THE GENERA OF INDO-MALAYAN AND PAPUAN TORTRICIDAE

by

A. DIAKONOFF
Amsterdam

(2nd Communication on Indo-Malayan and Papuan Microlepidoptera)[1])

1. INTRODUCTION

> "The discrimination of genera in the *Tortricina* has always been admittedly difficult; the similarity of type which prevails throughout the group permits only a few small genera to be obvious, and the classification of the large mass of remaining material has to depend upon structural characters which are in all instances either subject to variation or indefinite."
>
> Edw. Meyrick, 1913.

The study of the Indo-Malayan and Papuan so-called Microlepidoptera in general, and likewise that of the family Tortricidae, goes back to the middle of the 19th century, at which time a few species in the British Museum were described by Walker (1863, 1866). Occasional descriptions by Butler and Moore followed later on and a list of Indian Moths was given by Cotes and Swinhoe (1889). These authors used the superficial morphological characters, viz., the shape and the clothing of head and palpi, the antennae and the thorax.

To Meyrick we owe the use of wing neuration as a character for the

1) 1st Communication: Notes on the Tropical Tobacco Moth, Setomorpha rutella Z. Treubia, vol. 16, 1938, p. 399—414.

classification of Microlepidoptera, which he used, besides the above mentioned characters of former authors, for the study of Australian and New Zealand faunas (1881, 1883). This author founded the classification of Microlepidoptera on a new base. He dealt with Tortricidae in four works (Meyrick, 1895, 1910, 1912, 1913). Meyrick fully trusted these characters, not only for distinguishing the genera, but also for making hypotheses on their phylogeny.

More systematic study of Indo-Malayan and Papuan representants of the family begins with the paper of Walsingham (1900a). Soon afterwards followed short papers by Meyrick on Indian and Malayan Fauna and an important series of papers by the same author in the Journal of the Bombay Natural History Society. In his large publication on Exotic Microlepidoptera, many species of this fauna were subsequently described.

Only a few species have been named by other authors, of which the papers by Butler (1881), Pagenstecher (1899), Walsingham (1900b), Snellen (1902), Durrant (1915), Stringer (1929) may be recorded. Fernald published a paper on the Genera of Tortricidae and their Types (1908), Kennel wrote an elaborate monograph of the Palearctic Tortricidae (1910), which is of general importance.

As stated above, Meyrick's system was entirely based on external morphological characters, being the wing-neuration and the shape of palpi and antennae. Although in many cases these proved to be a good guide for a sound classification of Lepidoptera, still they are not sufficient in themselves. The wing-neuration is liable to considerable variation within a genus, even within a species; the shape of the head and its appendages and of the thorax is difficult to describe in words, and also is rather variable. Except in the paper on Tortricidae in Genera Insectorum, where 15 figures of wing-neuration and heads have been published and in his Handbook, Meyrick never illustrated his descriptions of genera; these descriptions are rather short and give but a vague idea of the insect-group concerned. This makes further study rather difficult.

Since the publication of Meyrick's revision in 1913 an important progress in the study of the so-called Microlepidoptera is made by the use of the genital characters in both sexes. Besides their value as excellent specific characters, these are very helpful for the arrangement of larger systematic units, viz., genera and families, as the excellent works of Pierce (and Metcalfe) (1909, 1914, 1922, 1935, 1938), a pioneer of that study, has proved. I believe that the use of genital characters has a great future and that the systematics of Lepidoptera, based on the study of exterior morphology only, and without taking the genitalia into consideration, cannot be sound. All the

same, however, we are at the beginning of this large task, and only a very small amount of the known species is studied in this way, whilst an enormous work remains to be done. I consider genital characters of a generic importance, which should not be underestimated by conservative authors. Of course, we should not use these characters alone, neither should we restrict ourselves to the use of exterior morphological characters only. All the available particulars should be compared together, in order to obtain a clear view on their possible correlation with each other, and on their real importance for systematic study.

Pierce and Metcalfe, on account of their study on the genitalia of British Tortricidae (1922), came to the following statement: "If it be asked what is the most arresting result of our prolonged study of the genitalia of the Tortricidae, we should be inclined to reply, the way in which the species fall into clearly defined groups. In other words, the genitalia are strongly generic in character and it is possible to place, at once, a species in the group to which it belongs. If it be further asked, what light the genitalia shed on the historic relationship of the groups or genera, we have to confess, that it is very little. This is not to be wondered at; the fact that the genera are so clearly defined shows how many connecting species have ceased to exist; and, further, the British species form but a part of the whole."

When beginning the study of the Indo-Malayan and Papuan Microlepidoptera, I have chosen the family of Tortricidae, because it is a well-defined and not very extensive group. Another consideration was the circumstance, that many representants of the family are injurious for cultivated plants. In the 26 years after the revision of the family by Meyrick, many genera and species have been described, but no handbooks or revisions were published. Therefore this study seemed to be worth while. I thought it necessary to try and join the old and the new paths of systematics together, by studying all characters available: the wing-neuration and the head as well as the genitalia in both sexes. Owing to lack of time and opportunity, I had to limit the extent of the present work, and to give up, for the present, my planned revision of the whole family of Tortricidae of the region. I have been able to study all the genotypes of the genera known from the region, bar two, one of which, *Elaeodina refrangens* Meyr., being preserved in the Sarawak Museum, and another, *Antiphrastis galenopa* Meyr., probably in the Paris Museum; I could not obtain these two for study. In order to supply the want of illustrations to Meyrick's descriptions, the head and the wing-neuration of all the genotypes have been figured in the present paper. The characters of the genitalia—of both sexes if available—

are given. Where necessary, remarks have been made also on allied species. As far as possible I have based my study on the type specimens themselves. To make the account complete, I also give drawings of some species already figured by Pierce and Metcalfe (1922).

Nomenclature is dealt with according to the International Rules of Nomenclature (Proc. Biol. Soc. Wash., vol. 39, p. 75—104, 1926) and to the excellent work of Fletcher on Generic Names, which was my continual guide. In order to economize space, I have cited only the most important papers.

As to the used methods, I made the drawings with a camera lucida of Abbe, in combination with a magnifying glass for figuring the heads and the neuration (the enlargement of these figures is arbitrary) and with a microscope for the drawings of the genitalia; enlargements of these can be derived from a line in every figure, which represents 0.25 mm. The genitalia have been prepared in the way described before (Diakonoff, 1937). The male genitalia are figured with the valvae pushed from each other, and seen in caudo-rostral direction (only a few are figured in their normal position, seen from the side). In most cases the aedoeagus is taken out of its normal position and figured from the side, in order to facilitate the reading of the figures. The female genitalia have been figured from the ventral side [1]). For the description of different parts I used the nomenclature as published by Pierce and Metcalfe (1922), and have added a few new terms for the sake of easy description. I have tried to figure the neuration of the wing as exactly as possible; as no wing-slides of type-specimens could be made, the wings have been examined in situ, the veins being made visible by a drop of alcohol or by local denudation of the wing at the underside. It was not always possible to trace and to draw the arrangement of the veins at the base of the wing, which therefore remained out of consideration. In most cases I also have abstained from drawing the frenulum.

The economic importance of the family is considerable — I have but to name the famous Tea Tortrix in Ceylon — which was also a motive for my taking up the present study. Our information on the life-history of different species of the genera dealt with is still very incomplete. In this respect we owe much to the studies of Fletcher (1919, 1920, 1932). I thought it worth while to make some remarks on injurious species, and in

1) The descriptions refer to the genitalia not in their natural position, but in the way in which they are figured, e.g., "dilated below" in the figure of male genitalia means: "dilated in ventral direction", in the figure of the female genitalia this means: "dilated in rostral direction".

this connection I wish to express my gratitude to the Director of the Institute for Plant Diseases at Buitenzorg, who kindly permitted me to use some not yet published data on foodplants, gathered in his Institute.

During my visit to the British Museum, I could, by studying Meyrick's and other types, confirm my former suspicions about the specific value of some of them. In order not to postpone the publication of these data, I give, after the description of genera, lists of new synonyms of some species.

Summing up the results of the present study, it may be said, that the genitalia of the Indo-Malayan and Papuan Tortricidae in general prove to be built after the same plan as in their Palearctic relatives. This confirms the importance of the genital characters for classification; their morphology is not subject to arbitrary variation, but follows strong rules. I could state the existence of the same larger units within the family, as Pierce did for the British Tortrices, according to the shape of the female genital armature, the signum. The male genitalia are also very helpful in recognising the subfamilies, by the shape of the uncus, the gnathos, the socii and the valvae. Two new subfamilies are erected, according to the genital as well as to the external morphological peculiarities. I have tried to use all the available characters in order to establish the correlation of the genera with each other, and for their arrangement within the subfamilies. Our insight in the last atter, howeve , is all but complete at present, because of our insufficient knowledge of the fauna concerned. I hope that my modest contribution will complete in some way the above mentioned publication of Pierce and Metcalfe. The present paper is only a base for later research, and I hope that the tiresome work of elaborate figuring will spare other workers the time and trouble of conceiving the characters after mere descriptions only.

54 formerly described genera were studied, of which 48 from the Indo-Malayan and Papuan Fauna, and 6 allied genera from adjacent regions. 2 genera among these 48 proved not to be represented in the fauna dealt with, 1 genus is abandoned, 1 restored and 3 new genera are described; furthermore 3 genera proved not to belong to the family, one being a Eucosmid (*Homalernis* Meyr.), another a Chlidanotid (*Diactenis* Meyr.) and a third a Lithosiid (*Atopomima* Meyr.); the latter genus should be rejected, being a synonym.

The types in the collection of the British Museum were studied during a two weeks stay in London, for which I gratefully acknowledge a stipendium from the Zoologisch Insulinde-Fonds of the Royal Academy of Sciences, Amsterdam and a leave of absence for study purposes granted by Prof. Dr. L. P. le Cosquino de Bussy, Director of the Commercial Museum of the

Koloniaal Instituut, Amsterdam. Other material, especially from the Malayan Archipelago and the Papuan region, could be studied at home.

Further grateful acknowledgments are due to the following gentlemen, who kindly have supplied me with material or information, or with both: Prof. Dr. L. P. le Cosquino de Bussy, Director of the Commercial Museum of the Koloniaal Instituut, Amsterdam; Mr. H. Stringer, Keeper of Microlepidoptera, British Museum Natural History, who very kindly gave me all possible advice and help — no trouble was too much for him to make my stay there effective; Dr. W. H. T. Tams, Keeper of Lepidoptera and Mr. R. Washburn, Assistant Keeper of Microlepidoptera at the same Museum; Prof. Dr. M. Hering, Director of the Zoological Museum, Berlin; Prof. Dr. H. Boschma, Director of the Rijksmuseum van Natuurlijke Historie, Leiden; Dr. H. C. Blöte, Keeper of Entomology, and Dr. C. de Jong, Assistant at the same Museum; Dr. P. van der Goot, Director of the Institute for Plant Diseases, Buitenzorg, Java, and Dr. L. G. E. Kalshoven, Chief Entomologist at the same Institute; Prof. Dr. W. Roepke, Director of the Laboratory of Entomology, Wageningen, who kindly gave me his collection of Tortricidae; Mr. M. A. Lieftinck, Keeper of Entomology, Zoological Museum, Buitenzorg; Dr. L. J. Toxopeus, Buitenzorg, and Dr. J. Westenberg, Batavia, who collected Microlepidoptera for me; Mr. T. Bainbrigge Fletcher, Stroud; Mr. F. N. Pierce, Warmington; and last not least Prof. Dr. L. F. de Beaufort, Director of the Zoological Museum, Amsterdam and Mr. J. B. Corporaal, Keeper of Entomology at the same Museum, who supplied me with material and information, rendered me valuable services in this study and helped in correcting the English text.

2. DEFINITION OF THE REGION AND REMARKS ON DISTRIBUTION

When the fauna of an island or an archipelago is chosen as a subject for study, the boundaries of the region are determined by the circumstances themselves. But when a part of a continent is concerned, as in the present study, the definition of the region becomes a much greater problem. Where no natural frontiers, as high mountains, deserts, etc., exist, the limits must be artificial ones, as, e.g., geographical or political frontiers, with all drawbacks inherent to them. Sometimes, however, they must be used for want of better and more natural ones.

The region dealt with in this paper includes the following parts: the whole of India, and Ceylon, bounded in the West and North West by Persia and Afghanistan, in the North by the Himalayas — a natural frontier;

Assam and Burma; Siam, Annam and Tonkin; in the North-East by the political frontier of China; Malaya; the whole Malayan Archipelago with the Greater and Lesser Sunda Islands and the Moluccas; New Guinea with the Aru and Kei Islands and the Bismarck Archipelago; the Philippines.

As it is very difficult to make a division between Paleotropic and Palearctic China, I have abstained from this whole region; as to Formosa, I have not included this island, because its fauna is closely correlated with that of South China, and also because some species were described from Formosa in Japanese; neither the types nor the descriptions were accessible to me.

Furthermore a few genera of special interest from North Australia (Queensland) and one from the Solomon Islands have been dealt with [1]).

Regarding the remaining boundaries of the region, it may be said, that the Indian Ocean is a good limit on the South and South West, while the Pacific Ocean is a more logical boundary for the Philippines than for New Guinea, as the fauna of the latter is continued on the Pacific Islands and also in Australia. The Papuan fauna has numerous Australian elements and I expect that future collecting will demonstrate this connection even more distinctly. I have great expectations of the result of the American-Dutch Archbold Expedition, which is working there now.

The boundary of the chosen region in the North East is altogether artificial on account of the forced exclusion of the fauna of South China and Formosa, which, however, is closely related to the Indo-Malayan fauna.

The above mentioned region has as a typical character the moist tropical climate, which gives rise to an abundant plant-growth; and this creates many possibilities for the existence of numberless species. As principal form of vegetation, the rain-jungle preponderates; in the West of the region it changes into the dry steppe of Central Hindostan, which becomes a desert at the boundaries of Persia and Afghanistan; the Malayan Archipelago is characterised in the East by savannah-like landscapes.

A great part of the region dealt with is situated on the borders of two large continents, Asia and Australia, and contains a mixture of these two faunas. The zoogeographical interpretation of the Malayan and Papuan faunas, the so-called Wallacia, is extremely difficult, on account of considerable tectonic movements, through which the strip of land between the two above mentioned continents has passed in the last geological periods. The knowledge of the fauna of Microlepidoptera of the region is not yet beyond the stage of early childhood; e.g., very little is known about the

---

1) These genera are marked in the present paper by the absence of a number.

faunas of such immense islands as Borneo and Celebes. Therefore I think that it would be absolutely premature to make any but very cautious speculations on the zoogeography of this group. Many years of collecting on a large scale will be necessary to widen our scope in this matter.

3. KEY TO THE FAMILIES OF TORTRICINA

1. Forewings with vein 2 from beyond ¾ of cell 2
   Forewings with vein 2 from before ¾ of cell 3
2. Hindwings with vein 5 absent . . . . . Carposinidae.
   Hindwings with vein 5 present . . . . . Phaloniadae.
3. Hindwings with basal pecten of hairs on lower margin of cell . . Eucosmidae.
   Hindwings without such pecten 4
4. Forewings with veins 8 and 9 stalked or coincident; hindwings with vein 5 parallel, 6 and 7 stalked. Ocelli absent . . . . . Chlidanotidae.
   Forewings with veins 8 and 9 rarely stalked, if stalked then hindwings with vein 5 approximated to 4 at base. Ocelli present . . . . . Tortricidae.

4. THE FAMILY TORTRICIDAE

General description

Tortricidae are moths of small, rarely of moderate size, with broad wings; when in resting attitude, they have an elongate-truncate shape. The head is densely covered with appressed scales, sometimes the vertex is rather rough-scaled and the face projecting in middle. The representatives of the subfamilies Ceracidii and Chresmarchidii have smooth heads. Tongue moderate, sometimes rather short or vestigial. Ocelli present. Eyes naked, of moderate size, round or with flattened hind margin. Antennae reaching from $^1/_3$ to $^2/_3$ of forewings, with the basal joint of different shape, thickened with scales, or with a pecten in male; flabellum tapering to the apex, shortly haired, with two ventro-lateral rows of short cilia in both sexes, sometimes strongly ciliated over the whole length, especially in male, or with a ring of cilia around every articulation; rarely pectinate. Maxillary palpi obsolete. Labial palpi porrected, subascending or ascending, robust, moderate, rarely long, basal joint short, medial joint often thickened with appressed or rough scales towards apex; its shape often triangular; terminal joint cylindrical, short, porrected or drooping. A collar of roughly appressed scales surrounding the head, dense and long above, where it covers the anterior margin of the patagia and of the thorax; diminishing below and partially concealing the basal joints of the palpi. Thorax smooth-scaled, often with very small and thin scales of a shape different from those on the patagia, which are moderate or short, longer in female and covered with broad scales. Thorax sometimes with a medial longitudinal crest,

ending in a tuft of raised scales posteriorly. Forewings broad, elongate-triangular, in some genera costa strongly arched at the base, then sinuate, with apex projecting and with termen sinuate above, rounded and projecting beneath; rarely the forewings are ovate, with costa rounded from base to termen (*Eboda* Meyr.), or elongate with apex acute (*Isochorista* Meyr.). In male the basal part of costa is sometimes folded over the upper surface of wing, forming a costal fold; this fold is of variable shape: from semi-circular to elongate and narrow, reaching from $^1/_4$ to beyond $^1/_2$ of costa; it conceals a brush of broad scales, which very probably represent a scent-organ. This peculiar character, which is known only in the present family, is rather plastic, absent or present within one single genus and even of variable shape within one species (e.g., *Chresmarcha pythia* Meyr.). The presence or the absence of the costal fold, therefore, can hardly be used as a generic character. In some genera, especially in the subfamily Homonidii the upper surface of the wing bears patches of raised scales, scattered irregularly, or placed in transverse rows. Sometimes the margin of wing bears a projection of dense and broad scales on costa (*Callibryastis* Meyr., *Planostocha* Meyr.), on the base of dorsum (some species of *Cacoecia* Hb. and of *Homona* Wlk.), or beyond the middle of dorsum (*Pternozyga* Meyr., *Protopterna* Meyr.).

Forewings with a moderate discal cell, often dilated, seldom narrowed posteriorly (*Schoenotenes* Meyr.), 12 veins, sometimes 11 veins present. 1b furcate at base, 1c vestigial, its terminal part distinct, 2 originating from before $^3/_4$ of the lower margin of discal cell, far remote from 3, which originates from the angle of cell, rarely before angle, 3 and 4 approximated, rarely stalked, 5 often approximated at base, 6 remote, 7, 8 and 9 variably arranged: 7 and 8 stalked or separate, 7 to costa or termen; rarely 8 and 9 stalked or out of 7; 12 separate. Accessory cell sometimes present, parting vein, if present, is seldom truncate (indicated in *Cerace* Wlk., an archaic character), mostly simple or vestigial. Cilia short. Markings of forewings following more or less a general schema, with a dark basal area, a medial oblique transverse fascia and a costal patch before apex.

Hindwings with frenulum, being a strong bristle in male and a sheaf of thin bristles in female; subtriangular, semiovate or elongate, often broader than forewings. A cubital pecten of long hairs (along the lower margin of discal cell) is rarely present (not in the genera dealt with in this paper). Discal cell moderate, with an acute lower angle extending posteriorly. 8 or 7 veins present; 1b shortly furcate, 1c present; 3 from the angle of cell, seldom before angle, approximated, coincident or stalked with vein 4, 5 approximated at base, seldom absent (*Polemograptis* Meyr.), 6 and 7 closely ap-

proximated towards base or stalked, from upper angle of cell, 7 rarely from before angle. 8 sometimes connate with the base of the upper margin of cell, slightly sinuate, to costa before apex. Sometimes in female a patch of dark coloured, thickened scales is present on costa before apex; rarely such a patch is present on termen at the middle of wing; in resting position these dark patches are visible just produced from beneath the costal margin or from beneath the dorsal margin of forewings respectively; these very probably are the female scent-organs. The hindwings are little coloured, mostly unicolourous, or with a dark base or termen. Cilia short, increasing in length towards the dorsum, where they reach $^1/_4$ of wing-breadth.

Legs strong, covered with smooth or appressed scales, tibia with two spurs below middle, the outer about $1^1/_2 \times$ as long as the inner one, anterior tibiae bearing a tibial blade, which is an articulated, lancet-shaped and flattened lamella, in rest concealed in a crevice of the inner tibial surface; this may be an instrument for the cleaning of the antennae, but it is more probable, that we have to do with a sense or a scent organ.

Abdomen cylindrical, tapering towards apex, sometimes with longitudinal scale-crests and always with an apical tuft in male, sometimes also present in female (*Harmologa* Wlk., *Chresmarcha* Meyr.). Tympanal organs absent.

Genital apparatus

The genital organs are formed by the chitinised parts of the 8th, 9th and 10th segments, which show considerable differentiations.

In male the 7th abdominal segment is simple, bears the spiracles and does not differ from the basal segments. The coremata (Pierce) being the lateral invaginations of this segment, covered with hairs or bristles, as they have been described in some Lepidopterous families (Pyralina, Geometridae), are absent in the present family.

The 8th abdominal segment, on the contrary, shows modifications, in connection with its role of supporting the secondary genital parts. The posterior margin of the 8th tergite and sternite, especially the latter, are chitinised and bear in the cavities of the outer surface dense brushes of hairs and scales, which add to the forming of the anal tuft above mentioned. The shape of the 8th tergite and especially the sternite will offer good specific characters. The latter is perhaps homologous with the abdominal plate (Buchanan White) in Eupitheciinae and in some Nymphalidae and Pyralidina. For the indication of these parts in the Tortricidae, I use the term of mensis dorsalis and mensis ventralis (these parts being generally moon-shaped); it has obtained its greatest development in *Leptochroptila*

nov. gen. and in *Chresmarcha* Meyr. I give to the hair-brushes on these parts, if present, the name of scopa dorsalis and scopa ventralis.

The 9th abdominal segment forms a chitinised ring, consisting of two distinct parts, the dorsal part, which is called the tegumen (Buchanan White pro parte), being an excavate and curved plate, which covers the genitalia from above when in rest, and is bent backwards during copulation; the tegumen articulates with the dorsal part of the saccus (Bethune Baker) by means of two basal projections, for which, in order to facilitate the description, I propose the name of pedunculi. The saccus is moderately developed in this family, being a rounded, narrow band, except in Chresmarchidii, where it is broad. The presence of a well defined articulation between this part and the tegumen is a good indication that the saccus must be regarded as an independent part of the 9th abdominal segment. The name tegumen should be used only for the dorsal part of this segment, as far as the above mentioned articulation.

The valvae are lateral lobes, articulating dorsally with the pedunculi of the tegumen, ventrally with the saccus. These are elongate, ovate or semicircular, rather membranous flanges, richly scaled on both the inner and outer surfaces, sometimes set with bristles along the margin and more or less distinctly separated in three parts: the dorsal, costa (Pierce), little developed in the present family, the ventral, sacculus (Pierce), being sometimes a considerable thickening, which often ends in a horn-shaped armature, the hook. The discal part of the valva, between the costa and the sacculus, is membranous, sometimes folded longitudinally and is called the valvula (Pierce). It shows little differentiation in the family, except, e.g., in *Chresmarcha* Meyr., where it forms an ear-shaped projection at the base of the costa.

The homology of the parts of the 9th abdominal segment may perhaps be understood as follows. The tegumen is the 9th tergite, the saccus the 9th sternite, while the valvae represent the pleurites of the same segment; the pleurites have acquired their present place by moving in caudal direction; at the same time becoming free, except at the base, where they articulate with the tergite (tegumen) as well as with the sternite (saccus). In this way the paired character of the valvae becomes comprehensible. A wide field for experimental research work on the development of these parts in the pupa remains open.

The parts of the 10th abdominal segment at last have undergone much greater differentiation than those of the preceding segments. It is therefore very difficult to obtain certainty on the homology of these. Zander even doubts the existence of this segment. However, the presence of chitinous

elements, articulating terminally with the above described parts of the 9th segment, justifies the supposition, that these elements represent this 10th segment indeed.

Anyhow the following parts, in connection with this segment, have been distinguished: the uncus (Gosse), an elongate and curved dorsal projection, articulating with the top of the tegumen by a broad base; sometimes it is dilated and indent at the apex with hairs underneath. The uncus is in reduction in the subfamily Peronidii (e.g. *Tymbarcha* Meyr.). On either side of the base of the uncus a bristled ventral projection is present, being the socius (Pierce), which is drooping, porrected or ascending and often of a considerable size; rarely socii are absent. Under the socii articulates the gnathos (Pierce), formed by two curved arms, which are bent downwards and united at the end in a sharp curved point. The gnathos encloses the anus from the ventral side. The bases on the costal parts of the valvae are sometimes connected by a transverse rod, the transtilla (Pierce); this shows considerable development in the family. Its medial part is often obliterate, the basal parts being thickened, often dentate knobs. The terminal part of the anus, protruding beween the articulation of the gnathos, is in most cases membranous, but has in *Rhomboceros* Meyr. the shape of a slightly chitinous tube; in this genus it is supported by a chitinised plate, and is perhaps homologous with the subscaphium (Pierce) of Geometridae and Noctuidae. At the ventral end of the round opening, formed by the inner sides of the valvae, a rounded, somewhat folded plate is attached, the anellus (Pierce); at its apex the curved aedoeagus is hinged. As to the homology of the described parts, I think it better to leave this question alone at present.

Now the primary genital organ remains, which consists of a vesicula seminalis, a more or less long ductus ejaculatorius, which is supported terminally by a curved and hinged, mobile tube, the aedoeagus. The distal part of the ductus ejaculatorious consists of a large membranous sack, the vesica, often armed with huge spines, the cornuti. When in rest, these spines lie in a sheaf together, but when extruded, they are a formidable apparatus, which has, without doubt, an excitatory role during the copulation. The ductus ejaculatorius with the vesica can be extruded to a considerable length, as the latter must penetrate into the bursa copulatrix of the female, where the cornuti break off and remain here afterwards.

During copulation the sperma is deposited in the bursa copulatrix in the form of a spermatophore, which is of various shape and possesses a very tough wall and sometimes also a considerable neck or collum (Petersen).

The female genitalia are formed by the 8th and the 9th abdominal seg-

ments, the 10th segment is modified into the ovipositor. The 7th segment is seldom modified, e.g., in *Cerace* Wlk., and *Chresmarcha* Meyr., where it bears the peculiar ventral tuft (see there) and has a wrinkled surface and a medial split. The 8th segment bears the anapophyses, being two more or less extended narrow chitinous rods, which lie at the sides in the abdominal cavity and serve as attachment for muscles for the extrusion of the ovipositor. The anapophyses are furcate at the posterior end and united ventrally and dorsally with each other. The dorsal connection is the dilated and chitinised posterior margin of the 8th tergite; it has two rounded lobes at the sides, which are bent ventrally, but rarely united. In *Cerace* they form a transverse bar above the ostium, perhaps homologous with the operculum (Pierce) of Geometridae and of other Tortricina. The ventral connection mostly forms a semicircular rod, which supports the outer rim of the ostium genitale and to which I give the name of limen for the facility of description; the limen is of variable shape and forms an important specific character. The ostium is the secondary genital opening of the female. It is wide, funnel-shaped and possesses a membranous wall. The ostium is connected with a tube, the ductus bursae, which is of variable length and ends in a large vesiculation, the bursa copulatrix. The ductus bursae is sometimes armed with chitinous plates at the upper fourth or half, for which armature I propose the name colliculum, and a spiraled rod in the lower part, which I call the cestum. The latter has acquired considerable development within the family, e.g. in *Cacoecia* Hb. and *Homona* Wlk., and especially in *Chresmarcha* Meyr., where it forms a broad and long spiral. The bursa copulatrix has its own armature, the signum (Pierce), which in most cases has the shape of a hook. This hook is attached by a dilated and chitinised base to the inner surface of the bursa, just opposite the entrance of ductus bursae. I do not doubt that the signum is the excitatory organ of the female, as when entering the bursa the vesica of the male must just touch the signum.

The cestum and especially the signum bear very important generic characters, not only in Tortricidae, but also in Geometridae and in Noctuidae, as is stated by Pierce. Unfortunately the signum can be absent in some species. This, however, is a secondary circumstance, which is found in various genera.

The 9th segment possesses the postapophyses, which are shorter than the anapophyses and support the ovipositor lobes, these being broad pads, mostly dilated apically, sometimes acute and narrow, densely covered with bristles and hairs. Sometimes they are covered with long hairs and flattened spines and may then be distinguished by the name floricomous (Pierce).

Early stages

The egg is flattened, oval, smooth or reticulate; the eggs are often laid in groups and covered with a substance which hardens after drying.

The larva is elongate, cylindrical, slightly tapering posteriorly, with 3 pairs of thoracic and 5 pairs of abdominal legs on segments 7 to 10 and 13; the crochets at the end of abdominal legs are bi- and triserial, arranged in a circle. The larvae are little marked, white, pink, red or green, with darker prothoracic and abdominal shields. They live often concealed in rolled leaves, many of them are considerably polyphagous. Sometimes they mine in flower-heads, stems and roots, and some are galligenous. Many species are bred from different cultivated plants and are of economic importance. *Homona coffearia* Nietn. has acquired a bad fame, being the main pest of the tea-plant in Ceylon.

The pupa ist mostly of a brown colour; it is a pupa libera, with the segments 8 to 11 free in female, 8 to 12 free in male. The abdominal segments are equipped with transverse rows of thorns, which help the protrusion of the mature pupa out of the cocoon before the emergence of the moth.

Systematic position

In the order Lepidoptera the superfamily Tortricina forms a well defined and natural group. It belongs to the suborder Heteroneura, having the neuration of hindwings incomplete, with a maximum of 8 veins. From the superfamilies Papilionina, Noctuina and Geometrina the Tortricina can be distinguished by the presence of vein 1c (second cubital vein) in hind wing; from the subfamilies Cossoidina and Psychodina by the absence of a furcate parting vein (medialis) in discal cell in hindwings and of a furcate vein 1c in forewings; from the Pyralidina by absence of tympanal organs and by vein 8, which is not fused or approximated to 7 in hindwings; from the Tineina by short apical segment of labial palpi.

For the way in which Tortricidae can be distinguished from the other four families of the superfamily Tortricina I may refer to the key to these families. The Eucosmidae are the nearest relatives of the Tortricidae. The separating characters are the cubital pecten on lower margin of cell in hindwings of Eucosmidae, which occurs in Tortricidae only in five genera, with American or New Zealand distribution. Another character for distinguishing these two families is the signum in female, which in Tortricidae has the shape of a single smooth horn with a bulbed base, a dentate band or a single, stellate plate; in Eucosmidae, as far as European and North American forms are concerned, the signum is either a single horn without

bulbed base or the signum is paired. The genitalia of the Asiatic Eucosmidae have not yet been studied. The connecting links between the families are *Mictoneura* Meyr. in the Tortricidae and *Articolla* Meyr. in the Eucosmidae. The connection of the Tortricidae with the Chlidanotidae is accomplished by *Diactenis* Meyr.

5. KEY TO THE GENERA

1 Head smoothly scaled (fig. 1B, J, L, M)[1] 2
Head not smoothly scaled 4
2 Vein 7 in forewings to termen (fig. 1H, I, O) *Chresmarcha* Meyr. (pro parte).
Vein 7 in forewings to costa (fig. 1A, D) 3
3 Forewings projecting in cell 8 and cell 6, their margin between these cells indent or straight and oblique; two complete accessory cells present; furca of vein 1 very long (fig. 1A) . . . . . *Cerace* Wlk.
Forewings with apex broadly rounded; upper accessory cell only indicated in ♀; furca of vein 1 short (fig. 1D) . . . . . *Pentacitrotus* Btl.
4 Forewings with a scale-projection on dorsum beyond middle (fig. 11L, N) . 5
Forewings without such projection 6
5 Forewings with 7 and 8 stalked, hindwings with 3 and 4 connate (fig. 11 N) *Pternozyga* Meyr.
Forewings with 7 and 8 separate, hindwings with 3 and 4 stalked (fig. 11L) *Protopterna* Meyr.
6 Head with a large, flattened crest, projecting forward over the face (fig. 1P) *Piliscophora* nov. gen.
Head without such crest 7
7 Forewings with a scale-projection on 1/3 of costa (fig. 11F) *Callibryastis* Meyr.
Forewings without such projection 8
8 Forewings with veins 7 and 8 stalked or with 8 and 9 out of 7 . . . 9
Forewings with veins 7 and 8 separate, sometimes 8 and 9 stalked . . 31
9 Forewings with veins 8 and 9 stalked, out of 7 (fig. 13M) *Antigraptis* Meyr.
Forewings with vein 9 separate, or out of the stalk of 7 and 8 . . . 10
10 Forewings with vein 9 out of the stalk of 7 and 8 (fig. 10G; 13E, R) . . 11
Forewings with vein 9 separate 14
11 Forewings with veins 3 and 4 stalked (fig. 11R) . . . . *Dicellitis* Meyr.
Forewings with veins 3 and 4 separate 12
12 Forewings with raised scale-tufts. Hindwings with veins 3 and 4 separate or almost connate (fig. 11C, D, E) . . . . . *Drachmobola* Meyr.
Forewings without raised scale-tufts. Hindwings with veins 3 and 4 stalked 13
13 Forewings with vein 7 to apex (fig. 10G, H) . . . *Capnoptycha* Meyr.
Forewings with vein 7 to termen (fig. 14G, H) . . . *Pandurista* Meyr.
14 Forewings with veins 3 and 4 stalked[2] 15
Forewings with veins 3 and 4 separate. 17
15 Forewings with raised scale-tufts, broad, truncate (fig. 13K, L) *Tymbarcha* Meyr.
Forewings without raised scale-tufts, elongate (fig. 5H, 10B) . . . 16
16 Forewings with a slight posterior crest; hindwings with veins 6 and 7 approximated at base (fig. 10B, C) . . . . . *Leontochroma* Wals.

1) Sometimes head with appressed scales (fig. 1K), then forewings snow-white, glossy, black along costa, black and lemon-yellow along termen (*Chresmarcha* Meyr., pro parte).

2) In *Leontochroma aurantiacum* Wals. very closely approximated at base (fig. 10 B).

Forewings without crest; hindwings with veins 6 and 7 stalked (fig. 5H, I) . *Pyrsarcha* Meyr.

17 Hindwings with veins 2—4 equidistant (fig. 5O, P). . *Metaselena* nov. gen.
Hindwings with vein 2 remote from 3 18

18 Hindwings with vein 3 originating considerably before angle 19
Hindwings with vein 3 from angle 20

19 Hindwings with vein 3 from before angle, 6 and 7 stalked (fig. 4H, I) *Adoxophyes* Meyr.
Hindwings with vein 3 from angle, 6 and 7 separate (fig. 5Q, R) *Procalyptis* Meyr.

20 Hindwings with the stalk of veins 6 and 7 twice as long as the free arms of these veins; palpi with terminal joint concealed in the scales of the second joint; thorax without crest (fig. 5C, D, E) . . . . . *Aeolostoma* Meyr.
Hindwings with the stalk of veins 6 and 7 not so long; terminal joint of palpi distinct; thorax usually with a posterior crest . . . . . 21.

21 Hindwings with veins 3 and 4 connate or stalked 22
Hindwings with veins 3 and 4 separate 25

22 Forewings with tufts of raised scales . . . . . *Elaeodina* Meyr.
Forewings without tufts of raised scales. 23

23 Hindwings with vein 2 from $^3/_4$ of cell (fig. 5A); antennae in ♂ with a rhomboidal scale-dilatation at base (fig. 5B). . . . . *Rhomboceros* Meyr.
Hindwings with vein 2 from $^2/_3$ or $^3/_5$ of cell. 24

24 Forewings with vein 10 more than twice as far from 11 as from 9; vein 11 straight; antennae in ♂ normal; thorax with a slight crest (fig. 5J). . *Epagoge* Hb.
Forewings with veins 9—11 almost equidistant, 11 sinuate; antennae in ♂ with a notch near base; thorax without crest (fig. 8G, H, I) . . *Ulodemis* Meyr.

25 Forewings very narrow; hindwings with the stalk of veins 6 and 7 more than twice as long as the free arms of these veins (fig. 5F, G) *Isochorista* Meyr.
Forewings moderately broad; hindwings with the stalk of veins 6 and 7 not so long 26

26 Forewings with vein 11 from beyond middle of cell, shorter than vein 9; hindwings 6 and 7 stalked (fig. 5S, T) . . . . . *Catamacta* Meyr.
Forewings with vein 11 from middle or from before middle of cell, about as long as, or longer than 9. 27

27 Forewings with vein 1 shortly furcate, furca not reaching halfway the origin of vein 2 28
Forewings with vein 1 longly furcate, furca reaching far beyond the origin of vein 2 29

28 Forewings with vein 11 from $^2/_5$ of cell, 4 nearer to 5 than to 3; hindwings with a long cell, reaching to beyond middle of wing, often with a scale- projection on costa before apex in ♀ (fig. 4F, G) 30
Forewings with vein 11 from beyond middle of cell, 4 nearer to 3 than to 5; hindwings with discal cell reaching to $^1/_2$, without scale-projection on costa (fig. 4J, K) . . . . . *Choanographis* Meyr.

29 Antennae with basal joint long, palpi very long with semi-appressed scales, abdomen with thick scale-brushes at the base (fig. 5L, M, N) *Ulodemis chelophora* (Meyr.)
Antennae with basal joint moderate, palpi with short, appressed scales, abdomen without scale-brushes at the base (fig. 4D, E) . . . *Thrincophora* Meyr.

30 Forewings with veins 8 and 9 stalked . . . . . *Antiphrastis* Meyr.
Forewings with veins 8 and 9 separate 31

31 Forewings with veins 3 and 4 stalked 32
Forewings with veins 3 and 4 separate 35

32 Forewings with costa broadly rounded posteriorly, apex indistinct, vein 7 apparently to costa (fig. 11O, P, Q) . . . . . *Paratorna* Meyr.
Forewings with vein 7 distinctly to termen. 33

33 Forewings with vein 2 before ½ of cell (fig. 13T) . . *Beryllophantis* Meyr.
Forewings with vein 2 from beyond ½ of cell 34
34 Hindwings with vein 3 present (fig. 11P, Q) . . . *Spatalistis* Meyer.
Hindwings with vein 3 absent (fig. 13G, H) . . . . . *Eboda* Wlk.
35 Forewings with discal cell considerably narrowed posteriorly, parting vein very distinct, oblique (fig. 11J, K) . . . . . *Schoenotenes* Meyr.
Forewings without such cell 36
36 Forewings with two complete parting veins, vein 7 to apex (fig. 19L) . . *Lophoprora* Meyr.
Forewings with only one complete parting vein, or with these veins vestigial or absent 37
37 Hindwings with vein 5 absent (fig. 13A, B) . . . *Polemographis* Meyr.
Hindwings with vein 5 present 38
38 Forewings with parting vein in cell very distinct, from the base of wing to between the origin of veins 4 and 5; hindwing with costa strongly sinuate (fig. 14K, L). *Taeniarchis* Meyr.
Forewings without such parting vein; hindwings with costa not strongly sinuate 39
39 Forewings with vein 3 from before angle (fig. 13R, S) *Planostocha* Meyr.
Forewings with vein 3 from angle 40
40 Hindwings with veins 6 and 7 connate or stalked 41
Hindwings with veins 6 and 7 separate 46
41 Hindwings with veins 3 and 4 connate or stalked. 42
Hindwings with veins 3 and 4 separate. 43
42 Palpi ascending, narrow, not dilated with scales (fig. 8O, P) *Terthreutis* Meyr.
Palpi semi-ascending, broadly dilated with scales towards apex (fig. 8Q, R) *Cnephasia* Hb.
43 Antennae with basal joint long. Forewings with veins 4 and 5 connate (fig. 10J, K) *Isotenes* Meyr.
Antennae with basal joint moderate. Forewings with veins 4 and 5 separate 44
44 Palpi moderate, second joint dilated at apex (fig. 3N); vein 1 in forewings with a long furca, reaching to beyond halfway the origin of vein 2 (fig. 3M); large dorsal scopa in male (fig. 3K) . . . . . *Leptochroptila* nov. gen.
Palpi long, second joint dilated before apex (fig. 8D, N); forewings with vein 1 shortly furcate 45
45 Thorax without crest; forewings with vein 11 from middle of cell, shorter than 10 (fig. 8M, N) . . . . . *Epichorista* Meyr. (pro parte)
Thorax with a posterior crest; forewings with vein 11 from before middle of cell, longer than 10 (fig. 8C, D) . . . . . *Harmologa* Meyr.
46 Forewings with vein 7 to costa (fig. 13I, J) . . . . *Peronea* Curt.
Forewings with vein 7 to apex or termen 47
47 Forewings with vein 7 to apex, 4 and 5 connate (fig. 19F, G) *Protyphantes* Meyr.
Forewings with vein 7 to termen, 4 and 5 separate 48
48 Palpi narrow, scarcely dilated towards apex (fig. 8L; 14E) 49
Palpi triangular, with second joint broadly dilated by projecting scales (fig. 11I; 13D, F) 50
49 Thorax with a posterior crest, forewings with vein 2 from ⅔, discal cell considerably dilated posteriorly, accessory cell well developed (fig. 14D, E) . . *Eulia* Hh.
Thorax without crest, forewings with vein 2 from beyond middle, no accessory cell (fig. 8K, L) . . . . . *Cacoecia* Hb.
50 Forewings with vein 11 very short, from middle of cell (fig. 8M, N; 13E, F) *Epichorista* Meyr. (pro parte)
Forewings with vein 11 moderate, from before middle of cell . . . 51

51 Forewings with raised scale-tufts (fig. 11H, I) . . . *Argyrotoza* Steph.
Forewings without scale-tufts 52
52 Palpi short, broadly dilated, with rough, projecting scales above and beneath (fig. 13C, D) . . . . . *Tortrix* Linn.
Palpi elongate, moderately dilated, with appressed scales 53
53 Palpi with second joint dilated at base, forewings elongate, narrow; antennae in ♂ normal (fig. 14I, J) . . . . . *Arotrophora* Meyr.
Palpi with second joint dilated at apex; forewings broad, semi-ovate or rectangular; antennae in ♂ with a notch near base (fig. 8E, F) . . *Pandemis* Hb.

6. DESCRIPTION OF THE GENERA AND OF THE GENITAL CHARACTERS OF THEIR GENOTYPES, WITH NOTES ON NEW SYNONYMS OF THE SPECIES

I. Subfamily CERACIDII, nov. subfam.

Ceracidae Meyrick, Rec. Ind. Mus., vol. 2, p. 395, 1908.
"Group B." (pro parte) Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 2 and 20, 1913.

Cestum a folded, sometimes scobinate, chitinous plate. Signum absent. 7th abdominal segment in female wrinkled ventrally or strongly chitinised. Ostium a strong funnel. Uncus well developed, curved, strong; gnathos strong. Socii drooping, large. Valva elongate, curved, thickly covered with hairs or bristles on disc.

Head, thorax and legs very smoothly scaled. Antennae ciliate in male. Thorax without crest. Forewings conspicuously coloured, without costal fold in male.

This subfamily represents a natural group of conspicuously and brightly coloured insects, which without doubt show their Tortricid origin by their structure. They have given many difficulties to the lepidopterologists, especially the genus *Cerace* Wlk., which was regarded already by Walker and Moore as belonging to the Tortricidae, but afterwards was placed in the Tineidae by Snellen and in the Plutellidae by Meyrick. It was Meyrick at last, who recognised the Tortricid origin of *Cerace*.

Cerace Wlk. and *Pentacitrotus* Btl., an abandoned genus, which is now restored, belong here, and probably also the Nearctic *Atteria* Wlk., and the Neotropic *Pseudatteria* Wals.

