terminal margin of the wing and the more slender uncus. From *pyrrhata*, to which it is also related, it can be separated by its smaller size and the smaller size of the central process on the gnathus. The forewing venation is similar to *innotata* with $R_4 + R_5$.

BIOLOGY. Not recorded. Adults collected in iii; x.

DISTRIBUTION. Australia: New South Wales.

MATERIAL EXAMINED.

Holotype ♂, AUSTRALIA: New South Wales, Tooloom, 28.x.1961 (*Common & Upton*), BM slide no. 14727, in ANIC.

Paratypes. 1 ♂, AUSTRALIA: New South Wales, data as holotype; 1 ♂, New South Wales, 8 km S. of Wachepe, 25.iii.1965 (*Common & Upton*). One in ANIC, one in BMNH.

Misalina parata sp. n.

(Pl. 8, fig. 68; Pl. 30, fig. 254)

♂. Wing, 11–14 mm. Vertex reddish brown. Antennae minutely ciliate. Third segment of labial palp one-quarter length second. Thorax reddish brown. Forewing, pattern as in Pl. 8, fig. 68, reddish brown with black reticulations. Hindwing similar, usually with black spot over apex of cells in hindwing. Underside, paler than upper, with black patch on each wing. Forewing with R_2 to R_5 separately from cell. Hindwing with $Sc + R_1$ and R_s just touching in some specimens.

Genitalia ♂ (Pl. 30, fig. 251). Uncus slightly indentate at apex with two long lateral lobes. Subscaphium hairy. Gnathus a sclerotized loop with short rounded median process. Valve simple, rather parallel-sided. Median valve process toothed. Sacculus process with two elongate lobes. Aedeagus with long spines on manica and small cornuti.

♀. Unknown.

DISCUSSION. There is some variation in the spines in the aedeagus of specimens of this species examined. Externally the intensity of the colour also varies between specimens. Although the genitalia are very similar to *innotata*, the wing shape and the lack of any fusion of veins R_4 and R_5 in the forewing separate *parata* from *innotata*. The structure of the genitalia suggests that this species should be one of the *pyrrhata*-group.

BIOLOGY. Not recorded. Adults collected i; iv; vii; ix; xii.

DISTRIBUTION. Australia: Northern Territory, Queensland.

MATERIAL EXAMINED.

Holotype ♂, AUSTRALIA: Northern Territory, Humpty Doo, light trap, 29.vii.1959 (*Boerema*), BM slide no. 14742, in ANIC.

Paratypes. AUSTRALIA: 1 ♂, Northern Territory, Humpty Doo, light trap, 1.ix.1959 (*Boerema*); 1 ♂, locality as holotype, 15.xii.1959; 1 ♂, Northern Territory, Bathurst I.; 1 ♂, Queensland, Mt Garnet, 690 m, 20.iv.1969 (*Common & Upton*). All in ANIC.

Misalina irias (Meyrick) comb. n.

(Pl. 8, fig. 69; Pl. 30, fig. 253; Pl. 49, fig. 380; Pl. 58, fig. 479; Pl. 66, fig. 565)

Striglina irias Meyrick, 1887 : 199. LECTOTYPE ♀, here designated, AUSTRALIA (SAMA) [examined].

Rhodoneura irias Meyrick; Turner, 1904 : 113.

Striglina irias Meyrick; Dalla Torre, 1914 : 11.

Striglina irias Meyrick; Gaede, 1932 : 749.

♂. Wing, 16–17 mm. Vertex grey-brown, scales white-tipped. Labial palp with third segment one-half length second. Thorax mauvish brown. Forewing, pattern as in Pl. 8, fig. 69, pale mauvish brown spotted with darker brown. Broad median fascia through both wings. Terminal and subterminal areas paler. Veins R_2 – R_5 separately from cell. Hindwing similar, mottled. Prominent round spot in middle of hindwing.

Genitalia ♂ (Pl. 30, fig. 253). Uncus hairy, bifid with small median process. Subscaphium hairy. Gnathus with large sclerotized and spiny median process. Valve slender. Median valve process hairy, bifid. Juxta with two short hairy lateral lobes. Aedeagus without cornuti but with minutely spined vesica.

♀. Wing, 17–20 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 49, fig. 380; Pl. 58, fig. 479; Pl. 66, fig. 565). Anal papillae short. Ostium covered with minute spines. Duct broad. Signum two lightly sclerotized plates, with minute spines. Lightly spined area round signum.

DISCUSSION. This pale coloured species with the darker median fascia is clearly recognizable from the others in the genus. The large black spot in the hindwing which is characteristic of this species is also found in the *navigatorum*-group in *Striglina*, but the colour and wing shape immediately separate these species. In the male the hairy nature of the uncus gives it a slightly irregular outline. Broadly the genitalia are similar to the *pyrrhata*-group but the external appearance is strikingly different. The female has a double frenulum, differing from the others in the group. In this character it approaches the *ochracea*-group.

BIOLOGY. Not recorded. No data on adult flight time.

DISTRIBUTION. Australia: Queensland.

MATERIAL EXAMINED.

Lectotype ♀, AUSTRALIA: Brisbane (*Lucas* coll.), in SAMA.
2 specimens, BMNH; 4 specimens, SAMA.

THE *GLAREOLA*-GROUP

This group contains species with a rather similar external appearance and with various modifications which suggest that they are on the fringe of the genus *Misalina*. The development of a more complicated structure round the ostium in the female is not common in *Misalina* but more typical of *Striglina*. The species in the *glareola*-group cannot be readily separated on external characters but the genitalia are quite distinct. The females of this group all have a triple frenulum as in most of the species in the preceding group.

Misalina glareola (Felder & Rogenhofer) **comb. n.**

(Pl. 8, fig. 70; Pl. 31, fig. 254; Pl. 49, fig. 381; Pl. 58, fig. 480; Pl. 66, fig. 566)

Siculodes glareola Felder & Rogenhofer, 1875 : pl. 134, fig. 11. Holotype ♂, JAVA (BMNH) [examined].

Siculodes glareola Felder & Rogenhofer; Pagenstecher, 1892 : 112.

Striglina glareola Felder & Rogenhofer; Hampson, 1897 : 613.

[*Striglina decussata* Moore; auct. Misidentification.]

[*Sonagara vittata* Moore; Turner, 1915 : 27. Misidentification; misspelling of *bivittata* Moore.]

[*Striglina duplicifimbria* Warren; auct. Misidentification.]

[*Striglina platyntis* Meyrick; auct. Misidentification.]

[*Striglina sordida* Pagenstecher; auct. Misidentification.]

[*Striglina glareola*; Turner, 1915 : 27. Misidentification.]

Striglina glareola Felder & Rogenhofer; Dalla Torre, 1914 : 11.

Striglina glareola Felder & Rogenhofer; Gaede, 1932 : 747.

♂. Wing, 12-16 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax brown. Forewing, pattern as in Pl. 8, fig. 70, pale brown with darker reticulations and dark costal margin. Prominent discal spot. Hindwing, as forewing. Underside, paler than upper.

Genitalia ♂ (Pl. 31, fig. 254). Uncus short, broad, with prominent lateral processes. Gnathus arms lightly sclerotized, not clearly meeting in mid-line. Prominent spiny subscaphium. Valve entire. Prominent hooked median valve process. Sclerotized and pointed sacculus process. Aedeagus broad, no cornuti.

♀. Wing, 18 mm. Colour and pattern as male. Third segment of labial palp almost half length second. Frenulum triple.

Genitalia ♀ (Pl. 49, fig. 381; Pl. 58, fig. 480; Pl. 66, fig. 566). Anal papillae short. Ostium sclerotized, spiny, prominent striae on membrane round ostium. Spiny signum in two parts at angle to one another.

DISCUSSION. Slight variation in the genitalia of specimens from Java and Malaya suggests that there is some subspeciation. No subspecies are described at present on the material available. The shape of the spiny subscaphium is characteristic of this species. In some specimens the radial veins R_4 and R_5 join for part of their length but in others they are free. It is not easy to separate this species from the others in the group on external characters although the genitalia are distinct.

BIOLOGY. Not recorded. Adults collected in Bali in x; in Sumatra in xii; in Borneo in iv.

DISTRIBUTION. Indonesia: Java, Bali, Sumatra, Borneo; Malaysia: Malaya; India (north); Burma.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Java (*Felder* coll.), BM slide no. 13506, in BMNH.
10 specimens, BMNH.

Misalina ferocia sp. n.

(Pl. 8, fig. 71; Pl. 31, fig. 255; Pl. 49, fig. 382; Pl. 58, fig. 481; Pl. 66, fig. 567)

♂. Wing, 15.5 mm. Vertex brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length of second. Tarsi with three apical spines on first four tarsal segments, apical segment without spines. Forewing, pattern as in Pl. 8, fig. 71, pale yellow-brown with darker spots. Dark brown costal margin. Radial veins R_3 to R_5 separately from cell. Hindwings similar. Underside, as upper but paler.

Genitalia ♂ (Pl. 31, fig. 255). Uncus sclerotized with six points. Subscaphium prominent, hairy. Gnathus arms (brachia) lightly sclerotized, not meeting in mid-line. Valve slender. Median valve process with several long spines. Sacculus process simple, long. Aedeagus short, broad with prominent group of cornuti.

♀. Wing, 17.5-18.5 mm. Colour and pattern as male. Third segment of labial palp longer

than male, one third length of second. Tarsal spines different from male, often two at end of segment with third further back.

Genitalia ♀ (Pl. 49, fig. 382; Pl. 58, fig. 481; Pl. 66, fig. 567). Anal papillae short. Strongly sclerotized and spiny plate surrounding ostium. Duct broad. Bursa with two large spiny signa.

DISCUSSION. This species is typical of the *glareola*-group externally but the genitalia are quite distinct. The uncus in the male with the prominent spines and the shape of the ostium in the female separate this species from *M. glareola* and the others in the group. There is little variation in the external pattern or colour of the specimens examined. The arrangement of the tarsal spines in this species is unusual in the genus. Most of the other species have rows of spines on each tarsal segment whereas in *ferocia* they are reduced to groups of three at the apex of the segments. The apparent dimorphism of tarsal spines in the males and females is interesting but only one male hindleg was available for examination; there was a distinct difference in the arrangement of the spines between this and the female.

BIOLOGY. Not recorded. Adults collected in ix.

DISTRIBUTION. Philippines.

MATERIAL EXAMINED.

Holotype ♂, PHILIPPINES: Los Baños (*Baker*), BM slide no. 14209, in USNM.

Paratypes. PHILIPPINES: 2 ♀, data as holotype, one in BMNH, one in USNM.

Misalina decussata (Moore) **comb. n.**

(Pl. 9, figs 73-78; Pl. 32, figs 259-263; Pl. 49, figs 383, 384; Pl. 59, figs 483, 484; Pl. 66, figs 568, 569)

Sonagara decussata Moore, 1883 : 27.

This species is difficult to separate externally from the others in the group but is quite distinct on genitalia. The shape of the uncus in the male is characteristic of the species. The species is separated into five subspecies differing mainly in details in the male and female genitalia, although the overall pattern of the genitalia in the subspecies is very similar. These five subspecies could, perhaps, be regarded as distinct species forming a close species-group, but the similarities between all the taxa is such that I think they are best considered as subspecies, certainly until more data are available on them.

KEY TO THE SUBSPECIES OF *Misalina decussata* (males)

- | | | |
|---|--|------------------------------|
| 1 | Aedeagus with minute cornuti | <i>d. derasata</i> (p. 111) |
| - | Aedeagus with large patch of cornuti | 2 |
| 2 | (1) Median valve process with broad sclerotized anterior point, posterior part of process rounded, often with small tooth on median side | <i>d. decussata</i> (p. 108) |
| - | Median valve process other than above, usually with several points | 3 |

- 3 (2) Median valve process with two long, rather slender curved spines, one posterior, one near medial side of process. Subscaphium a slender hairy patch. Uncus smoothly notched, rows of marginal hairs *d. formosa* (p. 110)
 - Other than above. Spines usually broad, not curved. Subscaphium broader. Uncus with lateral hairs usually not on margin 4
- 4 (3) Median valve process with several small points *d. straminea* (p. 112)
 - Median valve process with two main, broad, sclerotized points, not long and curved *d. popula* (p. 110)

Misalina decussata decussata (Moore)

(Pl. 9, fig. 73; Pl. 32, fig. 259; Pl. 49, fig. 383; Pl. 59, fig. 483; Pl. 66, fig. 568)

Sonagara decussata Moore, 1883 : 27. Holotype ♂, INDIA (BMNH) [examined].

Striglina decussata Moore; Pagenstecher, 1892 : 43.

Striglina decussata Moore; Hampson, 1893 : 354.

[*Striglina glareola* Felder & Rogenhofer; Dalla Torre, 1914 : 11. Misidentification.]

[*Striglina bivittata* Moore; Dalla Torre, 1914 : 10. Misidentification. Dalla Torre gives *decussata* 'Hampson' as a synonym of *bivittata* Hampson; this is a lapsus for Moore.]

♂. Wing, 15-16 mm. Vertex brown. Third segment of labial palp one-quarter length of second. Thorax brown. Forewing, pattern as in Pl. 9, fig. 73, yellowish brown with black reticulations. Prominent dark discal mark. Hindwing similar. Underside paler, discal mark prominent. $R_4 + R_5$ shortly stalked (free in some specimens).

Genitalia ♂ (Pl. 32, fig. 259). Apical lateral process of uncus incurved. Two prominent pairs of lateral processes on uncus, elongate digitate, anterior rounded, hairy. Gnathus weakly sclerotized. U-shaped subscaphium elongate, hairy. Valve entire, median valve process sclerotized with small points. Saccus process elongate, hairy. Juxta small, membranous. Aedeagus short, broad with two prominent groups of cornuti. Abdominal sternite of last segment deeply incised.

♀. Wing, 18 mm. Colour and pattern as male. Labial palps with third segment half length of second.

Genitalia ♀ (Pl. 49, fig. 383; Pl. 59, fig. 483; Pl. 66, fig. 568). Anal papillae short. Strongly sclerotized ostium, heavily spined. Duct of bursa slightly convolute. Prominent, spiny signum.

DISCUSSION. This subspecies can be separated from the others by the shape of the saccus process on the valve and the uncus in the male. In the female there are fewer long spines on the ostial plate than in the others. The shape of the last abdominal sternite is also characteristic. This subspecies is often darker than the others with a more reddish brown tinge but the external pattern in the *decussata* subspecies is not a reliable way of separating them.

BIOLOGY. Not recorded. Adults collected in iv; ix; x.

DISTRIBUTION. India: Assam, Khasis Hills, Naga; Sikkim.

MATERIAL EXAMINED.

Holotype ♂, INDIA: NE., Himalaya (Moore coll.), in BMNH [specimen lacks abdomen].

12 specimens, BMNH.

***Misalina decussata formosa* subsp. n.**

(Pl. 9, fig. 74; Pl. 32, fig. 260)

♂. Wing, 14 mm. Colour and pattern as nominate subspecies, but generally paler. Vein $R_4 + R_5$ shortly stalked.

Genitalia ♂ (Pl. 32, fig. 260). Uncus with two pointed lateral apical processes. Two pairs of lateral processes, posterior digitate, anterior round, papillae with hairs. Gnathus slender, lightly sclerotized. Subscaphium hairy, elongate. Valve entire, median valve process with sclerotized spines. Sacculus process sclerotized, clavate. Aedeagus short, broad, with two groups of cornuti.

♀. Wing, 16 mm. Colour and pattern as male.

Genitalia ♀. Similar to nominate.

DISCUSSION. This subspecies can be separated from the nominate one by the shape of the median valve process and the uncus. It is very similar to the nominate one but the specimens examined are smaller.

BIOLOGY. Not recorded. Adults collected in iii; iv; v.

DISTRIBUTION. Formosa.

MATERIAL EXAMINED.

Holotype ♂ [TAIWAN] Formosa: Kanschirei, 300 m, 27.iv.1907 (*Wileman*), BM slide no. 13870, in BMNH.

Paratypes. [TAIWAN] Formosa: 1 ♂, Kanschirei, 27.^{iv}.iii.1908 (*Wileman*), in BMNH; 1 ♂, Kanschirei, 8.v.1908 (*Wileman*), in BMNH.

***Misalina decussata popula* subsp. n.**

(Pl. 9, figs 75, 76; Pl. 32, fig. 261)

♂. Wing, 16–18 mm. Colour and pattern as nominate subspecies but paler, with more large black patches on forewing. Radial veins R_2 to R_5 separately from cell.

Genitalia ♂ (Pl. 32, fig. 261). Uncus similar to nominate subspecies but with posterior digitate processes shorter. Subscaphium less elongate than in nominate subspecies and median valve process with prominent curved and sclerotized spine. Sacculus process slender, more parallel-sided than in other subspecies. Aedeagus with two groups of cornuti.

♀. Wing, 18–23 mm. Colour and pattern as male, often more boldly marked with black.

Genitalia ♀. Similar to nominate. Anal papillae short. Large, strongly spined plate round ostium with long spines. Ductus convolute. Signum two spiny patches. Rest of bursa with patches of spines.

DISCUSSION. There is some variation in the origin of the veins from the cell with a few specimens having $R_4 + R_5$ while in the others these run separately from the cell. This subspecies differs from the others in the shape of the median valve process and the slender sacculus process. The females differ in size and number of spines round the ostium. In this *d. popula* is closest to *d. straminea* but the latter has even more spines and the signa are larger. The males of these two subspecies can be separated by the shape of the median valve process. Some variation exists in specimens of *d. popula* from different islands and longer series may show more positive evidence of further taxa at present included in this one. The single female

from Siberaut I. (west of Sumatra) is similar to the New Guinea specimens but differs in the shape of the structures round the ostium, and is only tentatively placed here.

BIOLOGY. Not recorded. Adults collected in New Guinea in i; vii; viii; xii. New Ireland in ii; xii. Rook I., viii. New Hannover, iii. New Britain, iv.

DISTRIBUTION. New Guinea; Rook I.; New Hannover; New Britain; New Ireland; Indonesia; Siberaut I.

MATERIAL EXAMINED.

Holotype ♂, NEW GUINEA: Kapaur, xii-i.[18]97 (*Doherty*), BM slide no. 13773, in BMNH.

Paratypes. NEW GUINEA: 2 ♂, Kumusi R., NE., low elev., vii.[19]07 (*Meek*), in BMNH; 1 ♂, Babooni, 900 m, ix. 1903 (*Pratt*), in BMNH; 1 ♀, data as holotype, in BMNH; 1 ♂, West Irian, Mefor I., Geevink Bay, 15.viii.-10.ix.1920 (*Pratt*), in BMNH; 1 ♂, West Irian, Mt Goliath, 1500 m, 13° long., v.1911 (*Meek*), in BMNH; 1 ♂, Milne bay, i.[18]99 (*Meek*), in BMNH; 2 ♂, Garaina, 800 m, x. 1968 (*Szent-Ivany*), in BPBM; 1 ♂, Padwi, 26.x.1957 (*Munroe*), in CNC. NEW HANNOVER: 1 ♂, iii. 1923 (*Meek*), in BMNH. NEW BRITAIN: 1 ♀, Talesa, iii-iv.1925 (*Eichhorn*), in BMNH. ROOK I., 1 ♂, viii. 1913 (*Meek*), in BMNH. NEW IRELAND: 1 ♂, xii. 1923 (*Eichhorn*), in BMNH. INDONESIA: 1 ♀, Siberaut I., W. of Sumatra, ix. 1924 (*B.K. & N.S.*), in BMNH.

Misalina decussata derasata (Warren) comb. n., stat. n.

(Pl. 9, fig. 77; Pl. 32, fig. 262; Pl. 49, fig. 384; Pl. 59, fig. 484; Pl. 66, fig. 569)

Striglina derasata Warren, 1897a : 382. Holotype ♀, BORNEO (BMNH) [examined].

[*Striglina derasata* Warren ab. *vulpina* Warren, 1897a : 383. Misidentification.]

Striglina derasata Warren; Dalla Torre, 1914 : 11.

[*Striglina derasata* Warren ab. *vulpina* Warren; Dalla Torre, 1914 : 11. Misidentification.]

Striglina derasata Warren; Gaede, 1932 : 747.

♂. Wing, 15-16 mm. Vertex brown. Thorax brown. Forewing, pattern as in Pl. 9, fig. 77, yellowish brown with darker reticulations. Costal margin with reddish suffusion. Prominent discal spot.

Genitalia ♂ (Pl. 32, fig. 262). Uncus broad, two lateral apical points with two lateral lobes, posterior long and slender, anterior, short broad and hairy. Gnathus lightly sclerotized, ending in point. Subscaphium elongate, hairy. Valve entire. Median valve process sclerotized with two curved hooks. Sacculus process elongate, clavate. Juxta small, membranous. Aedeagus short, broad with minute cornuti.

♀. Wing, 18 mm. Colour and pattern as male. Labial palp with third segment half length of second.

Genitalia ♀ (Pl. 49, fig. 384; Pl. 59, fig. 484; Pl. 66, fig. 569). Anal papillae short. Strongly spiny plate posterior to ostium. Ostium spiny. Signum two small spiny plates. Bursa with other small patches of spines.

DISCUSSION. While the male genitalia are very distinct from *glareola* the correct association of the females of these two species is uncertain and the small differences mentioned are therefore of uncertain value. From the nominate subspecies *d.*

derasata can be separated by the shape of the sacculus process of the valve and by the lack of the cornuti, although it is possible that the latter are deciduous. However, both the male specimens of *derasata* were similar in this respect and each had minute spines in the vesica.

BIOLOGY. Not recorded. Adults collected in iii; viii.

DISTRIBUTION. Malaysia: Sabah, Sarawak.

MATERIAL EXAMINED.

Holotype ♀, MALAYSIA: North Borneo, Lawas (*Evorett*), BM slide no. 13503, in BMNH.

3 specimens, BMNH.

***Misalina decussata straminea* (Warren) comb. n., stat. n.**

(Pl. 9, fig. 78; Pl. 32, fig. 263)

Striglina straminea, Warren, 1903 : 257. Holotype ♂, INDONESIA: Amboina (BMNH) [examined].

Striglina straminea Warren; Dalla Torre, 1914 : 13.

Striglina straminea Warren; Gaede, 1932 : 747.

♂. Wing, 18–21 mm. Pattern as nominate subspecies but paler coloured with more prominent dark marks on the wing.

Genitalia ♂ (Pl. 32, fig. 263). Uncus similar to nominate subspecies, but with posterior lateral process shorter and less digitate. Tegumen prominently sclerotized at junction with uncus. Gnathus lightly sclerotized. Prominent hairy subscaphium. Valve entire, median process with two prominent sclerotized points. Sacculus process slender, strongly sclerotized. Aedeagus short, broad, with two prominent groups of cornuti.

♀. Wing, 22 mm. Colour and pattern as male.

Genitalia ♀. Similar to nominate. Anal papillae short. Conspicuous sclerotized rods at right angles to posterior apodeme supporting anal papillae. Strongly sclerotized and spiny ostium. Duct convolute. Prominent spiny signum.

DISCUSSION. This subspecies can be separated from the nominate one by the shape of the uncus and median valve process. In the female the ostium is heavily sclerotized. Both males and females are larger than *d. popula* although the females are similar in appearance. The genitalia in the female are less distinct from *d. popula* than from all the others but the males of these subspecies are very distinct. Some variation in intensity of colour and pattern of *d. straminea* was found in the specimens examined. This subspecies is closely allied to *d. popula* from New Guinea.

BIOLOGY. Not recorded. Adults collected in Buru, iii; v. Sulawesi, iii; xi; xii. Amboina, i; v.

DISTRIBUTION. Indonesia: Moluccas, Sulawesi, Ceram, Buru.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Moluccas, Amboina, ii. 1892 (*Doherty*), BM slide no. 13523, in BMNH.

9 specimens, BMNH.

Misalina industa sp. n.

(Pl. 9, figs 79, 80; Pl. 31, fig. 256; Pl. 49, fig. 385; Pl. 58, fig. 482; Pl. 66, fig. 570)

♂. Wing, 13–15 mm. Vertex brown. Labial palp with third segment one-quarter length of second. Thorax grey-brown. Large scent scale patch on hind tibia. Forewing, pattern as in Pl. 9, figs 79, 80, greyish brown with darker markings and dark costal spot. Hindwing similar. Underside paler, reddish tinge along costa. Forewing with R_4 and R_5 shortly stalked.

Genitalia ♂ (Pl. 31, fig. 256). Uncus with two lateral apical points and two pairs of lateral processes. Posterior pair a small papillae, anterior pair rounded papillae, with hairs. Prominent sclerotized plate at attachment of uncus and tegumen. Gnathus joining in mid-line with small median hook. Prominent hairy subsaphium. Valve entire. Median valve process lightly sclerotized. Sacculus process clavate. Juxta membranous, minutely spined. Aedeagus short, broad, with two patches of short cornuti. Sternite of last segment deeply incised with small lateral processes.

♀. Wing, 17–19 mm. Colour and pattern as male. Labial palps with third segment one-third length of second.

Genitalia ♀ (Pl. 49, fig. 385; Pl. 58, fig. 482; Pl. 66, fig. 570). Anal papillae short. Ostium lightly sclerotized, with small spines. Duct convolute. Twin signum in bursa.

DISCUSSION. While the general morphology of this species is like *decussata* there are many differences in detail. The rather angular shape of the margins of the wings and in the female the proportions of the second and third segments of the labial palps separate the two species. Differences in the genitalia are mainly in the shape of the median valve process and the size of the cornuti. In the female the large spines around the ostium seen in *d. straminea* are absent in *industa*. The female genitalia are similar to *d. decussata* to which *industa* is most closely allied. While the female genitalia are similar to one subspecies of *decussata* the male genitalia of *industa* are more similar to another. In spite of these similarities, suggesting they are closely allied species, I am describing *industa* as a distinct species and not as another subspecies of *decussata*. There are more differences between *industa* and *decussata* than there are between the subspecies of *decussata* itself. At present *industa* is known only from the type-locality.

BIOLOGY. Although the series was bred, no host-plant data are available. Adults bred in ix; x.

DISTRIBUTION. India (south).

MATERIAL EXAMINED.

Holotype ♂, INDIA: Kanara^{Karwar} (Bell), ix, 1925, BM slide no. 13969, in BMNH.

Paratypes. INDIA: ♂♂, ♀♀, data as holotype, in BMNH.

Misalina sordida (Pagenstecher)

(Pl. 8, fig. 72; Pl. 31, fig. 257; Pl. 49, fig. 386; Pl. 59, fig. 485; Pl. 66, fig. 572)

Striglina sordida Pagenstecher, 1892 : 47. LECTOTYPE ♀, here designated, INDONESIA: Borneo (MNHU) [examined].

[*Striglina glareola* Felder & Rogenhofer; Hampson, 1897 : 613. Misidentification.]

[*Striglina glareola* Felder & Rogenhofer; Dalla Torre, 1914 : 11. Misidentification.]

♂. Wing, 14–15 mm. Vertex grey-brown. Third segment of labial palp one-quarter length of second. Thorax grey-brown. Forewing, pattern as in Pl. 8, fig. 72, grey-brown with paler patches. Veins R_2 – R_5 separately from cell. Broad costal dark area with prominent broad median fascia. Hindwing similar. Underside, strong prominent pattern with two square spots subterminally.

Genitalia ♂ (Pl. 31, fig. 257). Uncus with strong sclerotized apical process, two sclerotized ventro-lateral processes and two ventro-posterior processes. Gnathus sclerotized with prominent enlarged truncated median process, two small spines on gnathus on each side of median process. Valve entire. Sclerotized, toothed, comb-like median valve process. Juxta membranous, small lateral processes. Aedeagus without cornuti.

♀. Wing, 17–19 mm. Colour and pattern as male. Palp similar but porrect, not upturned as male. Frenulum triple.

Genitalia ♀ (Pl. 49, fig. 386; Pl. 59, fig. 485; Pl. 66, fig. 572). Anal papillae short, strongly spiny and sclerotized. Ostium sclerotized, short sclerotized postostial atrium. Duct truncate. Two sclerotized signa in bursa.

DISCUSSION. Very little variation in the small series examined. Externally this species resembles species of *Canaea* but the genitalia are distinct. This species is atypical in the structure of the male genitalia but the female is similar to the others in the genus.

BIOLOGY. Not recorded. No data available.

DISTRIBUTION. Malaysia: Sabah, Malaya, Sarawak; Indonesia: Borneo.

MATERIAL EXAMINED.

Holotype ♀, INDONESIA: Borneo, in MNHU.

7 specimens, BMNH.

Misalina gemmulosa sp. n.

(Pl. 9, figs 81, 82; Pl. 31, fig. 258; Pl. 79, fig. 387; Pl. 59, fig. 486; Pl. 66, fig. 571)

♂. Wing 23–24 mm. Vertex red. Frons white. Antennae strongly bipectinate. Labial palp three-segmented, third segment half length of second. Hind tibia with two pairs spurs, black and white striped. Thorax red, pinkish below. Legs yellow-white. Abdomen pink and yellow. Forewing, pattern as in Pl. 9, figs 81, 82, yellow with red pattern, black spots along costa towards base. Underside less strongly marked, median pinky-brown, incomplete fascia. Hindwing similar to forewing, fringe with black spots. Forewing with R_2 and R_3 shortly stalked. Hindwing with $Sc + R_1$ and Rs close but not touching.

Genitalia ♂ (Pl. 31, fig. 258). Uncus single, hood-like with broader posterior part. Anal tube with hairy sub-scapium. Gnathus with prominent, median, sclerotized process with median ridge. Valves simple, large sclerotized basal area. Juxta with two long, toothed lobes. Aedeagus without spines.

♀. Wing, 30 mm. Pattern as male, more red on wing. Underside as male. Antennae shortly toothed. Labial palp with third segment half length of second. Frenulum triple.

Genitalia ♀ (Pl. 49, fig. 387; Pl. 59, fig. 486; Pl. 66, fig. 571). Anal papillae short. Ostium with broad plate and sclerotized lateral walls. Duct convolute, large, spiny, signum.

DISCUSSION. This brightly coloured, red and yellow species is clearly distinguishable from all other thyridids. The colour and pattern, together with the strongly pectinate antennae in the male, make it unique in the subfamily. The exact systematic position of this species is uncertain. The species could be considered as

belonging to a distinct genus related to *Misalina*, but the signum of the female is typical of many species of *Misalina*. Within *Misalina* the species resemble in pattern some of the *glareola*-group and it is placed tentatively with this group.

BIOLOGY. Not recorded. Adults collected in iii; xii.

DISTRIBUTION. Australia: Queensland.

MATERIAL EXAMINED.

Holotype ♂, AUSTRALIA: Queensland, Mt Lewis, 13 km NW. Mt Molloy, 810 m, 15.iii.1964 (*Common & Upton*), BM slide no. 14722, in ANIC.

Paratypes. 1 ♂, AUSTRALIA: data as holotype, in BMNH; 1 ♀, Queensland, Mylee Creek, Palmerston Nat. Park, 630 m, xii. 1967 (*Dobson*), in ANIC.

ISCALINA gen. n.

Type-species: *Striglina hyperbolica* Warren.

This genus is restricted to the New Guinea-Solomons-Australian area. The species in the genus have very reduced valves in the male as in *Striglina* but they lack the modifications of the gnathus shown by those species. The sacculus processes reach an extreme of development in the two species of *Isalina*. The females show a highly modified ostial region but the bursa is without a signum.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae minutely ciliate. Labial palp three-segmented, relatively short in both sexes. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi each with rows of spines. Forewing with R_2-R_5 separately from cell. Hindwing with $Sc + R_1$ and R_s close but not touching. Frenulum double in female. Valve in male reduced. Subscaphium without modified scales. Gnathus slender, often very reduced. Sacculus process often forked. Female with large ostial plates, often deeply grooved. Signum absent.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 7). New Guinea; Solomon Is.; Australia.

KEY TO THE SPECIES OF *Isalina*

- 1 Larger, wing 17-21 mm. Uncus in male single process at apex *mediosecta* (p. 116)
 - Smaller, wing 14-19 mm. Uncus in male bifid *hyperbolica* (p. 115)

Isalina hyperbolica (Warren) comb. n.

(Pl. 2, fig. R; Pl. 33, fig. 264; Pl. 49, fig. 390; Pl. 59, figs 487, 488)

Striglina hyperbolica Warren, 1898b : 224. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Striglina pallidirufa Hampson, 1906 : 114. Holotype ♀, SOLOMON IS. (BMNH) [examined].

Striglina hyperbolica Warren; Dalla Torre, 1914 : 11.

Striglina pallidirufa Hampson; Dalla Torre, 1914 : 12.

Striglina rufocastanea Rothschild, 1915 : 110. Holotype ♂, INDONESIA: West Irian (BMNH) [examined]. **Syn. n.**

Striglina pallidirufa Hampson; Gaede, 1932 : 746.

Striglina rufocastanea Rothschild; Gaede, 1932 : 748.

Striglina hyperbolica Warren; Gaede, 1932 : 748.

♂. Wing, 14.5–18.5 mm. Vertex reddish brown. Labial palp with third segment one-quarter length of second. Thorax reddish brown, tegulae yellowish brown. Forewing, pattern as in Pl. 2, fig. R, reddish brown with darker median line and dark reticulations. Hindwing similar. Underside lighter brown, reticulations prominent, discal spot prominent in forewing. Genitalia ♂ (Pl. 33, fig. 264). Uncus Y-shaped at apex with strong ventral, pointed process. Gnathus reduced to small sclerotized loop. Valves modified, basal area enlarged, apical reduced. Juxta with quadruple, sclerotized, elongate and curved process. Aedeagus broader at anterior end, no cornuti.

♀. Wing, 16.5–19.0 mm. Pattern similar to male, usually more orange-brown. Labial palp with third segment one-third length second.

Genitalia ♀ (Pl. 49, fig. 390; Pl. 59, figs 487, 488). Anal papillae short. Ostium enlarged into convoluted sac. Duct broad, sclerotized. Bursa without signum.

DISCUSSION. This species varies in size and intensity of colour pattern over its range. It is most easily separated from *mediosecta* in the male by the shape of the uncus and the sacculus processes. On some of the Solomon Is. small morphological differences are apparent in the shape of the process at the base of the costa and they have small spines on the sacculus processes. There is similar variation all over the range of this species and it is possible that several subspecies will eventually be described. The New Guinea specimens tend to be larger than the others.

BIOLOGY. Not recorded. Adults collected in New Guinea in i; ii; iv; vii; ix; x; xi; xii.

DISTRIBUTION. Indonesia: West Irian; New Guinea; Papua; New Britain; New Hannover; New Ireland; Rossel I.; Admiralty I.; Woodlark I.; Solomon Is.: Guadalcanal, Gizo, Vella Lavella, Treasury I., Bougainville.

MATERIAL EXAMINED.

Lectotype ♂ (*hyperbolica*), NEW GUINEA: Mailu vii.[18]95 (*Anthony*), BM slide no. 13507, in BMNH. Holotype ♀ (*pallidirufa*), SOLOMON IS.: Gizo (*Meek*), BM slide no. 13518, in BMNH. Holotype ♂ (*rufocastanea*), INDONESIA: West Irian, Utakwe R., Base Camp, sea level, Dutch N.G. (*Wollaston*), BM slide no. 8531, in BMNH.

70 specimens, BMNH; 2 specimens, USNM; 5 specimens, CNC; 7 specimens, ANIC.

Iscalina mediosecta (Warren) **comb. n.**

(Pl. 9, fig. 83; Pl. 33, fig. 265; Pl. 49, fig. 391; Pl. 59, fig. 489)

Striglina mediosecta Warren, 1898c : 424. Holotype, KEY IS. (BMNH) [examined].

Striglina derasata Warren ab. *vulpina* Warren, 1897 : 383. LECTOTYPE ♀, here designated, FERGUSSON I. (BMNH) [examined]. **Syn. n.** HOLOTYPE

Striglina mediosecta Warren; Dalla Torre, 1914 : 12.

Striglina indistincta Gaede, 1922 : 30. Holotype ♂, NEW GUINEA (MNHU) [examined].

Syn. n.

Striglina mediosecta Warren; Gaede, 1932 : 748.

♂. Wing, 17–20 mm. Vertex grey-brown. Labial palp with third segment one-quarter length of second. Thorax grey-brown. Forewing, pattern as in Pl. 9, fig. 83, grey-brown with darker reticulations. Underside paler with orange-brown suffusion.

Genitalia ♂ (Pl. 33, fig. 265). Uncus narrow, curved dorso-ventrally, broader at base. Gnathus arms broad near tegumen, rest slender, lightly sclerotized in mid-line. Valve narrow at apex, large membranous base. Prominent broad sclerotized median valve process. Juxta with four curved arms, two shortly toothed. Aedeagus broadly expanded subapically. Manica and vesica with minute spines.

♀. Wing, 19–21 mm. Pattern similar to male but more reddish brown colour.

Genitalia ♀ (Pl. 49, fig. 391; Pl. 59, fig. 489). Anal papillae short. Large sclerotized capsule round ostium. Duct strongly convolute. Bursa covered with minute spines, no signum.

DISCUSSION. There is some variation in colour in this species. It is usually greyer than *hyperbolica* which it most closely resembles externally. Generally the underside of *hyperbolica* is a brighter colour, often yellowish, than *mediofascia*. The female genitalia are very similar. The males can easily be separated without dissection by gently brushing the tip of the abdomen on the dorsal side. In *hyperbolica* the two forks of the uncus can be clearly separated from the single process of *mediosecta*. Some variation in the structures in the genitalia was found in *mediosecta*. The single specimen from Key I. differs slightly from the New Guinea specimens and might be considered subspecific. Key I. probably represents the most westerly advance of the species from New Guinea. The specimen labelled *Striglina derasata* ab. *vulpina* Warren is a specimen of *mediosecta*. The Australian specimen is a single male from Queensland and is similar to the New Guinea specimens.

BIOLOGY. Not recorded. Adults collected in New Guinea in i; ii; iv; vi; vii; ix; x; xi; xii, in Fergusson I., xi, in Key I., i.

DISTRIBUTION. New Guinea; Key I.; Ron. I.; Florida I.; Fergusson I.; Australia: Queensland.

MATERIAL EXAMINED.

Holotype ♂ (*mediosecta*), INDONESIA: Key Is. [Kei or Kai] (*Kuhn*), i. 1896, BM slide no. 11161, in BMNH. Holotype ♂ (*indistincta*), NEW GUINEA: Kaiserin-Augusta-Fluss, viii–xi. 1912, BM slide no. 10893, in MNHU.

48 specimens, BMNH; 5 specimens, CNC.

NOVITINA gen. n.

Type-species: *Striglina variegata* Warren.

This genus is separated from the others in the complex by the different arrangement of the apical spines on the tarsi and by differences in the genitalia. Both species in the genus are strikingly patterned and distinct from all those in other genera in the subfamily. The two species in the genus are closely related and form a pair of sister-species, evidently derived from a close common ancestor.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae ciliate. Labial palps three-segmented, basal segment enlarged. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi with three or four apical spines on each segment. Forewing with R_1 and

Sc touching in many specimens and R_4 and R_5 with common stalk. Uncus modified. Valve with lateral process. Gnathus with medial process. Frenulum double in female. Ostium modified. Single signum in bursa.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 8). New Guinea.

KEY TO THE SPECIES OF *Novitina*

- 1 Hindwings reddish brown. Forewing with dark marks along costa *variegata* (p. 118)
 - Hindwings yellowish brown. Costa without conspicuous black marks *nigripuncta* (p. 119)

Novitina variegata (Warren) **comb. n.**

(Pl. 10, figs 85, 86; Pl. 33, fig. 266; Pl. 49, fig. 388)

Striglina variegata Warren, 1899 : 318. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Striglina variegata Warren; Dalla Torre, 1914 : 14.

Striglina variegata Warren; Gaede, 1932 : 748.

♂. Wing, 13.0-15.5 mm. Vertex white. Antennae shortly ciliate. Third segment of labial palp one-quarter length of second. Basal segment of palp swollen. Tarsi with three apical spines on first hind tarsus, four spines on second, three on third and fourth segments and two on fifth. Thorax dull white. Forewing, pattern as in Pl. 10, figs 85, 86, yellowish with pale purplish brown basal area and prominent black costal marks. Terminal margin of fore- and hindwings strongly angled. Underside pattern, more contrasting than upper side, particularly on hindwings. Black spot on hind angle of hindwing.

Genitalia ♂ (Pl. 33, fig. 266). Uncus pointed with two large branched lateral processes. Gnathus terminating in long pointed process. Valve modified with strongly toothed subapical process, and prominent median spine. Juxta two small sclerotized lobes with apical spine. Aedeagus without cornuti.

♀. Wing, 15-19 mm. Fascia on wings more distinct on upperside than in male. Tarsi with several spines on each segment, apical tarsus of hind leg with rows of strong spines.

Genitalia ♀ (Pl. 49, fig. 388). Anal papillae short. Ostium broad, heavily sclerotized with two sclerotized lateral lobes. Signum a single patch of small sclerotized plates. Rest of bursa minutely spiny.

DISCUSSION. Some variation in pattern exists in the specimens examined. This species is unusual in having sexual dimorphism of tarsal spines; in this it resembles the closely allied species, *nigripuncta*. The swollen base to the palp and the protuberance on the head posterior to the labial palp are unusual (but cannot be seen unless the head is descaled.) Both this species and *nigripuncta* have specimens where veins *Sc* and R_1 touch in the forewing, to give an extra cell in the wing. The females have an unusual signum, the small single patch which forms this is different to others in the subfamily. Variation in the origin of R_4 and R_5 occurs. In some specimens they arise almost together from the cell whereas in other specimens they are definitely fused together as a single vein before they reach the cell.

BIOLOGY. Not recorded. Adults collected in i; iii; iv; v; vii; viii; xi; xii.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Milne Bay, Brit. N.G., xii.[18]98 (*Meek*), BM slide no. 10895, in BMNH.

27 specimens, BMNH; 1 specimen, USNM.

Novitina nigripuncta (Warren) **comb. n.**

(Pl. 10, figs 87, 88; Pl. 33, fig. 267; Pl. 49, fig. 389; Pl. 59, fig. 490; Pl. 66, fig. 573)

Striglina nigripuncta Warren, 1908 : 107. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Striglina nigripuncta Warren; Gaede, 1914 : 12.

Striglina nigripuncta Warren; Gaede, 1932 : 748.

♂. Wing, 16.0–17.5 mm. Vertex white. Labial palp with third segment one-quarter length of second, basal segment enlarged. Thorax whitish. Tarsi with three or four spines on first (proximal) segment, three apical spines on next two segments and pair apical spines on last segment. Forewing, pattern as in Pl. 10, figs 87, 88, pale yellowish brown with brown pattern, somewhat obscured except on costa. Underside, more patterned with brown.

Genitalia ♂ (Pl. 33, fig. 267). Uncus pointed with two long lateral arms. Gnathus terminating in hook. Valves modified with prominent tooth to costa near apex. Juxta with two long, slender lateral arms. Aedeagus without cornuti.

♀. Wing, 22 mm. Colour and pattern more pronounced than male. Hind tarsi with rows of spines, prominent, strong, group on apical segment.

Genitalia ♀ (Pl. 49, fig. 389; Pl. 59, fig. 490; Pl. 66, fig. 573). Anal papillae short. Ostium broad, sclerotized with two rounded lobes laterally. Signum a single patch of small, sclerotized plates. Rest of bursa with minute spines.

DISCUSSION. This species is closely allied to *variegata*, differing in the shape of the uncus, pale wing colour and, in the female, in the shape of the lobes at the side of the ostium. The sexual dimorphism of the spines of the tarsi is similar to *variegata*. The general appearance is similar with slightly less angled terminal margin in the fore- and hindwing in *nigripuncta*. Both species have been found only in New Guinea where it is possible that *nigripuncta* is a subspecies of *variegata* which is geographically isolated. There are, however, many detailed morphological differences between the two so that in spite of general similarity in pattern, I regard the two as distinct species. Further evidence on their biology is needed to assess this.

BIOLOGY. Not recorded. Adults collected in i; iii; iv.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Biagi, Mambare R., B.N.G., iv.[19]06 (*Meek*), BM slide no. 13514, in BMNH.

5 specimens, BMNH.

RHODOGONIA Warren

Rhodogonia Warren, 1897b : 409. Type-species: *Rhodogonia miniata* Warren, by original designation.

Rhodogonia Warren; Dalla Torre, 1914 : 38.

Rhodogonia Warren; Gaede, 1936 : 1205.

Rhodogonia Warren; Whalley, 1964 : 125.

