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July 14, 1915

The
Macrolepidoptera
of the World

== A systematic description ==
of the known Macrolepidoptera

edited the with collaboration of well-known specialists

by

Dr. Adalbert Seitz, Professor Ph. D.



STUTTGART

Verlag des Seitz'schen Werkes (Alfred Kern)

1914.

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==== I. Section: ====

The Macrolepidoptera

of the

Paleartic Region

3. Volume: **The Noctuid Moths.**

With 75 coloured plates (4338 figures).



Preface.

Exactly a year after the completion of the second volume of the Palearctic section of the "Macrolepidoptera of the World", we to-day offer the third to the public. The favourable reception of the volumes already published gives me confidence that to this also the same kind consideration will be accorded. Unlike the two volumes already published the present one, with the exception of the first short section, is from the pen of only one author, Mr. W. WARREN, well known through his numerous important works. Of the figures 80—90% have been drawn from nature and many of them are the first reproductions of species which have never been figured before. They are drawn with as much fidelity and care as the extremely low price of the work permitted. Of the over 4000 figures which illustrate the Palearctic Noctuids fully $\frac{4}{5}$ are from originals which Dr. W. ROTHSCHILD kindly placed at our disposal from the Tring Museum, for which we tender him here our sincerest thanks. Without the treasures of this extremely rich museum an even approximately complete illustration from nature would not have been possible.

I have considered it to be of particular service to represent the North-East Asiatic species with a completeness which places the numerous collectors who confine themselves to the Palearctic fauna in a position to determine correctly the forms received from that region. I have therefore had numerous types figured from the collections of LEECH, PRYER and WILEMAN in London, which has been done partly by Mr. HORACE KNIGHT, partly by Miss PROUT, in a really ideal manner, and it is a pleasant duty to me to express here my sincere thanks for the care which has been bestowed on the preparation of these drawings.

A number of further figures were taken from the types which Herr R. PÜNGELER obligingly placed at our disposal, and thus we obtained possession of almost all the models worth figuring (about 4000 forms), and the list was completed by copying the excellent figures from Sir GEORGE HAMPSON's masterly Catalogue, from ROMANOFF and from CHARLES OBERTHÜR's „Études“ to fill up the lacunae. The former were likewise mostly prepared from drawings by Mr. HORACE KNIGHT and can consequently, as well as the admittedly excellent figures in ROMANOFF and OBERTHÜR, withstand any criticism.

Continental lepidopterists will be interested to learn that most of the Noctuids occurring in Great Britain are figured from British, not from continental specimens. There exist here shades of difference, which indeed, even if not considerable, have yet led several workers, e. g. TUTT, to bestow on them separate names. Numerous correspondents and immature critics have incorrectly characterized such figures as „inaccurate in the ground-colour“, thus furnishing a proof that the differences in colouring are really distinctly noticeable even by little trained eyes. I have therefore asked the author of the Noctuids to work out thoroughly TUTT's very numerous aberrational names, although this was not originally planned and might not appear altogether adapted to a work having such a wide scope. The size of the third volume has consequently risen not inconsiderably beyond the original estimate of 40 sheets and the number of parts been increased from 25 to 33. As, however, the price for subscribers (about 30 shillings for 500 pages of text and over 4000 figures) is still unprecedently low, we thought we might reckon on their consent to this small increase. Whilst in the butterflies and Bombycids a reference to the plates often rendered a description superfluous, in the Noctuids, however fully figured, a characterization, though often only short, has been regularly given, in the belief that in a family whose many species show such great similarity on the one hand and such variability on the other, a diagnosis would be desirable under all circumstances as an effectual aid to the illustration.

As concerns the abbreviations of the author's names we have repeatedly deviated from the previous schemes, correspondingly to the method adopted in our two preceding volumes. Our reason for this, which does not always seem to have been understood, lies in the numerous mistakes which result from the want of clearness in the customary abbreviations. Abbreviations such as "Wall.," which may mean WALLACE or WALLENGREN, "Rbr." (RAMBUR, RÖBER), "God." (GODART, GODMAN), "Butl." (BUTTEL, BUTLER), "Dru." (DRURY, DRUCE), etc., have been replaced in the German edition by others (*Rmb.*, *Röb.*, *Wkr.*, *Btlr.*, etc.), which have the advantage of being distinctive.

The geographical definition of the region is that of the earlier volumes. All the countries in the north of the Old World with any considerable winter frosts are treated as Palearctic, so that Japan, Korea, China north of the Yang-tse-kiang, the Tibetan highlands and the adjoining districts of Kashmir have been included; all the districts without a true winter are excluded. In this matter my own observations have been of the greatest value to me, as the impression which one receives when collecting in a district often differs considerably from that obtained from a statistical survey of its fauna, in which the greatest rarities, scarcely ever met with, figure equally with its commonest characteristic butterflies. Statistics of the Palearctic Lepidoptera show us the genera *Parnassius*, *Colias*, *Erebia*, *Sesia*, etc. in the lists as predominant and often represented by a very large number of forms; as a matter of fact, however, these genera are by no means characteristic, on account of their sporadic, rare or local occurrence, and the most characteristic butterflies are just those of which a small number of species or forms are included in the statistical lists, such as *Gonepteryx*, *Vanessa*, *Coenonympha*, *Xylina*, etc. Here I have followed entirely the impression received in my studies in East Asia, where 16 times and collecting at all seasons of the year I crossed the southern boundary-line of the Palearctic Region. True transitional districts, where the species met with in several days' collecting represented 50% of obviously Palearctic and 50% of unquestionably Indian forms, I have not met with, and — except perhaps in Kashmir — such can scarcely exist to the extent that is usually assumed.

The system employed for the Noctuidae agrees in general with that used in HAMPSON'S excellent work. LEDERER'S system (antiquated in addition), the setting aside of which some critics have thought fit to denounce, was not even taken into consideration, inasmuch as LEDERER himself, who was certainly well capable of judging, described it as inapplicable to a work including also the non-Palearctics. For the rest it has from the beginning not been within my purpose to furnish in the "Macrolepidoptera" an entirely new and reformed system, but a practical, time-saving and cheap work of reference, which shall in the first place help and stimulate. For arguments on systematic questions, which require to be founded on detailed evidence, space is altogether wanting. Where such was available, it has been placed at the disposal of the authors for biological additions, which deal with something more than the bare appearance of the insects.

It would also have been a great mistake, just at the critical moment when a heated controversy is being carried on concerning the fundamental principles of nomenclature, to tie down the work to a hard and fast nomenclatural scheme. From the moment when the opponents of absolute priority succeed in proving that the pursuit of the principle of priority with retrospective application leads to constant fluctuations rather than to stability, science finds itself confronted with entirely new questions, and whether we shall finally have recourse to the sovereignty of commissions or of codes of rules will depend upon whether the latter are able to secure general acceptance. It has therefore not been judged expedient to bind the authors of the separate sections down to the observance of any fixed code; we have thought it better, while holding fast to those of the "rules of nomenclature" which can be regarded as *actually* accepted, to sanction a freer and more practical view of the subject, where such was preferred by our collaborators.

As with the form, so also with the method of publication of the third volume of the "Macrolepidoptera", the principles laid down in the preface to the two first volumes have been applied. The rapidity with which the later plates and chapters of the third volume appeared shows a considerable increase on the earlier parts, while concurrently the exotic part of the work has also been materially advanced and the larger half of the last Palearctic volume (vol. IV) published. And likewise in our aim of cheapness an advance may be recognized, as the supplying of 4338 coloured figures and the full text has surpassed our previous offers.

As quite recently new descriptions of Noctuids have been published weekly, our earlier parts are necessarily not quite complete to-day. It was nevertheless needful, in order to bring the Palearctic part to a conclusion at all, to dispense with further insertions, references and appendices. This could, however, be the more

easily done because the greater part of the fourth volume — the last Palearctic volume — has in the meantime appeared and consequently the publication of the supplement to the entire work has been brought very near, by means of which we shall be able to bring everything up to date and add all that has been newly published.

As for the earlier volumes, I ask also for this that in judging of it the greatness of the proposed task may be taken into consideration. That the authors are among the best qualified for its fulfilment and that through the kindness of our patrons and friends we have succeeded in obtaining a very full and valuable illustration of the fauna will certainly be acknowledged. And there can also be no doubt that the chromo artists (WERNER and WINTER of Frankfort on the Main and EMIL HOCHDANZ of Stuttgart) have done their utmost to furnish a production that is at least commendable. That not all the figures or plates in such a gigantic work have been equally successful, and that in the more than 40,000 figures of the "Macrolepidoptera" there have even been failures at times, is indeed regrettable, but at the same time unavoidable, and I beg that such may be judged as leniently as has been the case with the imperfections of the earlier volumes.

Darmstadt, November 1913.

Dr. ADALBERT SEITZ.

==== TOME III: ====

NOCTUIFORM
PHALAEENAE



III. Section: **Noctuiformes**, Noctuiform Moths.

To the Spinners (Bombyces) and Hawkmoths (Sphinges) of the II. Volume we add in the III. Volume the Noctuiform Heterocera. The Agaristidae have here been separated from the Bombyces and placed in front of the Noctuidae, the reasons for doing so being given in the general description of the Agaristidae. That they were put near the beginning of the Bombyces by former authors was the consequence of the opinion already held by LINNÉ that the shape of the antennae was of primary importance in classification; and that they remained for so long in that place was perhaps chiefly due to there being a distinct though distant relationship with the Arctiids. Hampson, who was one of the first to derive the Agaristids direct from the Noctuids, has therefore placed the Arctiids close to the Noctuids, other modern systematists having even put the latter behind the Geometridae, this place being assigned to them also in MESSRS. STAUDINGER & REBEL'S Catalogue of the Palaearctic Lepidoptera. However, in this catalogue the Agaristids stand as part of the Noctuidae between the Hypeninae and Cymatophorinae, being separated from the Arctiids by the great multitude of Geometers, the authors probably regarding the similarity existing between the Agaristids and Arctiids as a mere superficial agreement in colour and aspect.

We have already mentioned in several places of this work that the linear arrangement of the families, which we are bound to follow, does not express the complicated affinities, and we refer those who wish for information about the systematic position of the Noctuiform Heterocera to what has been said in the II. Chapter of the Introduction.

The Noctuiform Heterocera are distributed over the whole globe as far as there exists vegetation, on which is they feed. The Agaristidae are so to speak a tropical resp. subtropical bright-coloured modification of the Noctuids, which latter are mainly a development of the temperate regions. While the true Noctuidae occur occasionally in immense numbers, being often devastating, the Agaristidae appear more singly and sporadically, having only in some districts of Australia, and here also only at certain seasons, such a preponderance in numbers over the other Lepidoptera flying at the same time that one may call them the insects characteristic for the country.

By far the greater proportion of the species of Noctuiform Phalaenae inhabits the northern Hemisphere. Many forms of Noctuidae are circumpolar, extending so far north that it is possible for them in these high latitude where the continents approach each other to migrate across. But the Agaristidae, which are restricted to the warmer climates, contain no species common to the Eastern and Western Hemispheres. On the whole we find smaller, darkened or paled, strongly hairy forms the farther we go towards the North, while we meet with brighter, often variegated, species in the tropical countries. However, single groups, f. i. *Catocala*, exhibit on the contrary an array of bright colours in the northern temperate zone, appearing to counterbalance the species of *Ophideres* characteristic for the hot countries. Far north a type with bright-coloured hindwing is again represented by the genus *Anarta* and several subarctic *Plusias*.