The subfamily seems to be an old offspring of the same trunk, from which the subfamily Cacoecidii has developed; it combines the archaic character of the parting vein, which is indistinctly stalked in *Cerace*, but has almost disappeared in *Pentacitrotus;* and the highly developed wing colouring and wing shape with the absence of a signum, very probably on account of a secondary reduction. I regard the above mentioned chitinised

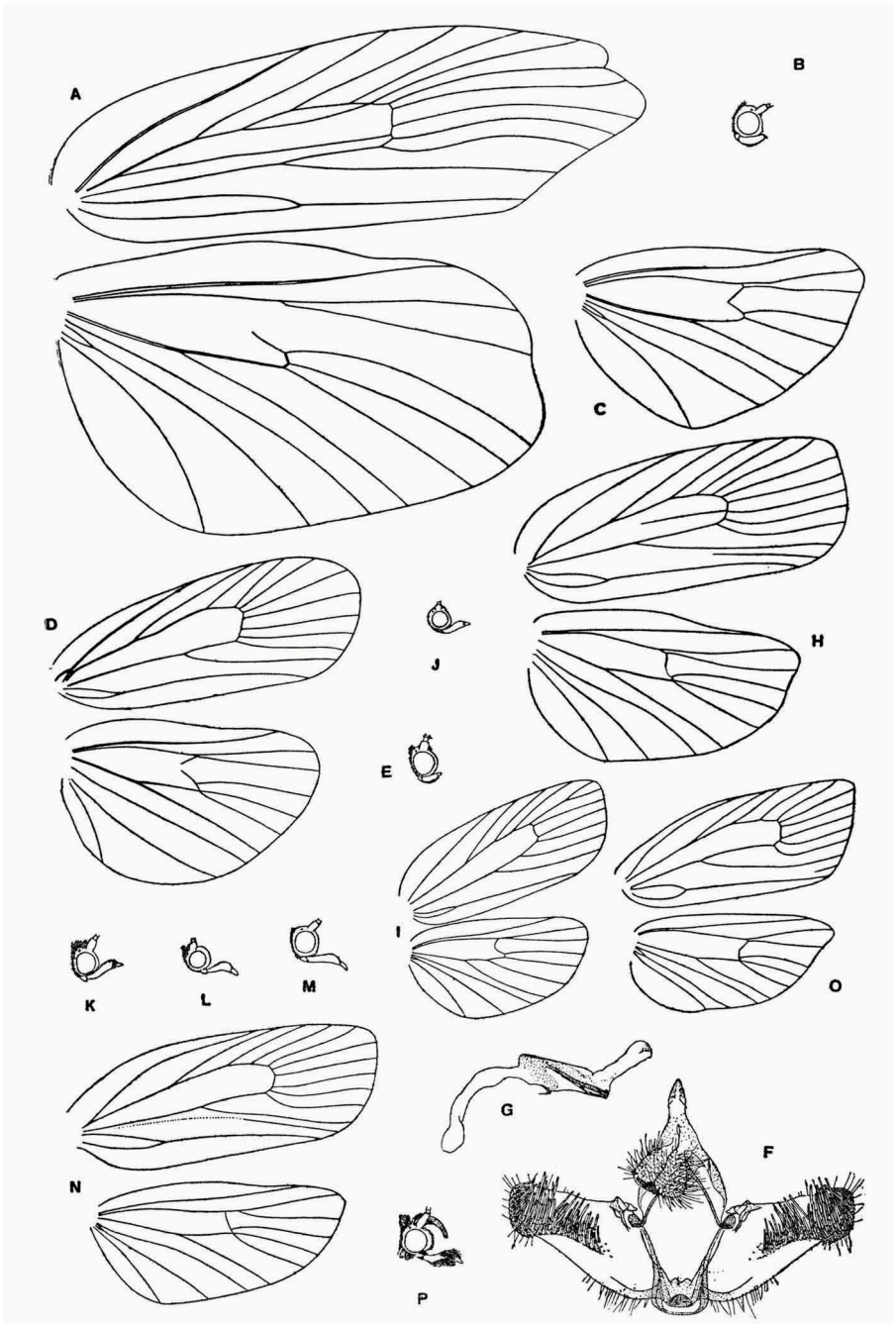

Fig. 1. A, B, *Cerace stipatana* Wlk. ♂, A, wing neuration; B, head, C, *Cerace triphaenella* Sn. ♀, hindwing. D—G, *Pentacitrotus vulneratus* Butl. ♂, D, wing neuration; E, head; F, genitalia; G, aedoeagus. H—J, *Chresmarcha sibyllina* Meyr., H, wing neuration ♀; I, wing neuration ♂; J, head ♂; K, *Chresmarcha pythia* Meyr., head ♀; L, *Chresmarcha holantha* Meyr., head ♀; M, *Chresmarcha stephanitis* Meyr., head ♀; N, *Chresmarcha holantha* Meyr., wing neuration ♀; O—P, *Philiscophora grisea* nov. gen., nov. spec. ♂, O, wing neuration; P, head.

plate as the cestum, as it is partially located in the ductus bursae and strongly reminds of the dilated and folded lower end of the cestum in the next subfamily.

Genus 1. **Cerace** Walker

Genotype: *Cerace stipatana* Walker (India, China).

Cerace Walker, List Lep. B. M., vol. 28, p. 422, 1863; Snellen, Tijdschr. v. Entom., vol. 46, p. 26, 1904; Meyrick, Rec. Ind. Mus., vol. 2, p. 395, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 20, pl. 5 fig. 74, 1913. Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 43, 1929.

Atteria (Walker) Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 221, 1910.

Head (fig. 1 B) smooth-scaled, palpi short, porrected, basal joint short, thickly scaled, medial joint moderate, rather broad, smoothly scaled above, carinate by rough projecting scales beneath, terminal joint smooth, short. Antennae short, to $^1/_3$ or $^1/_2$ of costa, pubescent in male: on every articulation in male with a circle of short, curved cilia, in female with an outer and an inner hair. On vertex between the antennae patches of long scales encircling almost entirely the base of each antenna.

Thorax smoothly scaled, with patagia short in male, elongate and reaching beyond the base of dorsum of forewings in female. Legs of moderate length, covered with short and smooth scales.

Forewing (fig. 1 A) elongate, 3 × as long as broad, without costal fold in male, with costa strongly arched at base, posteriorly straight, somewhat rounded at $^3/_4$; apex rectangular, termen vertical between veins 8—7, projected and rounded in cells 7—5, oblique beneath, tornus broadly rounded, but distinct, dorsum straight with basal $^1/_6$ arched. 1 with a very long furca, reaching to $^3/_8$ of wing; 2 from beyond $^3/_5$ of cell, 3 from angle, 3—5 almost parallel, 4 at base a little nearer to 3 than to 5, 7 to termen, nearer to 6 than to 8, 7—9 equidistant (except in the *triphaenella*-group, where 7 and 8 are slightly approximated at base), 10 twice as remote. Two parting veins distinct: medial ending above the base of vein 4, its almost obsolete upper arm between veins 5 and 6, and radial, originating from $^1/_2$ between 10 and 11, and running into vein 8.

Of the known species the ♂ of *guttana* F. et R. has the narrowest wings, which are nearly 4 × as long as broad. The wing of *C. stipatana* Wlk. figured by Meyrick (1913) is too broad.

Hindwings (fig. 1 A) broad, trapezoid-ovate, or semicircular, a little less than twice as long as broad, the greatest breadth at $^2/_5$; costa broadly arched to $^3/_4$, slightly sinuate posteriorly, apex broadly rounded, termen vertical

above, little curved, in *guttana* ♀ even concave beneath, dorsum nearly vertical, little curved. 1a slightly curved basally, 1b rather straight, 2 from beyond half of cell, 3 from angle, 4 approximated at base or connate, in *triphaenella* Sn. absent (fig. 1 c), 5 posteriorly parallel with 3 and 4, strongly curved at base, approximated to 4, hind margin of cell between 5—6 angularly bent inwards, 6 and 7 approximated at base or connate (in one ♀ of *guttana* Feld. et Rog. they are stalked), 8 separate.

Abdomen elongate, in male with a large tuft.

Genital apparatus.

♂ (fig. 2 A). Scopae absent. Tegumen broad, saccus rounded. Valva broad, curved, elongate, with costa and sacculus little developed, hook represented by a semicircular band of long bristle-shaped hairs. Uncus triangular, with a broad base, elongate above, with a rounded top, bearing two rows of hairs on inner side. Socii drooping, hairy, elongate-ovate, gnathos strong, short and curved. Transtilla a straight rod. Anellus darkly chitinised, broad. Aedoeagus (fig. 2 B) a short and broad tube, cornuti a sheaf of long spines. (Figured specimen in the Berlin Museum, genitalia slide No.30 D. 1)).

♀ (fig. 2 C). Ovipositor lobes moderate, not dilated posteriorly, operculum a curved transverse rod of a typical shape. Ostium large, strongly chitinised, dark brown, cup-shaped, with deeply indent outer rim; its thick wall forms the beginning of the ductus bursae; the latter is very long. Bursa copulatrix of considerable size; cestum represented only by its inner end, being a strong, dentate and semi-folded plate at the end of ductus bursae and at the beginning of the orifice of the bursa copulatrix. Signum absent. (Figured specimen in the Berlin Museum, genitalia slide No. 29 D.).

Distribution: Himalaya, India, Burma, Borneo, Java, China, Formosa.

Remarks. The species of this genus belong to the largest Tortricidae and form a very distinct and natural group. They are all characterised by the peculiar form of the forewings, as described above, and by the retinate markings of forewings in female. The genus can be divided into two distinct groups:

a) *stipatana*-group with trapezoid-ovate hindwings (fig. 1 A) and little sexual dimorphism: the males are of the same colour as the females, but smaller in size. Up to now, however, this cannot be stated with certainty, as of six of them only females are known.

b) *triphaenella*-group, with semi-circular hindwings (fig. 1 C) and con-

1) Numbers of slides marked with "D." refer to the author's list, those marked with "B. M." to the list of the British Museum.

siderable sexual dimorphism: only the female possesses the typical retinate forewings, while colouring of the male reminds of that of some species of *Chresmarcha* Meyr. Hhis group forms a transition to the following genus. Besides the rather variable *triphaenella* Sn., which is endemic on Java, *sardias* Meyr. belongs here.

Economic importance: *C. triphaenella* Sn. is injurious to the tea plant and to the cinchona tree in Java.

New synonymy:

Cerace guttana Felder et Rogenhofer

Cerace guttana Felder et Rogenhofer, Novara Reise, pl. 139 fig. 51, 1875. ♀.
Cerace onustana Walker, List Lep. Het. B. M., vol. 28, p. 423, 1863. ♂, syn. nov. (This is only the male of the same species. I have seen a series of both sexes from the same locality).

Genus 2. **Pentacitrotus** Butler

Genotype: *Pentacitrotus vulneratus* Butler (Himalaya, India).

Pentacitrotus Butler, Ill. Lep. Het. B. M., vol. 5, p. 35, pl. 86 fig. 5, 1881; Warren, Proc. Zool. Soc. Lond., p. 295—296, 1888; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 167, 1929.
Cerace (Walker) Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 20, 1913.

Head (fig. 1 E) smooth-scaled, palpi short, porrected, basal and medial joints with roughish scales, somewhat projecting beneath, terminal joint very short. Antennae reaching to $^1/_2$ of costa, with the basal joint thickened, smoothly scaled, pubescent in male: with a circle of short curved hairs around every articulation. On vertex between the antennae a thin patch of long hair-shaped scales, which do not encircle the bases of antennae.

Thorax smooth-scaled, patagia short in male, not reaching the dorsum in forewings. Legs very smooth, short-scaled.

Abdomen slender, elongate, with a dark anal tuft in male, large in female.

Forewings (fig. 1 D) elongate-ovate, about 2.4 × as long as broad, without costal fold in male, costa gradually curved from base to about $^1/_3$, almost straight in middle, posteriorly gradually rounded, apex broadly rounded, termen rounded gradually to about middle, obliquely rounded beneath, tornus distinct, dorsum straight, basal $^1/_5$ arched. 1 with the furca reaching to $^1/_4$ of wing, 2 from about $^2/_3$ of cell, 3 from angle, 4 approximated at base, nearer to 3 than to 5, 5 slightly approximated at base, 6—8 approximated at base and equidistant, 7 to termen. Cell 8 is 3 × as broad on apex as on discal cell, cell 10 on the contrary more than $1^1/_2$ × as broad at the discal cell as on costa; parting veins absent; 11 from middle of cell.

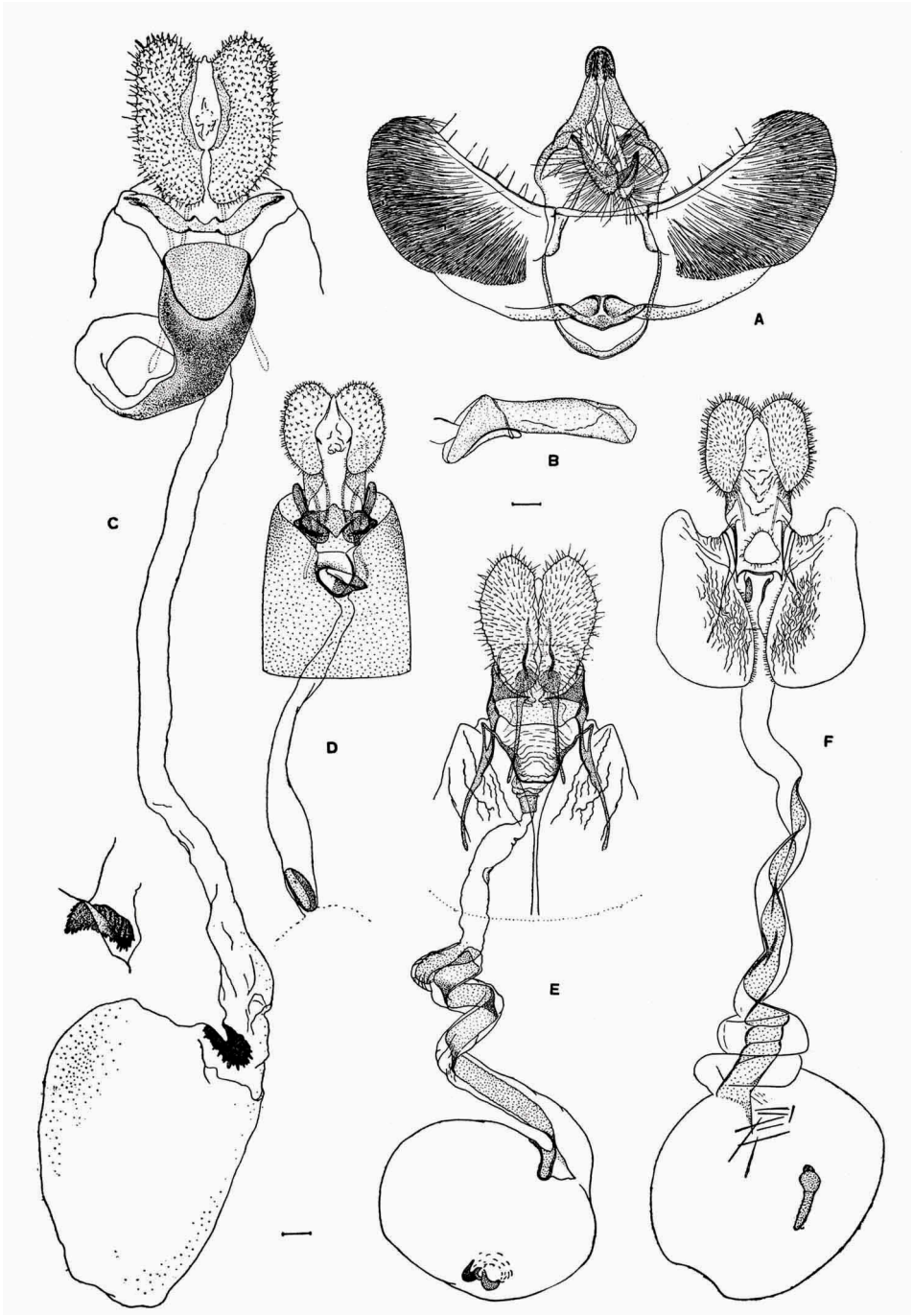

Fig. 2. A—C, *Cerace stipatana* Wlk., A, genitalia ♂; B, aedoeagus; C, genitalia ♀. D, *Pentacitrotus vulneratus* Butl., genitalia ♀. E, *Chresmarcha holantha* Meyr., genitalia ♀. F, *Chresmarcha sibyllina* Meyr., genitalia ♀.

Hindwings (fig. 1 D) broad, semicircular, about 1.5 × as long as broad, with costa arched from base to 1/2, posteriorly sinuate, apex rounded, termen and dorsum gradually rounded, the latter much more than in *Cerace*. 2 from beyond middle, 3—4 connate, from angle, 5 approximated at base, 6 and 7 remote, 7 to apex, closing vein into vein 6.

Genital apparatus.

♂ (fig. 1 F). Scopae absent. Saccus rounded. Valva elongate, not curved, narrowed posteriorly, costa with a projection at base, which bears a little pad pointing inwards, being the lateral remainder of vestigial transtilla. Apex thickly covered with strong long bristles, which are curved inwards. Sacculus little developed, with short hairs. Uncus dilated below apex, acute, with bristles underneath. Socii large, drooping, dilated apically, gnathos strong, curved, with a heavy point. Anellus little chitinised, moderate. Aedoeagus (fig. 1 G) short, broad, with a chitinous knob at the underside of the top, cornuti a sheaf of long spines. (Figured specimen in the Berlin Museum, genitalia slide No. 123 D.).

♀ (fig. 2 D). Ovipositor lobes moderate, elongate-ovate; limen broad, strongly chitinised, formed by a rhomboidal plate in the middle, pointed above and by an excavate, dark conus on each side. The whole 7th segment darkly chitinised, but smooth, without wrinkles. Ostium round, small, the beginning of the ductus bursae is a spiraled dark funnel. Cestum reduced to an elongate-ovate plate at the entrance of the bursa, with rolled up and serrate edges. Bursa large, ovoid (absent in the specimen figured), without signum. (Figured specimen in the British Museum, genitalia slide No. 1218 M. D.).

Distribution. India, Himalaya.

Remarks. This genus contains one single species; it was placed in the family Lithosiidae by Butler. Meyrick recognised it to be a Tortricid, but included it in the genus *Cerace*.

Pentacitrotus, however, is a distinct genus, especially characterized by the reduction (♀) or absence (♂) of parting veins in the discal cell, cell 10 in forewings being considerably dilated at base, and by the shape of the forewings, which are broader than in *Cerace,* and have a gradually rounded apex.

Another difference is the transtilla which in the present genus is almost obsolete, except for the most lateral parts, while in all *Cerace*-species examined it is well developed.

Correlated with *Cerace,* and intimately related to it.

Economic importance. Larva unknown.

II. Subfamily CHRESMARCHIDII, nov. subfam.

"Group B" (pro parte) Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 2 and 20, 1913.

Cestum large, a long, broad, coiled band. 7th abdominal segment in female mostly strongly wrinkled ventrally, with a split in the middle, and bearing a thick scale-tuft. Ostium not chitinised. Male genitalia mostly complicated, tegumen very large, of an elongate-clavate shape.

Saccus broad, trapezoid. 8th abdominal segment with strongly developed menses and scopae, especially scopa ventralis. Uncus broad, gnathos strongly curved; socii mostly vestigial. Valva strongly folded, partially membranous, twisted in dorsal direction, very thickly haired.

Head very smoothly scaled, with a flattened, porrected crest or with appressed scales. Antennae smooth. Thorax without crest. Forewings often brightly coloured, with costal fold in male mostly present.

This subfamily appears only superficially to be allied to the foregoing. It has rather uniform male genitalia, which have acquired high development. We have a differentiated lateral branch of the Tortricidae before us, which I regard to be correlated with the ancestors of *Cacoecia,* perhaps through *Adoxophyes. Piliscophora grisea* nov. spec., which is very modestly coloured and has the appearance of *Harmologa miserana* Wlk., is an interesting connecting link between the Chresmarchidii and the Cacoecidii. The subfamily is undoubtedly of Papuan origin.

Genus 3. **Chresmarcha** Meyrick

Genotype: *Chresmarcha sibyllina* Meyrick (New Guinea).

Chresmarcha Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 219, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 21, pl. 1 fig. 1, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 48, 1929.

Dichromia Felder et Rogenhofer, Novara Reise, pl. 139 fig. 29, 1875 (non. descr.), genotype: *taminia* Felder et Rogenhofer; Snellen, Midd. Sumatra, vol. 4, (I, 2), p. 83, 1892.

Zacorisca Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 220, 1910, genotype: *holantha* Meyrick; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 21, 1913; Exot. Microl., vol. 3, p. 111, 1924; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 238, 1929.

Atteria (Walker) Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 221, 1910.

Megalodoris Meyrick, Exot. Microl., vol. 1, p. 5, 1912, genotype: *stephanitis* Meyrick; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 20—21, pl. 3 fig. 32, 1913.

Head (fig. 1 J, K, L, M) very smooth or with appressed scales, roughish between the antennae, palpi moderate or long, porrected, basal joint short, medial joint elongate, smooth at base, dilated beyond middle by appressed scales, sometimes roughish above, terminal joint about $^1/_2$ as long, elongate or shortly pointed, smooth, somewhat drooping. Antennae moderate, in

male to $^2/_3$, in female to $^1/_2$ of costa; pubescent in male: a ring of dense, short hairs on every segment; smooth, shortly haired in female; basal joint short, moderately thickened, smooth-scaled.

Thorax smooth-scaled, patagia short, especially in male. Legs moderate or strong, smooth-scaled, middle and hind tibia with rather long appressed scales in male, roughish in female.

Abdomen moderate, with an anal tuft of long scales in male, stout in female, on ventral side with an area of short, very dense scales around the genital opening and the ovipositor; from above only the hind margin of this anal tuft is visible.

Forewings (fig. 1 H, I, N) elongate-rectangular, 2.4—2.5 × as long as broad, a little narrower in male, with or without costal fold; in *pythia* Meyr. the fold reaches to before or beyond $^1/_2$ of costa and is of variable breadth: in some specimens it is broadly elongate, about 4.5 × as long as broad, its posterior end very narrow, in other specimens it is about 3.5 × as long as broad and $1^1/_2$ × as broad as in the first case; in these specimens the wings are shorter, with costa more arched anteriorly. In *sibyllina* Meyr. the costal fold is absent; in *holantha* Meyr. the costal fold is long and narrow. Costa strongly arched anteriorly, posteriorly scarcely arched in female, straight in male, little curved before apex, apex and termen rounded (*holantha*) or apex rounded-rectangular, termen vertical, scarcely projecting around cell 5 in female (*sibyllina*), tornus broadly rounded, dorsum convex.

Venation of forewings in *sibyllina*-group (fig. 1 H, I): 1 with a short furca reaching to $^1/_5$ of wing, 1b distinct, running halfway to discal cell, 2 from a little beyond middle, 3 from rather far before angle, or from angle in male, always from angle in female, 4 remote, 4—5 curved and approximated at base, 6 straight, 6—8 remote and equidistant, or 7—8 stalked in male, 7 to termen, 10 from $^3/_5$, 11 from before middle of discal cell. In *holantha* and *stephanitis*-group (fig. 1 N): 1 with the furca reaching to before $^1/_3$ of wing, 2 from about $^2/_3$, 3 from angle, 4 curved at base, remote, approximated to 5, 5 straight, parallel to 6, 7 and 8 approximated at base, 8 and 9 sometimes sinuate and parallel, 10 from $^4/_5$.

Hindwings (fig. 1 H, I, N) moderate or broad, elongate, semiovate, 2 × as long as broad in male, a little broader in female, broader than forewings, with costa little curved anteriorly, somewhat projecting in middle, slightly convex posteriorly, apex with a short, rounded point, termen slightly indent below apex (in *sibyllina*), broadly rounded beneath, dorsum gradually broadly rounded; *stephanitis*-group has much broader hindwings, which are 1.8 × as long as broad, with apex and termen gradually broadly rounded, especially in female. 2 from $^1/_2$ to before $^2/_3$, 3 from angle, 3—4 connate or

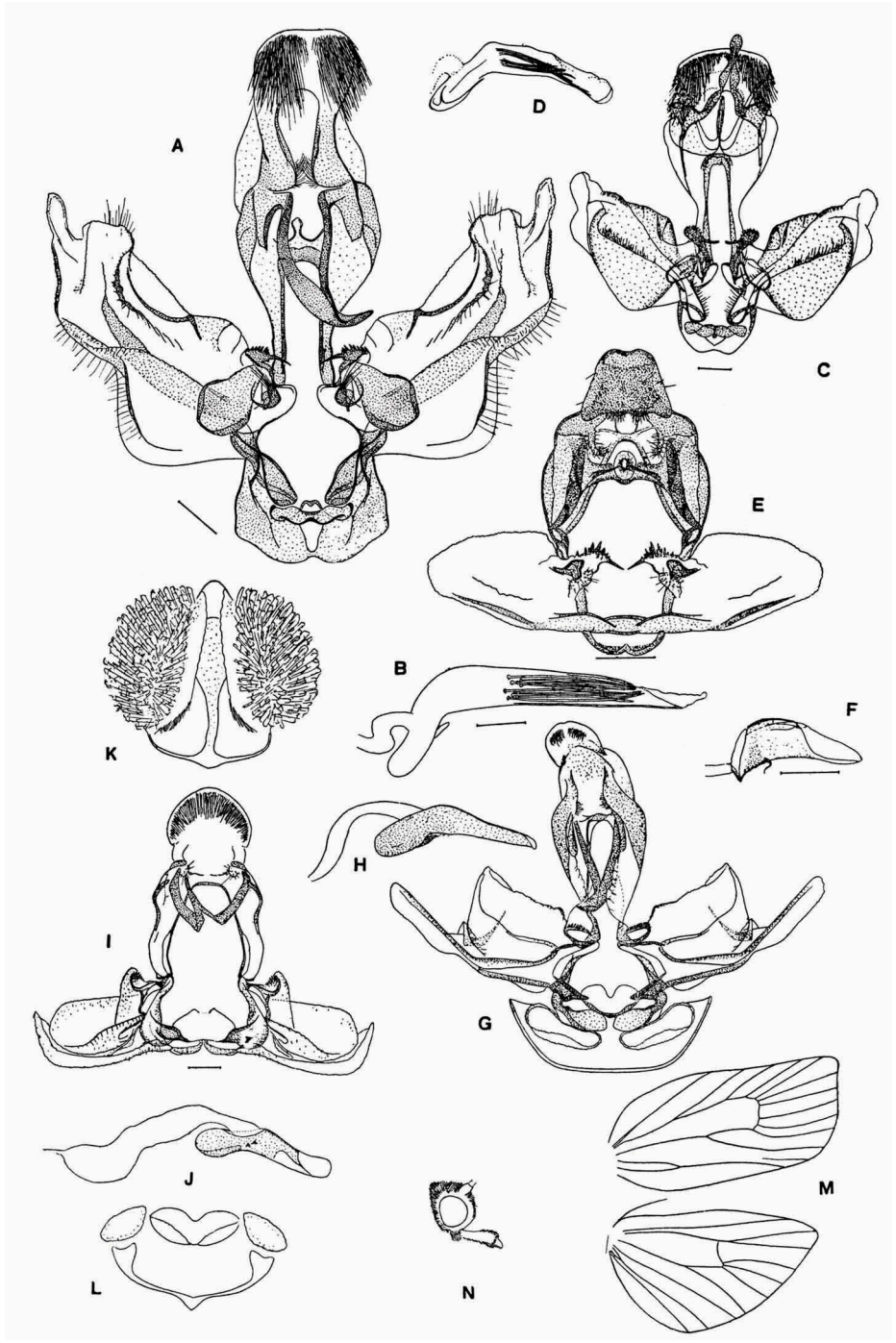

Fig. 3. A—B, *Chresmarcha holantha* Meyr., A, genitalia ♂ ; B, aedoeagus. C—D, *Chresmarcha pythia* Meyr., C, genitalia ♂ ; D, aedoeagus. E—F, *Chresmarcha sibyllina* Meyr., E, genitalia ♂ ; F, aedoeagus. G—H, *Piliscophora grisea* nov. spec., G, genitalia ♂ ; H, aedoeagus. I—L, *Leptochroptila daratua* nov. gen., nov. spec., I, genitalia ♂ ; J, aedoeagus; K, 8th tergit with scopa dorsalis; L, 8th sternite and mensis vertralis; M, wing-neuration; N, head.

separate and approximated at base, 5 approximated at base, 6—7 stalked or separate, 7 to just before apex; in *stephanitis* Meyr. 6 is separate from 7, closing vein running into vein 6 before its junction with 7 (7 from upper margin and before apex of cell).

Genital apparatus of the genotype:

♂ (fig. 3 E). Scopa ventralis at the 8th segment present. Tegumen strong, rather short, strongly concave, pedunculi moderately long. Saccus moderate, rounded. Valva moderate, elongate-ovate, with sacculus slightly thickened. Uncus very strong, curved, dilated at the top, with two haired pads underneath. Gnathos very strong, H-shaped, its arms prolonged into pointed, scobinate projections, its medial part a transverse, thick rod with a rounded, curved and projecting point in the middle (figured in front). Socii short, narrow, drooping. Transtilla paired, dentate above, with bristled thickening at base on each side. Aedoeagus (fig. 3 F) short and broad. Cornuti in the males examined absent (2 specimens), probably broken off during the copulation (see below). (Type in British Museum; the figured specimen genitalia slide No. 1179 B.M.).

♀ (fig. 2 F). Ovipositor lobes rather small, elongate-ovate. Ostium broad, supported by a W-shaped, thin rod, slightly dilated in the middle, with two projecting points at the sides of the ostium. Ductus bursae with two little, longitudinal plates at the beginning, rather broad below. Cestum several times twisted above and spiraled at the end, very strong. Signum a short, curved hook. Broken off cornuti of the male present, being sharp and long spines. (Type in British Museum; the figured specimen genitalia slide No. 1229 B.M.).

Genital apparatus of *Chresmarcha pythia* Meyr.

♂ (fig. 3 C). Scopa ventralis present, one pair of large, very dense tufts in the sternite of the 8th abdominal segment, which is considerably developed, broadly ovate and bears the scopae in two excavations of its inner side. Tegumen broad, curved and excavate above, with elongate basal rods, saccus angulate, of an upside-down trapezoid shape. Valva highly complicated, with a series of transverse and longitudinal folds, membranous, thickly set with long, thin hairs and with a dense patch of black hairs in an excavation below costa. (The development of valva in *Chresmarcha* is rather peculiar: this part has undergone a torsion upwards and outwards along its longitudinal axis for about 45°, as a result of which the costa comes into an almost lateral position and the disc of valva with the dense hairs points upwards, when regarding the genitalia in their natural position in living insect). Uncus very broad and short, flattened, rectangular, with two large

bristled tufts at the apex, gnathos small, peculiar, angularly bent in middle, slender, with a blunt point, which is turned upwards. Sacculus well-developed, cylindrical; as a result of the above described torsion it has taken the normal place of the valva. Valvula a pyramidal projection at the middle of inner margin of the valva. Transtilla paired, each half a long-stalked, rounded body, with curved teeth above and a long spine at the inner side. Anellus strong, curved. Aedoeagus (fig. 3 D) moderate, curved; cornuti a sheaf of long spines. (The examined specimen in my collection, genitalia slide No. 147 D).

♀. Ovipositor lobes small, rounded at the top. Ostium rather broad, with a quadrate, thickened outer rim. The beginning of the ductus bursae is armed with chitinous plates. Cestum narrow above, dilated and rather transparent beneath, its end folded (see above in *Cerace*!). Bursa copulatrix moderate, spheroid, signum a little thorn. (Type specimen in British Museum. The examined specimen in my collection, genitalia slide No. 148 D).

Genital apparatus of *Chresmarcha holantha* Meyr.

♂ (fig. 3 A). Scopa ventralis on segment 8, of which the sternite and the tergite are darkly chitinised and have a typical form; menses strongly developed. Saccus strongly developed, broad, angular. Valva elongate, with about four longitudinal folds, costa unarmed, sacculus broadly angular; top of valva with an ear-shaped projection. Valvula present, being an ovate structure at the middle of the base of valva; rounded projections at the inner side of the valvula with long bristles at the top. Anellus large, of an undulate shape, juxta very short. Transtilla present, paired, each half being a pecten of inwardly curved teeth, ending in a long, sharp thorn. Tegumen and uncus large, the latter curved, very broad, with a rounded, broad top, bearing two brushes of long hairs underneath, gnathos large, curved. Socii indicated by rows of hairs above the gnathos. Aedoeagus (fig. 3 B) moderate, cornuti a sheaf of long, strong spines. (Type specimen in British Museum. Specimen figured in the British Museum, genitalia slide No. 1178 B.M.).

♀ (fig. 2 E). Ovipositor lobes elongate-ovate, their greatest breadth at $^2/_3$. 7th segment with a medial split and with numerous wrinkles at the sides (partially figured). Ostium broad, trapezoid; its inner (dorsal) wall with transverse folds. Ductus bursae with a short, chitinised upper part. Cestum conspicuous, extremely broad, darkly chitinised, its end in the bursa folded. (Type specimen in British Museum. Specimen figured in British Museum, genitalia slide No. 1230 B.M.).

(In order to illustrate the above descriptions, the figures of the genitalia

of the male of *Chresmarcha pythia* and of both sexes of *holantha,* as well as those of the genotype, are given).

Distribution: The *sibyllina*-group is typically Papuan, the *stephanitis*-group is known to me from N. Guinea, Moluccas (Ceram), Philippines, Borneo, Celebes, Flores and Java, while *holantha* Meyr. is Papuan.

Remarks. This genus is recognisable by its bright colours of astonishing differences in the various species. Meyrick formerly distinguished three closely related genera as follows: *Chresmarcha* Meyr. with vein 3 from far before angle, no costal fold; *Zacorisca* Meyr. with vein 3 in forewings from angle, vein 6—7 in hindwings stalked, costal fold present; and *Megalodoris* Meyr. with vein 3 in forewings from angle, veins 6 and 7 of hindwings approximated at base, costal fold present. Afterwards he combined the two latter and considered them to form "... a natural genus, remarkable for its bright, conspicuous colouring and for the curious enlarged vesicular formation of the ♀ genitalia in all species; it is characteristic of the Papuan region".

I did not succeed, however, in detecting any other vesicular formations in the ♀ genitalia, except the bursae copulatrix, the bulla seminalis and the receptaculum seminis, which all three are always present in Tortricidae and can hardly be regarded as a peculiarity. I wonder which part Meyrick meant in this citation.

The genus *Chresmarcha* was erected for the species *sibyllina* Meyr. (♂ and ♀), which had the above mentioned peculiar venation of forewings in male. Nine other species were described afterwards: all of them except one after females only, which were all characterised by bright silvery- or snowy-white colouring and black markings. *Ch. daphnea* Meyr., however, known in both sexes, has deep-blue forewings. Meyrick says of this species: "Apparently indicates the connection of the genus with *Zacorisca,* but exhibits the singular ♂ peculiarities of neuration fully developed and unexplained". Very probably he means the stalked veins 7—8 in forewings, which are developed in *daphnea* ♂ in the same way as in *sibyllina* ♂. Because the female has the same venation as *Zacorisca,* and the colours show transition from one genus into another, I wondered whether the two were not a single, rather variable genus; the striking differences in colouring need not be an objection, as, e.g., *Zacorisca holantha* Meyr. and *Z. stephanitis* Meyr. seem to be most different moths, when superficially examined.

I succeeded in finding a proof for this supposition, when examining a considerable series of both sexes of *Chr. pythia* Meyr. from New Guinea, of which Meyrick only knew the females. This species is a true *Chresmarcha,* with silvery-white forewings, marked black along costa, black and

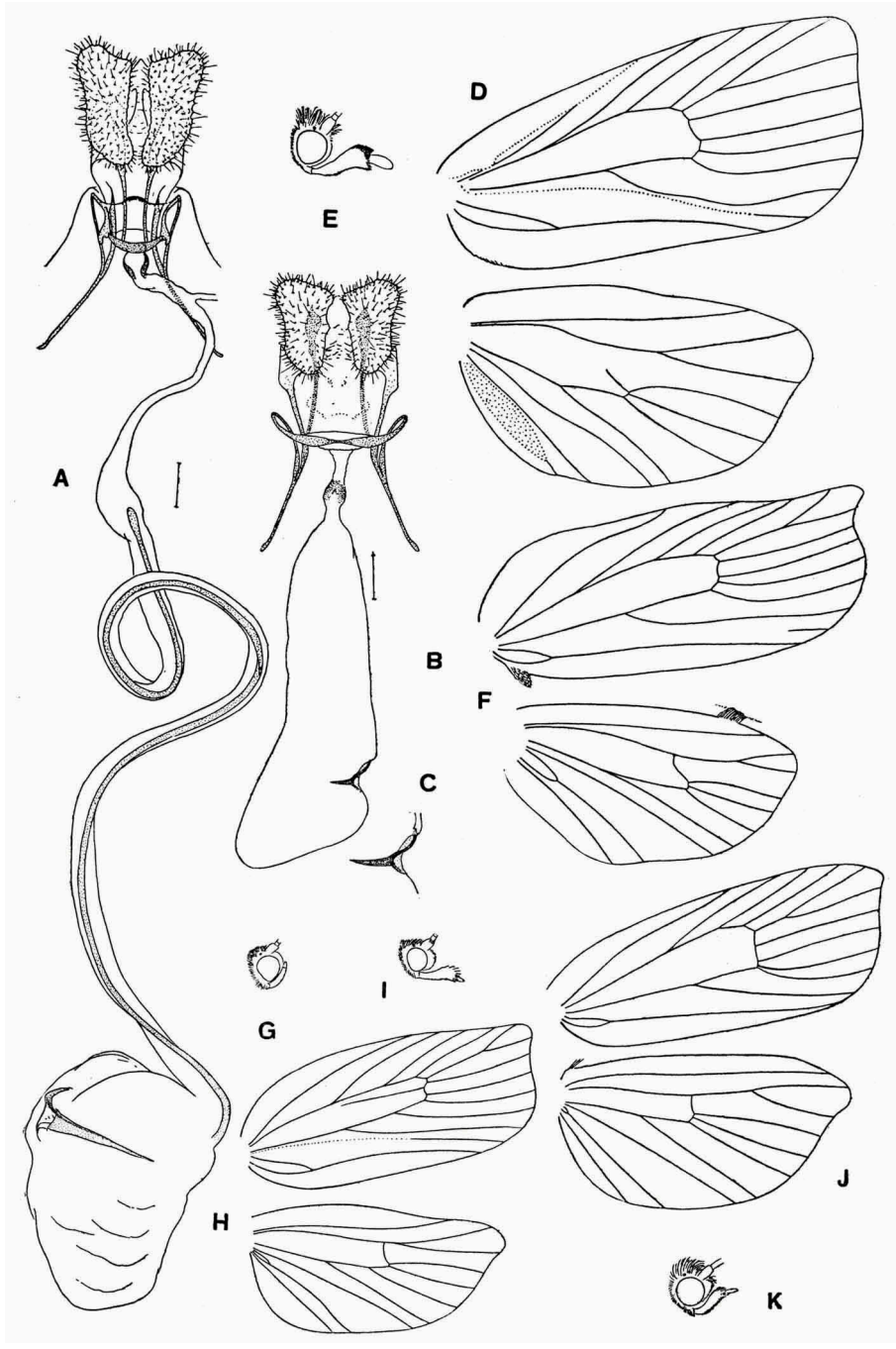

Fig. 4. A, F, G, *Homona coffearia* Nietn., A, genitalia ♀ ; F, wing neuration ♀ ; G, head ♂. B, C, H, I, *Adoxophyes heteroidana* Meyr., B, genitalia ♀ ; C, signum; H, wing neuration ♀ ; I, head ♀. D—E, *Thrincophora ostracopis* (Meyr.) ♂, D, wing neuration; E, head. J—K, *Beryllophantis cochlias* Meyr. ♀, J, wing neuration; K, head.

yellow along termen. The male, however, had two striking particularities: 1° veins 7 and 8 in forewings separate and 2° a costal fold. In other words, it was, except for the colouring, a real *Zacorisca*!

There was no doubt that both sexes belonged together, because the colouring as well as the structure of the first abdominal segment were identical. Therefore I cannot regard *Chresmarcha* and *Zacorisca* as distinct and unite them under the first name, which antedates.

The stalking of veins 7 and 8 in forewings and the absence of a costal fold in males of *sibyllina* and *daphnea* remains peculiar; however, the venation within the genus is rather variable. As to the costal fold, this is rather plastic within the genus, because it shows considerable variation in shape, as described above, even in one single species, viz., *pythia* Meyr.

A much more difficult puzzle are the male genitalia of the genotype, being of a different type and closely approching some *Adoxophyes*-species; and also the neuration is identical! The female genitalia of all species are, however, closely related to each other and show the strange anal tuft, the wrinkled anal area and the broad cestum. Therefore I regard *sibyllina* Meyr. to be congeneric with other studied species (viz., *stephanitis* Meyr., *holantha* Meyr., etc.).

Chresmarcha Meyr. is correlated with *Adoxophyes* Meyr.

Economic importance. Larva unknown. According to Dr. L. J. Toxopeus the white species (probably *sibyllina* or *pythia*) are in some way correlated with Araliaceae in New Guinea, the moths flying in day time around inflorescences of this family (in litt.).

Note: At present some 25 described and not yet described species are known to me. I had the occasion of examining the type-specimens of all of them and have stated the following synonyms.

Chresmarcha pythia Meyrick

Chresmarcha pythia Meyrick, Exot. Microl., vol. 2, p. 339, 1920; type ♂ in the British Museum.

Chresmarcha delia Meyrick, syn. nov., Exot. Microl., vol. 3, p. 110, 1924; type ♂ in the British Museum.

Chresmarcha patarea Meyrick, syn. nov., Exot. Microl., vol. 3, p. 110, 1924; type ♂ in the British Museum.

Chresmarcha holantha (Meyrick)

Zacorisca holantha Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 221, 1910; Meyrick, in Wagner, Lep. Cat., vol. 10, p. 16, 1912; Meyrick in Wytsman, Gen. Ins., vol. 149, p. 21, pl. 1 fig. 2, 1913: type ♂ in the British Museum.

Zacorisca cyprantha Meyrick, syn. nov., Exot. Microl., vol. 3, p. 111—112, 1924: type ♂ in the British Museum.

Chresmarcha aglaocarpa (Meyrick)

Zacorisca aglaocarpa Meyrick, Exot. Microl., vol. 3, p. 113—114, 1924; type ♂ in the British Museum.

Zacorisca opticodes Meyrick, syn. nov., Exot. Microl., vol. 3, p. 370, 1927; type ♂ in the British Museum.

Chresmarcha stephanitis Meyrick (Exot. Microl., vol. 1, p. 5—6, 1912; in Wagner, Lep. Cat., vol. 10, p. 15, 1912; in Wytsman, Gen. Ins., vol. 149, p. 21, pl. 3 fig. 32, 1913) is without doubt a synonym of *Dichromia taminia* Felder et Rogenhofer, (Novara Reise, pl. 139 fig. 29, 1875), as the latter species is recorded from Java, where *stephanitis* Meyr. is very common. The above mentioned figures agree in all particulars, except for the colour of the head, thorax and abdomen, this being yellow in *taminia* and blue in *stephanitis*. As the illustrations in the book of Felder and Rogenhofer are handcoloured, the dark colours being used after the bright ones, it seems to me very probable, that the painter has forgotten to make head, thorax and abdomen of *taminia* blue! I did not succeed in finding the type-specimen of *taminia* Feld. et Rog. and retain therefore Meyrick's name *stephanitis*, referring to his correct figure and description. The type of this species (a male) is in the British Museum.

Genus **Atopomima** Meyrick

Genotype: *Atopomima philocosma* Meyrick (Solomon Is.).

Atopomima Meyrick, Exot. Microl., vol. 5, p. 61, 1936.

The single species is not a Tortricid at all, but belongs to the family Lithosiidae, having vein 1 in forewings not furcate and vein 8 in hindwings originating from beyond the base of the upper margin of discal cell. The genus *Atopomima* should be rejected, as *philocosma* Meyrick proves to be a synonym of *Damias caerulescens* Butl. (Tr. Ent. Soc. Lond., p. 390, pl. 12 fig. 3, 1889). (Type ♂ in the British Museum).

Genus 4. **Piliscophora** nov. gen.

πιλισκόφορος = wearing a small hood.

Genotype: *Piliscophora grisea* nov. spec. (New Guinea).

Head (fig. 1 P), with very long, appressed scales above, forming a long, flattened crest, which projects between the antennae and is curved downwards over the face; face with roughly projecting scales, an appressed brush on each side below the basal joint of the antennae. Antennae with short cilia, flabellum tapering towards apex, slightly thickened at $^1/_4$, at this

place with distinct transverse rows of projecting, short cilia at the front; basal joint long, thickened, smoothly scaled. Palpi long, porrected, very roughly scaled; basal joint moderate, enveloped in elongate scales, second joint long, dilated towards apex by very long, projecting scales along the entire under side and along the upper side from beyond middle, terminal joint rather long, curved, drooping, little pointed. Tongue short.

Thorax with smooth scales. Patagia rounded, short. Legs smoothly scaled, hind tibia with long, appressed hairs. Abdomen with a large anal tuft in male.

Forewings (fig. 1 O) elongate-rectangular, about 2.5 × as long as broad, costa obliquely curved anteriorly, straight posteriorly, apex little rounded, termen vertical and rather straight above, slightly rounded beneath, the wing angular around tornus; dorsum straight, little curved at base. 1 with a broad, moderate furca, reaching to beyond $^1/_5$ of wing. 2 from middle of cell, 3 from angle, strongly curved at base, 4 remote, approximated to 5 at base, 5 straight, 7 and 8 separate, 7 to termen just below apex, 10 from about $^2/_3$, 11 from beyond $^1/_3$ of cell, discal cell narrow, curved posteriorly.

Hindwings (fig. 1O) without cubital pecten, with a pencil of long hairs, on disc of cell at the base of wing (this pencil has nothing to do with the cubital pecten, which is absent in *Piliscophora*), elongate- ovate, moderately pointed, about 2.1 × as long as broad, costa little curved at base, rather straight posteriorly, apex acute, termen oblique, concave below apex, gradually rounded below, dorsum projecting. 2 from before $^3/_5$ of cell, 3 and 4 connate, from angle, 5 approximated towards base, 6 and 7 separate, approximated towards base, 7 to costa just before apex; 8 straight.