The affinities of this genus are not clear. In the lack of one of the pairs of spurs on the hind tibia it resembles *Pentina*, thus with some other features in common I place it next to that genus. The signum in the female is broadly similar to some of the species of *Banisia* but the valve and other structures are different. Nothing is known of the biology of the species at present. The single species in the genus is very distinctive with the bright reddish brown colour and characteristic wing shape.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Labial palps three-segmented. Hind tibia with one pair of spurs. Tarsi with rows of spines. Forewing with R_1 - R_5 separately from cell. Valve modified with long spines at apex. Female with large patch of spines forming signum in bursa.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 6). South America.

Rhodogonia miniata Warren

(Pl. 2, fig. I; Pl. 33, fig. 268; Pl. 49, fig. 392; Pl. 66, fig. 574)

Rhodogonia miniata Warren, 1897b : 410. Holotype ♀, GUYANA (BMNH) [examined].

Rhodogonia subfusca Warren, 1905c : 351. Holotype ♂, FRENCH GUIANA (USNM) [examined].

Striglina pyrostola Hampson, 1914 : 109. Holotype ♀, GUYANA (BMNH) [examined].

Rhodogonia miniata Warren; Dalla Torre, 1914 : 38.

Rhodogonia subfusca Warren; Dalla Torre, 1914 : 38.

Striglina medara Schaus, 1934 : 101. Holotype ♂, BRAZIL (USNM) [examined]. **Syn. n.**

Rhodogonia subfusca Warren; Gaede, 1936 : 1205.

Rhodogonia miniata Warren; Gaede, 1936 : 1205.

Rhodogonia miniata Warren; Whalley, 1964 : 124.

♂. Wing, 17-21 mm. Vertex red-brown, with white line between antennal base continuing along antennae. Antennae ciliate. Labial palp with third segment one-quarter length of second. Thorax reddish brown. Tarsi with rows of spines. Hind tibia with one pair of spurs. Forewing, pattern as in Pl. 2, fig. I, bright reddish brown with obscure darker markings. Terminal margin of fore- and hindwing indented. Underside paler. White spot on black patch at apex of cell.

Genitalia ♂ (Pl. 33, fig. 268). Uncus, single, curved, with broad hairy basal part. Gnathus sclerotized loop. Valve virtually without processes but apically pointed, with strong hairs at apex. Juxta with two slender lateral lobes. Aedeagus without cornuti.

♀. Wing, 20-27 mm. Colour and pattern as male. Labial palp short, third segment one-quarter length of second. Frenulum double.

Genitalia ♀ (Pl. 49, fig. 392; Pl. 66, fig. 574). Anal papillae short. Ostial plate not heavily sclerotized. Duct minutely spined. Bursa minutely spined with one patch of larger spines forming signum.

DISCUSSION. This bright reddish brown species with sharply angled wings is easily recognized. The single pair of spurs on the tibia is also found in species of *Pentina* and this genus is placed near *Rhodogonia* even though its affinities are not clear. A single specimen from Peru is much larger than the others (27 mm wing;

Brazil and Guiana specimens not exceeding 24 mm) but is otherwise indistinguishable.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; v; vi; vii; viii; ix; x; xii.

DISTRIBUTION. Guyana; Brazil; Peru; French Guiana.

MATERIAL EXAMINED.

Holotype ♀ (*miniata*), GUYANA, BM slide no. 8519, in BMNH. Holotype ♂ (*medara*), BRAZIL: Rio de Janeiro, type cat. no. 34493, in USNM. Holotype ♀ (*pyrostola*), GUYANA: (*Kaye*), in BMNH. Holotype ♂ (*subfusca*), FRENCH GUIANA: St Jean Maroni, in USNM.

92 specimens, BMNH.

PENTINA gen. n.

Type-species: *Striglina xanthopera* Hampson.

This genus is separated from all the others in the subfamily by the presence of a single pair of spurs on the hind tibia. This type of reduction of number of spurs on the hind tibia is not common in the Thyrididae but has been recorded in the genus *Chrysotypus* Butler (Whalley, 1971a: 35.). The species described as *Macrogonia lucida* is transferred to this genus because it also has the single pair of tibial spurs, although the genitalia are slightly different. *Pentina* is related to *Macrogonia* and the species superficially resemble one another.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae ciliate, rarely minutely ciliate. Labial palp with three segments, basal segment as long as second, palp relatively short. Hind tibia with one pair of spurs. Tarsi with rows of spines. Forewing with veins separately from cell or with $R_2 + R_3$. Uncus modified. Gnathus simple. Valve short, apex of valve usually modified. Female with simple ostium. Bursa with two curved sclerotized plates surrounded by spines forming signum. Frenulum usually double.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 1). South America.

KEY TO THE SPECIES OF *Pentina* (males)

- | | | |
|-------|---|----------------------------|
| 1 | Median process of gnathus narrow. Valves very slender in middle with Y-shaped apex (Pl. 34, fig. 273) | <i>grandaeva</i> (p. 124) |
| - | Median process of gnathus broad. Valves generally broad in middle | 2 |
| 2 (1) | Valve outline simple, not modified or indented (Pl. 34, fig. 274) | <i>lucida</i> (p. 125) |
| - | Valve variously modified, apex often modified | 3 |
| 3 (2) | Uncus with two prominent median spiny lobes (Pl. 34, fig. 271) | <i>ornata</i> (p. 123) |
| - | Apex of uncus variously modified, without spiny lobes | 4 |
| 4 (3) | Apex of forewing yellow.
Genitalia as in Pl. 33, fig. 269 | <i>xanthopera</i> (p. 122) |
| - | Apex of forewing not yellow | 5 |
| 5 (4) | Forewing dark grey-brown, thin yellow fascia across wing. Hindwing brown with fine yellow reticulations. Small lateral process on uncus | <i>miracula</i> (p. 123) |
| - | Forewing pale brown, prominent transverse fascia. Hindwing with white reticulations and prominent brown fascia. Uncus without lateral process | <i>petulina</i> (p. 122) |

***Pentina xanthopera* Hampson comb. n.**

(Pl. 2, fig. N; Pl. 33, fig. 269; Pl. 50, fig. 393)

Striglina xanthopera Hampson, 1897 : 612. Holotype ♂, BRAZIL (BMNH) [examined].*Striglina xanthopera* Hampson; Dalla Torre, 1914 : 14.*Striglina xanthopera* Hampson; Gaede, 1936 : 1194.

♂. Wing, 13.5–15.0 mm. Vertex brown. Antennae ciliate. Third segment of labial palp less than half length of second, first segment slightly longer than second. Hind tibia with one pair spurs. Forewing, pattern as in Pl. 2, fig. N, yellowish brown with reddish brown basal and median areas. Prominent transverse line from apex of forewing across wing, continued on hindwing. Reticulations conspicuous. Purplish suffusion over wing. Underside pale, more evenly coloured. Yellow apical patch on forewing, lacking on underside.

Genitalia ♂ (Pl. 33, fig. 269). Uncus broad, rounded, strongly toothed along margin, hairy ventrally. Gnathus strongly sclerotized, produced into broad plate in middle line, with two small projections at apex. Basal margin of costa sclerotized. Juxta membranous with two lightly sclerotized lateral lobes. Aedeagus long, slender, without cornuti.

♀. Wing, 14–16 mm. Generally slightly darker than male but with similar pattern. Labial palps smaller than in male but similar shape.

Genitalia ♀ (Pl. 50, fig. 393). Anal papillae short. Ostium lightly sclerotized. Duct narrow, with ductus seminalis arising close to ostium. Short, spiny and broad duct. Bursa with two patches of spines.

DISCUSSION. The striking yellow colour, particularly the patches at the apex of the forewing in both sexes, make this species easily recognized. It is interesting that in contrast with *Striglina* a typical juxta is formed and the base of the valves (sacculus processes) is not modified in species in this genus.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv; xi; xii.

DISTRIBUTION. Brazil.

MATERIAL EXAMINED.

Holotype ♂, BRAZIL: Rio de Janeiro, BM slide no. 13311, in BMNH.
19 specimens, BMNH; 6 specimens, USNM.

***Pentina petulina* sp. n.**

(Pl. 9, fig. 84; Pl. 34, fig. 270; Pl. 50, fig. 394; Pl. 66, fig. 575)

♂. Wing, 12–13 mm. Vertex brown. Antennae ciliate. Labial palp short, third segment half length of second. Prothorax white, rest of thorax brown. Hind tibia with one pair of spurs. Forewing, pattern as in Pl. 9, fig. 84, brown with dark transverse fascia from apex of forewing. Darker, small, reticulations. Hindwing, reticulations with transverse fascia. White subterminal and median area. Underside similar, paler. Forewing with $R_2 + R_3$ shortly stalked.

Genitalia ♂ (Pl. 34, fig. 270). Uncus a sclerotized median process with apical teeth, and with ventral plate. Gnathus with broad median plate. Valve reduced with small lobe-like apex. Juxta with two sclerotized lateral arms. Aedeagus with minute spines in vesica.

♀. Wing, 15 mm. Colour and pattern as male. Antennae less ciliate than male.

Genitalia ♀ (Pl. 50, fig. 394; Pl. 66, fig. 575). Anal papillae short. Ostium very lightly sclerotized. Duct short, broad. Two patches of small plates and two slender rods forming signa.

DISCUSSION. This has a similar forewing pattern to *jucunda* but the hind tibia has only one pair of spines. It is probably more closely related to *xanthopera* from which it can be separated by the pattern and the genitalia in both sexes.

BIOLOGY. Not recorded. Adults collected in iii; iv.

DISTRIBUTION. Brazil.

MATERIAL EXAMINED.

Holotype ♂, BRAZIL: Teresopolis, 13-22.iii.1958 (*Kettlewell*), BM slide no. 14222, in BMNH.

Paratypes. BRAZIL: 1 ♂, Rio de Janeiro, Ste. 28.iii-1.iv.1958, Pic d'Italiaia (*Kettlewell*), in BMNH; 1 ♀, Rio de Janeiro, Ste. Pico d'Italiaia, 28.iii-1.iv.1958 (*Kettlewell*), in BMNH.

Pentina ornata sp. n.

(Pl. 10, fig. 89; Pl. 34, fig. 271)

♂. Wing, 12.5-15.0 mm. Vertex grey-brown. Antennae shortly ciliate. Labial palp short, third segment half length second. Prothorax white, rest of thorax grey-brown. Hind tibia with one pair spurs. Forewing, pattern as in Pl. 10, fig. 89, grey-brown with thin yellowish white transverse line. Apex of forewing yellowish. Hindwing similar but without yellow patch. Underside similar.

Genitalia ♂ (Pl. 34, fig. 271). Uncus bifid with two spiny processes and long hairy ventral plate. Gnathus with broad median plate. Valves reduced, short, pointed; large toothed and sclerotized basal costal process. Juxta two sclerotized lateral lobes. Aedeagus slender.

♀. Unknown.

DISCUSSION. This species is rather uniformly coloured on the upper and lower surfaces with a yellowish patch near the apex of the forewing. *P. ornata* is related to *xanthopera* from which it can be separated by the pattern and the genitalia.

BIOLOGY. Not recorded. Adult collected in i.

DISTRIBUTION. Argentina; Brazil.

MATERIAL EXAMINED.

Holotype ♂, ARGENTINA: Haut Parana, San Ignacio Mission (*Wagner*), ex coll. Brabant, BM slide no. 14224, in BMNH.

Paratypes. BRAZIL: 1 ♂, Alto de Serra, Sao Paulo, i. 1923 (*Spitz*), in BMNH; 1 ♂, Castro Parana, in BMNH.

Pentina miracula sp. n.

(Pl. 10, fig. 90; Pl. 34, fig. 272; Pl. 50, fig. 395; Pl. 60, fig. 491; Pl. 66, fig. 577)

♂. Wing, 14-17 mm. Vertex grey-brown. Antennae strongly ciliate. Labial palp short, third segment one-half length second segment. Thorax yellow-white. Hind tibia with one pair spurs. Forewing, pattern as in Pl. 10, fig. 90, brown with darker markings. Transverse dark fascia from apex of forewing to hindwing margin. Hindwing, similar colour but with light coloured patches in median area. Underside, similar to upperside.

Genitalia ♂ (Pl. 34, fig. 272). Uncus long, slender, recurved with strongly toothed apex.

Hairy plate ventrally to uncus. Gnathus with median lobe. Valve truncate, costal margin short. Strongly toothed basal costal area on valve. Juxta with two sclerotized lateral arms. Aedeagus long and slender.

♀. Wing, 16 mm. Colour and pattern as male. Antennae slightly less ciliate. Labial palps short.

Genitalia ♀ (Pl. 50, fig. 395; Pl. 60, fig. 491; Pl. 66, fig. 577). Anal papillae short. Ostium lightly sclerotized. Duct short, spiny. Two patches of small spines on bursa with two sclerotized plates.

DISCUSSION. This species is closely related to *ornata* from which it can be separated by the pattern and the genitalia. It is possible that this may be a subspecies of *ornata* but since on the evidence available the two occur in the same locality I am describing them as separate species.

BIOLOGY. Not recorded.

DISTRIBUTION. Brazil.

MATERIAL EXAMINED.

Holotype ♂, BRAZIL: Campo Bello, Rio Zikan, BM slide no. 14221, in USNM.

Paratypes. BRAZIL: 3 ♂, data as holotype, in USNM; 2 ♀, Nova Teutonia (*Plantman*), in USNM.

Pentina grandaeva sp. n.

(Pl. 2, fig. O; Pl. 34, fig. 273)

♂. Wing, 18 mm. Vertex yellow-brown. Labial palp with third segment one-quarter length second. Frons produced slightly between eyes. Prothorax yellow. Mesothorax brown, yellow on posterior part and metathorax. Hind tibia with one pair of spurs. Forewing, pattern as in Pl. 2, fig. O, brown and black with yellow apex to forewing and yellow margin to hindwing. Basal and median areas brown, subterminal blackish, orange discal spot. Hindwing similar but median area with pink tinge. Underside pinkish, pattern slightly less well marked than on upperside.

Genitalia ♂ (Pl. 34, fig. 273). Uncus broad, with two lateral lobes. Gnathus short with sclerotized median process. Valve reduced with prominent costal process giving Y-shaped end to valve. Juxta with strongly sclerotized lateral lobes. Aedeagus sclerotized with two strong lateral apical teeth and small spines at tip of sclerotized apical lobe.

♀. Unknown.

DISCUSSION. This species can easily be recognized by its striking colour pattern, which has a yellow and black basic plan, and very distinctive genitalia. It is related to *xanthopera* from which it can be separated by the characters mentioned. The frons in *grandaeva* is slightly produced between the eyes; in this it is similar to *jucunda*. Although known only from a single specimen, this species is clearly distinct from related ones.

BIOLOGY. Not recorded. Adult collected in viii.

DISTRIBUTION. Peru.

MATERIAL EXAMINED.

Holotype ♂, PERU: Tinguri, Carabaya, 1020 m, dry s[avanna], viii. 1904 (*Ockenden*), BM slide no. 14223, in BMNH.

Pentina lucida (Warren) **comb. n.**

(Pl. 10, fig. 91; Pl. 34, fig. 274; Pl. 50, fig. 397; Pl. 66, fig. 576)

Macrogonia lucida Warren, 1909 : 340. LECTOTYPE ♂, here designated, BRAZIL (BMNH) [examined].*Macrogonia lucida* Warren; Gaede, 1936 : 1194.

♂. Wing, 12–14 mm. Vertex yellow with reddish brown scales. Antennae ciliate. Third segment labial palp one-quarter length second. Thorax and patagia yellow, base of tegulae and prothorax brown, giving brown line across thorax, rest of thorax yellow. Hind tibia with one pair spurs. Forewing, pattern as in Pl. 10, fig. 91, yellow with brown reticulations and brown line from apex of forewing, continuing across hindwing. Prominent brown mark over apex of cell, circular brown ring apically of this. Hindwing similarly coloured, without brown mark or ring.

Genitalia ♂ (Pl. 34, fig. 274). Uncus broad, hairy. Gnathus sclerotized loop with rounded plate in mid-line. Valve short. Juxta, two curved lateral lobes. Aedeagus without cornuti.

♀. Wing, 14.5 mm. Colour and pattern as male. Third segment of labial palp one-third length second. Frenulum triple, but third bristle very slender.

Genitalia ♀ (Pl. 50, fig. 397; Pl. 66, fig. 576). Anal papillae short. Ostial plate lightly sclerotized. Ostium narrow, first part of duct without spines, rest broad with minute spines. Bursa with two curved signa and patches of spines.

DISCUSSION. The single pair of tibial spurs and the bright yellow-brown colour are characteristic of this species. The single Peruvian specimen is slightly different from the Brazilian ones.

BIOLOGY. Not recorded. Adults collected in Brazil in iv; v; vi.

DISTRIBUTION. Brazil; Peru.

MATERIAL EXAMINED.

Lectotype ♂, BRAZIL: Fonte Boa, Upper Amazon, vi. 1906 (*Klages*), BM slide no. 13308, in BMNH.

8 specimens, BMNH.

MACROGONIA Herrich-Schäffer

Macrogonia Herrich-Schäffer, 1855 : cover to pl. 57. Type-species: *Macrogonia igniaria* Herrich-Schäffer, by monotypy.

Macrogonia Herrich-Schäffer; 1858 : 62.

Macrogonia Herrich-Schäffer; Dalla Torre, 1914 : 10.

Macrogonia Herrich-Schäffer; Gaede, 1936 : 1194.

Macrogonia Herrich-Schäffer; Whalley, 1964 : 122.

This genus is close to *Rhodogonia* and *Pentina*, but has two pairs of tibial spurs. Almost certainly the only species in the genus should be divided into several subspecies but until more material is available I think it wiser to consider it as a single taxon. The valves in the male are short and pointed. The female has two patches of spines in the bursa which form the signa. It is difficult to evaluate the exact relationship of this species; externally the species has the typical appearance of members of the subfamily.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Labial palp three-segmented. Hind tibia with two pairs of spurs. Hind tarsi each with rows of spines. Forewing with R_2 - R_5 separately from cell. Uncus broad. Valve short, pointed. Juxta with two strong lateral arms. Aedeagus without cornuti.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 7). Central and South America.

Macrogonia igniaria Herrich-Schäffer

(Pl. 1, fig. E; Pl. 34, fig. 275; Pl. 50, fig. 396)

Macrogonia igniaria Herrich-Schäffer, 1855 : pl. 57, fig. 315. Holotype, BRAZIL (lost).

Macrogonia major Schaus, 1913 : 234. Holotype ♂, COSTA RICA (USNM) [examined].

Macrogonia igniaria Herrich-Schäffer; Dalla Torre, 1914 : 10.

Macrogonia igniaria Herrich-Schäffer; Gaede, 1936 : 1194.

Macrogonia major Schaus; Gaede, 1936 : 1194.

Macrogonia igniaria Herrich-Schäffer; Whalley, 1964 : 122.

♂. Wing, 14.5-17.0 mm. Vertex orange-brown. Third segment of labial palp one-quarter length of second. Hind tibia with large scale tuft. Thorax orange-brown. Forewing, pattern as in Pl. 1, fig. E, orange-brown with prominent brown line from below apex to middle of hind margin of forewing. This line continues along hindwing. Brown reticulations on wings. Hindwing similar to forewing but with second more slender, angled subterminal fascia. Under-side paler. Prominent discal spot.

Genitalia ♂ (Pl. 34, fig. 275). Uncus broad with slight lobed appearance, with dorso-lateral hairy extension. Gnathus a sclerotized loop with broad central plate. Valves small, pointed. Juxta two curved lateral lobes. Aedeagus without cornuti.

♀. Wing, 18 mm. Colour and pattern as male. Frenulum double.

Genitalia ♀ (Pl. 50, fig. 396). Anal papillae short. Ostium lightly sclerotized. Duct narrow with ductus seminalis coming off near ostium. Rest of duct widening to bursa. Bursa spinose with two patches of spines forming signum.

DISCUSSION. This species is conspicuously orange-brown with strong reticulate pattern and prominent transverse lines from below apex of forewing to hindwing. There is some variation in the shape of the valves of specimens examined. The original Herrich-Schäffer specimen has not been traced and the original coloured figure cannot be matched exactly. However, I have several specimens from Brazil which are very close and can be regarded as this species. Small differences were found between specimens from different localities but these were not considered significant amongst the few specimens examined. The specimens from Costa Rica showed the most differences from the mainland specimens and may be considered subspecific when more specimens are available for comparison.

BIOLOGY. Not recorded. Adults collected in vi; vii.

DISTRIBUTION. Brazil; Peru; Ecuador; Guyana; Costa Rica.

MATERIAL EXAMINED.

Holotype ♂ (*major*), COSTA RICA: Sixola, Esperanza, type no. 17896, in USNM. 11 specimens, BMNH.

SPECULINA gen. n.

Type-species: *Pyrinia* (?) *mediaria* Walker.

Primarily separated from *Pentina* on the basis of the forewing venation and the presence of two pairs of spurs on the hind tibia; there are also differences in the genitalia. The single species at present placed in the genus is widespread and probably will be separated into several subspecies when more material is available but only two subspecies are recognized here. The male genitalia and the short labial palps in both sexes are quite distinctive, separating the species from those in other genera.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae ciliate. Labial palps three-segmented, short. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi with several spines on each segment. Forewing with $R_3 + R_4$, occasionally free. Uncus modified. Valve short, modified. Apex of aedeagus enlarged. Female frenulum double. Lightly sclerotized ostium with two signa surrounded by spines.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 5). Guyanas; Brazil; Peru.

***Speculina mediaria* Walker comb. n.**

(Pl. 10, figs 92, 93; Pl. 35, figs 276, 277; Pl. 50, fig. 398; Pl. 60, fig. 492; Pl. 66, fig. 578)

Pyrinia (?) *mediaria* Walker, 1860 : 611^{2, 2-3}.

This dark reddish brown species lacks the yellow at the apex of the forewing found in most species of *Pentina*. The specimens of this species examined vary in the shape of the genitalia and two subspecies are recognized although more may be described later. The colour, together with the black speckling on the wings, make this species readily recognized from the other South American species of Striglininae. The genitalia too are very distinctive.

KEY TO THE SUBSPECIES OF *Speculina mediaria* (males)

- 1 Costal margin of valve elongate, toothed. Rest of apex of valve relatively smooth ***m. mediaria*** (p. 127)
 — Costal margin not produced, apex of valve strongly toothed. . . . ***m. brunneata*** (p. 128)

***Speculina mediaria mediaria* Walker**

(Pl. 10, fig. 92; Pl. 35, fig. 276; Pl. 50, fig. 398; Pl. 60, fig. 492; Pl. 66, fig. 578)

Pyrinia (?) *mediaria* Walker, 1860 : 229. Holotype ♀, BRAZIL (UM) [examined].

Mathoris mediaria (sic) Walker; Hampson, 1897 : 611.

Mathoris mediaria (sic) Walker; Dalla Torre, 1914 : 9.

Mathoris mediaria (sic) Walker; Gaede, 1936 : 1193.

♂. Wing, 15-16 mm. Vertex brown. Antennae ciliate. Labial palp short, approximately equal to diameter of eye, third segment half length of second, first segment almost equal in

length to second. Thorax reddish brown. Fore tibia white, conspicuous from anterior. Forewing, pattern as in Pl. 10, fig. 92, reddish brown with black spots and conspicuous black fascia from near apex of forewing, continued across hindwing. Underside, similarly patterned, paler. $R_3 + R_4$ in forewing.

Genitalia ♂ (Pl. 35, fig. 276). Uncus bifid, strongly sclerotized with two hairy, sclerotized lateral lobes. Gnathus broad at origin near tegumen, a curved sclerotized loop. Valves short, truncate, strongly toothed at apex. Juxta two sclerotized, rounded lateral lobes, minutely toothed. Aedeagus with small lateral process and broad apical part.

♀. Wing, 16–18 mm. Colour and pattern as male.

Genitalia ♀ (Pl. 50, fig. 398; Pl. 60, fig. 492; Pl. 66, fig. 578). Anal papillae sclerotized. First part of ductus sclerotized, followed by membranous part, narrowing posteriad. Two large curved signa, each associated with patch of spines on minutely spined bursa.

DISCUSSION. There is some variation in the shape of the process in the genitalia and this may indicate further subspeciation. The shape of the apex of the valve separates this subspecies from *m. brunneata* and generally the nominate subspecies is larger. Externally the pattern of both is similar.

BIOLOGY. Not recorded. Adults collected in vi; vii; viii.

DISTRIBUTION. Brazil; Peru.

MATERIAL EXAMINED.

Holotype ♀, BRAZIL: Amazon (*Saunders* coll.), BM slide no. 14368, in UM. The holotype is a female and not a male as stated in the original description.

22 specimens, BMNH.

Speculina madiaria brunneata Warren comb. n., stat. n.

(Pl. 10, fig. 93; Pl. 35, fig. 277)

Striglina brunneata Warren, 1905 : 351. Holotype ♂, FRENCH GUIANA (USNM) [examined].

Striglina brunneata Warren; Dalla Torre, 1914 : 10.

Striglina brunneata Warren; Gaede, 1936 : 1194.

♂. Wing, 12–13 mm. Colour and pattern as nominate subspecies, slightly less spotted in specimens examined. Smaller, separated on genitalic differences.

Genitalia ♂ (Pl. 35, fig. 277). Similar to nominate subspecies. Separated by shape of valve. No elongate costal process on valve, but strongly toothed apex in *brunneata*.

♀. Wing, 16 mm. Colour and pattern as male, labial palps longer.

Genitalia ♀. Similar to nominate subspecies.

DISCUSSION. The single female is not from the type-locality and its association with this subspecies is thus open to some doubt. No specimens of the nominate subspecies have been seen from the Guyanas. The male is slightly less marked than the nominate subspecies but few specimens were available for examination.

BIOLOGY. Not recorded. Adults collected in v.

DISTRIBUTION. Guyana; French Guiana.

MATERIAL EXAMINED.

Holotype ♂, FRENCH GUIANA: St Jean Maroni, Cat. no. 8939, in USNM.

4 specimens, BMNH; 3 specimens, USNM.

TANYODES Möschler

Tanyodes Möschler, 188 \bar{x} : 415. Type-species: *Tanyodes ochracea* Möschler, by monotypy.
 [*Striglina* Guenée; Pagenstecher, 1892 : 84. Misidentification.]
 [*Striglina* Guenée; Hampson, 1897 : 612. Misidentification.]
 [*Striglina* Guenée; auct. Misidentification.]
Tanyodes Möschler; Whalley, 1964 : 127.

The genus is separated from the others in the subfamily mainly on differences in the genitalia. The single species in it is larger than most others in the subfamily and much more strongly patterned on the underside of the wings. The structure of the uncus in the male is such that it appears to be used to close the end of the abdomen and is strikingly different from others (see details under species).

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae ciliate. Fore tibia with epiphysis. Hind tarsi with two pairs of spurs. Tarsi with rows of spines. Forewing with R_2 - R_5 separately from cell. Hindwing with $Sc + R_1$ and R_s not touching. Uncus broad with small median dorsal process. Valve reduced, basal part modified. Gnathus simple. Female, frenulum double. Ductus bursae sclerotized with long spiny patch forming signum.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 8). Brazil; Peru; Guyanas; Surinam.

Tanyodes rufitibia (Felder & Rogenhofer)

(Pl. 10, figs 94, 95; Pl. 35, fig. 278; Pl. 50, fig. 399; Pl. 60, fig. 493; Pl. 66, fig. 579)

Orthogramma rufitibia Felder & Rogenhofer, 1873 : pl. 117, fig. 1. Holotype ♂, BRAZIL (BMNH) [examined].

Striglina rufitibia Felder & Rogenhofer; Guenée, 1877 : 286.

Tanyodes ochracea Möschler, 188 \bar{x} : 415. Holotype ♀, SURINAM (MNHU) [examined]. **Syn. n.**

Striglina rufitibia Felder & Rogenhofer; Pagenstecher, 1892 : 43.

Striglina ochracea Möschler; Pagenstecher, 1892 : 84.

Striglina ochracea Möschler; Hampson, 1897 : 613.

?*Striglina rufitibia* Felder & Rogenhofer; Hampson, 1897 : 613.

Striglina rufitibia Felder & Rogenhofer; Warren, 1900 : 120. [Redescription.]

Striglina ochracea Möschler; Dalla Torre, 1914 : 12.

Striglina rufitibia Felder & Rogenhofer; Dalla Torre, 1914 : 12.

Striglina rufitibia Felder & Rogenhofer; Gaede, 1936 : 1194.

Striglina ochracea Möschler; Gaede, 1936 : 1194.

Tanyodes ochracea Möschler; Whalley, 1964 : 127.

♂. Wing, 20-22 mm. Vertex yellow-brown. Labial palp with third segment one-quarter length of second. Forewing, pattern as in Pl. 10, figs 94, 95, yellowish brown with prominent pattern, fringe of hindwing orange-brown. Underside, strongly patterned, forewings reddish brown, hindwing yellowish brown with dark spots. Transverse fascia often visible across forewing.

Genitalia ♂ (Pl. 35, fig. 278). Uncus broad, laterally expanded. Gnathus with broad, minutely spined median process. Valves reduced to slender curved process at apex, broad at base with hairy basal and median process. Juxta with flattened base and two curved lateral arms, almost encircling aedeagus. Aedeagus sclerotized at apex, covered with minute spines, no cornuti.

♀. Wing, 22-28 mm. Similar to male, third segment of labial palp one-quarter length of second.

Genitalia ♀ (Pl. 50, fig. 399; Pl. 60, fig. 493; Pl. 66, fig. 579). Anal papillae short. Ostium broad, sclerotized, covered with minute spines. Duct short, sclerotized on one side. Bursa with long narrow patch of spines down one side.

DISCUSSION. This is a very variable species. Although no differences could be found in the female genitalia, the uncus of the males differed in some details from one another. Some of this is probably subspecific as several of these modifications were in specimens from a single locality and intermediates to the more extreme states were found. Externally the pattern differences are often striking and some of this was correlated to the morphological differences mentioned. For the present I prefer to regard *rufitibia* as a widespread species with incipient subspecies.

In the male the 'normal' position of the uncus appears to be reflexed, entirely closing the abdomen. Only one out of more than 50 specimens examined had this raised; it is shaped to fit exactly over the posterior of the abdomen. This particular modification has not been noticed in other species although it seems reasonable to suppose that the gnathus in some other species may act in this way.

BIOLOGY. Not recorded. Adults collected in Brazil in v; in Surinam in iii; iv; x; in Peru in vi.

DISTRIBUTION. Peru; Brazil; French Guiana; Surinam; Guyana.

MATERIAL EXAMINED.

Holotype ♂ (*rufitibia*), BRAZIL: Amazon, BM slide no. 9573 in BMNH. Holotype ♀ (*ochracea*) SURINAM, BM slide no. 9554 in MNHU.
55 specimens, BMNH.

TRISTINA gen. n.

Type-species: *Striglina jucunda* Warren.

This genus is separated from the others by the venation of the forewing and the shape of the valve in the male. In the female the ostium has a diverticulum attached, from which the ductus bursa arises. The genus is related to *Pentina* and forms part of the complex of South American genera whose species were formerly included in *Striglina*.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae minutely ciliate. Labial palp three-segmented. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi with rows of spines. Forewing with $R_2 + R_3$ having a common stalk. Gnathus with median process. Valve with enlarged base, narrower distal part. Juxta large, sclerotized. Female with double frenulum. Large signum in bursa.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 4). South America.

KEY TO THE SPECIES OF *Tristina* (males)

1	Uncus bifid	<i>jucunda</i> (p. 131)
-	Uncus single	2
2 (1)	Gnathus with long median process (Pl. 35, fig. 281)	<i>eporedia</i> (p. 131)
-	Gnathus with short median process (Pl. 35, fig. 280)	<i>xanthina</i> (p. 132)

Tristina jucunda (Warren) **comb. n.**

(Pl. 1, fig. K; Pl. 35, fig. 279; Pl. 50, fig. 400; Pl. 60, fig. 494)

Striglina jucunda Warren, 1908: 350. LECTOTYPE ♂, here designated, PERU (BMNH) [examined].*Striglina jucunda* Warren; Dalla Torre, 1914: 12.*Striglina jucunda* Warren; Gaede, 1936: 1194.

♂. Wing, 12–13 mm. Vertex yellow, irrorate with red-brown. Labial palp with third segment one-third length of second. Frons with distinct keel in median line and shallower keels laterally above labrum (visible only on descaling). Prothorax yellow-brown, tegulae and rest of thorax brown. Forewing, pattern as in Pl. 1, fig. K, yellow, heavily patterned with black, and red scales with small circular yellow spots. Yellow ante- and post-median lines, antemedian reddish in posterior half. Hindwing similar, median area with more yellow than anterior wing. Underside pale yellow with black patterning, few red scales. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 35, fig. 279). Uncus bifid with two long lateral processes. Gnathus with median process enlarged and spade-like. Valve broad at base, narrower in median part and broader at apex. Juxta highly modified, U-shaped with two, broad, curved asymmetrical toothed processes. Aedeagus with small sclerotized tooth at apex and spiny vesica.

♀. Wing, 12.5–13.5 mm. Colouring and pattern as male. Third segment of labial palp half length of second.

Genitalia ♀ (Pl. 50, fig. 400; Pl. 60, fig. 494). Anal papillae short, produced into two narrow lobes. Ostium broad, strongly sclerotized. Duct broad, spiny, convolute near bursa. Bursa covered with minute spines with two large sclerotized plates forming signa.

DISCUSSION. The striking yellow and black pattern is very distinctive. There is some variation in the amount of black on the wing but no clear indication of subspecific trends were found in the few specimens available for examination. Specimens from the Guyanas were indistinguishable from the Peruvian ones. A single female from Cuba agreed in most respects with the mainland specimens, with only small differences in the sclerotization of the signa in the bursa.

BIOLOGY. Not recorded. Adults collected in Surinam in vii; in Brazil in ix; in Peru in i; xii.

DISTRIBUTION. Peru; Brazil; Surinam; French Guiana; Guyana; Cuba.

MATERIAL EXAMINED.

Lectotype ♂ PERU: La Oroya, Rio Inambari, 930 m (*Ockenden*), i. 1906, BM slide no. 13310, in BMNH.

13 specimens, BMNH.

Tristina eporedia **sp. n.**

(Pl. 2, fig. D; Pl. 35, fig. 281)

♂. Wing, 18 mm. Vertex yellow. Third segment of labial palp one-quarter length second. Prothorax yellow, rest of thorax brown-yellow. Hind tibia with large scale tuft. Forewing, pattern as in Pl. 2, fig. D, yellow with brown basal and median area, patterned, and with mauvish tinge. Terminal wing margin and subterminal yellow, rest brownish. Hindwing with subterminal thin fascia, yellow on each side. Basal area brown, with orange tinge. R_2 and R_3 with common stalk.

Genitalia ♂ (Pl. 35, fig. 281). Uncus slender with groove below apex. Gnathus with long

sclerotized median process. Valve with prominent process, broadly Y-shaped at apex. Juxta with two sclerotized lateral arms. Aedeagus curved, with spines on manica.

♀. Unknown.

DISCUSSION. This species is allied to *xanthina* from which it may be distinguished by the wing pattern and the shape and size of the uncus and gnathus. The morphology of *eporedia* is broadly similar to *jucunda* with the fusion of R_2 and R_3 and the two spurs on the hind tibia.

BIOLOGY. Not recorded.

DISTRIBUTION. French Guiana.

MATERIAL EXAMINED.

Holotype ♂, FRENCH GUIANA: St Jean de Maroni (*Le Moult* coll.), BM slide no. 14221, in BMNH.

Paratype. FRENCH GUIANA: 1 ♂, data as holotype.

Tristina xanthina Felder & Rogenhofer **comb. n.**

(Pl. 1, fig. Q; Pl. 35, fig. 280; Pl. 50, fig. 401; Pl. 60, fig. 495)

Siculodes xanthina Felder & Rogenhofer, 1875 : pl. 134, fig. 15. Holotype ♂, BRAZIL (BMNH) [examined].

Siculodes xanthina Felder & Rogenhofer; Pagenstecher, 1892 : 112.

Rhodoneura xanthina Felder & Rogenhofer; Hampson, 1897 : 622.

Mathoris apiceflava Dognin, 1911 : 28. Holotype ♂, FRENCH GUIANA (USNM) [examined].

Syn. n.

Mathoris apiceflava Dognin; Dalla Torre, 1914 : 9.

Rhodoneura xanthina Felder & Rogenhofer; Dalla Torre, 1914 : 36.

[*Mathoris mediaria* Walker; Gaede, 1936 : 1193. Misidentification.]

Striglina xanthina Felder & Rogenhofer; Gaede, 1936 : 1194.

♂. Wing, 13–15 mm. Vertex yellowish. Third segment of labial palp one-quarter length of second. Thorax yellow-brown. Forewing, pattern as in Pl. 1, fig. Q, yellow apex, rest reddish brown with reticulate pattern. Hindwing with orange-brown centre, red-brown marginal area and yellow fringe. Underside, similar, paler. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 35, fig. 280). Uncus spear-shaped. Gnathus a narrow sclerotized loop with long central process. Valve narrow, Y-shaped at apex, broad at base. Aedeagus curved, apex toothed, with strong lateral spine. Juxta broad with two lateral hairy lobes and shorter median lobes.

♀. Wing, 14 mm. Colour and pattern as male. Third segment of labial palp longer, one third length of second.

Genitalia ♀ (Pl. 50, fig. 401; Pl. 60, fig. 495). Anal papillae short. Broad sclerotized pouch with narrow spiny ductus leading from middle of pouch. Bursa spinose, large curved signum strongly sclerotized.

DISCUSSION. This strikingly coloured species is easily recognized by the clear yellow subterminal patch on the forewing. The genitalia of the male are similar to *eporedia* but can be distinguished by the shorter gnathus and shape of the juxta. The females have a large sclerotized diverticulum from the ostium from which the ductus arises; this is unusual in the subfamily. The structure of the valves in the

males is complicated but it is possible that the extended part is not the costal margin but an enlarged sacculus; further studies on this are needed.

BIOLOGY. Not recorded. Adults collected in ix.

DISTRIBUTION. French Guiana; Guyana; Brazil.

MATERIAL EXAMINED.

Holotype ♂ (*xanthina*), [BRAZIL] Amazona, BM slide no. 14527 in BMNH. Holotype ♂ (*apiceflava*) FRENCH GUIANA: St Laurent du Maroni (coll. *Le Moutt*), BM slide no. 14525, in USNM.

4 specimens, BMNH; 3 specimens, USNM.

MYSTINA gen. n.

Type-species: *Striglina humeralis* Whalley.

This genus is erected to contain the species in the *humeralis*-group (Whalley, 1971a : 81): *S. humeralis*, *S. jacanda*, *S. tincta*, but excluding *S. nigranalís* for which the genus *Heteroschista* is reused, and including *S. guttistigma* which was placed in a different group. This species group was considered distinct in my early paper but, until the world fauna of the subfamily were examined, it was not thought appropriate to propose a new generic name for them at that stage. However, it is now apparent that the subfamily can be separated into several genera with differences which are quite considerable but which, in the African species as they were then studied, are not considered too extreme.

GENERIC DESCRIPTION. Eyes with interfacetal hairs. Pilifers absent. Very reduced ocelli present. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi each with pair of spines. Hindwing with *Sc* + *R*₁ and *Rs* fused for part of length. Valves of male variously modified. Ostium of female highly modified, signum a transverse plate. Frenulum in female triple.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 6). Africa.

The species transferred here are:

Mystina humeralis (Whalley), 1971a : 81, **comb. n.** (Pl. 10, fig. 96);

Mystina jacanda (Whalley), 1971a : 82, **comb. n.** (Pl. 11, fig. 97);

Mystina tincta (Whalley), 1971a : 82, **comb. n.** (Pl. 11, fig. 98);

Mystina guttistigma (Hampson), 1906 : 115, **comb. n.** (Pl. 11, fig. 99).

No further information is available on these species; keys for their identification are given by Whalley (1971a : 66).

JAMBOINA gen. n.

Type-species: *Striglina vindicta* Whalley.

This genus contains the species of the *vindicta*-group (Whalley, 1971a : 76) but

without *S. guttistigma* which is transferred to *Mystina* (p. 133). The species in *Jamboina* are very similar externally but the genitalia are distinct.

This genus is separated from *Mystina* by the lack of interfacetal hairs.

GENERIC DESCRIPTION. Eyes without interfacetal hairs. Antennae ciliate. Hind tibia with two pairs of spurs. Tarsi with rows of spines. Forewing with veins separately from the cell. Valves reduced. Apex of aedeagus usually with process. Ostium strongly sclerotized in the female. Frenulum triple.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 5). Africa.

The species here transferred are:

Jamboina vindicta (Whalley), 1971a : 77, **comb. n.** (Pl. II, figs 100–102);

Jamboina ramosa (Whalley), 1971a : 79, **comb. n.** (Pl. II, figs 103, 104).

Keys for their identification are given by Whalley (1971a : 66). Further specimens of *J. ramosa* have now been examined which, while similar externally to the original specimens, differ in detail in the genitalia.

Jamboina ramosa (Whalley)

(Pl. II, figs 103, 104; Pl. 36, fig. 262)

Striglina ramosa Whalley, 1971a : 79. Holotype ♂, GABON (CM) [examined].

This is now divided into two subspecies. The nominate one from Cameroun and Gabon and a new one from Zaire and Uganda. They are separated on differences in the male genitalia.

KEY TO THE SUBSPECIES OF *Jamboina ramosa* (males)

- | | | |
|---|--|-------------------------------|
| 1 | Sacculus process long, slender, toothed, with second branch | <i>r. ramosa</i> |
| – | Sacculus process long, broad, toothed, without second branch | <i>r. orientalis</i> (p. 134) |

Jamboina ramosa orientalis subsp. n.

(Pl. II, fig. 104; Pl. 36, fig. 282)

♂. Wing, 12 mm. Externally as nominate subspecies.

Genitalia ♂ (Pl. 36, fig. 282). Uncus bifid with two pointed lateral spines. Valve reduced. Gnathus with one lateral process on each side of mid-line. Sacculus process very long, reaching to hairy subscaphium. Sacculus process strongly toothed. Aedeagus with small apical tooth, apex of aedeagus swollen.

♀. Unknown.

DISCUSSION. Although similar to the nominate subspecies externally the genitalia are quite distinct. The uncus of *r. orientalis* is more slender and curved and although strongly toothed, the sacculus process lacks the second long process of the nominate subspecies. *J. r. orientalis* seems to be the eastern representative of *J. ramosa*; little

data are available on flight periods of the two subspecies, but it seems they fly at the same time of year and are unlikely to be seasonal forms.

BIOLOGY. Not recorded. Adults collected in Uganda in vi; in Zaire in iii; vi; x.

DISTRIBUTION. Zaire; Uganda.

MATERIAL EXAMINED.

Holotype ♂, UGANDA: Entebbe, vi. 1961, BM slide no. 14231, in NMR.

Paratypes. ZAIRE: 1 ♂, Marghay, Congo, 27.x.1921 (*Verlaine*), in MRAC; 1 ♂, Eala (*Ghesquière*), iii. 1930, in MRAC; 1 ♂, Sankuru (*Ghesquière*), Komi, vi. 1929, in MRAC.

HETEROSCHISTA Warren

Heteroschista Warren, 1903 : 271. Type-species: *Heteroschista nigranalisis* Warren, by original designation.

[*Striglina* Guenée; Whalley, 1971a : 64. Misidentification.]

When the African species were studied I commented (Whalley, 1971a : 83) that this species might need to be in a separate genus. Now that I have examined the world fauna of the subfamily I am sure that this is sufficiently distinct to warrant placing in its own genus. Full details of morphology, distribution etc. are given by Whalley (1971a : 83).

GENERIC DESCRIPTION. Eyes with interfacetal hairs. Antennae minutely ciliate. Forewing with $R_2 + R_3$. Hindwing with $Sc + R_1$ and Rs joined for part of length. Frenulum double in female. Valve of male with strong lateral process. Female with strongly sclerotized ostium. Bursa without signum.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 7). Africa (west central).

Heteroschista nigranalisis Warren

(Pl. 11, fig. 105; Pl. 28, fig. 236)

Heteroschista nigranalisis Warren, 1903 : 271. Holotype ♂, NIGERIA (BMNH) [examined].

Mathoris lenistrialis Hampson, 1906 : 114. Holotype ♀, GHANA (BMNH) [examined].

Striglina nigranalisis Warren; Whalley, 1971a : 85. [Synonymy and distribution.]

No new material of this species has been seen since the recent revision (Whalley, 1971a : 83).

DISTRIBUTION. Gambia; Sierra Leone; Liberia; Ivory Coast; Ghana; Cameroun; Nigeria; Rio Muni; Zaire; Uganda.