The more the blackish, grey, brown or paled forms of Palaearctic Noctuidae, the species of *Agrotis*, *Hadena*, *Mamestra*, *Acrionicta*, etc., disappear towards the Tropics, the more abundant become the so-called Daylight-Noctuids, which swarm already when dusk has hardly set in and show even in sunshine a greater alertness and timidity than most of our Noctuids, which are usually fast asleep in daytime. Nearly all the Phalaenae known as Deltoids, which name was formerly much in use, are timid like Butterflies and hurry away at the slightest molestation, flying almost like Rhopalocera. These are just the forms to which belong in the Tropics the greater number of individuals of Noctuids, or sometimes even of Heterocera.

All the Noctuiformes are fond of junketting. It is sufficiently known to every collector in which abundance the Noctuids come to baits, the whole catch at them being often composed of forms belonging this family. While the species of *Plusia*, *Anarta*, *Mamestra*, *Leucania* etc., show a preference for flowers, visiting at night in our regions especially *Lonicera*, *Silene*, *Echium*, *Ajuga*, and in the warmer countries *Ipomoea*, *Lantana*, *Mimosa* as well as *Labiatae*, the forms of *Catocala*, *Erebus*, *Mamia*, *Sypna*, *Argiva* etc., are met with especially at the sap flowing from the wounds of trees when it has commenced to ferment in consequence of the intercurrence of a fungus. The Agaristidae congregate, besides around flowering shrubs,

especially also on damp places on roads. As the species of *Ophideres* prick with their hard-pointed tongue the ripe fruit of trees and thereby spoil the fruit, these insects are of importance for the horticulturist. However, the greater number of the noxious Noctuids is injurious as caterpillars, like the well-known Cotton-worm, *Leucanica argillacea*, which has repeatedly injured the crop of cotton-wool to a great extent; further the grass- and cabbage-worms, etc.

As the Agaristidae in their bright-coloured garb fly about flowers in sunshine presumably unmolested, they are doubtless protected internally. Such protection, however, is apparently quite absent from all other Noctuiiformes. These are, therefore, mostly very well concealed in daytime by their colour, resembling bark, lichens, rocks, dry leaves, etc. The species which are easily disturbed, like *Catocala*, *Ophideres*, *Grammodes*, etc., have also the unsteady, undulating flight of the Rhopalocera, which renders it extremely difficult for the pursuing enemy to catch the prey. The species of *Acrionicta*, *Agrotis*, *Leucania*, etc., which are fast asleep in daytime, are loath to take to the wing during daylight, having a straight whizzing flight, and falling almost regularly a prey to their enemies, if they are not at once able to effectually conceal themselves again.

1. Family: **Agaristidae.**

Very closely allied to the Noctuids, from which they are not sharply separated. The Agaristidae are nothing but day-flying Noctuidae which have preserved some generalized characters, being in other respects more specialized than the Noctuids. The frons is convex and mostly bears (as in many Noctuids) a usually circular non-scaled spot the edge of which is raised. This frontal ring is often situated at the tip of a truncate cone or horn-like process. The anterior edge of the clypeus is sharp. The tongue is well developed. The ocelli are present. The antennae are more or less distinctly incrassate distally in most forms, but remain sometimes fili- or even setiform. The sensory bristles stand in a somewhat irregular transverse row; the fine hairs which cover the non-scaled ventral surface are usually very short, being as a rule dispersed on the clubbed antennae. There are never prolonged ciliae arranged in roof-stape as in the Noctuid ♂♂, the lateral grooves being also always absent. The segments are nearly always cylindrical, or slightly flattened below, being rarely slightly prismatical. The neurulation is quite Noctuid-like, but the 2. radial of the hindwing (vein 5 of HERRICH-SCHAEFFER) is distinctly developed and originates in the centre of the cell, rarely a little behind the centre, while in the forewing this vein branches off not far from the hinder angle of the cell, as in the Noctuidae. Hindtibia always with 2 pairs of spurs. Claw with tooth. ♂ with scent-organ laterally in the 2. abdominal segment; anal segment with long hook.

Between the first abdominal segment and the thorax there is in ♂ and ♀ a sensory organ as in the Noctuids and Arctiids. In between the lateral sclerite and the tergite there is situated an often circular opening leading into a cavity which is divided by a vitreous vertical membrane into a right and left chamber (sound-receiver?). In most species this opening is very large and distinctly visible without removal of the hairs. The ♂♂ of some species possess like many Noctuids an organ of stridulation with which they produce during flight a loud, whistling, or hissing sound by the ribbed tarsus being pressed against a naked ribbed space of the wing.

The early stages, which are known of a few species only, are like those of the Noctuidae. The larva, the penultimate segment of which is somewhat enlarged, bears single long hairs placed on small tubercles, these hairs being sometimes widened at the tips. The pupa lies naked in the ground. It is posteriorly obtuse and bears at the apex a transverse ridge which is usually twice interrupted.

The Agaristidae fly in day-time, only a few species come to the light at night. They swarm about flowering trees and visit flowers like the European day-flying Noctuids.

The family is best developed in the Tropics of the Old World, containing here many bright-coloured forms of medium size. Almost all the Agaristidae have metallic spots on the wings. The few species occurring in the Palaearctic Fauna are restricted to the Pacific districts of the Region. They are Himalayan forms which extend partly as far as Yesso, only *Syffania* appears to be a purely West Chinese genus.

The Agaristidae are comparable to the Arctiids as regards colour; some agree indeed very strikingly with Arctiids in colour, pattern and size. Also many Geometridae resemble them most closely. Among the American Erycinidae there are likewise species which are of the same type of coloration as the American black and yellow Agaristids.

1. Genus: **Episteme** *Hbn.*

Frontal ring somewhat transverse, situated on a short cone. Antenna of ♂ and ♀ distinctly clubbed; fine hairs very short. Eye naked. Tibiae without spines. Forewing without areole, 2.—5. subcostals stalked together. — Larva (of *E. bisma* *Moore*, Java) black, with yellow belts; the single hairs grey; on Dioscorea. — Indo-Malayan, northwards extending to Kashmir and China, eastwards to Sumba. Flying in sunshine about flowering trees.

E. lectrix *L.* (1a). Breast black below, only the inside of the forecoxa yellow; abdomen below *lectrix*. ringed with black, or at least the last segments with 3 black spots; tip of abdomen black. Spots of forewing yellow, with the exception of the submarginal row; size of spots very variable; sometimes the hindwing almost entirely black. Clasper of ♂ obtuse, upper margin externally projecting elbow-like. — China, very common; the East Chinese specimens more extended black on hindwing than the West Chinese ones.

6 EPISTEME; CHELONOMORPHA; MIMUSEMIA; SCROBIGERA; SYFANIA. By Dr. K. JORDAN.

beatrix. **E. beatrix** *spec. nov.* (= *irenea* *Leech*, nec *Boisd.*) (1a). Tip of abdomen yellow. Similar to *maculatrix* *Westw.* from North India. Thorax below inclusive of its sides and the underside of the mid- and hind-femora clothed with long yellow hairs, mid- and hindtibiae, usually also a portion of the tarsi, pale yellow on upperside. Spots of forewing sometimes all white. Clasper of ♂ black, not yellow as in *maculatrix*, ending in a point, and bearing at the dorsal margin near the base a spatuliform process similar to that of *lectrix* but broader; anal hook slender, acute. — In West China, together with the preceding, but less abundant.

adulatrix. **E. adulatrix** *Koll.* (1a). Thorax with large yellow spots anteriorly; abdomen ringed with yellowish red. Forewing with 2 rows of blue spots at the base, 2 yellow macular bands and a row of white submarginal spots. Hindwing black, with a yellowish red spot before the anal angle and a row of white dots between that spot and the costal margin. — Common in North India, rarer in Kashmir and West China.

2. Genus: **Chelonomorpha** *Motsch.*

Eye sparsely hairy below. Antenna feebly clubbed, the fine hairs very short. Body shaggy. Forewing with areole, the 5. subcostal from apex of areole; 1. abdominal segment with yellow tuft above. Frontal process rather high and slender. — 1 species, which is distributed from India to Yezzo.

japona. **C. japona.** Abdomen above ringed with black, spotted below. Forewing with yellowish white spots, 2 in and 1 below the cell, and 2 distally from the apex of cell, and with a submarginal row of smaller spots. Hindwing yellow, base and the yellowish white-spotted distal margin black, in front of the anal angle two black spots. — The Japanese form, **japona** *Motsch.* (= *villocoides* *Btlr.*) (1b), is rough-hairy; the 2 black spots situated before the anal angle of hindwing are separated and the submarginal spots of the underside are large. Not rarely in Central and North Japan, in June and July. — **austeni** *Moore* (1b) occurs in Central China and North India. The spots of the forewing are smaller and the 2 black spots of the hindwing are confluent.

3. Genus: **Mimusemia** *Btlr.*

Very closely agreeing with *Chelonomorpha*. The 3. palpal segment longer; 2. radial of forewing closer to the 3. than in the preceding genus. — Indo-Malayan, northwards distributed to Amurland and Yezzo.

persimilis. **M. persimilis** *Btlr.* (1b). A broad stripe on head and pronotum, a long spot on the mesothoracical tegula and a round one in the centre of the metanotum pale yellow like the spots of the forewing. Pectus yellow. Hindwing at apex of cell with a large black spot which is connected with the black costal margin; distal marginal band black, widened anally, proximal to it a black spot which is usually entirely merged together with the band. — Yezzo; Central Japan; Amurland; Corea; West China.

4. Genus: **Scrobiger** *Jord.*

Frons simply convex, without distinct ring. Antenna very slightly clubbed, in ♀ almost filiform, fine hairs very short. Forewing with areole, 2. subcostal stalked with 3. and 4., upper median proximal to cell-angle. Hindwing of ♂ with central longitudinal fold (scent-organ); base of 2. radial and apex of cell-fold forked in ♂ and ♀, the two forks forming a rhomb. — Indo-Malayan, extending to West and Central China.

amatrix. **S. amatrix** *Westw.* Forewing with pale yellow macular band in the centre and a row of 4 small spots distal to apex of cell. Hindwing reddish yellow above, with the exception of the base and the distal margin which are broadly black; at apex of cell a black spot. Underside of body for the greater *clinensis.* part orange-yellow. Pronotum yellow in ♂, black in ♀. India and China. — The Chinese form, **chinensis** *subsp. nov.* (1c), has a much more extendedly black abdomen than the Indian subspecies; in ♂ above only the 4., 5. and 6. segments narrowly bordered with yellow, the 7. segment, which envelops the claspers, being entirely black. The underside of the hindwing is paler in ♂ and ♀, and the ♀ has an entirely black abdomen. — I-chang on the Yang-tse-kiang, and in West China.

5. Genus: **Syfan** *Oberth.*

Frontal cone with sharp ring. 3. segment of palpus short, rough. Tibiae and underside of body long-hairy; hindtibia with some spines between the 2 pairs of spurs. Antenna of both sexes rather strongly clubbed, the fine hairs very short. Forewing with areole, 1. median from the angle of cell. — All the 5 species come from West China, where they fly in June and July. They resemble each other very closely. All bear whitish or greenish yellow spots on the wings, 1 or 2 standing not far from the base, 2 in the

centre, 1 long one distal to apex of cell, and mostly a submarginal row of which the last spot is usually somewhat enlarged. The hindwing has a spot near base of cell (white or yellowish like the other spots), a 2. larger one at end of cell, a 3. behind it, and amostly a smaller, sometimes orange, spot in front of anal angle, the spots being sometimes connected with one another. The spots are paler on the underside, the hindwing bearing a yellow costal streak or being for the greater part yellow.