Genital apparatus.

♂ (fig. 3 G). Scopae present, scopa ventralis very large, originating from a folded ovate plate on each side of the 8th sternite; mensis ventralis and dorsalis narrow, curved rods. Tegumen long, hooded, narrowed below, pedunculi narrow rods. Saccus strong, broad, rounded. Valva with membranous costa and valvula, the disc with deep folds, sacculus narrow, chitinised, with long projecting point, valvula absent. Transtilla paired, a membranous fold on each side, dentate above. Uncus broad below with a flattened and rounded, curved top. Gnathos large, strong, with a curved point. Socii indicated by a row of hairs on each side above the articulation of gnathos. Anellus excavate, rounded. Aedoeagus (fig. 3 H) little curved, dilated at base. Cornuti absent. (The paratype examined in my collection, genitalia slide No. 159 D).

♀. Unknown.

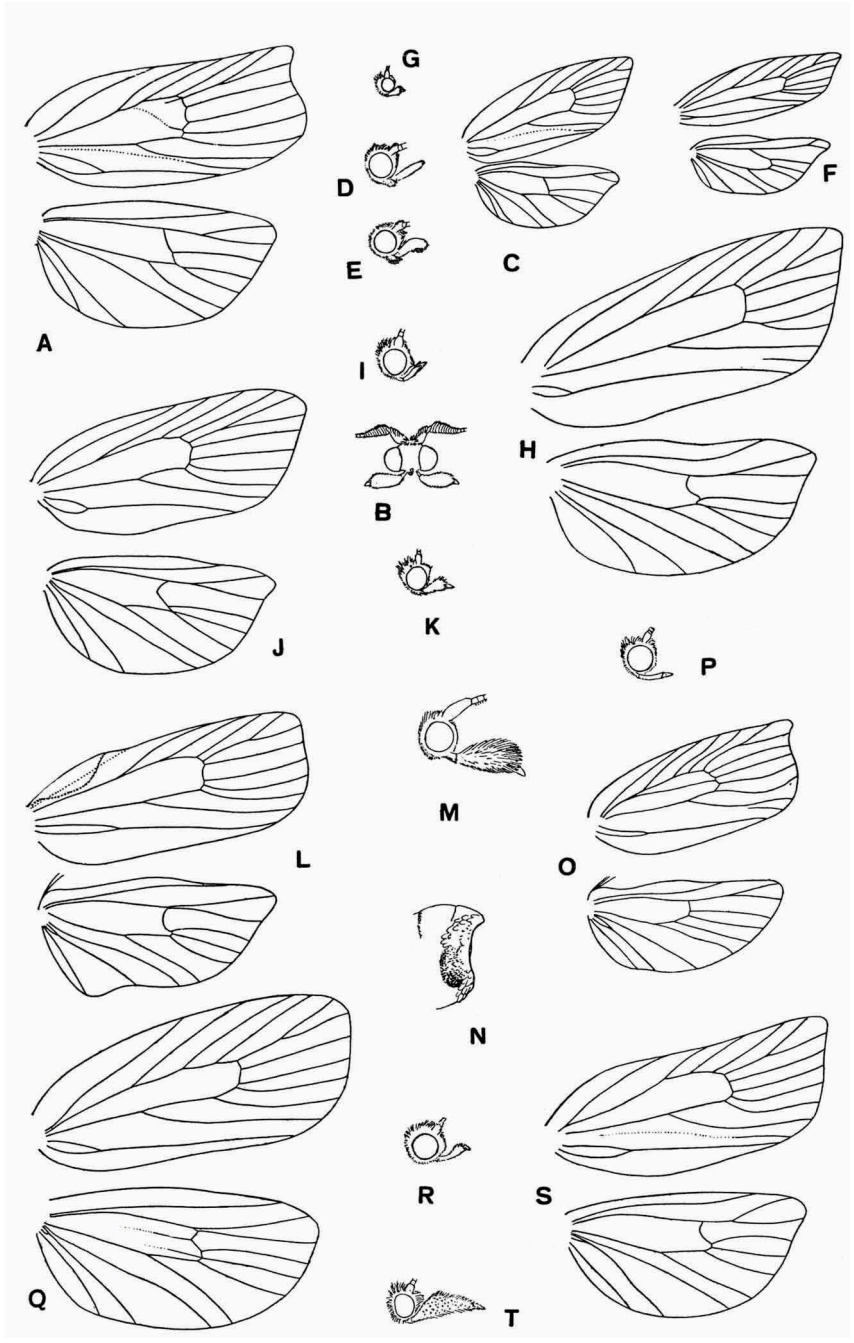

Fig. 5. A—B, *Rhomboceros nodicornis* Meyr., A, wing neuration ♀ ; B, head ♂. C—E, *Aeolostoma scutiferana* Meyr., C, wing neuration ♀ ; D, head ♂ ; E, head ♀. F—G, *Isochorista ranulana* Meyr., F, wing neuration ♀ ; G, head ♀. H—I, *Pyrsarcha hypsicrates* Meyr. ♂, H, wing neuration; I, head. J—K, *Epagoge grotiana* Fabr. ♂, J, wing neuration; K, head. L—N, *Ulodemis chelophora* Meyr. ♂, L, wing neuration; M, head; N, basal part of abdomen. O—P, *Metaselena alboatra* nov. gen., nov. spec. ♀ ; O, wing neuration; P, head. Q—R, *Procalyptis oncota* Meyr. ♀ ; Q, wing neuration; R, head. S—T, *Catamacta gavisana* Meyr. ♀ ; S, wing neuration; T, head.

Distribution: North East New Guinea.

Remarks. A link between the present and the following subfamily. According to the genitalia closely related to *Chresmarcha holantha* Meyr. and *pythia* Meyr., but superficially reminding of *Harmologa* Meyr.

Economic importance. Larva unknown.

Piliscophora grisea nov. spec.

♂. 21—24 mm. Head greyish or whitish, mixed with greyish. Face black, white patch below the basal joint of antennae on each side, eyes edged by white scales, two whitish spots on front. Palpi white at the inner side; basal joint white at the outer side, second joint whitish, dark grey at the lower side of apical half, terminal joint dark grey. Antennae brownish grey, basal $^1/_5$ of flabellum whitish at the front, brownish ringed. Thorax greyish, mixed with whitish, collar whitish. Abdomen light grey, darker grey at the end. Legs whitish. Wings shaped as described above. Forewings whitish, densely spotted and suffused with greyish, markings grey and dark brown. Ground colour brightly white on costa except its base, which is grey. Posterior edge of basal area indicated by a brownish triangular patch on $^1/_5$ of costa, edged with dark brown, and continued into a narrow dark brown oblique fascia, reaching to fold and interrupted on veins; dorsal part of this area with a dark brown irregular suffusion. Transverse fascia indicated by a dark brown striga along the anterior edge, which is geniculate above fold, with a dark brown projection pointing towards base of wing, by a dark brown suffusion on dorsum to tornus and by a rectangular greyish-brown patch before middle of costa. Costal patch moderate, triangular, not always distinct, dark-edged; a transverse patch on costa before apex and a dark brown suffusion on tornus reaching halfway the disc, sometimes connected with costal patch; a blackish, round dot on the lower angle of discal cell; indistinct and interrupted transverse streaks before termen brownish. The ground colour between these markings spotted with elongate light-brown dots in cells. Cilia with a median row of brown dots, white at base, greyish beyond these dots. Hindwings greyish, suffused with grey along termen and on apical $^1/_4$. Cilia grey around apex, light-greyish, with grey base along termen, whitish along dorsum.

North East New Guinea, Hunsteinspitze, 1350 m, II—III. 1913, Kaiserin Augustafluss Exp. (Bürgers), 5 specimens. Type in the Berlin Museum, paratypes in this Museum and in my collection.

Genus 5. **Isotenes** Meyrick

Genotype: *Isotenes melanoclera* Meyrick (New Guinea).

Isotenes Meyrick, Trans. Ent. Soc. Lond., vol. 87, p. 507, 1938.

Head (fig. 10 K) with appressed scales, rather smooth, face smooth. Antennae smooth, basal joint very long, little thickened, flabellum angularly bent (its top broken off). Palpi long, projecting, second joint sinuate, very roughly scaled, with projecting scales above and beneath, terminal joint moderate, smooth, obtuse.

Thorax very smooth, with short scales, patagia moderate. Legs strong, hind tibia rather rough, covered with appressed, long scales.

Forewings (fig. 10 J) broad, elongate-rectangular, about 2.5 × as long as broad, costa strongly arched at base, gradually curved to $^1/_3$, slightly concave posteriorly, apex rounded, a little projecting, termen slightly sinuate above, straight below, shortly rounded on tornus, dorsum gradually slightly rounded. 1 with a short furca to $^1/_6$, 2 from beyond middle of cell, 3 from angle, 4 remote, curved at base and connate with 5; 5 and 6 straight, parallel; 7 and 8 separate, 7 to termen, 10 from beyond $^2/_3$, 11 from $^2/_5$ of cell. Discal cell long, rather narrow.

Hindwings (fig. 10 J) as broad as forewings, elongate-semiovate, costa rather straight, apex rounded, somewhat projecting, termen concave above, broadly rounded beneath. 2 from beyond $^2/_3$, 3—5 separate, equidistant, 3 from angle; 6 and 7 shortly stalked, 8 rather straight.

Genital apparatus.

♂. Unknown. Cornuti long, thin spines, with sharp point and clavate base.

♀ (fig. 10 I). Ovopositor lobes of normal shape, elongate, dilated below apex. 9th tergit broad. Ostium round, moderate, a transverse bar above with a triangular dilatation at each side, the lower margin thickened. Colliculum present, elongate, two semiovate plates. Ductus bursae long, widened below. The beginning of the bursa indistinct, recognisable only by the cestum, which is a broad, rather short spiraled band with sharp point below. Bursa copulatrix very large, elongate; signum a large, curved hook with a moderate capitulum [1]), placed at the lower end of the bursa (cornuti of the male present). (Type specimen in British Museum, genitalia slide No. 1231 B.M.).

Distribution: New Guinea.

Remarks. Closely related to *Leptochroptila* and *Chresmarcha*. The surmise of Meyrick of a probable correlation to *Schoenotenes* does not hold, as his description of neuration is not quite correct.

Economic importance. Larva unknown.

---

1) See p. 151.

Genus 6. **Leptochroptila** nov. gen.

λεπτοχρωπτιλωτός = with weakly coloured wings.

Genotype: *Leptochroptila daratua* nov. spec. (New Guinea).

Head (fig. 3 N) densely covered with appressed scales, face with appressed scales, a short scale-brush on each side below the basal joint of antennae. Antennae shortly ciliate in male. Palpi moderate, porrected, basal joint with semi-appressed scales, second joint moderately dilated towards apex with appressed scales above and beneath, terminal joint short, acute, drooping.

Thorax densely covered with appressed scales. Patagia small, narrow. Abdomen short, thick, with a large anal tuft in male. Legs strong, smooth, hind tibia with long, projecting scales above and beneath.

Forewings (fig. 3 M) elongate-rectangular, about 2.2 × as long as broad, with a narrow costal fold reaching to beyond middle, costa obliquely curved to before middle, straight posteriorly, apex rounded-rectangular, termen straight above, rounded beneath, dorsum straight, curved at base, with a small scale-projection at $^1/_6$. 1 with a long furca to beyond $^1/_4$ of wing, 2 from $^2/_3$ of cell, 3—5 equidistant, 3 from angle, 6—8 equidistant, converging towards base, straight, 10 from $^1/_5$, 11 from beyond $^2/_5$ of cell.

Hindwings (fig. 3 M) broad, pointed, semiovate, about 2 × as long as broad, costa gradually slightly arched, scarcely concave before apex, apex little rounded, termen oblique, gradually rounded, dorsum projecting. 2 from about $^2/_3$, 3—5 equidistant, closely approximated towards base, 6 and 7 shortly stalked, 8 rather straight.

Genital apparatus.

♂ (fig. 3 I). Scopae present, very large, especially scopa dorsalis (fig. 3 K), forming two thick brushes of broad, membranous, longitudinally folded lamellae, which are located on two membranous folds of the 8th tergite, supported by a large mensis dorsalis; a large mensis ventralis present (fig. 3 L), dilated at the sides and connected by a membrane with a thin plate at each side, thickly covered with very long hairs and with a median excavate and indent plate, also thickly scaled (in the figures the scales are omitted); the three hair-brushes form together a considerable scopa ventralis. Tegumen (fig. 3 I) large, with elongate, rather narrow pedunculi. Saccus small, indent in middle. Valva short, broad, costa and disc membranous, folded, thickly set with hairs. Sacculus separated, strongly developed, also bearing numerous hairs. Transtilla vestigial, indicated by a curved, dentate projection at the upper base of valva. Uncus large, very broad, rounded and curved. Gnathos strong, its arms semicircular, with a very long

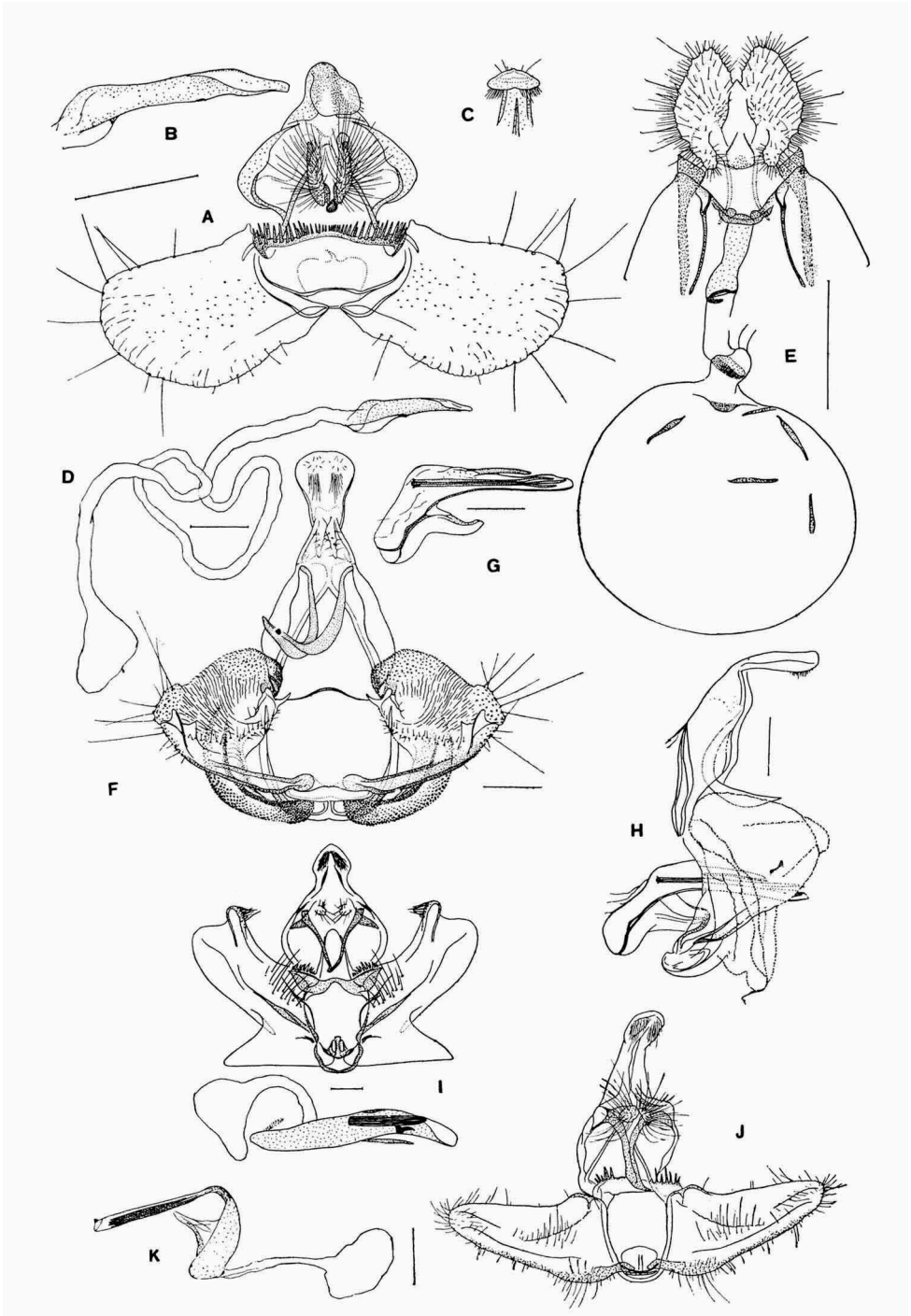

Fig. 6. A—D, *Isochorista ramulana* Meyr., A, genitalia ♂; B, aedoeagus; C, uncus; D, vesicula seminalis, ductus ejaculatorius and aedoeagus. E, *Metaselena alboatra* nov. gen., nov. spec., genitalia ♀. F—H, *Homona coffearia* Nietn., F, genitalia ♂; G, aedoeagus; H, genitalia ♂, side view. I, *Thrincophora ostracopis* (Meyr.) ♂, genitalia and aedoeagus. J—K, *Epagoge grotiana* Fabr., J, genitalia ♂; K, aedoeagus.

narrow point. Socii small, rounded pads. Anellus moderate, membranous. Aedoeagus (fig. 3 J) moderate, little curved. Cornuti 2; in the figured specimen these are broken off and only their bases remain. (The studied specimen in my collection, genitalia slide No. 161 D).

♀. Unknown.

Distribution. New Guinea.

Remarks. On account of the enormous scopae and membranous and folded valvae, this genus seems to be related to the Chresmarchidii; it approaches *Cacoecia* by the neuration, but shows a considerably advanced specialisation.

Economic importance. Larva unknown.

Leptochroptila daratua nov. spec.

darah tua (Malayan) = curdled blood.

♂. 18—20 mm. Head and patagia light brownish-ochreous, face dark, brown above, light brownish-ochreous beneath. Basal joint of antennae light brownish-ochreous above, dark brown beneath. Palpi dark brown. Thorax brown, with two light postmedian bands, dark brown posteriorly. Forewings with basal area greyish-brown, above sharply dark-brown edged from $^1/_4$ of costa to fold, below fold narrower, dark brown, suffused posteriorly, lighter in middle of disc, with two short distinct dark brown transverse markings; transverse fascia broad, dark brown, pink-tinged, sharply edged on upper half of wing, suffused below, interrupted in fold, indicated by brown suffusion on dorsum with a dark brown, suffused patch in disc. Apical patch obliquely triangular, with short basal and long terminal side, from $^2/_3$ of costa, almost reaching apex, with suffused point, connected with transverse area. Terminal area with some three dark brown transverse fasciae, interrupted by ochreous scales on veins; a narrow dark brown streak along termen. Pre- and postapical areas conspicuous on upper half of wing, the first of them in middle with a minute, transverse dark brown strigula, distinct on costal fold. Cilia brownish-ochreous at base, brown at the top, darker around apex. Hindwings light whitish-ochreous, darker ochreous at the apex and along termen. Cilia greyish-ochreous.

North East New Guinea, Hunsteinspitze, 1350 m, II—III. 1913, Kaiserin Augustafluss Exp. (Bürgers), 15 specimens. Type in Berlin Museum, paratypes in this Museum and in my collection.

III. Subfamily CACOECIDII mihi

Archipsidii Pierce et Metcalfe, Genit. Brit. Tortr., p. 1, 1922.
"Group A" Meyrick (pro parte), in Wytsman, Gen. Ins., vol. 149, p. 2 and 7, 1913.

Cestum a coiled, often very long, chitinous band. Signum rarely absent, mostly a very large, strong hook, often with capitulum. Ductus bursae mostly very long, coiled. Uncus well developed, large, often dilated at the top, haired underneath; gnathos strong. Socii small, drooping. Valva mostly rounded, sacculus often with a strong, apical projection on the disc of the valva.

A large group of moths with the typical Tortricid appearance: forewings mostly with a strong costal fold in male, and with costa and termen often sinuate in both sexes; veins 7 and 8 in forewings often stalked and without raised scale-tufts on the upper surface. Some genera with considerable sexual dimorphism.

The large signum is very characteristic. It is fitted on the inner side of the wall of the bursa copulatrix, which is darkly chitinised at this place, and bears an external projection, for which I propose the name of capitulum.

Genus 7. **Pyrsarcha** Meyrick

Genotype: *Pyrsarcha hypsicrates* Meyrick (India).

Pyrsarcha Meyrick, Exot. Microl., vol. 4, p. 340, 1932.

Head (fig. 5 I) roughly scaled above, face with thin appressed scales, projecting below middle. Antennae reaching to half of costa, pectinate with long cilia, basal joint thickened. Palpi short, subascending, narrow, second joint with appressed scales, scarcely dilated at the top, terminal joint very short, acute, with appressed scales. Tongue moderate.

Thorax smooth, with a posterior crest, patagia moderate. Legs moderate, with appressed scales.

Forewings (fig. 5 H) rather broad, elongate, about 2.4 × as long as broad, trapezoid, without costal fold, costa moderately arched at base, gently and gradually arched posteriorly, apex somewhat acute, scarcely projecting, termen rather oblique, somewhat convex above, gently rounded beneath, dorsum straight, curved at base. 1 with a very short furca, gradually curved, convex; 2 from beyond $^3/_5$, 3 and 4 shortly stalked from angle, 5 remote, somewhat approximated to 6 towards termen, 7 and 8 stalked, 7 to termen, 9 slightly sinuate, 9—11 equidistant, 10 from $^3/_4$, 11 from beyond half of upper margin of cell.

Hindwings (fig. 5 H) broad, semiovate, about 2 × as long as broad,

costa gently arched anteriorly, sinuate posteriorly, apex acute, termen slightly sinuate above, gradually rounded beneath. 2 from beyond $^3/_4$, 3—4 shortly stalked, from angle, 5 approximated at base, 7—8 stalked, 8 sinuate.

Genital apparatus.

♂ (fig. 7 A). The entire genital apparatus is of very hard and dark chitine. Tegumen short and broad, robust. Saccus a simple ring. Valva short, rather broad, truncate. Costa strongly chitinised, with a tubercle at base. Sacculus broad, concave, angularly projected in middle, with two longitudinal ribs anteriorly and a dark thickening at base, its top indent, with a triangular projection above and haired projection beneath. Uncus robust, its top broad and curved. Gnathos with heavy and broad arms, curved and rounded at the top. Socii small, rounded and haired knobs. Transtilla curved, with broad ends. Anellus strong, flattened and curved. Aedoeagus a simple tube of dark chitine; cornuti absent. (Type in British Museum, genitalia slide No. 1142 B.M.).

♀ Unknown.

Distribution: The only species of this genus is known from Kashmir, India.

Remarks. Probably correlated with *Epagoge* Hb. *P. hypsicrates* Meyr. superficially reminds of a Eucosmid.

Economic importance: Larva unknown.

Genus **Capnoptycha** Meyrick

Genotype: *Drachmobola ipnitis* Meyrick (Queensland).

Capnoptycha Meyrick, Exot. Microl., vol. 2, p. 323, 1920.

Head (fig. 10 H) with appressed scales. Antennae in ♂ shortly ciliate. Palpi rather short, ascending, second joint curved, broadly dilated posteriorly by angularly projecting scales along the lower side, terminal joint short.

Thorax with appressed scales, without crest.

Forewings (fig. 10 G) with costal fold in male, without raised scale-tufts, elongate, narrow, about 2.4 × as long as broad, costa little arched, apex subacute, termen oblique, gradually rounded, dorsum rounded. 1 with a moderate furca, 2 from beyond $^2/_3$ of cell, 3 from angle, approximated to 4 at base, 5 and 6 straight, parallel, 8 and 9 out of 7, 7 to apex, 10 from $^4/_5$, 11 from $^2/_5$ of cell.

Hindwings (fig. 10 G) subtrapezoid, broader than forewings, about 1.9 × as long as broad, costa projecting in middle, apex little rounded, projecting, termen straight above, projecting on veins 2—4, dorsum

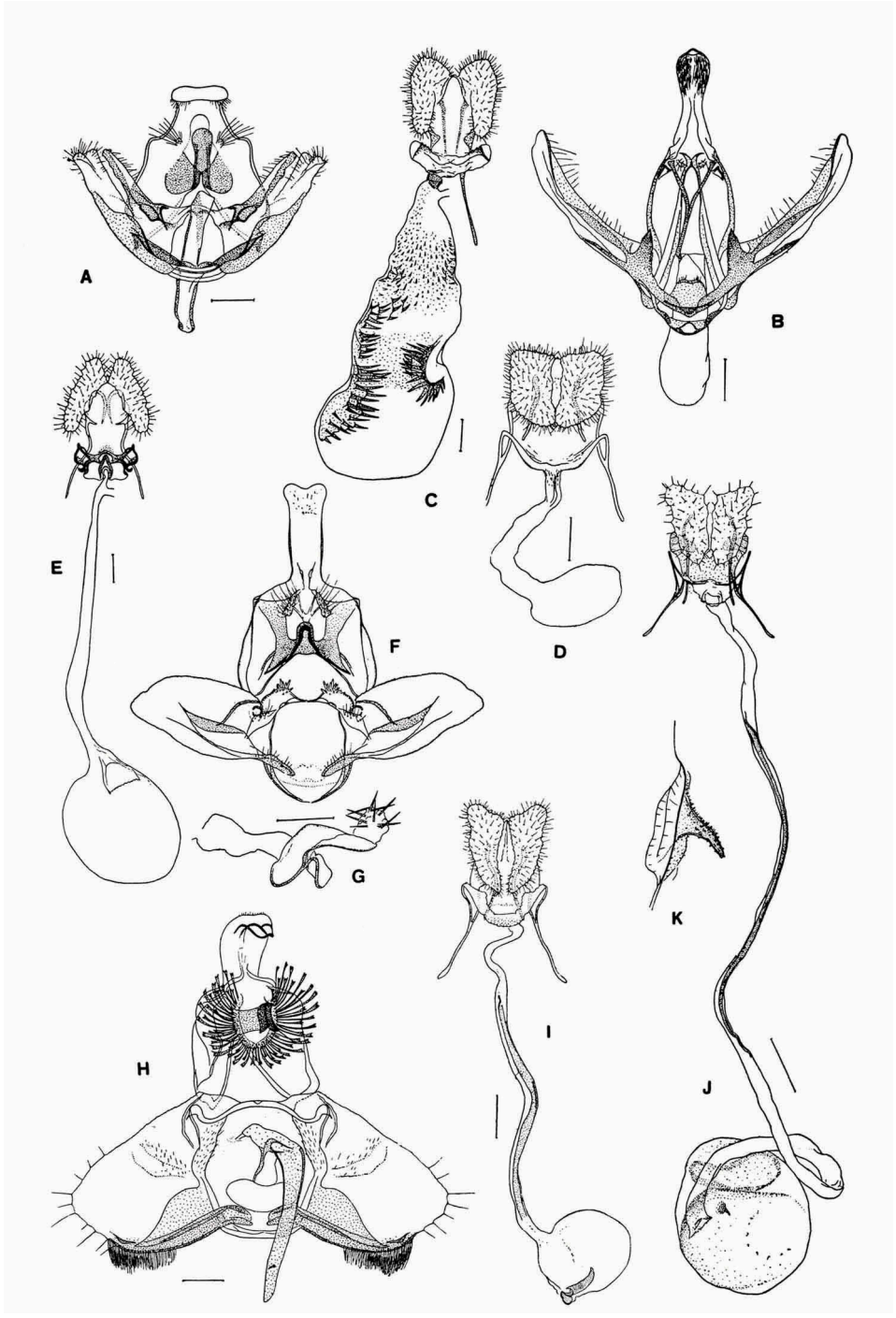

Fig. 7. A, *Pyrsarcha hypsicrates* Meyr., genitalia ♂. B—C, *Rhomboceros nodicornis* Meyr., B, genitalia ♂ ; C, genitalia ♀. D, *Procalyptis oncota* Meyr., genitalia ♀. E, *Aeolostoma scutiferana* Meyr., genitalia ♀. F—G, *Adoxophyes heteroidana* Meyr., F, genitalia ♂ ; G, aedoeagus. H, *Ulodemis chelophora* Meyr., genitalia ♂. I, *Catamacta gavisana* Meyr., genitalia ♀. J—K, *Isochorista ranulana* Meyr., J. genitalia ♀, K, signum.

rounded. 2 from $^5/_6$ of cell, approximated to its angle, 3 and 4 stalked, from angle, 5 little approximated towards base, 6 and 7 stalked, 8 straight to $^3/_5$ of costa.

Genital apparatus.

♂ (fig. 10 E). Tegumen very small, elongate, pedunculi broad; valva erected, extremely short, with scarcely developed disc, bristled along the outer margin. Transtilla indistinct. Uncus well developed, narrow, with bilobed and haired top. Gnathos small, but strong, with thorns at the point, curved, socii small, densely covered with curved bristles. Aedoeagus (fig. 10 F) large, elongate, little curved, socii 2 spindle-shaped, pointed spines with clavate base. Vesicula seminalis elongate, ductus seminalis of a moderate length. (The specimen studied in British Museum, genitalia slide No. 1168 B.M.).

♀ (fig. 10 D). Ovipositor lobes elongate, little dilated at the top, ostium narrow, cup-shaped. Ductus bursae unarmed, of a moderate length, dilated below, bursa copulatrix without a distinct orifice, pear-shaped; signum absent. (The examined specimen is in British Museum, genitalia slide No. 1169 B.M.).

Distribution. Australia.

Remarks. Undoubtedly belonging to the present subfamily and remote from *Drachmobola* Meyr., from which the genus *Capnoptycha* has been rightly separated by Meyrick. Related to *Pandurista* Meyr. Structurally suggesting a correlation with *Isochorista* Meyr., but with more specialised genitalia.

Economic importance. Larva unknown.

Genus 8. **Leontochroma** Walsingham

Genotype: *Leontochroma aurantiacum* Walsingham (India).

Leontochroma Walsingham, Ann. Mag. N.H. (7), vol. 5, p. 466, 1900; Fernald, Gen. Tortr. Typ., p. 47 & 62, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 55, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 124, 1929.

Head (fig. 10 C) rather smooth, with appressed scales, projecting at face; antennae densely ciliate with rather long, colourless bristles, basal joint moderately thickened. Palpi subascending, moderate, second joint moderate, slightly curved, little dilated at apex, with appressed scales; terminal joint short, acute. Tongue moderate.

Thorax with appressed scales, bearing a posterior crest. Patagia elongate, rather long, legs strong, smoothly scaled.

Forewings (fig. 10 B) without costal fold in male, elongate-rectangular, about 2.6 × as long as broad, costa gently arched anteriorly, gradually sinuate posteriorly; apex acute, somewhat projecting; termen slightly sinuate above, broadly rounded and projecting beneath, dorsum slightly projecting at about $^1/_4$. 1 little curved with a moderate furca reaching to $^1/_5$ of wing, 2 from beyond middle of cell, 3 and 4 stalked, from angle, curved at base; 5 remote, also curved at base, 6 straight, remote from 5 as well as from the stalk of 7 and 8, nearer to the latter; 7 and 8 stalked, stalk moderate, 7 to termen considerably below apex. 9 strongly sinuate from about $^1/_2$ of cell, 10 and 11 at the same distance from each other, out of 9, upper margin of cell between the stalks convex.

Hindwings (fig. 10 B) broader than forewings, semi-ovate, about 1.8 × as long as broad, with costa little sinuate anteriorly, nearly straight posteriorly, apex slightly rounded, projecting, termen somewhat sinuate, slightly projecting in cell 4, gradually rounded beneath. 2 straight, from before $^3/_5$, 3 and 4 shortly stalked, from angle, 5 somewhat approximated towards base, 6 and 7 closely approximated towards base; 8 sinuate.

Genital apparatus.

♂ (fig. 10 A). Tegumen very robust, broad, saccus rounded, valva broad, rounded, costa somewhat projected and chitinised, sacculus moderate, haired beneath, with rounded hunches at the underside. Uncus very short, broad, with indent top, and with two brushes of hair at the underside. Gnathos strong, with a broad, flattened and curved point, its arms broadly dilated at base, showing striped structure. Socii absent, transtilla absent. Aedoeagus peculiar, large, its top ending in two projections: a long, curved point above and a spade-shaped projection beneath. Cornuti absent. (Type in British Museum, genitalia slide No. 51 B. M.).

♀. Unknown.

Distribution. The genus consists of three Indian and one Chinese species.

Remarks. Allied to *Homona* Wlk. and *Cacoecia* Hb.; the genotype appears to have the veins 9—11 stalked in forewings, as a result of an apparent obliteration of the closing vein between 7 + 8 and 9. (The parting vein is present in *L. aurantiacum* Wals., but in *suppurpuratum* Wals. and *viridochraceum* Wals. it is incomplete, in *lebetanum* Wals. absent[1]). The genus is correlated with *Homona* Wlk.

Economic importance. Larva unknown.

---

1) This information I owe to the kindness of Mr. H. Stringer, British Museum (Natural History).

Genus 9. **Choanographtis** Meyrick

Genotype: *Choanographtis didyma* Meyrick (New Guinea).

Choanographtis Meyrick, Tr. Ent. Soc. Lond., vol. 87, p. 504, 1938.

Head (fig. 4 K) rough, face roughly scaled, projecting. Antennae to $^1/_2$ of costa, smooth, with basal joint elongate, little thickened, palpi moderate, ascending, second joint elongate, scarcely dilated towards apex, with appressed thin scales, terminal joint moderate, acute, porrected. Tongue moderate.

Thorax with appressed, thin scales and a posterior crest, patagia moderate. Legs strong, smooth, hind tibiae with long, appressed hairs.

Forewings (fig. 4 J) elongate-truncate, about 2.4 × as long as broad, costa moderately arched anteriorly, rather straight in middle, slightly arched towards apex, apex acute, termen scarcely concave, straight, almost vertical, rounded beneath, dorsum straight. 1 with a rather short furca, 2 from $^2/_3$, 3 from angle, 4 closely approximated towards base, 5 slightly sinuate, little approximated at base, 7 and 8 stalked, 10 from $^5/_6$, 11 from beyond middle.

Hindwings (fig. 4 J) semiovate, broader than forewings, about 1.8 × as long as broad, costa little curved anteriorly, moderately curved at apex, apex curved, projecting, termen deeply concave at vein 7, broadly rounded beneath, 2 from $^2/_3$ of cell, 3 from angle, remote from 4, 5 little approximated to 4 towards base, 7 and 8 stalked, stalk long.

Distribution: New Guinea.

Remarks. An interesting form of which the type, a female, present in the British Museum, lacks the abdomen: therefore I could not study the genitalia. I do not think that it can be allied to *Pyrgotis* Meyr., as Meyrick states, and place it in the neighbourhood of *Catamacta* Meyr. from which it only differs by the shape of palpi. Meyrick describes the veins 3 and 4 in both fore- and hindwings as being connate, which is not the case.

Economic importance: Larva unknown.

Genus 10. **Metaselena** nov. gen.

Genotype: *Metaselena alboatra* nov. spec. (New Guinea).

Head (fig. 5 P) with rough scales; face rather smooth. Antennae with basal joint somewhat thickened. Palpi small and short, porrected, smoothly scaled, with short, slightly projecting scales along the lower margin; basal joint moderate, second narrow, elongate, scarcely dilated at apex, terminal joint moderate, acute. Tongue very short, vestigial.

Thorax broad, smoothly scaled. Patagia moderate, smooth, edged with broad scales. Legs smooth, rather weak. Abdomen moderate.

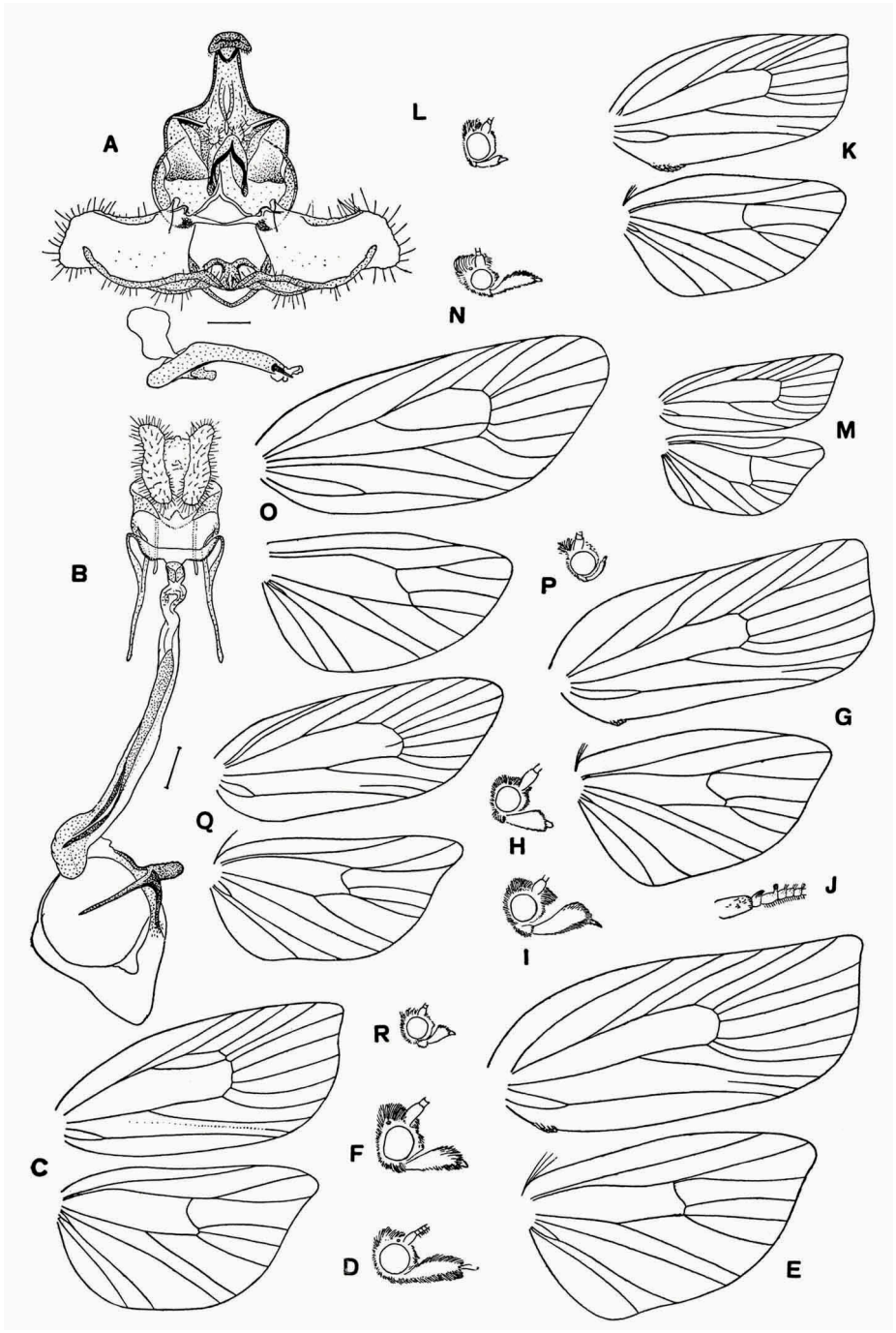

Fig. 8. A—D, *Harmologa oblongana* Meyr., A, genitalia ♂ and aedoeagus; B, genitalia ♀; C, wing neuration ♂; D, head ♂. E—F, *Pandemis corylana* Fabr. ♀, E, wing neuration; F, head. G—J, *Ulodemis trigrapha* Meyr., G, wing neuration ♀; H, head ♂; I, head ♀; J, basal part of antenna ♂. K—L, *Cacoecia xylosteana* Linn. ♀, K, wing neuration; L, head. M—N, *Epichorista hemionana* Meyr. ♂, M, wing neuration; N, head. P—Q, *Cnephasia pasivana* Hb. ♂, P, head; Q, wing neuration.

Forewings (fig. 5 O) rather broad, elongate-ovate, about 2.3 × as long as broad, costa moderately arched at base, very slightly curved in middle, scarcely sinuate before apex; apex oblique, little rounded, slightly projecting, termen vertical, sinuate above, strongly rounded and projecting beneath, dorsum rather straight to $^1/_4$, curved at base. 1 with a long furca to $^1/_4$ of wing, 2 from beyond $^3/_5$, 3 from angle, remote from 4, 4—6 equidistant, 2—4 sinuate, 5 and 6 straight. 7 and 8 stalked, stalk sinuate, 7 to termen; 7 + 8 — 10 equidistant, 9 and 10 parallel, slightly sinuate, 10 from before $^3/_4$, 11 from before middle of cell; parting vein complete, from about $^1/_3$ to between the origin of 4 and 5.

Hindwings (fig. 5 O) rather narrow, semiovate, costa concave anteriorly and posteriorly, projecting a little in middle, apex rounded, termen gradually rounded, dorsum slightly projecting. 2—4 equidistant, 2 from $^2/_3$, 3 from before angle, 4 nearer to 5 than to 3, from angle, 5 straight, 6 and 7 stalked, 7 to apex. 8 slightly sinuate. Discal cell rather short, reaching scarcely beyond middle of wing.

Genital apparatus.

♂. Unknown. Cornuti short spines, with a very sharp point and narrowed and clavate base.

♀ (fig. 6 E). Ovipositor lobes large, ovate, broadest in middle, narrowed below. 8th tergit chitinised. Ostium cup-shaped, limen little chitinised, with a little knob at each side. Ductus bursae moderately long, sinuate; colliculum a dark incomplete ring, cestum a curved plate above the ending of the ductus. Bursa copulatrix large, sphaeroid, signum a small semiovate plate (cornuti of the male present). (Type in the Berlin Museum, genitalia slide No. 158 D).

Distribution. North East New Guinea.

Remarks. An interesting form; structurally it appears to be an intermediate form between *Proselena* Meyr. and *Paraselena* Meyr. on one side, and the form from which these two may be derived on the other side. I did not study the genital apparatus of these two genera, but I suppose that they are allied to *Schoenotenes* Meyr and do not belong to the present subfamily. *Metaselena* is correlated with *Adoxophyes* Meyr.

Economic importance. Larva unknown.

Metaselena alboatra nov. spec.

♀ 10 mm. Head with vertex and face whitish (damaged). Antennae brown, with basal joint whitish above. Palpi white, with a few blackish scales at the outer side. Thorax and patagia dirty light yellowish-ochreous

(damaged). Abdomen and legs grey. Wing shape as described above. Forewings white, with markings dark brown and blackish: minute oblique transverse blackish streaks along costa from beyond base to $^2/_3$; four oblique transverse dark markings on costa from its $^3/_5$ to before apex, decreasing in length posteriorly: an oblique blackish short striga on $^3/_5$ of costa, elongate triangular, its acute lower end pointing towards $^2/_3$ of tornus; beyond this a blackish semicircular spot, twice as broad, but shorter, connected posteriorly below with the following two brownish and suffused spots. The four strigae form together an erected costal patch, its posterior edge concave, reaching from costa before apex to below $^1/_2$ of termen, apex white. Three indistinct, transverse, oblique, suffused strigae on $^1/_3$ of dorsum, reaching to fold on dorsum, between them a brownish suffusion. Yellowish indistinct suffusion on middle of costa and on $^1/_4$ of disc. Cilia whitish (damaged). Hindwings and cilia ochreous-grey.

North East New Guinea. Hauptlager bei Malu, 24. VII. 1912, Kaiserin Augustafluss Exp. (Bürgers), 1 specimen, type in the Berlin Museum.

Genus 11. **Adoxophyes** Meyrick

Genotype: *Adoxophyes heteroïdana* Meyrick (East Australia).

Adoxophyes Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 6, p. 429, 1881; Meyrick, Trans. N. Zeal. Inst., vol. 15, p. 39—40, 1883; Fernald, Gen. Tortr. Typ., p. 42 & 60, 1908; Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 205, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 18, 1913; Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 710, 1929; Walsingham, Ann. Mag. N.H. (7), vol. 5, p. 481, 1900; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 6, 1929.

Head (fig. 4 I) with rough scales, two thick patches, of elongate scales at vertex between the antennae, surrounding the basal joints; face with appressed scales, projecting in middle. Palpi moderate, porrected, second joint smooth at base above, strongly dilated towards apex by rough scales above and beneath, especially above; rough along the entire underside, terminal joint moderate, drooping. Tongue short.

Thorax rather smooth, without a crest. Patagia moderate, with their hind-margin obtuse. Legs strong, hind pair long; fore-tibia rather smooth, hind-tibia very roughly scaled with elongate and acute scales, projecting above and beneath. Abdomen long, with a large anal tuft in male.

Forewings (fig. 4 F) broad, elongate-truncate, about 2.3 × as long as broad, with a costal fold in male reaching to about $^1/_2$ of costa, elongate, of rather variable shape; costa strongly arched anteriorly, slightly sinuate before apex, apex rounded, projecting in female, termen sinuate above, rounded and projecting beneath, dorsum straight, slightly projecting at

$^1/_5$ of wing; 1 with a narrow furca to $^1/_6$, curved posteriorly, 2 from $^1/_2$ of cell, 3 from considerably before angle, from about $^4/_5$ of cell, 4 from angle parallel to 5, 6 approximated to the stalk of 7 and 8; this stalk is long; 7 to termen; 10 from before $^4/_5$, 11 from $^1/_2$ of cell.