MATHORIS Guenée

Mathoris Guenée, 1877 : 272. Type-species: *Siculodes roseola* Felder & Rogenhofer, by subsequent designation (Whalley, 1964 : 122).

Mathoris Guenée; Pagenstecher, 1892 : 36.

Mathoris Guenée; Hampson, 1897 : 611.

Mathoris Guenée; Dalla Torre, 1914 : 9.

Mathoris Guenée; Gaede, 1917 : 374.

[*Heteroschista* Warren; Gaede, 1917 : 374. Misidentification.]

Mathoris Guenée; Gaede, 1929 : 374.

Mathoris Guenée; Whalley, 1964 : 122.

Mathoris Guenée; Whalley, 1971a : 51.

A genus with species in India, Africa and South America which is a distribution rather similar to *Banisia*, it is therefore interesting that these two genera have species with similar, widely distributed, food-plants. All the species of *Mathoris* are smaller than most of the other species in the subfamily. One of the most striking features in common between the species of *Mathoris* is the shape of the eye, which varies from flattened posteriorly to distinctly reniform, with a slight indentation on the posterior side. Other aspects of the morphology of the species are similar and although there are some basic differences between species on different continents I prefer to consider that they are related rather than that they show convergent resemblances.

GENERIC DESCRIPTION. Eyes without interfacetal hairs, flattened on posterior margin or slightly reniform. Labial palps three-segmented. Fore tibia with epiphysis. Hind tibia with two pairs of spurs. Tarsi each with pair of apical spines. Forewing usually with $R_2 + R_3$. Hindwing with $Sc + R_1$ and Rs joined. Male with well developed socii. Female with highly modified ostium.

BIOLOGY. *M. ignepicta* feeds on the leaves of *Mimusops* (= *Manilkara*) *elengi* Adanson (Sapotaceae) in India.

DISTRIBUTION (Map 3). Africa; South America; India.

KEY TO THE SPECIES OF *Mathoris*

- | | | |
|---|--|---------------------------|
| 1 | Forewing with R_2 to R_5 arising separately from cell | <i>ignepicta</i> (p. 138) |
| - | Forewing with $R_2 + R_3$ | 2 |
| 2 | (1) Forewing orange-brown, usually with hyaline spots in forewing | 3 |
| - | Forewing black or black and white | <i>magica</i> (p. 139) |
| 3 | (2) Juxta of male with two lateral lobes, without spines. Female without signum in bursa | <i>procurata</i> (p. 137) |
| - | Juxta strongly spined. Female with small spiny signum | <i>vocata</i> (p. 136) |

Mathoris vocata (Walker)

(Pl. II, fig. 106; Pl. 36, fig. 283; Pl. 51, figs 402, 403; Pl. 60, fig. 496)

Hyria (?) *vocata* Walker, 1861 : 662. LECTOTYPE ♀, here designated, BRAZIL (BMNH) [examined].

Siculodes (?) *roseola* Felder & Rogenhofer, 1872 : pl. 134, fig. 5. LECTOTYPE ♂, here designated, COLOMBIA (BMNH) [examined].

[*Cambogia procurata* Walker; Dalla Torre, 1914 : 9. Misidentification.]

Mathoris vocata Walker; Dalla Torre, 1914 : 9.

Mathoris vocata Walker; Hampson, 1897 : 611.

Mathoris vocata Walker; Gaede, 1936 : 1193.

Mathoris vocata Walker; Whalley, 1964 : 122.

♂. Wing, 8–9 mm. Vertex orange-brown. Antennae minutely ciliate. Vertex produced slightly between eyes. Third segment of labial palp one-third length second. Eyes posteriorly flattened, slightly reniform. Thorax orange-brown. Forewing, pattern as in Pl. 11, fig. 106, orange-brown with reddish brown fascia. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 36, fig. 283). Similar to *procurata*, differing in the shape of the median valve process, the costal process and in the strongly spined lateral lobes to the juxta.

♀. Wing, 9–10 mm. Colour and pattern as male. Generally more orange colour on hindwing. Labial palps as male, third segment one-quarter length second.

Genitalia ♀ (Pl. 51, figs 402, 403; Pl. 60, fig. 496). Anal papillae short. Ostium sclerotized at end of tube with opening anteriorly and ductus arising posteriorly from broader end of tube, laterally with strongly sclerotized plates, duct short. Receptaculum seminalis arising halfway along short duct.

DISCUSSION. This species differs from *procurata* in the structure of the male and female genitalia. The female of *vocata* is larger than *procurata*.

BIOLOGY. Not recorded.

DISTRIBUTION. Brazil; French Guiana.

MATERIAL EXAMINED.

Lectotype ♀ (*vocata*) BRAZIL: Para, in BMNH (specimen lacks abdomen). Lectotype ♂ (*roseola*), COLOMBIA: Bogota, BM slide no. 14284, in BMNH.

14 specimens, BMNH.

Mathoris procurata (Walker) sp. rev.

(Pl. 11, fig. 107; Pl. 36, fig. 284; Pl. 51, fig. 404; Pl. 60, fig. 497)

Cambogia procurata Walker, 1861 : 672. Holotype ♂, BRAZIL (BMNH) [examined].

Mathoris crepuscularia Guenée, 1877 : 283. Holotype ♂, BRAZIL (BMNH) [examined]. **Syn. n.**

[*Mathoris vocata* Walker; Hampson, 1897 : 611. Misidentification.]

[*Mathoris vocata* Walker; Dalla Torre, 1914 : 9. Misidentification.]

[*Mathoris roseola* Felder & Rogenhofer; Dalla Torre, 1914 : 10. Misidentification.]

[*Mathoris vocata* Walker; Gaede, 1936 : 1193. Misidentification.]

♂. Wing, 6.5–7.5 mm. Vertex brown, frons projecting slightly between eyes. Labial palp with third segment one-quarter length of second. Eyes flattened posteriorly, sometimes reniform. Thorax orange-brown. Fore tibia with epiphysis. Forewing, pattern as in Pl. 11, fig. 107, orange-brown with darker brown transverse fascia and three circular hyaline areas. Narrow black, thin lines giving faint reticulations. Hindwing similar, without hyaline area and more yellow in median area. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 36, fig. 284). Uncus divided with two lobes curving toward mid-line, hairy at apex. Gnathus with broad plates, not joining in mid-line, with posterior projection, forming tube-like process round anal tube. Transtilla sclerotized with several median projections. Valves entire, curved. Median valve process bifurcate and sclerotized, process at apex of sacculus. Juxta with two broad, plate-like lateral processes. Aedeagus with prominent slender, lateral process.

♀. Wing, 7–8 mm. Colour and pattern as male. Third segment of labial palp one-third length of second.

Genitalia ♀ (Pl. 51, fig. 404; Pl. 60, fig. 497). Anal papillae short. Prominent sclerotized tube from ostium leading posteriorly to more membranous ductus bursa. Rest of plates round ostium less heavily sclerotized than in *vocata*. Small group of spines on bursa forming long signum.

DISCUSSION. This species has always been considered as a junior synonym of *M. vocata*. The two are very similar in pattern although *procurata* generally has darker terminal and subterminal areas. Generally *M. procurata* is smaller than *M. vocata*, the females being much smaller. No other reliable external characters were found. The third segment of the labial palp of the female *procurata* is relatively longer in proportion to the second than in the female *vocata*. *M. procurata* is widespread through the Amazonian forests to Peru, reaching Venezuela and Guyana in the north. No specimens have been seen from Surinam.

BIOLOGY. Not recorded. Adults collected in iii; x.

DISTRIBUTION. Brazil; Peru; Guyana; Venezuela.

MATERIAL EXAMINED.

Holotype ♂ (*procurata*), [BRAZIL:] Villa Nova (Bates), BM slide no. 14285, in BMNH. Holotype ♂ (*crepuscularia*), [BRAZIL:] Amazon, BM slide no. 8296, in BMNH.

16 specimens, BMNH.

Mathoris ignepicta (Hampson)

(Pl. 11, fig. 108; Pl. 36, fig. 285; Pl. 51, fig. 405; Pl. 60, fig. 498)

Striglina ignepicta Hampson, 1905 : 196. Holotype ♂, INDIA (BMNH) [examined].

Striglina ignepicta Hampson; Dalla Torre, 1914 : 11.

Striglina ignepicta Hampson; Gaede, 1932 : 748.

Mathoris ignepicta Hampson; Whalley, 1971a : 51.

♂. Wing, 6.5–7.5 mm. Vertex brown irrorate with white. Labial palp with third segment one-quarter length of second. Frons rounded, projecting slightly between eyes. Eyes posteriorly truncate. Thorax yellowish brown. Hind tibia with long scale tufts. Hind tarsi each with pair apical spines, last segment with two rows of spines. Forewing, pattern as in Pl. 11, fig. 108, black with red costal patch and orange patch in cell. Clear white spot between Cu_{1a} and Cu_{1b} . Forewings with veins separately from cell. Hindwing dark. Fringe of fore- and hindwings mostly white. Some red in anal area of hindwing. Underside, more white than on upperside, large white circular spot between Cu_{1a} and Cu_{1b} . Some mauve patches with a few red scales below costa. Hindwing underside similar, without white patch.

Genitalia ♂ (Pl. 36, fig. 285). Uncus narrow curved hook. Gnathus with process on each side under anal tube. Valve simple, long spines on sacculus, some longer than width of valve. Juxta with two lateral strap-like arms. Aedeagus with minutely spined vesica.

♀. Wing, 6.5–8.0 mm. Colour and pattern as male. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 405; Pl. 60, fig. 498). Anal papillae short. Ostium rather square, strongly spiny. Bursa without signum.

DISCUSSION. This small black and red species is easily distinguished from the others in the subfamily. Externally somewhat similar to *M. magica* from Africa, the latter species lacks the red scales on the wings. The apical tarsal segment shows an interesting modification. This segment usually has rows of spines, even in some species where the rest of the segments have only a pair of apical spines. In *M. ignepicta* the segment is enlarged and has a prominent groove on the side, edged with setae, with even stouter setae in a pair at the apex of the groove near the claw.

Specimens from south India and Ceylon were similar and little variation was found in the specimens examined. There are certain differences between this species and the South American representatives of the genus but I think the basic similarities between them are more important.

BIOLOGY. This species has been bred from the leaves of *Mimusops* (= *Manilkara*) *elengi* (Sapotaceae). The adults were collected in India in iii; vii; viii; x, in Ceylon in iv; vi; vii; viii; x.

DISTRIBUTION. India; Ceylon.

MATERIAL EXAMINED.

Holotype ♂, INDIA: Bombay, Castle Rock (*Davidson*), x.[18]92, BM slide no. 8540, in BMNH.

16 specimens, BMNH.

***Mathoris magica* Gaede**

(Pl. 12, fig. 109)

Mathoris magica Gaede, 1917 : 381. Holotype ♂, RIO MUNI (MNHU) [examined].

Mathoris magica Gaede; Whalley, 1971a : 51. [Figures and details of distribution.]

DISTRIBUTION. Africa (west and central).

No further material has been available for examination since the previous study (Whalley, 1971a). This species has R_2 and R_3 joined in the forewing as in the South American species.

***CANAEA* Walker**

Canaea Walker, 1863 : 73. Type-species: *Canaea semitessellalis* Walker, by monotypy.

Canaea Walker; Whalley, 1971b : 161.

This genus was dealt with in detail by Whalley (1971b). Keys for all the species and details of their distribution are given in that work. Further material has confirmed that species of the genus occur in the Philippines; this was only tentatively suggested before. Specimens of a new subspecies have been collected; this is described below.

DISTRIBUTION (Map 4). Malaysia; Indonesia; New Guinea; Philippines; Australia; Solomon Is.; New Caledonia.

***Canaea semitessellalis* Walker**

(Pl. 12, fig. 110; Pl. 36, fig. 286)

Canaea semitessellalis Walker, 1865 : 1246.

Canaea semitessellalis Walker; Whalley, 1971b : 174.

Canaea semitessellalis semitessellalis Walker

Canaea semitessellalis Walker, 1865 : 1246. Holotype ♂, AUSTRALIA (BMNH) [examined].

This subspecies is found in Australia with only a doubtful record from New Guinea (Whalley, 1971b : 175). The species is variable in the intensity of colour and pattern. It is common in Queensland and has been collected in New South Wales. For separation of this subspecies from *caledonia* see under that subspecies.

Canaea semitessellalis caledonia subsp. n.

(Pl. 12, fig. 110; Pl. 36, fig. 286)

♂. Wing, 16 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-third length of second. Thorax grey-brown. Forewing, pattern as in Pl. 12, fig. 110, grey-brown with round white patches, these amalgamated to form large groups in fore- and hindwings. Base of forewing reddish brown. Underside paler, similar. Veins R_2-R_5 in forewing separately from cell.

Genitalia ♂ (Pl. 36, fig. 286). Uncus long, slender, clavate at apex. Gnathus and socii fused, forming ring round anal tube. Valve simple. Median basal process sclerotized with curved hook. Sacculus process short, strongly toothed. Juxta membranous. Saccus small. Aedeagus with two small patches of cornuti.

♀. Wing, 15 mm. Orange-brown with darker reticulations and darker median fascia. Underside grey-brown.

Genitalia ♀. Unknown, only female specimen lacks an abdomen.

DISCUSSION. When the nominate subspecies was examined during the recent revision (Whalley, 1971b : 175) there were specimens from Australia and one female from New Guinea. At that time I commented that the single New Guinea specimen probably represented a distinct subspecies but did not describe it. No more New Guinea specimens have been collected but the New Caledonia specimens also show some differences from the mainland Australian subspecies. *C. s. caledonia* is similar externally to the nominate subspecies but can be separated by the shape of the sacculus process in the male genitalia. This is long and slender in the nominate subspecies but short and toothed in *s. caledonia*. Both subspecies have similar curved median basal processes on the valves. *C. s. caledonia* differs from *C. plagiata* in the shape of the uncus, the more slender valves and the lack of the strongly sclerotized gnathus; this latter is prominent in all the subspecies of *plagiata*. The modified key for the separation of these species is given below. The couplet in the key given by Whalley (1971b : 164) where the species are separated on the basis of the sacculus process will not work with the new subspecies of *semitessellalis*.

- | | | |
|---|--|---|
| 1 | Uncus T-shaped, gnathus well developed and sclerotized. Valve very broad in basal third | <i>plagiata</i> |
| - | Uncus rounded, clavate. Gnathus not conspicuously enlarged. Valves not much broader near base than at apex | 2 |
| 2 | Sacculus process long | <i>semitessellalis semitessellalis</i> (p. 140) |
| - | Sacculus process short | <i>semitessellalis caledonia</i> (p. 140) |

BIOLOGY. Not recorded. Adults collected in vii.

DISTRIBUTION. New Caledonia.

MATERIAL EXAMINED.

Holotype ♂, NEW CALEDONIA: Mt Panié, 800 m, site 60, 27.vii.1971 (*Holloway*), BM slide no. 14721, in BMNH.

Paratype. 1 ♀, NEW CALEDONIA: data as holotype (abdomen missing), in BMNH.

BANISIA Walker

Banisia Walker, 1864 : 77. Type-species: *Banisia fenestrifera* Walker, by original designation.

Durdara Moore, 1882 : 176. Type-species: *Phalaena myrtaea* Drury, by original designation.

[*Rhodoneura* Guenée; Hampson, 1897 : 615. Misidentification.]

Vernifilia Schultze, 1907 : 364. Type-species: *Vernifilia hyalipuncta* Schultze, by monotypy.

Trophoessa Turner, 1911 : 99. Type-species: *Trophoessa daphoena* Turner, by monotypy.

[*Rhodoneura* Guenée; Dalla Torre, 1914 : 17. Misidentification.]

Banisia Walker; Whalley, 1964a : 117.

Neobanisia Whalley, 1967 : 45. Type-species: *Striglina antiopa* Viette, by original designation.

Syn. n.

Banisia Walker; Whalley, 1967 : 47.

Banisia Walker; Whalley, 1971a : 58.

The genus *Banisia* is a very complicated one with species showing extreme modifications and apparently unrelated. However, when all the species are examined it is possible to see how intermediates occur and, even in extreme cases, the derivation of the more highly modified parts can usually be demonstrated. Very little is known of the biology of the species in the genus; knowledge of this might give some indications of affinities. Generally the females in the genus have a particular type of signum in the bursa and this together with other characters help to delimit the genus. One species of *Canaea*, even though it has a similar signum, is not at present included in the genus because other structures are different. No one character is used to define the genus and the whole genus is at present considered to consist of groups of species which show closer affinities with one another than between the groups. Several attempts have been made to separate the genus into distinct generic groups and to restrict them, producing several genera from the one genus. Ultimately in all cases it proved more practical and, perhaps, to show more relationships, to place all these divisions under one generic name. The genus *Neobanisia*, described for a group of African and Madagascan species, while forming a reasonable compact unit, is reduced here to a species-group of *Banisia* (*antiopa*-group) on the grounds of the difficulty of producing a non-overlapping definition. The use of the species-group concept is in line with the present treatment of the genus *Striglina* and is used to emphasize the relationship and similarities of the species rather than their differences. In fact the sister-group relationship, with derivation from a common ancestor, is suggested for a number of the species-groups discussed.

Externally the patterns and colours are not as variable as in many genera. The typical colours of the species are reddish browns, usually with one or more white or translucent fenestrations in the forewing. The males usually have a bifid uncus and the females have a large, oval, usually spiny, signum of very characteristic shape. One of the characteristics of the genus is the formation of species pairs with obvious close affinities, judging from the numbers of complex characters in common.

Frequently, while these species pairs have many characters in common, one of them may have a single character showing an extreme specialization, not present, or only marginally present, in the other species.

Three species which are very different externally, *B. fenestrifera*, *B. intonsa* and *B. placida*, and have a number of differences in the detailed morphology of the genitalia, have also a large number of fundamental similarities in them. *B. composita* and *B. angulata* are closely related species, broadly similar with similar genitalia and a similar development of the hind tibia (the tibia is swollen and extends beyond the articulation with the femur). It is thus difficult at first to separate these two species. However, the males of *angulata* have a modification of the labial palps which seems to be unique in the family. There is a groove formed by a modification of the scales on the labial palp which, from its shape, looks as if the antennae might be pulled through it. The palps themselves under the scale tuft are swollen and a different shape from the closely allied *composita*. Thus in spite of many similar features between these two species, *B. angulata* has developed this highly specialized character whose function is not yet known.

Banisia is a worldwide genus although the New World species often differ more from the Old World species than the Old World species do amongst themselves. *B. myrsusalis* occurs in both the Old and New World and is probably a species which has been spread by man (p. 154). Some of the similarities between the New and Old World species are remarkable, many species having very similar wing patterns. How far this is convergence, caused by mutual resemblances to similar environments in different areas, or relationship, is impossible to tell but linked with other basic similarities of structures of both sexes the New World species and Old World species can both be derived from fairly close, hypothetical, common ancestral types.

Subspeciation is fairly common in the genus, particularly when the species occurs on a number of different islands. Some of the subspeciation, e.g. *B. anthina* where distinct subspecies occur on Fiji, Samoa and the New Hebrides, has progressed so far that it would be possible to consider them as distinct species. However, a close examination of the material available shows that many of the differences between them can be derived from less highly modified characters present in the other subspecies. Nevertheless they are clearly incipient species and a final decision on the status of some subspecies will have to await more biological information and breeding experiments.

GENERIC DESCRIPTION. Proboscis present. Labial palps three-segmented. Eyes without interfacetal hairs. Forewing with radials R_2 to R_5 from the cell, occasionally $R_2 + R_3$. Foretibia with epiphysis. Hind tibia with two pairs of spurs. Hind tarsi each with a pair of apical spines. Uncus usually bifid, rarely single, occasionally reduced. Socii well developed. Gnathus variously modified. Female usually with large signum in bursa, occasionally reduced, rarely absent. Frenulum triple in female.

BIOLOGY. Several species have been bred from one family of plants, Sapotaceae, particularly on *Achras zapota* L. and *Bassia latifolia* (Roxburgh) in India. *B. myrsusalis* has been bred from *zapota* in Java (Whalley, 1967; Bose, 1935). Karlshoven (1950) illustrates the leaf-rolling of larvae of *Banisia myrtaea* and *B. myrsusalis*,

which he records on *Derris* and *Erythrina* used as shade over Coffee in Java. Gater (1925) records this species on *Bauhinia* and *Canavallaria* and as a pest of *Derris*.

DISTRIBUTION (Map 2). Neotropical; Nearctic; Ethiopian; Oriental; Australasian-Pacific; rare in the Palaearctic region.

The species-groups, which are not separated in the key, are discussed at the start of each new group. No keys are provided for the females, due to insufficient material. Generally the females of this genus have a strongly sclerotized and spiny ostium and a large and characteristically shaped signum. Only in *Canaea ignotalis* is there a similar shaped signum.

KEY TO THE SPECIES OF *Banisia* (males)

1	Forewing with $R_2 + R_3$ or $R_4 + R_5$	2
-	Forewing with veins arising separately from cell	6
2 (1)	Uncus of male bifid	<i>fenestrifera</i> (p. 168)
-	Uncus of male single	3
3 (2)	Costal margin of valve without process near base	<i>joccatia</i> (p. 161)
-	Costal margin of valve swollen at base or with process	4
4 (3)	Costal margin with enlarged lobe (Pl. 41, fig. 310). Base of sacculus toothed but not enlarged	<i>myrtaea</i> (p. 167)
-	Costal margin with toothed or strap-like process	5
5 (4)	Basal costal process long, strap-like. Forewing with $R_2 + R_3$	<i>furva</i> (p. 162)
-	Basal costal process toothed. Forewing with $R_4 + R_5$	<i>zamia</i> (p. 162)
6 (1)	Uncus single	7
-	Uncus absent or uncus bifid	12
7 (6)	Aedeagus with prominent lateral process (Pl. 40, fig. 309)	<i>venustula</i> (p. 166)
-	Aedeagus with or without cornuti but without lateral processes	8
8 (7)	Gnathus reduced or absent	9
-	Gnathus spiny	11
9 (8)	Fore and hindwings black, often with small white spot on forewing	<i>fuliginea</i> (p. 161)
-	Brownish or reddish brown species	10
10 (9)	Large white fenestrations in fore- and hindwing	<i>clathrula</i> (p. 162)
-	Wings without such marks	<i>antiopa</i> (p. 162)
11 (8)	Gnathus with two spiny arms. Median valve process spiny. Sacculus spiny	<i>anthina pervaga</i> (p. 147)
-	Gnathus with two small spiny pads. Median valve process not spiny. Sacculus process small, not spiny	<i>argutula</i> (p. 144)
12 (6)	Uncus reduced or absent or with large <i>socii</i> concealing it	8
-	Uncus present, <i>socii</i> while large, never concealing it	16
13 (12)	Valve with margins unmodified	14
-	Valve with margins modified with processes	15
14 (13)	Valve very narrow in apical third	<i>flavidiscalis</i> (p. 183)
-	Valve broad over whole length	<i>messoria</i> (p. 182)
15 (13)	Base of sacculus with spines. Process on costal margin of valve thumb-like (Pl. 43, fig. 322)	<i>strigigrapha</i> (p. 180)
-	Base of sacculus unmodified. Spine-like process on costal margin (Pl. 43, fig. 323) of valve	<i>orcina</i> (p. 180)
16 (12)	Uncus bifid	17
-	Uncus with many processes (Pl. 42, fig. 317)	<i>ovifera</i> (p. 174)
17 (16)	Labial palp with large tuft of scales forming curved groove	<i>angulata</i> (p. 178)
-	Labial palps not so modified	18

- 18 (17) Uncus bifid, broad at apex. Valve with gland on costal margin. Sclerotized juxta with two lateral arms and spines (Pl. 43, fig. 326) **flammans** (p. 184)
 - Not as above 19
- 19 (18) Aedeagus with row of cornuti or large spines on manica 20
 - Aedeagus without rows of cornuti, sometimes with a small plâte. No large spines on manica 22
- 20 (19) Base of sacculus modified into long process, angled, toothed pseudojuxta (Pl. 38, fig. 296) **minuta** (p. 152)
 - Base of sacculus unmodified, a short process or with toothed edge 21
- 21 (20) Uncus U- or V-shaped, at apex, base of uncus broad. Base of sacculus process unmodified **composita** (p. 179)
 - Uncus Y-shaped. Base of uncus narrow. Base of sacculus process toothed (Pl. 42, fig. 316) **barbatula** (p. 173)
- 22 (19) Coastal margin of valve smooth, no processes or swellings 24
 - Coastal margin with process or swelling 23
- 23 (22) Y-shaped uncus. Costal process thumb-like. Basal sacculus process elongate, toothed **intonsa** (p. 172)
 - U- or V-shaped uncus. Costal process a rounded swelling. Base of sacculus toothed **fenestrifera** (p. 168)
- 24 (22) Uncus Y-shaped, base narrower 25
 - Uncus U- or V-shaped, base broader 26
- 25 (24) Gnathus strongly toothed **anthina** (p. 146)
 - Gnathus not toothed **cognata** (p. 161)
- 26 (24) Saccus with small lateral lobes 27
 - Saccus without lateral lobes 29
- 27 (26) Base of sacculus with elongate toothed process (Pl. 38, fig. 295) **placida** (p. 152)
 - Base of sacculus with one small tooth or base finely toothed 28
- 28 (27) Base of sacculus finely toothed. Broadly Y-shaped uncus with broad lateral arms **anthina** (p. 146)
 - Base of sacculus with one small tooth. Uncus with two slender lateral arms **lobata** (p. 149)
- 29 (26) Uncus Y-shaped with rather lobate arms to the Y. Gnathus with long toothed process **anthina** (p. 146)
 - Uncus U- or V-shaped. Gnathus with or without patches of spines 30
- 30 (29) Base of sacculus unmodified. Uncus V-shaped, lateral arms broader in middle than at top or bottom **angulata** (p. 178)
 - Base of sacculus variously modified. Uncus lobes variously tapered from apex 31
- 31 (30) Gnathus with rows of spines or patch of spines 32
 - Gnathus without spines or with a few small serrations 35
- 32 (31) Gnathus with rows of short spines all along arms. Median valve process small (Pl. 38, fig. 294) **insignifica** (p. 148)
 - Gnathus with patch of longer spines. Median valve process conspicuous, toothed and sclerotized 33
- 33 (32) Gnathus with long spines along one side. Median valve process with long teeth. Basal sacculus process short, toothed at apex (Pl. 39, fig. 303) **myrsusalis sumatrensis** (p. 157)
 - Gnathus with long spines in patch near mid-line 34
- 34 (33) No reddish patch on forewing. Basal sacculus process slender, lightly toothed (Seychelle Islands) **tibiale** (p. 158)
 - Reddish patch on forewing. Basal sacculus process toothed, curved (Pl. 39, fig. 300, Neotropical, Ethiopian, Oriental) **myrsusalis** (p. 154)
- 35 (31) Basal sacculus process very prominent, toothed, larger than uncus. Median process of valve with prominent lateral arms (Pl. 38, fig. 297) **idalialis** (p. 153)

-	Basal sacculus process smaller, toothed, or absent. Median process of valve variably shaped, or almost absent	36
36 (35)	Median process reduced to slender sclerotized rod. No basal sacculus process	
	<i>aldabrana</i> (p. 158)	
-	Median process present, variously sclerotized and toothed	37
37 (36)	Uncus with lateral margins almost straight.	33
-	Uncus with lateral margins expanded	<i>hyaena</i> (p. 159)
38 (37)	Median valve process with large teeth. Basal sacculus process serrate (Pl. 38, fig. 299)	<i>plagifera</i> (p. 159)
-	Median valve process with minute teeth. Basal sacculus process not serrate	<i>apicale</i> (p. 158)

THE *MYRSUSALIS*-GROUP

The species in this group are generally rather uniformly coloured and patterned, with the exception of the first two species which are rather anomalous and could possibly be separated from this group. The first species, *argutula*, is a Neotropical species, externally similar to *B. aldabrana* from Africa but the genitalia are distinct. In the absence of the female, the exact position of this species is uncertain. Generally in the males the uncus is bifid and the form of the genitalia is similar to *myrsusalis* (Pl. 39, fig. 300).

Banisia argutula sp. n.

(Pl. 12, fig. III; Pl. 36, fig. 287)

♂. Wing, 8.5-11.0 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-third length second. Thorax grey-brown. Forewing, pattern as in Pl. 12, fig. III, grey-brown with orange-brown costal and median areas. Two small hyaline spots in forewing, posterior spot smaller than anterior. Line of black spots subterminally. Hindwing marked with black reticulations, no hyaline areas. Underside paler, grey with more pattern. Subapical brown mark, median brown fascia, reticulations prominent in hindwing. Forewing veins R_2 - R_5 from cell.

Genitalia ♂ (Pl. 36, fig. 287). Uncus broad, hood-shaped. Socii well developed. Gnathus with two patches of curved spines near mid-line. Sacculus process with single tooth. Juxta membranous. Aedeagus with row of large cornuti.

♀. Unknown.

DISCUSSION. This species is the smallest in the group. The affinities of this species are not clear. The general colour and pattern are broadly similar to others in the group but the genitalia are quite distinct. In view of the fact that externally the appearance of many species in the group is similar when they are performing a similar function, for example mimicking dead leaves, then similar external appearances need not necessarily indicate relationships. Probably the discovery of the female will give more information on its relationship. Externally it is a typical member of this group.

BIOLOGY. Not recorded. Adults collected in ii.

DISTRIBUTION. French Guiana; Guyana; Surinam.

MATERIAL EXAMINED.

Holotype ♂, FRENCH GUIANA: St Jean de Maroni (*Le Moults* coll.), BM slide no. 14483, in BMNH.

Paratypes. FRENCH GUIANA: 5 ♂, data as holotype, in BMNH. GUYANA: 1 ♂, Potaro, ii. 1908 (*Klages*), in BMNH. SURINAM: 1 ♂, Aroewara Creek, Maroewyn Valley, 1905 (*Klages*), in BMNH.

***Banisia anthina* (Tams) comb. n.**

(Pl. 12, figs 112–116; Pl. 37, figs 288–290; Pl. 51, fig. 406; Pl. 61, figs 500–502; Pl. 67, figs 580–582)

Striglina anthina Tams, 1935 : 243. Holotype ♂, SAMOA (BMNH) [examined].

This species was originally described from nine specimens from Samoa of which six are still in the British Museum (Natural History) collection; a further seven specimens were subsequently added to the series. Although variable externally, from a pale sandy colour to richly coloured browns and blacks, most specimens have two small hyaline areas in the forewing. In the genitalia the males are very distinct in the uncus, and in the enlarged and spiny gnathus which appears to have two arms on each side. The female has a large signum with a more sclerotized band towards one end. With the further material now available it appears that this species also occurs on Fiji and New Hebrides, where there are distinct subspecies. These retain essentially the similar genitalia but the adults tend to be larger than the nominate subspecies from Samoa.

BIOLOGY. Not recorded. Adults collected at light in i; ii; iv; vii; x; xi.

DISTRIBUTION. Samoa; Fiji; New Hebrides.

KEY TO THE SUBSPECIES OF *Banisia anthina*

1	Wing 16.5 mm or less	<i>a. anthina</i> (p. 146)
–	Wing 17.5 mm or more	2
2 (1)	Wing 19–24 mm (♂, ♀), usually darker brown. Uncus bifid	<i>a. bella</i> (p. 147)
–	Wing 17.5–20.0 mm (♂, ♀). Usually sandy coloured. Uncus single	<i>a. pervaga</i> (p. 147)

***Banisia anthina anthina* (Tams)**

(Pl. 12, fig. 112; Pl. 37, fig. 288; Pl. 51, fig. 406; Pl. 61, fig. 500; Pl. 67, fig. 580)

Striglina anthina Tams, 1935 : 243. Holotype ♂, SAMOA (BMNH) [examined].

♂. Wing, 14.5–16.0 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-third length of second. Thorax whitish brown. Large scale tuft on tibia with black scales. Forewing pattern as in Pl. 12, fig. 112, whitish brown with black marks, indistinct brown median fascia and several small hyaline areas. Hindwing similar, brown marks below apex of forewing. Veins R_2 – R_5 from cell.

Genitalia ♂ (Pl. 37, fig. 288). Uncus long, slightly bifid at apex. Socii large. Brachia with spiny margins and curved spiny lateral process. Median valve process sclerotized with point. Sacculus process two broad lobes with spines along inner edge. Aedeagus with sclerotized cornuti.

♀. Wing, 15–17 mm. Colour and pattern as in male. Labial palps with third segment half length of second. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 406; Pl. 61, fig. 500; Pl. 67, fig. 580). Anal papillae short. Ostial plate heavily sclerotized. First part of duct broad, then narrowing, strongly convolute. Large signum in bursa with narrow part more strongly sclerotized than rest.

DISCUSSION. Specimens vary from a pale sandy brown colour to a dark orange-brown. The divided uncus in the male separates this from the other subspecies.

BIOLOGY. Not recorded. Adults collected in i; iii; iv; xi.

DISTRIBUTION. Samoa.

MATERIAL EXAMINED.

Holotype ♂, SAMOA: Upolu, Malololelai, 21.iv.1925, 600 m (*Buxton & Hopkins*), BM slide no. 8449, in BMNH.

13 specimens, BMNH.

Bansia anthina pervaga subsp. n.

(Pl. 12, figs 113, 114; Pl. 37, fig. 289; Pl. 61, fig. 501; Pl. 67, fig. 581)

♂. Wing, 17–19 mm. Pattern as in Pl. 12, figs 113, 114, similar to nominate subspecies. Generally grey-brown, although variable and may be a dark reddish brown. Generally larger than the nominate subspecies and intermediate in size between this and *a. bella*.

Genitalia ♂ (Pl. 37, fig. 289). Similar to nominate subspecies, differing mainly in uncus, which is a single structure.

♀. Wing, 19 mm. Larger than nominate subspecies and a more grey-brown rather than red-brown, but otherwise similar.

Genitalia ♀ (Pl. 61, fig. 501; Pl. 67, fig. 581). Similar to the nominate subspecies.

DISCUSSION. This subspecies varies in colour from grey-brown to a rich reddish brown. The most striking difference between this and the other two subspecies is in the shape of the uncus. Generally the apex of the uncus is slightly less acute than in *a. bella*.

BIOLOGY. Not recorded. Adults collected in v; vi; vii; ix.

DISTRIBUTION. New Hebrides.

MATERIAL EXAMINED.

Holotype ♂, NEW HEBRIDES: Aneityum, Red Crest, 13 km NE. Anelgauhat, 360 m, v. 1955 (*Cheesman*), BM slide no. 14509, in BMNH.

Paratypes. NEW HEBRIDES: 4 ♂, data as holotype but collected vi–vii; 1 ♂, Santo, Apuna R., 300 m, 9–11.ix.1971 (*Robinson*); 1 ♂, Santo, Mt Tabwemasana Ridge, 1350 m, 2.ix.1971 (*Robinson*); 1 ♀, Tanna, 10.ix.1925 (*Buxton*). All in BMNH.

Bansia anthina bella subsp. n.

(Pl. 12, figs 115, 116; Pl. 37, fig. 290; Pl. 61, fig. 502; Pl. 67, fig. 582)

♂. Wing, 19–20 mm. Pattern as in Pl. 12, figs 115, 116, reddish or grey-brown, with two or three clear hyaline spots in forewing; in some specimens these are large oval spots similar to the females.

Genitalia. Similar to nominate subspecies but uncus more slender. Median valve process larger and more sclerotized.

♀. Wing, 21-24 mm. Dark reddish brown, hyaline areas in forewing generally larger than in male. Frenulum triple.

Genitalia ♀ (Pl. 61, fig. 502; Pl. 67, fig. 582). Similar to nominate subspecies.

DISCUSSION. This subspecies is much larger and usually darker coloured than the nominate and although variable in pattern, is not as pale as the nominate. The genitalia of both are similar and this subspecies has differentiated less in morphology from the nominate than those of *a. pervaga*.

BIOLOGY. Not recorded. Adults collected in i; iii; iv; vi; ix; xi.

DISTRIBUTION. Fiji.

MATERIAL EXAMINED.

Holotype ♂, FIJI: Suva, 1955 (*Simmonds*), BM slide no. 14487, in BMNH.

Paratypes. FIJI: 1 ♂, data as holotype; 1 ♂, Vunidawa, 24.iii.1933 (*Phillips*); 1 ♂, Vunidawa, 4.iv.1932 (*Phillips*); 1 ♂, Vunidawa, 29.ix.1932 (*Phillips*); 1 ♂, Vunidawa, 7.i.1935 (*Phillips*); 1 ♂, Nandarivatu, 12-14.ix.1969 (*Robinson*); 1 ♂, Nandarivatu, 27-30.ix.1968 (*Robinson*); 1 ♀, Nandarivatu, 6.ix.1966 (*Robinson*); 1 ♀, Nandarivatu, 28.vi.1968 (*Robinson*). All in BMNH.

Banisia insignifica (Rothschild) comb. n.

(Pl. 12, fig. 117; Pl. 38, fig. 294; Pl. 51, fig. 407; Pl. 60, fig. 499; Pl. 67, fig. 583)

Rhodoneura insignifica Rothschild, 1915 : 111. Holotype ♂, NEW GUINEA (BMNH) [examined].
Rhodoneura insignifica Rothschild; Whalley, 1962 : 118.

♂. Wing, 10-13 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-third length second. Thorax grey-brown. Scent brush on hind tibia. Forewing, pattern as in Pl. 12, fig. 117, grey-brown with darker reticulations. Underside paler but more heavily patterned. Underside hindwing with several distinct fascia.

Genitalia ♂ (Pl. 38, fig. 294). Uncus bifid. Socii prominent. Gnathus with two lateral spiny arms and prominent median spiny plate. Median valve process sclerotized with two spines. Sacculus process spiny, juxta small sclerotized plate. Aedeagus without cornutus.

♀. Wing, 11-12 mm. Colour and pattern as male. Labial palp with third segment one-third length second. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 407; Pl. 60, fig. 499; Pl. 67, fig. 583). Anal papillae short. Ostial plate very spiny. Duct narrow, convolute. Large signum in bursa, secondary diverticulum and sac arising from duct just anterior to bursa.

DISCUSSION. This species is similar externally to *idalialis*, lacking the hyaline areas in the forewing and generally having a more prominent fascia on the underside of the forewing. The genitalia of the male are quite distinct with the broad, spiny gnathus and the bifid uncus. This species could be separated into two, and possibly three, subspecies but the series examined is too small for this to be done at present. The single specimen from the Philippines is darker and has a much smaller sacculus process than the New Guinea-Rennell specimens, but more are needed to determine the significance of the variation in this character. The Rennell specimens are

practically indistinguishable from the New Guinea ones, with a tendency to be slightly darker but not subspecifically distinct. The female is very similar to *myrsusalis* but the size of the sclerotized area in the bursa is smaller and the spines round the ostium are generally longer than *myrsusalis*. Otherwise this species is typical of the *myrsusalis* complex.

BIOLOGY. Not recorded. Adults collected in viii; x; xi.

DISTRIBUTION. New Guinea; West Irian; Rennell Island; Philippines.

MATERIAL EXAMINED.

Holotype ♂, WEST IRIAN: Base camp, Utakwa River, sea-level, xi. 1912 (*Wollaston*), BM slide no. 14246, in BMNH.

16 specimens, BMNH; 1 specimen, USNM.

Banisia lobata (Moore) **comb. n.**

(Pl. 12, figs 118–120; Pl. 37, figs 291–293; Pl. 51, figs 408, 409; Pl. 61, figs 503, 504; Pl. 67, figs 584, 585)

Durdara lobata Moore, in Moore & Hewitson, 1882 : 177.

This species is similar to *myrsusalis*, with which it has usually been synonymized. The males have a larger scale tuft on the hind tibia; this, together with the black scales associated with this tuft, are useful external characters for separating *lobata* from *myrsusalis*. In *lobata* there is usually a single oval anterior hyaline area with one or two posterior ones whereas *myrsusalis* generally has two or three areas with one or two posterior.

Three subspecies are recognized here. The Sri Lanka subspecies is separable on size of the anterior process on the median valve process, otherwise it is similar to the nominate one. The main differences between *lobata* and *myrsusalis* is in the male genitalia. In *lobata* the saccus has swollen, lobate, sides, the median valve process has a long slender process and the gnathus is a different shape. No reliable external differences have been found in the female although the single oval anterior hyaline area in the forewing is a good guide. Both *lobata* and *myrsusalis* have specimens without any hyaline areas in the forewing. *B. lobata* could be separated into more subspecies than there are in this work but the differences are slight and further investigation of their significance is needed.

BIOLOGY. Not recorded.

DISTRIBUTION. North India; Sri Lanka; Malaya; Indonesia: Sulawesi, Bali, Borneo; Solomon Is.; Goodenough Is.; New Guinea; New Caledonia; Philippines.

KEY TO THE SUBSPECIES OF *Banisia lobata* (males)

- | | | |
|---|---|---------------------------|
| 1 | Sacculus process tooth-like. | |
| | Median valve process heavily sclerotized with curved basal processes strongly sclerotized | 1. caesia (p. 151) |
| - | Sacculus process a small lobe | 2 |

- 2 Anterior process of median valve process long, slender *l. ceylonensis* (p. 151)
 - Anterior process of median valve process short *l. lobata* (p. 152)

Banisia lobata lobata (Moore)

(Pl. 12, fig. 118; Pl. 37, fig. 291; Pl. 51, fig. 408; Pl. 61, fig. 503; Pl. 67, fig. 584)

Durdara lobata Moore, in Moore & Hewitson, 1882 : 177. Holotype ♀, INDIA (BMNH) [examined].

Striglina lobata Moore; Pagenstecher, 1892 : 39.

[*Rhodoneura myrsusalis* Walker; Hampson, 1897 : 618. Misidentification.]

[*Rhodoneura myrsusalis* Walker; Dalla Torre, 1914 : 27. Misidentification.]

♂. Wing, 10-14 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-third length second. Thorax grey-brown. Scale-tuft on hind tibia with long black scales. Forewing, pattern as in Pl. 12, fig. 118, grey-brown with reddish tinge, three or four small hyaline areas in forewing. Hindwing, similar, without hyaline areas. Underside strongly patterned with subapical brown mark and brown marks in median and costal area.

Genitalia ♂ (Pl. 37, fig. 291). Uncus bifid. Socii prominent. Brachia not meeting in mid-line, each with large patch of spines. Juxta a small plate. Sacculus process two small lobes. Median valve process with long slender process and two small processes. Sacculus with prominent lateral lobes. Aedeagus with large sclerotized cornutus.

♀. Wing, 12.5-13.5 mm. Pattern as male, usually with more reddish tinge to wing. Third segment of labial palp one-half length second. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 408; Pl. 61, fig. 503; Pl. 67, fig. 584). Anal papillae short. Ostium and ostial plate strongly sclerotized and covered with spines. Duct with small sclerotized part near origin of ductus seminalis, rest of duct of bursa convolute. Large sclerotized signum in bursa. Secondary sac arising from duct anterior to bursa and broad diverticulum on the bursa.

DISCUSSION. Separable externally from *myrsusalis* by the large black tufts on the hind tibia and by pattern of the hyaline areas in the forewing. At present this subspecies (*lobata*) is known from north India, Malaya, Sulawesi, New Guinea, Solomon Islands and the Philippines, but it will probably be separated into further subspecies when more is known of the ecology and biology of the species. There are small differences between specimens from the various geographical areas, but only the more striking subspecies have been separated here. This species is separated from *placida*, which has a similar external pattern, by the large development of the sacculus process and the median process, in which they are similar to *myrsusalis*, differing from this species amongst other things in the lobate saccus.

BIOLOGY. Not recorded. Adults collected in India in ii; iii; v; viii; ix; xii, in Solomon Is., xii, in New Guinea in i; ii; iii; iv, in Malaya in i; iii; iv; v; vi; xi; xii, in Sulawesi in xi.

DISTRIBUTION. North India; Malaya; Indonesia: Borneo, Bali; Sulawesi, West Irian; Solomon Is.: Guadalcanal; Louisade Archipelago: Sudest Is.; New Guinea; Philippines.

MATERIAL EXAMINED.

Holotype ♀, INDIA: ^{Khasia Hills} Calcutta (*Staudinger* coll.), BM slide no. 14529, in MNHU.
 81 specimens, BMNH.

***Banisia lobata caesia* subsp. n.**

(Pl. 12, fig. 119; Pl. 37, fig. 292; Pl. 51, fig. 409; Pl. 61, fig. 504; Pl. 67, fig. 585)

Durdara lobata Moore, in Moore & Hewitson, 1882 : 177.

Wing, 12–14 mm. As nominate subspecies but generally grey and with more prominent black scales on the hind tibia; the underside is generally less marked than in the nominate subspecies.