S. bieti *Oberth.* (1d). Hindwing with white separate spots, no spot before anal angle. — Ta-tsien-lu *bieti*. and other places in West China; the commonest species.

S. giraudeaui *Oberth.* (1d). Hindwing above with a row of submarginal spots or at least an anal *giraudeaui*. spot, and beneath more extended yellowish white than in the preceding insect. — From several places in West China, in May, June and July.

S. oberthueri *Alph.* (1d). Spots of hindwing connected with one another, only the anal one being *oberthueri*. separated. — Kham country, found in June.

S. dejeani *Oberth.* (1d). Hindwing with yellow spot in front of anal angle. — Ta-tsien-lu and *dejeani*. Tsang-ku, in May, June and July.

S. dubernardi *Oberth.* (1d). Spots of hindwing confluent, with the exception of the anal one; the *dubernardi*. wings deeper yellow beneath than above. Forewing without submarginal row, only the last spot being present: discal spot very large. — Tsang-ku.

6. Genus: **Asteropetes** *Hamps.*

Frons long-scaled, the long frontal cone usually concealed underneath the rough scaling. 3. segment of palpus long, smooth-scaled, somewhat incrassate at the tip. Antenna thin, not clubbed, the fine hairs and setae somewhat longer than in the previous genera. Abdomen above with long tufts on the proximal segments. Tibiae long-hairy on upperside. 2. subcostal of forewing from the areole, 1. median from angle of cell. — Japan; 1 species.

A. noctuina *Bth.* (1c). Forewing with reddish brown marginal band and dark orbicular and reni- *noctuina*. form spots. Hindwing yellow, with brownish black marginal band, large black stigma and a longish spot behind the cell. Underside yellow, with black spots in centre. — Yezzo and Central Japan, June and July.

7. Genus: **Zalissa** *Walk.*

Frontal cone shorter and broader than in the preceding genus. Antenna usually almost setiform, the fine hairs mostly still somewhat more distinct than in *Asteropetes* (therefore *Zalissa* placed with the Noctuids by HAMPSON). 3. palpal segment shorter. — Indo-Malayan, northwards to Amurland and Yezzo. All the species have a yellow hindwing bearing mostly a black or brown marginal band, and have on the forewing an orbicular and a reniform spot.

Z. subflava *Moore* (= *jankowskii* *Alph.*) (1e). 3. segment of palpus almost as long as in *Asteropetes subflava*. *noctuina*. A broad streak in front of hind margin of forewing and a large subapical patch, which is proximally limited by two lines, red-brown. Underside of forewing yellow, with black reniform stigma, and a brown marginal band; hindwing with black stigma. — Japan (main island); Amurland; Corea; East and West China; in July and August.

Z. mandarina *Leech* (1e). Below yellow like the preceding species. Stigma of hindwing large, *mandarina*. marginal band broken up into spots which stand separate from the edge. — Chang-Yang, Central China, in July, 1 ♂ known.

Z. flavida *Leech* (1e). Hindwing above all yellow. Underside of both wings yellow, with indistinct *flavida*. red-brown marginal band; spots of forewing and a streak in front of hindmargin, as well as a stigma on the hindwing brown-black. — Chang-Yang, in August.

Z. subalba *Leech* (1e). Forewing above white distally from the reniform spot; at the hindmargin a *subalba*. brown-red spot proximally of external angle; marginal band of hindwing black, complete, not separated from the edge. Forewing below white in the cell, apart from the round central spot; on disc a white band which is connected with a white spot standing at the hind angle; marginal band of hindwing black, no stigma. — Very similar to the Indo-Malayan *Z. transiens*, most probably only a local form of it. Central China.

Z. venusta *Leech* (1f). Forewing above similar to that of the preceding insect. Hindwing with *venusta*. a large black spot in front of anal angle; the black marginal band, which is as broad as in the previous species,

not reaching the anal spot. Forewing below with black submarginal band, and hindwing without black marginal band. — Corea; Central and West China; in July.

albifascia. **Z. albifascia** Walk. (1f). Antenna of ♂ distinctly though feebly clubbed, fine hairs short. Forewing above without brown-red spots; distally from reniform spot a white patch; submarginal line zigzag. Hindwing with an anteriorly very broad black marginal band. Below, the forewing yellow at base. — India: Andamans; according to HAMPSON also in North China.

S. Genus: **Ophthalmis** Hbn.

Frontal process simply convex, the ring not sharp. Antenna setiform, in the ♂♂ of some species very faintly clubbed, the fine hair about as long as in *Zalissa albifascia* Walk. Abdomen and tibiae not shaggy, 3. palpal segment short in the single Palaearctic species, but mostly long in the Indo-Australian species. 2. subcostal of forewing from the areole; 1. median from the angle of cell. — Oriental Region, northward to China.

vithoroides. **O. funebris** Moore. Body yellow below, abdomen ringed with yellow above, legs white-spotted. Forewing above reddish brown or black, spotted with white; hindwing black, with broad white band proximally of centre and a row of small white spots on disc. Underside black, marked with white. 2 geographical races: North India and China. — The Chinese subspecies, **vithoroides** Leech (1f), has a black forewing with larger spots; band of hindwing interrupted by a black transverse line situated in the cell. Central and West China.

Alphabetical List

of the Palaearctic Agaristidae, with references to the original descriptions.

* denotes that the form is also figured in the place quoted.

albifascia Zal. *Wlk.* Cat. Lep. Het. B. M. p. 771.
adulatrix Epist. *Koll.* Hüg. Kaschmir IV. (2). p. 464.*
amatrix Scrob. *Westw.* Cab. Or. Ent. p. 68.
austeni Chel. *Moore*, Desc. Ind. Lep. Atkins. p. 11.
beatrice Epist. *Jord.* Seitz, Macrol. I, Bd. 3, p. 6.*
bieti Syf. *Oberth.* Bull. Soc. Ent. Fr. (6) V. p. CCXXVIII.
chinensis Scrob. *Jord.* Seitz, Macrol. I, Vol. 3, p. 6.*
dejeani Syf. *Oberth.* Ét. d'Ent. XVIII. p. 19.*
dubernardi Syf. *Oberth.* Ét. d'Ent. XIX. p. 21.*
flavida Zal. *Leech*, Entomol. XXIII. p. 110.
giraudeaui Syf. *Oberth.* Et. d'Ent. XVIII. 19.*

japona Chel. *Motsch.* Ét. Ent. IX. p. 29.
lectrix Epist. *L.* Mus. Ulr. p. 389.
mandarina Zal. *Leech*, Entomol. XXIII. p. 110.
nocturna Aster. *Btlr.* Ent. Month. Mag. XIV. p. 206.
oberthueri Syf. *Alphér.* Rom. Mém. Léop. IX. p. 126.*
persimilis Mim. *Btlr.* Ann. Mag. Nat. Hist. (4) XV. p. 397.
subalba Zal. *Leech*, Entomol. XXIII. p. 110.
subflava Zal. *Moore*, Ann. Mag. Nat. Hist. (4) XX. p. 85.
venusta Zal. *Leech*, Proc. Zool. Soc. L. 1888. p. 614.*
vithoroides Ophith. *Leech*, Entomol. XXIII. p. 110.

2. Family: Noctuidae.

The insects included under the term Noctuidae are of general distribution throughout the world and exhibit among themselves in the imago stage immense variety in size, shape, and coloration, but are all alike differentiated from other families, except the *Agaristidae*, by their neuration. The large majority are, as the name implies, nightfliers, hiding by day in convenient shelters among trees, shrubs, and lowplants, or resting with closed wings on the trunks of trees or on rocks, to which their coloration is assimilated, and coming forth at dusk to feast upon the juices of flowers and fruits, and to search for their mates. Those which fly by day, such as *Heliothis* and allied genera are brighter coloured and can hardly be distinguished either by structure or habits from the *Agaristidae*, the separation of the latter being, I think, purely one of convenience.

Of the great bulk of the species the larvae also feed by night and conceal themselves by day under foliage close to the ground and in some cases by actually burrowing beneath it; these are, as a rule, dull coloured and difficult of differentiation; on the other hand, those which feed by day, as *Heliothis*, and some *Cucullia* are of brighter coloration and more easily distinguished. All are smooth or nearly so, except those of the *Acronictinae*, which are variously adorned with tufts or series of hairs. These, as well as the larvae of the last two groups, which comprise the *Plusiæ*, the *Catocalæ* and the *Deltoids*, spin a cocoon for pupation above ground, whereas the true *Noctuæ* pupate in the earth.

In the arrangement of groups in the Palaearctic Noctuidae it has seemed advisable, in view of its general familiarity and authority, to adhere, as far as may be, to the subdivision and sequence observed in STAUDINGER and REBEL'S Catalogue of 1901. But since the publication of that Catalogue the first 2 volumes of Sir GEORGE HAMPSON'S more elaborate and systematic review of the Noctuidae have appeared, and the results of his researches will be utilized, with as small an amount of alteration in the sequence as may be found possible. The groups employed by STAUDINGER are five in number: the *Acronictinae*, with hairy larvae; the *Trifidinae*,*) including the true *Noctuæ*; the *Gonopterinae*, with angled outer margins to the wings; the *Quadrifidinae*, comprising the largest members of the family; and the *Hypeninae* or *Deltoids*, characterised by the largely developed palpi.

The neuration of the Noctuidae is on the whole surprisingly constant. It is generally as follows: vein 1c is absent; vein 2 rises from well before the end of cell; vein 3 from close to 4; vein 5, the lower radial, always nearer to 4 than to 6; vein 6 from the upper angle; veins 7, 8 and 9, 10 are stalked, 9 anastomosing with 8 to form the areole; 11 is free, from the cell. In the hindwing the costal anastomoses with the subcostal at a point only, near base (abnormally, in certain instances, for one half of cell); veins 3, 4 and 6, 7 generally from the ends of cell; vein 5 is either strong and perfect, or weak and obsolescent. This difference in the structure of vein 5 of the hindwing affords a natural subdivision into 2 groups; the first including the *Acronictinae*, *Trifidinae* and *Gonopterinae*, and the second the *Plusiinae* and *Hypeninae*. In the *Hypeninae* this vein is straight and runs parallel to vein 4; in the other groups it is more or less curved from its base, rising in the *Plusiinae* in close approximation to 4, and in the other 3 from just below the centre of the discocellular.

In the first 4 subfamilies the labial palpi are of moderate dimensions, more or less upturned, with the second segment densely scaled, the third generally short; in the *Hypeninae* they are generally very long, porrect horizontally or upcurved before face. The hind tibia always bears 2 pairs of spurs; the tongue, frenulum, and ocelli are present. The eyes are generally smooth; but in some groups hairy, or smooth but fringed with cilia; they also vary in shape, being usually globose, but in certain cases narrowed. In many cases the tibiae bear spines and claws as well as scales and tufts of hair.

*) The terms *Trifidæ* and *Quadrifidæ*, — names originally given to denote the splitting up of the median vein of forewing into 3 or 4 veinlets — mean three cleft and four cleft: the syllable *fid* — in these words is therefore an integral part of each, and not a portion of the descriptive ending — *idæ*.

It should be noted that, while the *Acronictinae* and *Trifidinae* are more abundant in the temperate regions, the *Plusinae* and *Hypeninae* predominate in the tropics.