Hindwings (fig. 4 F) semiovate, costa little arched anteriorly, sinuate before apex, apex rounded, slightly curved, projecting, termen sinuate above, gradually broadly rounded beneath, dorsum projecting. 2 from $^1/_2$ of cell, 3 from before angle, 4 from angle, 5 separate from 4, approximated at base, 6 and 7 approximated or stalked, 8 slightly sinuate.

Genital apparatus.

♂ (fig. 7 F). Scopae absent. Tegumen broad and strong, its lower end broad. Saccus moderate, rounded. Valva elongate, rather small, costa indistinct, sacculus narrow, but distinct. Uncus large, elongate, dilated and indent at the top. Gnathos very strong, W-shaped, with broad arms, curved, blunt point and sharp angles at the sides. Socii small, elongate. Transtilla narrowed in middle, thick pads at the sides, dentate above. Valvula haired. Anellus small, elongate-triangular. Aedoeagus (fig. 7 G) strongly curved, moderate, cornuti sharp spines. (The studied specimen is present in British Museum, genitalia slide No. 1174 B.M.).

♀ (fig. 4 B). Ovipositor short, broad, dilated at apex. Apophyses strong. Ostium large, its outer rim strong, narrowed in the middle. Ductus bursae narrow above, with a chitinised vesiculation (cestum?), very short. Bursa large, elongate, signum a short, sharp thorn. (The studied specimen in British Museum, genitalia slide No. 1175 B.M.).

Distribution. Abundant in the Papuan region, also richtly represented in the Australian, Malayan and Indian faunas, more sporadically occurring in China, Japan and Formosa and represented by a few specimens in Europe, N. America, Solomon Is., Seychelles, Mauritius, and Madagascar.

Remarks. A very distinct and rather uniform genus with mostly considerable sexual dimorphism. Especially the females are sharply marked by a transverse and a preterminal fascia and can be easily recognised by rather thick veins in both fore- and hindwings.

The genital apparatus is rather uniform in male, but shows some difference of shape in ductus bursae and in bursa copulatrix of female; they are all characterised, however, by a short, curved signum.

Economic importance: The larva of some common species of *Adoxophyes*, being very polyphagous, attack very frequently various crops of cultivated plants. As an example two species may be recorded, which are very common on Java:

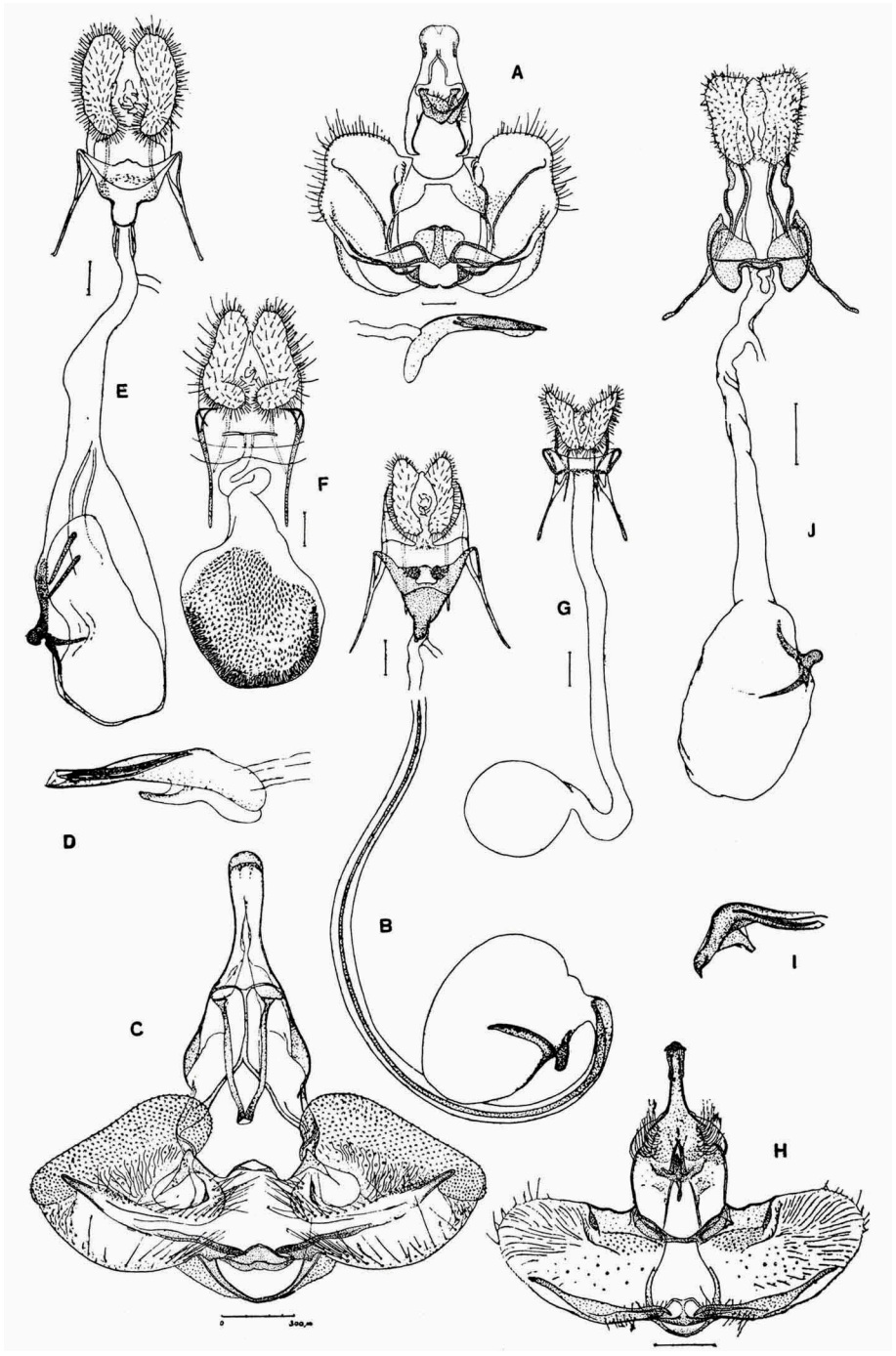

Fig. 9. A—B, *Pandemis corylana* Fabr., A, genitalia ♂; B, genitalia ♀. C—E, *Cacoecia xylosteana* Linn., C, genitalia ♂; D, aedoeagus; E, genitalia ♀. F, *Eulia ministrana* Linn., genitalia ♀. G, *Epagoge grotiana* Fabr., genitalia ♀. H—J, *Ulodemis trigrapha* Meyr., H, genitalia ♂; I, aedoeagus; J, genitalia ♀.

A. perstricta Meyr. has been bred from *Ricinus* (Mus. Leiden), *Hibiscus, Mangifera* (Inst. for Plant Diseases, Buitenzorg, in litt.).

A. privatana Wlk. has been bred in India from *Lantana* (Fletcher, 1920), in Java from *Citrus, Jasminum, Thea, Desmodium, Vitis, Cassia, Eugenia, Canavallia, Rosa, Alternanthera, Calophyllum, Mallotus, Litsea* (Inst. for Plant Diseases, Buitenzorg, in litt.).

These lists will undoubtedly be extended in future.

Note. When studying Meyrick's types I stated the following synonymy.

Adoxophyes moderatana (Walker) Meyrick

Tortrix moderatana Walker, List Lep. Het. B. M., vol. 28, p. 328—329, 1863. Type ♂ in the British Museum.

Adoxophyes epizeuchta Meyrick, syn. nov., Proc. Linn. Soc. N. S. Wales, vol. 35, p. 207, 1910. Type ♀ in the British Museum.

Genus **Procalyptis** Meyrick

Genotype: *Procalyptis oncota* Meyrick (West Australia).

Procalyptis Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 204, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 17, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 184, 1929.

Head (fig. 5 R) with rough scales, face slightly projecting beneath. Antennae reaching to beyond half of costa, with basal joint large, considerably thickened at base. Palpi moderate, or rather long, porrected, second joint dilated by rough scales, especially above towards apex, terminal joint short, pointed, drooping.

Thorax without crest, smooth, patagia moderate, rather broad. Legs strong, smooth.

Forewings (fig. 5 Q) moderate, elongate-ovate, about 2.3 × as long as broad, costa gradually curved anteriorly, less curved posteriorly, apex rounded, termen rather straight, scarcely projecting, broadly rounded beneath, dorsum slightly convex; in female 1 with a moderate furca, 2 from about $^1/_2$, 3 a little before angle, 4 approximated to 5 at base, 5 and 6 straight and parallel, 7 and 8 stalked, 7 just below apex, 9—10 almost parallel, 10 from about $^3/_4$, 11 from $^1/_2$ of cell, 12 slightly sinuate posteriorly.

Hindwings (fig. 5 Q) rather broad, elongate-ovate, 1.6 × as long as broad, costa little curved, apex acute, termen little oblique above, rounded beneath. 2 from about $^3/_5$, 3 from angle, 3—5 equidistant, closing vein angulate above middle, with a remainder of a parting vein, 6 and 7 separate, closely approximated towards base, 8 slightly sinuate. Abdomen moderate.

Genital apparatus.

♂. Unknown.

♀ (fig. 7 D). Ovipositor lobes broad, little dilated at the top. Ostium simple, supported by a single bent rod, ductus bursae straight and somewhat chitinised at the beginning. Lower part and bursa in the type specimen seem to be lost; the vesicular formation figured is probably no bursa copulatrix, but receptaculum seminis. (Type specimen in British Museum, genitalia slide No. 1145 B. M.) .

Distribution. West Australia. Since the Indian species *chelophora* Meyr. proves to be a true *Ulodemis* (see p. 179), the present genus should be removed from the list of our region, being only Australian.

Remarks. Allied to *Adoxophyes*.

Economic importance. Larva unknown.

Genus 12. **Epagoge** (Hübner) Meyrick

Genotype: *Pyralis grotiana* Fabricius (= *flavana* Hübner) (Europe, China, Corea, Japan).

Epagoge Hübner, Verz. bek. Schmett., p. 389, 1826; Meyrick, Handb. Brit. Lep., p. 527, 1895 (pro parte); Walsingham, Ann. Mag. Nat. Hist. (7), vol. 5, p. 483, 1900; Fernald, Gen. Tortr. Typ., p. 15 & 58, 1908; Kennel, Zoologica, vol. 54, p. 108, 1910; Pierce & Metcalfe, Genit. Tortr., p. 7, pl. 3, 1922; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 78, 1928.

Capua Stephens, Ill. Brit. Ent. Haust., vol. 4, p. 171, 1834, genotype: *favillaceana* Hübner (= *ochreana* Stephens); Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 444—445, 1881; Meyrick, Handb. Brit. Lep., p. 527, 1895; Fernald, Gen. Tortr. Typ., p. 27 & 59, 1908; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 183, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 12, 1913; Meyrick, Rev. Handb. Brit. Lep., p. 500, 1927; Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 709, 1929.

Teratodes Guenée, Ann. Soc. Ent. Fr. (2), vol. 3, p. 34, 1845, genotype: *favillaceana* Hübner (non descr.).

Dichelia Stainton, Manual, vol. 2, p. 197, 1858, genotype: *grotiana* Fabricius; Guenée, Ann. Soc. Ent. Fr. (2), vol. 3, p. 141, 1845 (non descr.); Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 468—469, 1882; Moore, Lep. Ceylon, p. 492, 1887; Fernald, Gen. Tortr. Typ., p. 29 & 58, 1908.

Sperchia Walker, Char. Undescr. Het., p. 83, 1869, genotype: *intractana* Walker.

Epitymbia Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 657—658, 1881; genotype: *alaudana* Meyrick.

Head (fig. 5 K) roughly scaled, face considerably projecting in middle. Antennae reaching to beyond $^1/_2$ of costa, shortly biciliated in male, basal joint moderate, thickened. Palpi moderate or long, porrected, second joint broadly dilated towards apex, with rough projecting scales above and beneath, terminal joint moderate, acute, drooping. Tongue short.

Thorax with closely appressed scales,with or without a posterior crest, patagia moderate. Legs strong, rather smoothly scaled. Abdomen moderate.

Forewings (fig. 5 J) with or without costal fold in male, elongate, costa moderately arched anteriorly, rather straight posteriorly, slightly curved before apex, apex rounded, termen straight, oblique, rounded beneath, dorsum projecting at $^1/_3$ of wing. 1 with a furca, reaching to about $^1/_5$ of wing, 2 from beyond $^3/_5$, 3 from angle, sometimes a little from before angle, 3—5 equidistant, 5 and 6 straight, 7 and 8 stalked, 7 to termen, 10 from $^4/_5$, 11 from $^2/_5$ of cell.

Hindwings (fig. 5 J) semiovate, costa little curved at base, slightly concave before vein 8, apex slightly curved, projecting, acute, termen sinuate above, rounded beneath. 2 from $^3/_5$, 3 and 4 very closely approximated at base or connate, 5 approximated at base; 6 and 7 stalked, 8 slightly sinuate.

Genital apparatus.

♂ (fig. 6 J). Tegumen strong, angulate, saccus small, rounded. Valva elongate, with a rounded top, costa with a blunt projection at base, sacculus moderate, haired. Uncus large, rather broad, with a blunt top, haired underneath, gnathos strong, curved, with a sharp point. Socii moderate, elongate, drooping. Anellus pear-shaped. Aedoeagus long, curved, cornuti a sheaf of long spines. (The specimen figured in my collection, genitalia slide No. 16 D).

♀ (fig. 9 G). Ovipositor lobes rather narrow, pointed. 9th sternite with scattered hairs. Ostium broad, supported by an ovate rod, which is slightly thickened at the sides. Ductus bursae unarmed, rather short, straight, bursa copulatrix moderate, sphaeroid. Cestum as well as signum absent. (The specimen examined in my collection, genitalia slide No. 160 D).

Distribution. A large genus distributed all over the world, but especially richly represented in Australia. The African fauna, on the contrary, counts but a few species. In our region the genus is rather abundant, some 30 described and a dozen of undescribed species are known to me.

Remarks. The species are all but uniform as regards the shape and the length of palpi, the shape of forewings and the position of vein 3 in forewings, which all can vary considerably. Therefore it is not possible at present to divide *Epagoge* Hb. in distinct subgenera. These characters, however, are independent from each other, as *Epagoge favillaceana* Hb. possesses the narrowest wings, in the forewings of which vein 3 originates before angle of cell, remote from vein 4. *Epagoge grotiana* F. is an intermediate form, with rather broad wings, but with vein 3 from angle, closer to vein 4. *E. harmonia* Meyr., e.g., is another extreme, having very broad wings and vein 3 as in *favillaceana* Hb.

In 1826 Hübner described this genus for the species *peramplana* (= *amplana* Hb.), *gnomana* L. (= *flavana* Hb.) and *ochreana* Hb. The first

and third species belong, however, to the genus *Tortrix* Linn.; Hübner's *gnomana* proves to be *grotiana* F., which is therefore the genotype.

For many years the name *Epagoge* Hb. has been forgotten and replaced by *Capua* Steph. (1934). Meyrick (1886) originally distinguished two genera: *Dichelia* Hb. with, and *Capua* Steph. without the costal fold in male. In 1895, however, he restored Hübner's old name *Epagoge,* instead of *Capua* Steph., but rejected it in 1910 again, because he regarded the name *Epagoge* Hb. not quite correct and wanted to retain the well-established name of Stephens, which was already 80 years old at the time. At the same occasion he united also *Dichelia* Hb. with this genus and, in 1912, placed the 150 species known at that time under the name *Capua* Steph. In 1935 the name *Dichelia* (*D. retractana* Wlk.) appears again in one of Meyrick's last papers (Caradja and Meyrick, 1935), but without any further explanation.

I agree, however, with the first correction by Meyrick and join the opinion of Walsingham (1897), Kennel (1910) and Fletcher (1924, 1929), by using the name *Epagoge* (Hübner) Meyrick.

Economic importance. The numerous species of this genus will very probably prove to be polyphagous in the same way as the other related genera and therefore it may be expected that they will be able to attack many cultivated plants. The very common species, which is widely distributed throughout India, Malaya, the Malayan Archipelago and South-China is *Epagoge retractana* Wlk. (of which the female was described as *invalidana* Wlk.). It has been bred in Java from *Lantana* and *Elephantopus* (in collection of the Inst. for Plant Diseases, Buitenzorg), and in India from *Lantana* and betel-vine (Fletcher).

Genus 13. **Homona** Walker

Genotype: *Tortrix fasciculana* Walker (= *coffearia* Nietner) (South Asia).

Homona Walker, List Lep. Het. B. M., vol. 28, p. 424, 1863: Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 210; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 19, 1913; Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 710, 1929; Walsingham, Biol. Centr. Amer. Lep. Het., vol. 4, p. 207, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 111, 1929.

Godana Walker, List Lep. Het. B. M., vol. 35, p. 1800—1801, 1866, genotype: *menciana* Walker (= *simulana* Walker = *nubiferana* Walker = *coffearia* Nietner).

Ericia Walker, List Lep. Het. B. M., vol. 35, p. 1800—1801, 1866, genotype: *aestivana* Walker (= *posticana* Walker (praeocc.)).

Aesiocopa Zeller, Hor. Soc. Ent. Ross., vol. 13, p. 104—108, 1877, genotype: *vacivana* Zeller.

Anisogona Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 464—465, 1881, genotype: *simulana* Walker.

Ericiana Strand, Soc. Ent. Stuttgart, vol. 25, p. 34, 1910, genotype: *aestivana* Walker (= *posticana* Walker).

[*Capua* (Stephens)] Walsingham, Ann. Mag. N. H. (7), vol. 5, p. 482, 1900.

Head (fig. 4 G) with short, closely appressed scales, vertex thickly scaled in male. Antennae to $^1/_2$ of costa, shortly ciliate in male, smooth in female, basal joint thickened, short. Palpi short, narrow, ascending and appressed to face in male (fig. 4 G), subascending in female; basal joint with short, rough scales, second joint in male narrow, straight, scarcely dilated below apex, with short, appressed scales beneath, in female very thin, smooth; terminal joint short, acute, porrected. Tongue very short, vestigial.

Thorax with closely appressed, smooth scales and a small posterior crest; collar in male broad. Patagia in female rather large, in male moderate, with elongate scales. Legs very strong, covered with long, roughly appressed scales. Abdomen with a large anal tuft in male.

Forewings (fig. 4 F) in male elongate-semiovate, about 2.3 × as long as broad, with a broad and short costal fold, ovate-triangular in shape, not reaching $^1/_3$ of costa; costa gradually arched anteriorly, nearly straight posteriorly, apex little rounded, termen slightly concave above, oblique and rounded beneath; forewings in female elongate-rectangular, about 2.5 × as long as broad, with costa abruptly and strongly arched at base, straight in middle, slightly sinuate before apex, apex slightly rounded, projecting, termen sinuate above, rounded and oblique beneath. Termen gradually rounded, in male with a broad, rounded or triangular scale-projection on $^1/_4$. 1 with a moderate furca reaching beyond $^1/_5$ of wing, 2 from before $^2/_3$, curved, 3—5 remote, 3 from angle, 4 nearer to 5 than to 3, 7 and 8 stalked, stalk long; 9 nearer to 8 than to 10, 10 from before $^4/_5$, 11 from before $^1/_2$ of cell, 9—11 curved and approximated towards costa.

Hindwings (fig. 4 F) broader than forewings, semiovate-triangular in male, broadly semiovate in female, about 2 × as long as broad, costa rather straight anteriorly, in female sometimes with a patch of dense, black scales on $^3/_4$, somewhat convex before apex, apex almost acute, projecting, termen scarcely concave below apex, broadly rounded beneath, dorsum projecting in cell 1. 2 from before $^2/_3$, 3 and 4 connate, from angle, 5 approximated towards base, 6 and 7 separate, closely approximated towards base.

Genital apparatus.

♂ (fig. 6 F ventral view; H lateral view). Tegumen strong, triangular, pedunculi narrow, saccus small, rounded. Valva broad, very short, triangular, wrinkled, bristled along the margin, costa indistinct, sacculus strongly chitinised, narrow, with a curved point before apex of valva.

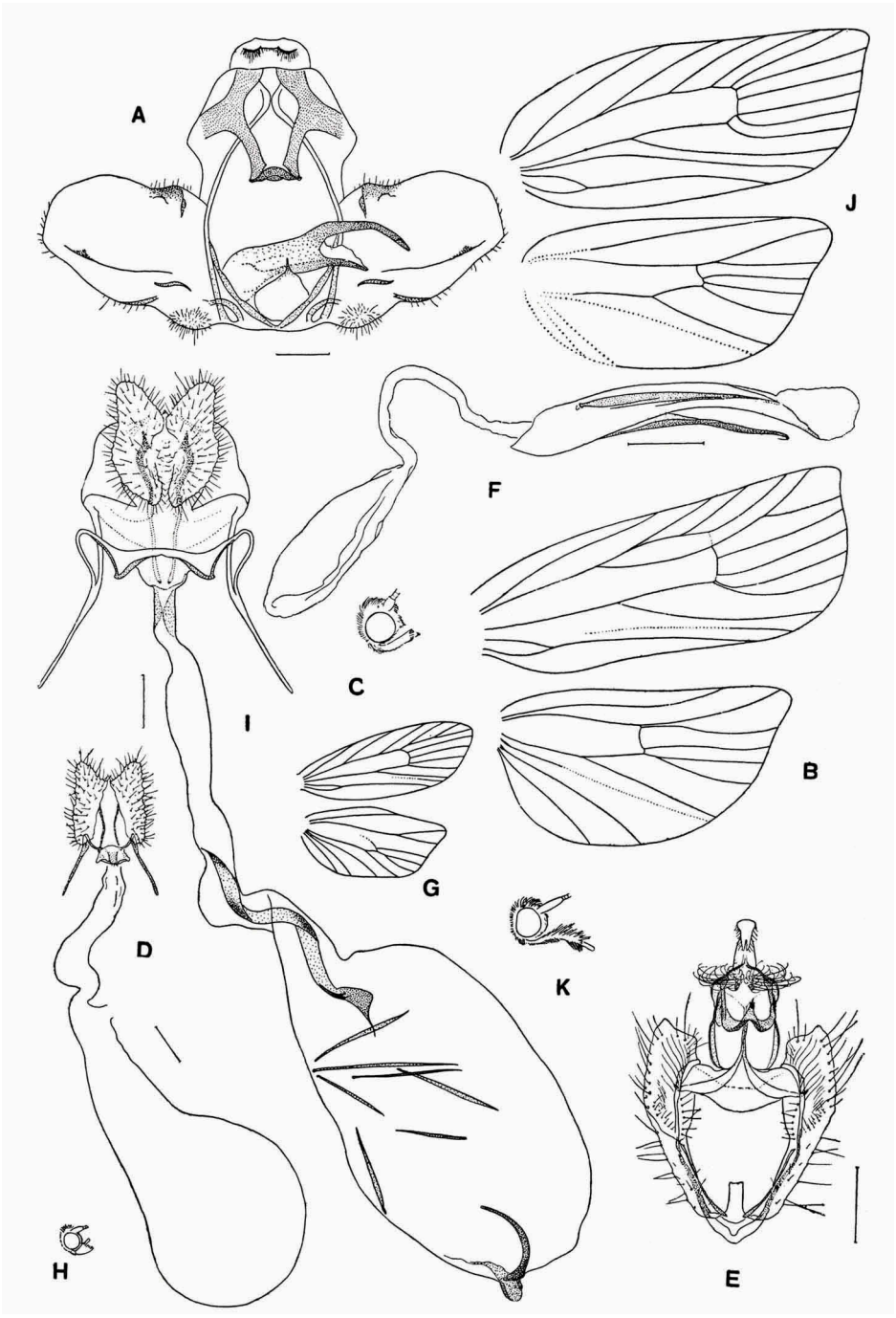

Fig. 10. A—C, *Leontochroma aurantiacum* Wals. ♂, A, genitalia; B, wing neuration; C, head. D—H, *Capnoptycha ipnitis* Meyr., D, genitalia ♀; E, genitalia ♂; F, aedoeagus; H, head. I—H, *Isotenes melanoclera* Meyr. ♀, I, genitalia; J, wing neuration; H, head.

Uncus large, with rounded-clavate top, shortly haired underneath. Gnathos very strong, with narrow arms and large, sharp hook. Socii minute, narrow. Transtilla narrowed in the middle, with excavate under edge. Aedoeagus (fig. 6 G) pistol-shaped, with a strong thorn at the upper margin of the top; cornuti three long spines. (The specimen figured is in my collection, genitalia slide No. 38 D).

♀ (fig. 4 A). Ovipositor lobes elongate, dilated at the top. Ostium broad upturned-trapezoid, ductus bursae very long and narrow and beginning with a curved and chitinised funnel; cestum thin, making one spiral, somewhat dilated at the end. Bursa copulatrix large, ovoid, signum a large hook with dilated base. (The specimen figured in my collection, genitalia slide No. 52 D).

Remarks. A large and difficult genus with considerable sexual dimorphism. Especially the females of the species allied to *H. coffearia* Nietn. give much trouble in determination. The different species show also considerable variation in markings, colour, size and even in the shape of the wings within a species. Therefore many synonyms were created by different authors, especially by Walker, but also by Meyrick. On the other hand some of them must at present be regarded as a mixture of distinct species. I found among *H. coffearia* Nietn. at least three different species [1]). It is often impossible at the present state of our knowledge of the genus, to join the sexes with certainty and much work has to be done, and corrections must be made by rearing on a large scale. The matter becomes still more intricate by the considerable, sometimes astonishing polyphagy of different species.

Correlated with *Cacoecia,* nearly related to it and forming with *Epagoge, Harmologa, Pandemis* and *Ulodemis* a natural group.

Distribution. South Asia is the country of origin of this large genus, which is abundant in India, in the Malayan region and in South China and Japan. But also numerous species have been described from Australia and Papua, a few are known from America and one from Madagascar.

Economic importance. Many species are highly polyphagous; the larvae live in rolled or spun leaves. *H. coffearia* Nietn., the famous Tea Tortrix, is the most injurious Tortricid; it was a dangerous pest of the tea plant in Ceylon. In the last years it seems to have been suppressed by cultivation and distribution of Hymenopterous egg parasites, which was executed during several years. In Java this species is also very common and sometimes also attacks the tea plant, but it is of little importance there, very

1) Shortly I hope to deal with this question, which can only be solved by an elaborate study of the genitalia.

probably on account of its natural parasites. An extensive literature exists on this subject, of which the studies of Jardine (1918) in Ceylon and of Leefmans (1921) in Java may be named here. Besides from Tea *H. coffearia* has been reared in Java from the following plants: *Bauhinia, Calophyllum, Gossypium, Cinnamomum, Citrus, Corchorus, Derris, Dysotylum, Eugenia, Linum, Melochia, Nephelium, Pluchea, Pyrus* (Inst. for Plant Diseases, Buitenzorg); *Ricinus* (material in Leiden Museum). Fletcher records it from Indigo.

Note. When studying Meyrick's types I stated the following synonymy:

Homona aestivana (Walker) Meyrick

Ericia aestivana Walker, List Lep. B. M., vol. 35, p. 1803, 1866. Type ♂ in the British Museum.

Ericia posticana Walker, List Lep. B. M., vol. 35, p. 1803, 1866. Type ♂ in the British Museum.

Homona tribapta Meyrick, syn. nov., Exot. Microl., vol. 3, p. 455, 1928. Type ♂ in the British Museum.

Homona coffearia (Nietner) Meyrick

Tortrix coffearia Nietner, Enem. Coff. Ceyl., p. 24, 1861. Type lost.

Pandemis menciana Walker, List Lep. Het. B. M., vol. 28, p. 310, 1863. Type ♀ in the British Museum.

Homona fasciculana Walker, List Lep. Het. B. M., vol. 28, p. 424, 1863. Type ♂ in the British Museum.

Godana simulana Walker, List Lep. Het. B. M., vol. 35, p. 1801, 1866. Type ♀ in the British Museum.

Homona fimbriana Walker, Char. Lep. Het., p. 101, 1869. Type ? in the British Museum.

Homona socialis Meyrick, Exot. Microl., vol. 1, p. 3—4, 1912. Type ♂ ♀ in the British Museum.

Homona spargotis Meyrick, syn. nov., Proc. Linn. Soc. N.S. Wales, vol. 35, p. 215, 1910. Types ♂ ♀ in the British Museum.

Genus 14. **Cacoecia** Hübner

Genotype: *Phalaena Tortrix xylosteana* Linné (Europe, Asia Minor, Japan).

Cacoecia Hübner, Verz. bek. Schmett., p. 388, 1826; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 482—483, 1882; Meyrick, Handb. Brit. Lep. p. 529, 1895; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 216, 1910; Meyrick, in Wytsman, Gen. Ins. vol. 149, p. 22, 1913; Rev. Handb. Brit. Lep. p. 501, 1927; Meyrick, in de Joannis, Ann. Soc. Ent. France vol. 98, p. 710, 1929, Fletcher, Mem. Agr. Ind. Ent. vol. 11, p. 36, 1929.

Ptycholama Stephens, Cat. Brit. Ins. p. 183, 1829 (non descr.), genotype: *lecheana* Linné; Stephens, Ill. Brit. Ent. Haust. vol. 4, p. 141—142, 1834.

Anacrusis Zeller, Hor. Soc. Ent. Ross., vol. 13, p. 85—87, 1877, genotype: *atrosparsana* Zeller.

Cryptoptyla Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 481, 1881, genotype: *australana* Mac Leay (= *immersana* Walker).

Archips Hübner, Tentamen, p. 2, 1806 (non descr.); Walsingham, Proc. Zool. Soc. Lond. p. 133, 1897, genotype: *piceana* Linné (= *oporana* Hb.); Fernald, Gen. Tortr. Typ., p. 3 & 54, 1908; Walsingham, Ann. Mag. Nat. Hist. (7), vol. 5, p. 378, 1910; Pierce & Metcalfe, Genit. Tortr., p. 1, 2, pl. 1, 1922.

Head (fig. 8 L) with roughly appressed scales at the vertex, face rather smooth. Antennae shortly biciliate in male, smooth in female, with basal joint moderate, thickened. Palpi ascending or subascending, rather short in male, moderate in female, basal joint short, triangularly dilated at the top by projecting scales, second joint smooth, except along the under edge, where it bears short, roughly appressed scales; at the top it is somewhat dilated by appressed scales above, terminal joint acute, porrected, short in male, a little longer in female.

Thorax smoothly scaled, without crest. Patagia long. Legs very strong, with elongate, the hind tibia with roughly appressed scales at the outer side and above and beneath.

Abdomen moderate, with anal tuft in male.

Forewings (fig. 8 K) elongate-rectangular, about 2.3 × as long as broad, with or without costal fold in male, with costa considerably, but gradually arched from base to beyond $^3/_4$, slightly concave before apex, apex acute, projecting, termen sinuate above, broadly rounded and projecting beneath, dorsum rather straight, with a scale-projection near the base of variable size and shape. 1 with a long furca reaching to beyond $^1/_5$ of wing, 2 from about $^2/_3$, 3—5 remote, 3 from angle, 4 nearer to 5 than to 3, 7 and 8 separate, 7 to termen, 8 and 9 parallel, 10 from $^3/_4$, 11 from beyond $^2/_5$ of cell.

Hindwings (fig. 8 K) broader than forewings, about as long as broad, semiovate or subtrapezoid, costa curved in middle, apex more or less rounded, not projecting, termen scarcely sinuate above, rounded beneath, dorsum rounded and projecting in cell 1 a, 2 from $^2/_3$, 3 and 4 shortly stalked from angle, 5 approximated towards base, 6 and 7 separate, closely approximated at base, 8 straight.

Genital apparatus.

♂ (fig. 9 C). Ventral scopa present on wrinkled semicircles. Tegumen strong, excavate, with broad pedunculi, saccus moderate, rounded. Valva short, very broad, costa indistinct, sacculus short and broad, with a hook at the end. Valvula a median, haired pad. Uncus elongate, clavate, haired underneath. Gnathos strong, curved, with long point. Socii minute. Transtilla broad, strongly narrowed in the middle. Aedoeagus pistol-shaped,

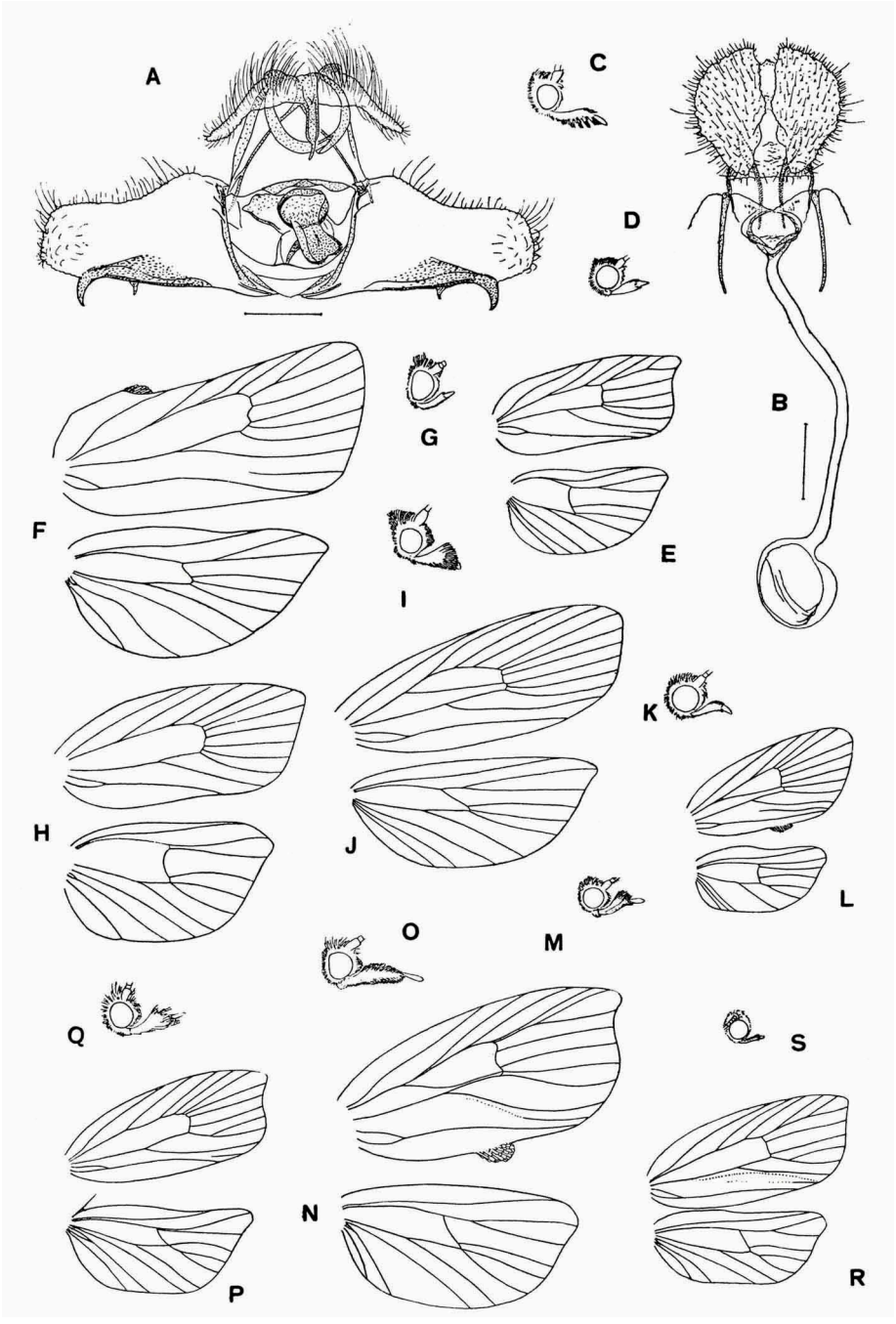

Fig. 11. A—B, *Taeniarchis periorma* Meyr., A, genitalia ♂; B, genitalia ♀. C—E, *Drachmobola periastra* Meyr., C, head ♀; D, head ♂; E, wing neuration, F—G, *Callibryastis pachnota* Meyr. ♀, F, wing neuration; G, head. H—I, *Argyrotoza bergmanniana* Hb., H, wing neuration; I, head. J—K, *Schoenotenes synchorda* Meyr. ♂, J, wing neuration; K, head. L—M, *Protopterna chalybias* Meyr. ♀; L, wing neuration; M, head. N—O, *Pternozyga haeretica* Meyr. ♀, N, wing neuration; O, head. P—Q, *Spatalistis rhopica* Meyr., P, wing neuration; Q, head.

strong, cornuti a sheaf of long, strong spines. (The figured specimen in my collection, genitalia slide No. 18 D.).

♀ (fig. 9 E). Ovipositor lobes elongate, rather narrow, little dilated apically. Ostium wide, a broad chitinised funnel with a curved, transverse rim in middle, its wall below this rim thinner. Ductus bursae long, curved, cestum a narrow strong band, little dilated at the entrance of the bursa. Signum a strong, little curved thorn, its capitulum short and strong. (The figured specimen in my collection, genitalia slide No. 116 D.).

Distribution. This large genus is distributed all over the Northern Hemisphere and is especially richly represented in North-America. On the Southern Hemisphere *Cacoecia* is far from abundant; in Africa only a few species occur, and none in New Zealand. According to Meyrick the genus is a rather recent one, originating from North America. It has penetrated through South Asia in the Malayan Archipelago to New Guinea; in the region dealt with in this paper 38 described species and a series of not yet described ones are known to me.

Remarks. A large and very difficult genus to which the difficulties mentioned in the foregoing genus fully apply; it shows considerable sexual dimorphism in many species, which in themselves are very variable. *C. micaceana* Wlk. (of which *C. epicyrta* Meyr. is a synonym), a widely distributed South-Asiatic and Malayan species, is a striking example: it forms local varieties, which have rather constant superficial characters as, e.g., the markings and even the shape of forewings. Some of them were even described as distinct species, e. g., *C. compacta* Meyr. However, in spite of the very short and somewhat differently marked forewings, I consider this species to be conspecific with *micaceana* Wlk., as the genitalia show no differences at all, while on the other hand these are greatly different in other closely related species. In the same way as in *Homona,* the females of allied species are rather uniform and very difficult to distinguish, while the females of the above mentioned varieties (with which I will deal in my next paper) can scarcely be distinguished with any certainty at all.

Cacoecia is very nearly related to *Homona,* and is its precursor. There is no reason for placing it in another group, as Meyrick did, in spite of the separate veins 7 and 8 in the forewings. The entire genital apparatus in both sexes shows a very close relation, whereas the character of the stalking of the veins 7 and 8, which is rather plastic, is of much less importance.

An old genus, perhaps the ancestor of all the preceding genera, and a far offspring of the *Cnephasia*-group.

Economic importance. Some common species have proved to be highly

polyphagous and often to cause injuries to cultivated crops. *C. micaceana* Walker may be recorded in the first place, as this species has been bred in India from *Cedrela, Duranta, Hibiscus, Ixora, Lantana, Medicago, Phaseolus, Psidium, Salix, Thea,* bread bean, green chillies, mulberry, soya, strawberry (Fletcher) and in Tonkin from *Phaseolus,* mulberry, "patates, taros rouges", *Thea* (de Joannis). On Java it has been reared from *Aleurites, Derris, Capsicum, Citrus, Linum, Nephelium, Thea, Zea* in the collection of the Inst. for Plant Diseases, Buitenzorg) and from *Ricinus* (material in the Leiden Museum).

Note. When examining the types in the British Museum, I stated the following synonyms:

Cacoecia micaceana Walker

Cacoecia micaceana Walker, List Lep. Het. B.M., vol. 28, p. 314, 1863; type ♀ in British Museum.

Cacoecia epicyrta Meyrick, syn. nov., J. Bomb. N. H. Soc., vol. 16, p. 589, 1905; types ♂, ♀ in British Museum.

Cacoecia machlopis Meyrick, syn. nov., Exot. Microl., vol. 1, p. 4, 1912; type ♀ in British Museum.

Cacoecia isocyrta Meyrick, syn. nov., Exot. Microl., vol. 2, p. 340, 1920; type ♀ in British Museum.

Cacoecia transcutata Meyrick, syn. nov., Exot. Microl., vol. 4, p. 569, 1935; type ♂ in British Museum.

Cacoeia micaceana Walker var. *compacta* Meyrick var. nov.

Cacoecia compacta Meyrick, Exot. Microl. vol. 2, p. 164—165, 1918; type ♂ in the British Museum.

Cacoecia seditiosa Meyrick

Cacoecia seditiosa Meyrick, Zool. Meded. Mus. Leiden, vol. 6, p. 147, 1921; type ♂ in Leiden Museum.

Cacoecia brachytoma Meyrick, syn. nov., Exot. Microl. vol. 4, p. 341, 1932; type ♂ in British Museum.

Cacoecia alcmaeonis Meyrick

Cacoecia alcmaeonis Meyrick, Exot. Microl., vol. 3, p. 455, 1928. Type ♀ in British Museum.

Cacoecia contemptrix Meyrick, syn. nov., Exot. Microl., vol. 4, p. 526, 1934. Type ♂ in British Museum.

Cacoecia hemixantha Meyrick

Cacoecia hemixantha Meyrick, Exot. Microl., vol. 2, p. 165—166, 1918. Type ♂ in British Museum.

Cacoecia expleta Meyrick, syn. nov., Exot. Microl., vol. 3, p. 54, 1923. Type ♂ in British Museum.

Genus 15. **Thrincophora** (Meyrick) [1])

Genotype: *Tortrix impletana* Walker (Australia, Tasmania).

Thrincophora Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 431, 1881; Fernald, Gen. Tortr. Typ., p. 42 & 60, 1908; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 221, 1929.

Acropolitis Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 432, 1881, genotype: *magnana* Walker; Fernald, Gen. Tortr. Typ., p. 42 & 60, 1908; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 5, 1929.

Head (fig. 4 E) roughly scaled at vertex, face covered with appressed scales. Antennae densely ciliate, basal joint moderate, thickened and densely scaled. Palpi rather long, porrected, basal joint moderate, second joint long, somewhat curved, dilated beyond middle, with semi-projecting scales, especially above, terminal joint rather long, broad, acute. Tongue well developed, strong.

Thorax covered with appressed scales, with a double posterior crest. Abdomen large, with a large anal tuft in male.

Forewings (fig. 4 D) broad, elongate-rectangular, about 2.1 × as long as broad, sometimes with ridges of slightly raised scales, in ♂ with a strong costal fold, costa moderately arched at base, gradually curved posteriorly, apex rounded, termen concave above, broadly rounded below, dorsum slightly concave posteriorly, curved at base. 1 with a rather long furca to $^1/_5$, 2 from $^2/_3$, 3—5 remote, equidistant, 3 from angle, 6 parallel, 7 and 8 stalked, 7 to termen, 10 from $^3/_4$, 11 from before $^1/_3$.

Hindwings (fig. 4 D) semi-ovate, on the underside with a narrow fold on the veins 1 a and 1 b, which is filled with short dark scales, costa scarcely projecting in middle, apex gradually rounded, termen slightly sinuate above, broadly rounded beneath, dorsum rounded, somewhat projecting. 2 from $^3/_5$, 3 from angle or from before angle, 4 remote, 4 and 5 closely approximated at base or connate, 6 and 7 connate or shortly stalked.

Genital apparatus.

♂ (fig. 6 I). Tegumen broad and strong, pedunculi broad. Saccus small, rounded. Valva large, costa with a rounded and haired projection at apex, sacculus well defined, large and broad, produced into a sharp point. Uncus rather broad, pointed, haired underneath. Gnathos moderate, its arms narrow, its point short. Socii small, rounded pads. Transtilla strong, little curved, narrowed in middle. Aedoeagus (fig. 6 I) little curved at the

1) I did not study the genotype. The following description is based on ♂ of *T. ostracopis* (Meyr.), of which I have a series from North East New Guinea (*Anisochorista ostracopis* Meyrick, Tr. Ent. Soc. London, vol. 87, p. 505, 1938).

top, spindle-shaped, with a strong thorn before apex; cornuti a large sheaf of long spines. (The figured specimen is in my collection, genitalia slide No. 162 D).

Distribution. Especially Australia; one species is known now from New Guinea. This is a typically Australian element in the fauna of that island.

Remarks. Although in *T. ostracopis* Meyr. vein 3 does not originate distinctly from before angle and the posterior crest is rather small, while in Meyrick's description no remarks are made on the peculiar fold in hindwings, I do not doubt that *ostracopis*, which has been erroneously attributed by Meyrick to *Anisochorista* Turner, belongs to *Thrincophora*. This latter name was withdrawn by Meyrick himself (Meyrick, 1910) as a synonym of *Acropolitis* Meyr. The name *Thrincophora*, however, was published one page earlier, and therefore antedates.

Economic importance. The Australian species of the genus all seem to be correlated with different species of *Acacia*.

Genus **Catamacta** Meyrick

Genotype: *Catamacta gavisana* Meyrick (New Zealand).

Catamacta Meyrick, Trans. New Zeal. Inst., vol. 43, p. 81, 1911; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 9, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 41, 1929.

Head (fig. 5 T) with rough scales, face rather rough-scaled. Antennae moderate, to about $^1/_2$ of wing, smooth, basal joint moderate, thickened. Palpi long, porrected, elongate-triangular, with rough, projecting scales above and beneath, at the sides with rounded, appressed scales, terminal joint rather short, acute, with appressed scales. Tongue rather short.