Genitalia ♂ (Pl. 37, fig. 292). As nominate subspecies, differing mainly in the shape of the gnathus, the median valve and sacculus processes.

♀. Wing, 13.5 mm. As nominate subspecies but greyer and lacking the reddish tinge.

Genitalia ♀ (Pl. 51, fig. 409; Pl. 61, fig. 504; Pl. 67, fig. 585). Similar to nominate subspecies.

DISCUSSION. This subspecies from New Caledonia seems to be constant in the grey rather than brown colour and to lack the red suffusion of the nominate subspecies. There are also the small differences in the male genitalia.

BIOLOGY. Not recorded. Adults collected in v; vi; vii.

DISTRIBUTION. New Caledonia.

MATERIAL EXAMINED.

Holotype ♂, NEW CALEDONIA: R. Bleue, 180 m, site 10, 27.v.1971 (*Holloway*), BM slide no. 14429, in BMNH.

Paratypes. NEW CALEDONIA: 1 ♀, Sarraméa, 160 m, site 29 (*Holloway*); 1 ♂, Grottes de Koum, 20 m, site 43, 11.vii.71 (*Holloway*); 1 ♂, M. des Sources, 500 m, site 14 (*Holloway*). All in BMNH.

***Banisia lobata ceylonensis* subsp. n.**

(Pl. 12, fig. 120; Pl. 37, fig. 293)

♂. Wing, 13 mm. Colour and pattern as nominate subspecies.

Genitalia ♂ (Pl. 37, fig. 293). As nominate subspecies but differing in size of process on valve which is larger and more heavily sclerotized than in the nominate subspecies.

♀. Unknown.

DISCUSSION. This subspecies differs slightly from the nominate one. It is interesting that it occurs together with *myrsusalis* in Sri Lanka, but it can be separated from that species by the single fenestration instead of the two or three in the forewing of *myrsusalis*. This subspecies is described on the basis of a single specimen.

BIOLOGY. Not recorded. Adults collected in xi.

DISTRIBUTION. Sri Lanka.

MATERIAL EXAMINED.

Holotype ♂, SRI LANKA, Maskeliya, xi. (*Mackworth*), BM slide no. 14467, in BMNH.

***Banisia placida* sp. n.**

(Pl. 13, fig. 121; Pl. 38, fig. 295; Pl. 51, fig. 410; Pl. 61, fig. 505; Pl. 67, fig. 586)

♂. Wing, 12–14 mm. Vertex purplish brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length of second. Thorax purplish brown. Hind tibia with large scent scale patch with darker scales near distal end of tibia. Forewing, pattern as in Pl. 13, fig. 121, purplish brown with black spots and two hyaline areas, separated by small yellowish spots. Hindwings similar, without hyaline area, strong reddish tinge near margin. Underside strongly patterned. Dark apical mark and dark median mark from costa with dark patch from hind margin in median area. Hindwings with numerous transverse fascia. $Sc + R_1$ and R_s just touching.

Genitalia ♂ (Pl. 38, fig. 295). Uncus bifid. Socii present. Brachia with broad lobes near middle and many spines along edge. Sacculus process strong and serrate. Saccus with lobate sides. Aedeagus with very long sclerotized cornutus.

♀. Wing, 12 mm. Colour and pattern as male. Labial palps with third segment half length of second. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 410; Pl. 61, fig. 505; Pl. 67, fig. 586). Anal papillae short. Ostial plates and ostium strongly spiny. First part of ductus bursae broad. Large signum in bursa not proportionally as large in relation to total bursa size as in *myrsusalis*.

DISCUSSION. Externally this species is indistinguishable from *lobata*. The shape of the sacculus process and the median valve process in the male, the broad duct and relatively small signum (in proportion to the total bursa surface area) in the female, separate this species from *lobata*. Externally it can be separated from *myrsusalis* by the single anterior hyaline area in the forewing, with one or two areas behind it (*myrsusalis* has two or three posterior hyaline areas). No difference could be found between specimens from the Bismarck Archipelago-Solomons and the Australian specimens. So far no specimens have been seen from New Guinea but one female, probably this species, was found in material from New Hannover.

BIOLOGY. Not recorded. Adults collected in Solomon Is. in i; in New Britain in i; ii; iii; iv; in Rook I. in viii; in New Ireland in xii.

DISTRIBUTION. Bismarck Archipelago; New Britain, New Ireland, New Hannover, Rook I.; Solomon Is.: Guadalcanal; Australia: Queensland.

MATERIAL EXAMINED.

Holotype ♂, BISMARCK ARCHIPELAGO: New Ireland, xii. 1923 (*Eichhorn*), BM slide no. 14440, in BMNH.

Paratypes. NEW BRITAIN: 3 ♂, 1 ♀, Talešā, ii. 1925 (*Eichhorn*). ROOK I.: 1 ♂, viii. 1913 (*Meek*). AUSTRALIA: 3 ♂, Queensland, Cedar Bay S. of Cooktown (*Meek*). All in BMNH.

Material not included in type-series. NEW HANNOVER: 1 ♀, iii. 1923 (*Meek*), in BMNH. SOLOMON IS.: Guadalcanal, Tenaru R., i. 1945 (*Bohart*), in Californian Academy of Science.

***Banisia minuta* (Whalley) comb. n., stat. n.**

(Pl. 13, fig. 122; Pl. 38, fig. 296; Pl. 51, fig. 411; Pl. 61, fig. 506; Pl. 67, fig. 587)

Rhodoneura hyaena minuta Whalley, 1962 : 118. Holotype ♂, RENNELL I. (BMNH) [examined].

♂. Wing, 11–12 mm. Vertex whitish brown. Antennae minutely ciliate. Labial palp

with third segment one-quarter length of second. Thorax yellowish brown. Forewing, pattern as in Pl. 13, fig. 122, whitish brown with darker areas and hyaline spot in centre of wing. Hindwing, similarly coloured, without spot. Underside more heavily patterned.

Genitalia ♂ (Pl. 38, fig. 296). Uncus bifid. Gnathus with two patches of spines on broadly sclerotized part. Valve narrowing to apex. Large, toothed median process with several long teeth. Saccus process toothed. Aedeagus with rows of cornuti.

♀. Wing 11 mm. Colour and pattern as male. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 411; Pl. 61, fig. 506; Pl. 67, fig. 587). Anal papillae short. Ostium strongly sclerotized. Duct convolute. Large signum in bursa.

DISCUSSION. This species is related to *B. placida* but can be distinguished by differences in the male genitalia. It was originally described as a subspecies of *Rhodoneura hyaena* which is also transferred to the genus *Banisia* (p. 159). *B. minuta* seems to have a very restricted distribution and to have developed in isolation on Rennell Island, possibly from a common ancestor with *B. placida*.

BIOLOGY. Not recorded. Adults collected in xi.

DISTRIBUTION. Rennell I. (Solomon Is.).

MATERIAL EXAMINED.

Holotype ♂, RENNELL I.: Hutuna, 1-8.xi.1953 (*Bradley*), BM slide no. 14416, in BMNH.

5 specimens, BMNH.

Banisia idalialis (Walker) **comb. n., sp. rev.**

(Pl. 13, fig. 123; Pl. 38, fig. 297)

Pyralis idalialis Walker, 1859 : 903. LECTOTYPE ♀, here designated, SARAWAK (UM) [examined].

?*Stiglina idalialis* Walker; Meyrick, 1894 : 13.

[*Rhodoneura myrsusalis* Walker; Hampson, 1897 : 618. Misidentification.]

[*Rhodoneura myrsusalis* Walker; Dalla Torre, 1914 : 27. Misidentification.]

♂. Wing, 12 mm. Vertex grey-brown. Third segment labial palp one-third length of second. Thorax grey-brown. Forewing, pattern as in Pl. 13, fig. 123, grey-brown with darker irrorations, slightly mauvish tip. Hindwing similar, no hyaline area on fore- or hindwings. Underside, paler, more patterned, median orange-brown fascia and subapical brown mark.

Genitalia ♂ (Pl. 38, fig. 297). Uncus bifid, apical processes strongly curved. Gnathus sclerotized with small teeth. Valve narrowing to apex, median process sclerotized with two large curved spines. Saccus process very large, sclerotized and toothed. Aedeagus with sclerotized cornutus.

♀. Wing, 13 mm. Colour and pattern as male but with small hyaline spot in forewing. Underside as male.

DISCUSSION. Only one male specimen is known and the single female specimen lacks an abdomen. The genitalia are different from the *myrsusalis-lobata* complex. The female lectotype lacks an abdomen and is associated with the male on pattern, although slightly larger. Walker, in the original description, mentions two specimens, one a female from Sarawak, the other a male from Ceylon (Sri Lanka). The latter specimen has not been traced and therefore the female from Sarawak has been

designated as lectotype. There is an element of doubt about the correct association of this male with the lectotype but until more material is available, this association is preferable to describing the male as a new species.

BIOLOGY. Not recorded.

DISTRIBUTION. Indonesia: Borneo; Malaysia: Sarawak.

MATERIAL EXAMINED.

Lectotype ♀, SARAWAK, in UM (lacks abdomen).

1 specimen, BMNH.

Banisia myrsusalis (Walker)

(Pl. 13, figs 124-127; Pl. 39, figs 300-303; Pl. 52, figs 413-416; Pl. 62, figs 509-512;
Pl. 67, figs 588-590)

Pyrallis myrsusalis Walker, 1859 : 892.

This species is widespread over Africa (south of Sahara), Madagascar, South India, Thailand, Java, Australia, in Central and South America and into the U.S.A. Although there is some variation in the wing pattern over this wide range I have been unable to find any satisfactory morphological characters for the separation of the African-Indian specimens while even the differences between these and the New World specimens are slight. Such differences that occur are in the male genitalia; no reliable differences in the female genitalia having been found. The species was described originally from the Dominican Republic (St Domingo) by Walker. The specimens from this island differ slightly from those on the mainland of South America.

One of the problems of this species is it is practically tropicopolitan and there is the possibility that it has been widely distributed by artificial introductions. This was suggested, and the details reviewed by Whalley (1971a : 68). Briefly, the host plant of the larva (*Achras zapota*, Sapotaceae) has been widely introduced to different continents for many years and species of Sapotaceae are widespread as possible hosts for the caterpillars on different continents.

The subspecies recognized here are separated on the shape of the median process of the valve or the size of the sacculus process. These small differences emphasize how little the species has differentiated over an enormous range, suggesting that perhaps the spread is relatively recent.

B. myrsusalis can only be separated from its sister species, *lobata*, by the male genitalia, although there are some external differences which can be used as a guide. The tufts of scales on the hind tibia of *lobata* are generally larger than in *myrsusalis* and have black scales in them. Although a number of specimens of *myrsusalis* were available from various West Indian islands, no males were found and thus the exact subspecies cannot be reliably determined.

BIOLOGY. Larvae feed on *Achras zapota* (Sapotaceae).

DISTRIBUTION. South America; West Indies; Africa; India; Sri Lanka; Thailand; Indonesia; Admiralty Is.; Australia.

KEY TO THE SUBSPECIES OF *Banisia myrsusalis* (males)

- 1 Median valve process (Pl. 39, fig. 300) not reaching margin of valve *m. myrsusalis* (p. 155)
 — Median valve process reaching hind margin of valve 2
 2 (1) Median valve process broad. Brachia with teeth along most of edge *m. sumatrensis* (p. 157)
 — Median valve process narrow. Brachia with teeth along only short part of edge 3
 3 (2) Sacculus process reaching roughly half way to median valve process *m. cinereola* (p. 156)
 — Sacculus process reaching almost to median valve process *m. elaralis* (p. 156)

Banisia myrsusalis myrsusalis (Walker)

(Pl. 13, fig. 124; Pl. 39, fig. 300; Pl. 52, fig. 413; Pl. 62, fig. 509; Pl. 67, fig. 588)

Pyralis myrsusalis Walker, 1859 : 892. Holotype ♂, DOMINICAN REPUBLIC (BMNH) [examined]

Rhodoneura myrsusalis Walker; Hampson, 1897 : 618.

Rhodoneura myrsusalis Walker; Dalla Torre, 1914 : 27.

Banisia myrsusalis Walker; Whalley, 1971a : 59.

Striglina immaculata Möschler, 1890 : 123. Holotype, PUERTO RICO (not traced).

Striglina radiata Pagenstecher, 1892 : 41. Holotype ♂, PUERTO RICO (MNHU) [examined].

♂. Wing, 11.5–12.0 mm. Vertex grey-brown, irrorate with white. Antennae minutely ciliate. Labial palp with third segment one-third length of second. Thorax grey-brown, irrorate with black. Hind tibia with scale tuft. Outer spur of distal pair half length of inner. Forewing, pattern as in Pl. 13, fig. 124, reddish brown strongly irrorate with black, with small hyaline spots. Hindwing, colour and pattern as forewing, without hyaline areas. Underside with purplish tinge and strongly patterned under forewing, paler than upperside.

Genitalia ♂ (Pl. 39, fig. 300). Uncus bifid, socii with large scale tufts. Brachia with tufts of spines subapically. Median valve process toothed, not reaching posterior margin of valve. Sacculus process toothed, out-curved. Juxta a small plate, lightly sclerotized. Aedeagus with toothed edge.

♀. 11.0–12.5 mm. Colour and pattern as male, but generally more red on upperside of wing. Labial palp with third segment one-half length of second. Frenulum triple.

Genitalia ♀ (Pl. 52, fig. 413; Pl. 62, fig. 509; Pl. 67, fig. 588). Ostium and VIIIth segment spiny. Duct of bursa lightly spined. Bursa with prominent signum made up of rows of plates. Small rounded secondary sac attached to bursa and another sac attached to duct where it arises from bursa.

DISCUSSION. Previously (Whalley, 1971a : 60) the term juxta was used for the whole of the process at the base of the valve. Further research has shown that these processes originate from the base of the sacculus and that the juxta is very small. Specimens of this subspecies vary from grey to reddish brown; some lack the hyaline areas in the forewings. This subspecies is basically separated from the others by the shorter median valve process which does not reach the posterior (morphologically ventral) margin. The distribution of this species in the islands in the West Indies is not known. It occurs on Cuba and Puerto Rico where males have been examined, but the subspecific identity of those on the other islands is not known. Two specimens (♂, ♀) are known from Florida, U.S.A. (C. P. Kimball coll.).

DISTRIBUTION. Dominican Republic; Dominica; Cuba; Puerto Rico; U.S.A. (Florida, Key Largo).

MATERIAL EXAMINED.

Holotype ♂ (*myrsusalis*), [DOMINICAN REPUBLIC], St Domingo, BM slide no. 8428, in BMNH. Holotype ♂ (*radiata*), PUERTO RICO, BM slide no. 14530, in MNHU.

6 specimens from Dominican Republic, in AMNH; 3 specimens from Cuba in BMNH; 6 specimens from Dominica, in BMNH; 2 specimens from U.S.A., C. P. Kimball Coll.

***Banisia myrsusalis cinereola* (Felder & Rogenhofer) comb. n., stat. n.**

(Pl. 13, fig. 125; Pl. 39, fig. 301; Pl. 52, fig. 414; Pl. 62, fig. 510; Pl. 67, fig. 589)

Siculodes cinereola Felder & Rogenhofer, 1875: pl. 134, fig. 8. Holotype ♀, VENEZUELA (BMNH) [examined].

Striglina scallula Guenée, 1877: 41. LECTOTYPE ♂, here designated, BRAZIL (BMNH) [examined].

Rhodoneura myrsusalis (Walker); Dalla Torre, 1914: 27.

Banisia myrsusalis (Walker); Whalley, 1967: 47.

Banisia myrsusalis (Walker); Whalley, 1971a: 58.

Rhodoneura myrsusalis (Walker); auct., partim.

♂. Wing, 11.5–13.5 mm. Similar to nominate subspecies. Differentiation in key, p. 155. Genitalia ♂ (Pl. 39, fig. 301). As nominate subspecies. Median valve process reaches valve margin.

♀. Wing, 12–14 mm. Similar to nominate subspecies.

Genitalia ♀ (Pl. 52, fig. 414; Pl. 62, fig. 510; Pl. 67, fig. 589). Similar to nominate subspecies.

DISCUSSION. This subspecies is widespread in the warmer parts of South America and extends northwards to southern Mexico (Mt Soconusco, Jalapa). Although there is some variation between specimens from different localities, no constant differences were found and those noted were small. This is a remarkably constant subspecies over a wide area which has considerably different local conditions.

BIOLOGY. Not recorded. Adults collected in Bolivia in ii; in Brazil in iii; vii; ix; xi; in Costa Rica in viii; in Belize in xii; in Mexico in vii; in Surinam and the Guyanas in iii; iv.

DISTRIBUTION. Venezuela; Bolivia; Paraguay; Brazil; Ecuador; Guyanas; Surinam; Mexico; Costa Rica; Belize.

MATERIAL EXAMINED.

Holotype ♀ (*cinereola*), VENEZUELA (Felder coll.), in BMNH (abdomen glued on, possibly not original). Lectotype ♀ (*scallula*), BRAZIL (Guenée coll.), in BMNH (abdomen missing).

53 specimens, BMNH.

***Banisia myrsusalis elaralis* (Walker)**

(Pl. 13, fig. 126; Pl. 39, fig. 302; Pl. 52, fig. 415; Pl. 62, fig. 511; Pl. 67, fig. 590)

Pyralis elaralis Walker, 1859: 901. Holotype ♂, SRI LANKA (BMNH) [examined].

Durdara pyraliata Moore in Moore & Hewitson, 1882: 177. Holotype ♂, INDIA (MNHU) [examined].

Durdara zonula Swinhoe, 1885 : 469. LECTOTYPE ♀, here designated, INDIA (BMNH) [examined].

Rhodoneura myrsusalis (Walker); Dalla Torre, 1914 : 27.

Banisia myrsusalis elaralis (Walker); Whalley, 1967 : 47.

Banisia myrsusalis elaralis (Walker); Whalley, 1971a : 60.

Rhodoneura myrsusalis (Walker); auct., partim.

♂. 11.5–12.5 mm. Similar to nominate subspecies, differing in size of median process of valve of the male.

Genitalia ♂ (Pl. 39, fig. 302). As nominate subspecies, differing in proportional length of median valve process.

♀. 11.5–13.0 mm. As nominate subspecies.

Genitalia ♀ (Pl. 52, fig. 415; Pl. 62, fig. 511; Pl. 67, fig. 590). As nominate subspecies.

DISCUSSION. From *m. cinereola* this subspecies can be separated by the relative lengths of the sacculus processes and by the smaller scale tuft on the hind tibia. The sacculus process in *m. elaralis* is long and reaches to the median valve process. Externally *m. elaralis* is virtually indistinguishable from the other subspecies. This relative lack of differentiation between specimens from widely separated geographic localities, as far apart as Thailand and Ecuador, suggests that the American and Old World subspecies are only relatively recently separated. Only a single specimen has been seen from Australia, from Cairns (Queensland) collected in 1962 and in spite of examining long series of the *myrsusalis*-complex from New Guinea, all have proved to be *B. lobata*, thus at present *B. myrsusalis elaralis* is not known from New Guinea.

BIOLOGY. Larvae bred from *Achras zapota* (Sapotaceae).

DISTRIBUTION. Sierra Leone; Ivory Coast; Ghana; Nigeria; Zaire; Congo (Brazzaville); Uganda; Tanzania; Kenya; Mozambique; Malawi; Zambia; Rhodesia; South Africa; India (south); Sri Lanka; Thailand; Indonesia: Sumatra, Bali; Bismarck Archipelago: Admiralty Is.; Australia.

MATERIAL EXAMINED.

Holotype ♂ (*elaralis*), SRI LANKA, in BMNH (specimen lacks abdomen). Holotype ♂ (*pyraliata*), INDIA, in MNHU. Lectotype ♀ (*zonula*), INDIA, Bombay, in BMNH. 70 specimens, BMNH.

Banisia myrsusalis sumatrensis subsp. n.

(Pl. 13, fig. 127; Pl. 39, fig. 303; Pl. 52, fig. 416; Pl. 62, fig. 512)

Rhodoneura myrsusalis auct., partim.

♂. Wing, 11–12 mm. As nominate subspecies but lacking hyaline areas of forewing. Underside less heavily patterned, purplish brown.

Genitalia ♂ (Pl. 39, fig. 303). Uncus bifid, long, slender. Brachia with spines all along length. Median valve process broad, with several teeth. Sacculus process with only three or four apical teeth.

♀. Wing, 10.5 mm. Similar to male, but more patterning on underside, and more red on underside of forewing.

Genitalia ♀ (Pl. 52, fig. 416; Pl. 62, fig. 512). As nominate subspecies.

DISCUSSION. Specimens of this subspecies are more slender than the others and lack the hyaline areas found in most of the other subspecies. The female, if correctly associated, is indistinguishable (except in size) from the nominate subspecies. The male genitalia are strikingly different from the others due mainly to the enlarging of the area of tothing on the brachia.

BIOLOGY. Not recorded. Adults collected in vii; viii; x, at 1200–1500 m.

DISTRIBUTION. Indonesia: Sumatra.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sumatra, N. Korintji Valley, 1500 m (*Pratt*), ^{ix}♂.x.[19]21, BM slide no. 14446, in BMNH.

Paratypes. INDONESIA: 1 ♂, Sumatra, Dempo, 1200 m, vii. 1923 (*Brooks*), in BMNH; 1 ♀, Sumatra, Lebong Tandai, 1920–23 (*Brooks*), in BMNH; 1 ♀, Sumatra, Medan, Dell (*de Bussy*), in USNM.

Banisia tibiale (Fryer)

(Pl. 13, fig. 128)

Rhodoneura tibiale Fryer, 1912 : 20. LECTOTYPE ♂, SEYCHELLES (BMNH) [examined].

[*Rhodoneura elaralis* (Walker); Hampson, 1897 : 618. Misidentification.]

Rhodoneura tibiale Fryer; Legrand, 1965 : 88.

Banisia tibiale Fryer; Whalley, 1971a : 61.

This species is known only from the Seychelles where it appears to have been derived from *B. myrsusalis elaralis*. The two species are very similar and an account of their possible relationship is given by Whalley (1971a).

Banisia apicale (Fryer)

(Pl. 13, fig. 129)

Rhodoneura apicale Fryer, 1912 : 21. Holotype ♂, SEYCHELLES (BMNH) [examined].

Rhodoneura apicale Fryer; Legrand, 1965 : 88.

Banisia apicale (Fryer); Whalley, 1971a : 62.

This species was dealt with by Whalley (1971a); no further specimens were available for examination.

Banisia aldabrana (Fryer)

(Pl. 13, figs 130, 131)

Rhodoneura aldabrana Fryer, 1912 : 21.

Rhodoneura aldabrana Fryer; Legrand, 1965 : 88.

Banisia aldabrana Fryer; Whalley, 1971a : 63.

This species was dealt with by Whalley (1971a) where it was separated into two subspecies; no further specimens have been examined.

Banisia aldabrana aldabrana Fryer, 1912 : 21. Lectotype ♂, ALDABRA (BMNH) [examined].
(Pl. 13, fig. 130.)

Banisia aldabrana cana Whalley, 1971a : 64. Holotype ♂, SOUTH AFRICA (BMNH) [examined].
(Pl. 13, fig. 131.)

Banisia hyaena (Warren)

(Pl. 13, fig. 132; Pl. 38, fig. 298; Pl. 51, fig. 412; Pl. 62, fig. 513; Pl. 67, fig. 591)

Canaea hyaena Warren, 1905a : 6. LECTOTYPE ♂, here designated, SOLOMON IS. (BMNH) [examined].

Rhodoneura hyaena (Warren); Dalla Torre, 1914 : 24.

Rhodoneura hyaena (Warren); Whalley, 1962 : 118.

♂. Wing, 14–15 mm. Vertex brown. Antennae minutely ciliate. Third segment of labial palp one-quarter length second. Thorax yellow-brown. Tibia with long scale tufts. Forewing, pattern as in Pl. 13, fig. 132, pale grey-brown, black reticulations and oval hyaline area. Indistinct median fascia. Hindwing similar, without hyaline area. Underside more patterned with reddish brown on forewing, particularly in median area. Hindwing paler, transverse fascia distinct.

Genitalia ♂ (Pl. 38, fig. 298). Uncus bifid, socii present. Gnathus a slightly thickened sclerotized loop. Valve with prominent median process, hooked. Sacculus process sclerotized, curved and toothed. Aedeagus with patch of spines on manica and large sclerotized cornutus.

♀. Wing, 15–17 mm. Colour and pattern as male. Labial palps with third segment slightly more than half length of second segment. Frenulum triple.

Genitalia ♀ (Pl. 51, fig. 412; Pl. 62, fig. 513; Pl. 67, fig. 591). Anal papillae short. Ostial plate sclerotized and very spiny. Ostium broad, duct spiny, slightly sclerotized in first part, convolute. Bursa with secondary sac and large signum. Signum not extending much above middle of bursa.

DISCUSSION. The lectotype is rather a dark specimen whereas most of the rest of the series are pale coloured. One female specimen has a frenulum with four bristles; the other ones are three-bristled. This species is closest to *B. plagifera* but differs in size and in details in the genitalia. *B. hyaena* appears to be truly endemic in the Solomon Islands. In the female the size of the signum is smaller in proportion to the surface area of the bursa than in the other species, although the shape of the signum is similar.

BIOLOGY. Not recorded. Adults collected in xi.

DISTRIBUTION. Solomon Is.: Gizo I.

MATERIAL EXAMINED.

Lectotype ♂, SOLOMON IS.: Guizo [Gizo] I., xi. 1903 (*Meek*), BM slide no. 14249, in BMNH.

8 specimens, BMNH.

Banisia plagifera (Butler) **comb. n.**

(Pl. 14, figs 133, 134; Pl. 38, fig. 299; Pl. 52, fig. 417; Pl. 61, fig. 507; Pl. 68, fig. 592)

Microsca plagifera Butler, 1886 : 420. Holotype ♂, TONGA (BMNH) [examined].

Siculodes plagifera (Butler); Pagenstecher, 1892 : 120.

[*Rhodoneura myrtaea* Drury; Hampson, 1897 : 610. Misidentification.]²

[*Rhodoneura myrtaea* Drury; Dalla Torre, 1914 : 28. Misidentification.]

Rhodoneura incarnatalis Rebel, 1915 : 132. Holotype, SAMOA (not traced). [Synonymized by Tams, 1935 : 245.]

Rhodoneura incarnatalis ab. *fenestralis* Rebel, 1915 : 132. Holotype, SAMOA (not traced).

Rhodoneura plagifera (Butler); Tams, 1935 : 245.

♂. Wing, 11 mm. Vertex grey-brown. Antennae minutely ciliate. Third segment labial palp one-third length second. Thorax reddish brown. Large scale tuft on tibia. Forewing, pattern as in Pl. 14, figs 133, 134, purplish brown with orange-brown areas from median area of costa along to near base of forewing. Several hyaline areas and black spots in forewing. Hindwings purplish brown without hyaline areas. Underside forewing purplish with brown terminal mark near apex of wing, and brown mark in median area. Hindwing pinkish red with black spots.

Genitalia ♂ (Pl. 38, fig. 299). Uncus bifid, socii present. Brachia slightly sclerotized, without spines. Median process of valve with several prominent processes. Sacculus process toothed, juxta small. Aedeagus with long sclerotized cornutus, slightly serrate at margin.

♀. Wing, 12.0-13.5 mm. Pattern as male. Frenulum triple. Third segment of labial palp one-half length second.

Genitalia ♀ (Pl. 52, fig. 417; Pl. 61, fig. 507; Pl. 68, fig. 592). Anal papillae short. Ostium spiny, sclerotized. First part of duct broad, rest convolute. Signum in bursa, with additional smaller, more sclerotized, patch.

DISCUSSION. This species tends to be more reddish than the others with an orange-red patch on the forewing; in some females this is a very bright orange-red patch. The holotype (Tonga) agrees closely with the Fijian specimens in genitalia but these latter are greyer than the Tongan specimens and may be subspecifically distinct. The series of specimens from the New Hebrides are peculiar. The males have genitalia which are indistinguishable from the Samoan specimens but the only two females, which externally look rather like *myrsusalis*, have genitalia which are in fact similar to that species. Although the males and females were apparently collected together I think that it is possible that both *plagifera* and *myrsusalis* occur on the New Hebrides and until further material is available, I am treating the New Hebrides specimens, which look slightly smaller than the Samoan males, may be a subspecies. Males and females from Omura, Ogasawara I. [Bonin Is.] which I examined through the kindness of Dr H. Inoue are certainly a new subspecies of *plagifera*.

BIOLOGY. Not recorded. Adults collected in New Hebrides in iv; in Samoa in i; v; xi; in Fiji in i.

DISTRIBUTION. Samoa; New Hebrides; Fiji; Tonga; Ogasawara Is.

MATERIAL EXAMINED.

Holotype ♀, TONGA, BM slide no. 8384, in BMNH.

4 specimens from Samoa, 2 specimens from New Hebrides, 2 specimens from Fiji, all in BMNH. 2 specimens from Ogasawara Is., in coll. H. Inoue.

***Banisia cognata* sp. n.**

(Pl. 14, fig. 135; Pl. 39, fig. 304)

♂. Wing, 12 mm. Vertex brown. Antennae minutely ciliate. Labial palp with third segment one-third length second. Thorax grey-brown. Large scale tuft on tibia with black scales at distal end. Forewing, pattern as in Pl. 14, fig. 135, grey-brown with indistinct black spots and an indistinct median fascia. Underside, paler, brown mark below apex of forewing, median fascia more distinct.

Genitalia ♂ (Pl. 39, fig. 304). Uncus bifid. Gnathus a lightly sclerotized loop. Basal valve process short, slightly toothed. Saccus broad, sclerotized. Median valve process a curved plate with smaller processes. Saccus slightly lobate. Aedeagus without cornuti.

♀. Unknown.

DISCUSSION. The prominent black scales on the hind tibia and slightly lobate saccus suggest that this species is related to the *lobata-placida* complex. The affinities of this species are not clear but it is probably closest to *placida* from the Bismarck Archipelago. *B. cognata* shows several distinct features which have been developed in isolation on the Marianas.

BIOLOGY. Not recorded. Adults collected in v; x.

DISTRIBUTION. Mariana Islands.

MATERIAL EXAMINED.

Holotype ♂, MARIANA IS.: Saipan (*Large*), 19.x.1947, BM slide no. 14420, in BPBM.

Paratype. MARIANA IS.: 1 ♂, Saipan, 1.5-3 km E. of Tanapag, 1.v.[19]45 (*Dybas*), at light, in USNM.

THE *ANTIOPA*-GROUP

The genus *Neobanisia* was described for *N. antiopa* from Madagascar. Subsequently several more species were described in it from Africa (Whalley, 1971a : 52), but now, with the examination of species of *Banisia* on a world basis, the separate status of *Neobanisia* can no longer be maintained. Nevertheless the African species in this genus form a reasonably homogeneous group, the *antiopa*-group, to which two further American species are added here (*B. furva*, *B. venustula*). The former species has several characteristics of the *antiopa*-group although not as closely related as the African species are amongst themselves. The second species is placed here tentatively, although possibly should be separated when more is known about it. Some aspects of the group are similar to species of *Canaea* (p. 139) but further information on their biology is needed before closer comparisons can be made.

The *antiopa*-group contains the following species all of which are dealt with by Whalley (1971a).

Banisia fuliginea (Whalley), 1971a : 53, **comb. n.** (Pl. 14, fig. 139). Holotype ♂, GHANA (BMNH) [examined].

B. joccatia (Whalley), 1971a : 54, **comb. n.** (Pl. 14, fig. 141). Holotype ♂, SOUTH AFRICA (BMNH) [examined].

B. clathrula (Guenée), 1877 : 285, **comb. n.** (Pl. 14, fig. 142). Holotype ♀, MAURITIUS (BMNH) [examined].

B. inoptata (Whalley), 1971a : 56, **comb. n.** (Pl. 14, fig. 143). Holotype ♀, GHANA (BMNH) [examined].

B. zamia (Whalley), 1971a : 57, **comb. n.** (Pl. 14, fig. 144). Holotype ♂, SOUTH AFRICA (BMNH) [examined].

B. antiopa (Viette), 1954 : 120, **comb. n.** (Pl. 14, fig. 140). Holotype ♂, MADAGASCAR (MNHN) [examined].

The group also contains the following two species described here: *B. furva* (Warren) and *B. venustula*.

***Banisia furva* (Warren) comb. n.**

(Pl. 1, fig. F; Pl. 2, fig. J; Pl. 14, figs 136–138; Pl. 40, figs 305–308; Pl. 52, figs 419–421; Pl. 62, figs 514–516)

Rhodoneura furva Warren, 1905c : 350.

This species was described by Warren from French Guiana. Examination of specimens from as far apart as Peru and Florida show that, although this species can be separated into subspecies, the distinctions which are clear at the limits of the range show a distinct gradation between one subspecies and the next; it is obviously a species which would repay a biological study. The extremes of the species at each end of the range are sufficiently distinct to be considered practically specific, but with the intermediates one is obviously dealing with a cline.

This species generally varies from yellow-brown to orange-brown, usually with a distinct oval hyaline area in the forewing. The genitalia of the male, with the curious uncus and the process on the costal margin near the base are characteristic of this species. The sacculus process is quite strongly toothed, the juxta itself being a lightly sclerotized plate with two tubular processes, very variable in size in different subspecies. The female generally has two long patches of spines which run almost the length of one side of the bursa. These look rather like the remains of the more typical signum found in other species of *Banisia*. Variation in the presence or absence of the hyaline spots in specimens of the same subspecies is common, but could not be linked with any obvious seasonal or other data available. Generally the female lacks this hyaline area while it is usually present in the males. A small series labelled 'S. America' but without any other data probably represents yet another subspecies, but in the absence of further locality data these are not described.

BIOLOGY. In Florida, *B. f. fracta* has been reared from *Achras zapota* where trees of this species can be heavily infested (J. B. Heppner, personal communication).

DISTRIBUTION. U.S.A. (Florida); Mexico; Honduras; French Guiana; Surinam; Guyana; Brazil; Peru; Colombia; Dominican Republic.

KEY TO THE SUBSPECIES OF *Banisia furva* (males)

- 1 Forewing with $R_2 + R_3$ 2
 - Forewing with R_2 and R_3 arising separately from the cell or just touching *f. fracta* (p. 165)
 2 (1) Very dark brown specimens. Wing about 13 mm. Genitalia of male with costal valve process almost as long as width of valve . . . *f. devincta* (p. 164)
 - Orange or yellow-brown specimens, more or less than 13 mm wing. Genitalia of male with costal valve process less than half width of valve . . . 3
 3 (2) Orange-brown specimens, lightly marked with dark reticulations *f. illicita* (p. 165)
 - Yellow or grey-brown specimens, usually with well marked black reticulations . . . 4
 4 (3) Smaller species, wing 12.5-14.0 mm. Median valve process roughly triangular *f. epasta* (p. 164)
 - Larger species, wing 13.0-16.0 mm. Median valve process elongate *f. furva* (p. 163)

Banisia furva furva (Warren)

(Pl. 1, fig. F; Pl. 40, fig. 305; Pl. 52, fig. 419; Pl. 62, fig. 514)

Rhodoneura furva Warren, 1905c : 350. Holotype ♂, FRENCH GUIANA (USNM) [examined].*Letchena myrsusalis* (Walker) var. *flavalis* Dognin, 1911 : 28. Holotype ♂, FRENCH GUIANA (USNM) [examined]. **Syn. n.***Rhodoneura furva* Warren; Dalla Torre, 1914 : 23.[*Rhodoneura myrsusalis* (Walker); Dalla Torre, 1914 : 28. Misidentification.]

♂. Wing, 13-15 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length second. Patagia grey-brown, rest of thorax yellow brown. Tibia with scale tuft. Forewing, pattern as in Pl. 1, fig. F, yellowish brown with black fringe, dark reticulations. Prominent oval hyaline area in wing. Median fascia indistinct. Hindwing, similarly coloured, lacking hyaline areas, but with black spot over cell. Underside paler, pattern more prominent, white marks in front of hyaline area in forewing. $R_2 + R_3$ with, in some specimens, $R_4 + R_5$ joining at origin from cell. Mauve tinge to underside forewing with a brown patch subterminally.

Genitalia ♂ (Pl. 40, fig. 305). Uncus curved, slender, hairy, slightly swollen at apex. Socii prominent. Gnathus a sclerotized loop. Valve broad at base, narrowing apically. Sclerotized process from base of costal margin of valve, median process sclerotized. Apex of sacculus sclerotized and flattened. Sacculus process small, toothed, small toothed process laterally to this on sacculus. Juxta membranous with two large tubular lobes. Aedeagus, with cornutus, narrowing at apex with two or three small teeth.

♀. Wing, 14.0-15.5 mm. Pattern as male. Generally more red-brown than yellow-brown. Labial palps with third segment one-third length second. Frenulum triple.

Genitalia ♀ (Pl. 52, fig. 419; Pl. 62, fig. 514). Anal papillae short. Ostium broad. Ostial plate sclerotized and spiny. Duct with minute spines, convolute. Bursa with two long rows of spines.

DISCUSSION. Specimens of this subspecies from the type-locality are constant in external pattern. There is some variation in the size and extent of the spines at the base of the sacculus in the male. This subspecies can be recognized by the white oval hyaline area in the forewing. Specimens from Colombia are slightly different from the others and could well represent a new subspecies, approaching more closely those of *f. illicita* from Dominica in some aspects.

BIOLOGY. Not recorded. Specimens collected in Surinam in v; in Peru in vi; in Brazil in vii; in Colombia in x; xii.

DISTRIBUTION. French Guiana; Surinam; Brazil; Peru; Colombia.

MATERIAL EXAMINED.

Holotype ♂ (*furva*), FRENCH GUIANA: Godebert-Maroni (coll. *Le Moulle*), BM slide no. 14526, in USNM. Holotype ♂ (*flavalis*), FRENCH GUIANA: Godebert-Maroni (coll. *Le Moulle*), BM slide no. 14526, in USNM.

26 specimens, BMNH.

***Banisia furva devincta* subsp. n.**

(Pl. 14, fig. 136; Pl. 40, fig. 306)

♂. Wing, 13 mm. Vertex whitish brown, thorax similar. Forewing, pattern as in Pl. 14, fig. 136, reddish brown with darker reticulations. Hindwings similar, more black reticulations. Forewing with $R_2 + R_3$, $R_4 + R_5$ separately from cell.

Genitalia ♂ (Pl. 40, fig. 306). Uncus long and slender. Socii well developed. Brachia not meeting in mid line. Valve with prominent, highly sclerotized process from base of costal margin, process almost as long as width of valve. Sacculus process toothed. Juxta with two small pointed lateral arms. Aedeagus curved, vesica minutely spined.

♀. Unknown.

DISCUSSION. This subspecies is a much darker purplish brown than the others and there are differences in the genitalia. Although only one specimen is known it is sufficiently distinct from all the others to be considered a subspecies.

BIOLOGY. Not recorded. Adult collected in xi.

DISTRIBUTION. Brazil.

MATERIAL EXAMINED.

Holotype ♂, BRAZIL: Paulo de Olivenca, Amazonas, xi. (*Fassl*), BM slide no. 14464, in BMNH.

***Banisia furva epasta* subsp. n.**

(Pl. 14, fig. 137; Pl. 40, fig. 307; Pl. 52, fig. 420; Pl. 62, fig. 515)

♂. Wing, 12.5 mm. Smaller than nominate subspecies with rather grey-brown wings having an obscure pattern, darker discal mark and no hyaline areas. Underside with white mark over apex of cell. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 40, fig. 307). Uncus broader than nominate subspecies. Aedeagus with smaller cornutus. Median valve process roughly triangular.

♀. Wing, 12-14 mm. More orange on wing than male, with several clear hyaline areas in forewing. Frenulum triple.

Genitalia ♀ (Pl. 52, fig. 420; Pl. 62, fig. 515). As nominate subspecies. Groups of large spines forming long double line of signa, similar to nominate subspecies.

DISCUSSION. Rather similar to *f. fracta* but differing in having $R_2 + R_3$ anastomosing near their origin from the cell. This subspecies can be separated from the nominate one by the size and colour. Some of the females in the series examined lacked the hyaline area in the forewing.

BIOLOGY. Not recorded.

DISTRIBUTION. Honduras.

MATERIAL EXAMINED.

Holotype ♂, BELIZE: 'British Honduras', BM slide no. 14426, in BMNH.

Paratypes. BELIZE: 'British Honduras', 8 ♀, (*Davis*), in BMNH.

***Banisia furva fracta* subsp. n.**

(Pl. 14, fig. 138; Pl. 40, fig. 308; Pl. 52, fig. 421; Pl. 62, fig. 516)

♂. Wing, 10–12 mm. As nominate subspecies but smaller. Forewing orange-brown, with or without hyaline areas. Dark patch anterior to hyaline area of forewing. Underside pale, often with pinky tinge. Forewing with veins $R_2 - R_5$ separated from cell, rarely with R_2 and R_3 touching near base.

Genitalia ♂ (Pl. 40, fig. 308). As nominate subspecies, differing in more slender valves and in the lateral processes of the juxta which are very small. The sacculus process is generally more prominent and strongly toothed compared with the other subspecies.

♀. Wing, 10.5–13.0 mm. Darker than male, more red-brown. Indistinct dark median fascia. Hyaline areas present or absent. Frenulum triple.

Genitalia ♀ (Pl. 52, fig. 421; Pl. 62, fig. 516). As nominate subspecies. Ostium slightly more V-shaped. Bursa without clear evidence of long patches of spines, although whole bursa minutely spined.

DISCUSSION. One female specimen had a 'male' colouration including the hyaline area which was absent from the other specimens; the genitalia were normal. The small size and lack of fusion of the veins from the cell of the forewing separate this subspecies from the others. This subspecies is close to *f. epasta* from Honduras but the latter is larger and has $R_2 + R_3$ in the forewing.

BIOLOGY. Not recorded. Adults collected in iii; viii.

DISTRIBUTION. United States (Florida).

MATERIAL EXAMINED.

Holotype ♂, U.S.A.: Florida, Big Pine Key, S. Florida Keys, 3–7.iii.1951 (*Sanford*), BM slide no. 14422, in AMNH.

Paratypes. U.S.A.: 3 ♂, 1 ♀, Florida, data as holotype, in AMNH; 2 ♂, 4 ♀, Florida, Noname Key, 15–21.viii. (*Sweadner*), in CNC; 1 ♂, Florida, 15–21.viii. (*Sweadner*), in CNC; 5 ♂, Tavernier, Monroe Co., Fla, x–xi.1955 (*Todd*), in C. P. Kimball coll.

Material not included in type-series. U.S.A.: 1 ♀, Key Largo, Monroe Co., Fla, 5.vi.1967; 1 ♀, Key Largo, Monroe Co., Fla, 20.iv.68 (*Spencer-Kemp*); 1 ♀ Key Largo Monroe Co., Fla, 26.xi.72 (*Spencer-Kemp*). All in C. P. Kimball coll.

***Banisia furva illicita* subsp. n.**

(Pl. 2, fig. J)

♂. Wing, 13.5–15.0 mm. As nominate subspecies either with several hyaline spots in the forewing or these spots absent, never a single one. Generally more brick-red than the nominate subspecies.

Genitalia ♂. As nominate subspecies. Lateral lobes of juxta smaller, more pointed. Sacculus process more toothed. Cornutus in aedeagus more slender than nominate subspecies.

♀. Wing, 15-17 mm. More orange-brown than nominate subspecies, generally less heavily marked. Underside more yellow-brown.

Genitalia ♀. As nominate subspecies.

DISCUSSION. Although this series looks different externally from the other subspecies, the differences in detail from the nominate subspecies are very slight. The rather orange-brown colour with less black reticulation are the best guide to this subspecies, although there are small differences in the genitalia. This is one of the few species with data for the time of flight in the subfamily. It is recorded as night-flying in Dominica.

BIOLOGY. Not recorded. Adults collected in iv; v; vi; viii; x; xii.

DISTRIBUTION. West Indies: Dominica.

MATERIAL EXAMINED.

Holotype ♂, DOMINICA: (*Eliott*), BM slide no. 14477, in BMNH.

Paratypes. DOMINICA: 1 ♂, 5 ♀, v-xii, 1905 (*Agar*), in BMNH; 1 ♀, Portsmouth, 4.x.1956, night-flying (*Hamblett*), in BMNH; 1 ♂, 1 ♀, Dominica, no other data, in BMNH.

Banisia venustula (Warren) **comb. n.**

(Pl. 15, fig. 145; Pl. 40, fig. 309)

Canaea venustula Warren, 1905a : 6. Holotype ♂, NEW GUINEA (BMNH) [examined].

Rhodoneura venustula Warren; Dalla Torre, 1914 : 36.