Many Noctuids are remarkable for the organs of stridulation or scent found in the ♂♂. The often very striking structures are most strongly developed in tropical species. The scent-organs consist of expansible hair-tufts of various shapes, occurring on the legs and antennae, or on the wings, the thorax or abdomen. The organs of stridulation are less frequent, and still less often is it known, what kind of sound the ♂ produces therewith. They consist of non-scaled, transversely ribbed places on the wings.

Subfamily: **Acronictinae.**

Forewing elongate; head, thorax, and pectus usually densely haired. Antenna in a few cases bipectinate in the ♂; usually nearly simple.

Separated from the rest of the Noctuidae by having larvae more or less hairy, feeding exposed, and pupating in a cocoon above ground.

In nervation the *Acronictinae* cannot be called a homogeneous group; in fact all the different variations, which occur in the rest of the Noctuidae possessing non hairy larvae, are found among them; vein 5 of the hindwing being sometimes strong and complete, or again weak and obsolescent, or intermediate between the two.

The ground-colour, in the large majority of the species, is grey darkened with fuscous and black; in some green or greenishwhite; others again are fawn-brown or reddish; and a few white or ochreous. The grey species, which form the large genus *Acronicta*, are characterised by black dagger-shaped marks on the folds along the course of the inner and outer lines; the green species are marked by black irregularly zigzag cross-lines or brown bands; the fawn coloured species are crossed by white zigzag lines; and the paler forms have narrower, more pointed, wings, without transverse lines and markings, but with darker streaks between theveins.

A. Forewings whitish, with transverse dark markings.

1. Genus: **Panthea** Hbn.

Antennae bipectinate in ♂; head, thorax, and pectus hairy; palpi short, the terminal segment hidden; tongue slight; eyes hairy; abdomen without crests; vein 5 of hindwing curved at base, from lower third of discocellular.

coenobita.

P. coenobita Esp. (2a). Forewing whitish, crossed by thick black zigzag lines; hindwing grey; head and thorax white with black spots; abdomen black. — Flies in May, in firwoods of Central Europe, but nowhere common. Larva hairy, dark blue, with the segmental rings reddish, the 4. and penultimate segments of dorsum with long tufts of hair; fullfed in autumn, on Fir and Pine.

2. Genus: **Moma** Hbn.

Differs from *Panthea* in the antennae of ♂ being simple; palpi short, with terminal segment rounded.

ludifica.

M. ludifica L. (2a). Forewing cream-colour crossed by broken zigzag black lines; hindwing with inner margin yellow; the rest white in ♂ with blackveins, blackish in ♀; abdomen yellow, with black bars. — The perfect insect flies in May, in mountainous districts of Central Europe. Larva blue-grey, with three orange dorsal lines; a white dorsal blotch behind 3. segment and another on anal segment; a fleshy protuberance on 11. segment, bearing hairs; fullfed in autumn, on Sorbus.

champa.

M. champa Moore (2a). Differs from *ludifica* in the forewing being flushed with rosy; hindwing in ♀ with only the apex dark. — Amurland; India.

B. Forewings green.

3. Genus: **Canna** Walk.

The typical species is *C. prasinaria* from India. Antennae of ♂ simple; head, thorax, and pectus hairy; metathorax crested; palpi projecting beyond frons, hairy, the last segment small; tongue well developed; eyes naked; abdomen with large central crest; vein 5 of hindwing curved at base from lower third of discocellular.

malachitis.

C. malachitis Oberth. (2b). Forewing glossy green, with base and outcurved central band brown; pale spaces at apex and anal angle, each with a dark ringlet; hindwing glossy white; thorax and abdomen green, the tufts blackish. — Amurland; West China. The species is closely allied to *C. splendens* Moore from India, but certainly not identical, the course of central band and shape of basal green area are both different.

4. Genus: **Daseochaeta** *gen. nov.*

Antennae of ♂ with short stiff ciliated pectinations, towards apex serrate; of ♀ finely serrate and pubescent: head, face, palpi, pectus, abdomen and legs rough-haired, as in *Oxycesta* Hbn.; palpi short, drooping; tongue well-developed: abdomen without crests: eyes naked; vein 5 of hindwing curved at base, from lower third of discocellular.

D. viridis *Leech* (2b). Forewing dingy grey-green; markings black, with pale edges: the 3 lines *viridis* wavy, the outer approaching distal margin: reniform stigma large, roughly 8-shaped; hindwing dirty grey; the wings are rather glossy in both sexes, generally paler in the ♂. — Recorded by LEECH from Japan, as *Agriopsis*.

5. Genus: **Diphtherocome** *gen. nov.*

Differs from *Diphthera* in having the antennae of ♂ bipectinated.

D. pallida *Moore* (2b). Forewing sea-green, paler between the lines, and white along the folds; *pallida*. the lines black and thick: a black blotch between stigmata; a row of dark submarginal spots; hindwing greenish white. — Recorded from West China; also from India and Kashmir. — In West China there occur two forms, both distinct from the typical; ab. *laevis* *nov.*, as large as type-form, has the black markings *laevis* reduced, the outer line nearer middle of wing, and no submarginal spots; the other form, ab. *minor* *nov.*, *minor* is distinctly smaller, has the black markings intensified, the outer line closer to distal margin, and the hindwing in both sexes tinged with smoky grey; these forms were referred by LEECH to *vigens* *Walk.*, but that Indian species is quite distinct.

D. vivida *Leech* (2b). Forewing yellower green than in *pallida*, the lines finer; submarginal spots *vivida*. nearer distal margin. — West China.

6. Genus: **Diphthera** *Th.*

Antennae of ♂ lamellate, pubescent; head, thorax, and pectus hairy; palpi upturned, hairy; third segment long, smooth, acute; tongue developed; eyes naked; patagia and metathorax crested; vein 5 of hindwing straight, from just below middle of discocellular.

D. alpium *Osb.* (= *orion* *Esp.*) (2c). Forewing bluegreen, the costa and both folds white: stigmata *alpium*. and lines black: outer line with brown outer border; hindwing fuscous, with black and white marks at anal angle; widely distributed, but local, flying in May and June. — In the form *murrhina* *Graes.* (2c), from *murrhina*. Western Asia, the green of the forewing is much more broken up by black markings between the lines, and the brown shade beyond outer line is wider and extends into the fringe. — The examples from Japan are as large as European, those from Corea decidedly smaller. Larva pale brown streaked with yellow; dorsum black with 3 transverse yellowish white blotches; tubercles reddish, bearing erect tufts of hairs; feeds up in autumn, on oak.

D. marmorea *Leech* (2b). Forewing bright green; basal patch brown, angularly produced below *marmorea*. middle; a brown shade beyond outer line followed by a submarginal row of spots; hindwing whitish. — West China.

C. Forewings fawn-colour or reddish.

7. Genus: **Colocasia** *Hbn.*

Antennae of ♂ bipectinate, of ♀ simple; head, thorax, and pectus hairy; palpi hairy, porrect, terminal segment small; tongue slight; vein 5 of hindwing strong, straight from near middle of discocellular; veins 6, 7, and 3, 4 short-stalked.

C. coryli *L.* (2c). Forewing pearly grey, tinged with brown; lines blackish, vertical; space between *coryli*. them often dark brown. Of general distribution, occurring in May, throughout Europe, also in Asia Minor. — The form *mus* *Oberth.* (2c) from Amurland has the ground-colour more bluish grey. — Larva ochreous, *mus*. with grey hairs; dorsal line dark, with two long projecting pencils of black hairs from segment 2 and one from segment 12., two reddish brown erect tufts on segments 5 and 6; feeds up in autumn on various trees. The genus seems better placed with the *Ocenebriidae*, with which it agrees in the larval tuftings.

8. Genus: **Oxycesta** Hbn.

Antennae of ♂ bipectinated, the shaft and pectinations both thick, of ♀ subserrate; head, face, thorax, abdomen, pectus, and legs hairy; palpi porrect, with distinctly pointed terminal segment; tongue slight; eyes naked; vein 5 of hindwing straight, from just below middle of discocellular.

geographica.

O. geographica F. (= *austera* Esp., *sericina* Hbn.) (2d). Forewing brownish fawn-colour, the veins pale; lines broadly white, sharply but irregularly angled; stigmata indistinct; hindwing in ♂ whitish, in ♀ fuscous. Flies in May and again in July in S. E. Europe, and in the Tyrol. — Larva whitish, marbled with black: a dorsal black white-bordered streak: subdorsal line black; spiracular line white; a fulvous stripe across each segment: the tubercles bear fascicles of black and white hairs; fullfed in June and again in autumn: on *Euphorbia cyparissias*; when young living gregariously.

chamaesyces.

O. chamaesyces Guen. (= *chamaenices* H.-Sch., *sericina* Hbn.) (2d). Like *geographica* F., but smaller and darker: head and thorax paler than abdomen. Restricted to S. W. Europe, South of France, Piedmont and Spain. — Larva on *Euphorbia chamaesyce*.

9. Genus: **Eogena** Guen.

Antennae lamellate, thicker in ♂; head, thorax, palpi, and pectus hairy; palpi thick, porrect; tongue slight; eyes naked; abdomen without crests; vein 5 of hindwing straight from below middle of discocellular.

contaminei.

E. contaminei Er. (= *eogene* Ferr., *bombycina* Mén.) (2d). Forewing dull pink; lines marked by dark spots on costa and folds; hindwing a little paler. Occurs only in S. E. Russia and Turkey. — Larva pale yellow, tufted with reddish brown dorsally, and with black and white lateral stripes. On *Statice gmelini*.

10. Genus: **Euromoia** Stgr.

Antennae setaceous, shortly ciliated; palpi smooth, slender; eyes naked; forehead slightly prominent; tongue well developed.

mixta.

E. mixta Stgr. (2d). Forewing ashygrey; a yellowish blotch at base, the distal margin pale; cell dark, with the stigmata pale; hindwing fuscous, with yellow fringe. — Amurland.

D. Forewings whitish, elongate, with longitudinal dark streaks.

11. Genus: **Simyra** O.

Antennae of ♂ bipectinated, of ♀ simple; head, palpi, and thorax roughhaired; thorax and abdomen without crests; eyes naked; vein 5 of hindwing slightly curved at base, from lower third of discocellular.

buettneri.

S. buettneri Hering (= *bloomeri* Hein.) (2d). Forewing straw-colour, the veins rufous, the intervals with grey streaks; hindwing grey, with rufous veins. Flies in autumn in marshes of N. Germany and S. Russia.

dentinosa.

S. dentinosa Ferr. (= *tentinosa* H.-Sch., *leucaspis* Fisch.) (2e). Forewing greyish ochreous, the veins rufous; grey streaks between the veins running out into the fringe; costa at base pale. Flies in spring, occurring in S. E. Europe, Armenia and Central Asia. — The larva feeds gregariously on *Euphorbia*, being full fed in May and June.

nervosa.

S. nervosa F. (2e). Forewing ochreous, covered with dark atoms; the veins darker, the intervals paler. Flies in July and August, but not commonly, in Germany and Austria. — Larva yellowish white, with broad dark dorsal band and another above the spiracles, bearing dull red and yellow tubercles; hairs

argentacea.

whitish; full fed in June, on *Euphorbia*. — ab. **argentacea** H.-Sch. (= *torosa* Guen.) (2e) differs in having the ground-colour whiter, with less dusting; recorded from S. Russia and Central Asia; examples from Afghanistan seem to be intermediate.

splendida.