Thorax covered with appressed scales, patagia moderate, obtuse. Legs strong, smooth, hind tibia with long appressed hairs above.

Forewings (fig. 5 S, ♀) elongate-rectangular, about 2.4 × as long as broad, costa strongly arched at base, sinuate posteriorly, apex acute, projecting, termen scarcely sinuate, rather straight, oblique, tornus rounded, dorsum rounded and projecting at $^2/_5$ of wing. 1 with a furca reaching to beyond $^1/_5$, straight; 2 from about $^3/_5$ of cell, 3 from angle, 3—5 remote, almost equidistant, 5 and 6 straight and parallel, 7 and 8 stalked, 7 to termen; 6—9 almost equidistant, 9—11 more remote from each other, but also equidistant, 11 short, from about $^3/_5$ of upper margin of cell, which is considerably narrowed anteriorly.

Hindwings (fig. 5 S) broad, semi-ovate, about 2 × as long as broad, costa gently arched, apex rounded, termen scarcely sinuate above, broadly

rounded beneath. 2 from before $^2/_3$, 3 from angle, 4 remote, somewhat approximated to 5 at base, 5 curved, 6—7 stalked, 8 slightly sinuate.

Genital apparatus.

♂. I had no occasion to study the male genitalia. These have been studied and described by Philpott (1928) as follows:

"*Catamacta* Meyrick (Figs. 72 to 74).

Tegumen moderately broad; uncus narrow to moderately broad. Socii of normal length, narrow or broad. Gnathos normal. Aedoeagus moderately curved, tapering, apex obliquely pointed. Anellus and juxta normal. Harpes (valvae) broad, oblong, apex subtruncate; sacculus weak, extending to about $^1/_2$; transtilla normal. Vinculum normal."

The species *gavisana* Meyr. is characterised as follows: "Uncus narrow, apex rounded; harpes with upper apical angle rounded."

♀ (fig. 7 I). Ovipositor of ordinary shape, dilated apically. Postapophyses strongly curved. Ostium wide, supported by a broad chitinous rim, which is crenate laterally and set with minute bristles in the middle. Ductus bursae long, strongly curved at the beginning, cestum long, slightly sinuate and rather narrow, beginning at about $^1/_4$ of the ductus and not reaching bursa. Bursa small, spheroid, signum a curved, sharp thorn. (Type in British Museum, genitalia slide No. 280 B.M.).

Distribution. Formerly Meyrick placed two species into this genus, *Catamacta gavisana* Meyr. from New Zealand and *C. provocata* Meyr., known from India, China and Formosa. In one of his last papers (Caradja et Meyrick, 1935), he placed it in the genus *Capua,* without any explanation; in his collection this species is also arranged as *Capua provocata.* After examining the type-specimen of *provocata* Meyr. (type ♂ in the British Museum, genitalia slide No. 275 B.M.), I agree with this alteration. Therefore at present the genus *Catamacta* Meyr. does not belong to the region dealt with in this paper, being typically New Zealandian. Furthermore one single species is described from South Africa.

Remarks. An offspring of the *Epagoge* branch, and closely allied to this genus.

Economic importance. Larva unknown.

Genus 16. **Ulodemis** Meyrick

Genotype: *Ulodemis trigrapha* Meyrick (India, Java).

Ulodemis Meyrick, J. Bomb. N. H. Soc., vol. 17, p. 736, 1907; Fernald, Gen. Tortr. Typ., p. 49 & 63, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 26, 1913; Meyrick, in de Joannis, Ann. Soc. Ent. Fr. vol. 98, p. 713, 1929. Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 233, 1929.

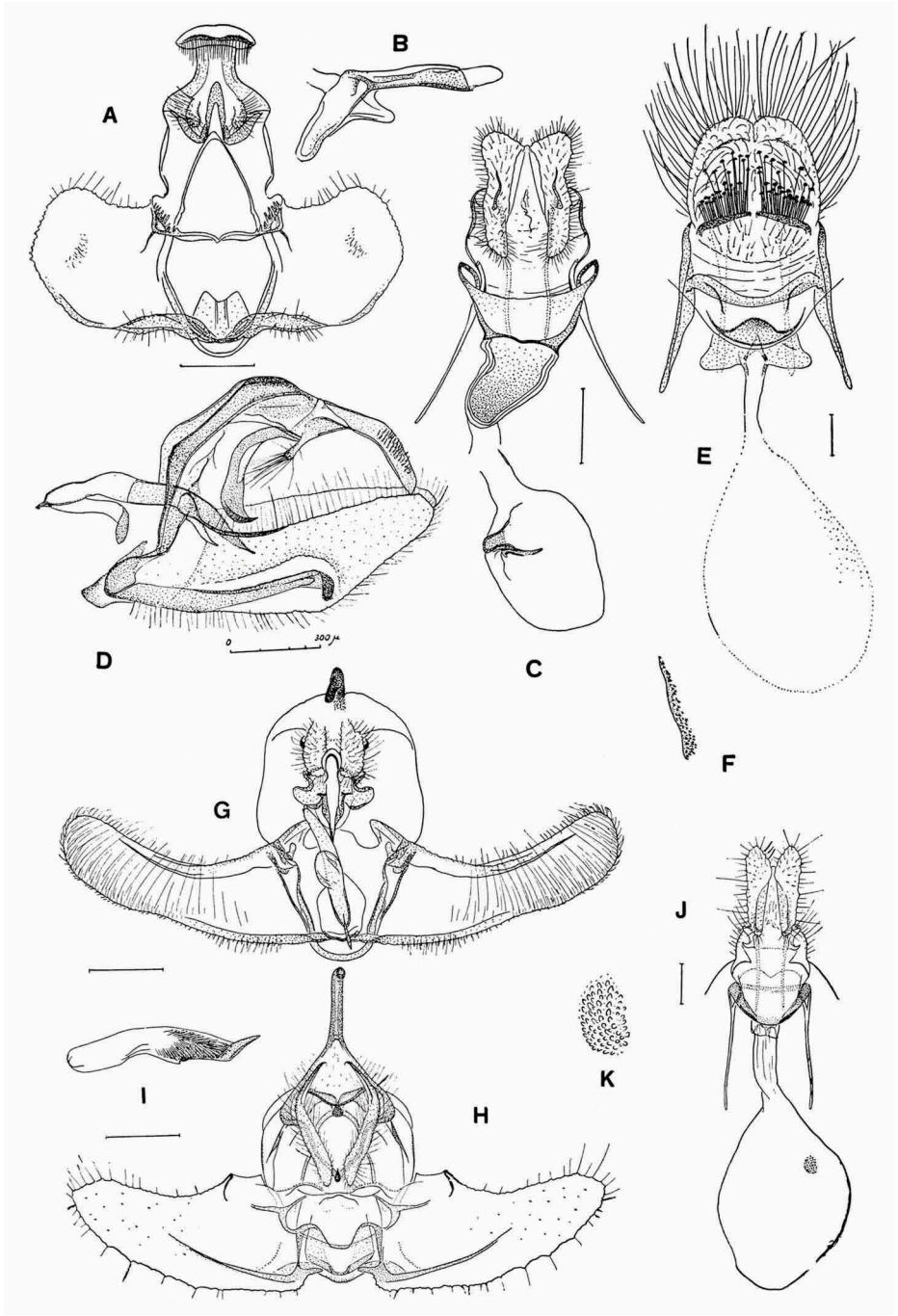

Fig. 12. A—C, *Epichorista hemionana* Meyr., A, genitalia ♂ ; B, aedoeagus; C, genitalia ♀. D, F, *Cnephasia pasivana* Hb., D, genitalia ♂ ; F, signum ♀. E, *Cnephasia nubilana* Hb., genitalia ♀. G, *Terthreutis sphaerocosma* Meyr., genitalia ♂. H—K, *Arotrophora arcuatalis* Meyr., H, genitalia ♂ ; I, aedoeagus; J, genitalia ♀ ; K, signum.

Head (fig. 8 I) in female with appressed scales, which project forward between the antennae; in male (fig. 8 H) with rough scales, a scale-brush at each side of the face. Antennae in male ciliate, with a notch near base (fig. 8 J), basal joint rather long, little thickened, antennae in female very shortly biciliate, without notch, basal joint shorter and somewhat more thickened than in male. Palpi moderate in male, long in female, basal joint short, with projecting scales beneath, second joint long, broadly dilated with long appressed scales towards apex above and with shorter appressed scales along the underside, terminal joint short, narrow, acute, projecting. Tongue well developed and long.

Thorax smoothly covered with small scales in female, which are narrower in male; an indication of a slight posterior crest in male. Legs strong, hind tibia with long appressed scales above. Abdomen rather long in female, with a moderate scale-tuft in male.

Forewings (fig. 8 G) elongate-rectangular, without costal fold, in female about 2.4 × as long as broad, a little broader in male, costa strongly arched anteriorly in female, gradually arched in male, without costal fold, slightly sinuate before apex, apex rounded, termen slightly concave above, rounded and somewhat projecting beneath, dorsum rather straight, with a small scale-projection at $^1/_4$. 1 with a moderate furca reaching to beyond $^1/_5$ of wing, 2 from $^2/_3$, 3 considerably from before angle in male, from angle in female, 4 remote, 5 approximated to 4 at base, 7 and 8 stalked, the stalk approximated to 9 in middle, 10 from beyond $^3/_5$, 11 from before half, sinuate and closely approximated to the upper margin of cell towards base; the upper margin of cell horizontal between veins 7 + 8 — 10, oblique before 10.

Hindwings (fig. 8 G) semiovate to subtrapezoid, broader than forewings, about 1.8 × as long as broad, costa little arched at base, slightly sinuate before apex, apex rounded, termen scarcely sinuate above, broadly rounded beneath, dorsum projecting in cell 1 c. 2 from before half of cell, 3 and 4 shortly stalked, from angle, 5 approximated towards base, 6 and 7 separate, 6 curved and closely approximated to 7 towards base, 8 rather straight. Hindwings in male at the underside with cell 1 c and the anterior half of cell 2 very thinly scaled or entirely naked, translucent at these places, the cells 1 b and 1 c on the contrary with very long hairs; dorsal cilia very long, decreasing in length towards the base of wing; hindwings in female scaled and ciliated in the normal way.

Genital apparatus.

♂ (fig. 9 H). Tegumen broad and rather short, with broad pedunculi. Saccus small, rather broad. Valva moderate, elongate, rounded at the top,

with bristles along the outer edge. Costa broad, reaching to half of the length of valva, forming an angularly bent fold with bristles and a short projection at base. Sacculus narrow, dark, reaching to $^3/_4$ of valva. Transtilla narrow in middle, semilunar. Uncus very narrow, strong and curved, its apex with minute bristles. Gnathos with broad arms and with a ventral projection, its point strong, curved upwards, and armed with 4 or 5 strong, curved thorns. Socii large, elongate, curved, thickly covered not with normal bristles, but with curved, long scales. Aedoeagus (fig. 9 I) pistol-shaped, strongly curved, with one short thorn at the lower edge of the orifice; cornuti 4 very long and strong spines. (The figured specimen in my collection, genitalia slide No. 22 D.).

♀ (fig. 9 J). Ovipositor lobes normal, elongate, dilated at the top. Ostium broad, strongly chitinised, with a rounded diverticulum at each side; its outer rim sinuate. Cestum absent, bursa very large, ovoid. Signum a sharp thorn of moderate size, its capitulum broad, rounded and slightly curved. (The figured specimen in Leiden Museum, genitalia slide No. 49 D.).

Distribution. From India to Sumatra, Java, Celebes and Formosa.

Remarks. A very natural genus, of which the typical characters are the armed point of the gnathos and the scaled socii.

Economic importance. *U. trigrapha* Meyr. has been bred in India from *Virburnum, Pyrus* and perhaps from *Colquhounia* (Fletcher, 1920) and from *Citrus* (Fletcher, 1932), and in Java from *Cinnamomum, Citrus, Linum* and *Thea* (Inst. for Plant Diseases, Buitenzorg) and from *Schima* (material in Leiden Museum). *U. pullatana* Sn., a species endemic to Java, seems to be connected with *Quercus*; it flies about in the mountains on clouded days (Dr. L. J. Toxopeus, in litt.).

Note. I stated the following synonymy:

Ulodemis trigrapha Meyrick

Ulodemis trigrapha Meyrick, J. Bomb. N. H. Soc., vol. 17, p. 736, 1907.
Ulodemis falsa Meyrick, syn. nov., J. Bomb. N. H. Soc., vol. 22, p. 771, 1914. (The studied specimen, named by Meyrick himself, in my collection, genitalia slide No. 223 D).

Ulodemis chelophora (Meyrick)

Procalyptis chelophora Meyrick, Tr. Ent. Soc. Lond., p. 431, 1910; Meyrick, in Wagner, Lep. Cat., vol. 10, p. 13, 1912; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 18, 1913.

This species is at once recognisable as a true *Ulodemis* Meyr. by the ovate costal fold (fig. 5 H), concealing a thick scale-patch, by which the

fold is lifted up a little (in all species of *Ulodemis* the fold is elevated in this way), and by the notch at the base of the antennae, which in this species is very long (longer than the diameter of the flabellum at that place) and curved. The palpi (fig. 5 M) are more dilated than in other species. Two thick bushes of short hairs are present in ventro-lateral excavations of the first abdominal segment (fig. 5 N).

The following is a description of the genital apparatus (fig. 7 H) of this species, which proves to be closely related to *Ulodemis pullatana* Sn. from Java.

♂. Scopa present, two ventro-lateral patches of long scales. Tegumen very strong, quadrate, with broad pedunculi. Saccus narrow. Valva broad, costa oblique, indefinite, sacculus strong, dilated anteriorly, with a triangular brush of dense hairs posteriorly. The inner margin of valva densely haired. Uncus very strong, of dark chitine, curved, with a beak-shaped point; gnathos very strong, two massive, straight arms, ending in a bilobed body. Socii drooping, curved, rather slender, densely covered, not with the common long bristles, but with scales, which are dilated and indent at apex. Transtilla a curved narrow rod. Anellus a reniform plate. Aedoeagus long and narrow at the top, nearly rectangularly bent. Cornuti absent, except for one minute thorn. (Type in British Museum, genitalia slide No. 1143 B.M.).

Genus 17. **Pandemis** Hübner

Genotype: *Pyralis corylana* Fabricius (North and Central Europe).

Pandemis Hübner, Verz. bek. Schmett. p. 388, 1826. Meyrick, Handb. Brit. Lep., p. 533, 1895; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 26, 1913; Meyrick, Rev. Handb. Brit. Lep., p. 505, 1927; Walsingham, Ann. Mag. Nat. Hist. (7), vol. 5, p. 386, 1900; Fernald, Gen. Tortr. Typ., p. 15 & 58, 1908; Kennel, Zoologica, vol. 54, p. 155, 1910. Pierce & Metcalfe, Gen. Brit. Tortr., p. 3, pl. 1, 1922; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 160, 1929.

Head (fig. 8 F) in female roughly scaled, in male with dense, appressed scales at vertex, and long roughly projecting scales on face. Antennae to $^2/_3$, shortly and densely ciliate in male, with a notch near base, very shortly biciliate in female; basal joint moderate in female, longer in male, thickened. Palpi long, porrected, basal joint short, with rough, projecting scales beneath, second joint long, in female dilated with appressed scales towards apex, broadest beyond the middle; in male much broader, broadest in the middle, with long, projecting scales above, terminal joint short, acute or rounded. Tongue well developed, long.

Thorax smoothly scaled, without crest, patagia elongate, rather large.

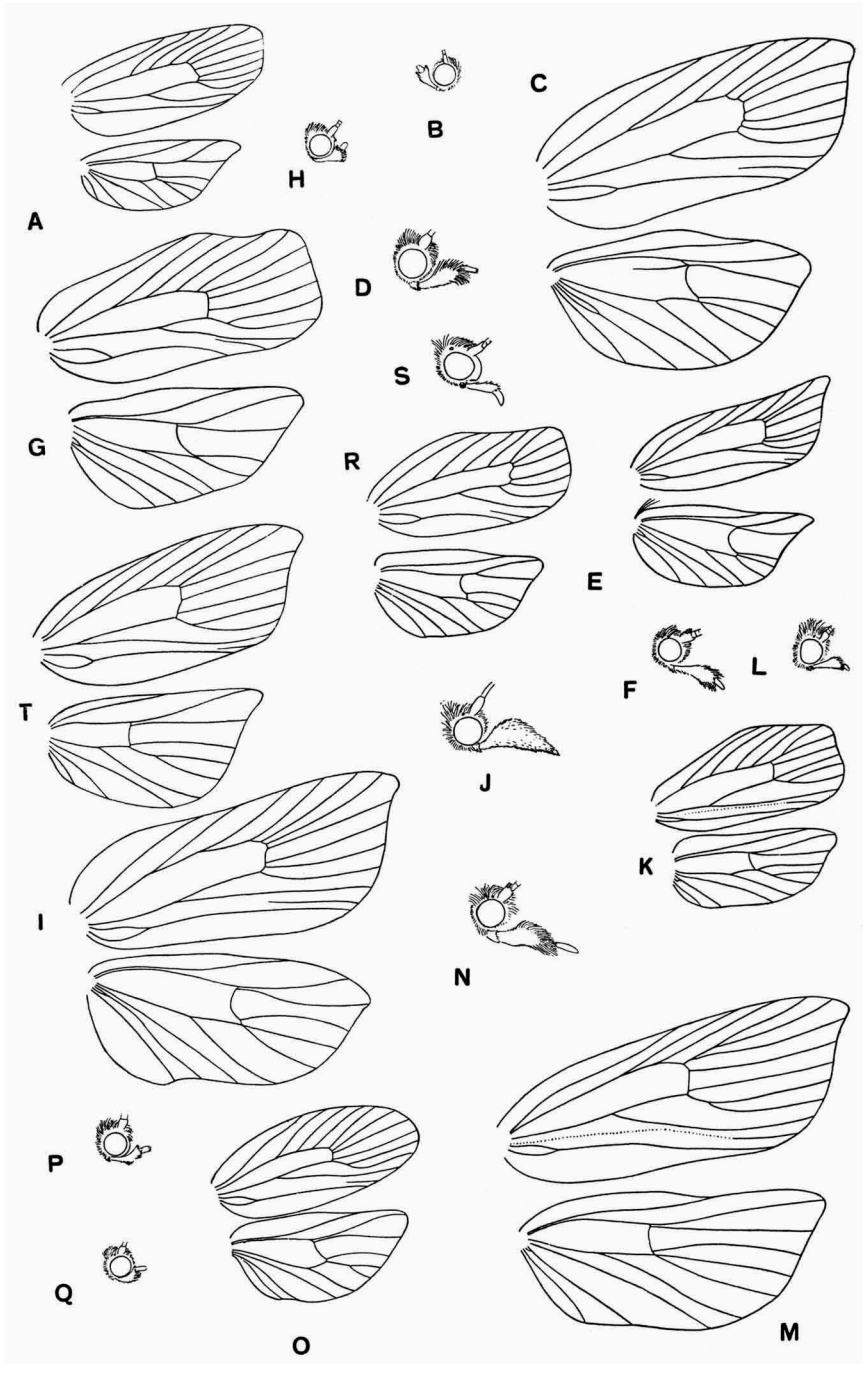

Fig. 13. A—B, *Polemograptis miltocosma* Meyr. ♀, A, wing neuration; B, head. C—D, *Tortrix viridana* Linn. ♀; C, wing neuration; D, head. E—F, *Epichorista hemionana* Meyr. ♀; E, wing neuration; F, head. G—H, *Eboda smaragdinana* Wlk. ♀, G, wing neuration; H, head. I—J, *Peronea cristana* Fabr. ♀, I, wing neuration; J, head. K—L, *Tymbarcha cerinopa* Meyr. ♂, K, wing neuration; L, head. M—N, *Antigraptis hemicrates* Meyr. ♀, M, wing neuration; N, head. O—Q, *Paratorna dorcas* Meyr., O, wing neuration; P, head ♂; Q, head ♀. R—S, *Planostocha cumulata* Meyr. ♀, R, wing neuration; S, head. T, *Beryllophantis cochlias* Meyr., wing neuration.

Legs strong, middle and hind tibia very densely covered with appressed, long scales. Abdomen moderate, with a large anal tuft in male.

Forewings (fig. 8 E) elongate-rectangular, about 2.4 × (♀) or 2.1 × (♂) as long as broad, in male without costal fold, broadest before middle. Costa strongly arched anteriorly, straight posteriorly, apex rounded, termen in male above rather straight, in female sinuate, rounded below, dorsum slightly convex. 1 with the furca reaching beyond $^1/_5$ of wing, 2 from $^3/_5$, 3—5 separate, 3 from angle, 4 approximated to 5 at base, 6—8 almost equidistant, 7 and 8 separate, 7 to termen, 9 nearer to 8 than to 10, 10 from about $^3/_4$, 11 from beyond $^1/_3$ of cell.

Hindwings (fig. 8 E) broad, semiovate, broader than forewings, about 1.7 × as long as broad, costa rather straight to middle, slightly curved posteriorly, apex rather acute, termen slightly convex in cell 6, rounded beneath, dorsum rounded, scarcely projecting in cell 1 a. 2 from $^3/_5$, 3 and 4 from angle, very shortly stalked, connate or just a little separate, 5 approximated towards base, 6 and 7 separate, approximated towards base, 8 straight.

Genital apparatus.

♂ (fig. 9 A). Tegumen small, elongate. Saccus small. Scopae present, very dense. Valva very broad and short, massive, sacculus with long, dense hairs, which join the scopae. Anellus moderate, rounded. Transtilla a simple semilunar rod. Uncus short, very broad, indent, shortly haired underneath, gnathos small, curved, socii elongate, drooping. Aedoeagus geniculate, cornuti 2 large thorns, narrowed at base. (The specimen figured in my collection, genitalia slide No. 163 D).

♀ (fig. 9 B). Ovipositor lobes small, elongate. Ostium rather wide, strongly chitinised and funnel-shaped, ending in a tube beneath. Ductus bursae long, with a narrow, curved, but not spiraled cestum, which is slightly dilated at the entrance of the bursa copulatrix; the latter is large, ovoid; signum a curved, thick thorn, with an oblique capitulum. (The specimen figured in my collection, genitalia slide No. 164 D).

Distribution of the species. The genus is characteristic of the Northern Hemisphere, of America as well as of North and Central Europe. One palearctic species, *P. ribeana* Hb., occurs along the Northern frontier of India.

Remarks. A peculiar genus, closely related to *Cacoecia,* probably an offspring of the *Tortrix-Peronea* group.

Economic importance. The larvae are polyphagous and live in rolled leaves of various plants, especially of Betulaceae, Cupuliferae and Rosaceae.

Genus 18. **Harmologa** Meyrick

Genotype: *Teras oblongana* Walker (New Zealand).

Harmologa Meyrick, N. Zeal. J. Sc., vol. 1, p. 277, 1882; Meyrick, Trans. N. Zeal. Inst., vol. 15, p. 44, 1883; Fernald, Gen. Tortr. Typ., p. 44 & 61, 1908; Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 270, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 41, 1913; Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 713, 1929; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 104, 1929.

Trachybathra Meyrick, Tr. N. Zeal. Inst., vol. 39, p. 114 & 117, 1907, genotype: *scoliastis* Meyrick.

Head (fig. 8 D) roughly scaled. Antennae to $^2/_3$, ciliate in male, shortly haired in female, basal joint moderate, thickened. Palpi long, ascending, basal joint very short, second joint long, narrow at base, broadly dilated towards apex by rough semiappressed scales above and beneath and at the apex; its greatest breadth beyond middle; terminal joint very narrow, elongate, smooth. Tongue well developed, long.

Thorax smoothly scaled, with a moderate posterior crest in male, which is absent in female. Patagia short in both sexes. Legs strong, smoothly scaled in female, with appressed hairs above and beneath on tibia in male. Abdomen moderate.

Forewings (fig. 8 C) elongate, rather narrow, about 2.5 × as long as broad in female, broader in male (in *H. miserana* Walk. both sexes possess rather narrow wings), with a short and broad costal fold reaching beyond $^1/_5$ of costa, costa in female moderately arched anteriorly, slightly sinuate before apex, apex somewhat projecting, termen vertical, sinuate above, rounded beneath; in male costa gradually arched from base to apex, termen slightly sinuate above, rounded beneath, more oblique than in female. 1 with a short furca, 2 from $^3/_5$ in male, from $^2/_3$ in female, 3—5 remote, 3 from angle, 4 more approximated to 5 than to 3, in female 3 and 4 nearly connate; 7 and 8 separate, 8 twice as far from 9 as from 7, 10 from $^3/_4$, 11 from beyond $^2/_5$ of cell. Parting vein present, from beyond the origin of vein 11, to between the veins 7 and 8.

Hindwings (fig. 8 C) broad, about 1.9 × as long as broad, subtrapezoidal, costa rather straight, slightly concave before apex, apex rounded, slightly projecting, termen sinuate above, rounded beneath, dorsum rounded and projecting in cell 1 a. 2 from $^2/_3$ in male, from $^2/_5$ in female, 3—5 separate, approximated towards base, in female more than in male, 6 and 7 shortly stalked in male, separate in female, 8 slightly curved towards base.

Genital apparatus.

♂ (fig. 8 A). Tegumen very strong, excavate, semispheroid, with very broad pedunculi. Saccus small, rounded. Valva short, narrowed posteriorly,

bristled along the margin. Costa with a transverse rim at base, indicated posteriorly by a narrow fold. Sacculus moderate, rather narrow posteriorly, with a long, clavate hook. Uncus long, narrow and curved, its top dilated and indent, gnathos with broad arms, ending in an upturned V-shaped, blunt point, which is curved upwards. Socii small, rounded. Transtilla narrowed in the middle. Aedoeagus pistol-shaped, curved, cornuti three strong and short spines. Spermatophore spheroid, with a conoid appendix.

♀ (fig. 8 B). Ovipositor lobes elongate, dilated at the top. Ostium rather broad, ductus bursae with a moderate colliculum and a strong cestum beginning at $^3/_4$, which is broad and shows a longitudinal split along its lower half. The end of the ductus bursae is swollen and chitinised. Signum a long and thin thorn, capitulum long, scobinate.

Distribution. The genus is characteristic for the New Zealand fauna, but one very common species, *H. miserana* Walk. has a South Asiatic distribution, occurring in East Australia, Formosa, Java and Assam, and another, *H. crobylota* Meyr., was described from New Guinea. One single species, described from North America, is regarded by Meyrick to be congeneric.

Remarks. I wonder whether the female of *H. oblongana* Walk. which I studied in the British Museum (Meyrick's collection) belongs to that male, as the neuration and the shape of wing are rather different. In any way the male bears the characters of the genus, as the nearly allied *H. miserana* Walk. possesses the same neuration in both sexes, except the parting vein and the furca of vein 1, which in *miserana* is much longer than in the genotype.

Closely allied to *Homona* and *Cacoecia* and not to *Cnephasia* and *Tortrix*, as was supposed by Meyrick. The Indian *H. miserana* Walk. shows considerable sexual dimorphism, the female being about $1^1/_2 \times$ as large as the male and possessing no thoracic crest.

Economic importance. Larva feeds in rolled leaves of different plants. *H. miserana* Walk. has been bred in Australia from different species of *Ficus*, but will perhaps turn out to be polyphagous.

Genus 19. **Epichorista** Meyrick

Genotype: *Epichorista hemionana* Meyrick (New Zealand).

Epichorista Meyrick, Ann. Transv. Mus., vol. 2, p. 5, 1909; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 259, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 35, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 80, 1929.

Vertex roughly scaled (fig. 8 N ♂, 13 F ♀), scales projecting forward over the base of antennae, face also roughish. Antennae to about $^2/_3$, basal joint thickened with scales, short; flabellum ciliate in male, with sharply,

angularly projecting upper hind margin of every segment; shortly pubescent in female. Palpi rather long, porrected in male, somewhat shorter and slightly drooping in female, basal joint short, second joint long, slender at base, broadly dilated at beyond $^1/_3$, towards apex with rough, short, projecting scales above and beneath, its top in female appearing indent, terminal joint short, roughish, obtuse in male, slender, elongate in female. Tongue very short.

Thorax smoothly scaled, patagia moderate, legs strong, rather smooth.

Forewings (fig. 8 M ♂, 13 E ♀) narrow, about 2.8 × (♂)—3. 1 × (♀) as long as broad, with costa gradually arched at base, sinuate posteriorly, in male apex acute, not projecting, termen oblique, rounded beneath; in female apex very acute, projecting, termen oblique, sinuate, rounded and projecting beneath. Dorsum gradually rounded. 1 with a moderate furca, 2 from beyond $^2/_3$ of cell, rather straight, 3—5 equidistant, 3 from angle, curved at base, 5 almost parallel to 4; 7 and 8 separate, little approximated towards base, 9—11 short, almost equidistant and parallel, 10 from beyond $^2/_3$, 11 from $^1/_2$ of cell.

Hindwings (fig. 8 M ♂, 13 E ♀) broader than forewings, about 2.2 × as long as broad, costa slightly sinuate before apex, apex acute and projecting in both sexes, especially in female, termen oblique, sinuate, rounded and projecting beneath. 2 from $^2/_3$ of cell, 3 from angle, remote from 4, 4 and 5 approximated at base, 6 and 7 closely approximated at base.

Abdomen moderate, tapering in female, in male with a small anal tuft.

Genital apparatus.

♂ (fig. 12 A). Tegumen elongate, rather strong, saccus small, rounded. Valva simple, short, rounded, with small bristles along costa, which is indistinct; sacculus distinct, dark bristled. Uncus large, curved, hooded, with dilated and curved top, haired underneath. Gnathos moderate, with strong arms, and long point, which is curved upwards. Socii drooping, elongate, rounded at the top. Transtilla indent in the middle of upper margin, with a group of strong thorns at each side. Anellus moderate, strong. Aedoeagus (fig. 12 B) pistol-shaped, strong. (The figured specimen in British Museum, genitalia slide No. 1213 B.M.).

♀ (fig. 12 C). Ovipositor lobes elongate, dilated at the top. Ostium moderate, the outer rim dilated at the sides; the beginning of ductus bursae is a large, darkly chitinised and oblique bag, with a thick wall, ductus bursae very short, cestum absent. Bursa copulatrix moderate, spheroid, signum large, a curved hook. (The figured specimen in British Museum, genitalia slide No. 1214 B.M.).

Distribution. Some 10 species of moderate size belong to this genus,

which has a peculiar distribution, being known from New Zealand, Australia, South Africa and India.

Remarks. *Epichorista* is correlated with the *Cacoecia*-group and is perhaps an ancestor of the latter, as the cestum is not yet developed in female. The peculiar distribution shows that the genus, which probably originates from the Indo-Malayan region, is an old one.

Economic importance. Larva (known in only one species) lives in spun leaves of Zygophyllaceae.

Genus **Isochorista** Meyrick

Genotype: *Isochorista ranulana* Meyrick (East Australia).

Isochorista Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 424, 1881; Fernald, Gen. Tortr. Typ., p. 42 & 60, 1908; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 165, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 8, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 119, 1929.

Head (fig. 5 G) with rough scales. Palpi moderate, porrected, first joint short, second joint moderate, considerably dilated towards apex by long, rough scales above and beneath, rougher in female, terminal joint short. Antennae shortly or moderately ciliated in male, basal joint elongate, little thickened.

Thorax smooth or with a little crest, patagia moderate. Legs moderate, rather smooth-scaled. Abdomen elongate, in male with a short anal tuft.

Forewings (fig. 5 F) elongate, narrow, about 3 × as long as broad in female, $3^1/_2$ × in male, with costa little arched at base, gradually curved from base to apex; costal fold in male present, very long and narrow, reaching to beyond middle of costa; apex rather acute, not projecting, termen straight, oblique, tornus broadly rounded, dorsum little convex. 1 shortly furcate, 2 from $^2/_3$ of cell, 3 from angle, 4 approximated at base, 5 a little remote, rather straight, 6 far remote, parallel with 5, 7 and 8 stalked, stalk to halfway the apex, 7 to termen, 9 remote, 10 from about $^2/_3$, 11 from before $^1/_2$ of upper margin of discal cell, 12 little curved to beyond $^2/_5$.

Hindwings (fig. 5 F) elongate in male, broader in female, elongate-ovate; costa angularly curved in middle, little curved posteriorly to apex, apex acute, projecting, termen considerably sinuate in cell 6, gradually rounded below, straight posteriorly, dorsum curved. 2 from before $^2/_3$ of lower margin of cell, 3 from angle, 4 considerably remote, 5 much more remote from 4, straight, transverse veins running into the common trunk of 6 and 7 at before $^1/_2$ of wing, as a result of which the lower angle of distal cell projects far posteriorly; 8 rather straight.

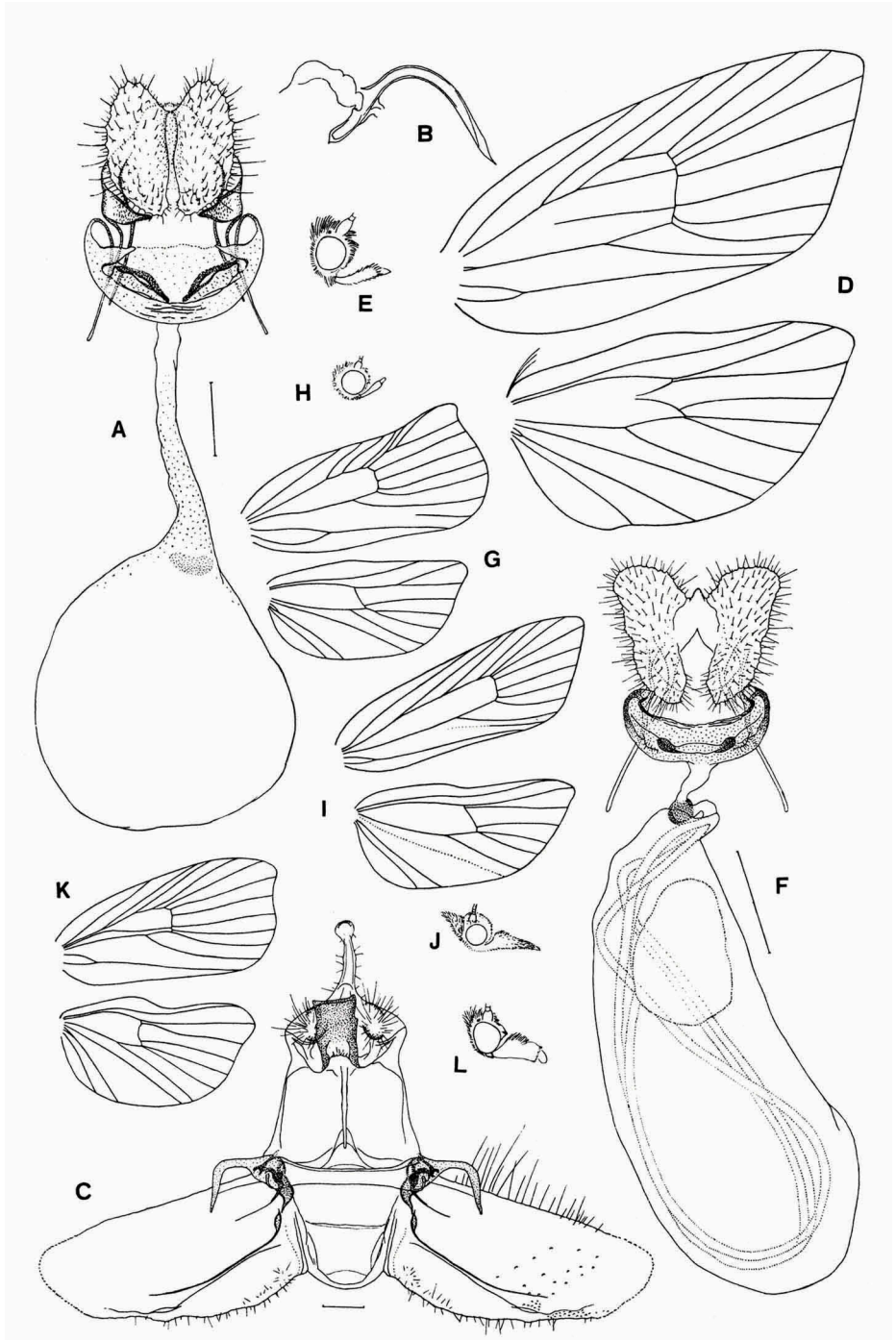

Fig. 14. A, *Terthreutis sphaerocosma* Meyr., genitalia ♀. B—E, *Eulia ministrana* Linn., B, aedoeagus; C, genitalia ♂; D, wing neuration ♀; E, head ♀; F—H, *Pandurista stictocrossa* Meyr., F, genitalia ♀; G, wing neuration; H, head. I—J, *Arotrophora arcuatalis* Meyr. ♀, I, wing neuration; J, head. K—L, *Taeniarchis periorma* Meyr. ♀, K, wing neuration; L, head.

Genital apparatus.

♂ (fig. 6 A). Tegumen strongly concave, almost semispheroid, saccus rounded, little developed. Valva broad, with costa and sacculus indefinite, long bristles along margin. Uncus (fig. 6 A, C) elongate, with curved and dilated top, two patches of hairs underneath. Socii drooping, rather long and narrow, not reaching the top of the gnathos; gnathos moderate with curved point. Transtilla peculiar, being a strong transverse pecten of dark coloured teeth. Anellus membranous, rather broad (fig. 6 B,D). Aedoeagus slender, acute, juxta short, ductus ejaculatorius very long, 10—11 × as long as the aedoeagus. Cornuti absent in the examined specimen (perhaps thrown off during the copulation). (The figured specimen in British Museum, genitalia slide No. 1167 B.M.).

♀ (fig. 7 J). Ovipositor lobes small, dilated apically, anapophyses short. Ostium simple, not armed, ductus bursae long, with one noose, with cestum only present in the medial part of the ductus, narrow, straight. Signum (fig. 7 K) a minute hook with thorns on the surface, without capitulum. (In the figured specimen two spermatophores are present in the bursae, but no traces of the thrown off cornuti of the male were to be found). (The figured specimen in British Museum, genitalia slide No. 1166 B. M.).

Distribution. Australia.

Remarks. A small genus of some 15 rather uniform species, being small and obscure insects, locally abundant where they occur. Meyrick regards this genus to be a probable derivation of *Epagoge* Hb. The genital characters confirm this opinion.

Economic importance. According to Meyrick the species fly in daytime and seem to be connected in some way with *Eucalyptus*. The larval stages, however, are not yet known.

Genus **Aeolostoma** Meyrick

Genotype: *Aeolostoma scutiferana* Meyrick (Australia).

Aeolostoma Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 102, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 11, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 7, 1929.

Head (fig. 5 D, E) roughly scaled, face with appressed scales, in male with an erect small crest between the antennae. Antennae ciliated in male, basal joint moderate, thickened. Palpi ascending, moderate; in male (fig. 5 D) basal joint thickly scaled, with projecting scales below, second joint elongate, spindle-shaped, narrow, rather smoothly covered with appressed scales, only below and at the apex slightly projecting; terminal joint indistinct, concealed in the scales of the second joint; in female (fig. 5 E)

with roughly projecting scales, second joint short, curved, its lower side concave, its apex porrected; dilated beyond middle with appressed scales above and beneath, terminal joint concealed, very short. Tongue moderate.

Thorax with a posterior crest, with appressed scales anteriorly. Patagia short. Legs rather strong, smooth, middle and hind tibia with long, appressed scales. Abdomen moderate.

Forewings (fig. 5 C) elongate, acute, about 2.4 × as long as broad, with an elongate, cylindrical costal fold in male, costa little curved at base, gently curved from beyond base to apex, apex acute, a little projecting, termen very oblique, somewhat convex above, broadly obliquely rounded beneath, dorsum rather straight. 1 with a short furca, 2 from beyond middle of cell, 3 from angle, 4 remote, little approximated to 5 at base, 5 and 6 parallel, 5 from about middle of transverse vein, 7 and 8 stalked, stalk long, close to 9; 10 from about $^4/_5$, 11 from middle of cell (12 omitted in figure).

Hindwings (fig. 5 C) rather narrow, elongate-semiovate, about 2 × as long as broad, costa a little projecting before middle, slightly sinuate posteriorly, apex acute, termen concave above, rounded beneath, dorsum obliquely rounded, not projecting. 2 from about $^2/_3$ of cell, 3 and 4 connate, from angle, 5 little approximated at base; 6 and 7 stalked, stalk very long, 8 into $^3/_4$ of costa.

Genital apparatus.

♂. I did not examine the male genitalia.

♀ (fig. 7 E). Ovipositor lobes of common shape, elongate. Ostium narrow, limen complicated, x-shaped, with a ring in middle and curved and sinuate rods at the sides, beginning of the ductus bursae supported by a Λ-shaped rim. Ductus bursae narrow, long, unarmed. Bursa moderate, ovoid, signum a membranous, little chitinised semicircular plate, with slight dentations along the lower margin. (Type and the figured specimen in British Museum, genitalia slide of the latter No. 1210 B.M.).

Distribution. Australia.

Remarks. Unfortunately I had no occasion to study the male genitalia so far. According to the reduced armature of the female I place the genus provisionally in the present subfamily. Contrary to Meyrick's description a distinct posterior thoracal crest is present in both sexes.

Economic importance. Larva unknown.

Genus **Eulia** Hübner

Genotype: *Phalaena Tortrix ministrana* Linné (North and Central Europe, Siberia, North America).

Eulia Hübner, Verz. bek. Schmett., p. 392, 1826; Fernald, Gen. Tortr. Typ., p. 16 &

58, 1908; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 269, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 38, 1913; Meyrick, Rev. Handb. Brit. Lep., p. 510, 1927; Pierce & Metcalfe, Genit. Brit. Tortr., p. 9, 1922; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 89—90, 1929.

Lophoderus Stephens, Ill. Brit. Ent. Haust., vol. 4, p. 143—144, 1834; Stephens, Cat. Brit. Ins., vol. 2, p. 184, 1829, genotype: *ministrana* Linné (non descr.).

Goboea Walker, List Lep. Het. Br. Mus., vol. 35, p. 1805, 1866, genotype: *copiosana* Walker.

Orthocomotis Dognin, Ann. Soc. Ent. Belg., vol. 49, p. 85, 1905, genotype: *olivata* Dognin.

Argyrothaenia Stephens, List Spec. Br. Mus., vol. 10, p. 67—68, 1852, genotype: *politana* Haworth (non descr.); Pierce & Metcalfe, Genit. Brit. Tortr., p. 1, 1922.

Mixogenes Zeller, Hor. Soc. Ent. Ross., vol. 13, p. 304, pl. 3, figg. 88 a—c, genotype: *penthinella* Zeller.

Sociphora Busck, Ins. Inscit. Menstr., vol. 8, p. 85, 1920, genotype: *magicana* Zeller (= *muscosana* Zeller).

Head (fig. 14 E) roughly scaled. Antennae ciliate in male, shortly ciliate in female, basal joint short, densely covered with scales. Palpi narrow, short in male, longer in female, porrected, somewhat dilated towards apex; basal joint short, second joint moderate, slightly curved, densely covered with appressed scales, which in female project a little towards apex above; terminal joint short, acute. Tongue well developed.

Thorax smooth anteriorly, with a large erect crest in both sexes posteriorly. Patagia moderate. Legs strong, rather smooth, except hind tibia, which has long, appressed hairs above and beneath.

Forewings (fig. 14 D) rather broad, elongate-ovate, about 2.3 × as long as broad, without costal fold in male, costa moderately arched from base to apex, oblique; apex rounded, termen rather oblique, straight, tornus rounded; dorsum gradually gently curved. On the upper surface the forewings are convex along a semicircular line, running along the transverse vein and vein 3. 1 with furca to $^1/_5$ of wing, 2 from $^4/_5$, 3—5 separate, 3 from angle, approximated to 4 at base; 5 remote, straight, 6—8 almost equidistant, 9 somewhat remote, 10 from before $^5/_6$, 11 from before $^1/_2$ of cell; parting vein vestigial, its anterior remainder from halfway between 10 and 11; the upper margin of cell oblique as far as the origin of 10, horizontal posteriorly.

Hindwings (fig. 14 D) elongate-ovate, as broad as forewings, about 1.9 × as long as broad. Costa gently curved, apex little acute, termen oblique and somewhat concave above, gradually rounded beneath, dorsum rounded, not projecting. 2 from beyond $^2/_3$, 3 and 4 connate from angle, 5 somewhat approximated at base, 6 and 7 shortly stalked, 8 slightly sinuate posteriorly.

Genital apparatus.