♂. Wing, 12 mm. Vertex brown. Antennae minutely ciliate. Third segment of labial palp one-quarter length second. Thorax blackish brown. Forewing, pattern as in Pl. 15, fig. 145, black-brown with indistinct transverse fascia. Costal margin whitish. Hindwing similar but with strong red tinge round wing margin. Fringe white. Underside paler, more heavily patterned. Hindwing with brown fascia and brown fascia near apex of forewing on underside. R_2 to R_5 from cell separately. Cell in forewing very long in proportion to length of veins.

Genitalia ♂ (Pl. 40, fig. 309). Uncus long, slender. Socii sclerotized. Gnathus a long, slender sclerotized loop, pointed in middle. Valve with prominent median sclerotized process. Juxta a sclerotized plate, with second plate (? from manica). Aedeagus strongly curved and with two prominent sclerotized lateral spines near apex.

♀. Unknown.

DISCUSSION. The aedeagus, with lateral spines, is characteristic of this species. The secondary juxta is unusual and the actual origin of this plate is not clear but appears to develop as a sclerotization of the manica or possibly of the membranes round the juxta. In the latter case it is merely the upper part of the juxta itself. Only the holotype is known.

BIOLOGY. Not recorded. Adult collected in i.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Holotype ♂, NEW GUINEA: Upper Aroa R. (*Meek*), i.[19]03, BM slide no. 14522, in BMNH.

THE *FENESTRIFERA*-GROUP

A group of medium sized thyridids (wing 30–45 mm) with generally a reddish brown colouration. The males usually have a bifid uncus which is modified further into many points (*ovifera*) or as a single point (*myrtaea*). The females have the typical *Banisia* signum with a large signum made up of many small plates. Most species in the group have been previously known under the name *Rhodoneura myrtaea*. One species, *fenestrifera*, shows some distinct subspeciation over its range and will probably be further divided when more specimens are available for examination.

Banisia myrtaea (Drury)

(Pl. 15, figs 146, 147; Pl. 41, fig. 310; Pl. 52, fig. 418; Pl. 61, fig. 508; Pl. 68, fig. 594)

Phalaena noctua myrtaea Drury, 1773 : pl. 2, fig. 3. Holotype, INDIA (lost, probably destroyed, ? ♂).

Durdara fenestrata Moore, 1883 : 27. Holotype ♂, INDIA (BMNH) [examined].

Striglina myrtaea (Drury); Pagenstecher, 1892 : 41.

Rhodoneura myrtaea (Drury); Hampson, 1897 : 618.

Rhodoneura myrtaea (Drury); Dalla Torre, 1914 : 28.

Rhodoneura myrtaea (Drury); Gaede, 1932 : 755.

Banisia myrtaea (Drury); Whalley, 1964 : 117.

♂. Wing, 15–16 mm. Vertex reddish brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length second. Thorax orange-brown. Tibia with large scale tuft. Forewing pattern as in Pl. 15, figs 146, 147, orange-brown with darker reticulations. Hindwing similar. Underside similar, paler. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 40, fig. 310). Uncus curved dorsally. Gnathus a sclerotized loop, not modified. Socii well developed with large scale tuft. Valve with short, thumb-like costal process. Sacculus enlarged, with sclerotized apex and strongly spined margin. Process on valve strongly spined. Saccus elongate. Aedeagus with prominent spiny cornutus, apex toothed.

♀. Wing, 15–17 mm. Similar to male but generally with hyaline area in forewing.

Genitalia ♀ (Pl. 52, fig. 418; Pl. 61, fig. 508; Pl. 68, fig. 594). Ostial plate spiny, duct convolute. Bursa with large complex signum.

DISCUSSION. This species is known from South India and Singapore. Although it is not possible externally to separate this species from *fenestrifera*, the male genitalia are quite distinct. Unfortunately all the female specimens of *myrtaea* available either lacked an abdomen or had one which had been glued on; there was no way of telling if it was original. The figures are from one of these specimens. *B. myrtaea* varies considerably in colour and pattern and in the presence/absence of the hyaline area in the forewing. With the specimens available it has not been possible to tell whether this is seasonal or geographical variation, but in other species which also have these hyaline areas in the forewing there is also considerable variation in their size and presence/absence. It is possible that *B. myrtaea* is derived from species where the male had a divided uncus since traces of a rudimentary division can be seen in the apex of the uncus of some specimens. This species is identified from the original coloured figure. The type is almost certainly lost but no neotype is proposed at present.

BIOLOGY. Not recorded.

DISTRIBUTION. India; Sri Lanka; Singapore.

MATERIAL EXAMINED.

Holotype ♂ (*fenestrata*), INDIA: Bombay, BM slide no. 8373, in BMNH.
16 specimens, BMNH.

Banisia fenestrifera Walker

(Pl. 2, fig. P; Pl. 15, figs 148-152; Pl. 41, figs 311-314; Pl. 52, fig. 422; Pl. 62, fig. 517;
Pl. 68, fig. 595)

Banisia fenestrifera Walker, 1864 : 78.
[*Rhodoneura myrtaea* Drury; auct. Misidentification.]

This species is characterized by the shape of the bifid uncus and the shape of the valve in the male. The female ostium is sclerotized and covered with minute spines. The species is widely distributed from India to Australia but is separated into five subspecies, mainly on the basis of differences in the male genitalia and geographical separation. There is variation in the size and shape of the hyaline areas in the forewing; these may be absent or reduced to small spots. The underside pattern is similar to *B. myrtaea* to which *B. fenestrifera* is most closely related.

The India-Andamans-Burma subspecies is separated on the shape of the uncus while the Sulawesi subspecies is separated mainly on the shape of the median process of the valve. However, each subspecies shows a number of other small differences individually but the pattern externally is equally variable in all of them. There are a few colour trends; *f. omissina* and *f. daphoena* are generally darker and larger than the other subspecies.

On Sulawesi two subspecies occur but they are apparently from different localities. *B. fenestrifera fenestrifera* is present on the island in the east and the specimens there are typical of the subspecies while in the west and south *fenestrifera omissina* occurs. It is possible that the latter subspecies could have resulted as a hybrid between *f. daphoena* and *f. fenestrifera* since *f. omissina* shows some characters of both species, but further material is needed together with some biological information to decide more exactly the status of *f. omissina*.

KEY TO THE SUBSPECIES OF *Banisia fenestrifera* (males)

- | | | |
|-------|--|---------------------------------|
| 1 | Uncus with prominent spines dorsally on each lobe | <i>f. triferina</i> (p. 170) |
| - | Uncus without dorsal spines | 2 |
| 2 (1) | Median valve process with small secondary process, both strongly spiny | <i>f. fenestrifera</i> (p. 169) |
| - | Median valve process curved, spiny, without lateral process | 3 |
| 3 (2) | Apex of aedeagus with single sclerotized crest | 4 |
| - | Apex of aedeagus with rows of spines | <i>f. daphoena</i> (p. 171) |
| 4 (3) | Basal part of valve with spines | <i>f. omissina</i> (p. 170) |
| - | Basal part of valve with teeth | <i>f. solomonensis</i> (p. 171) |

Banisia fenestrifera fenestrifera Walker

(Pl. 15, fig. 148; Pl. 41, fig. 311)

Banisia fenestrifera Walker, 1864 : 78. Holotype ♀, MALAYSIA (UM) [examined].*Thermesia fenestrina* Felder & Rogenhofer, 1875 : pl. 117, fig. 2. Holotype ♂, INDONESIA (BMNH) [examined].*Striglina fenestrata* Guenée, 1877 : 285. [Replacement name for *fenestrina* Felder & Rogenhofer.]*Vernifilia hyalipuncta* Schultze, 1907 : 364. Holotype ♂, PHILIPPINES (lost).*Banisia fenestrifera* (sic) Walker; Whalley, 1964 : 117.[*Rhodoneura myrtaea* Drury; auct. Misidentification.]

♂. Wing, 15–17 mm. Vertex reddish brown. Antennae minutely ciliate. Thorax reddish brown. Hind tibia with large scale tuft. Forewing, pattern as in Pl. 15, fig. 148, reddish brown, almost unicolorous with black marks. Small hyaline area in forewing. Hindwing similar colour, no hyaline area. Underside more purple tinge, brown mark on costal margin subapically. Forewing with $R_2 + R_3$.

Genitalia ♂ (Pl. 41, fig. 311). Uncus bifid with two smooth half-moon-shaped lobes. Socii prominent. Gnathus a weakly sclerotized loop. Valve simple with large raised lobe on costal margin. Median valve process toothed, with smaller lateral process. Base of sacculus with strong teeth. Juxta sclerotized with median lobe. Aedeagus with prominent apical crest with small teeth. Cornutus in aedeagus.

♀. Wing, 15–18 mm. Colour and pattern as male. Frenulum triple.

Genitalia ♀. Anal papillae short. Ostium V-shaped, covered with minute spines. Duct broader and convolute near bursa. Large signum in bursa. [Similar to Pl. 52, fig. 422; Pl. 62, fig. 517; Pl. 68, fig. 595 for *f. omissina*.]

DISCUSSION. This subspecies is generally less orange-brown than the others, but the only reliable separation is in the male genitalia. Generally specimens of this subspecies have a hyaline area in the forewing. *B. f. fenestrifera* occurs in the same localities as *B. myrtaea* in Singapore, otherwise their ranges do not overlap. Specimens from the Philippines differ slightly in the shape of the outline of the uncus but further material will be needed to see if there are other subspecific differences. One or two specimens from New Guinea, while not being *f. daphoena*, are slightly different from *f. fenestrifera* but are included under this subspecies until more information is available.

BIOLOGY. Caterpillars reared on Gutta Percha (*Palaquium* spp., Sapotaceae) in Malaya. Adults collected in Philippines in v; in Sulawesi in v; vii; in Borneo in xi; xii; in Sumatra in ix.

DISTRIBUTION. Indonesia: Borneo, Sulawesi, Sumatra; Formosa; Singapore; Philippines; Malaysia; [New Guinea].

MATERIAL EXAMINED.

Holotype ♀ (*fenestrifera*), MALAYSIA: Sarawak, in UM. Holotype ♂ (*fenestrina*), INDONESIA: Sulawesi, BM slide no. 8380, in BMNH.

55 specimens, BMNH.

***Banisia fenestrifera triferina* subsp. n.**

(Pl. 15, fig. 149; Pl. 41, fig. 312)

♂. Wing, 16.0–17.5 mm. Colour and pattern as nominate subspecies, but generally more orange in the wing.

Genitalia ♂ (Pl. 41, fig. 312). Uncus bifid with patch of teeth on each lobe dorsally. Rest of genitalia similar to nominate subspecies.

♀. Wing. 15–18 mm. As nominate subspecies.

Genitalia ♀. As subsp. *omissina* (Pl. 52, fig. 422).

DISCUSSION. This subspecies differs from the nominate one in the presence of spines on the dorsal side of the uncus. It is possible that this is merely a seasonal difference but no evidence of this is available at present. Only one specimen of this subspecies was available from Burma (Rangoon), but the rest of the specimens from the continent were all from the north of India, contrasting with *B. myrtaea* which has only been found in south or central India. Some of the specimens from the Andaman Islands have a few more spines on the uncus than those from Sikkim, but were otherwise similar.

BIOLOGY. Not recorded. Adults collected in vi.

DISTRIBUTION. India (north); Sikkim; Burma; Andaman Is.

MATERIAL EXAMINED.

Holotype ♂, SIKKIM: Gopaldhara, Mirik (*Stephens*), BM slide no. 14369, in BMNH. Paratypes. SIKKIM, $\frac{3}{4}$ ♂, in BMNH.

Material not included in type-series. ANDAMAN IS., 11 specimens. BURMA, 1 specimen. All in BMNH.

***Banisia fenestrifera omissina* subsp. n.**

(Pl. 15, fig. 152; Pl. 41, fig. 314; Pl. 52, fig. 422; Pl. 62, fig. 517; Pl. 68, fig. 595)

♂. Wing, 16–20 mm. Colour and pattern as nominate subspecies but all males examined lacking hyaline area in forewing or with only small ones. Venation as nominate subspecies.

Genitalia ♂ (Pl. 41, fig. 314). Uncus bifid. Basal part of valve similar to *f. daphoena* but more slender. Base of sacculus more strongly spiny than nominate one. Apex of aedeagus with small sclerotized comb as in nominate subspecies.

♀. Wing, 18 mm (one specimen). As nominate subspecies but with two small hyaline patches on forewing.

Genitalia ♀ (Pl. 52, fig. 422; Pl. 62, fig. 517; Pl. 68, fig. 595). The females of all the subspecies of *B. fenestrifera* are similar.

DISCUSSION. This subspecies is separated from the nominate one on the size and shape of the median valve process and from *f. daphoena* by the shape of the apex of the forewing and the more slender median valve process. This subspecies appears to be intermediate between *f. fenestrifera* and *f. daphoena* and could be a hybrid population.

BIOLOGY. Not recorded. Adults collected in ii; iii; vi; vii; viii; ix; x.

DISTRIBUTION. Indonesia: Sulawesi, Bali.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sulawesi, W. Celebes, Paloe, G. Tompoe, 810 m, ii. 1937 (*Kalis*), BM slide no. 4826, in BMNH.

Paratypes. INDONESIA: 1 ♂, Sulawesi, S. Celebes, viii-ix.[18]91 (*Doherty*), in BMNH; 1 ♀, Celebes, Minahara, Tomohou, 23.vii.1954 (*Alston*), in BMNH; 1 ♂, E. Bali, Batoerit, 1050 m, vi. 1935 (*Kalis*), in BMNH; 1 ♀, W. Bali, Mondoktoempang, 750 m, x. 1934 (*Kalis*), in BMNH.

***Banisia fenestrifera solomonensis* subsp. n.**

(Pl. 15, fig. 150)

♂. Wing, 21 mm. Similar to nominate subspecies but larger and blacker with two small hyaline areas on forewing. Underside dark, black mark subapically.

Genitalia ♂. Similar to nominate subspecies, basal part of sacculus strongly toothed. Median valve process narrow. Aedeagus with apical sclerotized crest and small cornuti.

♀. Unknown.

DISCUSSION. This subspecies is similar externally to *f. omissina* but is darker and larger. The genitalia have the sclerotized crest on the apex of the aedeagus of the nominate one. It can be separated from the nominate subspecies by the toothing (not spines) on the base of the sacculus and the larger size and darker colour.

BIOLOGY. Not recorded. Adults collected in xi.

DISTRIBUTION. Solomon Is., Guadalcanal, Gizo.

MATERIAL EXAMINED.

Holotype ♂, SOLOMON IS.: Guadalcanal, Pompomanasiu Hunuvalekama, 1320 m, 9.xi[19]65, black light. Royal Soc. Exped., BM slide no. 14495, in BMNH.

Paratypes. SOLOMON IS.: 1 ♂, Gizo, xi. 1903 (*MEEK*), in BMNH. 1 ♂, San Jorge, 22-27.ix.1965, Roy. Soc. Exped., in BMNH; 1 ♂, San Cristoval, ^wNarahito-Pagato confluence, 1965, black light, Roy. Soc. exped., in BMNH.

***Banisia fenestrifera daphoena* (Turner) stat. n.**

(Pl. 2, fig. P; Pl. 15, fig. 151; Pl. 41, fig. 313)

Trophoessa daphoena Turner, 1911 : 99. Holotype ♀, AUSTRALIA (ANIC) [examined].

Trophoessa fenestrifera (Walker); Whalley, 1964 : 117.

♂. Wing, 17-20 mm. Colour and pattern as nominate subspecies. This subspecies is as variable in the presence, absence or reduction of the hyaline areas as the nominate subspecies. The underside is as strongly patterned as the nominate subspecies.

Genitalia ♂ (Pl. 41, fig. 313). As nominate subspecies, differing in shape of sacculus process and apex of aedeagus and in the presence of a pointed process on the margin of the valve immediately posterior to the median valve process, and arising from the ventral margin of the valve.

♀. Wing, 17-20 mm. Colour and pattern as male.

Genitalia ♀. Similar to *f. omissina*.

DISCUSSION. Although all the subspecies have a process on the ventral margin of the valve, in this subspecies it is particularly long and slender. This is a widespread subspecies and could be further split when more material is available for comparison. There are a few small differences between the Australian and the New Guinea populations but these are not constant in the material examined. In some of the island populations more distinct forms (?subspecies) occur.

BIOLOGY. Not recorded. Adults collected in Australia in i; in New Guinea in iii; iv; v.

DISTRIBUTION. Australia; New Guinea; Admiralty Island; Bismarck Archipelago; Louisiade Archipelago; D'Entrecasteaux Is.; Dampier Is.

MATERIAL EXAMINED.

Holotype ♀, AUSTRALIA: Queensland, Kuranda (*Dodd*), in ANIC.
46 specimens, BMNH; 17 specimens, CNC.

Banisia intonsa sp. n.

(Pl. 2, fig. E; Pl. 41, fig. 315; Pl. 52, fig. 423; Pl. 63, fig. 518, Pl. 68, fig. 596)

♂. Wing, 18–19 mm. Vertex reddish brown, with white-tipped scales. Antennae minutely ciliate. Third segment of labial palp one-quarter length second. Prothorax reddish brown, patagia whitish, rest of thorax and tegulae yellowish brown. Large scale tuft on hind tibia. Forewing, pattern as in Pl. 2, fig. E, purplish brown on terminal and subterminal area with yellowish brown basal and part of median area. Two large hyaline areas in forewing. Hindwing, similar colour, without hyaline areas but with more distinct fasciae of purplish brown. Underside, forewing mauvish with prominent diagonal brown fascia from apex of wing to hind margin of forewing, in median area. Brown patch near apex of cell. Hindwing underside more brown, but with distinct black reticulations. R_2 to R_5 separately from cell.

Genitalia ♂ (Pl. 41, fig. 315). Uncus bifid, on stalk. Valve with prominent process on costal margin. Gnathus a sclerotized loop. Socii prominent. Short sclerotized process from distal end of sacculus, basal part of sacculus sclerotized and covered with spines. Juxta a small plate. Median valve process swollen, toothed, with a large lateral spine. Aedeagus with sclerotized, toothed apical crest. Small sclerotized plate in vesica.

♀. Wing, 18–20 mm. Colour and pattern as male. Frenulum triple. Third segment of labial palp one-half length second.

Genitalia ♀ (Pl. 52, fig. 423; Pl. 63, fig. 518; Pl. 68, fig. 596). Anal papillae short. Sclerotized and spiny ostial plate. Opening broad, minute spines in first part of convoluted duct. Large, lightly sclerotized signa. Bursa with secondary sac and another sac arising just anterior to junction of ductus and bursa.

DISCUSSION. This species is readily distinguished from the others in the genus by its pattern and colouring. On the underside the angled brown line on the forewing separate it from some specimens of *fenestrifera* which may show some of the yellow-brown pattern on the upper side. *B. intonsa* is related to *fenestrifera* but can be readily separated on pattern and on the shape of the genitalia in both sexes.

This species has a similar sclerotized apical process on the aedeagus to that found in *f. fenestrifera* and perhaps could be considered as a further subspecies of that

species. However, there is a single specimen of *f. fenestriifera* which was apparently collected with specimens of *intonsa* on Mt Kinabalu (Sabah). It is on Mt Kinabalu that other species have been described which are restricted to this area (Whalley, 1963). This occurrence together, plus the fact that *intonsa* is far more distinct from *fenestriifera* than any of the other subspecies, leads me to consider *intonsa* as a good species. *B. intonsa* has also been collected at 1200 m on Mt Dulit (Sarawak) which suggests that *intonsa* is a distinct, mountain species. It was collected in the moss forest at light.

BIOLOGY. Not recorded. Adults collected at light at or above 1200 m in ii; vii; ix.

DISTRIBUTION. Malaysia: Sabah, Sarawak.

MATERIAL EXAMINED.

Holotype ♂, MALAYSIA: Sabah, Mt Kinabalu, Park H.C. 1620 m, vii-ix. 1965, Cambridge Exped. (*Barlow, Banks & Holloway*), BM slide no. 14484, in BMNH.

Paratypes. MALAYSIA: 4 ♀, data as holotype; 1 ♀, Sabah, Mt Kinabalu, Radio Sabah, 2600 m, vii-ix. 1965; 1 ♀, Sabah, Mt Kinabalu, 8.ii.1964 (*Smart*), Royal. Soc. Expd.; 1 ♀, Mt Dulit, 1200 m, moss forest, 29.x.1932, light trap (*Hobby & Moore*), Oxford Univ. Exped. All in BMNH.

Banisia barbatula sp. n.

(Pl. 15, fig. 153; Pl. 42, fig. 316; Pl. 52, fig. 424; Pl. 63, fig. 521; Pl. 68, fig. 597)

♂. Wing, 15-18 mm. Vertex grey-brown. Antennae minutely ciliate. Third segment labial palp one-quarter length second. Thorax grey-brown. Forewing pattern as in Pl. 15, fig. 153, grey-brown with one large or two small hyaline patches. Some black reticulations on forewing. Underside similar, brown patch subapically on forewing, distinct reddish brown area terminad of hyaline patches. Hindwing grey-brown with more prominent reticulation than forewing. $R_2 - R_5$ separately from cell.

Genitalia ♂ (Pl. 42, fig. 316). Uncus bifid, shortly stalked. Socii prominent. Gnathus a simple sclerotized loop. Valve without process on costal margin. Median valve process narrow, strongly toothed. Apex of sacculus elongate, sclerotized, strap-like. Base of sacculus with large sclerotized teeth. Juxta a sclerotized plate. Aedeagus with prominent cornuti and small sclerotized and toothed apical crest.

♀. Wing, 15-18 mm. Colour and pattern as male. Labial palp with third segment one-half second. Frenulum triple.

Genitalia ♀ (Pl. 52, fig. 424; Pl. 63, fig. 521; Pl. 68, fig. 597). Anal papillae short. Ostium broad, rounded. Ostial plate sclerotized and covered in spines. First part of duct broad, sclerotized, with minute spines, rest of duct convolute. Bursa with large strongly sclerotized signum and secondary sac.

DISCUSSION. This species is related to *fenestriifera* but can be separated by the grey-brown rather than red-brown colour. The shape of the uncus in the male and the ostium in the female are also diagnostic. Little variation was found in pattern and colour between the hundred specimens examined. The uncus is similar in general form to *intonsa* and can clearly be derived from the rather broad type found in *fenestriifera*. The apex of the aedeagus has the sclerotized and toothed

crest but this is smaller proportionally than in the other species. Apparently this species is restricted to Sulawesi where it occurs in the same localities as *fenestriifera*.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; v; vi; xii.

DISTRIBUTION. Indonesia: Sulawesi.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sulawesi, G. Tompoe Paloe, W. Celebes, i. 1937 (*Kalis*), BM slide no. 14372, in BMNH.

Paratypes. INDONESIA: 18 ♂, 6 ♀, data as holotype; 14 ♂, 7 ♀, Sulawesi, G. Rangkoenau Paloe, W. Celebes, 540 m, xii. 1936 (*Kalis*); 23 ♂, 14 ♀, Sulawesi, Loda Paloe, W. Celebes, v. 1937 (*Kalis*); 1 ♀, Sulawesi, Ulu Kolaka, E. Celebes, 500 m, v-vi. 1939 (*Kalis*); 1 ♀, Sulawesi, Sidaonta Paloe, W. Celebes, 1350 m, vi. 1937 (*Kalis*); 2 ♂, Sulawesi, Koelawi Paloe, 930 m, W. Celebes, iii. 1937 (*Kalis*). All in BMNH.

Banisia ovifera (Butler) **comb. n.**

(Pl. 1, fig. L; Pl. 2, fig. K; Pl. 15, fig. 154; Pl. 42, figs 317-319; Pl. 53, figs 425-427; Pl. 63, figs 519, 520; Pl. 68, figs 598, 599)

Durdara ovifera Butler, 1892 : 129.

[*Rhodoneura myrtaea* Drury; Hampson, 1897 : 618. Misidentification.]

Canaea ovifera Butler; Warren, 1902 : 342.

Rhodoneura ovifera Butler; Dalla Torre, 1914 : 30.

This is a very variable species which here is separated into three subspecies. The basic external pattern with the oval shaped hyaline area on the forewing is characteristic of most of the specimens examined, although a few have even this reduced in size. In the genitalia the shape of the uncus, with several branches, separates this species from all the others in the genus. The most variable character in the genitalia is the shape of the gnathus. It is possible to separate the specimens into groups with similar shaped teeth on the gnathus and there are evidently many local populations which differ slightly on this character. However, the overall picture is of a species distributed from Borneo, through Sulawesi and into the Solomon Islands. Over each part of its range there are small differences in the genitalia and some quite striking differences in colour. After examination of the long series, so much overlap in these structures was found with every sort of intermediate stage that I prefer to regard this as a highly variable species which has a large number of slightly different populations, some of which are sufficiently differentiated and geographically isolated to be considered as subspecies. In New Guinea, some quite striking differences occur. In one specimen from the Weyland Mountains the gnathus is strikingly different in shape from the more typical one. The rest of the morphology is reasonably close and at present I do not propose to describe this one.

KEY TO THE SUBSPECIES OF *Banisia ovifera* (males)

- 1 Lateral uncus processes toothed and swollen but without branches. Socii elongate
o. praevaria (p. 176)
- Lateral uncus processes toothed with short projecting arms. Socii broad. . . . 2
- 2 (1) Gnathus finely serrate. Without cornutus in aedeagus . . . *o. ovifera* (p. 175)
- Gnathus coarsely toothed. Small cornutus in aedeagus . . . *o. diversicolor* (p. 175)

Banisia ovifera ovifera (Butler)

(Pl. 2, fig. K; Pl. 42, fig. 317; Pl. 53, fig. 425; Pl. 63, fig. 519; Pl. 68, fig. 598)

Durdara ovifera Butler, 1892 : 129. Holotype ♀, SABAH (BMNH) [examined].
[*Rhodoneura myrtaea* Drury; auct. Misidentification.]

♂. Wing, 12 mm. Vertex brown. Antennae minutely ciliate. Labial palp with third segment one-third length second. Thorax reddish brown. Hind tibia with large scent scale patch. Tarsi each with pair apical spines, last tarsal segment with rows of spines. Forewing, pattern as in Pl. 2, fig. K, orange-brown with reticulations and large, oval, hyaline area posterior to M_3 . Hindwing as forewing, without hyaline area. Underside more patterned than upper with subapical mark and mauve sheen to subterminal and median areas. Hindwing with more red-brown than upper side. $R_2 - R_5$ separately from cell.

Genitalia ♂ (Pl. 42, fig. 317). Uncus with two lateral processes, each with short spiny basal process. Two curved median ventral processes. Socii prominent. Gnathus finely serrate. Valve constricted with mesally a pointed and long curved process. Juxta slender sclerotized plate. Aedeagus without cornutus, with lateral extension of manica anteriorly.

♀. Wing, 15–16 mm. Colour and pattern as male. Frenulum triple. Third segment of labial palp one-third length second.

Genitalia ♀ (Pl. 53, fig. 425; Pl. 63, fig. 519; Pl. 68, fig. 598). Anal papillae short. Ostium strongly sclerotized with minute platelets which are also present on duct, convolute near bursa. Bursa minutely spiny with prominent median signum extending length of bursa. Secondary sac off just anterior to opening of duct and bursa.

DISCUSSION. This subspecies tends to be smaller than the others with small differences in the shape of the uncus in the male, although some specimens of *o. diversicolor* approach it in shape of the uncus. The females have less red on them than *o. diversicolor*. Generally the oval area in the forewing is smaller than *o. diversicolor*, otherwise this subspecies is similar.

BIOLOGY. Not recorded. Adults collected in ii.

DISTRIBUTION. Malaysia: Sabah.

MATERIAL EXAMINED.

Holotype ♀, MALAYSIA: Sabah, Sandakan, BM slide no. 8383, in BMNH.
6 specimens, BMNH.

Banisia ovifera diversicolor (Warren) *stat. & comb. n.*

(Pl. 1, fig. L; Pl. 42, fig. 318; Pl. 53, fig. 426; Pl. 63, fig. 520; Pl. 68, fig. 599)

Letchena diversicolor Warren 1897a : 381. ^{Lecto} Holotype ♂, TROBRIAND IS. (BMNH) [examined].
Letchena satelles Warren, 1906 : 64. ^{Lecto} Holotype ♂, NEW GUINEA (BMNH) [examined].

Letchena satelles Warren ab. *coeca* Warren, 1906 : 64. Holotype ♂, NEW GUINEA (BMNH) [examined].

[*Rhodoneura myrtaea* Drury; Dalla Torre, 1914 : 28. Misidentification.]

♂. Wing, 15-19 mm. Colour variable, reddish brown to yellow-brown, otherwise similar to nominate subspecies. Hyaline areas in forewing generally large, oval, occasionally reduced (particularly in specimens from Admiralty Is.). Underside generally more heavily marked than nominate with more mauve.

Genitalia ♂ (Pl. 42, fig. 318). As nominate subspecies but generally more irregular toothing of gnathus and with cornutus in aedeagus.

♀. Wing, 14-19 mm. Pattern as male, often more red on upperside. Hyaline area in forewing occasionally reduced or absent. Labial palp with third segment half length of second. Frenulum triple.

Genitalia ♀ (Pl. 53, fig. 426; Pl. 63, fig. 520; Pl. 68, fig. 599). Anal papillae short. Ostium broad, covered with minute platelets, these continue into duct. Large signum in bursa extending longitudinally.

DISCUSSION. This is a very variable subspecies with the probability that further separation into several more subspecies will be justified when more specimens from different localities are available. There are slight differences between specimens from Sulawesi and New Guinea but there is a lot of variation in New Guinea itself and on the surrounding island. This is generally a rather large species with a very prominent oval hyaline area in the forewing. One specimen from the Weyland mountains (West Irian) differs considerably from the other in the shape of the gnathus and is a greyer insect (other specimens being brown or reddish brown). This may represent a new subspecies but is not described here in view of the great diversity shown by the specimens of this species.

BIOLOGY. Not recorded. Adults collected in Sulawesi in ii; iv; in New Guinea in i; ii; iv; xi; in New Ireland in xii; in Rook Is. in viii; in Trobriand Is. in iv.

DISTRIBUTION. Indonesia: Sulawesi, West Irian; New Guinea; Papua; Trobriand Is.; Bismarck Archipelago; Louisiade Archipelago; D'Entrecasteaux I.

MATERIAL EXAMINED.

Holotype ♂ (*diversicolor*), TROBRIAND IS.: Kiriwini (*Meek*), 1895, BM slide no. 8403, in BMNH. Holotype ♂ (*satelles*), NEW GUINEA: Angabunga R., 1800 m, xi.[19]04 (*Meek*), BM slide no. 8391, in BMNH. Holotype ♀ (*coeca*), NEW GUINEA: Angabunga R., 1800 m, xi[19]04-ii.[19]05 (*Meek*), BM slide no. 8425, in BMNH.

120 specimens, BMNH; 1 specimen, ANIC.

Bansia ovifera praevaria subsp. n.

(Pl. 15, fig. 154; Pl. 42, fig. 319; Pl. 53, fig. 427)

Wing, 17-20 mm. Similar to nominate subspecies, but a paler orange-brown hindwing and yellow-brown forewing. Generally more prominent dark marks on costa on underside of forewing.

Genitalia ♂ (Pl. 42, fig. 319). As nominate subspecies but lacking prominent lateral process on the two lateral uncus processes. Socii elongate. Gnathus with a few, widely spaced teeth. Median valve processes two long curved processes. Aedeagus with large sclerotized cornutus.

♀. Wing, 16–19 mm. Pattern as male but generally dark red-brown and heavily patterned in fore- and hindwing. Labial palp with third segment half length of second. Frenulum triple.

Genitalia ♀ (Pl. 53, fig. 427). Similar to nominate subspecies but with slightly broader sclerotized plate at ostium and some of the spines in the signum are larger.

DISCUSSION. This subspecies is usually larger than the others but the orange-brown and more heavily marked pattern generally separates this from the other subspecies. Some of the specimens of *diversicolor* from New Guinea approach this in colour but the genitalia are quite distinct. This is the most distinct of the *ovifera* subspecies with several striking differences in genitalia from the others. One specimen of *o. praevaria* has been examined from Feni Island, east of New Ireland, while on New Ireland itself only *o. diversicolor* has been found.

BIOLOGY. Not recorded. Adults collected in i; ix; x; xi; xii. This species has been collected at black light on the Solomon Is.

DISTRIBUTION. Solomon Is.; Feni Is. (east of New Ireland).

MATERIAL EXAMINED.

Holotype ♂, SOLOMON IS.: Choiseul I., xii. 1903 (*Meek*), BM slide no. 14375, in BMNH.

Paratypes. SOLOMON IS.: Choiseul, 3 ♂, 4 ♀, xii–i. 1903–04 (*Meek*); 4 ♂, 2 ♀, Gizo, xi. 1903 (*Meek*); 1 ♂, Guadalcanal, Honiara, 8–18.ix.1953 (*Bradley*); 1 ♀, Guadalcanal, Popomanasi, Hunuvalekama, 1320 m, 9.xi.1965 (*Roy. Soc. Expd.*). NEW IRELAND: Feni I., v. 1924 (*Eichhorn*). All in BMNH.

THE *ANGULATA*-GROUP

This group consists of the next two species (*angulata*, *composita*) which are morphologically very similar in many respects but show some peculiar specific differences. In both species the hind tibia (Pl. 44, fig. 330) is swollen and the genitalia show similar modifications but *angulata* has a special modification of the labial palps. On the second segment of these palps there is a large tuft of scales forming a curved groove. It appears to be the shape which could be used for

	<i>angulata</i>		<i>composita</i>	
	♂	♀	♂	♀
Hindwing with $Sc + R_1$ + R_5 to wing margin	×			
Hind tibia swollen	×		×	
Hind tibial articulation with femora lateral	×		×	
Labial palp second seg- ment with groove and scale tuft.	×			

× character present.

cleaning the antennae or proboscis in a similar way that the epiphysis on the fore tibia is used by some insects. Why this particular character has developed in *angulata* and not apparently in the closely related *composita* is not clear. *B. angulata* also has difference in hindwing venation from *composita* but all these modifications are present in the males only.

***Banisia angulata* (Warren) comb. n.**

(Pl. 2, fig. Q; Pl. 15, fig. 155; Pl. 42, fig. 320; Pl. 53, fig. 428; Pl. 63, fig. 522; Pl. 68, fig. 600)

Letchena angulata Warren, 1899b : 316. LECTOTYPE ♂, here designated, NEW GUINEA (BMNH) [examined].

Rhodoneura angulata (Warren); Dalla Torre, 1914 : 19.

♂. Wing, 15–18 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-half length second. Second segment of palp with long curved scale tuft. Large scale tuft on tibia, often with black scales. Forewing, pattern as in Pl. 15, fig. 155, grey-brown with black spots, and hyaline spots forming streaks in forewing. Hindwing similar with several small hyaline spots often with reddish tinge. Underside, greyish, more heavily patterned, brown mark on costa in median area. Hindwing with reddish tinge, forewing with $R_2 - R_5$ separately from cell. Hindwing with $Sc + R_1$ and R_s separate at base of hindwing, but running together to wing margin as $Sc + R_1 + R_s$.

Genitalia ♂ (Pl. 42, fig. 320). Uncus bifid. Socii very large and prominent. Gnathus a sclerotized loop, enlarged near middle, slightly toothed. Valve with broad median process. Sacculus unmodified. Juxta a sclerotized plate with median keel. Aedeagus with large number of prominent cornuti.

♀. Wing, 15–18 mm. Pattern as male but with more orange-red in patch in hindwing and some in forewing. Labial palp without scale process. $Sc + R_1$ and R_s in hindwing approach but do not join. Tergum of first abdominal segment red-brown.

Genitalia ♀ (Pl. 53, fig. 428; Pl. 63, fig. 522; Pl. 68, fig. 600). Anal papillae short. Ostium with many spines. Opening broad. Anterior part of duct thickened and spiny, rest convolute. Large signum in bursa.

DISCUSSION. This is a remarkable species, externally similar to *barbatula* and very similar in much of its morphology to *composita*, but differing from both these species in specialized characters in the male.

The male *angulata* has the remarkable curved group of scales on the second segment of the labial palp with a groove on the palp itself, and the hindwing venation has the unusual fusion of R_s towards the wing margin with $Sc + R_1$, giving a single vein ($Sc + R_1 + R_s$) to the margin. Neither the palpal character nor the hindwing modification are found in the female of *angulata* and it does raise some doubt of the correctness of the association of the males and females. However, both males and females were collected in the same locality (but so also was *composita* which is rather similar) but the underside pattern in males and females is similar so that their association is reasonable. If this is correct then sexual dimorphism is present not only in the labial palps (which is usual) but also in the hindwing venation in males and females, which is very unusual.

BIOLOGY. Not recorded. Adults collected in i; ii; iii; iv; viii; x; xi; xii.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED.

Lectotype ♂, NEW GUINEA: Milne Bay, British New Guinea, xi.[18]98 (*Meek*), BM slide no. 8416, in BMNH.

29 specimens (including three females), BMNH.

***Banisia composita* (Warren) comb. n.**

(Pl. 16, figs 157, 158; Pl. 42, fig. 321; Pl. 44, fig. 330; Pl. 53, fig. 429; Pl. 63, fig. 523; Pl. 68, fig. 601)

Letchena composita Warren, 1908 : 14. Holotype ♀, NEW GUINEA (BMNH) [examined].

Rhodoneura composita Warren; Dalla Torre, 1914 : 21.

♂. Wing, 14.5–16.0 mm. Vertex brown. Antennae minutely ciliate. Labial palp with third segment one-third length second. Thorax orange-brown. Tibia with large scale tuft. Forewing, pattern as in Pl. 16, figs 157, 158, yellow-brown with darker reticulations and several oval hyaline areas in forewing. Basal area of hindwing similar but without reticulations. Underside paler, pinkish tinge, prominent brown mark from costa in forewing in median area.

Genitalia ♂ (Pl. 42, fig. 321). Uncus bifid. Socii with long arms. Gnathus a sclerotized loop, broader near mid-line, with small teeth marginally. Juxta a sclerotized plate with median ridge. Base of sacculus unmodified. Aedeagus with large number of cornuti.

♀. Wing, 16–19 mm. Pattern similar to male but more reddish brown with orange-brown patches. Frenulum triple. Hind tibia without large scale patch.

Genitalia ♀ (Pl. 53, fig. 429; Pl. 63, fig. 523, Pl. 68, fig. 601). Anal papillae short. Ostial plate and ostium sclerotized and spiny. Duct convolute. Bursa with large signum.

DISCUSSION. The female is similar to the female *angulata* but has more reddish brown rather than grey-brown, otherwise the two are similar. The male *composita*, while lacking the process on the labial palps and the differences in hindwing venation, have a similar development of the hind tibia with a large scent scale patch and the swollen base to the tibia.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv; v; x; xi; xii.

DISTRIBUTION. Indonesia: West Irian; New Guinea.

MATERIAL EXAMINED.

Holotype ♀, NEW GUINEA: Biagi, Mambare R., 1500 m, ii.[19]06 (*Meek*), BM slide no. 14510, in BMNH.

7 specimens, BMNH.

THE *STRIGIGRAPHA*-GROUP

This group contains species where the uncus is reduced but it is not a very homogeneous one and some of the species at present placed in it are probably not closely related. However, in the case of the Fijian species, *B. messoria* and the South American one, *B. extravagans*, the remarkable external similarity and similar genitalia structures suggests the possibility of a close common ancestor for these two

geographically widely separated species. Unfortunately the males of *extravagans* are not known and further speculation on their relationship will have to await their discovery.

***Bansia strigigrapha* (Hampson) comb. n.**

(Pl. 16, figs 159, 160; Pl. 43, fig. 322; Pl. 53, fig. 430; Pl. 63, fig. 524; Pl. 68, fig. 602)

Striglina strigigrapha Hampson, 1914 : 110. Holotype ♂, BORNEO (BMNH) [examined].

Striglina strigigrapha Hampson; Gaede, 1932 : 748.

♂. Wing, 13.5–15.0 mm. Vertex brown. Antennae minutely ciliate. Third segment one-quarter length of second. Prothorax brown with yellow-tipped scales, rest of thorax reddish brown. Forewing, pattern as in Pl. 16, figs 159, 160, reddish brown with darker transverse fascia. Hindwing similar. Underside paler, similarly patterned with dark patch subapically on terminal margin of forewing. Veins R_2 to R_5 separately from cell.

Genitalia ♂ (Pl. 43, fig. 322). Uncus reduced. Socii large, lightly sclerotized. Gnathus a lightly sclerotized loop. Valve with prominent thumb-like process on base of costal margin. Sacculus process strongly spined. Juxta a lightly sclerotized plate. Aedeagus without cornuti but with minute spines on manica.

♀. Wing, 15–16 mm. Colour and pattern as male, usually more red-brown than male. Frenulum triple. Third segment of labial palp one-quarter length second.

Genitalia ♀ (Pl. 53, fig. 430; Pl. 63, fig. 524; Pl. 68, fig. 602). Anal papillae short. Ostial plate spiny, sclerotized. Ostium oval, first part of duct sclerotized, rest minutely spined. Bursa with large secondary sac. Signum very large and sclerotized.

DISCUSSION. This is one of the few species where there is virtually no difference between the size of the labial palps in the male and females. It is very variable in colour and pattern with some specimens having a clear hyaline area in the forewing, while others are entirely without this. Considerable variation in colour, from brown to a very bright red-brown, exists even in the small series examined. There is some variation in the genitalia which indicates that there may be some subspeciation but without more material this cannot be confirmed. In some specimens the valves are less pointed than in others.

BIOLOGY. Not recorded. Adults collected in iii; ix; x; xii. Collected in moss forests in Sarawak.

DISTRIBUTION. Indonesia: Borneo; Malaysia: Sarawak.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Borneo, Sadong, xii. 1903, BM slide no. 8427, in BMNH. 11 specimens, BMNH.

***Bansia orcina* sp. n.**

(Pl. 15, fig. 156; Pl. 43, fig. 323)

♂. Wing, 10.5–11.5 mm. Vertex grey-brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length of second. Forewing, pattern as in Pl. 15, fig. 156, dark grey-brown. Hindwing almost black with white fringe. Some darker, inconspicuous, transverse fasciae on forewing. Underside, strongly patterned, paler with distinct pink-red

tinge under forewing, fascia more distinct and large number of white scales on forewing. Veins R_2 to R_5 separately from cell.

Genitalia ♂ (Pl. 43, fig. 323). Uncus reduced to small point. Gnathus a sclerotized loop. Socii sclerotized. Valve with long pointed process from near base of costal margin. Thumb-like median valve process, base of valve with long hairs. Juxta Y-shaped, sclerotized plate. Aedeagus curved with prominent spines on manica.

♀. Unknown.

DISCUSSION. The relationships of this small grey-black species are not clear. The genitalia are unusual in the genus in having the prominent costal spine on the valve, but this could be regarded as an extreme of the thumb-like projection of *strigigrapha*, where in the absence of other evidence, this species is placed near. If this relationship is correct then it is probable that the female, when found, should have a signum something like the typical form for the genus. This species is known only from a small series collected in New Guinea.

BIOLOGY. Not recorded. Adults collected in x; xi; xii.

DISTRIBUTION. Indonesia: West Irian; New Guinea.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: West Irian, nr Oetakwa R., Snow Mts up to 1050 m, x-xii, 1910 (*Meek*), BM slide no. 14482, in BMNH.

Paratypes. INDONESIA: 2 ♂, West Irian, data as holotype, in BMNH. NEW GUINEA: 1 ♂, Owgarrá (*Meek*), in BMNH.

Bansia extravagans (Warren) **comb. n.**

(Pl. 2, fig. F; Pl. 53, fig. 431; Pl. 63, fig. 525; Pl. 68, fig. 603)

Letchena extravagans, Warren, 1909 : 340. Holotype ♀, BRAZIL (BMNH) [examined].

Rhodoneura extravagans Warren; Dalla Torre, 1914 : 22.

♀. Wing, 15-16 mm. Vertex grey-brown. Antennae minutely ciliate. Third segment labial palp one-third length second. Patagia grey-brown, thorax and tegulae reddish brown. Forewing, pattern as in Pl. 2, fig. F, grey-brown with black reticulations and orange-brown area in cell with black spot at apex of cell. Large group of hyaline spots, posterior ones orange-yellow, in median area. Hindwing, uniformly grey-brown with black reticulations. Under-side purplish, with brown subapical and median areas on fore- and hindwings and purple iridescence. Veins R_2 to R_5 separately from cell. Frenulum triple.

Genitalia ♀ (Pl. 53, fig. 431; Pl. 63, fig. 525; Pl. 68, fig. 603). Anal papillae short. Ostial plate sclerotized and covered in spines. Ostium broad, duct with minute spines in first part. Strongly convolute bursa with large median signum.