S. splendida Stgr. (= *niveonitens* Graes.) (2e). Wings shining white on both sides; hindwing sometimes greyish above. Occurs in Central Asia, Amurland and Korea.

12. Genus: **Arsilonche** Led.

Differs from *Simyra* O. in the antennae of the ♀ being shortly ciliated only, instead of pectinated.

albovenosa.

A. albovenosa Goetze (= *venosa* Borkh., *degener* Hbn.) (2e). Forewing whitish ochreous, whiter in ♀, greyer in ♂, with dark longitudinal streaks along the folds and inner margin. Flies in marshes in May and August throughout Europe and in Western Asia. — Larva pinkish, marbled with pale; lines pale,

yellowish or reddish; the tubercles with short fascicles of pale hairs, feeds up in autumn on reed and marsh grasses. pupating in a spun cocoon. — ab. **flavida** and ab. **albida** of *Auriv.* (= ochracea and *argentea* Tutt) seem to represent mere variations in colour. — ab. **centripuncta** *H.-Sch.* (2f) has a black cell spot in forewing and occurs in S. E. Russia and Dalmatia. — ab. **murina** *Auriv.* (4a) is smaller than the typeform, and from its appearance might well be a distinct species; the forewing is bronzy brown, with all the veins and the fringe white: the head and thorax are brown: the abdomen and hindwings white: this form occurs in Sweden and Dalmatia, being probably more widely distributed.

13. Genus: **Leiometopon** *Stgr.*

Antennae thick, lamellate, flattened: palpi short, hairy, with third segment minute; tongue absent; eyes naked; abdomen without crests.

L. simyrides *Stgr.* (2f). Forewing pale grey, with a broad white streak from base below median vein: according to STAUDINGER, it much resembles *S. dentinosa*. It occurs only in Central Asia.

E. Forewing grey varied with fuscous and black.

14. Genus: **Acronieta** *Tr.*

Antennae of ♂ pubescent; head, thorax, pectus and abdomen densely haired; the abdomen slightly tufted near base, roughened laterally; palpi with third segment usually short; eyes naked; tongue strong; vein 5 of hindwing weak, curved at base, from lower third of discocellular. — Larva adorned with long, generally scattered, hairs; resting in form of a horse-shoe; tubercles small. — Pupa in cocoon in wood; the segmental margins smooth. — Eggs deposited singly.

A. aceris *L.* (2g). Forewing whitish grey; basal streak thin and interrupted; a black streak through outer line on submedian fold; hindwing white in ♂, greyish in ♀, the veins blackish. — Common throughout Europe, extending through West and Central Asia. — ab. **infuscata** *Haw.* (2f) has the whole forewing dark suffused grey. — ab. **candelisequa** *Esp.*, to which STAUDINGER wrongly sinks *infuscata*, seems, from the figure, to be intermediate between it and the type, if it belong here at all; ab. **intermedia** *Tutt* (= *candelisequa* *Gn. nec Esp.*) is the common British form, with forewing darker, tinged with ochreous, and more distinct markings; ab. **judaea** *Stgr.* from Palestine is paler, the forewing greyish white. — Larva with diffuse tufts of long yellow or fulvous hairs; a dorsal series of snowwhite, purple-edged, diamond-shaped spots, sometimes united by a white line: head black: fullfed in autumn: on sycamore and horse chestnut.

A. albonigra *Herz.* Intermediate between *strigosa* and *pontica*, nearer the latter; the base of the forewing and a fascia beyond median shade blackish; the rest pale grey; orbicular stigma small, whitish; reniform yellowish, as in *strigosa*; a black basal streak; hindwing shining greybrown; smaller than *strigosa*; Corea.

A. alni *L.* (2g). Forewing pale grey; inner margin and a broad median shade black; hindwing white; generally distributed but rarely common. — The larva, when young, is whitish, with the middle segments grey, being protected at this stage by its resemblance to a bird's droppings; when fullfed it becomes purple black, the tubercles then bearing long black hairs with broadly thickened tips; the dorsum marked on each segment with transverse yellow bands; in this stage it is said to emit a strong scent; — fullfed in autumn, on oak, alder, etc. — In the ab. **steinerti** *Casp.* the ground colour is dark brownish grey; ab. **carola** *Phil.* representing an intermediate form; in ab. **suffusa** *Tutt* the two pale patches are as dark as the rest of wing; in ab. **obsoleta** *Tutt* the orbicular stigma is wanting.

A. asiatica *Pouj.* Differs from *aceris* *L.* in having the forewing more square; the orbicular stigma conspicuously white on a grey ground; the whole wing with a rufous tinge; recorded only from Moupin, W. China.

A. bellula *Alph.* Forewing uniform dark ashy grey; the markings finely black: the orbicular stigma pale: described from a single ♂ from Sidemi.

A. carbonaria *Graes.* (= *brumosa* *Leech*) (2h). Forewing elongate, like a large *rumicis*, fuscous black; a pale patch at base of inner margin; hindwing whitish, darker at base: found in Amurland by GRAESER; LEECH's so-called *brumosa* from Japan and Corea.

A. catocaloida *Graes.* (2h). Forewing greyish black, much broken up by obscure dark and light marks; hindwing bright yellow, the veins and base dark; submarginal band deep black; discovered, like the

preceding species, by GRAESER in Amurland, who gives the larva as dark green, sparsely clad with short-brown bristles, thickened at their tips; fullfed in autumn. on oak.

- centralis*. **A. centralis** Ersch. (2h). Forewing ashy grey, with black lines and stigmata, and a fuscous shade beyond outer line; recorded from Central Asia.
- consanguis*. **A. consanguis** Btlr. (3i). Like *pruinosa* Guen., but larger and paler: at present only known from Japan.
- cuspis*. **A. cuspis** Hbn. (2h). Like *A. psi* L., but paler, bluer grey; the black streaks thicker; stigmata united by a short black bar; occurs sparingly throughout Europe and in Western Asia, but not recorded from England. — Larva like that of *psi*, but the fleshy process on segment 5 bears a long tuft of black hairs; it is fullfed in autumn, living on alder only. — **leucocuspis** Btlr., occurring in North China, Japan and Corea is larger and darker in tint. — **taurica** Stgr., on the contrary, is a much paler form, with the stigmata far apart. queried by STAUDINGER as possibly a distinct species.
- digna*. **A. digna** Btlr. (= *michaël Oberth.*) (2i). Forewing pale grey in the ♂, darker in ♀, with a thick black streak from base: median shade broad. bent in middle; hindwing dull whitish. Occurs in Amurland, Japan and Corea.
- eleagni*. **A. eleagni** Alph. (2i). Differs from *aceris* in having the thorax and forewing tinged with luteous, the normal markings tending to become obsolete; recorded from Bokhara. The larva, which does not seem to have been described, is said to feed on *Eleagnus hortensis*.
- fasciata*. **A. fasciata** Moore (2i). Like *strigosa* F., but larger and darker, more coarsely scaled; a broad black streak. interrupted in the ab. **divisa** Moore, runs along submedian fold; hindwing brownish fuscous; originally described from India, but occurs also in China and Japan, in Kashmir and Burma, and with slight local differences also in the Kei Islands, New Guinea and North Australia.
- gastridia*. **A. gastridia** Swinh. (2i). Forewing pale grey, with ill-defined markings; inner margin of hindwing and the abdomen fulvous-tinged; this species in the first instance recorded from Murree, N. W. India, extends northwards into Kashmir.
- hemileuca*. **A. hemileuca** Püng. (2k). Like *strigosa* F., but larger; forewing darker, reddish grey; hindwing pure white; found at Kuku Nor, Tibet.
- hercules*. **A. hercules** Fldr. (= *elongata Oberth.*). One of the largest species of the genus, closely resembling the North American *luteicoma* Guen.; found in Japan and Amurland. The larva is described by GRAESER as short, thick, and chestnutbrown in colour, sparingly clothed with glossy black bristles, the tips of which are slightly clubbed, and having a very large, shining black, head; fullfed in autumn, on elm, resting, like others of the genus, in a half-coiled position on the upper surface of the leaf.
- intermedia*. **A. intermedia** nom. nov. (= *incretata* Btlr. nom. praeocc.) (2k). Like *tridens* L. but consistently larger, with more uniformly dark grey forewings; the stigmata united by a black dash; the tibiae and anal segments of abdomen laterally streaked with black; occurs in Japan, Corea and West China, and is surely distinct from *tridens*.
- jankowskii*. **A. jankowskii** Oberth. (2k). Forewing pale grey, with a dark central fascia forked at costa; hindwing of ♂ whitish, of ♀ wholly brown. This is a small species, found in Amurland and Japan, somewhat like *sinens* Wlk.
- karghalika*. **A. karghalika** Moore. Like *tridens* and with similar markings, but darker; the basal black streak shorter, and the interval between the two lines wider. Karghalik, Yarkand.
- leporina*. **A. leporina** L. (3a). Forewing white, the lines indicated by black spots; fairly common in May and June throughout Europe, in Armenia and Amurland. Larva pale green, or yellowish, with long silky white hairs, which are also sometimes yellowish, curling over the sides; fullfed in autumn; on alder and birch. — ab. **bradyporina** Tr. (3a), occurring in N. Europe and the commoner form in Britain, has the wings dusted with grey, and the markings more developed. — ab. **semivirga** Tutt has the outer margin of forewing broadly grey. — In **leporella** Stgr. (= *cineracea* Graes.) (3a) confined to Eastern Asia and Japan, the forewing is greyish white with indistinct markings. — ab. **rosea** Tutt (= *la rose* Engr.) is said to have the forewing and the segmental incisions of abdomen of a bright rose colour.
- leucoptera*. **A. leucoptera** Btlr. Forewing like *rumicis*; hindwing white, with base and inner margin brown. and a broad black outer border; a Japanese species, which LEECH sinks to *longa* Guen. from N. America.
- ligustri*. **A. ligustri** F. (3b). Forewing purplish fuscous, more or less greenish-tinged, with a paler patch beyond cell; prothorax conspicuously whitish. — SNELLEN makes this species the type of his genus *Cranio-phora*, because the dorsal segments are all tufted. Widely distributed, but not abundant, throughout

Europe, in Amurland and Japan. — ab. **sundevalli** *Lampa* (= *olivacea* *Tutt*) (4a) is a form in which both *sundevalli*. forewing and thorax are entirely dark olivegreen. — ab. **nigra** *Tutt* (3b) has the forewing black throughout, *nigra*. without any green tinge, and has only been taken in the North of England; lastly, in ab. **coronula** *Huw.* *coronula*. the white apex is suffused with grey brown instead of green, with a white lunule on its inner edge. Larva pale green; a fine pale dorsal and yellowish lateral lines; hairs long, single; fullfed in autumn, on privet and ash.

A. literata *Brem.* (3c). Forewing hoary grey, marked in the lower middle field by two dark *literata*. curved longitudinal streaks, convex towards each other: described from East Siberia. — The species will probably prove to be identical with *senica* *Er.*

A. major *Brem.* (= *anaedina* *Bthr.*, *maxima* *Moore*) (3b). Forewing olive grey, with a lilac tinge; *major*. the usual three black streaks slender; as large as *hercules* *Fldr.*, and like it occurring in Amurland, China and Japan: also recorded from India. — There are also smaller specimens in which the markings are almost obsolete, to which the name **defigurata** *ab. nov.* may be applied as an aberration. *defigurata*.