♂ (fig. 14 C). Tegumen elongate, pedunculi very broad. Vinculum arms

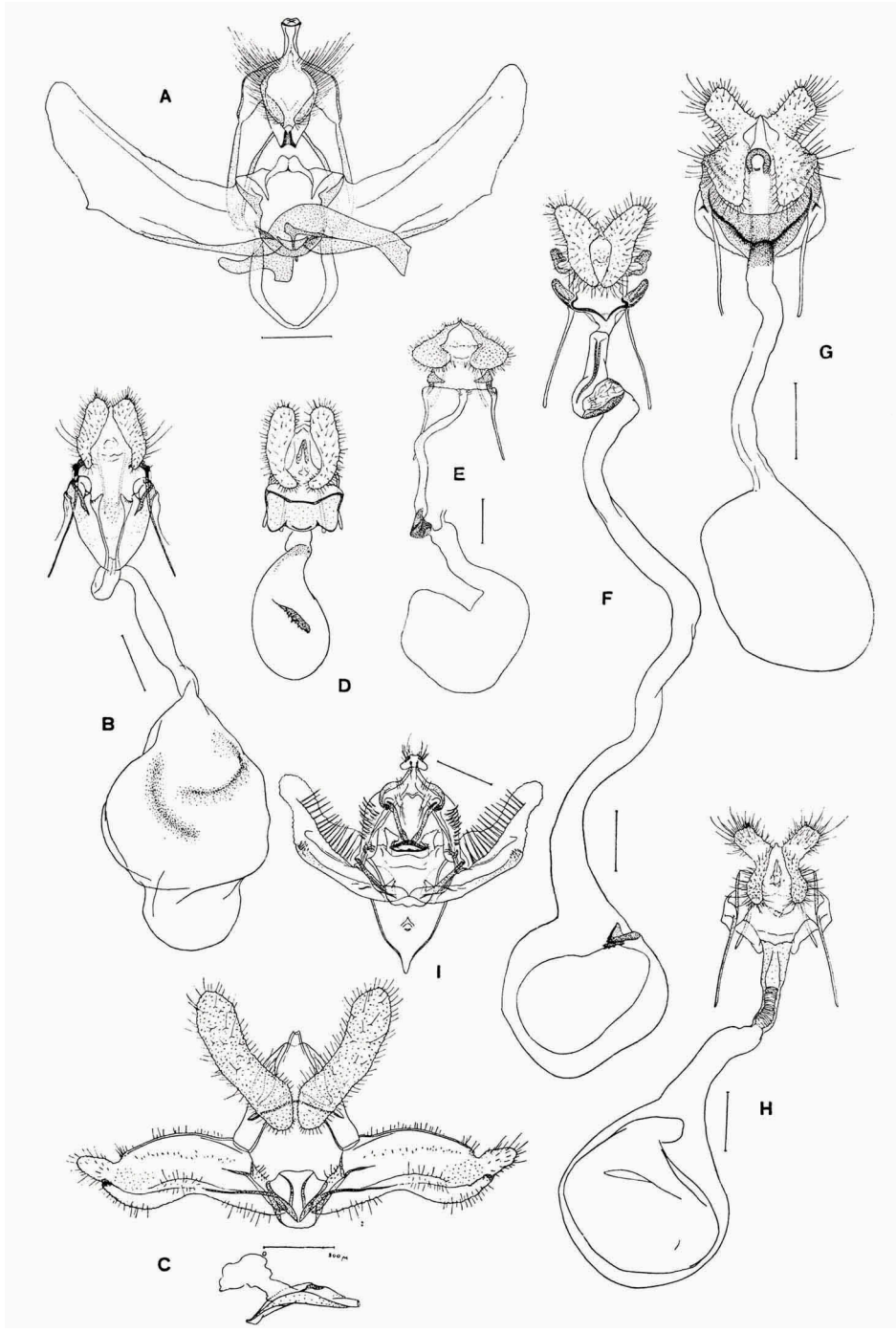

Fig. 15. A—B, *Drachmobola periastra* Meyr., A, genitalia ♂; B, genitalia ♀. C—D, *Argyrotoza bergmanniana* Hb., C, genitalia ♂; D, genitalia ♀. E, *Polemographis miltocosma* Meyr., genitalia ♀. F, *Callibryastis pachnota* Meyr., genitalia ♀. G, *Pternozyga haeretica* Meyr., genitalia ♀. H—I, *Protopterna chalybias* Meyr., H, genitalia ♀; I, genitalia ♂.

strong. Saccus small, triangular. Valva elongate-rounded, costa rather straight, sacculus short and broad, reaching to $^1/_2$ of valva. Transtilla broad, straight, with a curved, horn-like projection on each side. Uncus very narrow, with bristles at the edges, dilated at the top. Gnathos with narrow arms and curved, very strong point, being a quadrate plate. Socii moderate, elongate. Aedoeagus (fig. 14 B) strongly curved, acicular. (The figured specimen in my collection, genitalia slide No. 46 D).

♀ (fig. 9 F). Ovipositor lobes elongate, rather narrow, the lower ends curved inwards. Each anapophyse with two transverse projections above: one horizontal and one curved towards the ostium. Ostium rather narrow, ductus bursae short, unarmed, the inner wall of the bursa copulatrix covered at the lower end for $^3/_4$ with numerous short teeth (pannicular, Pierce). (The figured specimen in my collection, genitalia slide No. 164 D).

Distribution. The place of origin seems to be South- and North-America, where the genus is richly represented, but *Eulia* is also characteristic of the Hawaiian Islands; one species only is known from each Australia and New Zealand. According to Meyrick, however, (1913) they are "of marked American type, and probably derived directly thence". Another migration, perhaps from North America, has extended over the Paleartic region, to Siberia. I added the description of the genus, because two species are described from South West Asia and may be found also in our region.

Remarks. The genus is rather far remote from the other ones and stands apart, but seems to be somewhat related to *Cnephasia*.

Economic importance. Larvae live in rolled or spun leaves, seldom in seeds of various trees, shrubs and low plants.

Genus 20. **Protyphanthes** Meyrick

Genotype: *Protyphanthes hybristis* Meyrick (Java).

Protyphanthes Meyrick, Exot. Microl., vol. 4, p. 424, 1933.

Head (fig. 19 E) with thick, roughly appressed scales above, forming two lateral combs at the sides, bent towards middle; also bent between the antennae over the forehead; face rather smooth, with two little scale-tufts just below the basal joints of antennae. The latter are thickly short-haired; basal joint moderate. Palpi moderate, porrected, second joint thickly scaled with appressed scales, roughish beneath and at the apex, which is dilated with long, projecting scales above, terminal joint moderate, smooth, somewhat clavate and obtuse. Tongue moderate.

Thorax with appressed scales, patagia moderate. Legs strong, with appressed scales.

Forewings (fig. 19 F) elongate-rectangular, dilated posteriorly, about 2.5 × as long as broad, costa from base to apex gradually arched, apex broadly rounded, termen almost straight, vertical, tornus broadly rounded, dorsum almost straight posteriorly, curved at base. 1 with a furca to $^1/_6$ of wing, 2 from beyond middle of cell, 3 from a little before angle, very closely approximated to 4 (appearing connate), 5 closely approximated towards base, 6 remote, straight, 7 to apex (or just below apex), closely approximated to 8 towards base, 9 and 10 parallel at costa, diverging towards base, 10 from $^2/_3$, 11 from before middle of cell.

Hindwings (fig. 19 F) broad, semiovate, broader than forewings, about 2 × as long as broad, costa little curved, slightly convex posteriorly, apex curved and rounded, termen convex above, rounded and slightly projecting beneath. 2 from middle of cell, straight, 3 and 4 connate, from angle, 5 approximated towards base; 6 closely approximated to 7 towards base, 7 to apex, 8 slightly sinuate.

Genital apparatus.

♂. Unknown.

♀ (fig. 19 E). Ovipositor lobes very small, elongate, acute, curved basally. Postapophyses very long and narrow. 8th segment chitinised and considerably elongate, forming a peculiar, haired tube; ostium concealed behind a chitinised, haired, triangular lob. Ductus bursae broad, cup-shaped, chitinised above, ending in a dilated, verrucose plate, membranous and broad below. Bursa copulatrix large, with a slightly chitinised semicircular band, with minute thorns at the inner side, and a large bidentate signum. (Type in British Museum, genitalia slide No. 1153 B. M.).

Distribution. Java.

Remarks, Very peculiar and strange form, reminding of the Asiatic genus *Ergasia* Issiki et Stringer, which has an extensible ovipositor.

Economic importance: Bred from larvae, feeding on leaves of *Dillenia*.

Genus 21. **Antiphrastis** Meyrick

Genotype: *Antiphrastis galenopa* Meyrick (Tonkin).

Antiphrastis Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 713—714, 1929.

The genotype, which is very probably in the Paris Museum, is not known to me. It may probably be placed here. The following is Meyrick's description:

"**Antiphrastis** Meyr., n.g.

Antennae ♂ serrulate, simple. Palpi moderate, subascending, second joint

with appressed scales somewhat expanded towards apex, terminal joint very short. Thorax without crest. Forewings ♂ without costal fold, 3 from angle, 7 to termen, 8 and 9 stalked. Hindwings without cubital pecten; 3 and 4 connate, 5 approximated at base, 6 and 7 stalked.

Type: *galenopa* Meyrick.

A. galenopa Meyr., n. sp. ..... Forewings elongate-triangular, termen gently rounded, slightly oblique....."

Distribution. Tonkin.

Economic importance. Larva unknown.

IV. Subfamily CNEPHASIDII Pierce et Metcalfe

Cnephasidii Pierce et Metcalfe, Genit. Tortr., p. 9, 1922.

"Group C" + "Group D" (pro parte) Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 2, 22 & 47, 1913.

Cestum absent. Signum an elongate or rounded, scobinate or not scobinate band, sometimes bursa copulatrix pannicular, or signum absent. Ductus bursae mostly moderate, narrow. Uncus moderate or small, narrow, curved. Gnathos moderate or small, sometimes paired. Socii moderate or large, drooping. Valva elongate, sacculus sometimes with one thorn at its top, or with a pyramidal projection at base. Cristae sometimes developed.

The present subfamily is sparingly represented in our region, mostly by species of moderate size, sometimes with raised scale-tufts on the upper surface of forewings, without costal fold in male; veins 7 and 8 mostly separate. Signum is sometimes absent, but then the male genitalia show the characters of the subfamily.

Two genera possess a bilobed ovipositor (*Pternozyga* Meyr. and *Protopterna* Meyr., fig. 15), which is not known in the Palearctic Tortricidae. Perhaps this is the intermediate form between the common and the floricomous ovipositor.

Genus 22. **Rhomboceros** Meyrick

Genotype: *Rhomboceros nodicornis* Meyrick (New Guinea).

Rhomboceros Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 180, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 11, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 195, 1929.

Head (fig. 5 B) with rough scales, a brush of scales at the vertex between the antennae, face rather flattened. Antennae ciliated with basal joint moderate, bearing at the foreside a comb of thick scales; the basal $^1/_3$ of

flabellum flattened, of a rhomboidal shape, covered above with scales. Palpi ascending, rather long, basal joint small, second joint elongate, broadly dilated by dense, projecting scales above and beneath, its shape rounded-ovate; terminal joint short, acute, drooping, Tongue very short.

Thorax with appressed scales and a posterior crest. Legs strong, with roughly appressed narrow scales and strong spurs. Abdomen moderate.

Forewings (fig. 5 A) without costal fold in male, broad, about 2.3 × as long as broad, in male costa abruptly curved at base, oblique anteriorly, slightly sinuate before apex, apex somewhat rounded, projecting, termen sinuate, rounded and projecting beneath. The underside of $^1/_3$ of costa and of discal cell with appressed, rounded, dense scales, the remaining parts smoothly scaled. 1 with a furca to $^1/_4$, 2 from about $^2/_3$, 3 from angle, closely approximated to 4, 5 remote, straight; 6 far remote from 5, straight, 7 and 8 stalked, stalk shorter than free parts of 7 and 8, 7 to termen, 9 and 10 parallel, 10 from about $^2/_3$, 11 from beyond middle.

Hindwings (fig. 5 A) short, broader than forewings, about 1.8 × as long as broad, costa rather arched at base, projecting in a blunt angle at beyond $^1/_5$, gently curved posteriorly; apex rounded, termen slightly convex above, rounded beneath; along the basal half of costa extensile long hairs at the upper side and dense fringe at the underside. The discal cell at the underside scaled in the same way as the discal cell in forewings. 2 from about $^4/_5$, 3 and 4 shortly stalked, 5 approximated at base, 6 and 7 stalked, 8 approximated to cell along about $^1/_4$ of its length, strongly curved posteriorly to $^4/_5$ of costa (convex towards base of wing).

Genital apparatus.

♂ (fig. 7 B). Scopa present, a broad ventral brush. Tegumen narrow, erected, its lower ends very strong and long. Saccus moderate, rather strong, Valva elongate (in the figure turned upwards and showing too narrow). Costa simple, thickened, sacculus with a large, basal tooth of very dark and strong chitine, dentate at the edge. Uncus elongate, with a spoon-shaped top, haired underneath. Socii small, curved, narrow, projecting. Uncus narrow and long, Y-shaped, drooping, curved at the end. Anellus a dark ring, thickened in middle. Transtilla absent. Aedoeagus thick and short, with slightly dentate outer rim. Cornuti absent. (Holotype in British Museum, genitalia slide No. 1144 B.M.).

♀ (fig. 7 C). Ovipositor lobes broad, dilated at apex. Limen a broad band, with a thin, dentate plate at each side. Colliculum a short, chitinised tube. Ductus bursae indistinct. Bursa copulatrix very large, elongate-pear-shaped, pannicular, with chitinised plates at the lower half, densely covered with strong, curved thorns, at the upper half regularly covered with small thorns,

diminishing in size upwards. (Allotype in British Museum; paratype figured in this Museum, genitalia slide No. 1209 B.M.).

Distribution. New Guinea.

Remarks. An intermediate form between the foregoing and the present subfamily, the large uncus and the well developed gnathos being the characters of Cacoecidii; the large tooth at the base of the sacculus is, on the contrary, a typical character of some Cnephasidii.

Economic importance. Larva unknown.

Genus 23. **Lophoprora** Meyrick

Genotype: *Lophoprora cyanostacta* Meyrick (New Guinea).

Lophoprora Meyrick, Exot. Microl., vol. 3, p. 611, 1930.

According to Meyrick "palpi very long, porrected, with dense rough, projecting scales, diminishing to apex, terminal joint short, nearly concealed. Antennae simple" (Head in type-specimen broken off).

Thorax smooth, with a double posterior crest. Patagia elongate, Legs strong, with closely appressed scales.

Forewings (fig. 19 L) with tufts of scales on upper surface, about 2.5 × as long as broad, appearing much broader, because of the long apex. Costa strongly curved at base, convex in middle, rounded at $^3/_4$, apex narrow, sharp, projecting, termen very concave above, rounded beneath, dorsum slightly rounded. 1 with a moderate furca to $^1/_5$, 2 from $^2/_3$, 3 and 4 separate, 3 from angle, 5 remote, straight, parallel to 6, 7 and 8 separate, approximated along basal half, 7 to apex, 8 concave, 10 from $^2/_3$, 11 from before $^1/_2$ of cell, the latter curved at base, 12 oblique. Discal cell narrow at base, with two complete parting veins, upper one from between 11 and 10, to above 6, lower one from about $^1/_5$ of cell to 5.

Hindwings (fig. 19 L) of uncommon shape, very narrow, elongate, about 2.9 × as long as broad, costa broadly arched at base, convex beyond middle, apex subacute, somewhat curved, projecting, termen oblique, convex above, rounded and projecting in cell 3, convex in middle of wing, tornus rounded, projecting. Discal cell very short, to $^1/_3$ of wing. 2 from angle, 4—6 remote, equidistant, from the angular projection of cell, 4 remote from 2, 6 moderately approximated to 7. (Meyrick's description is not quite correct as he states that 7 in forewings is to costa and 2 approximated to 4 in hindwings).

Genital apparatus.

♂ (fig. 19 K). Tegumen short and broad, its basal rods elongate, ending in two projections at the sides of saccus. Saccus large, triangular.

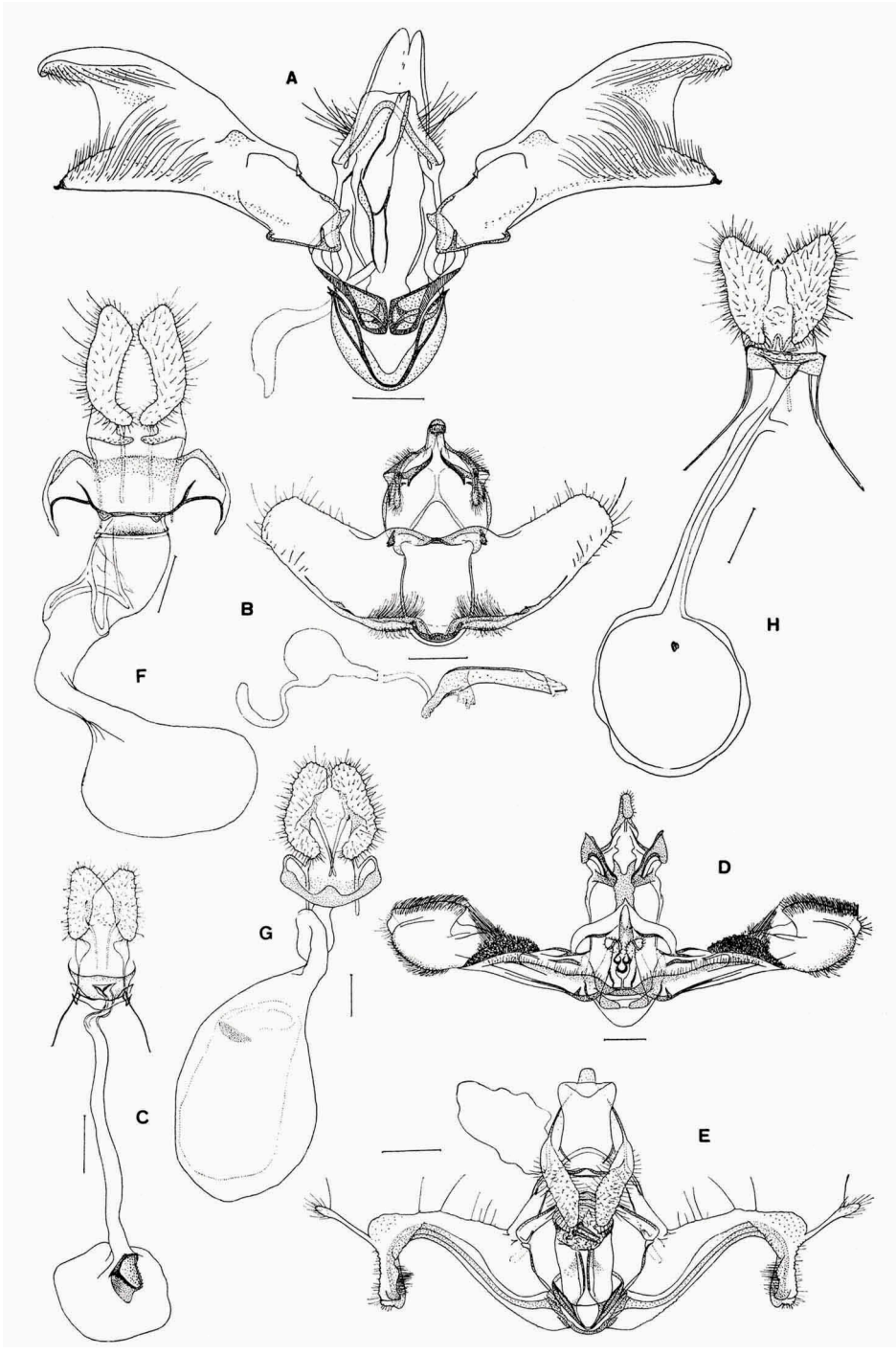

Fig. 16. A, *Polemograptis halysideta* Meyr., genitalia ♂. B—C, *Dicellitis nigritula* Meyr., B, genitalia ♂ ; C, genitalia ♀. D, *Schoenotenes synchorda* Meyr, genitalia ♂. E—F, *Spatalistis rhopica* Meyr., E, genitalia ♂ ; F, genitalia ♀. G, *Beryllophantis cochlias* Meyr., genitalia ♀. H, *Planostocha cumulata* Meyr., genitalia ♀.

Valva of a very complicated structure, deeply folded longitudinally and transversally and appearing double; its entire surface, also in the deep fold, densely scaled, probably with erectile scales; the apex of both folds rounded. The lower lobe is the sacculus, which has obtained this large size. At its base a curved dark rim. Uncus strong and narrow, a curved hook. Gnathos rather strong, with curved, concave top. Socii large, projecting, elongate-ovate. Transtilla broad, in the middle of a trapezoid shape, slightly projecting at the sides. Anellus indefinite. Aedoeagus straight, long, club-shaped, with a thorn under the top. Cornutus 1, of a peculiar shape, being a dentate rod. (Type in Britsh Museum, genitalia slide No. 277 B.M.).

♀ Unknown.

Distribution. British New Guinea.

Remarks. A very peculiar genus, standing apart. According to the shape of tegumen, gnathos and uncus doubtlessly related to the *Cnephasia*-group and not to *Spatalistis* Meyr., as Meyrick thought. The character of raised scales in forewings does not hold.

Economic importance. Larva unknown.

Genus 24. **Beryllophantis** Meyrick

Genotype: *Beryllophantis cochlias* Meyrick (New Guinea).

Beryllophantis Meyrick, Tr. Ent. Soc. Lond., vol. 87, p. 509, 1938.

Head roughly scaled above, face with appressed scales. Antennae smooth, basal joint elongate, little thickened. Palpi moderate, porrected, second joint somewhat curved, dilated towards apex, with rough, projecting scales above and beneath, terminal joint moderate, narrow. Tongue rather short.

Thorax with appressed scales; patagia moderate. Legs rather weak, smooth.

Forewings (fig. 13 T), broad, elongate-ovate, about 2.4 × as long as broad; costa moderately arched anteriorly, straight in middle, curved posteriorly, apex curved, acute, projecting, termen oblique, sinuate above, rounded beneath, dorsum rounded at $^1/_3$. 1 with a short furca, 2 from $^1/_3$ of cell, 3 and 4 stalked, from angle, 5 separate, straight; 7 and 8 separate, approximated at base, 7 to termen; 9—11 almost parallel, 10 from beyond $^3/_4$, 11 from $^2/_5$ of cell.

Hindwings (fig. 13 T) broad, semiovate, about 1.8 × as long as broad, costa little curved anteriorly, straight posteriorly, apex acute, projecting, termen sinuate above, strongly rounded and broadly projecting beneath, dorsum short. 2 from $^3/_5$, 3 and 4 stalked, from angle; 5 parallel, closely approximated towards base, 6 and 7 separate, approximated at base, 8 short.

Genital apparatus.

♂. Unknown. Spermatophore an elongate bag without collum.

♀ (fig. 16G). Ovipositor lobes elongate-ovate. Anapophyses short. Limen a broad curved band, dilated at the ends and in middle, chitinised. Ductus bursae moderate, coiled. Bursa copulatrix large, pear-shaped, signum a semiovate, little chitinised plate (spermatophore present). (Type in British Museum, genitalia slide No. 1232 B.M.).

Distribution. New Guinea.

Remarks. Allied to *Taeniarchis* Meyr. and *Argyrotoza* Steph.; a novel form regarding the peculiar position of vein 2 in forewings. In Meyrick's description the veins 6 and 7 of hindwings are erroneously recorded as being stalked.

Economic importance. Larva unknown.

Genus 25. **Pandurista** Meyrick

Genotype: *Pandurista stictocrossa* Meyrick (New Guinea).

Pandurista Meyrick, Exot. Microl., vol. 2, p. 166, 1918; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 160, 1929.

Head (fig. 14 H) with rough scales. Antennae shortly haired to $^1/_2$ of costa, basal joint thickened, elongate. Palpi ascending, curved, second joint long, little dilated towards apex, with closely appressed scales, rather smooth, terminal joint elongate, obtuse.

Thorax with large, appressed, rough scales, bearing a posterior crest. Patagia triangular, moderate. Legs strong.

Forewings (fig. 14 G) rather short, obtuse, dilated posteriorly, about 2 × as long as broad, costa strongly arched anteriorly, sinuate posteriorly, apex curved, acute, projecting, termen sinuate above, broadly rounded and projecting beneath, dorsum rather straight. 1 with a long furca, reaching to $^1/_3$ of wing, 2 from $^4/_5$, 3 from angle, 4 separate, somewhat approximated at base, 4—7+8 equidistant, 8 and 9 nearly approximated, out of 7; 10 and 11 parallel, rather short, 10 from $^4/_5$, 11 from about $^3/_5$ of the upper margin of cell, 12 straight.

Hindwings (fig. 14 G) broad, elongate, semiovate, about 2 × as long as broad, costa little curved at base, somewhat projecting at $^2/_5$, straight posteriorly, apex rounded-projecting, termen slightly sinuate above, rounded beneath, 2 from $^4/_5$ of cell, 3 and 4 shortly stalked, from angle, 5 approximated at base, 5 and 7 stalked, 8 gradually curved.

Genital apparatus.

♂. Unknown.

♀ (fig. 14 F). Ovipositor moderate, dilated apically, ostium surrounded by a thick and broad limen, forming a fold at the front, in which there are three chitinous thickenings; this fold has at the outer side two haired projections. Ductus bursae very short, bearing at the lower part a vesicular formation of very dark chitin (colliculum), bursa copulatrix very large, elongate, without signum. (Type in British Museum, genitalia slide No. 1146 B. M.).

In the bursa of the figured cotype-specimen (in British Museum, genitalia slide No. 1147 B. M.) a spermatophore of a very peculiar shape is visible, being a spheroid body of moderate size, with an enormous collum, which is folded three times in the bursa; therefore the spermatophore is more than three times as long as the bursa! The significance of this peculiarity is not clear.

Distribution. New Guinea.

Remarks. Superficially allied to *Cacoecia*. After Meyrick structurally nearest to *Peteliacma* Meyr., differing in absence of thoracic crest and close approximation of 8 and 9 at origin. A slight crest, however, is present in *Pandurista* too, but this is much smaller than in *Peteliacma*. Nothwithstanding this, I regard the present genus as only accidentally agreeing with *Peteliacma* from Madagascar, as this is an entirely different insect with narrow, elongate fore- and hindwings, being far remote from the *Cacoecia*-group. I had no occasion for studying the genitalia of *Peteliacma torrescens* Meyr. (the genotype).

Economic importance. Larva unknown.

Genus 26. **Terthreutis** Meyrick

Genotype: *Terthreutis sphaerocosma* Meyrick (Sikkim, Assam).

Terthreutis Meyrick, Exot. Microl., vol. 2, p. 170, 1918; Fletcher, Mem. Agr. Ind. Ent., vol. 11, 218, 1929.

Head (fig. 8 P) roughly scaled, face with appressed scales. Antennae to beyond $^1/_2$ of costa, shortly haired in ♀, basal joint thickened at base with smooth scales. Palpi moderate or long, ascending, slender, basal joint dilated with appressed scales at apex, second joint slender, a little curved, thin and rather smoothly scaled, terminal joint smooth, moderate, acute. Tongue moderate, narrow.

Thorax broad, very smooth, with a slight posterior crest, patagia moderate, with larger, elongate scales. Legs long, rather slender, hind tibia with long, appressed scales. Abdomen moderate.

Forewings (fig. 8 O) slightly varying in shape (elongate in the specimens of *T. sphaerocosma* Meyr. from Khasis, broader in the specimens from

Sikkim), about 2.5 × as long as broad, without costal fold in male, costa gradually, moderately rounded anteriorly, straight posteriorly, apex broadly rounded, termen straight, oblique, dorsum gradually rounded. 1 with a long furca reaching beyond $^1/_4$ of wing, 2 from beyond $^2/_3$ of cell, rather short, 3 from angle, sinuate, remote from 4, 4 approximated to 5 at base, 5 straight, curved upwards at base. 7 and 8 separate, 7 to apex. 9 and 10 approximated to each other towards costa, 11 from $^1/_2$ of cell, oblique. Parting vein present, from before the origin of 11 to the base of 5. Discal cell considerably dilated beyond half of its length.

Hindwings (fig. 8 O) as broad as forewings, about 1.7 × as long as broad, costa curved beyond middle, apex rounded, termen gradually rounded, dorsum rounded. 2 from $^3/_5$, 3 and 4 connate, from angle, 5 gradually curved, little approximated towards base; 6 and 7 stalked, 8 slightly sinuate.

Genital apparatus.

♂ (fig. 12 G). Tegumen very broad and short, spheroid, pedunculi very broad. Saccus small, semilunar. Valva narrow, elongate, curved, with rounded top; costa thickened; sacculus narrow, haired anteriorly. Transtilla W-shaped, with a strong rounded projection on each side. Uncus with a broad, but indistinct base and a very narrow and geniculate point. Gnathos peculiar, its arms strong, dilated laterally, its point drooping and sharp. Socii moderate, elongate, drooping. Anellus a membranous semi-rhomboidal plate. Aedoeagus narrow, little curved, cornuti absent. (Type in British Museum; paratype examined, genitalia slide No. 1217 B. M.).

♀ (fig. 14 A). Ovipositor lobes semiovate, broad. Ostium moderate, limen semicircular, broad with a transverse triangular projection on each side above and two chitinised folds below. Ductus bursae moderate, slightly verrucose in the lower half, bursa copulatrix large, spheroid, signum an ovate, semilunar thin plate. (Type in British Museum; paratype examined, genitalia slide No. 1180 B. M.).

Distribution. India (Sikkim, Assam, Bengal) and Formosa.

Remarks. A small and peculiar genus, superficially suggesting a Eucosmid. The opinion of Meyrick, that it might be allied to *Cnephasia* is sufficiently confirmed by the present study of the genital characters.

Economic importance. Larva unknown.

Genus 27. **Callibryastis** Meyrick

Genotype: *Callibryastis pachnota* Meyrick (India).

Callibryastis Meyrick, Exot. Microl., vol. 1, p. 14, 1912; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 51, pl. 4 fig. 46, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 37, 1929.

Head (fig. 11 G) roughly scaled, face with closely appressed scales. Antennae moderate, to $^2/_3$ of costa, basal joint short, thickened with scales towards apex, palpi short, ascending, narrow, second joint slightly curved, with short, appressed scales, somewhat roughish at the underside, terminal joint moderate, smooth, acute. Tongue moderate.

Thorax with a posterior crest, swollen, broad, smoothly covered with thin, closely appressed scales, and with a slight posterior crest. Patagia elongate. Legs strong. Abdomen rather long, with anal tuft in both sexes.

Forewings (fig. 11 F) rather broad, elongate, about 2.2 × as long as broad, dilated posteriorly. Costa abruptly strongly curved at base, forming a subtrapezoid projection at about $^1/_3$, bordered posteriorly with a scale-projection, costa gradually convex posteriorly, slightly rounded towards apex, apex rounded but distinct, termen little oblique, gradually rounded, tornus distinct, dorsum nearly straight. 1 with a short furca, convex posteriorly; parting vein to about $^1/_4$ of wing, 2 from $^2/_3$ of cell, sinuate, 3 from angle, 4 remote from 3, approximated to 5 towards base, 6 remote, closing cell between 5 and 6 bent inwards; 7 and 8 stalked, 7 to termen just below apex; 9—11 short, equidistant, 10 from beyond $^3/_4$, 11 from about $^1/_2$ of cell.

Hindwings (fig. 11 F) rather broad, semi-ovate, 2 × as long as broad, costa little curved at base, distinctly convex posteriorly, apex slightly curved, very acute, termen almost straight above, broadly rounded beneath. 1c with a short furca, considerably sinuate, 2 from $^2/_3$, 3—5 equidistant and approximated at base, 3 from angle, 6 and 7 stalked, 7 to costa, 8 rather straight.

Genital apparatus.

♂. Unknown. Spermatophore without collum.

♀ (fig. 15 F). Ovipositor lobes moderate, of usual shape, dilated apically, a thickening of the upper rim of the 8th segment on each side of ovipositor. Apophyses narrow, rather long. Ostium moderate, with elongate-ovate thickenings at the sides and an indentation in the middle of the narrow limen. Ductus bursae with the upper part strongly chitinised, forming an elongate tube, with a split at the fore-side, ending in a curved, dilated plate; ductus below this plate narrow; cestum a moderate folded plate with dentations at the underside. (Type in British Museum, genitalia slide No. 1158 B.M.).

Distribution. The only known species is Indian.

Remarks. A peculiar form, correlated with the subfamily Cacoecidii, but with a stellate signum.

Economic importance: Larva unknown.

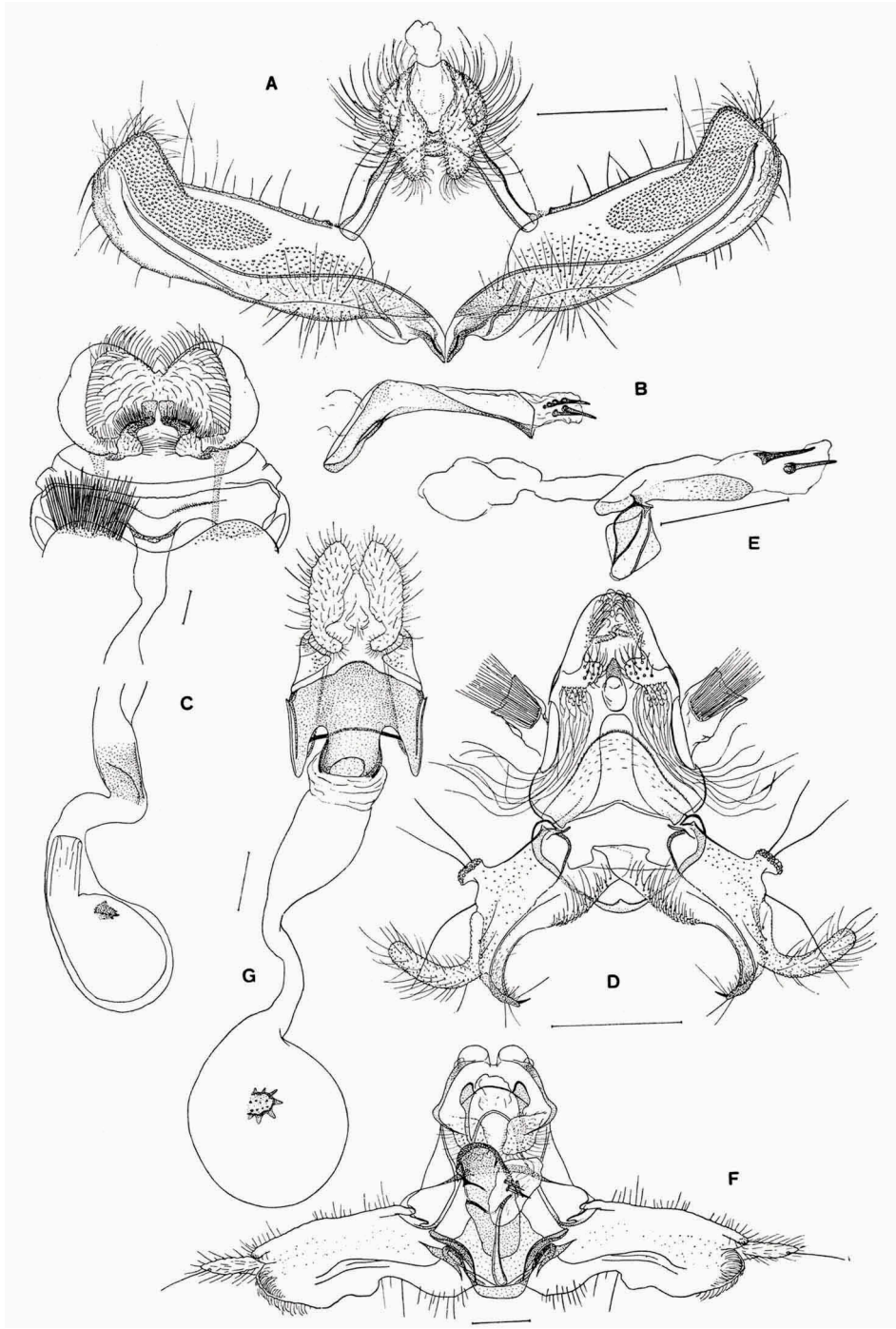

Fig. 17. A—C, *Tortrix viridana* Linn., A, genitalia ♂; B, aedoeagus; C, genitalia ♀. D—E, *Eboda smaragdinana* Wlk., D, genitalia ♂; E, aedoeagus. F—G, *Peronea cristana* Fabr., F, genitalia ♂; G, genitalia ♀.

Genus 28. **Cnephasia** Curtis

Genotype: *Cnephasia pasivana* Hübner (Europe).

Cnephasia Curtis, Brit. Ent., vol. 3, p. 100, 1826; Fernald, Gen. Tortr. Typ., p. 4 & 53, 1908; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 271, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 44, 1913; Pierce & Metcalfe, Genit. Tortr., p. 10, pl. 4, 1922; Meyrick, Rev. Handb. Brit. Lep., p. 512, 1927; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 51, 1929.

Ablabia Hübner, Verz. bek. Schmett., p. 383, 1826, genotype: *osseana* Scopoli.

Nephodesme Hübner, Verz. bek. Schmett., p. 380, 1826, genotype: *penziana* Thunberg.

Sciaphila Treitschke, Schmett. Eur., vol. 7, p. 233, 1829 (non descr.); Treitschke, Schmett. Eur., vol. 8, p. 168, 1830, genotype: *wahlbohmiana* Linné.

Argyroptera Duponchel, Ann. Soc. Ent. Fr., vol. 3, p. 448, 1834; genotype: *argentana* Clemens (= *gouana* Linné).

Trachysmia Guenée, Ann. Soc. Ent. Fr. (2), vol. 3, p. 164, 1845, genotype: *rigana* Sodoffsky.

Sphaleroptera Guenée, Ann. Soc. Ent. Fr., (2), vol. 3, p. 167, 1845 (non descr.); Stainton, Manual, vol. 2, p. 256, 1859, genotype: *ictericana* Haworth (= *longana* Haworth).

Dipterina Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 523, 1881, genotype: *nubiferana* Meyrick.

Head (fig. 8 R) roughly scaled. Antennae in male moderately or strongly ciliated, basal joint short, little thickened, concealed by the scales on vertex; palpi short, porrected, basal joint moderate, with short, projecting scales beneath, second joint triangular, broadly dilated towards apex by projecting scales above, terminal joint moderate, drooping, obtuse. Tongue well developed.

Thorax with appressed scales and sometimes with a posterior crest. Patagia short. Legs strong, smooth, hind tibia with appressed long hairs above. Abdomen moderate.

Forewings (fig. 8 Q) elongate, about 2.6 × as long as broad, without costal fold in male, sometimes with small, raised scale-tufts on the upper surface, costa moderately arched anteriorly, slightly gradually arched posteriorly, apex slightly rounded, termen straight, very oblique, dorsum rather straight posteriorly. 1 with a short furca, 2 from before $^3/_5$, 3—5 separate, almost equidistant (4 a little nearer to 3 than to 5), little curved, 3 from angle; 6 somewhat remote, 6—8 equidistant, straight, 7 to apex or termen, 8—11 almost parallel, 10 from before $^4/_5$, 11 from $^1/_2$ of cell. Discal cell a little narrowed posteriorly beyond the origin of 10, a remainder of a parting vein is present below the origin of 6.

Hindwings (fig. 8 Q) broader than forewings, elongate-trapezoid, about 2.1 × as long as broad, costa slightly sinuate beyond middle, apex acute, projecting, termen sinuate, rounded beneath, dorsum projecting in cell 1 a. 2 rather short, from $^3/_4$ of cell, 3—4 variably arranged, shortly stalked (*C.*

pasivana Hb.), connate or even separate (*C. nubilana* Hb. ♀), from angle, 5 approximated towards base, 6 and 7 shortly stalked, 8 sinuate.

Genital apparatus.

♂ (fig. 12 D). Tegumen elongate, pedunculi narrow, haired at the sides, saccus small, rounded, valva elongate, rather acute, costa with a narrow thickening at base, sacculus well defined, elongate, rounded, haired at the lower side, somewhat loosened from the valva, its top curved, forming a strong hook. Transtilla usually a narrow, curved rod (absent in the genotype). Uncus small, ending in a narrow and sharp hook, scobinate at the upper surface. Gnathos arms rather strong, a dilated plate, which ends in a sharp, upturned point. Anellus a small rounded plate, indent above. Cristae present, being two elongate, ventro-lateral, haired lobes, supporting the aedoeagus. The latter is elongate, sharply pointed and little curved. Cornuti absent. (The figured specimen in Amsterdam Museum, genitalia slide No. 15 D).

♀. Ovipositor lobes large, fleshy, densely covered with long hairs, their lower ends converted into chitinised plates, bearing strong bristles of different length and of peculiar shape: every bristle ends in a curved, spoon-shaped dilatation (floricomous ovipositor, Pierce). Apophyses short, strong. Ostium large, supported by chitinised folds, which bear important specific characters. Ductus bursae short, narrow, ending in a large, pear-shaped bursa copulatrix. Signum an elongate, scobinate plate (fig. 12 F).

Note. The figured genitalia (fig. 12 E) are not those of the genotype, but of a related species, *C. nubilana* Hb., which shows only specific differences with *C. pasivana* Hb.; the signum of the latter is represented in fig 12 F. (The studied specimen in Amsterdam Museum, genitalia slide No. 165 D).

Distribution. Cosmopolitan. Up to now two Indian species are known, and one Papuan species will be described in due course, as a connecting link between the Palearctic and Australian faunas, in both of which the genus is represented. The place of origin seems to be North America, as the species occurring there, according to Meyrick, have primitive characters. One species is known from the Hawaiian Islands. Therefore it may be possible that the genus has reached Australia and New Zealand from America along this way.

Remarks. Correlated with *Tortrix,* being the connecting link between Cacoecidii and Peronidii.

Economic importance. Larvae live in rolled and spun leaves, especially on different low plants.

Genus 29. **Arotrophora** Meyrick

Genotype: *Arotrophora arcuatalis* Meyrick (Australia).

Arotrophora Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 528, 1881; Fernald, Gen. Tortr. Typ., p. 43 & 61, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 37, 1913.

Head (fig. 14 J) with rough scales, palpi long or very long, porrected, second joint a little curved, flattened laterally, at base very broad and roughish above, gradually narrowed towards apex, with elongate, roughish, appressed scales, terminal joint rather short. Antennae pectinate-biciliate in male, short-haired in female, reaching to beyond half of costa, basal joint elongate, little thickened, smooth-scaled.

Thorax smooth, sometimes with a crest. Legs strong, rather smooth, tibiae with dense appressed scales.

Forewings (fig. 14 I) narrow, elongate, 3.2 × as long as broad, costa without fold in male, moderately arched at base, straight posteriorly, somewhat rounded towards apex. Apex rather acute, termen straight, little oblique, tornus shortly rounded, dorsum sinuate. 1 very long to before tornus, with a short furca; 2 from about $^2/_3$, 3 from angle, little curved, 4 approximated at base, 5 straight, little approximated at base to 4, 6 straight, remote, 7 to termen, 7 and 8 straight, approximated at base, 9 and 10 almost parallel, 10 from about $^2/_3$, 11 from about $^1/_3$ of the upper margin of cell.

Hindwings (fig. 14 I) moderate, about 2 × as long as broad, broader than forewings, with costa shortly rounded at base, straight anteriorly, sinuate beyond middle, apex acute, projecting, termen scarcely sinuate above, gradually rounded beneath, dorsum gradually rounded. 2 from $^2/_3$ of cell, 3—4 connate, from angle, 5 closely approximated, 6—7 separate, closely approximated at base.

Genital apparatus.

♂ (fig. 12H). Scopa: a dorsal tuft on 7th segment. Tegumen broad, semi-spheroid, saccus small, rounded. Valva elongate, slightly curved, narrowed towards apex, costa projected at base, with a thickened, transverse bar. Sacculus narrow, with a long, chitinous, longitudinal rod. Uncus a long, strong and narrow hook. Gnathos large, but slender, with very long arms, broad and curved above, slender and sinuate beneath, ending in a little hook. Socii very long, narrow, drooping. Tegumen shows centrally a strongly chitinised body, extended sidewards and connected with the gnathos at base. Anellus strong, a double V-shaped plate. T-shaped thickenings at the base of valva. Transtilla membranous and hyalin, peculiar: with a narrow median part and with lateral thickenings, which are scobinate on the upper

surface. Aedoeagus (fig. 12 I) curved, with a strong, sharp point. Cornuti numerous short and thin spines. (The figured specimen in British Museum, genitalia slide No. 1188 B.M.).

♀ (fig. 12 J). Ovipositor lobes elongate, slender, with a longitudinal rim on the lower half, haired only along the outer margin, the whole further surface covered with very short bristles; apophyses long; ostium very broad, simple; limen broad, not chitinised in middle. Ductus bursae very short, simple; bursa copulatrix pear-shaped. Signum (fig. 12 K) a scobinate, semispheroid body. (The figured specimen in British Museum, genitalia slide No. 1189 B.M.).

Distribution. Especially Australian. One single species, *A. crustata* Meyr., is Indian.

Remarks. According to Meyrick the genus is correlated with early forms of *Tortrix*.

Economic importance. Larva feeds in flower-heads or in a silken tube between leaves. Its foodplants are Proteaceae, especially *Banksia*. This seems to be a characteristic feature of the genus.

Genus 30. **Polemograptis** Meyrick

Genotype: *Polemograptis miltocosma* Meyrick (Borneo).