♂. Unknown.

DISCUSSION. With only the females known it is difficult to assess the relationships of this species. However, the remarkable similarity to *messoria* from Fiji is discussed in more detail under that species. The main morphological difference between these two is in the shape of the signum and bursa. The structure of the signum is typical of the genus but shows a greater degree of reduction in proportion to the total surface area of the bursa. The overall similarities are so striking that it is difficult not to consider a close common ancestor for *messoria* and *extravagans*

even though they are geographically so distant. The discovery of the male of *extravagans* will help to throw light on this relationship.

BIOLOGY. Not recorded. Adults collected in vi.

DISTRIBUTION. Brazil; French Guiana.

MATERIAL EXAMINED.

Holotype ♀, BRAZIL: Fonta Boa, Upper Amazon, vi. 1906 (*Klages*), BM slide no. 14410, in BMNH.

1 specimen, BMNH.

Banisia messoria sp. n.

(Pl. 16, figs 161, 162; Pl. 43, fig. 324; Pl. 53, fig. 432; Pl. 63, fig. 526; Pl. 68, fig. 604)

Rhodoneura scatebrosa mss. Meyrick.

♂. Wing, 15 mm. Vertex grey. Antennae minutely ciliate. Third segment one-quarter length second. Thorax grey-brown. Tibia with large scale tufts. Forewing, pattern as in Pl. 16, figs 161, 162, blackish with black, narrow and interrupted, transverse fascia and reddish brown mark in discal area. Small hyaline spot and small orange-yellow mark posterior to hyaline spot. Hindwing blackish, with black reticulation, no hyaline areas. Underside white with black giving lighter pattern than upper surface with black reticulations. Two small purplish marks in position of upper hyaline area. Dark patch in front of cell in forewing with a few reddish scales. Forewing with R_2 to R_5 separately from cell. Hindwing with $Sc + R_1$ and R_s running together for a short distance.

Genitalia ♂ (Pl. 43, fig. 324). Uncus reduced to small point. Socii large, lightly sclerotized. Gnathus a sclerotized loop, upturned in middle. Valve with prominent sclerotized median process, heavily toothed posteriorly. Sacculus with distal end elongate, basal part strongly spiny. Juxta a small sclerotized plate. Aedeagus with a small sclerotized cornutus in vesica.

♀. Wing, 12.5–15.5 mm. Colour slightly more purplish brown than male. Large group of hyaline spots in median area of forewing with orange-red surrounding many of them. Hindwing without hyaline area. Underside pale, distinct subapical black mark on termen. Labial palp with third segment one-half length of second. Frenulum triple.

Genitalia ♀ (Pl. 53, fig. 432; Pl. 63, fig. 526; Pl. 68, fig. 604). Anal papillae short. Ostial plate sclerotized and spiny, ostium U-shaped. Duct narrow, broader in convoluted part. Bursa with large signum part of which is more heavily sclerotized. Signum smaller in proportion to size of bursa than in related species.

DISCUSSION. There is an element of doubt in the association of male and female specimens in this species. The species, if the association is correct, is strongly dimorphic in pattern. However, only one male is known and the presence/absence of the hyaline areas on the forewing is known to vary intraspecifically. The affinities of this species are uncertain. Externally the female looks very similar to *extravagans* from South America but the genitalia differ. Provisionally I place this species next to *extravagans* and *strigigrapha* from which it can be separated by size or on the structure of the genitalia, and close to *lithophora* with which it also has some similarities. The overall similarity to *extravagans* from South America is unexpected. There are so many features in common that I think this indicates some relationship rather than a convergent resemblance. One

specimen of *messoria* has the label in Meyrick's handwriting, '*Rhodoneura scatebrosa* sp. n. E. Meyrick det'. I have been unable to trace a published description with this name and from a study of Meyrick's notebooks I believe that this is a manuscript name.

BIOLOGY. Not recorded. Adults collected in i; ii; xii.

DISTRIBUTION. Fiji.

MATERIAL EXAMINED.

Holotype ♂, FIJI: 1966-67 (*Robinson*), BM slide no. 14486, in BMNH.

Paratypes. FIJI: 3 ♀, data as holotype; 1 ♀, Lautoka (*Phillips*), 7.xii.1929; 4 ♀, Vunidawa (*Phillips*), 1929-1934; 1 ♀, Suva (*Lever*), 7.xii.1944. All in BMNH.

***Banisia lithophora* (Tams) comb. n.**

(Pl. 16, fig. 163; Pl. 53, fig. 433, 434; Pl. 64, fig. 527)

Striglina lithophora Tams, 1935 : 243. Holotype ♂, SAMOA (BMNH) [examined].

♀. Wing, 16.5-17.5 mm. Vertex yellow-brown. Antennae minutely ciliate. Third segment of labial palp one-half length second. Thorax pinkish brown. Tibia with a few long white scales. Forewing, pattern as in Pl. 16, fig. 163, pinky brown irrorated with black. Thin black subterminal line, reddish brown patch over cell with group of hyaline behind. Hindwing pinkish brown without hyaline spots. Underside paler, dark subapical patch on termen of forewing. Veins R_2 to R_5 separately from cell.

Genitalia ♀ (Pl. 53, figs 433, 434; Pl. 64, fig. 527). Anal papillae short. Ostial plate sclerotized, spiny. Ostium broad, V-shaped. First part of duct with minute spines, rest broad, convolute. Bursa with secondary sac but without signum.

♂. Unknown.

DISCUSSION. Externally this Samoan species is similar to *messoria* from Fiji, but differs in lacking a signum in the bursa and in having much smaller hyaline areas in the forewing. Until males are known its affinities are uncertain but I think it is related to *messoria*; in fact this latter species could even prove to be a subspecies of *lithophora*.

BIOLOGY. Not recorded. Adults collected in vi; viii; ix.

DISTRIBUTION. Samoa.

MATERIAL EXAMINED.

Holotype ♀, SAMOA: Vailema Apia, West Samoa, 19.ix.[19]22 (*Armstrong*), BM slide no. 13510, in BMNH.

4 specimens, BMNH.

***Banisia flavidiscalis* (Hampson) comb. n.**

(Pl. 16, figs 164, 165; Pl. 43, fig. 325; Pl. 53, fig. 435; Pl. 64, fig. 528; Pl. 68, fig. 605)

Rhodoneura flavidiscalis Hampson, 1914 : 110. Holotype ♀, SINGAPORE (BMNH) [examined].

Rhodoneura cyclothyris Hampson, 1914 : 111. Holotype ♂, SINGAPORE (BMNH) [examined].

Syn. n.

Striglina flavidiscalis (Hampson); Gaede, 1932 : 748.

♂. Wing, 10–11 mm. Vertex dark brown. Antennae minutely ciliate. Labial palp with third segment one-quarter length second. Patagia yellow. Thorax and tegulae bright red-brown. Tibia with large scale tufts. Forewing, pattern as in Pl. 16, figs 164, 165, bright orange-brown with prominent oval hyaline area and dark fringe and costa. Dark reticulations on forewing. Hindwing similar, without hyaline areas. Underside yellow-brown, dark patch subapically on termen. Hindwing reddish brown, reticulate, no yellow as forewing. Veins R_2 to R_5 separately from cell.

Genitalia ♂ (Pl. 43, fig. 325). Uncus reduced. Socii large. Gnathus a broad sclerotized loop, slightly thickened in mid-line. Valves narrowing considerably in apical third. Curved, sclerotized median process. Sacculus process covered with spines. Aedeagus with prominent toothed cornutus.

♀. Wing, 12–13 mm. Purplish brown fore- and hindwings with several yellow areas in forewing. Underside similar to male but yellow areas more defined. Labial palp with third segment one-third length second. Frenulum triple.

Genitalia ♀ (Pl. 53, fig. 435; Pl. 64, fig. 528; Pl. 68, fig. 605). Anal papillae short. Ostial plate sclerotized, spiny. Ostium broad. First part of duct bell-shaped, rest slender and convolute. Large signum in bursa.

DISCUSSION. The correctness of the association of males and females in this species still needs field observations. If they are correctly associated then there is a dimorphism similar to that in *messoria*. The males are comparatively brightly coloured, the females very distinctively patterned. In the male genitalia the valves are more highly modified in shape than in most others in the genus and in some ways similar to those in the genus *Striglina*. At present this species is known only from two males and two females from Singapore and all collected by the same collector, probably at the same time.

BIOLOGY. Not recorded.

DISTRIBUTION. Singapore.

MATERIAL EXAMINED.

Holotype ♀ (*flavidiscalis*), SINGAPORE: (*Ridley*), BM slide no 13317, in BMNH. Holotype ♂ (*cyclothyrus*), SINGAPORE: (*Ridley*), BM slide no. 8441, in BMNH. 2 specimens, BMNH.

The following single Neotropical species is anomalous and the association of males and females is also uncertain. The male has a curious 'gland' on the costal margin of the valve which has not been seen in any other species in the subfamily.

Banisia flammans (Hampson) **comb. n.**

(Pl. 16, fig. 166; Pl. 43, fig. 326; Pl. 54, fig. 436)

Striglina flammans Hampson, 1906 : 115. Holotype ♀, PERU (BMNH) [examined].

Striglina flammans Hampson; Dalla Torre, 1914 : 11.

Striglina flammans Hampson; Gaede, 1936 : 1194.

♂. Wing, 18.0–18.5 mm. Vertex reddish brown. Antennae minutely ciliate. Third segment of labial palp one-third length second. Prothorax with white-tipped scales. Hind tarsi with three apical spines on each segment. Forewing, pattern as in Pl. 16, fig. 166, reddish brown with darker reticulations. Prominent median transverse line with dark patch over cell. Another shorter transverse line subapically, from costa to terminal margin. Hindwing with

complicated reticulate pattern. Underside pale, discal spot prominent. R_2 to R_5 separately from cell.

Genitalia ♂ (Pl. 43, fig. 326). Uncus broad, divided into two curved lateral lobes. Gnathus sclerotized with two median sclerotized processes. Valve narrowing sharply at apex, hairy, basal process absent. Tubular, clavate-ended, process from costal margin covered in minute spines, tightly adpressed to valve. Juxta sclerotized with two long lateral arms. Aedeagus with ductus seminalis in median position, apical half of aedeagus curved and sclerotized. Vesica minutely spined.

♀. Wing, 18 mm. Colour and pattern as male. Third segment of labial palp one-half length of second. Forewing slightly more orange-brown than male.

Genitalia ♀ (Pl. 54, fig. 436). Anal papillae short. Ostium broad, spiny with sclerotized lateral lobes. Duct convolute, first part of duct broad, sclerotized, short. Bursa without signum but with minute spines. Secondary sac from junction of ductus and bursa.

DISCUSSION. This species was described from a female specimen and the association of the males is uncertain. If correctly associated then it is probable that this species should be placed in a separate genus.

The female lacks a signum but has a complicated ostium typical of the species of *Banisia*, and in some way similar to *Canaea*, but the male is atypical of either genera. With some doubt of the correctness of the association of males and female, further speculation of the affinities is not justified.

BIOLOGY. Not recorded. Adults collected in ii; iii; iv.

DISTRIBUTION. Peru; ^{Ecuador} Bolivia; Brazil.

MATERIAL EXAMINED.

Holotype ♀, PERU: Perené (*Simmonds*), BM slide no. 10884, in BMNH.
3 specimens, BMNH.

MONODECUS gen. n.

Type-species: *Monodecus admirandus* sp. n.

This genus is separated from *Banisia* by the hairy eyes. The genitalia of the male are very distinct from the typical *Banisia* but show some similarities to the American species, *B. furva*. The female lacks a signum, which is found in most species of *Banisia*. Although the genus at present has only one species placed in it, it can be separated from *Banisia* on a number of characters. One of the more remarkable aspects of the genus is the difference between the two subspecies of the single included species. In the nominate subspecies the interfacetal hairs are short and not very conspicuous but in *a. capillatus* these hairs are very long. Although interfacetal hairs have been found in other genera (*Mystina*, *Telchines*), nothing like this variation has been found even interspecifically.

GENERIC DESCRIPTION. Antennae minutely ciliate. Proboscis present. Labial palp three-segmented. Eyes with interfacetal hairs. Hind tarsi each with pair apical spines. Epiphysis on fore tibia. Radial veins R_2 to R_5 separately from cell. Male genitalia with large socii. Uncus a small recurved dorsal process. Sacculus spiny. Juxta membranous. Female with triple frenulum. Ostium lightly sclerotized. Bursa without signum.

BIOLOGY. Not recorded.

DISTRIBUTION (Map 8). Malaysia: Sabah; Indonesia: Sumatra.

***Monodecus admirandus* sp. n.**

(Pl. 1, fig. R; Pl. 16, figs 167, 168; Pl. 44, figs 327-329, 331; Pl. 54, figs 436, 437; Pl. 64, figs 529, 530)

This brightly coloured orange-red and yellow species is very distinctive and can only be confused with the orange form of *angulata*. From this the males can be separated by the large scale tuft on the hind tibia in *angulata* (small in *admirandus*) and in the female by the larger size and darker colour of *angulata*. *B. angulata* is also without the interfacetal hairs in both sexes which are characteristic of *admirandus*. The genitalia of the two species are quite distinct.

M. admirandus is separated into two subspecies which are geographically isolated. There are small differences in the genitalia and in the shape of the hyaline area in the forewing; this tends to be larger in *a. capillatus* (rather similar in shape to *B. angulata*), whereas in *a. admirandus* the hyaline area usually consists of one or two small round spots. The more obvious external difference is in the length of the interfacetal hairs on the eyes. The males are unusual in having a small recurved uncus and a large process below (ventral uncus). The female genitalia have a less sclerotized ostium than most species of *Banisia* and lack a signum.

Most of the specimens were collected at altitudes over 1200 m.

KEY TO THE SUBSPECIES OF *Monodecus admirandus* (males and females)

- | | | |
|---|--|--------------------------------------|
| 1 | One or two small round or oval hyaline spots in forewing. Eyes with short interfacetal hairs | <i>a. admirandus</i> (p. 186) |
| - | Hyaline spots on forewing run together forming dash-like mark. Eyes with long interfacetal hairs | <i>a. capillatus</i> (p. 187) |

***Monodecus admirandus admirandus* subsp. n.**

(Pl. 1, fig. R; Pl. 16, fig. 167; Pl. 44, figs 327, 328, 331; Pl. 54, fig. 437; Pl. 64, fig. 529)

♂. Wing, 13-15 mm. Vertex yellow-brown. Third segment labial palp one-third length second. Eyes with short interfacetal hairs. Thorax reddish yellow. Forewing, pattern as in Pl. 1, fig. R, orange-red with brown and yellow patches. Underside paler. One or two hyaline marks in forewing, often yellowish.

Genitalia ♂ (Pl. 44, figs 327, 328). Uncus curved. Gnathus a sclerotized loop, but with posterior link with large socii-gnathus process. Valve narrow, enlarged basally. Juxta small, membranous. Sacculus process slightly toothed. Aedeagus with number of strongly sclerotized, long, cornuti.

♀. Wing, 15-16 mm. Pattern as male but colour more orange than yellow-brown. Labial palp with third segment one-half length second.

Genitalia ♀ (Pl. 54, fig. 437; Pl. 64, fig. 529). Anal papillae short. Ostial plate minutely spined, lightly sclerotized. Ostium broad, duct not convolute. Bursa minutely spined, no clear signum.

DISCUSSION. This is readily separated from *a. capillatus* by the different lengths of the interfacetal hairs.

BIOLOGY. Not recorded. Adults collected in ii; v; vi; vii; viii; ix.

DISTRIBUTION. Malaysia: Sabah.

MATERIAL EXAMINED.

Holotype ♂, MALAYSIA: Sabah, Mt Kinabalu, Mesilau, 14.ii.1964 (*Smart*), Roy. Soc. Exped., BM slide no. 14492, in BMNH.

Paratypes. MALAYSIA: 1 ♂, 7 ♀, Sabah, Mt Kinabalu, Park HQ. 1620 m, vii-ix. 1965 (*Banks, Barlow & Holloway*); 1 ♂, 2 ♀, Mt Kinabalu, Power Station, 1930 m, vii-ix. 1965 (*Banks, Barlow & Holloway*); 1 ♂, Mt Kinabalu, W. Mesilau River, 3.ii.1964 (*Smart*); 2 ♀, Mt Kinabalu, Radio Sabah, 2600 m, vii-ix. 1965 (*Banks, Barlow & Holloway*); 1 ♂, Mt Kinabalu, v-viii. 1903 (*Waterstradt*). All in BMNH.

Monodecus admirandus capillatus subsp. n.

(Pl. 16, fig. 168; Pl. 44, fig. 329; Pl. 54, fig. 438; Pl. 64, fig. 530)

♂. Wing, 16 mm. Pattern as in Pl. 16, fig. 168, broadly similar to nominate subspecies but with more brown on wing. Distinguished by the very long interfacetal hairs on the eyes of *a. capillatus*.

Genitalia ♂ (Pl. 44, fig. 329). Similar to nominate subspecies; small differences in base of sacculus.

♀. Wing, 16 mm. Pattern similar to male but more orange-brown, otherwise similar to female of nominate subspecies but interfacetal hairs on the eyes much longer.

Genitalia ♀ (Pl. 54, fig. 438; Pl. 64, fig. 530). As nominate subspecies; first part of duct by ostium more sclerotized than in nominate subspecies.

DISCUSSION. This subspecies, while similar in pattern to the nominate one, can readily be separated by the extreme hairiness of the eyes. The specimens were all collected above 1500 m.

BIOLOGY. Not recorded. Adults collected in viii; ix; x.

DISTRIBUTION. Indonesia: Sumatra.

MATERIAL EXAMINED.

Holotype ♂, INDONESIA: Sumatra, North Korintji Valley, SW. Sumatra, 1500 m, ix-x. 1921 (*Pratt*), BM slide no. 14489, in BMNH.

Paratypes. INDONESIA: 1 ♂, 1 ♀, Sumatra, slopes of Mt Korintji, SW. Sumatra, 2190 m, viii-ix. 1921 (*Pratt*) (male specimen lacks abdomen and hindwing), in BMNH.

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- zamia Whalley, 162
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PLATE I

- A. *Striglina navigatorum inversa* (Gaede)
- B. *S. clathrata clathrata* Hampson
- C. *Misalina xanthoscia xanthoscia* (Warren)
- D. *M. scintillans* (Warren)
- E. *Macrogonia igniaria* Herrich-Schäffer
- F. *Banisia furva furva* (Warren)
- G. *Striglina castaneata castaneata* Hampson
- H. *Misalina condensata* (Warren)
- I. *M. dentifascia* (Warren)
- J. *M. reversa alternata* subsp. n.
- K. *Tristina jucunda* (Warren)
- L. *Banisia ovifera diversicolor* (Warren)
- M. *Striglina rufescens* Gaede
- N. *Misalina pseudoscia* sp. n.
- O. *M. ignefissa* (Warren)
- P. *M. costirufata chelydra* subsp. n.
- Q. *Tristina xanthina* (Felder & Rogenhofer)
- R. *Monodecus admirandus admirandus* subsp. n.

PLATE I



PLATE 2

- A. *Striglina scitaria scitaria* (Walker)
- B. *Misalina leprosa* (Warren)
- C. *Telchines lepidus* sp. n.
- D. *Tristina eporedia* sp. n.
- E. *Banisia intonsa* sp. n.
- F. *B. extravagans* (Warren)
- G. *Striglina rubicunda* sp. n.
- H. *Misalina floccosa* (Warren)
- I. *Rhodogonia miniata* (Warren)
- J. *Banisia furva illicita* subsp. n.
- K. *B. ovifera ovifera* (Butler)
- L. *Striglina divisata* Warren
- M. *S. advena* sp. n.
- N. *Pentina xanthopera* (Hampson)
- O. *P. grandaeva* sp. n.
- P. *Banisia fenestriifera daphoena* (Turner)
- Q. *B. angulata* (Warren)
- R. *Isalina hyperbolica* (Rothschild)

PLATE 2



A



G



M



B



H



N



C



I



O



D



J



P



E



K



Q



F



L



R

PLATE 3

- FIG. 1. *Striglina scitaria thermesiodes* (Snellen)
FIG. 2. *S. scitaria particula* subsp. n.
FIG. 3. *S. scitaria restricta* subsp. n.
FIG. 4. *S. scitaria iamba* subsp. n.
FIG. 5. *S. cinnamomea* (Rothschild)
FIG. 6. *S. strigosa* (Moore)
FIG. 7. *S. navigatorum navigatorum* (Felder & Rogenhofer)
FIG. 8. *S. navigatorum navigatorum* (Felder & Rogenhofer)
FIG. 9. *S. navigatorum superior* (Butler)
FIG. 10. *S. venilia* sp. n.
FIG. 11. *S. opulenta opulenta* subsp. n.
FIG. 12. *S. opulenta elea* subsp. n.

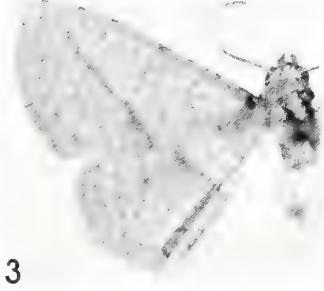
PLATE 3



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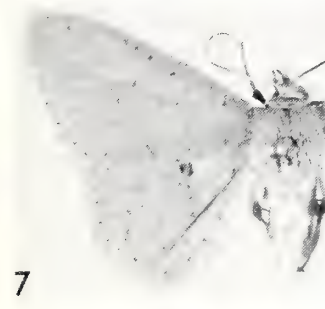
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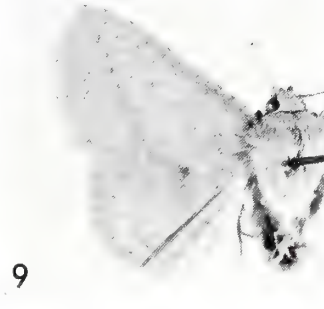
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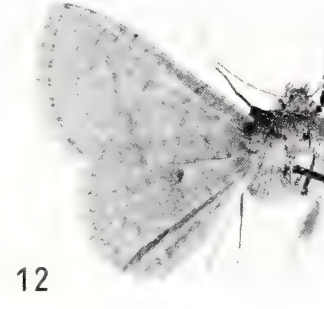
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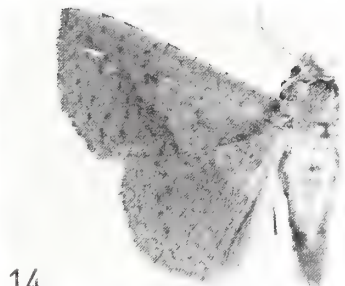
PLATE 4

- FIG. 13. *Striglina asinina* Warren
FIG. 14. *S. atrata* sp. n.
FIG. 15. *S. castaneata synethes* West
FIG. 16. *S. conjuncta* Swinhoe
FIG. 17. *S. cymba* sp. n.
FIG. 18. *S. cuticula* sp. n.
FIG. 19. *S. sectura* sp. n.
FIG. 20. *S. minutula* (Saalmüller)
FIG. 21. *S. eguttalis* Gaede
FIG. 22. *S. meridiana* sp. n.
FIG. 23. *S. burgesi* Gaede
FIG. 24. *S. curvilinea* Warren

PLATE 4



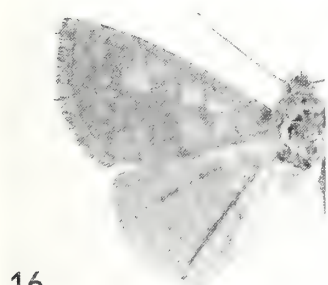
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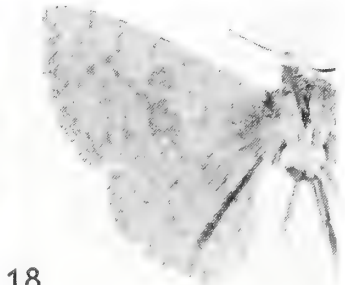
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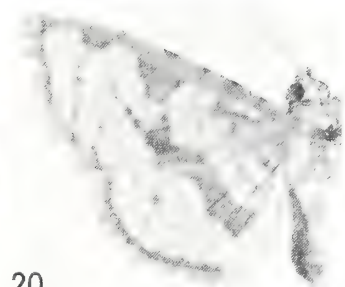
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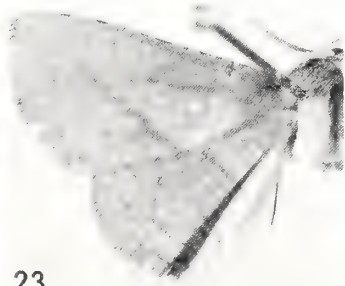
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PLATE 5

- FIG. 25. *Striglina irresecta irresecta* subsp. n.
FIG. 26. *S. irresecta obscura* subsp. n.
FIG. 27. *S. fixseni* Alpheraky
FIG. 28. *S. nemorosa* sp. n.
FIG. 29. *S. venia* sp. n.
FIG. 30. *S. cancellata* (Christoph)
FIG. 31. *S. mediofascia* Swinhoe
FIG. 32. *S. mediofascia* Swinhoe
FIG. 33. *S. scalata* Warren
FIG. 34. *S. duplicifimbria duplicifimbria* Warren
FIG. 35. *S. duplicifimbria duplicifimbria* Warren
FIG. 36. *S. duplicifimbria certa* subsp. n.

PLATE 5



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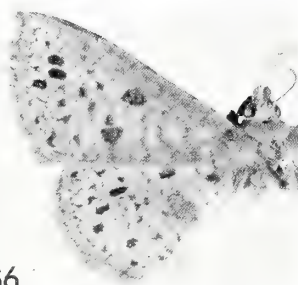
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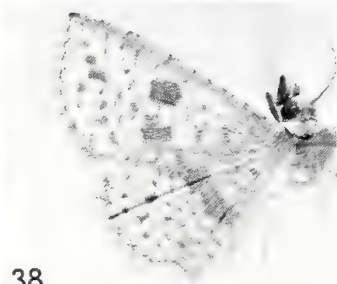
PLATE 6

- FIG. 37. *Striglina lilacina* Warren
FIG. 38. *S. suzukii* Matsumura
FIG. 39. *S. abella* sp. n.
FIG. 40. *S. dactylica dactylica* subsp. n.
FIG. 41. *S. dactylica blaesa* subsp. n.
FIG. 42. *S. rufivestris rufivestris* (Hampson)
FIG. 43. *S. rufivestris sinewiti* subsp. n.
FIG. 44. *S. fidelia* sp. n.
FIG. 45. *S. rothi* Warren
FIG. 46. *S. augescere* Whalley
FIG. 47. *S. strigifera* Strand
FIG. 48. *S. ferula* Whalley

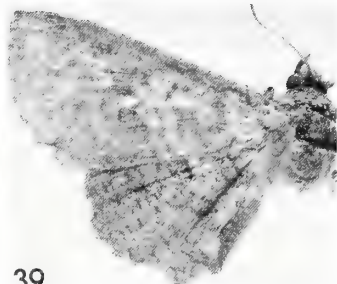
PLATE 6



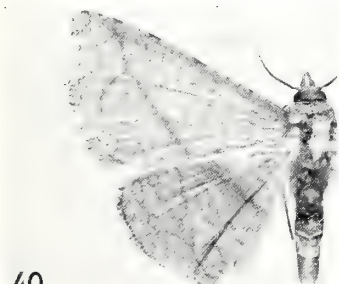
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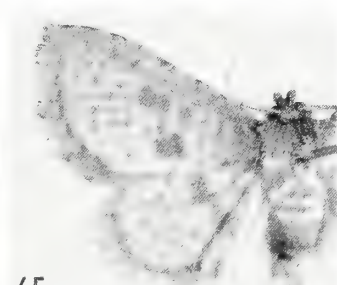
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47



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PLATE 7

- FIG. 49. *Strigina trepida* Whalley
FIG. 50. *Telchines vialis* (Moore)
FIG. 51. *T. henrici* (Snellen)
FIG. 52. *Sonagara strigipennis* Moore
FIG. 53. *Misalina ochracea* (Warren)
FIG. 54. *M. xanthoscia flava* subsp. n.
FIG. 55. *M. pseudoscia* sp. n.
FIG. 56. *M. ignefissa* (Warren)
FIG. 57. *M. reversa reversa* (Warren)
FIG. 58. *M. metallifera* (Warren)
FIG. 59. *M. anxia* sp. n.
FIG. 60. *M. anxia* sp. n.

PLATE 7



49



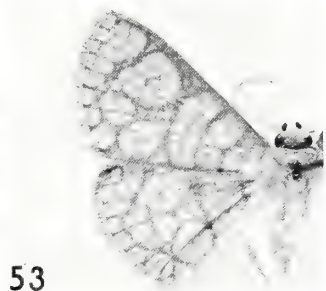
50



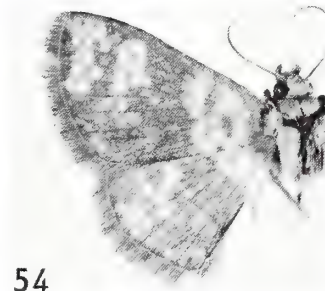
51



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53



54



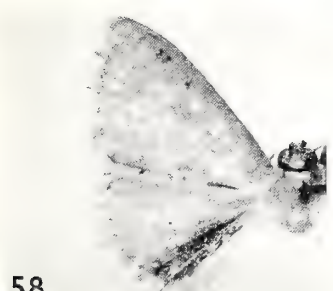
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60

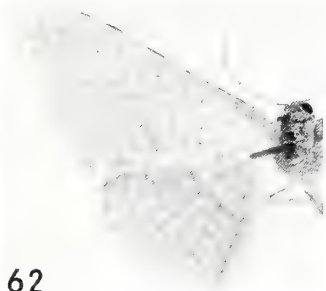
PLATE 8

- FIG. 61. *Misalina leprosa* (Warren)
FIG. 62. *M. suffusa* (Leech)
FIG. 63. *M. pyrghata* (Walker)
FIG. 64. *M. centiginosa* (Lucas)
FIG. 65. *M. stramentaria* (Lucas)
FIG. 66. *M. innotata* (Warren)
FIG. 67. *M. ferruginea* sp. n.
FIG. 68. *M. parata* sp. n.
FIG. 69. *M. irias* (Meyrick)
FIG. 70. *M. glareola* (Felder & Rogenhofer)
FIG. 71. *M. ferocia* sp. n.
FIG. 72. *M. sordida* (Pagenstecher)

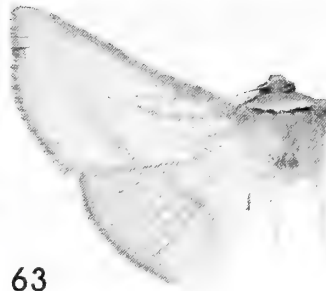
PLATE 8



61



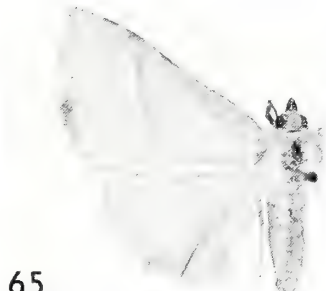
62



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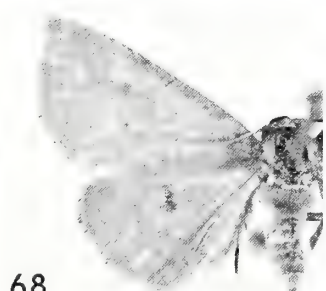
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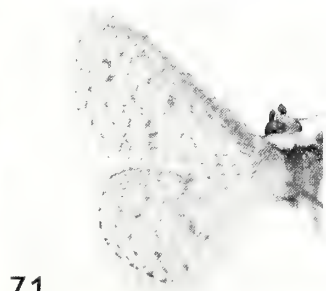
68



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71



72

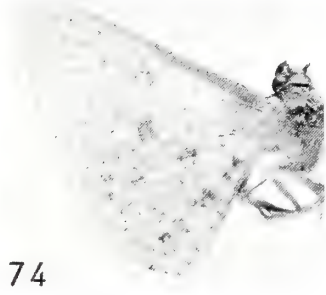
PLATE 9

- FIG. 73. *Misalina decussata decussata* (Moore)
FIG. 74. *M. decussata formosa* subsp. n.
FIG. 75. *M. decussata popula* subsp. n.
FIG. 76. *M. decussata popula* subsp. n.
FIG. 77. *M. decussata devasata* (Warren)
FIG. 78. *M. decussata straminea* (Warren)
FIG. 79. *M. industa* sp. n.
FIG. 80. *M. industa* sp. n.
FIG. 81. *M. gemmulosa* sp. n.
FIG. 82. *M. gemmulosa* sp. n.
FIG. 83. *Iscalina mediosecta* (Warren)
FIG. 84. *Pentina petulina* sp. n.

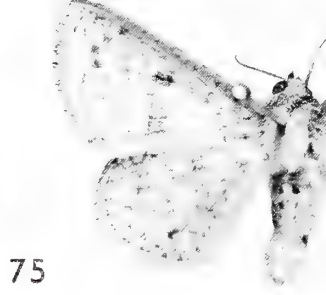
PLATE 9



73



74



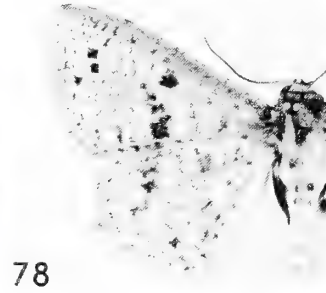
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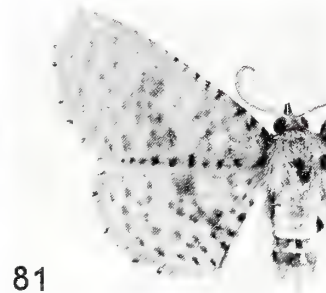
78



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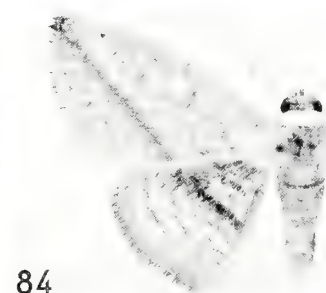
81



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83



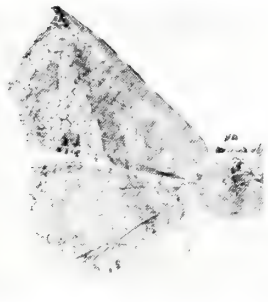
84

PLATE 10

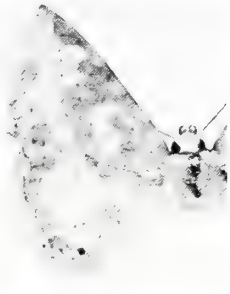
- FIG. 85. *Novitina variegata* (Warren)
FIG. 86. *N. variegata* (Warren)
FIG. 87. *N. nigripuncta* (Warren)
FIG. 88. *N. nigripuncta* (Warren)
FIG. 89. *Pentina ornata* sp. n.
FIG. 90. *P. miracula* sp. n.
FIG. 91. *P. lucida* (Warren)
FIG. 92. *Speculina madiaria madiaria* (Walker)
FIG. 93. *S. madiaria brunneata* (Walker)
FIG. 94. *Tanyodes rufitibia* (Felder & Rogenhofer)
FIG. 95. *T. rufitibia* (Felder & Rogenhofer)
FIG. 96. *Mystina humeralis* (Whalley)



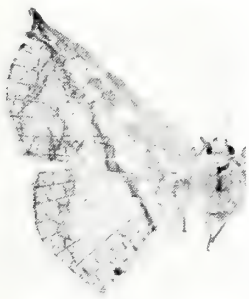
85



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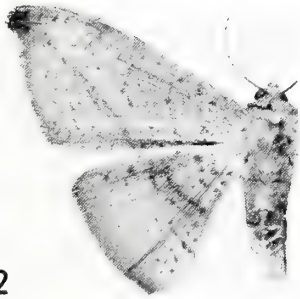
89



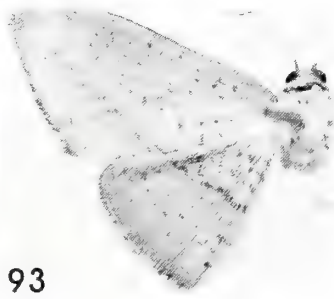
90



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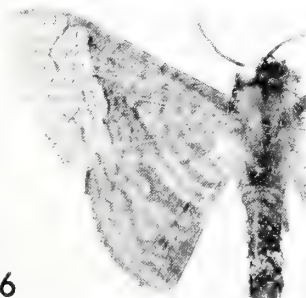
93



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PLATE II

- FIG. 97. *Mystina jaccanda* (Whalley)
FIG. 98. *M. tincta* (Whalley)
FIG. 99. *M. guttistigma* (Whalley)
FIG. 100. *Jamboina vindicta vindicta* (Whalley)
FIG. 101. *J. vindicta congoensis* (Whalley)
FIG. 102. *J. vindicta ivoriensis* (Whalley)
FIG. 103. *J. ramosa ramosa* (Whalley)
FIG. 104. *J. ramosa orientalis* subsp. n.
FIG. 105. *Heteroschista nigranalis* Warren
FIG. 106. *Mathoris vocata* (Walker)
FIG. 107. *M. procurata* (Walker)
FIG. 108. *M. ignepicta* (Hampson)

PLATE II



97



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100



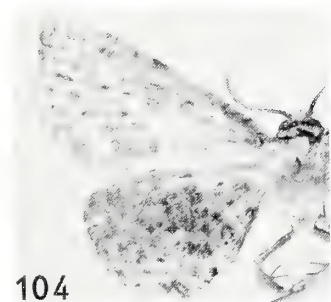
101



102



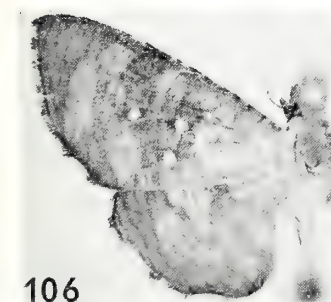
103



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107

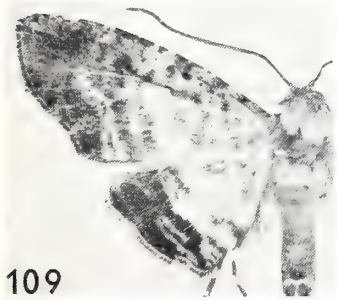


108

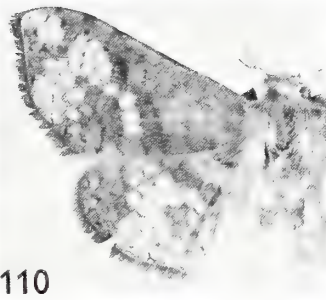
PLATE 12

- FIG. 109. *Mathoris magica* Gaede
FIG. 110. *Canaea semitesellalis caledonia* subsp. n.
FIG. 111. *Banisia argutula* sp. n.
FIG. 112. *B. anthina anthina* (Tams)
FIG. 113. *B. anthina pervaga* subsp. n.
FIG. 114. *B. anthina pervaga* subsp. n.
FIG. 115. *B. anthina bella* subsp. n.
FIG. 116. *B. anthina bella* subsp. n.
FIG. 117. *B. insignifica* (Rothschild)
FIG. 118. *B. lobata lobata* (Moore)
FIG. 119. *B. lobata caesia* subsp. n.
FIG. 120. *B. lobata ceylonensis* subsp. n.

PLATE 12



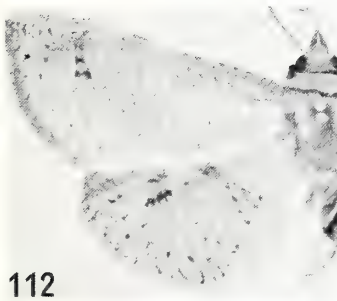
109



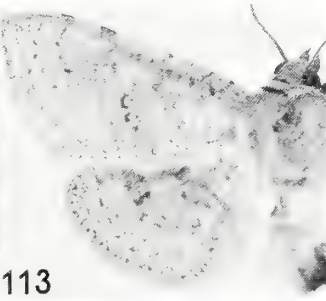
110



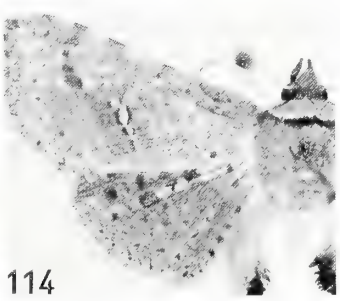
111



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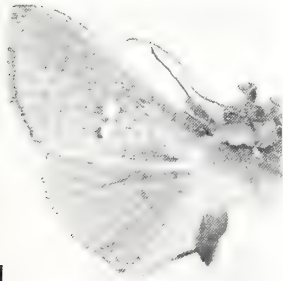


120

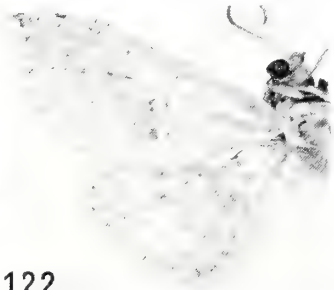
PLATE 13

- FIG. 121. *Banisia placida* sp. n.
FIG. 122. *B. minuta* (Whalley)
FIG. 123. *B. idalialis* (Walker)
FIG. 124. *B. myrsusalis myrsusalis* (Walker)
FIG. 125. *B. myrsusalis cinereola* (Felder & Rogenhofer)
FIG. 126. *B. myrsusalis elaralis* (Walker)
FIG. 127. *B. myrsusalis sumatrensis* subsp. n.
FIG. 128. *B. tibiale* (Fryer)
FIG. 129. *B. apicale* (Fryer)
FIG. 130. *B. aldabrana aldabrana* (Fryer)
FIG. 131. *B. aldabrana cana* (Whalley)
FIG. 132. *B. hyaena* (Warren)

PLATE 13



121



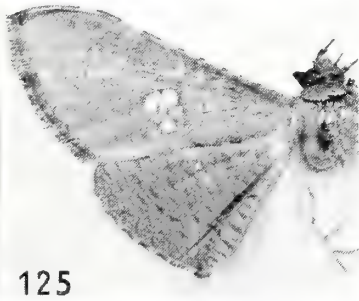
122



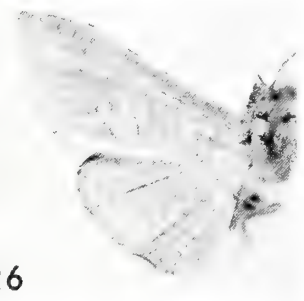
123



124



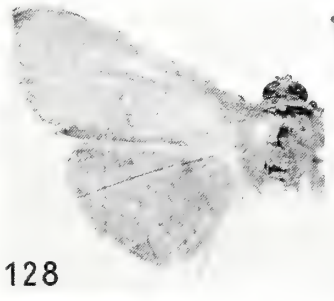
125



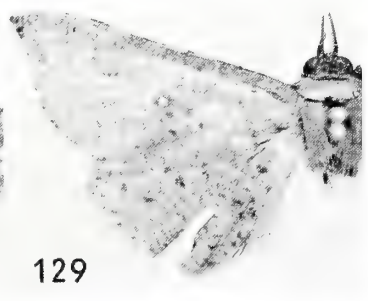
126



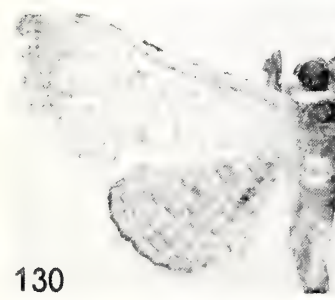
127



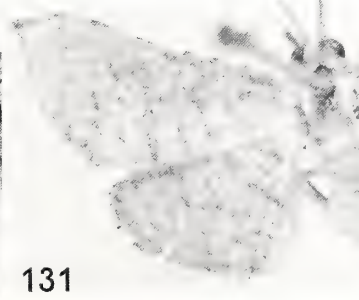
128



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131



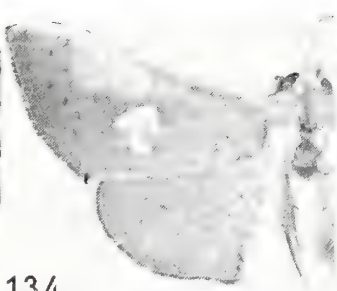
132

PLATE 14

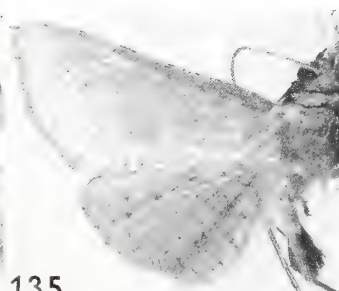
- FIG. 133. *Banisia plagifera* (Butler)
FIG. 134. *B. plagifera* (Butler)
FIG. 135. *B. cognata* sp. n.
FIG. 136. *B. furva devincta* subsp. n.
FIG. 137. *B. furva epasta* subsp. n.
FIG. 138. *B. furva fracta* subsp. n.
FIG. 139. *B. fuliginea* (Whalley)
FIG. 140. *B. antiopa* (Viette)
FIG. 141. *B. joccatia* (Whalley)
FIG. 142. *B. clathrula* (Guenée)
FIG. 143. *B. inoptata* (Whalley)
FIG. 144. *B. zamia* (Whalley)



133



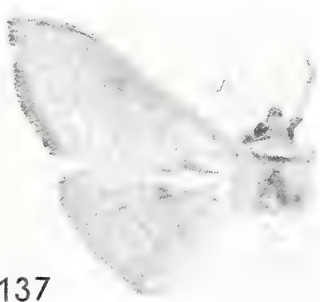
134



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136



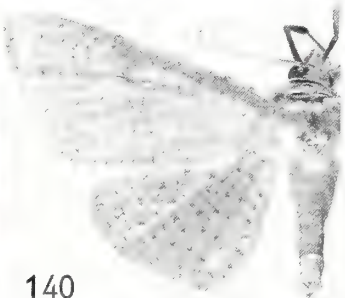
137



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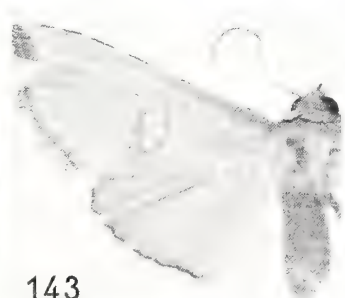
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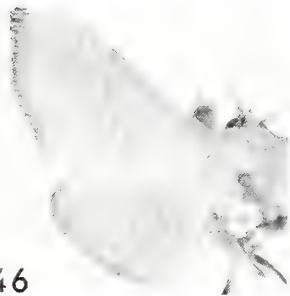
PLATE 15

- FIG. 145. *Banisia venustula* (Warren)
FIG. 146. *B. myrtaea* (Drury)
FIG. 147. *B. myrtaea* (Drury)
FIG. 148. *B. fenestrifera fenestrifera* Walker
FIG. 149. *B. fenestrifera triferina* subsp. n.
FIG. 150. *B. fenestrifera solomonensis* subsp. n.
FIG. 151. *B. fenestrifera daphoena* (Turner)
FIG. 152. *B. fenestrifera omissina* subsp. n.
FIG. 153. *B. barbatula* sp. n.
FIG. 154. *B. ovifera praevaria* subsp. n.
FIG. 155. *B. angulata* (Warren)
FIG. 156. *B. orcina* sp. n.