A. megacephala *F.* (3b). Forewing pale grey, suffused with dark, except in a patch beyond cell; *megacephala*. hindwing white in ♂, greyer in ♀. Common in June throughout Europe, Asia Minor and N. Asia. Larva dark grey, with granulated yellowish dots; segment 11 with a large yellowish-white dorsal patch; the hairs, which rise singly, whitish; head black with pale markings; fullfed in autumn, on poplars. — In **grumi** *grumi*. *Alph.* the forewing is narrower, the space between inner line and median shade conspicuously whitish; this form is found in West China. — ab. **ochrea** *Tutt* has the ground colour distinctly ochreous; while in ab. *odrea*. **rosea** *Tutt* the forewing is rosy-tinged. *rosea*.

A. nigricans *Leech.* Distinguished from *A. carbonaria* *Graes.*, with which it agrees in the long *nigricans*. narrow forewing and white hindwing, in having the lower half of forewing much blacker than the costal, and the hindwings purer white; recorded only from West China.

A. obscura *Leech* (3c ♂). Forewing dark grey, suffused with black and varied with whitish; *obscura*. orbicular stigma quadrate; hindwing with a smoky grey marginal border and dark outer line; described from West China.

A. orientalis *Mann* (3c). Forewing pale and dark grey, with the three typical black streaks; *orientalis*. orbicular stigma connected by a black dash with the lower end of the dark reniform; hindwing white; recorded only from Asia Minor.

A. paucinotata *Hps.* Forewing grey, with all the markings obscure; a slight claviform mark on *paucinotata*. outer edge of the dentate black inner line; reniform with a black lunule on lower edge; some black streaks beyond outer line towards apex; hindwing brownish fuscous. Described by HAMPSON from a single ♀ from Kashmir.

A. pfizenmayeri *Herz.* Forewing ashgrey, with a black curved streak in middle of wing not *pfizenmayeri*. touching costa; an inner oblique dentate line joined by a black streak from base; two black wedge-shaped marks before outer margin between veins 4 and 5; the orbicular stigma wanting; described as being intermediate between *literata* *Brem.* and *x-signata* *Stgr.* — Yakutsk, Siberia.

A. pontica *Stgr.* (3c, d). Like *ligustri* *F.*, but with white hindwings; the dorsum tufted throughout; *pontica*. found in S. E. Russia, Armenia, Asia Minor and Kurdistan; also recorded from Spain.

A. praeclara *Graes.* (3d). Forewing lilac grey; the lines and shades dark greenish fuscous; a *praeclara*. yellowish green patch at base of inner margin. A handsome species from Amurland; placed by STAUDINGER in *Craniophora* *Snell.*, but the dorsum has no series of tufts.

A. pruinosa *Guen.* (3d). Forewing dull dark grey, with a pale patch on inner margin at base; a *pruinosa*. brownish blotch beyond outer line on each fold; palpi upright before face; described from India, but occurring also in Japan; the Japanese specimens are somewhat darker.

A. psi *L.* (3d). Forewing pale grey, with the three black streaks strongly marked; stigmata *psi*. normally in contact; common throughout the region. — Larva with broad yellow dorsal stripe; spiracular line whitish, with a lateral row of red marks; on segment 5 an erect fleshy black dorsal process, and a smaller one on 12; hairs sparsely scattered; fullfed in autumn; polyphagous on trees and shrubs. Three main variant forms are recorded: ab. **bivirga** *Tutt* has both the basal and marginal areas darker; ab. *bivirga*. **suffusa** *Tutt* is the wholly dark grey form that simulates *trilens*, and ab. **altaica** *Stgr.* (3e) is a paler, more *suffusa*. whitish, form from the Altai Mts. and Amurland; besides these there are the following 5 less important *altaica*. forms; ab. **cuspis** *Steph. nec Hbn.* is a large grey form with the black dagger marks more strongly *cuspis*. developed, as in HÜBNER's species: in ab. **bidens** *Tutt* the basal dagger is without the short end representing *bidens*. the handle, and the outer line runs straight to costa without a slope basewards: ab. **virga** *Tutt* has a *virga*.

- rosea*. greyish band across forewing before the middle; and ab. **rosea** *Tutt* has the forewing suffused with rosy; *juncta*. lastly. ab. **juncta** *Tutt* shows the two stigmata with their inner edges united.
- raphaël*. **A. raphaël** *Oberth.* (= *fixseni* *Graes.*) (3e). Forewing bluish grey, crossed by coarse grey blotches and fasciae; a black streak from base with paler patch above; found only in Amurland.
- senica*. **A. senica** *Er.* (3e). Forewing bluish grey; costa with two black blotches; two black horizontal marks, convex to each other, on veins 1 and 2. Occurring in the Ural and Altai Mts.; the above (p. 15) mentioned *A. literata* *Brem.* from E. Siberia must be very near this species, possibly identical, with the costal blotches absent (? abraded). — *x-signata* *Stgr.* (see below), also from S. E. Siberia, may represent a strongly marked form, in which the contact of the swollen horizontal streaks produces the long x-shaped marking from which it derives its name; all three insects are of the same size, 35 mm.
- sinens*. **A. sinens** *Wlk.* Forewing chalkwhite; the lines olive grey, black on costa; a thick black basal dash: the lines connected by a black and grey shade on submedian fold; a black spot at end of vein 2 on both wings; *LEECH* records one specimen from West China of this small Indian insect.
- strigosa*. **A. strigosa** *F.* (= *favillacea* *Esp.*) (3e). Forewing pale grey, tinged with ochreous; base of inner margin yellow; reniform stigma externally yellowish; a broken black streak along submedian fold; not a common species, but occurring throughout Europe, in Armenia, Amurland, Japan and Corea. — Larva velvety green, with broad reddish brown dorsal band; hairs scattered and fine; dorsum humped on segment 12; like the larva of *Cerura*, which it resembles superficially in colour and ornamentation, it changes from green to dull purplish before spinning up; fullfed in autumn; on hawthorn, which is its only foodplant in Britain, though continental writers give sloe and Rhamnus. — ab. **bryophiloides** *Horm.* (= *casparii* *Steinert*) (3e) is a smaller form with the forewings wholly dark grey. — Japanese specimens are considerably larger than European and much darker; the stigmata more strongly indicated, and the black dashes thicker; they may be distinguished as **adaucta** *subsp. nov.* (3e).
- subornata*. **A. subornata** *Leech* (3f). Forewing dark grey, clouded with black, and here and there varied with whitish; a whitish costal patch near base; submarginal line interruptedly whitish; hindwing dark fuscous. Occurs in Japan and Corea; resembling *carbonaria* *Graes.* and *nigricans* *Leech*, but distinguished by the dark hindwing.
- subviridis*. **A. subviridis** *Btlr.* (3f). Forewing silvery grey, with various dark markings; the whole wing blotched with pale green; submarginal line greenish-white, preceded by a broad green band; inhabits Japan and W. China.
- terrigena*. **A. terrigena** *Graes.* This species, described from a single ♀ from Amurland, is stated to be intermediate between *strigosa* and *tridens*; it is possibly a small example of *fasciata* *Moore*.
- tridens*. **A. tridens** *Schiff.* (3f). Externally indistinguishable in the imago stage from dark forms of *psi*, but the grey always seems browner; occurs throughout Europe, and in Amurland; also recorded from Japan, but these specimens seem rather referable to *intermedia* (= *incretata* *Btlr.*). — Larva black and red: a white dorsal stripe with a series of orange red spots; a broad white spiracular line, and a row of red and white marks along the sides; hairs darker and longer than in *psi*; segment 5 of dorsum with a tuft of black hairs; 5 and 12 both slightly humped; fullfed in autumn, on hawthorn and various trees. — ab. **virga** *Tutt* is a form with the hindmargin darker, corresponding to the ab. *bivirga* of *psi*; ab. **rosea** *Tutt* has the wings suffused with rosy; in ab. **bidens** *Tutt* the basal dagger has no handle; while in ab. **quinquedentata** *Tutt* the handle part is produced through a second bifurcation; lastly in ab. **juncta** *Tutt* the two stigmata have their inner edges united.
- virga*. **A. x-signata** *Stgr.* Forewing dark grey, crossed by fine curved black lines, united on submedian fold by a black streak to form a long x-shaped marking; in marginal area are two rows of black streaks, one only, in the inner row, being conspicuous; described from S. E. Siberia and possibly, as remarked above, a dark well-marked form of *senica* *Er.*

15. Genus: **Chamaepora** *nov. gen.*

Distinguished from *Acrionicta* by the larva bearing fascicles of short stiff hairs, rising from enlarged tubercles; larva stout and thick, resting extended, not coiled round, and feeding on various low plants. — Pupa in a spun cocoon, with the segmental margins ridged. — Eggs laid in a mass. Type: *C. rumicis* *L.*

- auricoma*. **C. auricoma** *F.* (3f). Forewing grey, with dark dusting; base of inner margin pale ochreous; a short black basal streak and another above anal angle, often obscure; flies in May and again in August, occurring throughout Europe, and in Armenia, extending into Siberia. — The ab. **pepli** *Hbn.* (= *pyhae-*

vaarae *Hoffm.*) (3f) has the forewing more dusted with black atoms, so as to obscure the markings; in ab. **similis** *Haw.* the forewing is darker, with two dark waved lines from costa; ab. **menyanthidis** *Haw. nec Hbn.* is paler with the ψ -like mark strongly developed. Larva black with reddish orange tubercles bearing fascicles of reddish hairs: head and plate on second segment black; the summer brood fullfed in July; the second brood hibernates. *similis. menyanthidis.*

C. euphorbiae *F.* (= *cyparissiae* ♀ *Hbn.*) (3g). Forewing grey dusted with darker; orbicular stigma close beyond inner line; hindwing white in ♂, fuscous in ♀ with pale cilia; not common; occurring all over Europe, in Asia Minor, Armenia and Siberia, in May and July. — The ab. **montivaga** *Guen.* (3g) is a mountain form, with darker, bluer grey forewings, occurring in the Alps and in Norway. — ab. **myricae** *Guen.* (3h), occurring in the Scotch and Irish mountains is still darker, with narrower, more pointed forewings, but not smaller as *STAUDINGER* states: the larva feeding on sweetgale, heath and willow, and single brooded. — ab. **euphrasiae** *Brahm* (? = *paradoxa* *Bsd*) (3h), which appears to be the commoner form in France and S. W. Europe, is paler than the type and more luteous; — lastly, ab. **esulae** *Hbn.* (= *abscondita* *Tr.*) (3h) is a quite small form, with the markings obscured. — **paradoxa** *Bsd.*, overlooked by *STAUDINGER* but referred by *GUENÉE* to *candelisequa* *Esp.* as a form of *aceris*, appears rather to be synonymous with ab. *euphrasiae* of this species, especially as *BOISDUVAL* states that the larva is totally different from that of *aceris* and is found commonly feeding on *Rhus coriaria* in the Provence. Larva black; tubercles with fascicles of dark and pale hairs; line below spiracles and a band on third segment orange-red; a subdorsal row of irregular yellowish white spots: head black; feeds up in autumn on Euphorbia and other low plants. *euphorbiae. montivaga. myricae. euphrasiae. esulae. paradoxa.*