Polemograptis Meyrick, Tr. Ent. Soc. Lond., p. 432, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 49—50, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 181, 1929.

Head (fig. 13 B) roughly scaled and somewhat tufted. Antennae moderate, to beyond $^1/_2$ of forewings, smoothly scaled, basal joint moderate. Palpi short, porrected, basal joint small, second joint narrow and smooth at base, broadly dilated towards apex, with projecting scales especially beneath, terminal joint rather short and thick, somewhat curved, porrected. Tongue rather short. (In *P. halysideta* Meyr. the palpi are a little narrower than in *miltocosma* Meyr.).

Thorax without crest, thorax and patagia smoothly scaled, the latter are broad and concave. Legs of moderate length, smoothly scaled.

Forewings (fig. 13 A) about 2.5 × as long as broad, elongate-truncate, costa moderately curved from base to apex, apex rounded but distinct, termen straight, nearly vertical, tornus indistinct, rather oblique, dorsum angularly projecting at about $^1/_5$ of wing. 1 straight, approximated to cell, with a short furca, 2 curved, from beyond half of cell, lower margin of cell between 2 and angle curved inwards, 3 from angle, considerably sinuate, 4 closely approximated at base, 5 remote, 5—7 equidistant and rather straight, 7 separate to termen, 8—11 rather parallel and nearly equidistant,

every following vein more sinuate than the preceding, 11 from $^1/_2$ of cell.

Hindwings (fig. 13 A) rather short, narrower than forewings (damaged, therefore only superficially studied), about 2.3 × as long as broad, costa gently curved from base to apex, apex very acute, considerably projecting, termen scarcely sinuate above, very oblique, rounded beneath. 2 from about $^3/_4$, 3 and 4 shortly stalked (sometimes connate?) from angle, 5 absent in *P. miltocosma,* present in four other species [1]); 6 and 7 stalked, 8 gradually curved.

Genital apparatus.

♂. Unknown.

♀ (fig. 15 E). Ovipositor lobes peculiar, flattened, with a dilated base and narrow top; two tooth-like projections between them. Lobes of 9th segment verrucate. The fork of the anapophyses dilated, strong; ostium broad, simple. Ductus rather short, with a folded plate at the lower end (the remainder of the cestum?). Bursa large, curved; a narrow and long neck between it and the ductus. Seminal duct beginning at the upper part of this neck, below the cestum. (Type in the British Museum, genitalia slide No. 276 B.M.).

As the male of this species was unknown, I have studied the male genitalia of *Polemographis halysideta* Meyr., from Christmas Id., which show considerable peculiarities. The systematic place of this species is uncertain. I wonder whether it is congeneric with *miltocosma* Meyr.

Genital apparatus of *Polemographis halysideta* Meyr.

♂ (fig. 16 A). Tegumen a curved rod, forming a broad orifice, its lateral parts narrow. Saccus very strong, thickened, with a dark, projecting outer rim. Anus a chitinised tube, deeply indent at the top. Valva elongate, considerably dilated towards top, costa unarmed, ending in a blunt projecting arm, sacculus also unarmed at base, projecting and pointed at apex with a sharp, curved hook. At the base of the sacculus a transverse rib. Uncus appears to be absent. Gnathos below anus, an entire, angularly bent rod. Anellus very strong and broad, of dark chitin. Aedoeagus rather short, geniculate. (Type in British Museum, genitalia slide No. 286 B.M.).

Distribution. A small genus of wide distribution, two species being African, one East-Indian and one from Christmas Island.

Remarks. Perhaps the genus is heterogenous, being a combination of a few distinct genera; at present this question must remain unsolved.

Economic importance. Larva unknown.

---

1) This information I owe to the kindness of Mr. H. Stringer, British Museum (Natural History).

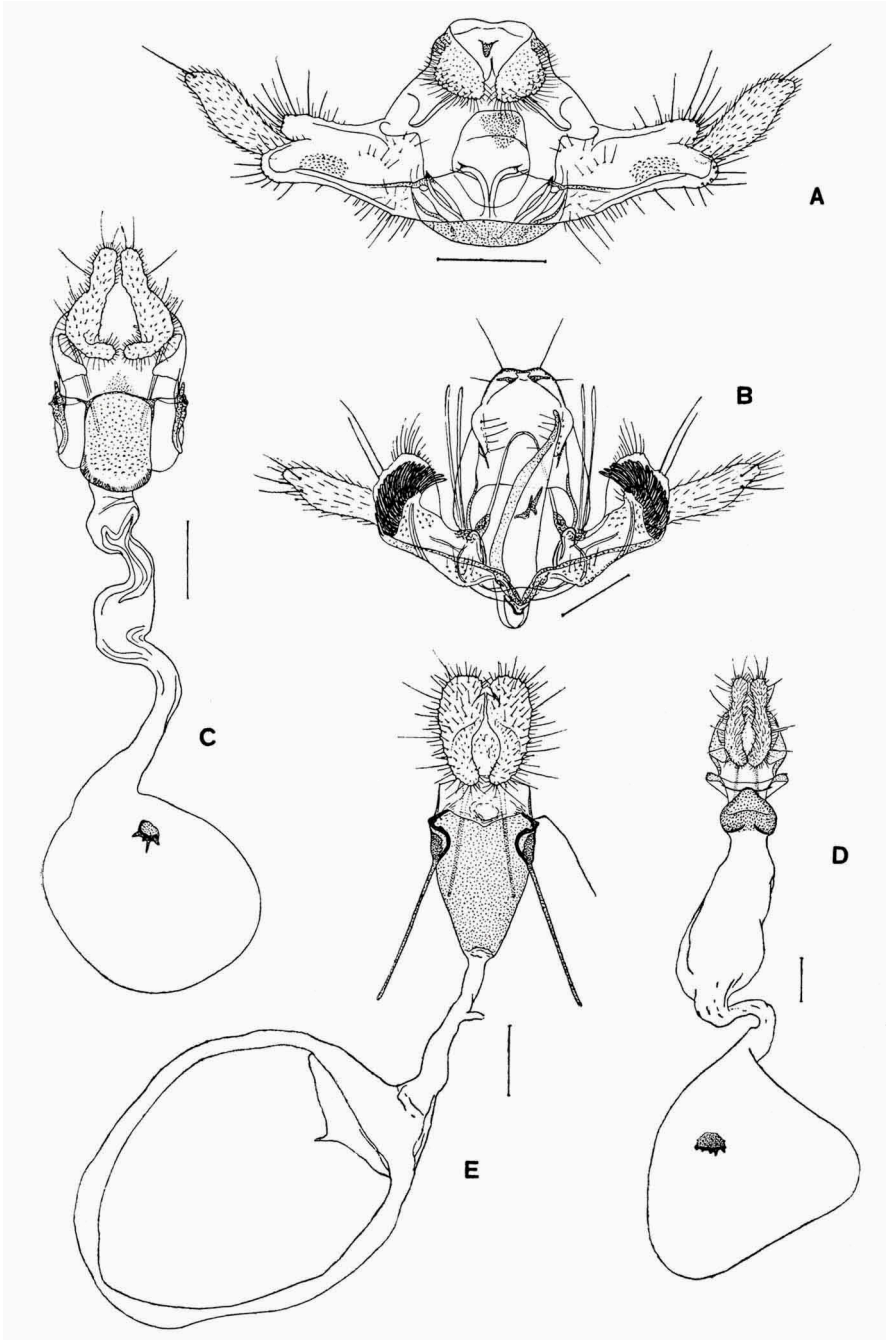

Fig. 18. A, *Tymbarcha cerinopa* Meyr., genitalia ♂. B—C, *Paratorna dorcas* Meyr., B, genitalia ♂ ; C, genitalia ♀. D, *Eboda smaragdinana* Wlk., genitalia ♀. E, *Antigraptis hemicrates* Meyr., genitalia ♀.

Genus 31. **Drachmobola** Meyrick

Genotype: *Drachmobola periastra* Meyrick (India).

Drachmobola Meyrick, J. Bomb. N. H. Soc., vol. 17, p. 978, 1907; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 285, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 53—54, 1913.

Head (fig. 11 D, C) very roughly scaled, with thick crests of scales at the vertex, face with two small projecting scale-brushes above, smooth below. Antennae thin, shortly ciliated in male, basal joint moderate, strongly thickened by dense scales, which project angularly at the front-side of its top. Palpi moderate, porrected, in female (fig. 11 C) basal joint short, second joint smooth above, with separate groups of long, projecting scales beneath, terminal joint rather long, clavate, obtuse; in male (fig. 11 D) shorter, second joint little dilated towards apex, with appressed scales, terminal joint moderate, acute. Tongue very short, vestigial.

Thorax with appressed scales and an indication of a posterior crest. Patagia narrow. Legs strong, smooth. Abdomen moderate.

Forewings (fig. 11 E) with raised scale-tufts and patches of shining, metallic scales, broad, truncate, about 2.2 × as long as broad, costa without fold in male, strongly arched at base, straight anteriorly, projecting at $^2/_3$, rather straight before apex, apex acute, projecting, termen strongly sinuate above, rounded and projecting beneath, dorsum concave, curved at base. 1 with a short furca, 2 from $^2/_3$, 3—5 equidistant, closely approximated at base, 3 from angle, 8 and 9 out of 7, 7 to termen, 10 from $^4/_5$, 11 from middle of cell.

Hindwings (fig. 11 E) with metallic markings on tornus, elongate-semiovate, about 1.8 × as long as broad, costa concave in middle, apex acute, oblique, slightly projecting, termen concave above, broadly rounded beneath. 2 from $^3/_5$, 3 separate, from angle, 4 closely approximated at base, 5 remote, 6 and 7 stalked, 7 to apex, 8 sinuate, out of $^1/_2$ of upper margin of cell.

Genital apparatus.

♂ (fig. 15 A). Tegumen elongate, pedunculi narrowed below, saccus large, erected. Valva very narrow and long, curved, costa thickened, sacculus short and narrow. Transtilla with two knobs in middle, a triangular dilatation at each side. Uncus narrow, dilated at the top, gnathos moderate, with a strong top, socii rather long, narrow, curved, covered with long bristles. Anellus small, semilunar. Aedoeagus geniculate, with bilobed base, the lower edge of the orifice pointed. (Type in British Museum, genitalia slide No. 271 B.M.).

♀ (fig. 15 B). Ovipositor lobes elongate, dilated apically, limen a broad

conoid band, deeply indent in middle, with two triangular projections at each side above. Ductus bursae rather long, coiled, bursa copulatrix large, pear-shaped, with a semispheroid appendix at the bottom, signum a little chitinised semilunar band; another such band or fold opposite, less chitinised. (Type and the figured paratype in British Museum, genitalia slide No. 1219 B.M.).

Distribution: Indian. According to Meyrick, *Tortrix insignitana* Möschler, from the West Indies, is congeneric.

Remarks. According to the male genitalia a Cnephasiid, superficially remembering *Spatalistis,* but in fact remote from it. The paired signum is probably a secondary character.

Economic importance. Larva unknown.

Genus 32. **Pternozyga** Meyrick

Genotype: *Pternozyga haeretica* Meyrick (India).

Pternozyga Meyrick, J. Bomb. N. H. Soc., vol. 18, p. 621, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 53, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 91, 1929.

Head (fig. 11 O) roughly scaled, face projecting. Antennae smoothly haired, basal joint a little thickened with scales at the apex. Palpi very long, porrected, second joint roughly scaled with projecting scales above and beneath, elongate, dilated before its middle, somewhat narrowed towards apex, terminal joint moderate, clavate, its top rounded. Tongue short.

Thorax with a crest, smooth, covered with thin hair-shaped scales; patagia moderate. Legs strong, smoothly scaled. Abdomen moderate.

Forewings (fig. 11 N) broad, about 2.1 × as long as broad, with a dorsal, projecting scale-tuft just beyond middle. Costa moderately arched at base, gradually curved in middle, considerably arched posteriorly, apex curved, acute, projecting, termen strongly sinuate above, rounded and projecting beneath, dorsum rather straight. 1 with a moderate furca, 2 from before $^2/_3$ of cell, considerably sinuate, almost parallel with 3; 3 from angle, 3—5 almost equidistant, separate, 3 and 4 approximated before base; 7 and 8 stalked, 7 to termen; 9 near to 8, closely approximated to the stalk, from upper angle of cell, 10 from $^5/_6$, 11 from $^1/_2$ of upper margin of cell, the last vein closely approximated to cell towards base; closing vein curved, parting vein distinct, strongly curved, from $^1/_3$ of upper margin of cell into the origin of vein 4.

Hindwings (fig. 11 N) narrower than forewings, elongate-semiovate, about 2 × as long as broad, costa little arched, apex rounded, scarcely projecting, termen slightly concave above, broadly rounded beneath. 2 from

beyond middle of cell, 3 and 4 connate, from angle, 5 remote, slightly approximated towards base, closing vein oblique. 7 and 8 stalked, 8 to termen, slightly undulate.

Genital apparatus.

♂. Unknown.

♀ (fig. 15 G). Ovipositor lobes thickly haired, of a peculiar shape, with rectangularly projecting upper lobe and semiovate under lobe, a constriction between both lobes in the middle. Ostium strongly chitinised, its wall rough, at the sides with a thickened rim. Ductus bursae and bursa copulatrix moderate, unarmed. (Type in British Museum, genitalia slide No. 1151 B.M.).

Distribution. India.

Remarks. Closely related to *Protopterna*.

Economic importance. Larva unknown.

Genus 33. **Protopterna** Meyrick

Genotype: *Protopterna chalybias* Meyrick (India).

Protopterna Meyrick, J. Bomb. Nat. Hist. Soc., vol. 18, p. 621, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 53, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 189, 1929.

Head (fig. 11 M) and face roughly scaled, face projecting in middle. Antennae to $^1/_2$ of wing, thick, in both sexes ciliate at the front; flabellum scobinate by angularly projecting hind margins of the joints, basal joint shortly thickened. Palpi rather long, porrected, basal joint short, narrow, second joint with narrow base, dilated beyond middle, in female elongate, with appressed scales above, in male (fig. 11 M) triangular, with projecting scales above; terminal joint moderate, obtuse.

Thorax very broad, smoothly covered with thin appressed scales, with an elongate, not erect crest posteriorly. Patagia short. Legs strong, smooth. Abdomen moderate.

Forewings (fig. 11 L) broad, with a scale-projection beyond middle of dorsum, less distinct in female, without costal fold, about 2.1 × as long as broad. Costa moderately arched from base to apex, apex rounded, termen obliquely rounded, dorsum little curved. 1 with a short furca, 2 from $^2/_3$ of cell, 5 almost equidistant, 3 and 4 from a posterior projection of cell (3 from angle), 5—7 equidistant, almost parallel, 7 and 8 separate, 7 to termen. 9 from near 8, 10 from $^3/_4$, 11 (in figure omitted) from $^1/_3$ of cell.

Hindwings (fig. 11 L) elongate-ovate, about 1.8 × as long as broad, costa projecting before middle, sinuate posteriorly, apex rounded, termen slightly sinuate above, broadly rounded beneath, dorsum rounded, little projecting,

2 straight, from $^2/_3$ of cell, 3 and 4 shortly stalked, from angle, 5 remote, 6 and 7 remote, 7 to apex, 8 long, sinuate.

Genital apparatus.

♂ (fig. 15 I). Tegumen broad and short, pedunculi moderate, with strong spines at the outer side. Saccus large, erected, with a narrow point. Valva elongate, with projecting top, a longitudinal row of strong spines in disc; sacculus distinct, reaching to $^1/_2$ of valva, with scobinations at the top. Transtilla membranous, with a mushroom-shaped projection at each side, chitinised and dentate in middle. Uncus narrow, with curved bristles, dilated at the top. Gnathos strong with broadly dilated and curved point and narrow arms. Socii small, elongate, haired at the top. Anellus small. Aedoeagus (not figured) very long, narrow, dilated beyond base, cornuti absent. Spermatophore (fig. 15 H) with short collum. (Paratype figured in British Museum, genitalia slide No. 1222 B.M.).

♀ (fig. 15 H). Ovipositor lobes with quadrate dilated and projected upper lobes elongate, rounded, both thickly haired with long hairs along the outer edge. Ostium rather broad, colliculum a funnel with thick wall and with ringed structures below. Ductus bursae short, bursa copulatrix spheroid, without signum (in figured specimen a spermatophore is present). (Paratype figured in British Museum, genitalia slide No. 1223 B.M.).

Distribution. India, Java.

Remarks. Correlated with *Drachmobola* Meyr.

Economic importance. Larva unknown.

Genus 34. **Dicellitis** Meyrick

Genotype: *Dicellitis nigritula* Meyrick (India).

Dicellitis, Meyrick, J. Bomb. Nat. Hist. Soc., vol. 18, p. 616, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 52, 1913.

Head (fig. 11 S) with rough scales, palpi porrected, short, second joint elongate, dilated towards apex by rough scales above and beneath, terminal joint short, obtuse. Antennae to $^1/_2$ of costa, shortly haired, simple in both sexes; basal joint elongate, little thickened, rather smooth.

Thorax with a posterior scale-crest, patagia broad. Legs strong, with long spurs, in every pair inner twice as long, but much thinner than the outer spur. Abdomen with a small anal tuft in male.

Forewings (fig. 11 R) with tufts of raised scales, broad and short, about 2.3 × as long as broad, costa moderately arched at base, in male without costal fold, gradually curved posteriorly, apex rather acute, a little projecting, termen scarcely sinuate, nearly vertical, tornus broadly rounded, dorsum gradually rounded. 1 with a short furca, 2 from about $^2/_3$ of the

lower margin of discal cell, 3 and 4 stalked from angle, 5 straight, close to the stalk of 3 and 4, 6 straight, remote, 8 from about $^3/_5$, 9 from about $^1/_5$ of 7, 7 to termen, 9 and 10 a little curved, from $^4/_5$ and from before $^3/_5$ of the upper margin of discal cell.

Hindwings (fig. 11 R) elongate, narrower than forewings, costa rounded anteriorly, slightly sinuate posteriorly, apex rounded, projecting, termen somewhat sinuate above, broadly rounded beneath, dorsum little rounded. 2 from before $^2/_3$ of the lower margin of discal cell, 3 and 4 stalked, from angle, stalk short; 5 approximated at base, 6 and 7 stalked, 8 rather straight.

Genital apparatus.

♂ (fig. 16 B). Tegumen short and broad, saccus rounded. Uncus slender, moderate, curved, with hairs at the top. Valva elongate, curved, truncate, costa little developed, sacculus small but distinct, with curved short hairs beneath and long hairs above. Gnathos strong, paired, the parts separate from each other, pointed above and beneath. Socii long, slender, drooping, haired only at the outer side. Transtilla broad, membranous, with a curved projection in the middle, dilated at the sides with a transverse chitinous body on each side. Aedoeagus elongate, curved, cornutus a small spine. Ductus ejaculatorius moderate, vesicula seminalis rounded with a vermiform appendix. (Type and paratypes in British Museum; paratype figured, genitalia slide No. 1190 B.M.).

♀ (fig. 16 C). Ovipositor lobes elongate-ovate, anterior apophyses slender and long. Ostium narrow, limen formed by two transverse sinuate rods, the under rod forming a tooth on each side. Ductus bursae curved, with very thick wall above, straight and thin-walled beneath, bursa moderate, spheroid, with a scobinate, chitinous bag, which is very probably the cestum. (Type and paratypes in British Museum; paratype figured, genitalia slide No. 1191 B.M.).

Distribution. A small genus consisting of one Indian and three Australian species.

Remarks. Meyrick regarded this genus as a probable derivation of *Spatalistis*.

Economic importance. Larva unknown.

Genus 35. **Schoenotenes** Meyrick

Genotype: *Schoenotenes synchorda* Meyrick (Java).

Schoenotenes Meyrick, J. Bomb. Nat. Hist. Soc., vol. 18, p. 619, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 49, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 199, 1929.

Epitrichosma Lower, Tr. R. Soc. S. Austr., vol. 32, p. 320, 1919; genotype: *neurobapta* Lower.

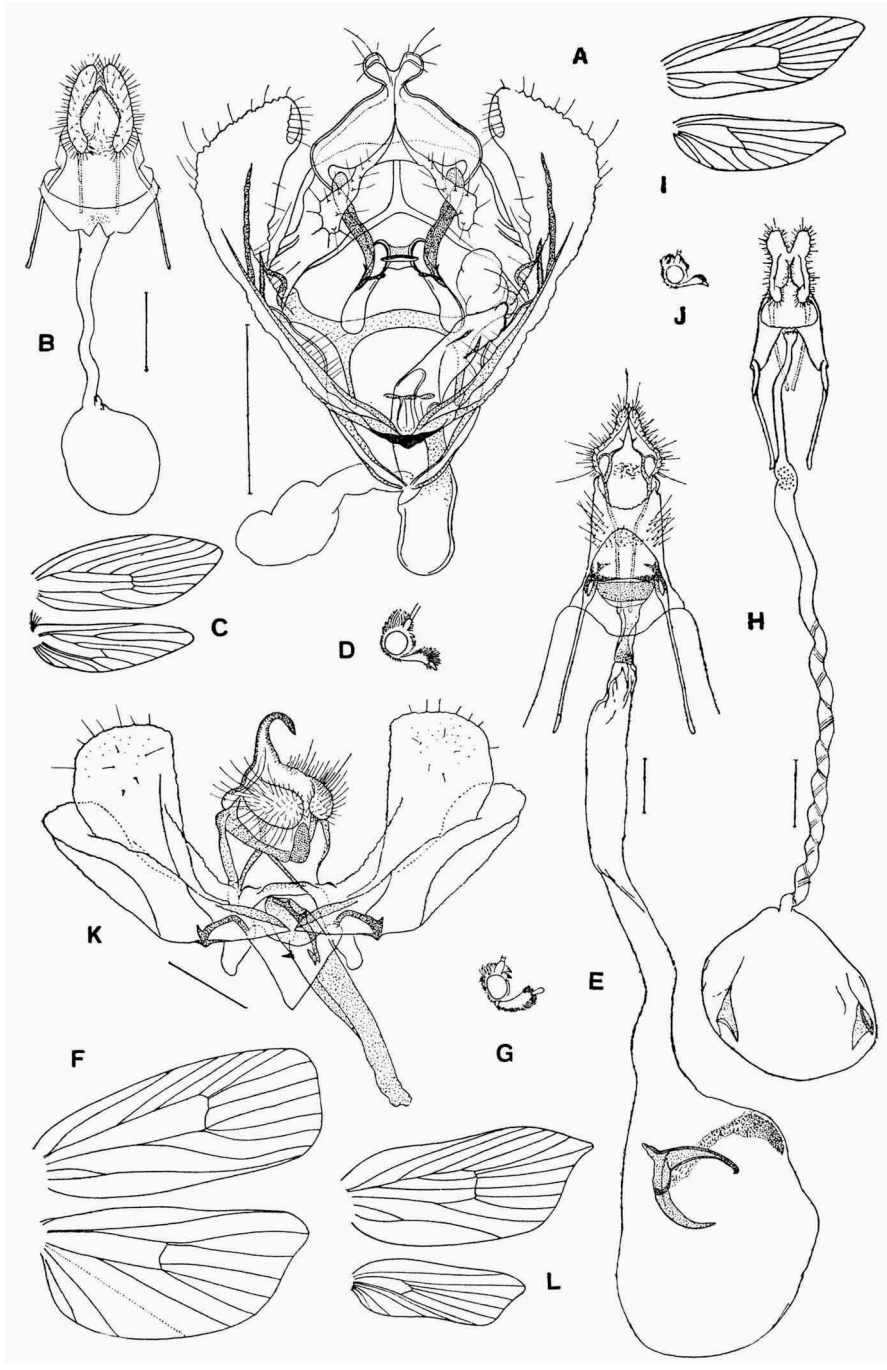

Fig. 19. A—D, *Diactenis pteroneura* Meyr., A, genitalia ♂; B, genitalia ♀; C, wing neuration; D, head. E—G, *Protyphanthes hybristis* Meyr., E, genitalia ♀, F, wing neuration; G, head. H—J, *Homalernis semaphora* Meyr., H, genitalia ♀, I, wing neuration; J, head. K—L, *Lophoprora cyanostacta* Meyr., K, genitalia ♂; L, wing neuration.

Head (fig. 11 K) roughly scaled. Antennae densely ciliated, with basal joint rather short, moderately thickened. Palpi moderate, or rather long, porrected, curved a little downwards, second joint narrow at base, dilated by roughly appressed scales above and beneath, terminal joint moderate, acute, drooping. Tongue moderate.

Thorax smooth, with a slight posterior crest. Legs rather long, roughly scaled, with long, narrow scales.

Forewings (fig. 11 J) with tufts of scales, in ♂ sometimes with a costal fringe of hairs, rather broad, elongate-ovate, about 2.5 × as long as broad, costa gradually arched from base to apex, apex rounded, termen straight, little oblique above, obliquely rounded beneath, dorsum gradually rounded. Discal cell considerably narrowed posteriorly, with a strong parting vein. 1 with a moderate furca, reaching to beyond $^1/_5$ of wing, curved posteriorly; 2 from before $^3/_5$, curved upwards before tornus, 3 from angle, 3—5 equidistant, 6 remote from 5, nearer to 7, 7 separate to termen (or apex?; indistinct), 5—9 almost straight, 8 somewhat approximated to 7 at base, considerably remote from 9, 10 from about $^4/_5$ of upper margin of cell, 11 from before $^3/_5$, strongly curved at base, 12 very oblique.

Hindwings (fig. 11 J) elongate-semiovate, about 2.3 × as long as broad, costa gradually and moderately arched, apex rounded, projecting, termen slightly convex below apex, oblique, broadly rounded below. Cell narrow, reaching to $^1/_2$ of wing, 2 from $^2/_3$ of cell, 3 and 4 connate from angle, 5 slightly approximated at base; closing vein oblique, 6 and 7 connate or shortly stalked, 8 rather straight.

Both fore- and hindwings, especially the hind ones, translucent in most species, only the veins being fringed by rows of broad, rounded scales, more distinct at the underside.

Genital apparatus.

♂ (fig.16 D). Tegumen elongate, rather narrow, its basal arms strong, curved, saccus considerably rounded. Valva elongate, dilated and indent at the top, with a thickening pointing anteriorly, which is covered with short hairs; on disc of the valva a transverse area, very thickly covered with dark, curved hairs; posteriorly this area is bordered by a row of long, straight hairs. Anteriorly from this area the disc of the valva shows some longitudinal, thickened folds. Sacculus moderate, shortly haired. Uncus elongate, narrow, strongly curved and with short hairs. Gnathos paired, its arms free, turned upwards and outwards and dilated at the top. Socii absent. Transtilla strong, curved. Anellus highly developed and forming cristae (Pierce), being two ventral projections which support the aedoeagus: and a canaliculus (Pierce), being the dorsal lobe, all three with short hairs.

Aedoeagus elongate, strong, rather acute. Anus a chitinised tube, deeply indent at apex. Cornuti absent. (Type specimen in British Museum, genitalia slide No. 1150 B.M.).

♀. Unknown.

Distribution. A large genus of Indian, Malayan and especially Papuan distribution, extending to tropical (N.E.) Australia. A considerable series of new species from New Guinea were described by Meyrick in the last years. In his posthume paper (Meyrick, 1938) he added six more new species, two of which, however, prove to be synonyms of previously described ones. *Schoenotenes* is obviously of Papuan origin.

Remarks. A very distinct genus, easily recognisable by the posteriorly narrowed discal cell, by the conspicuous parting vein, and by the reduced scale-clothing at the underside of wings; especially the hindwings are poorly scaled, only along the veins, and are transparent. *Schoenotenes* is correlated with the foregoing genus. The developed cristae are a typical Cnephasiid character.

I regard *Paraselena* Meyr. and *Proselena* Meyr. to be closely related with the present genus; until now, however, I did not study the genitalia of these two. This group shows also a relation with Chlidanotidae, *Diactenis* (a Chlidanotid) being the connecting link.

Economic importance. Larva unknown.

V. Subfamily PERONEIDII Pierce et Metcalfe

Peroneidii Pierce et Metcalfe, Genit. Tortr., p. 16, 1922.
"Group C" + "Group D" (pro parte), Meyrick, in Wytsman, Gen. ins., vol. 149, p. 2, 22 & 47, 1913.

Cestum absent. Signum a small, stellate plate. Limen broad. Ductus bursae short and broad. Uncus absent or scarcely developed. Gnathos absent or indistinct. Socii very large, sometimes ascending. Valva elongate, sacculus often curved, concave, with one or two teeth towards apex below. Brachiola mostly present. Aedoeagus short and broad.

A distinct group of small Tortricidae, often with truncate wings. The subfamily is not abundant in our region. The species have sometimes metallic markings on forewings, and often they possess raised scale-tufts. Costal fold in male is absent.

The broad limen, the stellate signum, the absence of uncus, and the presence of an apical vermiform haired appendix on the valva, for which I propose the name of brachiola, are very typical characters.

Genus 36. **Taeniarchis** Meyrick

Genotype: *Cnephasia periorma* Meyrick (North East Australia).

Taeniarchis Meyrick, Exot. Microl., vol. 4, p. 153, 1931.

Head (fig. 14 L) roughly scaled, face with projecting scales in middle, antennae to $^2/_3$, in male with long cilia, in female shortly ciliate, basal joint short, thickened. Palpi long, basal joint short, second joint narrow at base, smooth beneath, abruptly broadly dilated by long, projecting scales above, as far as half its length in male; in female beyond middle, smooth towards apex, with long appressed hairs beneath, truncate; terminal joint short, rather broad, drooping, obtuse.

Thorax with long, appressed scales and hairs, a slight posterior crest in male. Patagia small, very narrow. Legs moderate, smoothly scaled, spurs short.

Forewings (fig. 14 K) very broad and short, truncate, about 2 × as long as broad, without costal fold in male, costa moderately arched anteriorly, straight in middle, curved before apex; apex curved, slightly rounded, projecting, termen sinuate above, rounded and projecting beneath, dorsum straight posteriorly. 1 straight with a moderate furca not reaching $^1/_5$; 2 from $^3/_4$, 3—5 gradually curved, 3 and 5 slightly sinuate, separate, 3 from angle, 4 nearer to 3 than to 5, 7—9 separate, equidistant, 7 to termen just below apex, 10 and 11 parallel, oblique, 10 from $^1/_3$, 11 from beyond $^2/_3$ of cell. A parting vein present, running from base of wing, parallel to the upper margin of cell, as far as the origin of 10, curved posteriorly running to between 4 and 5.

Hindwings (fig. 14 K) with conspicuous metallic markings along tornus, about as broad as forewings, semiovate, about 1.7 × as long as broad, costa strongly sinuate, projecting before middle, with very long cilia along the basal half of this projection; apex curved, rounded or almost acute, termen sinuate above, broadly and gradually rounded beneath. 2 from beyond $^2/_3$, straight, 3 and 4 connate, from angle, 5 approximated at base, 6 and 7 separate, 6 somewhat undulate, approximated to 7 towards base, 7 to apex; 8 considerably sinuate.

Genital apparatus.

♂ (fig. 11 A). Tegumen moderate, reversed-V-shaped, pedunculi narrow. Saccus small, rounded. Valva elongate, narrowed posteriorly, its top truncate. Costa indistinct. Sacculus indistinct anteriorly, well developed in middle, chitinised, with a short medial and a large curved distal hook. Brachiola absent. Transtilla a moderately broad, straight rod, with a triangular thickening in the middle. Uncus narrow, strong, ending in a sharp

hook, curved downwards. Gnathos circular, its arms united in a short point. Socii elongate, very large, stretched sidewards; they are conspicuous, densely haired, with a pad at base and narrowed towards apex. Anellus elongate. Aedoeagus short, robust, geniculate; its apex flattened and dilated, with indent, bristled edge, cornuti absent. Spermatophore spheroid, without collum (fig. 11 B). (Type and paratypes in British Museum. Paratype figured, genitalia slide No. 1206 B.M.).

♀ (fig. 11 B). Ovipositor lobes broadly dilated at the upper half, nearly semicircular, regularly set with short hairs. Ostium rounded, moderate, with thickened margin. Ductus bursae narrow, long, simple; bursa copulatrix spheroid, small. Signum absent. (Type and paratypes in the British Museum. Paratype figured, genitalia slide No. 1207 B.M.).

Distribution. A small genus with two Australian and one Papuan species.

Remarks. Correlated with the ancestors of *Cnephasia.* The two Australian species were originally regarded by Meyrick as congeneric with *Cnephasia,* but afterwards the present genus was erected, differing from the latter by tornal markings and the position of vein 7 in hindwings; at present also vein 3 and 4 prove to be of different position, as they are separate and not connate as in *Cnephasia.*

Economic importance. Larva unknown.

Genus 37. **Antigraptis** Meyrick

Genotype: *Antigraptis hemicrates* Meyrick (New Guinea).

Antigraptis Meyrick, Exot. Microl., vol. 3, p. 613, 1930.

Head (fig. 13 N) roughly scaled with narrow scales. Antennae with basal joint rather thick, flabellum shortly haired. Palpi long, drooping-porrected, second joint narrow at base, broadly dilated towards apex by roughly projecting scales above and beneath, its top appearing oblique; terminal joint moderate, smooth, porrected. Tongue moderate.

Thorax with appressed scales, patagia moderate. Legs strong, with appressed scales. Abdomen moderate.

Forewings (fig. 13 M) elongate, about 2.6 × as long as broad, costa moderately curved anteriorly, straight in middle, moderately curved towards apex. Apex acute, projecting. Termen slightly sinuate and oblique above, rounded and projecting beneath. Dorsum somewhat convex. Discal cell rather narrow. 1 long, with a narrow furca, 2 from $^3/_5$ of cell, 3 and 4 stalked, from angle, 5 straight, from closely above the angle, 6 slightly approximated towards base to the stalk of 7—9, 8 and 9 stalked, out of 7,

7 to termen, 10 and 11 almost parallel, from beyond $^5/_6$, and from before $^3/_5$ of the upper margin of cell respectively.

Hindwings (fig. 13 M) little broader than forewings, about 2.3 × as long as broad, elongate-trapezoid, costa moderately curved anteriorly, projecting as far as its middle, concave posteriorly, apex little acute, projecting, termen straight, oblique, rounded beneath, dorsum projecting.

Genital apparatus.

♂. Unknown. Spermatophore ovoid, without collum (fig. 16 G).

♀ (fig. 16 G). Ovipositor lobes elongate, narrowed below, both pairs of apophyses long and straight. Ostium with slightly indent rim, forming a large, chitinised funnel, at the bottom of which begins the short ductus bursae; cestum absent; bursa copulatrix large, ovoid, signum absent (a spermatophore present). (Type in the British Museum, genitalia slide No. 1156 B.M.).

Distribution. New Guinea.

Remarks. Peculiar form, perhaps related to *Peronea* Curt. According to Meyrick also related to *Mictoneura* Meyr.

Economic importance. Larva unknown.

Genus 38. **Planostocha** Meyrick

Genotype: *Cacoecia cumulata* Meyrick (India, Ceylon).

Planostocha Meyrick, Exot. Microl., vol. 1, p. 13, 1912; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 50, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 179, 1929.

Head (fig. 13 S) with closely appressed scales, projecting between the antennae, face smooth. Antennae smooth, basal joint short, little thickened. Palpi moderate, porrected, basal joint short, second joint elongate, dilated beyond middle by projecting scales above (in figure appearing too short), terminal joint moderate, rather broad, curved, acute, drooping. Tongue well developed.

Thorax without crest, broad, with appressed scales; patagia rather short. Legs strong, smooth. Abdomen rather short.

Forewings (fig. 13 R) with raised scale-tufts, elongate, truncate, about 2.1 × as long as broad, without costal fold in male, costa strongly curved to middle, then convex to apex, in middle considerably projecting; a small scale-projection on costa beyond middle; apex rounded, rectangular, termen vertical and straight above, rounded beneath, dorsum slightly rounded. 1 with a moderate furca to $^1/_5$, 2 from beyond middle of cell, 3 from before angle, 4 remote, from angle, 5 separate, parallel to 6, 7 and 8 separate, 7 to termen; 8—11 equidistant, 10 from $^3/_5$, 11 from beyond $^2/_5$ of cell, discal cell very narrow.

Hindwings (fig. 13 R) elongate, sub-trapezoid, costa little projecting at middle, slightly concave beyond middle, apex rounded, projecting, termen sinuate above, rounded beneath. 2 from beyond $^2/_3$, 3 and 4 stalked, from angle, 5 curved, but remote, 6 and 7 shortly stalked, 8 rather straight, to $^3/_4$ of costa.

Genital apparatus.

♂. I had no opportunity to study the male genitalia. Spermatophore spheroid, with a very long collum (fig. 16 H).

♀ (fig. 16 H). Ovipositor lobes dilated above, tips pointed. Limen rather broad, with a longitudinal split, probably the ostium, with a funnel below this. Anapophyses rather long. Ductus bursae long, narrow, bursa copulatrix moderate, spheroid, signum a small patch of dark chitine. (A spermatophore is present in the specimen figured, which is in Leiden Museum, genitalia slide No. 160 D).

Distribution. India, Ceylon, Java.

Remarks. Correlated with *Peronea*, perhaps related to *Eboda* Walk.

Economic importance. Bred in Sidapur from *Lantana* (Fletcher, 1920).

Genus 39. **Argyrotoza** (Stephens) Fernald

Genotype: *Phalaena Tortrix bergmanniana* Linné (Europe, North-America).

Argyrotoza, Stephens, Ill. Brit. Ent. Haust., vol. 4, p. 173, 1834; Stephens, Cat. Brit. Ins., vol. 2, p. 89, 1829 (non descr.); Fernald, Gen. Tortr. Typ., p. 25 & 53, 1908; Pierce & Metcalfe, Genit. Tortr., p. 16, pl. 6, 1922; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 23, 1929.

Argyrotosa, Herrich-Schäffer, Schmett. Eur., vol. 4, p. 169, 1851.

Argyrotoxa, Heinemann, Kleinschm. Deutschl., vol. 1, i, p. 48, 1863; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 281, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 50, 1913; Meyrick, Rev. Handb. Brit. Lep., p. 517, 1927.

(*Tortrix*) Kennel, Zoologica vol. 54, p. 160, 1910; Pierce, Gen. Brit. Tortr., p. 16, 1922.

Head (fig. 11 I) roughly scaled above, face with appressed scales, projecting in middle. Antennae shortly ciliate in male, basal joint rather short, little thickened. Palpi moderate, porrected, terminal joint with short, projecting scales beneath, second joint broad, triangular, broadly dilated beyond middle, with closely appressed long scales beneath and projecting scales above, terminal joint short, concealed in the scales of the second. Tongue short.

Patagia and thorax smooth, the latter with a posterior crest. Legs strong, with appressed scales. Abdomen rather long.

Forewings (fig. 11 H) without costal fold, with raised scale-tufts on upper surface, elongate-ovate or truncate, about 2.3 × as long as broad,

costa gradually arched from base to apex, apex acute, termen straight, little oblique, tornus rounded, dorsum concave. 1 with a short furca, 2 from $^2/_3$, 3—5 equidistant, 3 from angle, 5 and 6 parallel, 7 separate to termen, 8—10 almost parallel, straight, oblique, 10 from $^3/_4$, 11 from $^2/_5$ of cell.

Hindwings (fig. 11 H) broader than forewings, subtrapezoid, costa concave in middle, curved before apex, apex acute, termen convex above, straight in middle, rounded below, dorsum slightly projecting. 2 from beyond $^2/_3$, 3 and 4 connate, from angle, 5 approximated towards base, 6 and 7 separate, approximated towards base, 8 slightly sinuate, to $^4/_5$ of costa.

Genital apparatus.

♂ (fig. 15 C). Tegumen triangular, pedunculi rather narrow. Saccus small, rounded. Valva elongate, costa indicated by a narrow rim, brachiola broad and short; sacculus haired, moderate, somewhat concave in middle of lower side, curved posteriorly, with a chitinised projection at the apex. Uncus absent, gnathos indicated by a transverse rim at the sides. Socii extremely large, erect, shortly haired. Transtilla absent. Anellus moderate, a polygonal shield. Aedoeagus short and narrow, little curved. Cornuti absent. (Specimen figured in the author's collection, genitalia slide No. 48 D.).

♀ (fig. 15 D). Ovipositor lobes moderate, slightly dilated above, curved beneath. Limen a broad, transverse band, with short, lateral projections beneath; anapophyses short. Ductus bursae short, bursa elongate; signum an elongate scobinate patch. (Specimen figured in the author's collection, genitalia slide No. 167 D.).

Distribution. Originating from Asia and extending into neighbouring regions, viz., Europe, S. Africa, N. America. Our region contains 6 species.

Remarks. Correlated with *Peronea* Hb.

Economic importance. Larva in rolled up or spun leaves or in fruits, polyphagous, on various trees and shrubs.

Genus 40. **Tortrix** (Linné) Meyrick

Genotype: *Phalaena Tortrix viridana* Linné (Europe).

Tortrix Linné, Syst. Nat. (Ed. X), vol. 1, p. 496, 1758; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 6, p. 507—508, 1882; Meyrick, Handb. of Brit. Lep., p. 534, 1895; Fernald, Gen. Tortr. Typ., p. 2 & 53, 1908; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 222, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 27, 1913; Pierce & Metcalfe, Genit. Tortr., p. 19, pl. 8, 1922; Meyrick, Rev. Handb. Br. Lep., p. 506, 1927; Kennel, Zoologica, vol. 54, p. 164, 1910; Fletscher, Mem. Agr. Ind. Ent., vol. 11, p. 227, 1929.

Syndemis Hübner, Verz. bek. Schmett., p. 382, 1826, genotype: *musculana* Hübner.

Amelia Hübner, Verz. bek. Schmett., p. 390, 1826, genotype: *viburnana* Fabricius.

Aphelia Hübner, Verz. bek. Schmett., p. 390, 1826, genotype: *viburniana* Fabricius.
Aleimma Hübner, Verz. bek. Schmett., p. 391, 1826, genotype: *loeflingiana* Linné.
Lozotaenia Stephens, Ill. Brit. Ent. Haust., vol. 4, p. 69—70, 1834, genotype: *forsterana* Linné; Stephens, Cat. Brit. Ins., p. 169, 1829 (non descr.).
Dictyopteryx Stephens, Ill. Brit. Ent. Haust., vol. 4, p. 168—169, 1834, genotype: *loeflingiana* Linné; Stephens, Cat. Brit. Ins., p. 189, 1829 (non descr.).
Clepsis Stainton, Manual, vol. 2, p. 197, 1858, genotype: *rusticana* Treitschke; Guenée, Ann. Soc. Ent. Fr. (2), vol. 3, p. 168, 1845 (non descr.).
Choristoneura Lederer, Wien. Ent. Monatschr., vol. 3, p. 242, 246, 1859, genotype: *diversana* Hübner.
Heterognomon Lederer, Wien. Ent. Monatschr., vol. 3, p. 242, 247, pl. 1 fig. 6, 1859, genotype: *viridana* Linné.
Smicrotes Clemens, Proc. Acad. Nat. Sc. Phil., p. 355, 1860, genotype: *peritana* Clemens.
Pararrhaptica Walsingham, Fauna Hawaiiensis, vol. 1, p. 689, 1907, genotype: *perkinsana* Walsingham.

Head (fig. 13 D) roughly scaled. Antennae shortly ciliated in male, basal joint rather short, thickened. Palpi short, moderate or long, porrected, basal joint short, second joint dilated towards apex with roughly projecting scales above and beneath, triangular, its apex obtuse, terminal joint short or moderate, elongate, obtuse. Tongue short.

Thorax broad, without crest, smoothly scaled, patagia broad. Legs strong, hind tibia with long, appressed scales. Abdomen moderate.

Forewings (fig. 13 C) with or without costal fold in male, in genotype about 2.4 × as long as broad, costa moderately arched from base to apex, apex curved, semiacute, projecting, termen concave above, gradually rounded beneath, dorsum somewhat concave. 1 with a furca to $^1/_5$, 2 from $^3/_5$, 3—5 remote, 3 from angle, 4 nearer to 5 than to 3, 6 and 7 parallel, 7 separate to termen, 9 and 10 rather short, 10 from $^3/_4$, 11 from $^2/_5$ of cell.

Hindwings (fig. 13 C) elongate-semiovate or subtrapezoid, about 1.9 × as long as broad, costa projecting in middle, rounded posteriorly, apex little rounded, scarcely projecting, termen broadly rounded. 1 b with a long furca, 2 from beyond $^2/_3$, 3 and 4 connate or shortly stalked, from angle, 5 approximated towards base, 6 and 7 separate, approximated towards base. 8 rather straight.

Genital apparatus.

♂ (fig. 17 A). Tegumen short, broadly triangular, pedunculi elongate. Saccus small, pointed. Valva narrow, costa a narrow rim. Sacculus thickened at base, bristled, ending in a point before the top of valva; this has a projection on the disc, which is thickly haired. Brachiola indicated by a short projection. Uncus and gnathos absent, socii large, drooping, densely haired. Aedoeagus (fig. 17 B) geniculate, with strong projecting lower edge of its orifice, cornuti 5—6 strong spines with dilated base.

(Specimen figured is present in my collection, genitalia slide No. 37 D).