PLATE 15



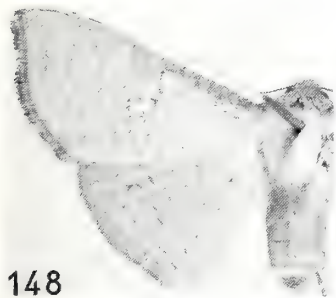
145



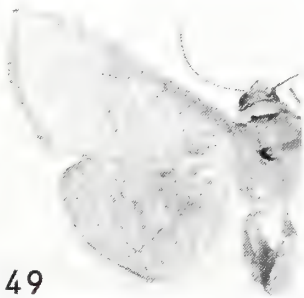
146



147



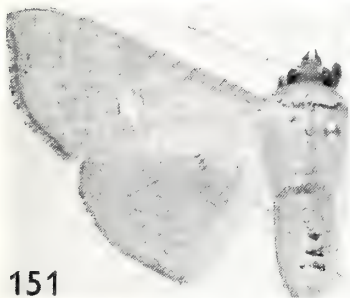
148



149



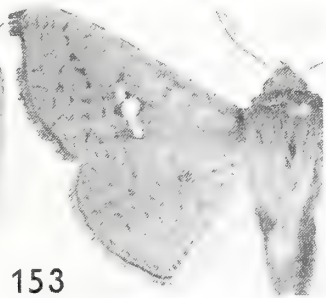
150



151



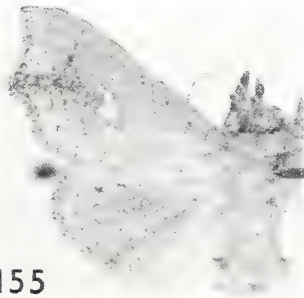
152



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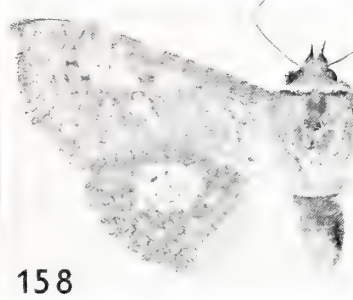
PLATE 16

- FIG. 157. *Banisia composita* (Warren)
FIG. 158. *B. composita* (Warren)
FIG. 159. *B. strigigrapha* (Hampson)
FIG. 160. *B. strigigrapha* (Hampson)
FIG. 161. *B. messoria* sp. n.
FIG. 162. *B. messoria* sp. n.
FIG. 163. *B. lithophora* (Tams)
FIG. 164. *B. flavidiscalis* (Hampson)
FIG. 165. *B. flavidiscalis* (Hampson)
FIG. 166. *B. flammans* (Hampson)
FIG. 167. *Monodecus admirandus admirandus* subsp. n.
FIG. 168. *M. admirandus capillatus* subsp. n.

PLATE 16



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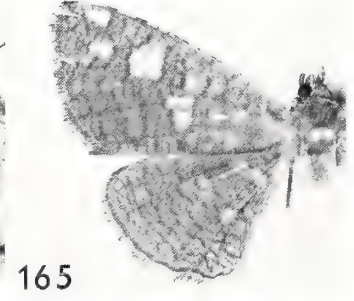
162



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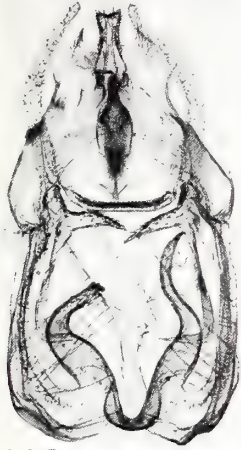
167



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PLATE 17

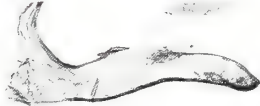
- FIG. 169. *Striglina scitaria scitaria* (Walker)
FIG. 170. *S. scitaria thermesiodes* (Snellen)
FIG. 171. *S. scitaria particula* subsp. n.
FIG. 172. *S. scitaria restricta* subsp. n.
FIG. 173. *S. scitaria iamba* subsp. n.
FIG. 174. *S. cinnamomea* (Rothschild)



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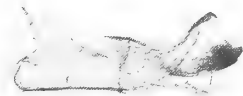
171



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PLATE 18

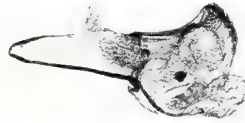
- FIG. 175. *Striglina strigosa* (Moore)
FIG. 176. *S. rubicunda* sp. n.
FIG. 177. *S. venilia* sp. n.
FIG. 178. *S. navigatorum navigatorum* (Felder & Rogenhofer)
FIG. 179. *S. navigatorum superior* (Butler)
FIG. 180. *S. navigatorum inversa* Gaede



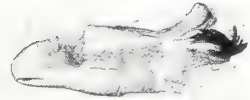
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PLATE 19

- FIG. 181. *Striglina advena* sp. n.
FIG. 182. *S. opulenta opulenta* subsp. n.
FIG. 183. *S. opulenta elea* subsp. n.
FIG. 184. *S. asinina* Warren
FIG. 185. *S. asinina* Warren (posterior)
FIG. 186. *S. asinina* Warren (posterior)
FIG. 187. *S. atrata* sp. n.



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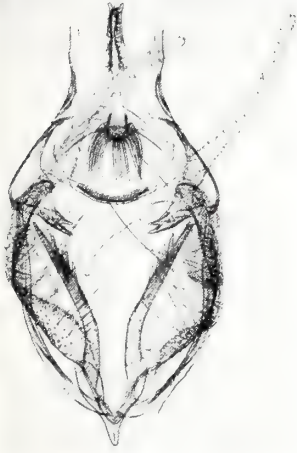


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PLATE 20

- FIG. 188. *Striglina propatula* Whalley
FIG. 189. *S. tibiaria* (Walker)
FIG. 190. *S. conjuncta* Swinhoe
FIG. 191. *S. castaneata castaneata* Hampson
FIG. 192. *S. castaneata synethes* West
FIG. 193. *S. minutula* (Saalmüller)



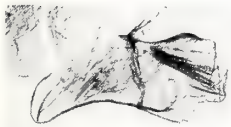
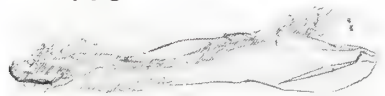
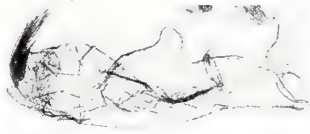
188



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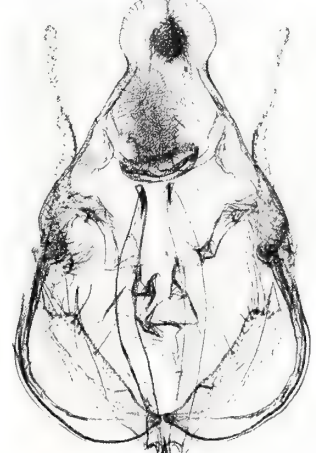


PLATE 21

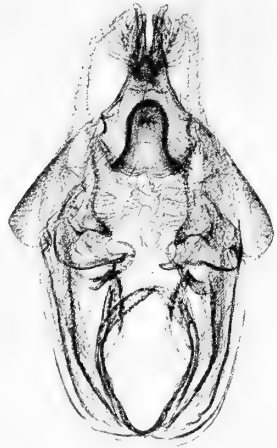
- FIG. 194. *Striglina rufescens* Gaede
FIG. 195. *S. rufescens* Gaede (enlargement of aedeagus)
FIG. 196. *S. cymba* sp. n.
FIG. 197. *S. cymba* sp. n. (enlargement of aedeagus)
FIG. 198. *S. cuticula* sp. n.
FIG. 199. *S. cuticula* sp. n. (enlargement of aedeagus)



194



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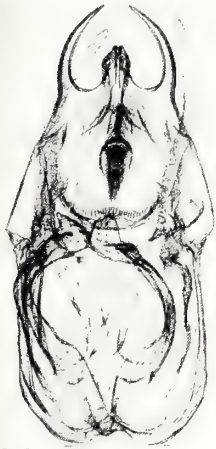


199

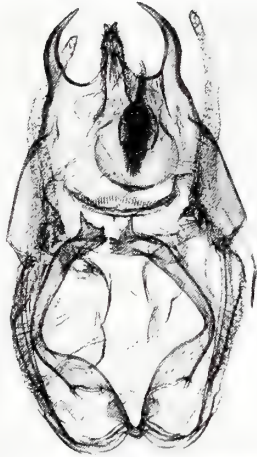


PLATE 22

- FIG. 200. *Striglina burgesi* Gaede
FIG. 201. *S. burgesi* Gaede
FIG. 202. *S. burgesi* Gaede (uncus)
FIG. 203. *S. burgesi* Gaede (gnathus)
FIG. 204. *S. irresecta irresecta* subsp. n.
FIG. 205. *S. irresecta obscura* subsp. n.
FIG. 206. *S. meridiana* sp. n.



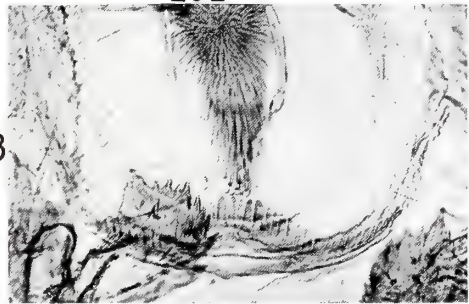
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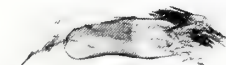
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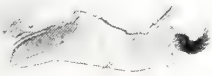


PLATE 23

- FIG. 207. *Striglina curvilinea* Warren
FIG. 208. *S. nemorosa* sp. n.
FIG. 209. *S. venia* sp. n.
FIG. 210. *S. cancellata* (Christoph)
FIG. 211. *S. mediofascia* Swinhoe
FIG. 212. *S. scalata* Warren



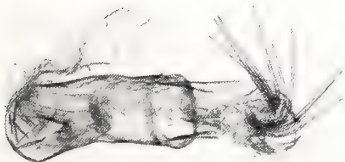
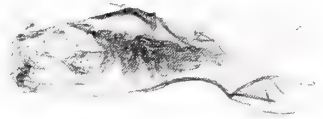
207



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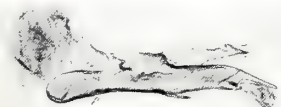
PLATE 24

- FIG. 213. *Strigina duplicifimbria duplicifimbria* Warren
FIG. 214. *S. duplicifimbria certa* subsp. n.
FIG. 215. *S. suzukii* Matsumura
FIG. 216. *S. abella* sp. n.
FIG. 217. *S. dactylica dactylica* subsp. n.
FIG. 218. *S. dactylica blaesa* subsp. n.

captions reversed



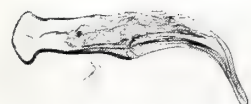
213



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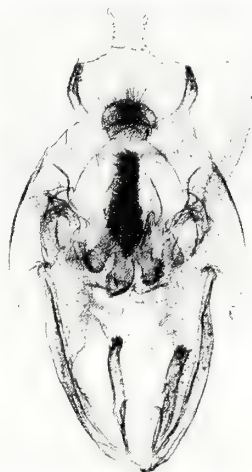
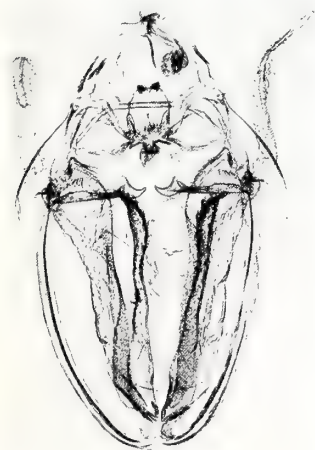


PLATE 25

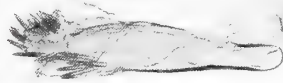
- FIG. 219. *Striglina divisata* Warren
FIG. 220. *S. rufivestris rufivestris* (Hampson)
FIG. 221. *S. fidelia* sp. n.
FIG. 222. *S. rufivestris sinewiti* subsp. n.



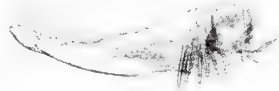
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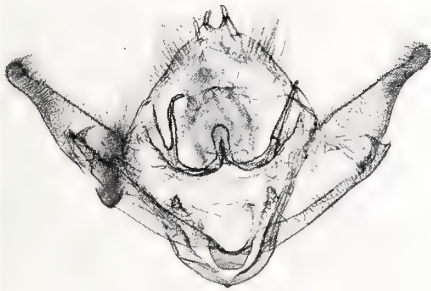
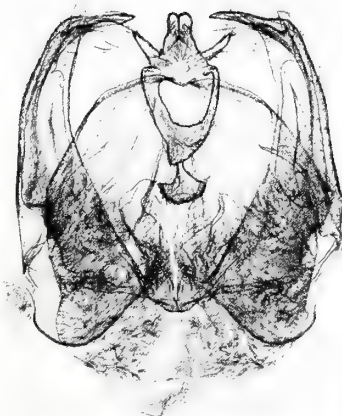


PLATE 26

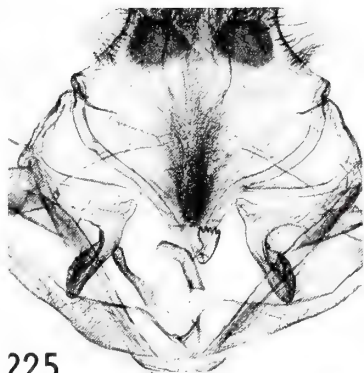
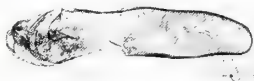
- FIG. 223. *Striglina sectura* sp. n.
FIG. 224. *S. rothi* Warren
FIG. 225. *Telchines vialis* (Moore) (anterior)
FIG. 226. *T. vialis* (Moore)
FIG. 227. *T. henrici* (Snellen)
FIG. 228. *T. lepidus* sp. n.
FIG. 229. *Sonagara strigipennis* Moore



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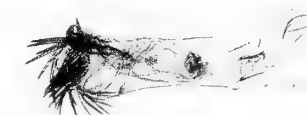
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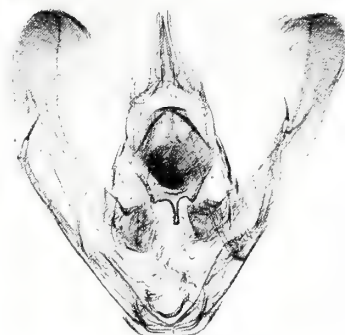


PLATE 27

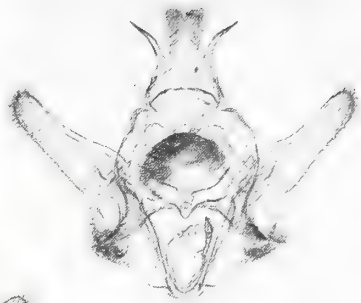
- FIG. 230. *Misalina ochracea* (Warren)
FIG. 231. *M. condensata* (Warren)
FIG. 232. *M. pseudoscia* sp. n.
FIG. 233. *M. xanthoscia xanthoscia* (Warren)
FIG. 234. *M. xanthoscia flavia* subsp. n.
FIG. 235. *M. xanthoscia aurantia* subsp. n.



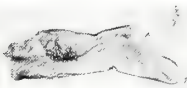
230



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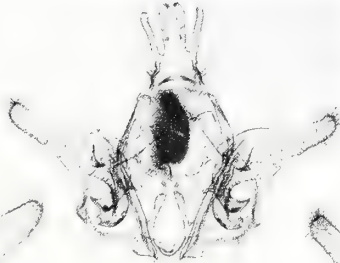
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PLATE 28

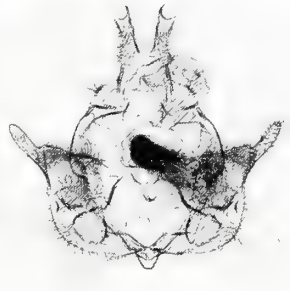
- FIG. 236. *Heteroschista nigranalis* (Warren)
FIG. 237. *Misalina ignefissa* (Warren)
FIG. 238. *M. scintillans* (Warren)
FIG. 239. *M. reversa reversa* (Warren)
FIG. 240. *M. reversa alternata* subsp. n.
FIG. 241. *M. metallifera* (Warren)



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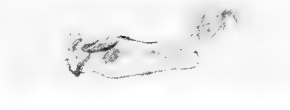
238



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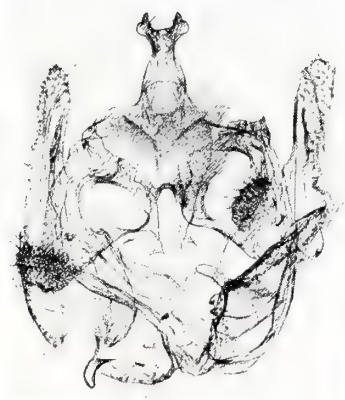
240



241



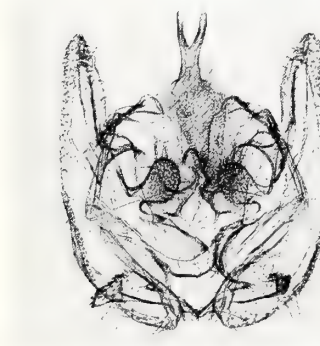
239



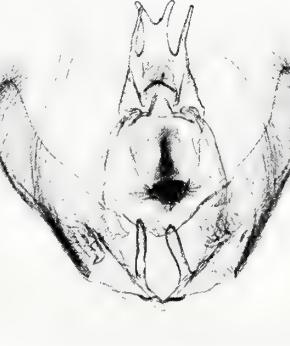
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PLATE 29

- FIG. 242. *Misalina anxia* sp. n.
FIG. 243. *M. costirufata* (Warren)
FIG. 244. *M. leprosa* (Warren)
FIG. 245. *M. floccosa* (Warren)
FIG. 246. *M. suffusa* (Leech)
FIG. 247. *M. pyrrhata* (Walker)



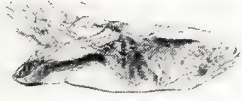
242



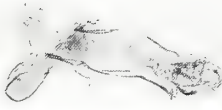
243



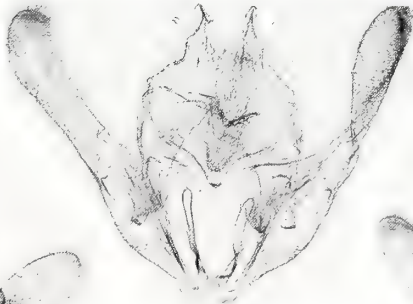
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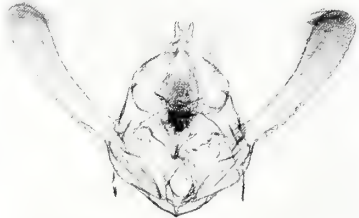
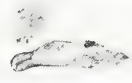


PLATE 30

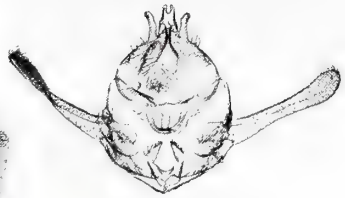
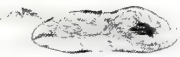
- FIG. 248. *Misalina centiginosa* (Lucas)
FIG. 249. *M. stramentaria* (Lucas)
FIG. 250. *M. innotata* (Warren)
FIG. 251. *M. parata* sp. n.
FIG. 252. *M. ferruginea* sp. n.
FIG. 253. *M. irias* (Meyrick)



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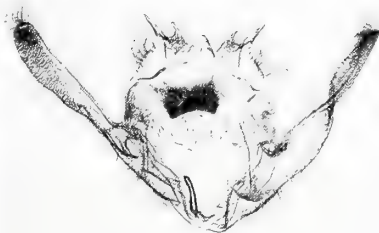


PLATE 31

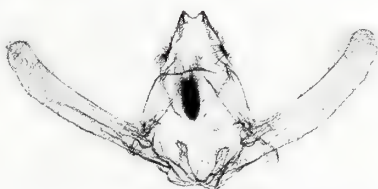
- FIG. 254. *Misalina glareola* (Felder & Rogenhofer)
FIG. 255. *M. ferocia* sp. n.
FIG. 256. *M. industa* sp. n.
FIG. 257. *M. sordida* (Pagenstecher)
FIG. 258. *M. gemmulosa* sp. n.



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PLATE 32

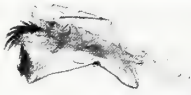
- FIG. 259. *Misalina decussata decussata* (Moore)
FIG. 260. *M. decussata formosa* subsp. n.
FIG. 261. *M. decussata popula* subsp. n.
FIG. 262. *M. decussata derasata* (Warren)
FIG. 263. *M. decussata straminea* (Warren)



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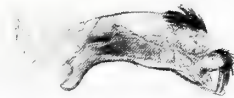
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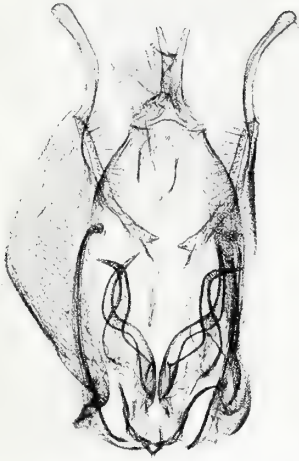


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PLATE 33

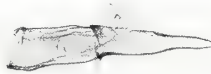
- FIG. 264. *Isalina hyperbolica* (Rothschild)
FIG. 265. *I. mediosecta* (Warren)
FIG. 266. *Novitina variegata* (Warren)
FIG. 267. *N. nigripuncta* (Warren)
FIG. 268. *Rhodogonia miniata* Warren
FIG. 269. *Pentina xanthopera* (Hampson)



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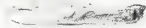


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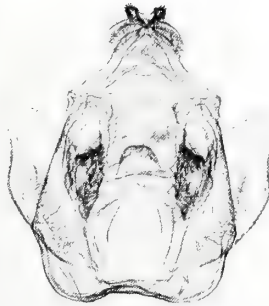


PLATE 34

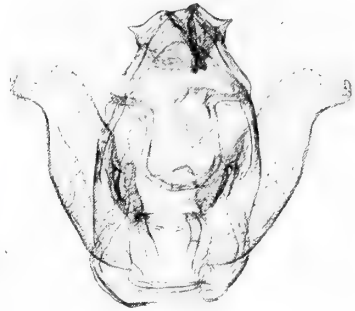
- FIG. 270. *Pentina petulina* sp. n.
FIG. 271. *P. ornata* sp. n.
FIG. 272. *P. miracula* sp. n.
FIG. 273. *P. grandaeva* sp. n.
FIG. 274. *P. lucida* (Warren)
FIG. 275. *Macrogonia igniaria* Herrich-Schäffer



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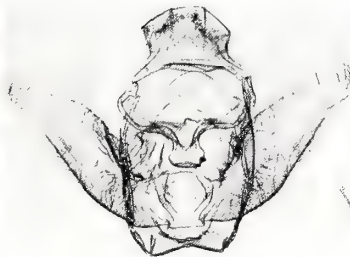
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PLATE 35

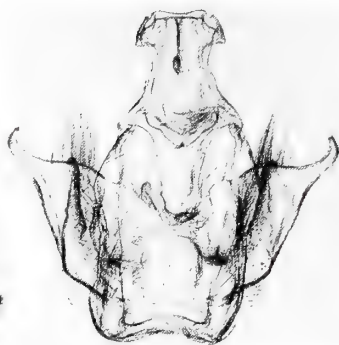
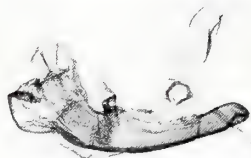
- FIG. 276. *Speculina madiaria madiaria* (Walker)
FIG. 277. *S. madiaria brunneata* (Walker)
FIG. 278. *Tanyodes rufitibia* (Felder & Rogenhofer)
FIG. 279. *Tristina jucunda* (Warren)
FIG. 280. *T. xanthina* (Felder & Rogenhofer)
FIG. 281. *T. eporedia* sp. n.



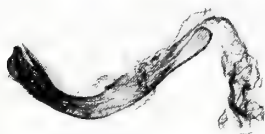
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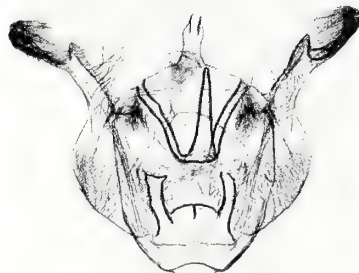
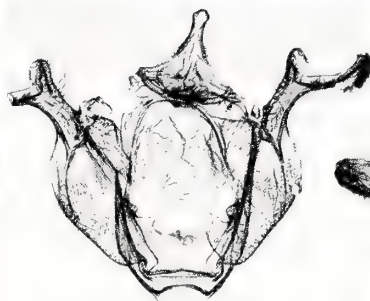
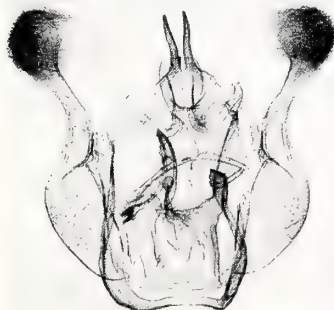


PLATE 36

- FIG. 282. *Jamboina ramosa orientalis* subsp. n.
FIG. 283. *Mathoris vocata* (Walker)
FIG. 284. *M. procurata* (Walker)
FIG. 285. *M. ignepicta* (Hampson)
FIG. 286. *Canaea semitessellalis caledonia* subsp. n.
FIG. 287. *Banisia argutula* sp. n.



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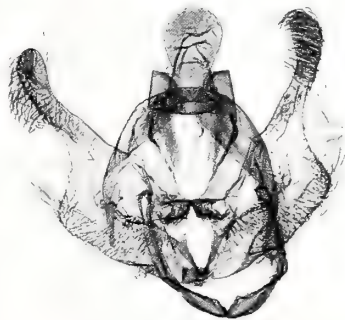


PLATE 37

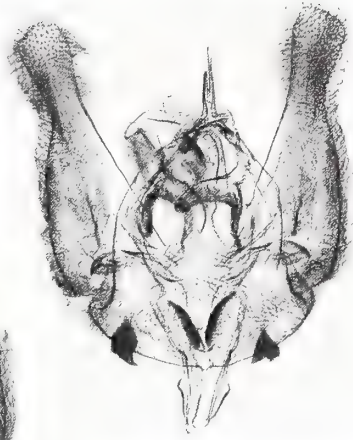
- FIG. 288. *Banisia anthina anthina* (Tams)
FIG. 289. *B. anthina pervaga* subsp. n.
FIG. 290. *B. anthina bella* subsp. n.
FIG. 291. *B. lobata lobata* (Moore)
FIG. 292. *B. lobata caesia* subsp. n.
FIG. 293. *B. lobata ceylonensis* subsp. n.



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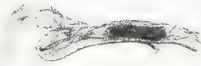


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PLATE 38

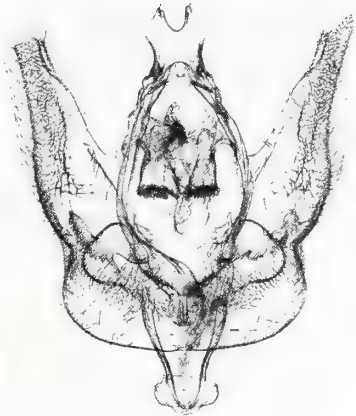
- FIG. 294. *Banisia insignifica* (Rothschild)
FIG. 295. *B. placida* sp. n.
FIG. 296. *B. minuta* (Whalley)
FIG. 297. *B. idalialis* (Walker)
FIG. 298. *B. hyaena* (Warren)
FIG. 299. *B. plagifera* (Butler)



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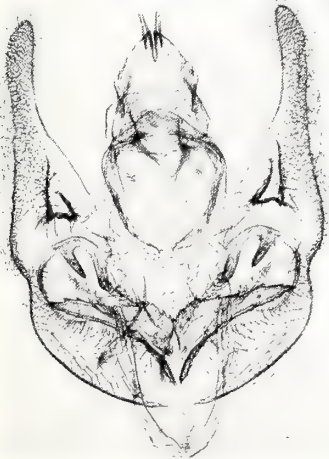
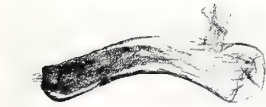


PLATE 39

- FIG. 300. *Banisia myrsusalis myrsusalis* (Walker)
FIG. 301. *B. myrsusalis cinereola* (Felder & Rogenhofer)
FIG. 302. *B. myrsusalis etaralis* (Walker)
FIG. 303. *B. myrsusalis sumatrensis* subsp. n.
FIG. 304. *B. cognata* sp. n.



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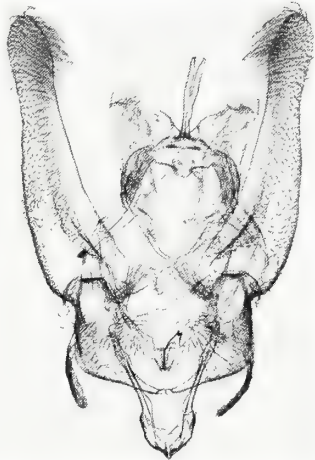
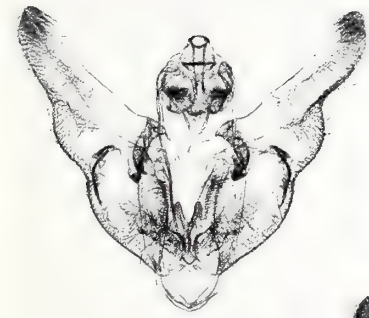


PLATE 40

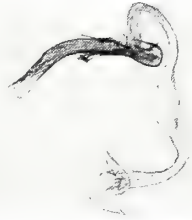
- FIG. 305. *Banisia furva furva* (Warren)
FIG. 306. *B. furva devincta* subsp. n.
FIG. 307. *B. furva epasta* subsp. n.
FIG. 308. *B. furva fracta* subsp. n.
FIG. 309. *B. venustula* (Warren)



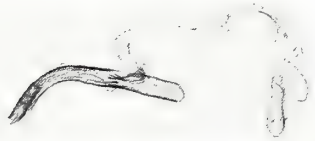
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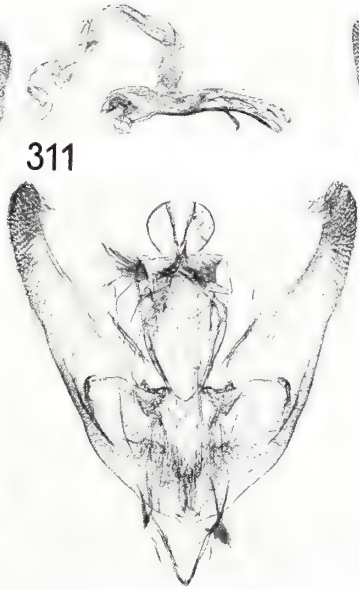
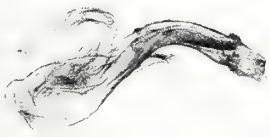


PLATE 41

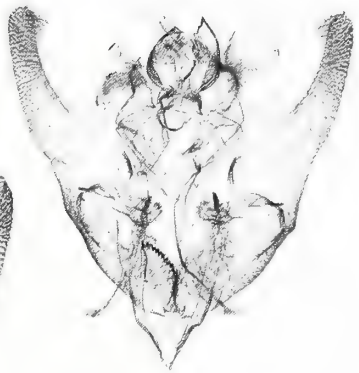
- FIG. 310. *Banisia myrtaea* (Drury)
FIG. 311. *B. fenestrifera fenestrifera* Walker
FIG. 312. *B. fenestrifera triferina* subsp. n.
FIG. 313. *B. fenestrifera daphoena* (Turner)
FIG. 314. *B. fenestrifera omissina* subsp. n.
FIG. 315. *B. intonsa* sp. n.



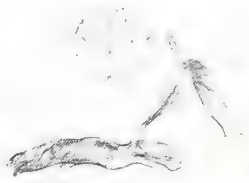
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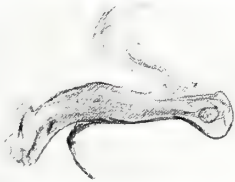


PLATE 42

- FIG. 316. *Banisia barbatula* sp. n.
FIG. 317. *B. ovifera ovifera* (Butler)
FIG. 318. *B. ovifera diversicolor* (Warren)
FIG. 319. *B. ovifera praevaria* subsp. n.
FIG. 320. *B. angulata* (Warren)
FIG. 321. *B. composita* (Warren)



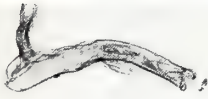
316



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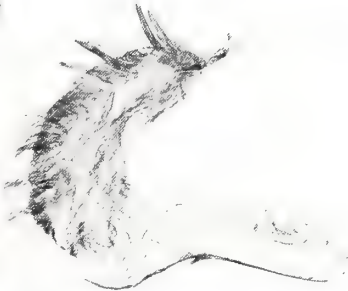
318



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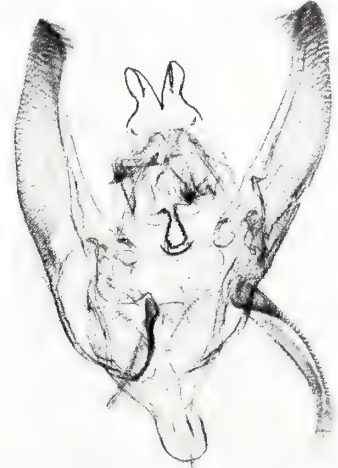


PLATE 43

- FIG. 322. *Banisia strigra* (Hampson)
FIG. 323. *B. orcina* sp. n.
FIG. 324. *B. messoria* sp. n.
FIG. 325. *B. flavidiscalis* (Hampson)
FIG. 326. *B. flammans* (Hampson)



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PLATE 44

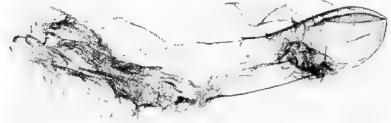
- FIG. 327. *Monodecus admirandus admirandus* subsp. n.
FIG. 328. *M. admirandus admirandus* subsp. n.
FIG. 329. *M. admirandus capillatus* subsp. n.
FIG. 330. *Banisia composita* Warren (hind-leg)
FIG. 331. *Monodecus admirandus admirandus* subsp. n. (hind-leg)



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PLATE 46

- FIG. 344. *Striglina asinina* Warren
FIG. 345. *S. atrata* sp. n.
FIG. 346. *S. castaneata castaneata* Hampson
FIG. 347. *S. rufescens* Gaede
FIG. 348. *S. meridiana* sp. n.
FIG. 349. *S. burgesi* Gaede
FIG. 350. *S. burgesi* Gaede
FIG. 351. *S. curvilinea* Warren
FIG. 352. *S. irresecta obscura* subsp. n.
FIG. 353. *S. fixseni* Alpheraky
FIG. 354. *S. venia* sp. n.
FIG. 355. *S. cancellata* (Christoph)
FIG. 356. *S. cancellata* (Christoph) (cornuti from ♂ in bursa)

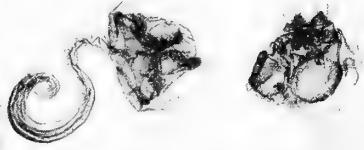


344

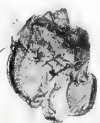
345



346



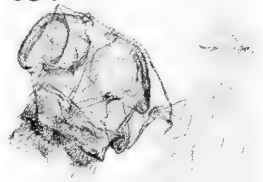
347 348



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PLATE 47

- FIG. 357. *Striglina mediofascia* Swinhoe
FIG. 358. *S. scalata* Warren
FIG. 359. *S. duplicifimbria duplicifimbria* Warren
FIG. 360. *S. lilacina* Warren
FIG. 361. *S. suzukii* Matsumura
FIG. 362. *S. divisata* Warren
FIG. 363. *S. fidelia* sp. n.
FIG. 364. *Telchines vialis* (Moore)
FIG. 365. *Misalina ochracea* (Warren)
FIG. 366. *M. condensata* (Warren)
FIG. 367. *M. dentifascia* (Warren)
FIG. 368. *M. xanthoscia xanthoscia* (Warren)



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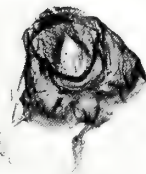
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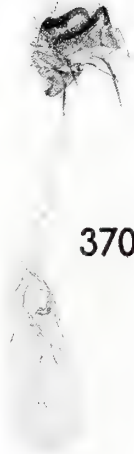
368

PLATE 48

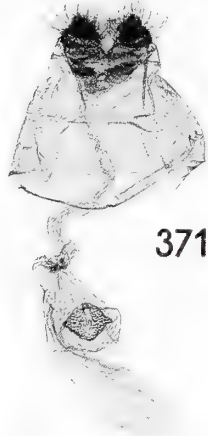
- FIG. 369. *Misalina pseudoscia* sp. n.
FIG. 370. *M. ignefissa* (Warren)
FIG. 371. *M. scintillans* (Warren)
FIG. 372. *M. reversa reversa* (Warren)
FIG. 373. *M. anxia* sp. n.
FIG. 374. *M. leprosa* (Warren)
FIG. 375. *M. floccosa* (Warren)
FIG. 376. *M. pyrrhata* (Walker)
FIG. 377. *M. centiginosa* (Lucas)
FIG. 378. *M. stramentaria* (Lucas)
FIG. 379. *M. innotata* (Warren)



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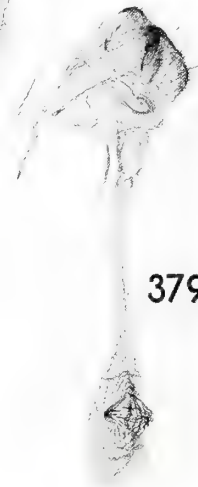
376



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PLATE 49

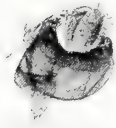
- FIG. 380. *Misalina ivias* (Meyrick)
FIG. 381. *M. glareola* (Felder & Rogenhofer)
FIG. 382. *M. ferocia* sp. n.
FIG. 383. *M. decussata decussata* (Moore)
FIG. 384. *M. decussata derasata* (Warren)
FIG. 385. *M. industa* sp. n.
FIG. 386. *M. sordida* (Pagenstecher)
FIG. 387. *M. gemmulosa* sp. n.
FIG. 388. *Novitina variegata* (Warren)
FIG. 389. *N. nigripuncta* (Warren)
FIG. 390. *Isalina hyperbolica* (Rothschild)
FIG. 391. *I. mediosecta* (Warren)
FIG. 392. *Rhodogonia miniata* Warren



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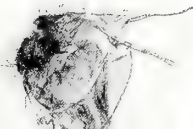
384



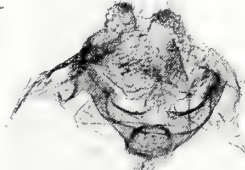
385



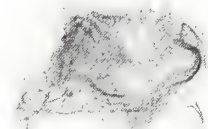
386



387



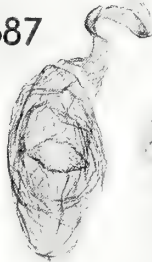
388



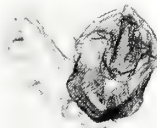
389



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PLATE 50

- FIG. 393. *Pentina xanthopeya* (Hampson)
FIG. 394. *P. petulina* sp. n.
FIG. 395. *P. miracula* sp. n.
FIG. 396. *Macrogonia igniaria* Herrich-Schäffer
FIG. 397. *Pentina lucida* (Warren)
FIG. 398. *Speculina madiaria madiaria* (Walker)
FIG. 399. *Tanyodes rufitibia* (Felder & Rogenhofer)
FIG. 400. *Tristina jucunda* (Warren)
FIG. 401. *T. xanthina* (Felder & Rogenhofer)



393



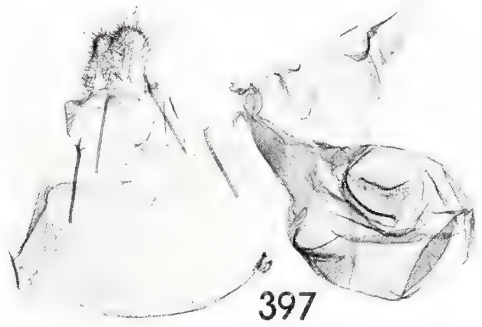
394



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PLATE 51

- FIG. 402. *Mathoris vocata* (Walker)
FIG. 403. *M. vocata* (Walker)
FIG. 404. *M. procurata* (Walker)
FIG. 405. *M. ignepicta* (Hampson)
FIG. 406. *Banisia anthina anthina* (Tams)
FIG. 407. *B. insignifica* (Rothschild)
FIG. 408. *B. lobata lobata* (Moore)
FIG. 409. *B. lobata caesia* subsp. n.
FIG. 410. *Banisia placida* sp. n.
FIG. 411. *B. minuta* (Whalley)
FIG. 412. *B. hyaena* (Warren)



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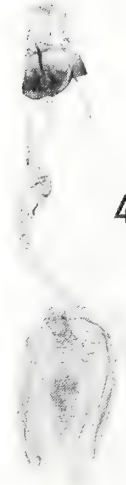
412

PLATE 52

- FIG. 413. *Banisia myrsusalis myrsusalis* (Walker)
FIG. 414. *B. myrsusalis cinereola* (Felder & Rogenhofer)
FIG. 415. *B. myrsusalis elaralis* (Walker)
FIG. 416. *B. myrsusalis sumatrensis* subsp. n.
FIG. 417. *B. plagifera* (Butler)
FIG. 418. *B. myrtaea* (Drury)
FIG. 419. *B. furva furva* (Warren)
FIG. 420. *B. furva epasta* subsp. n.
FIG. 421. *B. furva fracta* subsp. n.
FIG. 422. *B. fenestrifera omissina* subsp. n.
FIG. 423. *B. intonsa* sp. n.
FIG. 424. *B. barbatula* sp. n.