C. lutea *Brem. and Grey* (3h). Forewing pale and dark grey; the markings much as in *digna* *Bth.* (= *michael* *Oberth.*); hindwing yellowish strawcolour, with broad blackish marginal border and yellow fringe (in those specimens of *digna* which have the hindwings luteous white the fringe is always white): originally recorded by *BREMER* and *GREY* from N. China, and subsequently by *BREMER* alone from E. Siberia; occurring also in Japan and Corea. — Larva, according to *GRAESER*, something like that of *rumicis*, but larger and brighter, reddish yellow; feeding up in July, on low plants. *lutea.*

C. menyanthidis *View.* (3i). Forewing bluish white, dusted and shaded with dark grey; a short black streak from near base; marginal area darker, sometimes blackish, grey; orbicular stigma quite small; occurs on mountain moorlands in May and June in Europe and Siberia. — Larva black or brownish black; tubercles with fascicles of black or brownish hairs; a red lateral line below spiracles; head black; fullfed in autumn, on sweetgale, heath and willows. — In the ab. **suffusa** *Tutt* (3i) the whole forewing is suffused with dark grey. — ab. **obsoleta** *Tutt* has the forewing quite pale with all markings faint; on the contrary ab. **scotica** *Tutt* from the west coast of Scotland is larger and brighter than the type, with all markings clear and distinct. *menyanthidis. suffusa. obsoleta. scotica.*

C. radiata *spec. nov.* (3i). Forewing pale grey, dusted with darker; lines blackish-edged on both sides, the outer lunulate-dentate, followed by a broad dark shade, through which the black teeth of the line are prolonged along the veins; the outer line is more remote from the outer margin than usual, and the median area correspondingly lessened; orbicular stigma round, with black ring; reniform hidden between median shade and inner edge of outer line, which it touches; fringe grey with darker spots; hindwing whitish, the veins grey; fringe white with faint dark marginal spots; underside also whitish, grey-tinged; costa of forewing with two black spots; hindwing with a partial grey central line; head, thorax, and abdomen concolorous grey; antennae ligulate, broad and flattened. A single ♂ from Kuliab province, Afghanistan, expanding 35 mm, is in the Tring Museum; it is distinguished from *A. euphorbiae* by the different position of the outer line. *radiata.*

C. rumicis *L.* (3i). Forewing dark grey, varied in places with whitish; lines and shades black; outer line marked by a white spot on the submedian fold; hindwings brownish fuscous; common in summer throughout the region, and apparently extraordinarily abundant in Japan and China. — Larva marbled dark and light grey; a dorsal row of red spots on black blotches, and a row of white spots on each side; a pale line below spiracles, containing orange-red tubercles; segments 5 and 12 of dorsum humped; tubercles with fascicles of fuscous and fulvous hairs; fullfed in autumn, on various low growing plants. — **turanica** *Stgr.*, a form from Central Asia, is much paler, with the hindwings whitish. — Chinese and Japanese examples (3k) are larger than European and in all cases darker; in particular the lower half of forewing is blacker and the white spot of outer line then often obscured; possibly the scotch form figured by *CURTIS* as **salicis**, a melanic form, may represent this aberration, though the larva figured as belonging thereto is unquestionably that of *menyanthidis*. — ab. **alnoides** *Geest* (3k) has the costal half of forewing grey, the inner half blackish, somewhat interrupted, with a strong black dagger-shaped mark at base and above anal angle; superficially resembles a dark grey *alni*; recorded from Freiburg in Baden. — ab. **euphorbiae** *Steph.* nec *Hbn.* is grey brown, with the stigmata and space between them pale; and ab. **euphrasiae** *Steph.* nec *Dup.* is pale yellowish grey with numerous black lines and the orbicular stigma faint or obsolete, occurring in Cornwall. *rumicis. turanica. salicis. alnoides. euphorbiae. euphrasiae.*

16. Genus: **Anacronicta** *gen. nov.*

Differs from *Acronicta* in the antennae of the ♂ bearing short sessile fascicles of cilia; in vein 5 of hindwing rising from close to 4 and equally strong; and in the eyes being hairy. — BUTLER made the genus *Aplectooides* for these insects, but unfortunately named as type a North American insect, *condita* Guen., which is not congeneric with the Japanese insects.

caliginea. **A. caliginea** Btlr. (= *nitida* Graes. nec Btlr.) (3k). Forewing purplish fuscous, lightened with ochreous grey; reniform stigma yellowish externally, followed by a pale greyish ochreous space. Apparently a common species in Eastern Asia, occurring throughout Amurland, in China, Japan and Corea. — Larva, as recorded by GRAESER, very thick, beset with long pale brown tufts of hairs, somewhat resembling those of *A. aceris*, feeding on *Epilobium angustifolium*.

nitida. **A. nitida** Btlr. (3k). Forewing paler than in *caliginea* Btlr., whitish or ochreous grey, with the markings clearer; a thick black streak above vein 4 from reniform stigma to submarginal line, which forms above it a pale spot; found in Japan and W. China. — **moupinensis** Leech is smaller, vinous brown in colour, with only the typical black markings visible: the thorax ashy grey, conspicuous from its contrast with the darker wings; from Moupin, W. China. This form may be identical with the insect described by GRAESER as *Graphiphora lichenodes* (doubtfully referred by STAUDINGER to the genus *Aplectooides* Btlr.), and which is said to expand 35 mm; if so, GRAESER'S name would stand.

obscura. **A. obscura** Leech (3c ♀). Forewing blackish fuscous on a grey ground; no conspicuous pale space beyond reniform stigma; found only in Central and West China.

17. Genus: **Panthauma** *Stgr.*

Antennae of ♂ strongly bipectinated; thorax and palpi hairy; tongue slight; eyes naked; second segment of abdomen with lateral tuft of hairs; otherwise hardly differing from *Panthea* Hbn.

egregia. **P. egregia** Stgr. (4a). Forewing whitish grey, with a green tinge; basal third blackish, bounded by a jagged-edged dark fascia; inner and outer lines double; the latter starting from a black costal blotch; orbicular stigma absent; hindwing dull whitish, with double dark streak above anal angle. Recorded only from E. Siberia.

18. Genus: **Xanthomantis** *gen. nov.*

Antennal pectinations in the ♂ long and thin. Thorax and patagia hairy, tufted behind; abdomen with tufts of hair on segments 2 to 6, those on 3—5 longest. Tongue well developed. Eyes hairy. Forewing broad with prominent apex and oblique outer margin.

cornelia. **X. cornelia** Stgr. (= *honrathi* Graes.) (4a). Forewing silky blackish; the inner cross line deep black, dentate and distinct: the outer less plain, broader and wavy; the median shade connected with the inner line before vein 2 by a small pale yellow spot. Hindwing glossy, bright yellow; a spot in the cell, the narrow marginal border, and the fringes black: the fringe of the inner margin yellow. A handsome species, found in E. Siberia.

2. Subfamily: **Metachrostinae.**

Like the *Acronictinae* the subfamily *Metachrostinae* is separated from the rest of the *Noctuidae* by the habits of the larvae. These subsist solely, as far as is known, on various species of lichens, resting concealed by day in holes and crevices and rambling abroad only after dark, when their food becomes softened by the dew and moisture of the night. I have seen it stated that the larvae should be looked for only when the weather is wet; but it is more probable that the few individuals then seen have been driven out of their shelters by heavy rains succeeding a dry spell, than that they come forth of their own accord to feed by day. Such, at least, is my own experience with the two species which alone occur commonly in Britain.

The larvae themselves are of a soft and flabby consistence, with sparse short hairs growing from the small warts; feeding up in the early summer, and pupating *in situ* in a spun cocoon in the shelter of holes and ledges. The coloration of the larvae is not protective, -- a fact which affords additional reason for their nocturnal feeding: but that of the imago corresponds in a remarkable manner with the different hues of the lichen-covered surface on which they rest.

Up to the present the subfamily has contained only a single genus; the greater development of the dorsal tufts in STAUDINGER'S *Bryomoia* hardly seems to warrant its separation, and I have included the only species *metachlora* Stgr. in *Metachrostis*. Until quite recently the genus has gone by the name of *Bryophila* Tr.; but the older name of *Metachrostis* Hbn., revived by MEYRICK in his Handbook, appears absolutely unassailable and I have therefore called the subfamily *Metachrostinae*.

19. Genus: **Metachrostis** Hbn.

The same distinctions as the subfamily.

M. pineti Stgr. (4b). Forewing cinereous with a reddish tinge; a darker band across the middle; *pineti*. a dull yellow spot at end of cell: hindwing dull cinereous. Found only in Andalusia and Castile. — Larva on lichens growing on firtrees.

M. albonotata Stgr. (4b). Forewing brownish cinereous; basal and inner lines oblique, thick and black: stigmata large, black-edged; 3 black streaks before outer margin below middle, and one on submedian fold in central area, followed by a square white spot; hindwing grey brown. — Described from a single ♀ from Ussuri. A broad-winged species, and a doubtful *Metachrostis*.

M. petraea Guen. (4b). Forewing clouded with brownish green, grey and black; inner and outer lines closer than usual, especially on inner margin, where they are united by a short black streak; basal line twice angled, with a black blotch below it; orbicular stigma round and black; reniform large, pale; a pale space beyond outer line on inner margin and two black spots before submarginal: hindwing fawn grey; described from a single ♀ from Andalusia.

M. contristans Led. Forewing dull cinereous, sometimes with a coppery tinge; the transverse lines black: a small round stigma with dark edges. — A local species, occurring only in Greece and Syria, and. teste STAUDINGER, in W. Kurdistan.

M. raptricula Hbn. (= *pomula* Bkh.) (4b). Forewing elongate, grey with darker clouds; the lines obscure: inner outwardly oblique, twice curved; outer followed by a white crescent on submedian fold, beyond which is a black streak deflected through the fringe; stigmata inconspicuous, with dark edges: hindwing dull whitish, greyer towards margin. Found throughout the continent of Europe, in Asia Minor and Armenia, and in the Altai Mts. and Ussuri. — The ab. **carbonis** Ferr. (4b), as the name implies, is black. — ab. **deceptricula** Hbn. (4c) has a pale brown horizontal streak from base of costa through cell to outer line and beyond, sometimes broken up into patches, and the inner margin darker. — ab. **oxybiensis** Mill. (4c) is more uniformly grey than the type, while ab. **striata** Stgr. is distinguished by a black central streak: — lastly, ab. **eretina** Calb. (4c), much resembling the ab. **deceptricula**, is said to have the palpi yellow and porrect, a statement which suggests, at least, a distinct species. MILLIÈRE, who considered his *oxybiensis* distinct, suspected its larva to feed on lichens growing on old olive-trees. — Larva blue grey, with two yellow- and white-spotted stripes. Feeds on *Sticta pulmonacea*.

M. protracta Christ. Forewing chalkwhite, faintly flecked with ochraceous; the lines incomplete; inner and outer fuscous, the former oblique and approaching outer on inner margin; a brown submarginal streak, indistinct and interrupted; a cloudy broad streak above inner margin; hindwing whitish, the veins and outer margin somewhat darkened. Described from a single ♂ from Turcomania.

M. fraudatricula Hbn. (4c). Forewing browner grey than *raptricula*; the lines black, conversely white-edged; the inner curved more vertically, connected with the outer by a thick black streak on submedian fold, followed by another beyond outer line; stigmata slightly darker than the ground; hindwing dark grey. Widely spread throughout Europe. — The ab. **simulatricula** Guen., queried from Florence by the author but referred by STAUDINGER to Castile and Aragon, is greyer, with the hindwing paler; the description is considerably like that of *andalusiae* Dup.