♀ (fig. 17 C). The very specialised ovipositor has broad, rounded fleshy lobes, thickly bristled at the inner side; their lower ends form separate lobes curved ventrally, very densely haired, with an erect projection at the end. Genital segment very broad, anapophyses short, thickened and curved. Ostium narrow, ductus bursae moderately long, somewhat chitinised at the lower end, bursa copulatrix elongate, signum a small, stellate plate. (In the figured specimen, from my collection, genitalia slide No. 161 D, a spermatophore is present).

Distribution. Cosmopolite.

Remarks. A very large, rather heterogenous genus, which perhaps will be divided into different groups later on. The genotype in the female has very specialised genitalia, unlike those in any other species (except perhaps the European *T. loeflingiana* Linné), which are therefore of little generic value. The genus is an ancient one, being correlated with *Peronea* Hb., allied to *Argyrotoza* Steph. and erroneously attributed by Meyrick to the allies of *Cacoecia* Hb.

Economic importance. Larvae feed in rolled or spun leaves of all kinds of plants. The species are rather polyphagous. The genus is of no great importance in our region, but still some 27 species have been described. Records of foodplants are not known to me, neither from India, nor from Java [1]).

Genus 41. **Elaeodina** Meyrick

Genotype: *Elaeodina refrangens* Meyrick (Sarawak).

Elaeodina Meyrick, J. Sarawak Mus., vol. 3, p. 149, 1926.

I did not see the genotype of this monotypic genus of which the type is present in the Sarawak Museum. Meyrick's description is as follows:

"ELAEODINA n.g.

Palpi moderate, porrected, second joint expanded with rough scales towards apex above and beneath, terminal joint moderate, cylindrical. Thorax with slight posterior double crest. Forewings with tufts of scales: 3—5 approximated at base, 7 and 8 stalked, 7 to termen, Hindwings without cubital pecten; 3 and 4 connate, 5 closely approximated at base, 6 and 7 closely approximated towards base.

Intermediate between *Argyrotoxa* and *Spatalistis*."

---

1) One specimen of "*Tortrix operosa* Meyr." in the collection of the Institute for Plant Diseases, Buitenzorg, named by Meyrick, bred from *Vitex*, is *Adoxophyes privatana* Wlk.

"ELAEODINA REFRANGENS n. sp.

..... Fore wings suboblong, termen sinuate, vertical; ....."

Distribution. North Borneo.

Economic importance. Larva unknown.

Genus 42. **Spatalistis** Meyrick

Genotype: *Spatalistis rhopica* Meyrick (India).

Spatalistis Meyrick, J. Bomb. N. H. Soc., vol. 17, p. 978, 1907; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 286, 1910; Meyrick in Wytsman, Gen. Ins., vol. 149, p. 54, 1913; Meyrick, Rev. Handb. Brit. Lep., p. 518, 1927; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 206, 1929.

Head (fig. 11 Q) flattened, with roughly projecting scales at vertex, a comb of erect scales on each side of the face. Antennae smooth, basal joint moderate, thickly scaled, scales projecting at front of top. Palpi moderate, porrected, very roughly scaled with long projecting scales above and beneath, second joint with very oblique top, angularly projecting at the lower end; terminal joint long, narrow, porrected. Tongue very short.

Thorax without crest, with appressed scales, patagia short. Legs strong, smooth, hind tibia with long appressed scales. Abdomen moderate.

Forewings (fig. 11 P) without costal fold, elongate, truncate, or pointed, about 2.3 × as long as broad, with raised scale-tufts and with patches of metallic, shining scales. Costa considerably arched from base to apex, apex acute, projecting, termen strongly sinuate, rounded and projecting beneath, dorsum slightly rounded. 1 with a short and narrow furca, 2 from $^3/_5$ of cell, 3 and 4 stalked, from angle, 5 remote, parallel to 6, 7 and 8 separate, approximated at origin, 7 to termen, 8—11 almost equidistant and nearly parallel, straight, 10 from $^4/_5$, 11 from middle of cell.

Hindwings (fig. 11 P) subtrapezoid, elongate, about 2 × as long as broad, costa rather straight, slightly sinuate before apex, apex rounded, projecting, termen scarcely sinuate above, projecting beneath, dorsum rounded. 2 from $^2/_3$, 3 and 4 stalked, from angle, 5 connate, 6 and 7 separate, approximated towards base. 8 slightly sinuate, to $^4/_5$ of costa.

Genital apparatus.

♂ (fig. 16 E). Tegumen elongate-triangular, pedunculi narrow, slightly dilated below. Saccus small, rounded. Valva narrow, curved, almost sinuate, costa indistinct, bristled, sacculus narrow, darkly chitinised, ending in a curved and haired projection at the top of valva. Brachiola very narrow, long, clavate, with 1 bristle. Transtilla angularly bent in middle, broad, dilated at the sides. Uncus indistinct, gnathos indicated by a transverse bar, socii very large, elongate, drooping, shortly haired. Anus a membranous

broad tube. Aedoeagus very short, broad, cornuti 2 strong spines. (Type and paratypes in British Museum; paratype figured genitalia slide No. 1224 B.M.).

♀ (fig. 16 F). Ovipositor lobes elongate, curved below, ostium broad, 9th segment with median projections. Limen a broad transverse band, with curved rods at the sides, its upper edge thickened at the sides, lower edge strongly chitinised with two rounded pads in middle, colliculum a broad chitinised plate, ductus bursae very short, broad above, narrowed beneath, bursa copulatrix small, elongate; signum absent. (Type and paratypes in British Museum, paratype figured genitalia slide No. 1225 B.M.).

Distribution. India and Ceylon; throughout Malayan region into New Guinea, extending to China, Japan and Corea; one single species is European.

Remarks. Related to *Tymbarcha* Meyr. and perhaps correlated with *Argyrotoza* Steph.

Economic importance. The European species, *S. bifasciana* Hb., lives in the fruits of *Rhamnus* and *Cornus* (the genitalia of this species (Pierce and Metcalfe, 1922, pl. 9, p. 24) show distinct correlation with that of *S. rhopica* Meyr.).

Genus 43. **Eboda** Walker

Genotype: *Eboda smaragdinana* Walker (India, Ceylon, Papua).

Eboda Walker, List. Lep. Het. B.M., vol. 35, p. 1804, 1866; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 290, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 59, 1913; Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 714, 1929; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 72, 1929.

Head (fig. 13 H) roughly scaled, face with appressed scales. Palpi moderate, ascending, the first two joints considerably flattened beneath, basal joint slender, second joint narrow at base, strongly dilated by roughly projecting scales around the apex, especially beneath, terminal joint moderate, almost rectangular, obtuse. Antennae reaching to about $^1/_2$ of costa, somewhat three-carinate in male by a ventral row of very short cilia and two lateral rows, formed by the keels of the joints themselves, smooth in ♀; basal joint elongate, thickened, smooth. Tongue little developed, short.

Thorax smooth with short patagia, legs strong, first tibia smoothly scaled, excavate at the underside, in which excavation the tarsus fits; middle tibiae with long, appressed scales, hind tibiae smoothly scaled. Abdomen very long, especially in female.

Forewings (fig. 13 G) rather broad, elongate-truncate, about 2.8 × as long as broad, broader in female, without costal fold in male, costa strongly

arched at base, strongly projecting beyond middle, sinuate before apex, apex broadly rounded, termen vertical, rounded and considerably projecting beneath, dorsum slightly concave, curved at base, 1 with a furca to about $^1/_5$, 2 from $^2/_3$, 3 and 4 shortly stalked, from angle, 5 remote, parallel to 6, 7 separate, from upper angle of cell, 8—11 almost equidistant, 10 from about $^3/_5$, 11 from $^2/_5$ of cell. Discal cell narrow.

Hindwings (fig. 13 G) elongate-semiovate, about 1.5 × as long as broad, costa little arched at base, slightly projecting in middle, rather straight posteriorly, apex rounded, oblique, termen very oblique, projecting in cells 2—3, dorsum projecting. 2 from $^3/_5$, 3 from angle, curved, 4 absent, 5 closely approximated to 3 at base; 6 and 7 separate, closely approximated towards base, 7 to apex, 8 curved, closely approximated to cell at base.

Genital apparatus.

♂ (fig. 17 D). Scopa dorsalis developed, peculiar; two very long hair-pencils, located at the bottom of extensible tubes (partially figured). Tegumen moderate, pedunculi broad, saccus rounded, narrow, slightly dilated in middle. Valva of a peculiar shape, costa with a clavate projection bearing a sheaf of long bristles, sacculus strong, narrow, haired at base, ending in a strong, curved hook, with a strong bristle at the top; a long curved brachiola present. Transtilla a triangular, membranous sheet. Uncus indistinct, rounded, with curved bristles and two dentate hooks under the top, gnathos absent, socii moderate, rounded, with short bristles; a patch of very long curved hairs below each socius, perhaps being a part of it. On dorsal side of the tegumen a curved strong hook is present (showing through in the figure in the middle of tegumen). Anellus (fig. 17 E) rather large, rhomboid. Aedoeagus (fig. 17 E) rather short, straight, cornuti 2 large spines with bulbed base (vesicula seminalis moderate, ductus seminalis short). (Type in British Museum, specimen figured genitalia slide No. 1182 B.M.).

♀ (fig. 18 D). Ovipositor lobes narrow, elongate, with a few long bristles along the outer edge. Ostium cup-shaped, scobinate, chitinised, ductus bursae very broad at the upper part, narrow beneath; bursa copulatrix large, triangular, signum a dentate plate. (Type in British Museum, specimen figured genitalia slide No. 1183 B.M.).

Distribution. India, Ceylon, Malayan Archipelago, Papua, d'Entrecasteux Is., Solomon Is., Formosa, Mauritius, Comoro Is., S. Africa.

Remarks. Correlated with *Tymbarcha*, but much more specialised and therefore not a precursor of this genus, but perhaps representing a peculiar development of the same old branch from which also *Peronea* originates.

Economic importance. Larva of *Eboda obstinata* Meyr. lives in rolled

or spun leaves of *Cardiospermum* in India (Fletcher, 1929), and *Eboda celligera* Meyr. was bred in Java from *Nephelium* (Inst. for Plant Diseases, Buitenzorg) and in Tonkin on leaves of Litchi (de Joannis, 1921).

Note. When studying Meyrick's types I stated the following synonymy.

Eboda haruspex Meyrick

Eboda haruspex Meyrick, Exot. Microl., vol. 1, p. 15, 1912. Types ♂, ♀ in the British Museum.

Eboda facilis Meyrick, syn. nov., Exot. Microl., vol. 1, p. 15, 1912. Types ♂, ♀ in the British Museum.

Genus 44. **Tymbarcha** Meyrick

Genotype: *Tymbarcha cerinopa* Meyrick (India).

Tymbarcha Meyrick, J. Bomb. N.H. Soc., vol. 18, p. 622, 1908; Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 286, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 54, 1913; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 233, 1929.

Head (fig. 13 L) roughly scaled. Antennae moderate, basal joint moderate, little thickened, smooth, flabellum shortly ciliate. Palpi moderate, porrected, narrow at base, second joint dilated towards apex by appressed scales, terminal joint moderate, drooping, smooth and acute. Tongue very short.

Thorax with closely appressed scales, without crest, patagia rather short, legs strong with appressed scales, hind tibiae with long appressed hairs at apex. Abdomen rather short.

Forewings (fig. 13 K) with tufts of scales, broad and short, truncate, about 2.4 × as long as broad, costa little curved at base, straight and oblique anteriorly, angularly projecting beyond middle, slightly concave and oblique posteriorly, apex rounded, termen slightly concave, rounded above and slightly projecting beneath, dorsum rounded, curved at base. 1 with a very short furca, straight posteriorly, 2 from before $^1/_2$ of cell, 3 and 4 shortly stalked, from angle, 5 approximated towards base, 6 approximated to 7 and 8, which are shortly stalked, 7 to termen; 8—10 parallel and equidistant, 10 from beyond $^3/_5$ of cell, 11 diverging towards base, from before $^1/_2$ of cell.

Hindwings (fig. 13 K) elongate, about 2.2 × as long as broad, with costa strongly arched at base, slightly concave posteriorly, apex rather acute, projecting, termen convex above, broadly rounded beneath, slightly convex before dorsum, dorsum rather rounded. 2 from $^3/_5$ of cell, 3 and 4 stalked,

from base, 5 connate or sometimes absent, 6 and 7 connate, 7 to apex, 8 gradually curved.

Genital apparatus.

♂ (fig. 18 A). Uncus broad and short. Saccus broadly rounded, scobinate. Valva moderately broad, rather short, broadly indent at the top. Costa with a curved projection at base and a rounded one at the top; the latter with strong bristles; sacculus broad at base, forming another rounded and bristled projection at the top of valva; brachiola long, rather broad. Uncus absent, gnathos almost obsolete, a little curved point. Socii large, half-drooping, rounded-ovate. Transtilla absent. Anellus membranous. Aedoeagus very broad, nearly spheroid, slightly chitinised at the top above, cornuti absent. (Type specimen in British Museum, genitalia slide No. 1152 B.M.).

♀. Unknown.

Distribution. Three species of this small genus are known, two being Indian and one North East Australian. Until now no species from the connecting Malayan region have been found.

Remarks. Correlated with *Peronea* Curt.

Economic importance: Larva unknown.

Genus 45. **Paratorna** Meyrick

Genotype: *Paratorna dorcas* Meyrick (India).

Paratorna Meyrick, J. Bomb. N.H. Soc., vol. 17, p. 986, 1907; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 60, 1913; Meyrick, in de Joannis, Ann. Soc. Ent. Fr. vol. 98, p. 714, 1929; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 164, 1929.

Head (fig. 13 P, Q) roughly scaled, with appressed scales between the antennae and on face; antennae smooth, basal joint short, thickened at base. Palpi strongly curved, ascending, basal joint short, second joint short, curved and appressed to face in female (fig. 13 Q), little dilated by short projecting scales below, terminal joint moderate, broad, truncate, in male (fig. 13 P) second joint narrow and flattened dorso-ventrally at base, angularly curved in middle, dilated by short scales, especially below, terminal joint porrected, moderate, obtuse. Tongue vestigial.

Thorax with appressed scales, without crest, broad, swollen. Patagia short. Legs strong, rather smooth. Abdomen moderate, with anal tuft in male.

Forewings (fig. 13 O) peculiar, ovate, about 2.4 × as long as broad, costa strongly curved from base to termen, apex very broadly rounded, indistinct, termen strongly curved, dorsum rounded. 1 with a short furca, 2 from about middle of cell, 3 and 4 stalked, from angle, stalk and vein 3 sinuate, 5 parallel, near to the origin of 3 + 4, 7 and 8 separate, 7 ap-

parently to costa (apex indistinct), 9—11 equidistant and parallel, 11 from middle of cell.

Hindwings (fig. 13 O) elongate-semiovate, about 2 × as long as broad, costa projecting in middle, apex rounded, termen oblique, rounded beneath, dorsum somewhat projecting. 2 from beyond $^3/_4$ of cell, 3 and 4 connate, from angularly projecting cell, 5 approximated at base, 6 and 7 separate, closely approximated towards base, 8 to $^3/_4$ of costa.

Genital apparatus.

♂ (fig. 18 B). Tegumen short, pyramidal, with 4 bristles at the top; pedunculi rather narrow. Saccus little curved, rather narrow, small. Valva narrow, short, clavate, costa with rounded membranous projection towards apex and two strong bristles. Sacculus narrow at base, ending in a transverse projection, thickly covered with dark scales; brachiola large, pointed, with three bristles at the top. Vinculum small. Uncus and gnathos absent. Socii vestigial, a thickened rim on each side, bristled on the inner side. Aedoeagus elongate, with a narrow long point. Cornuti two strong, short spines, with dilated base. (Type and paratypes in British Museum, paratype figured genitalia slide No. 1226 B. M.).

♀ (fig. 18 C). Ovipositor lobes elongate, with narrow top and narrowed and curved lower lobe. 9th segment with triangular ventral projection at each side. Limen very broad, an erected ovate plate in the middle, with thickened upper and lower margin. Anapophyses short and thick. Ductus bursae rather long, with an indication of longitudinal rims. Bursa copulatrix moderate, spheroid, signum a small stellate plate. (Paratype examined in the British Museum, genitalia slide No. 1227 B. M.).

Distribution. India, Java, Formosa. The genotype is very probably widely distributed throughout our region.

Remarks. A peculiar genus, considerably specialised. Correlated with *Tymbarcha* Meyr., an offspring of the *Peronea* branch.

Economic importance. *P. dorcas* in Java has been bred from *Schima*-leaves (Inst. for Plant Diseases, Buitenzorg).

Genus 46. **Peronea** Curtis

Genotype: *Pyralis cristana* Fabricius.

Peronea, Curtis, Brit. Entom., vol. 1, p. 15, 1824; Fernald, Gen. Tortr. Typ., p. 4 & 55, 1908; Meyrick, Proc. Linn. Soc. N.S. Wales, vol. 35, p. 291, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 60, 1913; Pierce & Metcalfe, Genit. Tortr., p. 20, t. 8, 1922; Meyrick, in de Joannis, Ann. Soc. Ent. Fr., vol. 98, p. 714, 1929; Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 169, 1929.

Rhyacionia Hübner, Syst. verz. Schmett., p. 379, 1826, genotype: *hastiana* Linné.
Acteris Hübner, Syst. verz. Schmett., p. 384, 1826, genotype: *aspersana* Hübner.
Lopas Hübner, Syst. verz. Schmett., p. 384, 1826, genotype: *cristana* Fabricius.

Rhacodia Hübner, Syst. verz. Schmett., p. 384, 1826, genotype: *caudana* Fabricius.
Eclectis Hübner, Syst. verz. Schmett., p. 385, 1826, genotype: *hastiana* Fabricius.
Teleia Hübner, Syst. verz. Schmett., p. 385, 1826, genotype: *abietana* Hübner.
Oxygrapha Hübner, Syst. verz. Schmett., p. 386, 1826, genotype: *literana* Linné; Walsingham, Ann. Mag. N.H. (7), vol. 5, p. 369, 1900.
Croesia Hübner, Syst. verz. Schmett., p. 392, 1826, genotype: *holmiana* Linné.
Paramesia Stephens, Ill. Brit. Ent. Haust., vol. 4, p. 162, 1834, genotype: *ferrugana* Treitschke; Stephens, Cat. Brit. Ins., vol. 11, p. 187, 1829 (non descr.).
Glyphisia Stephens, Cat. Brit. Ins., vol. 11, p. 188, 1829 (non descr.); Stephens, Ill. Brit. Ent. Haust., vol. 11, p. 166, 1834 (non descr.).
Cheimatophila Stephens, Ill. Brit. Haust., vol. 11, p. 192, 1834, genotype: *castaneana* Haworth; Stephens, Cat. Brit. Ins., vol. 11, p. 188, 1829 (non descr.).
Teras Treitschke, Schmett. Eur., vol. 8, p. 247, 1830, genotype: *mixtana* Hübner; Snellen, Lep. Ned., vol. 2, p. 172, 1886.
Leptogramma Curtis, Guide Brit. Ins., p. 173, 1831, genotype: *literana* Linné; Curtis, Brit. Ent., vol. 10, p. 440, 1833 (charact.); Stephens, Cat. Brit. Ins., vol. 2, p. 187, 1829 (non descr.).
Acalla Kennel, nec Hübner, Zoologica, vol. 54, p. 63, 1910, genotype: ? *scabrana* Schiff.; Staudinger & Rebel, 1901 (non descr.).

Head (fig. 13 J) and face roughly scaled, face projecting in middle. Antennae smooth, basal joint short, little thickened. Palpi long, porrected, elongate-triangular, basal joint narrow, short, second joint abruptly dilated before middle with long, appressed scales, curved and gradually narrowed towards apex, apex obtuse or acute, terminal joint short, concealed in scales of second. Tongue well developed.

Thorax with a posterior crest in male, patagia elongate, rather smooth. Abdomen elongate.

Forewings (fig. 13 I) elongate, pointed, of variable shape, with tufts of raised scales, without costal fold, elongate-rectangular or pointed, in the genotype about 2.5 × as long as broad, costa strongly arched at base, concave in middle, curved towards apex, apex curved, projecting, acute, termen sinuate, rounded beneath, dorsum rather straight. 1 with moderate furca, 2 from middle of discal cell, 3—5 remote, 3 from angle, 4 nearer to 5 than to 3, 6—8 equidistant, 7 to apex, 9—11 short, 10 from $^2/_3$, 11 from $^1/_3$ of cell.

Hindwings (fig. 13 I) elongate-ovate, costa gradually curved, scarcely projecting in middle, apex acute, slightly projecting, termen little sinuate above, rounded beneath, dorsum considerably projecting. 2 from about $^2/_3$, 3 and 4 connate from angle, 5 separate, approximated towards base, 6 and 7 separate, approximated towards base, 8 sinuate, to $^3/_4$ of costa.

Genital apparatus.

♂ (fig. 17 F). Tegumen triangular, bilobed at the top, pedunculi broad and strong. Saccus small, rounded, erect. Valva elongate, costa indicated at base, with a projection at the top of valva. Sacculus rather broad, haired at base, its lower margin twice excavate, its top with dense, short hairs.

Brachiola moderate, pointed, with 1 bristle. Transtilla a curved, narrow rod, thickened towards middle. Uncus absent. Gnathos reduced to small, semicircular lateral rods below the socii. Socii large, drooping, elongate. Anellus a large, triangular plate. Aedoeagus broad and short, with a thorn at the lower edge of the top, the upper edge thickened. Cornuti 4—5 strong spines with dilated base. (The specimen figured in British Museum, genitalia slide No. 1228 B. M.).

♀ (fig. 17 G). Ovipositor lobes elongate, narrowed and curved below, limen a very broad transverse band, with a haired triangular projection in the middle of upper rim, with two appendices at the sides below, connected with the chitinised upper end of ductus bursae. Anapophyses short. Ductus bursae broad above, narrowed below, bursa copulatrix rather small, spheroid, signum a strong, stellate plate. The specimen figured in British Museum, genitalia slide No. 1229 B. M.).

Distribution. Abundant in Northern Hemisphere, viz., in Europe, Asia and North America, extending into South-America. According to Meyrick the genus has its probable origin somewhere in Central Asia; being of temperate constitution it could but badly pass the equator. A few species are present in Australia, none are known from Africa with certainty, and South Indian and Malayan species must have been introduced artificially. 23 species from our region are known to me, especially from North-India.

Remarks. An ancient genus, correlated through the Australian *Mictoneura* Meyr. with Eucosmidae. The species are recognisable hy their pointed wings with large tufts of raised scales on upper surface. Some of them are famous on account of their tendency to extraordinary variability in colour and markings.

Economic importance. Larvae feed in rolled or spun leaves on trees and shrubs, sometimes also on low plants, especially of the families Rosaceae, Salicaceae, Ericaceae, Cupuliferae. The following food-plants are known from India: *Dillenia, Polyalthia, Pyrus, Rosa, Rubus* (Fletcher, 1920); from Java: *Cinnamomum, Dillenia* (Inst. f. Plant Diseases).

Note. When studying Meyrick's types in the British Museum I stated the following syonymies:

Peronea divisana (Walker) Meyrick

Teras divisana Walker, List Lep. Het. B. M., vol. 28, p. 296, 1863. Type ♂ in the British Museum.

Teras extensana Walker, List Lep. Het. B. M., vol. 28, p. 296, 1863. Type ? in the British Museum.

Peronea agrioma Meyrick, syn. nov., Exot., Microl., vol. 2, p. 342, 1920. Types ♂, ♀ in the British Museum.

Peronea enitescens Meyrick

Peronea enitescens Meyrick, Exot. Microl., vol. 1, p. 16, 1912. Types ♂, ♀ in the British Museum.

Peronea compsoptyla Meyrick, syn. nov., Exot. Microl., vol. 3, p. 56, 1923. Type ♀ in the British Museum.

APPENDIX

As already stated (p. 115), the genus *Homalernis* Meyr. with the only species and genotype *semaphora* Meyr. and the genus *Diactenis* Meyr., with the genotype *pteroneura* Meyr. belong to the families Eucosmidae and Chlidanotidae respectively, and therefore were omitted. I hereby give descriptions of both these genera which may justify my opinion that they are no Tortricidae.

Genus **Homalernis** Meyrick

Genotype: *Homalernis semaphora* Meyrick (India).

Homalernis Meyrick, J. Bomb. N. H. Soc., vol. 18, p. 620, 1908; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 49, 1913; Fletcher, Mem. Ind. Agr. Ent., vol. 11, p. 111, 1929.

Head (fig. 19 J) roughly and thickly scaled, a tuft at the vertex bent forward over the face and concealing partially the basal joints of the antennae, which are moderate and little thickened. Antennae to $^2/_3$, shortly haired and minutely biciliated. Palpi porrected, second joint broadly dilated with rough scales towards apex, projecting above, triangular, terminal joint acute, moderate, drooping. Tongue short.

Thorax with appressed scales, without crest. Patagia rather narrow, moderate. Legs moderate, rather smooth, tibia with projecting scales at the end.

Forewings (fig. 19 I) with tufts of scales, very narrow, elongate, about 3.2 × as long as broad, costa scarcely curved at base, convex in middle of wing, gently curved posteriorly, apex very acute, projecting, termen very oblique, rather straight above, gradually curved beneath, dorsum rather straight, curved at base. 1 with furca reaching to $^1/_6$, convex posteriorly, 2 from before $^3/_5$ of cell, separate, 3 from angle, 4 remote, curved at base, connate with 5, 5—8 almost equidistant and straight, 7 separate, to termen, 10 from about $^3/_4$, 11 from before $^1/_2$ of upper margin of cell, 12 very oblique.

Hindwings (fig. 19 I) narrow, elongate, without cubital pecten, about 3 × as long as broad, costa gradually curved at base, slightly convex in middle, rather straight towards apex; apex curved, acute; termen slightly

sinuate below apex, very oblique and gradually rounded beneath. Discal cell very short, not reaching $^1/_2$ of wing. 2 curved, from $^4/_5$ of cell, short, 3 and 4 connate, from angle, 4—6 equidistant, 6 remote from 7, 7 from angle to costa, 8 short.

Genital apparatus.

♂. Unknown. Spermatophore spheroid, without collum.

♀ (fig. 19 H). Ovipositor lobes small, narrow, elongate, rounded at the top. Postapophyses curved, dilated at base. Ostium simple, with elongate-trapezoid plates at the sides, being the dilated basal part of the anapophyses. Ductus bursae very long, with a membranous vesiculation at about $^1/_4$, which is set with minute scobinations at the inner side; the lower half of the ductus is sinuate, having the appearance of a spiral, the parts between the curves being rippled. Bursa large, spheroid, with two signa, being thorns of thin chitin with a broad base. (Type and paratype in British Museum, genitalia slide No. 1148 and 1149 B.M. respectively).

Distribution. India.

Remarks. A peculiar genus, containing two species. In spite of the absence of a cubital pecten on base of the lower margin of discal cell in hindwings I regard it as belonging to the Eucosmidae.

Both known specimens of *H. semaphora* Meyr. prove to be females; the definition "antennae in ♂ ciliated" (Meyrick, 1908) is therefore incorrect.

Economic importance. Larva unknown.

Genus **Diactenis** Meyrick

Genotype: *Diactenis pteroneura* Meyrick (India, Ceylon, Queensland).

Diactenis Meyrick, J. Bomb. N. H. Soc. vol. 17, p. 979—980, 1907; Meyrick, Proc. Linn. Soc. N. S. Wales, vol. 35, p. 281, 1910; Meyrick, in Wytsman, Gen. Ins., vol. 149, p. 48, 1913. Fletcher, Mem. Agr. Ind. Ent., vol. 11, p. 66, 1929.

Ocelli absent. Head (fig. 19 D) with roughish scales, face with appressed scales, rather smooth. Antennae moderately ciliate in male, very shortly ciliate in female, basal joint elongate. Palpi pencil-shaped, with basal joint short and narrow, second joint abruptly strongly dilated towards apex, especially above and at the inner side, less projecting beneath, shape reversed conoid; in female the scales are less projecting than in male; terminal joint short, partially concealed in the scales of the second. Tongue rather long.

Thorax with closely appressed scales, patagia moderate. Legs smooth except the middle tibia, which bears a comb of hairs below and the hind tibia, covered with long appressed scales. Abdomen moderate, narrow.

Forewings (fig. 19 C) loosely scaled, scales on the veins somewhat raised;

very narrow, elongate, sharply pointed, without costal fold. About 2.5 × as long as broad, costa gradually arched from base to apex, apex subacute, termen extremely oblique, long, tornal angle indistinct, dorsum rather straight posteriorly. 1 with vestigial and extremely short furca, apparently to dorsum, 2 from beyond $^2/_3$ of cell, 3 and 4 from a projection of cell, 3 from angle, 4 remote, 4—8 almost equidistant, 7 separate to termen (vein 6 accidentally omitted in figure), 8—11 almost parallel, long, sinuate. Cell narrowed posteriorly beyond $^1/_3$, with a distinct parting vein, from $^1/_6$ to above the origin of 5. At the underside with scales only along the veins.

Hindwings (fig. 19 C) very narrow, elongate, about 3.2 × as long as broad, pellucent, with scales only along the veins; costa straight anteriorly, gradually curved posteriorly, apex acute, termen extremely oblique, gradually gently curved, dorsum somewhat projecting, 2 very short, from angle of cell, 2—4 equidistant, 3 from angularly bent transverse vein, very short, 4 from the upper angle of cell, 5 parallel, from beyond middle of upper margin of cell; 6 and 7 long, stalked, stalk from near the base of upper margin of cell, 8 straight, to $^2/_3$ of costa.

Genital apparatus.

♂ (fig. 19 A). Tegumen broad and short, pedunculi narrowed. Saccus moderate, rounded-elongate. Valva very narrow, dilated towards apex, costa indistinct, sacculus with strong, chitinised, longitudinal rims, bristled at base. Transtilla strong, a sinuate transverse bar with a narrow vertical appendix hanging down on each side. Uncus triangular, dilated below, constricted below apex, apex bilobed, haired. Gnathos peculiar, x-shaped, the strong arms with elongate projections below, connected by a transverse bar of complicated structure. Socii elongate, clavate, loosely haired. Anellus a small plate. Aedoeagus geniculate, cornuti 2 spines. (Type in British Museum; paratype figured genitalia slide No. 1220 B.M.).

♀ (fig. 19 B). Ovipositor lobes elongate, slightly dilated above, limen a simple, broad rim, with three indentations in middle of the lower edge. Ductus bursae moderate, narrow, bursa copulatrix small, spheroid. Signum indistinct (absent?). (Type in British Museum, paratype figured genitalia slide No. 1221 B.M.).

Distribution. India, Ceylon, Andaman Is., Java, Australia.

Remarks. The absence of ocelli and the position of vein 5 in hindwings, which is parallel, justify the transmission of this genus from the Tortricidae to the Chlidanotidae, in spite of the veins 8 and 9 in forewings being separate.

Economic importance. The larva of *Diactenis pteroneura* Meyr. has been bred in India from *Nyctanthes* (Fletcher, 1920).

7. GLOSSARY

The greater part of the terms used in this paper are taken from Meyrick (1927) and from Pierce and Metcalfe (1914—1922). The terms which are used now for the first time are marked with D.

accessory cell: a cell in wing formed by the division of the discal cell by a parting vein.
acicular: needle-shaped.
aedoeagus: chitinised cylindrical part of penis.
anellus: shield-like plate on which aedoeagus is hinged.
apex (of wing): top, junction of the costa and the termen.
appressed: pressed against surface.
bipectinate(d): with two series of pectinations.
brachiola D.: finger-shaped haired projection at the top of valva.
bursa copulatrix: part of female internal genital apparatus, where the sperma is introduced during copulation.
canaliculus: medial projection of the anellus above the aedoeagus.
capitulum D.: projection of the base of signum on the outer surface of bursa.
cestum D.: chitinised band in the ductus bursae.
closing vein: transverse vein, edging the discal cell posteriorly.
ciliae: fringe of wing.
ciliate(d): with series of hairs (applied to antennae).
colliculum D.: chitinisation in the upper part of the ductus bursae.
connate: rising from the same point.
corema (coremata): lateral extension of pleura of segment.
cornutus: spiny armature of vesica.
costa (of wing): rostral margin;
(of valva): upper edge.
costal: touching costa.
costal fold: fold at base of costa in forewings of male.
crista: patch of hairs or haired projection at either side of aedoeagus.
cubital: rising from the cubitus.
dorsal (in wing): touching dorsum.
dorsum: caudal margin of wing.
ductus bursae: tube giving entrance into bursa copulatrix.
ductus ejaculatorius: tube connecting vesiculus seminalis with the male genital opening.
fascia: transverse band.
furca: here used for the fork of vein 1 a in forewings.
gnathos: triangular, articulating appendix near the base of uncus.
hyaline: without scales and transparant.
indent: with edge notched centrally.
labis (labides): organs arising from the base of transtilla.
limen D.: more or less chitinised part of 8th sternite in female.
mensis D.: chitinised caudal edge of the 8th abdominal segment in male.
mensis dorsalis D.: mensis of the tergite.
mensis ventralis D.: mensis of the sternite.
orifice: opening of aedoeagus at its junction with the vesica.
ostium: secondary female sexual opening.
ovipositor: organ surrounding the primary sexual opening in female.
pannicular: locally covered.
parting vein: vein running through the discal cell.
patagium: shoulder-plate of the thorax.
pecten: row of projecting hair-scales.

pedunculus (pedunculi): elongate projections at the base of tegumen, articulating with the valva.
pencil: long, slender tuft of hairs.
penis: the whole intromittary organ of the male.
porrected: directed straight forward.
sacculus: lower part of valva.
saccus: sternal part of the 9th segment in male.
scobinate: with surface covered with rasp-like teeth.
scopa D.: long, dense hairs at the 8th abdominal segment in male.
scopa dorsalis D.: scopa on the tergite.
scopa ventralis D.: scopa on the sternite.
signum: internal armature of the bursa.
sinuate: slightly curved in, then outwards.
socius (socii): hairy pads at the base of the uncus.
subscaphium: armature at the ventral side of the anal opening.
tegumen: dorsal part of 9th abdominal segment in male.
termen: posterior margin of wing.
torded: twisted.
tornal: touching tornus.
tornus: junction of termen and dorsum.
transtilla: internal extension of costa.
truncate (of wings): with a straight vertical termen.
uncus: dorsal articulated projection of tegumen.
valva: lateral genital lobe of the male.
valvula: thin part of the valva, lying between the costa and the sacculus (here used only for peculiar processes in the middle of the base of valva).
vesica: extrovertable distal part of the ductus ejaculatorius.
vesicula seminalis: a sack, containing the sperm in male.

8. LITERATURE

In this list are enumerated only the works and papers to which reference is made in the general text, most of those mentioned in the systematic part are not included.

BUSCK, A., 1931. On the Female Genitalia of the Microlepidoptera and their Importance in the Classification and Determination of these Moths. Bull. Brooklyn Entom. Soc., vol. 26, pp. 199—226.

BUTLER, A. G., 1881. Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum. London.

COTES, E. C., and SWINHOE, C., 1889. A Catalogue of the Moths of India. Fam. Tortricidae, pp. 695—697. Calcutta.

DIAKONOFF, A., 1937. Notes on Microlepidoptera. 1. On the Characters of the Female Genital Apparatus in some Tineids. Temminckia, vol. 2, pp. 189—196.

DURRANT, J. H., 1915. Microlepidoptera (Pterophorina and Tineina) collected by the British Ornithologists' Union and Wollaston Expeditions in the Snow Mountains, Southern Dutch New Guinea. Rep. B.O.U. & W. Exp., vol. 2, No. 15, pp. 149—168.

EYER, J. R., 1929. Characters of Family and Superfamily Significance in the Male Genitalia of Microlepidoptera. Ann. Entom. Soc. Amer., vol. 19, pp. 237—244.

FERNALD, C. H., 1908. The Genera of the Tortricidae and their Types. Amherst, Mass.

FLETCHER, T. B., 1919. Annotated List of Indian Crop-Pests. Rep. Proc. of the Third Entom. Meeting Pusa, pp. 34—314.

——, 1920. Life-Histories of Indian Insects, Microlepidoptera. Mem. Dept. Agric. India, Entom. Ser., vol. 6.

——, 1929. A List of Generic Names used for Microlepidoptera. Mem. Dept. Agric. India, Entom. Ser., vol. 11.
——, 1932. Life-Histories of Indian Insects, Microlepidoptera, Second Series. The Imper. Council Agric. Res., Scient. Monogr. No. 2.
FELDER, C., FELDER, R., and ROGENHOFER, A. F., 1864—1875. Reise der Oesterreichischen Fregatte Novara um die Erde. Lepidoptera.
HEINRICH, C., 1918. A Note on the Tortricid Genitalia. Proc. Ent. Soc. Washington, vol. 19, pp. 137—138.
——, Revision of the North American Moths of the Subfamily Eucosmidae of the Family Olethreutidae. U. S. Nat. Mus. Bulletin No. 123.
JARDINE, N. K., 1918. The Tea Tortrix (*Homona coffearia* Nietn.). Ceylon Dept. Agric., Peradeniya, Bull. No. 40.
KENNEL, P., 1908—1910. Die Palaearctischen Tortriciden. Zoologica, vol. 54.
LEEFMANS, S., 1921. Bijdrage tot het vraagstuk der bladrollers van de thee. Meded. Inst. v. Plantenziekten, Buitenzorg, No. 51.
MEYRICK, Edw., 1883. Descriptions of the New Zealandian Micro-Lepidoptera. II. Tortricidae. Trans. New Zeal. Inst., vol. 15, pp. 33—68.
——, 1882. Descriptions of Australian Microlepidoptera. Tortricina. Proc. Linn. Soc. N. S. Wales, vol. 6, pp. 410 and 629.
——, 1895. Handbook of British Lepidoptera. London.
——, 1907—1914. Descriptions of Indian Microlepidoptera. J. Bombay Nat. Hist. Soc., vol. 16—22.
——, 1910. Revision of Australian Tortricina. Proc. Linn. Soc. N. S. Wales, vol. 35, pp. 139—294.
——, 1912. Tortricidae, in Wagner, Lepid. Catal., vol. 10.
——, 1912—1938. Exotic Microlepidoptera, vol. 1—5. Marlborough.
——, 1913. Tortricidae, in Wytsman, Gen. Insect., vol. 149.
——, 1927. Revised Handbook of British Lepidoptera. London.
——, 1938. Papuan Microlepidoptera. Tr. Ent. Soc. Lond., vol. 87, p. 503—528.
MEYRICK, E., and CARADJA, A., 1935. Materialen zu einer Microlepidopteren Fauna der chinesischen Provinzen Kiangsu, Chekiang und Hunan. Berlin.
PAGENSTECHER, H. A., 1899—1900. Die Lepidopteren des Bismarck-Archipels, vol. 2. Zoologica, vol. 29.
PHILPOTT, A., 1928. The male Genitalia of the New Zealand Tortricidae. Trans. & Proc. N. Zeal. Inst., vol. 59, pp. 443—468.
PIERCE, F. N., 1909. The Genitalia of the British Noctuidae. Liverpool.
——, 1914. The Genitalia of the British Geometridae. Liverpool.
PIERCE, F. N., and METCALFE, J. W., 1922. The Genitalia of the British Tortricidae. Liverpool.
——, 1935. The Genitalia of the British Tineina. Liverpool.
——, 1938. The Genitalia of the British Pyrales, Deltoids and Plumes. Liverpool.
SNELLEN, P. C. T., 1901 & 1903. Beschrijvingen van nieuwe exotische Tortricinen, Tineinen en Pterophorinen. Tijdschr. v. Entom., vol. 44, pp. 67—98, and vol. 46, pp. 25—57.
SNODGRASS, R. E., 1935. Principles of Insect Morphology. New York and London.
STRINGER, H., 1929. Two new Species of Tortricina (Lepidoptera). Ann. Mag. Nat. Hist. (10), vol. 3, pp. 26—29.
WALKER, F., 1863. List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, vol. 28.
——, 1866. Idem, vol. 35, suppl. vol. 15.
WALSINGHAM, T., 1900a. Asiatic Tortricidae. Ann. Mag. Nat. Hist. (7), vol 5—6.
——, 1900b. Pterophoridae and Tineina. Hetoroc. Mus. Oxon., vol. 2, pp. 541—585.

9. TABLE OF DISTRIBUTION OF THE GENERA [1]).

	Europe	North Asia	South Asia	North America	South America	Australia	N. E. Australia	New Zealand	Hawaii	Africa	South Africa	India	Kashmir	Himalaya	Sikkim	Assam	Burma	Bengal	Ceylon	Tonkin	China	Corea	Japan	Formosa	Philippines	Sumatra	Java	Borneo	Celebes	Flores	Moluccas	New Guinea	Christmas Id.	Solomon Is.	Mauritius	Madagascar	Tonga	Fiji
Aeolostoma	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Adoxophyes	X	·	X	X	·	X	·	·	·	·	·	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	·	·	·	X	·	X	X	X	X	X
Antigraptis	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Antiphrastis	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Argyrotoza	X	X	X	X	·	·	·	·	·	·	X	X	·	·	·	·	·	·	·	·	X	·	X	X	·	·	X	·	·	·	·	·	·	·	·	·	·	·
Arotrophora	·	·	·	·	X	X	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Beryllophantis	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Cacoecia	X	X	X	X	·	X	·	·	X	X	·	X	·	X	X	X	X	X	X	X	X	X	X	X	X	X	X	·	X	X	·	X	·	·	·	·	·	·
Callybriastis	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Capnoptycha	·	·	·	·	·	X	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Catamacta	·	·	·	·	·	X	·	X	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	?	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Cerace	·	·	·	·	X	·	·	·	·	·	·	X	·	X	·	·	X	·	·	·	X	·	·	X	·	·	X	X	·	·	·	·	·	·	·	·	·	·
Choanographis	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Chresmarcha	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	X	X	X	·	·	X	·	·	·	·	·	·
Cnephasia	X	X	X	X	X	X	·	X	X	X	X	X	X	·	X	·	·	·	·	·	X	·	X	·	·	·	X	X	X	·	·	X	·	·	·	·	·	·
Dicellitis	·	·	·	·	·	X	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Drachmobola	·	·	·	·	X	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Eboda	·	·	·	·	·	X	·	·	·	X	·	X	·	·	·	·	·	·	X	X	·	·	·	·	·	·	X	·	·	·	·	X	·	X	X	X	·	·
Elaeodina	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·
Epagoge	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	·	·	·	X	X	·	·	·	·	·	·
Epichorista	·	·	·	·	·	·	·	X	·	·	X	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	X	·	·
Eulia	X	X	X	X	X	X	·	X	X	·	·	X	·	·	·	·	·	·	·	·	X	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Harmologa	·	·	·	X	X	X	X	X	·	·	·	·	·	·	·	X	·	·	·	X	·	·	·	X	·	X	X	·	·	·	·	·	·	·	·	·	·	·
Homona	·	X	X	X	X	X	·	X	·	X	·	X	X	X	X	X	X	X	X	X	X	·	X	X	X	X	X	X	·	X	·	X	·	X	·	X	·	·
Isochorista	·	·	·	·	·	X	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Isotenes	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Metaselena	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Leontochroma	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Leptochroptila	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Lophoprora	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Rhomboceros	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Pandemis	X	X	·	X	X	·	·	·	·	·	·	X	·	X	·	·	·	·	·	·	X	X	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Pandurista	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Paratorna	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	X	·	·	·	X	·	·	X	·	·	·	·	·	·	·	·	·	·	·
Pentacitrotus	·	·	·	·	·	·	·	·	·	·	·	X	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Peronea	X	X	X	X	X	X	·	·	X	X	·	X	·	·	·	·	X	·	X	X	X	X	X	X	X	X	X	·	·	·	·	X	·	·	·	·	·	·
Piliscophora	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Planostocha	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	X	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·
Polemograptis	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	X	·	·	·	·	·
Procalyptis	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Protopterna	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·
Protyphanthes	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·
Pternozyga	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Pyrsarcha	·	·	·	·	·	·	·	·	·	·	·	X	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Schoenotenes	·	·	X	·	·	X	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	X	X	·	·	·	X	·	·	·	·	·	·	·
Spatalistis	X	X	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	X	·	X	X	X	·	·	·	X	·	·	·	·	X	·	·	·	·	·	·
Taeniarchis	·	·	·	·	·	X	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Terthreutis	·	·	·	·	·	·	·	·	·	·	·	X	·	·	X	X	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Thrincophora	·	·	·	·	·	X	X	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·
Tortrix	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	·	·	·	X	·	·	X	X	·	·
Tymbarcha	·	·	·	·	·	·	X	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
Ulodemis	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	X	·	·	·	·	·	X	X	·	X	·	·	·	·	·	·	·	·	·
Diactenis	·	·	·	·	·	·	X	·	·	·	·	X	·	·	·	·	·	·	X	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·
Homalernis	·	·	·	·	·	·	·	·	·	·	·	X	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·

1) This table only shows how insufficiently the distribution of the Tortricidae in our region is known at present; therefore it would be premature to base serious conclusions on these data.

10. INDEX [1])

1) The names marked with * are synonyms.