413



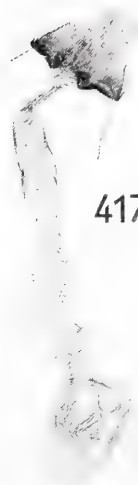
414



415



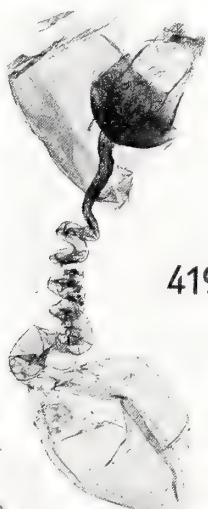
416



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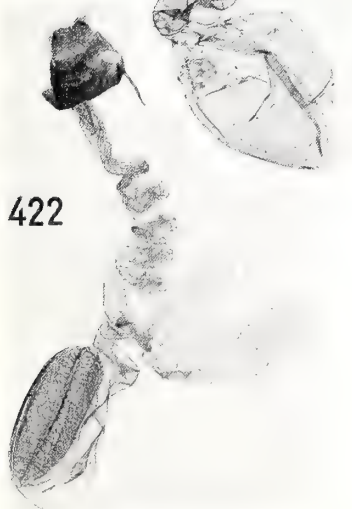
419



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PLATE 53

- FIG. 425. *Banisia ovifera ovifera* (Butler)
FIG. 426. *B. ovifera diversicolor* (Warren)
FIG. 427. *B. ovifera praevaria* subsp. n.
FIG. 428. *B. angulata* (Warren)
FIG. 429. *B. composita* (Warren)
FIG. 430. *B. strigigrapha* (Hampson)
FIG. 431. *B. extravagans* (Warren)
FIG. 432. *B. messoria* sp. n.
FIG. 433. *B. lithophora* (Tams) (anal papillae)
FIG. 434. *B. lithophora* (Tams) (bursa and duct)
FIG. 435. *B. flavidiscalis* (Hampson)



PLATE 54

Ostial region (439-445)

- FIG. 436. *Banisia flammans* (Hampson)
FIG. 437. *Monodecus admirandus admirandus* subsp. n.
FIG. 438. *M. admirandus capillatus* subsp. n.
FIG. 439. *Striglina scitaria scitaria* (Walker)
FIG. 440. *S. scitaria thermesiodes* (Snellen)
FIG. 441. *S. cinnamomea* (Rothschild)
FIG. 442. *S. strigosa* (Moore)
FIG. 443. *S. navigatorum navigatorum* (Felder & Rogenhofer)
FIG. 444. *S. navigatorum superior* (Butler)
FIG. 445. *S. navigatorum inversa* Gaede



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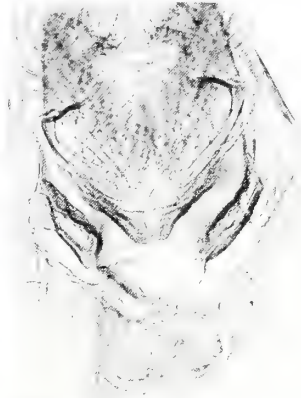
439



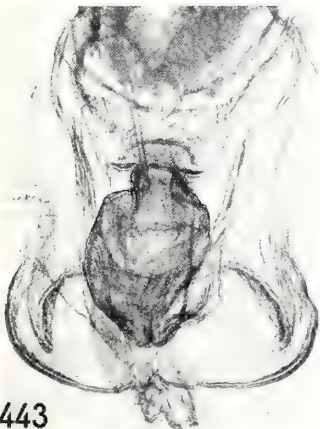
440



441



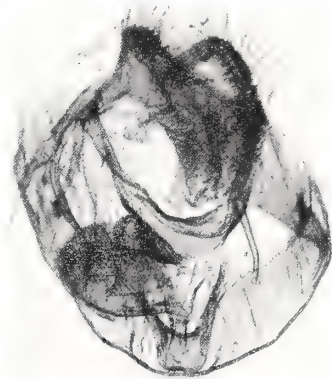
442



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444

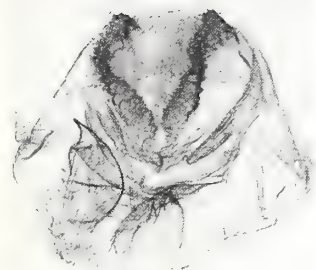


445

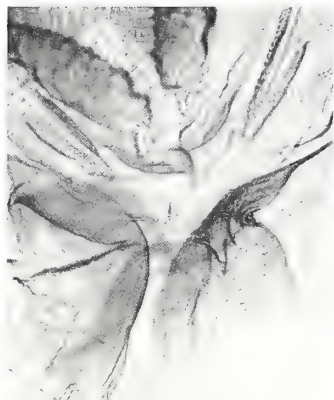
PLATE 55

Ostial region

- FIG. 446. *Striglina rubicunda* sp. n.
FIG. 447. *S. rubicunda* sp. n.
FIG. 448. *S. venilia* sp. n.
FIG. 449. *S. advena* sp. n.
FIG. 450. *S. opulenta opulenta* subsp. n.
FIG. 451. *S. opulenta elea* subsp. n.
FIG. 452. *S. asinina* Warren
FIG. 453. *S. atrata* sp. n.
FIG. 454. *S. castaneata castaneata* Hampson



446



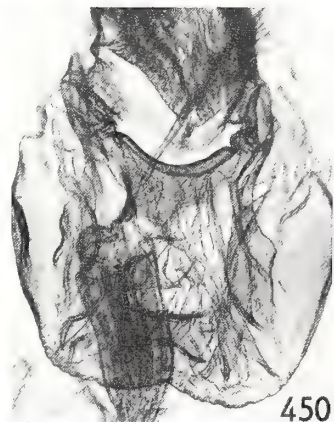
447



448



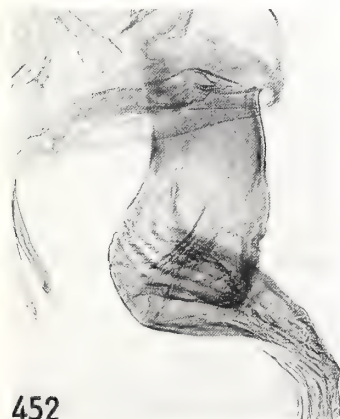
449



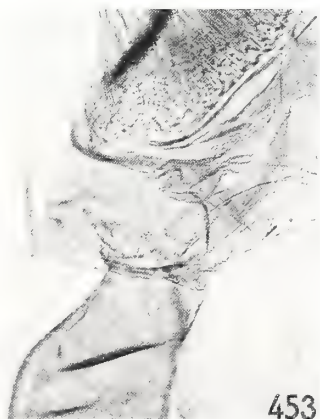
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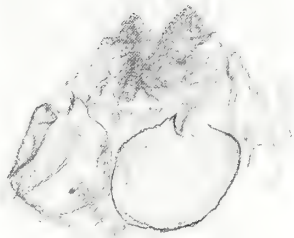
PLATE 56

Ostial region

- FIG. 455. *Striglina sectura* sp. n.
FIG. 456. *S. meridiana* sp. n.
FIG. 457. *S. burgesi* Gaede
FIG. 458. *S. curvilinea* Warren
FIG. 459. *S. irresecta obscura* subsp. n.
FIG. 460. *S. fixseni* Alpheraky
FIG. 461. *S. venia* sp. n.
FIG. 462. *S. mediofascia* Swinhoe
FIG. 463. *S. scalata* Warren



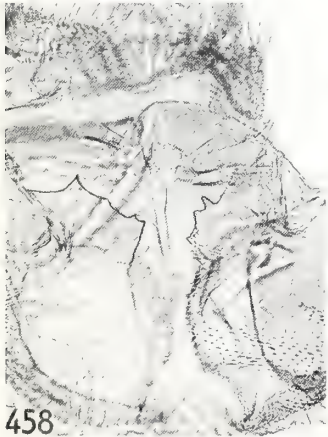
455



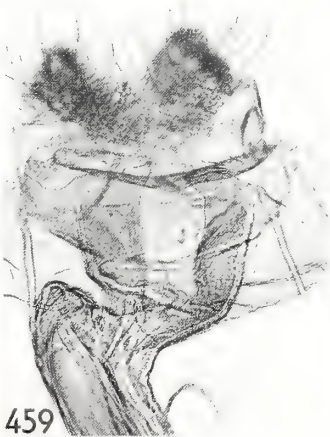
456



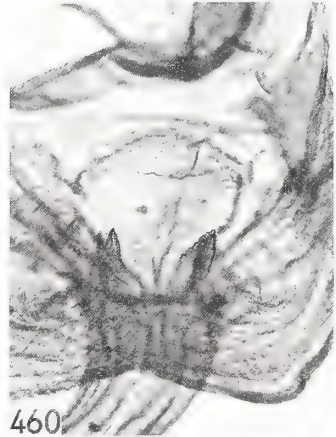
457



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PLATE 57

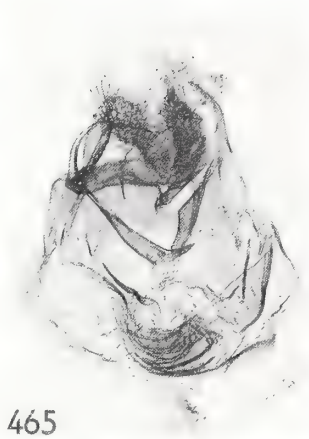
Ostial region

- FIG. 464. *Striglina duplicifimbria duplicifimbria* Warren
FIG. 465. *S. lilacina* Warren
FIG. 466. *S. suzukii* Matsumura
FIG. 467. *S. divisata* Warren
FIG. 468. *S. fidelia* sp. n.
FIG. 469. *Telchines vialis* (Moore)
FIG. 470. *Sonagara strigipennis* Moore (posterior)
FIG. 471. *S. strigipennis* Moore
FIG. 472. *Misalina xanthoscia xanthoscia* (Warren)
FIG. 473. *M. xanthoscia xanthoscia* (Warren)

PLATE 57



464



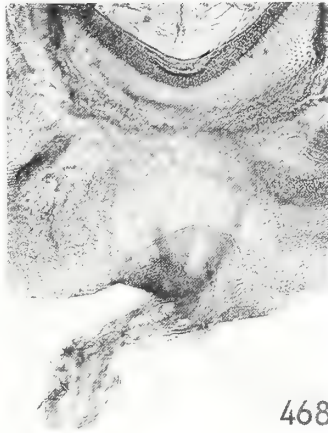
465



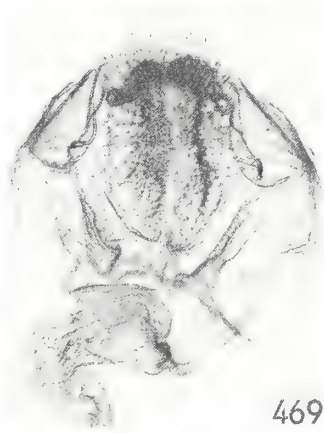
466



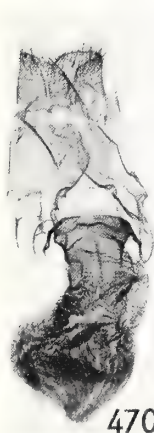
467



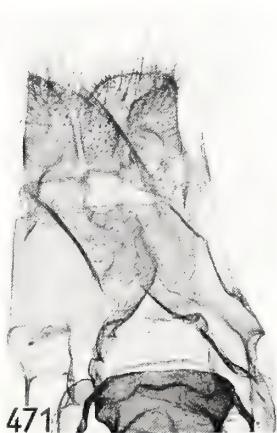
468



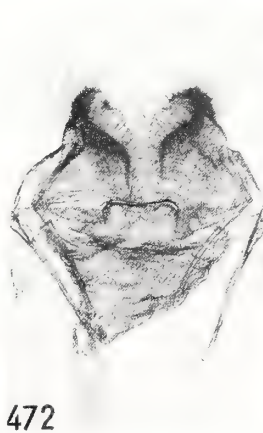
469



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PLATE 58

Ostial region

- FIG. 474. *Misalina ignefissa* (Warren)
FIG. 475. *M. reversa reversa* (Warren)
FIG. 476. *M. anxia* sp. n.
FIG. 477. *M. floccosa* (Warren)
FIG. 478. *M. stramentaria* (Lucas)
FIG. 479. *M. ivias* (Meyrick)
FIG. 480. *M. glareola* (Felder & Rogenhofer)
FIG. 481. *M. ferocia* sp. n.
FIG. 482. *M. industa* sp. n.



474



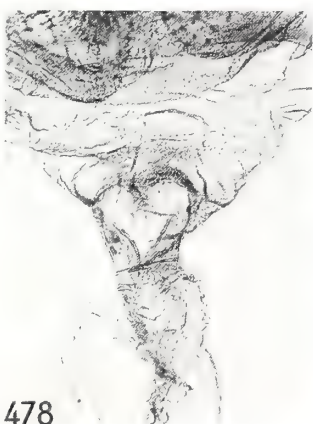
475



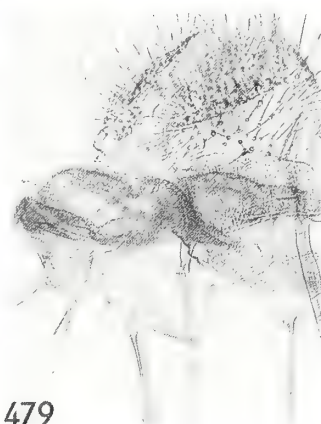
476



477



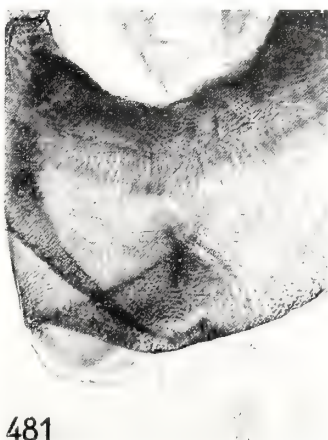
478



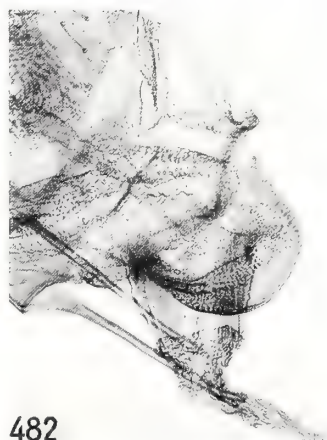
479



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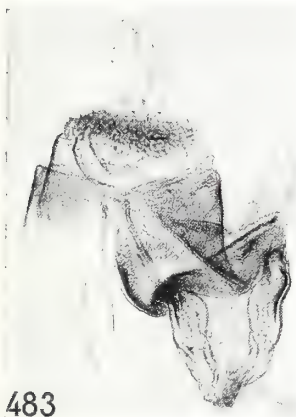


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PLATE 59

Ostial region

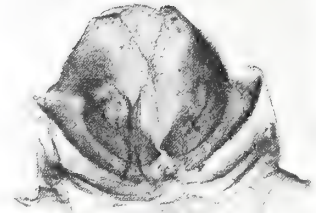
- FIG. 483. *Misalina decussata decussata* (Moore)
FIG. 484. *M. decussata derasata* (Warren)
FIG. 485. *M. sordida* (Pagenstecher)
FIG. 486. *M. gemmulosa* sp. n.
FIG. 487. *Isalina hyperbolica* (Rothschild) (lateral view)
FIG. 488. *I. hyperbolica* (Rothschild)
FIG. 489. *I. mediosecta* (Warren)
FIG. 490. *Novitina nigripuncta* (Warren)



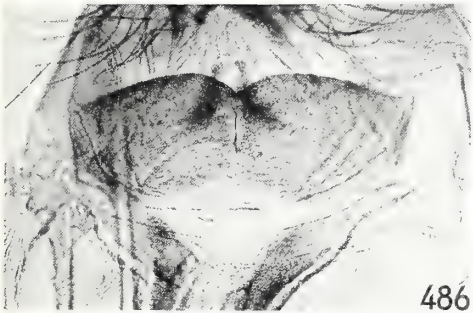
483



484



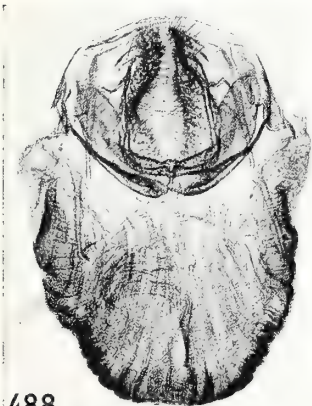
485



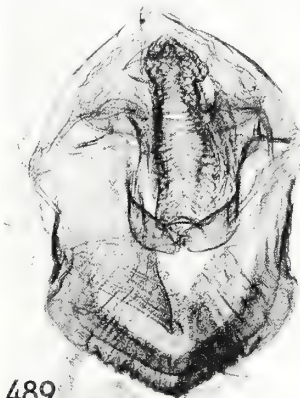
486



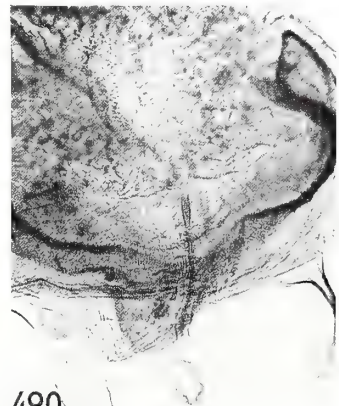
487



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489



490

PLATE 60

Ostial region

- FIG. 491. *Pentina miracula* sp. n.
FIG. 492. *Speculina madiaria madiaria* (Walker)
FIG. 493. *Tanyodes rufitibia* (Felder & Rogenhofer)
FIG. 494. *Tristina jucunda* (Warren)
FIG. 495. *T. xanthina* (Felder & Rogenhofer)
FIG. 496. *Mathoris vocata* (Walker)
FIG. 497. *M. procurata* (Walker)
FIG. 498. *M. ignepicta* (Hampson)
FIG. 499. *Banisia insignifica* (Rothschild)

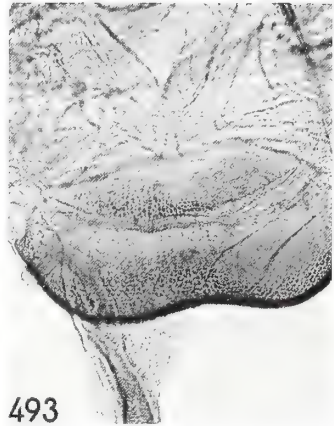
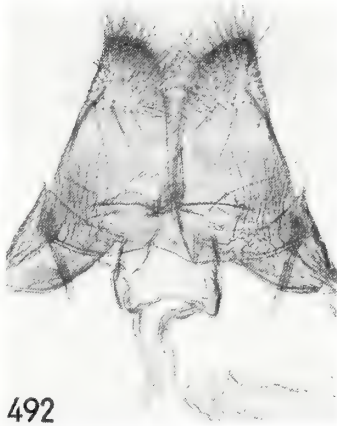


PLATE 61

Ostial region

- FIG. 500. *Banisia anthina anthina* (Tams)
FIG. 501. *B. anthina pervaga* subsp. n.
FIG. 502. *B. anthina bella* subsp. n.
FIG. 503. *B. lobata lobata* (Moore)
FIG. 504. *B. lobata caesia* subsp. n.
FIG. 505. *B. placida* sp. n.
FIG. 506. *B. minuta* (Whalley)
FIG. 507. *B. plagifera* (Butler)
FIG. 508. *B. myrtaea* (Drury)

PLATE 61

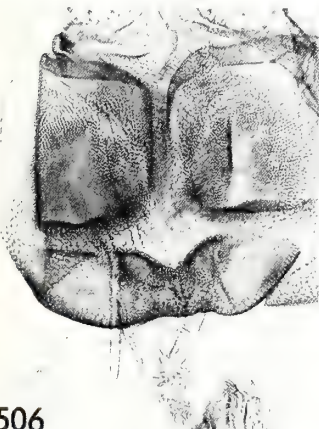
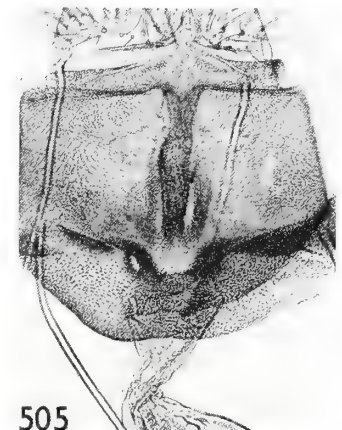
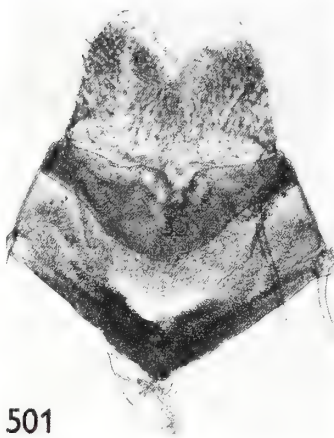
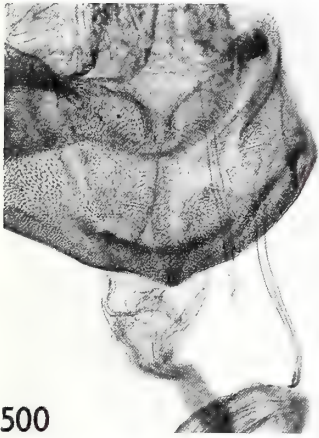
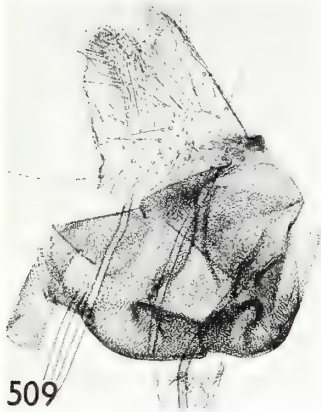


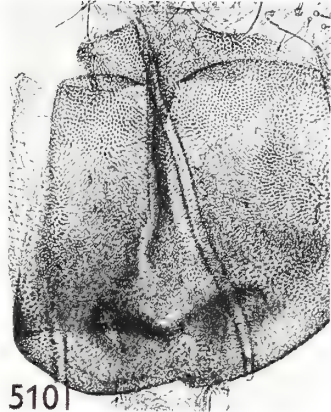
PLATE 62

Ostial region

- FIG. 509. *Banisia myrsusalis myrsusalis* (Walker)
FIG. 510. *B. myrsusalis cinereola* (Felder & Rogenhofer)
FIG. 511. *B. myrsusalis elaralis* (Walker)
FIG. 512. *B. myrsusalis sumatrensis* subsp. n.
FIG. 513. *B. hyaena* (Warren)
FIG. 514. *B. furva furva* (Warren)
FIG. 515. *B. furva epasta* subsp. n.
FIG. 516. *B. furva fracta* subsp. n.
FIG. 517. *B. fenestrifera omissina* subsp. n.



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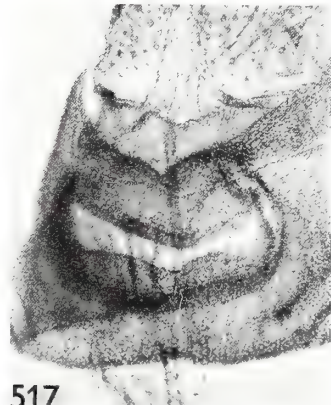
514



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516



517

PLATE 63

Ostial region

- FIG. 518. *Banisia intonsa* sp. n.
FIG. 519. *B. ovifera ovifera* (Butler)
FIG. 520. *B. ovifera diversicolor* (Warren)
FIG. 521. *B. barbatula* sp. n.
FIG. 522. *B. angulata* (Warren)
FIG. 523. *B. composita* (Warren)
FIG. 524. *B. strigigrapha* (Hampson)
FIG. 525. *B. extravagans* (Warren)
FIG. 526. *B. messoria* sp. n.

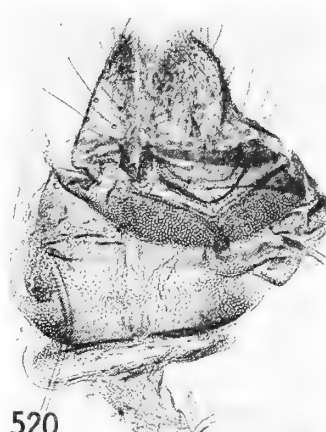
PLATE 63



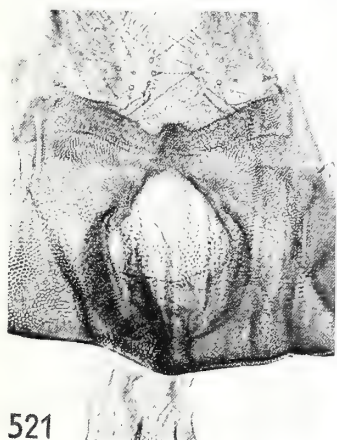
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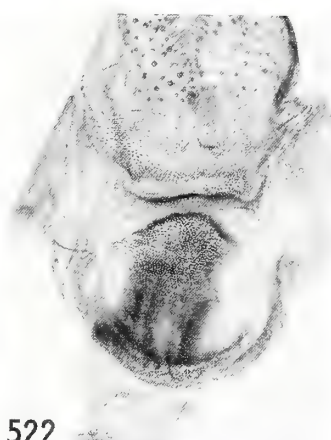
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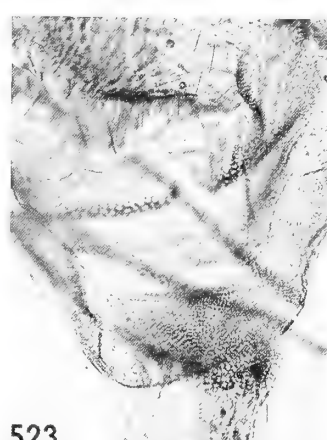
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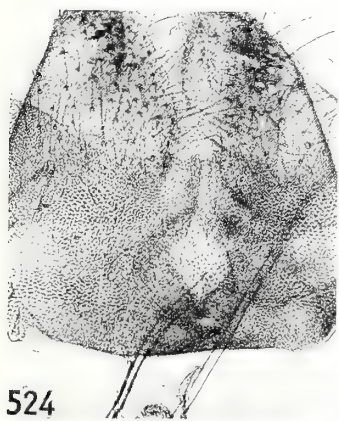
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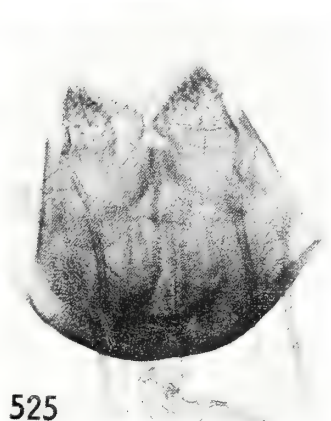
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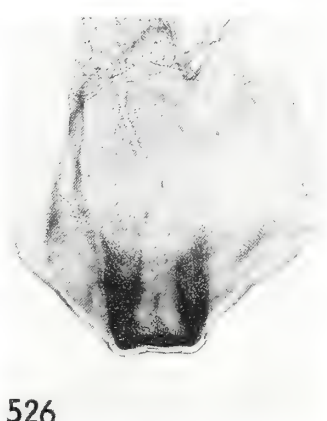
523



524



525



526

PLATE 64

Ostial region (527-530) and signa (531-541)

- FIG. 527. *Banisia lithophora* (Tams)
FIG. 528. *B. flavidiscalis* (Hampson)
FIG. 529. *Monodecus admirandus admirandus* subsp. n.
FIG. 530. *M. admirandus capillatus* subsp. n.
FIG. 531. *Striglina scitaria thermesiodes* (Snellen)
FIG. 532. *S. scitaria scitaria* (Walker)
FIG. 533. *S. cinnamomea* (Rothschild)
FIG. 534. *S. strigosa* (Moore)
FIG. 535. *S. navigatorum navigatorum* (Felder & Rogenhofer)
FIG. 536. *S. navigatorum superior* (Butler)
FIG. 537. *S. navigatorum inversa* Gaede
FIG. 538. *S. advena* sp. n.
FIG. 539. *S. opulenta opulenta* subsp. n.
FIG. 540. *S. opulenta elea* subsp. n.
FIG. 541. *S. asinina* Warren

PLATE 64

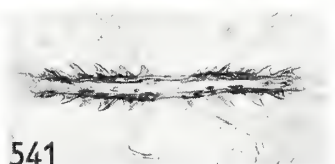
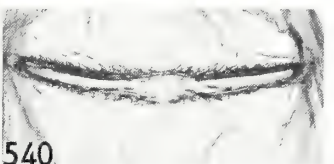
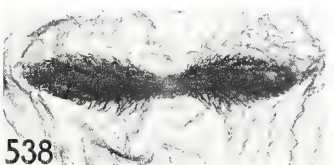
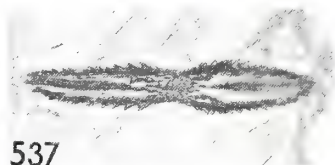
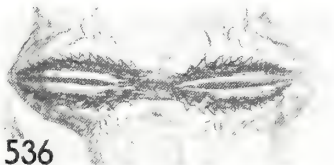
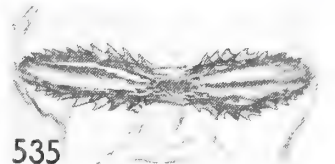
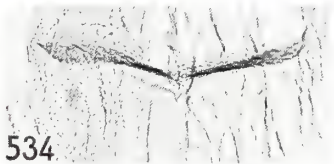
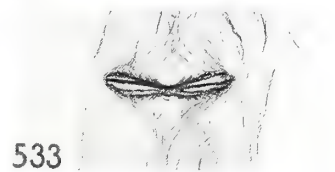
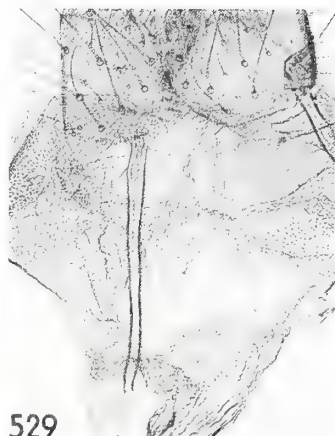
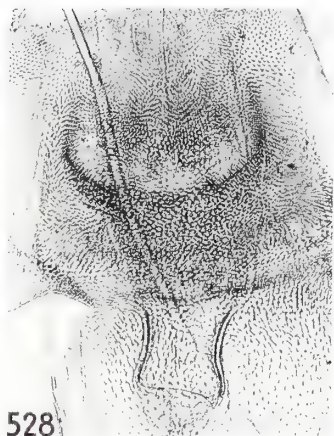
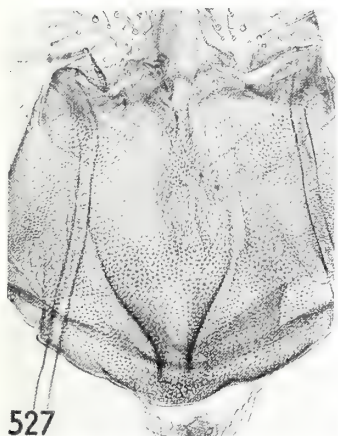


PLATE 65

Signa

- FIG. 542. *Striglina atrata* sp. n.
FIG. 543. *S. castaneata castaneata* Hampson
FIG. 544. *S. meridiana* sp. n.
FIG. 545. *S. burgesi* Gaede
FIG. 546. *S. curvilinea* Warren
FIG. 547. *S. irresecta obscura* subsp. n.
FIG. 548. *S. venia* sp. n.
FIG. 549. *S. fixseni* Alpheraky
FIG. 550. *S. cancellata* (Christoph)
FIG. 551. *S. mediofascia* Swinhoe
FIG. 552. *S. scalata* Warren
FIG. 553. *S. duplicifimbria duplicifimbria* Warren
FIG. 554. *S. lilacina* Warren
FIG. 555. *S. suzukii* Matsumura
FIG. 556. *S. divisata* Warren
FIG. 557. *S. fidelia* sp. n.
FIG. 558. *Sonagara strigipennis* Moore
FIG. 559. *Misalina ignefissa* (Warren)
FIG. 560. *M. scintillans* (Warren)
FIG. 561. *M. anxia* sp. n.
FIG. 562. *M. floccosa* (Warren)

PLATE 65

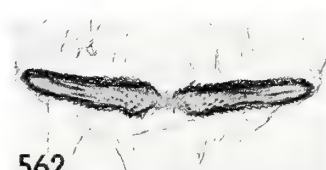
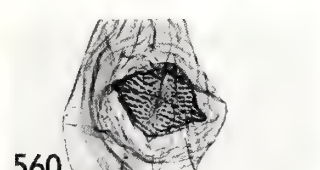
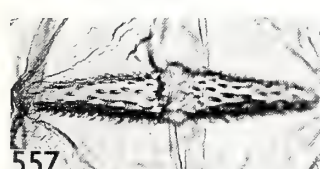
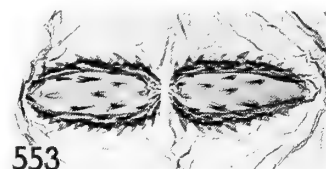
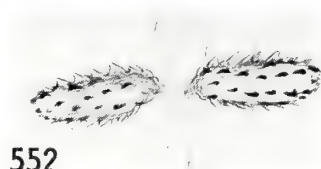
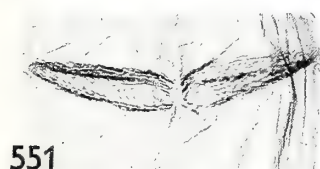
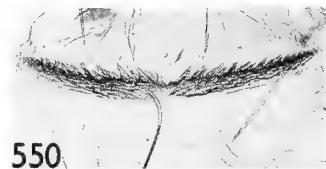
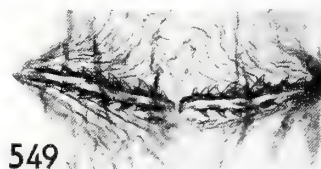
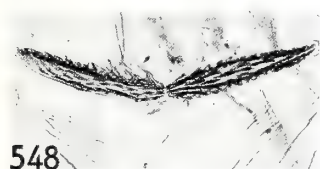
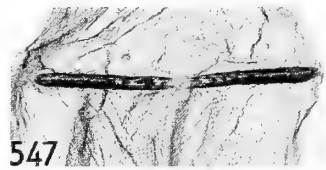
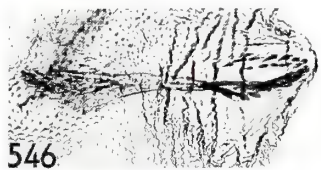
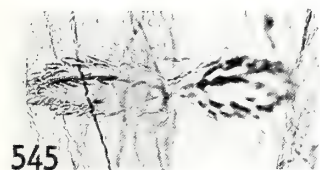
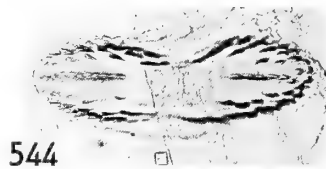
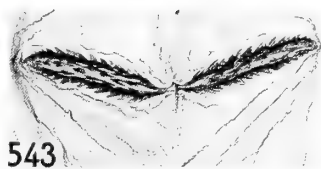


PLATE 66

Signa

- FIG. 563. *Misalina pyrrhata* (Walker)
FIG. 564. *M. stramentaria* (Lucas)
FIG. 565. *M. irias* (Meyrick)
FIG. 566. *M. glareola* (Felder & Rogenhofer)
FIG. 567. *M. ferocia* sp. n.
FIG. 568. *M. decussata decussata* (Moore)
FIG. 569. *M. decussata devasata* (Warren)
FIG. 570. *M. industa* sp. n.
FIG. 571. *M. gemmulosa* sp. n.
FIG. 572. *M. sordida* (Pagenstecher)
FIG. 573. *Novitina nigripuncta* (Warren)
FIG. 574. *Rhodogonia miniata* Warren
FIG. 575. *Pentina petulina* sp. n.
FIG. 576. *P. lucida* (Warren)
FIG. 577. *P. miracula* sp. n.
FIG. 578. *Speculina madiaria madiaria* (Walker)
FIG. 579. *Tanyodes rufitibia* (Felder & Rogenhofer)

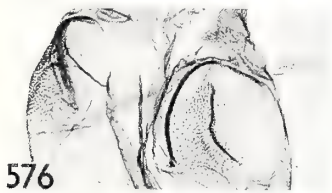
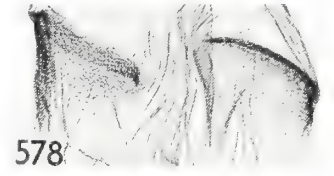
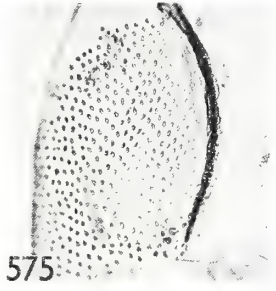
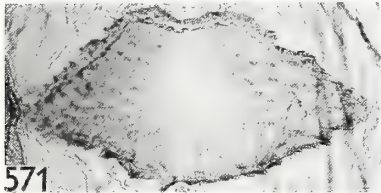
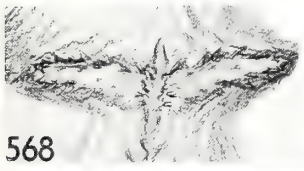
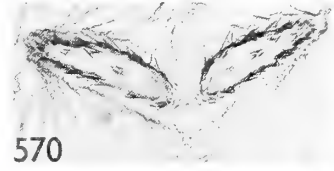
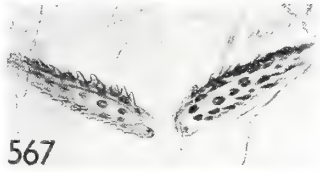
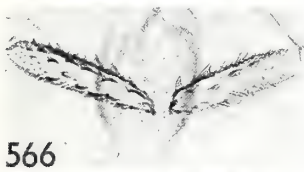
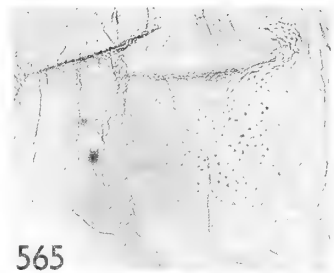
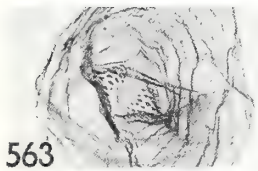
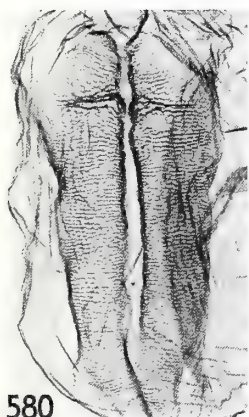


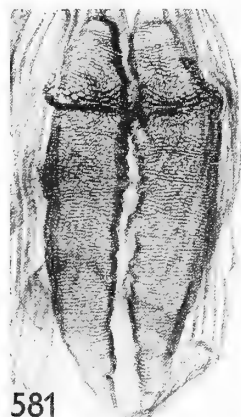
PLATE 67

Signa

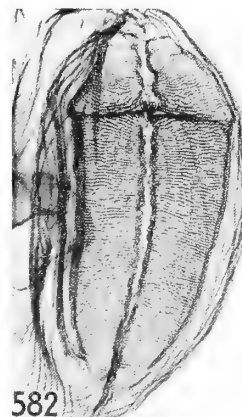
- FIG. 580. *Banisia anthina anthina* (Tams)
FIG. 581. *B. anthina pervaga* subsp. n.
FIG. 582. *B. anthina bella* subsp. n.
FIG. 583. *B. insignifica* (Rothschild)
FIG. 584. *B. lobata lobata* (Moore)
FIG. 585. *B. lobata caesia* subsp. n.
FIG. 586. *B. placida* sp. n.
FIG. 587. *B. minuta* (Whalley)
FIG. 588. *B. myrsusalis myrsusalis* (Walker)
FIG. 589. *B. myrsusalis cinereola* (Felder & Rogenhofer)
FIG. 590. *B. myrsusalis elaralis* (Walker)
FIG. 591. *B. hyaena* (Warren)



580



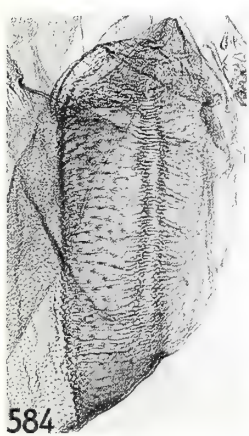
581



582



583



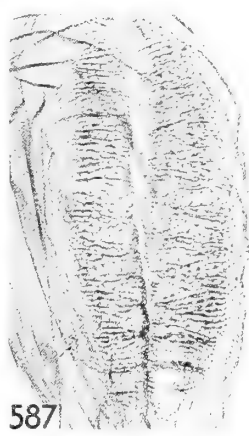
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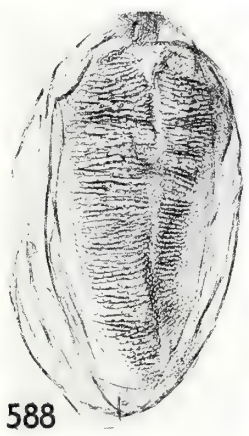
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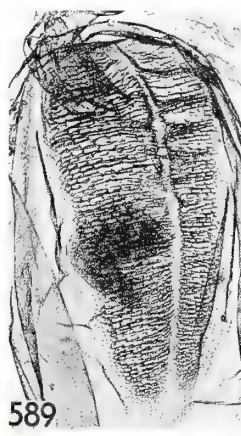
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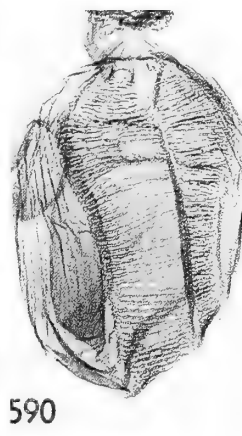
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PLATE 68

Signa

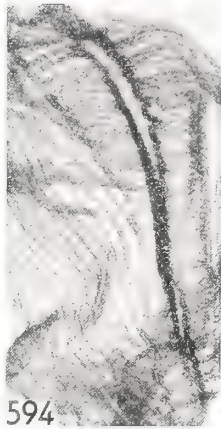
- FIG. 592. *Banisia plagifera* (Butler)
FIG. 593. *B. furva furva* (Warren)
FIG. 594. *B. myrtaea* (Drury)
FIG. 595. *B. fenestrifera omissina* subsp. n.
FIG. 596. *B. intonsa* sp. n.
FIG. 597. *B. barbatula* sp. n.
FIG. 598. *B. ovifera ovifera* (Butler)
FIG. 599. *B. ovifera diversicolor* (Warren)
FIG. 600. *B. angulata* (Warren)
FIG. 601. *B. composita* (Warren)
FIG. 602. *B. strigrapha* (Hampson)
FIG. 603. *Banisia extravagans* (Warren)
FIG. 604. *B. messoria* sp. n.
FIG. 605. *B. flavidiscalis* (Hampson)



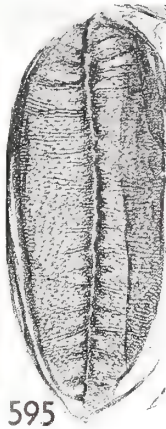
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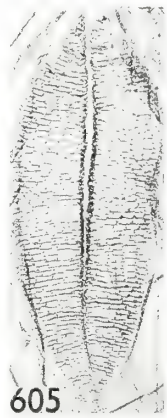
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7

**The Generic Names of Moths of
the World Volume 1
Noctuoidea (part): Noctuidae,
Agaristidae and Nolidae
by Ian W B Nye**

The aim of this new series is to provide a complete list of all the generic names, their type-species, designation, and appropriate references, for each of the families of moths treated. By ensuring that each generic name has its type-species fixed in accordance with the *International Code of Zoological Nomenclature*, this series will rectify present confusion and form a basis for a more stable nomenclature. All generic names have been checked for homonymy, and if necessary replaced.

The first volume deals with the families Noctuidae, Agaristidae and Nolidae. It contains entries for 5300 generic names, each placed to family or subfamily, with additional information giving the type-locality of the type-species and in the majority of cases the depository of the type-specimens.

Pp viii 568 frontispiece Crown Quarto.
Cloth 0 565 00770 X.

This new series of moths will be a companion to
The Generic Names of Butterflies and their Type-species
by F. Hemming.

**The Generic Names of the Butterflies
and their Type-species
(Lepidoptera: Rhopalocera)
by Francis Hemming**

This provides as complete as possible a list of the published generic names of butterflies from the inauguration of zoological nomenclature by Linnaeus in 1758 up to December 1963, with a full bibliographic reference to the place where each name was first validly published and the date of its publication. Each entry includes a statement of the name of the nominal species which is the type-species of the genus concerned, with a full bibliographic reference to the place and date of publication of the name of that species.

Pp 509 Crown Quarto Paper
Bulletin of the British Museum (Natural History)
Entomology Supplement 9 1967, Reprinted 1972.