M. leprosa spec. nov. (4c). Forewing with the lines and markings as in *fraudatricula* Hbn., but the apex blunter and the outer margin more vertical; the basal third, an anal blotch, and the costo-apical area hoary grey; median and outer areas brown: orbicular stigma obsolete; reniform large, pale grey; outer and marginal lines finely black, not dentate; hindwing brownish fuscous; fringes of both wings dark grey; 32 mm. 1 ♀ from Asamayama, Japan, taken in August.

M. felina Ev. Forewing greyish white; basal patch black: a curved black antemedian band, and a shorter one from costa beyond middle; orbicular stigma grey, indistinct: reniform whitish; hindwing dark grey, paler at base; occurs in Armenia and Fergana.

M. praecana Christ. Forewing grey; inner and outer lines fuscous edged with whitish, most plainly on inner margin: median area darker; the stigmata grey; an obscure luteous submarginal line; hindwing grey, darker externally and on the veins; forewing somewhat pointed; hindwing broad. Turcomania.

- plumbeola*. **M. plumbeola** Stgr. Forewing blue-grey with a yellowish white band before inner line; outer line fine; reniform stigma distinct; some dark clouds before outer margin; hindwing darkgrey with pale fringe; underside shining yellowish grey; head and thorax yellow, strongly irrorated with grey. Tarbagatai Mts.
- idonea*. **M. idonea** Christ. Forewing grey; the lines black; the basal interrupted and twice waved: the inner curved, with a tooth towards base; space between them and a blotch at anal angle pale cinnamon brown; outer line obsolete above; fringe whitish, mottled with grey; hindwing grey, the veins and outer margin darker. Turcomania.
- labecula*. **M. labecula** Led. (4c). Forewing dull grey brown: the markings as in *ravula* Hbn., but the stigmata show fine light edges; median area with a pale yellow blotch below the stigmata; hindwing ashy grey: of the same size, shape, and scaling as *ravula*; described from a single worn ♂ from Syria.
- glaucula*. **M. glaucula** Stgr. (4d). Forewing pale blue-grey: the median area, especially in inner half, clouded with dark, obscuring the orbicular stigma; reniform plain in a paler space; outer line edged with white; nearest *fraudatricula* and *ravula*, but shorter-winged than the former, and without the black streaks of the latter. From the Island of Askold and Suifun.
- strigula*. **M. strigula** Bkh. (= *receptricula* Hbn.) (4d). Forewing shorter and broader than in *fraudatricula*, dark grey; lines finely black, the inner nearly vertical, the outer crenulate below, connected by a black streak on submedian fold, followed by a shorter one beyond outer line; some black dashes along course of submarginal line; orbicular stigma usually plainer than the others; hindwing grey, darker towards margin. Found throughout southern Europe, also in Asia Minor and Armenia. — Larva yellowish grey; dorsal and lateral lines formed of dark brown spots: spiracular line black and distinct: feeds on *Parmelia*.
- ravula*. **M. ravula** Hbn. (= *lupula* Dup.) (4d). Forewing dark grey more or less tinged with brown; lines black edged with pale and dark; the inner vertical; stigmata distinct, the reniform unusually large; marginal area with some grey clouds; hindwing dingy grey. In South Europe, Asia Minor and Morocco. — ab.
- ereptricula*. **ereptricula** Tr. (= *troglodyta* Frr.) (4d) is an aberration with the ground colour darker, and the basal area, as well as patches at apex and anal angle, paler. — ab. *andalusiae* Dup. (= *andalusica* H.-Sch.) (4d) is lichen-grey, the ♂ with a white head; this form is found in Asia Minor as well as in Spain, according to STAUDINGER. Larva blue-grey; the dorsal line black: lateral lines wavy, yellowish red, with black edges: on lichens growing on walls.
- petricolor*. **M. petricolor** Led. (4d). Forewing grey black; markings as in *ereptricula*, but less white; the three black lines edged with reddish yellow: stigmata grey; the submarginal line pale; from Armenia and Pontus. Like *ereptricula*, but larger.
- galathea*. **M. galathea** Mill. (4d). Forewing dull sombre grey; the lines and stigmata obscure; of the same size as *muralis*, but the wings narrower and the median fascia wider; underside very glossy, grey in forewing, white in hindwing; a local species, occurring in S. E. France, North Italy and S. W. Valais. Taken at rest on rock faces.
- tabora*. **M. tabora** Stgr. (4e). Forewing dull dark brown, varied with paler scales; all the markings obscure: the inner line alone plainer; orbicular stigma small, round; reniform large, with dark centre and edge; fringe chequered; hindwing dark grey with paler base; intermediate between *maeonis* Led. and *galathea* Mill., according to STAUDINGER, darker and browner than the former, and paler than the latter. Aintab and Mardin in Syria.
- algae*. **M. algae** F. (= *spoliatricula* Hbn.) (4e). Forewing with basal area wholly, and marginal partly, pale green, marked with black; lines black, placed as in *ravula*; the median space brownish; some dark marks along the course of submarginal line; hindwing dull grey; found generally throughout Europe, except Sweden and Britain. — ab. *degener* Esp. (4e) is more unicolorous, the pale green clouded with grey; a dark band beyond inner line. — In ab. *mendacula* Hbn. (4e) the whole forewing is varied with pale and dark scales intermixed. — ab. *calligrapha* Bkh. (4e) is a remarkably pretty aberration, in which the basal and marginal areas are more or less filled with lichen-yellow. — Larva grey, bluish at the sides, with a dark grey dorsal line; feeds on tree lichens.
- simonyi*. **M. simonyi** Rogenh. (= *algae* var. *canariensis* Alph., *maderensis* Baker) (4e). Like *algae*, but the wings narrower, and wholly blackish, without any green tinge; lines as in *algae*, but somewhat paler.
- debilis*. Occurs only in Madeira and the Canary islands. — The ab. *debilis* Rbl. is smaller and paler, from Lanzarote Island only.

M. distincta *Christ.* (4d). Forewing greenish grey; the broad median and narrow marginal areas *distincta*, chocolate brown; between outer and submarginal lines on inner margin is a pale spot; reniform stigma large, externally white; hindwing pale grey, darkening towards margin; allied to *fraudatrixula*. Kopetdagh, Ashkhabad.

M. roederi *Standf.* (4e). Forewing blue grey; inner and outer lines nearly contiguous at middle of inner *roederi*, margin and widely divergent costally; the former diffusely white towards base, and outwardly followed by a dark cloud; submarginal line between two dark shades; lines sinuous, not dentate; apparently without stigmata. Mardin, Kurdistan. Possibly not a true *Metachrostis*.

M. umovii *Er.* (= *colorata* *Krul.*). Forewing green, with a submarginal series of spots; lines and *umovii*, stigmata black: the lines wavy and denticulate: the orbicular stigma dotlike; hindwing whitish, dark at margin, with dark cell spot and outer line. From E. Russia and the Ural Mts.

M. duskei *Christ.* Forewing greenish grey; median area broad, slate-coloured; the lines black and *duskei*, crenulate; stigmata with slate-coloured centres; the orbicular large, the reniform with a luteous edge; hindwing grey with luteous fringe. Armenia.

M. marginelota *Joan.* Forewing dark blue grey, with ferruginous dusting, forming spots along the *marginelota*, darker lines, especially the submarginal, beyond which the narrow outer marginal area is strikingly paler; hindwing dark grey, pale at base: the stigmata are represented dark in the figure published by the author. Known only from Beyrut, Syria.

M. muralis *Forst.* (= *lichenis* *Esp.*, *glandifera* *Hbn.*, *liguris* *Mill.*) (4f). Forewing smooth, unspotted *muralis*, green, the markings black and prominent: the claviform and orbicular stigmata coalescing to form a blotch; occurs throughout Europe. — ab. **par** *Hbn.* (4f) is grey green, with darker green dusting; the black markings obsolete. — ab. **impar** *Wurr.* (4d) is green dusted with black or rufous; the lines more or less *impar*, obsolete; the green colour fades more quickly than in typical *muralis*; this form occurs only at Cambridge, where the type form is non-existent. 4 further aberrations have been differentiated; ab. **viridis** *Tutt.*, rich-green, without black or grey dusting; ab. **flavescens** *Tutt.*, like the type, but with the green changed to *flavescens*, yellow, even in bred specimens; ab. **pallida** *Tutt.*, with typical markings on a whitish grey ground colour; *pallida*, and ab. **obscura** *Tutt.*, dull brownish grey, with the markings obscured and without any trace of green; all *obscura*, these forms are found on the coast of Kent and at Queenstown in Ireland. — Larva dark grey with a greenish tinge; dorsal line broadly white, sometimes interrupted; a pale line above feet; on lichen growing on walls and roofs.

M. maeonis *Led.* (4h). Forewing narrow and pointed, greenish grey, covered with blackish dusting; *maeonis*, markings obscure; inner and outer lines edged with ferruginous; stigmata pale-edged; hindwing grey. — According to *STAUDINGER* a very variable insect, occurring in Asia Minor, Transcaspia, and various places in Central Asia. — ab. **sordida** *Stgr.* and ab. **rubellina** *Stgr.*, both from Shahkuh in North Persia, are *sordida*, larger, the former dark, blackish grey, the latter pale and suffused with rufous. — Larva like that of *perla*, *rubellina*, on lichens growing on roofs.

M. perla *F.* (4g). Forewing creamwhite with slaty grey markings; orbicular and claviform stigmata *perla*, confluent forming a figure of 8; hindwing whitish grey with cell spot and outer line dark grey. Generally distributed and common. — The species varies in opposite directions; either the dark scales of forewing are more or less obsolete and the wing is overrun with yellow scaling ab. **lutescens** *Fuchs* (= *flavescens* *lutescens*, *Tutt.*, *perlina* *Stgr.*) (4g), or the wing becomes wholly suffused with the dark tints ab. **suffusa** *Tutt* (4g); *suffusa*, the dark specimens from the Pyrenees, referred here by *STAUDINGER*, are blacker than the very darkest British specimens, the whole hindwing being blackish also; in ab. **distincta** *Tutt* the ground colour is white, *distincta*, the discoidal spots dark grey; 4 short dark dashes on costa at centre and a shade near apex, a short basal streak and a shade beneath the orbicular stigma are the only markings. — Larva bluish grey with a broad orange dorsal stripe; head black: on lichens growing on walls.

M. perlodes *Guen.* (4g). Forewing whitish, strongly dusted, sometimes with yellow, sometimes *perlodes*, with grey, but always greenish grey rather than bluish: lines well marked; basal and inner lines joined behind; outer line rounded costally; orbicular and reniform touching, the latter small and dark; hindwing dark; intermediate between *perla* and *muralis* ab. *par*; like the former in size and shape, and like the latter in markings. Described by the author from 2 ♂♂ from Andalusia. Is it not possible that **perlina** *Stgr.* and *perlina*, **pyrenaica** *Oberth.* (4f) represent the pale and dark forms respectively of this species, which should then *pyrenaica*, be referred to *perla* as an aberration?

M. paulina *Stgr.* (4h). Forewing pale yellowish grey; the inner and outer lines finely rustbrown; *paulina*, stigmata large, grey, with pale edges; median area darker on inner margin; some grey clouds in marginal area; hindwing very pale grey; only found in Syria (Jerusalem). — Differs from *maeonis* in being paler, and in the outer line being less strongly sinuous.

- conspersa.* **M. conspersa** *Christ.* Forewing whitish, densely irrorated with fuscous; the lines fuscous; basal and inner lines nearly straight, the included space grey; outer line very sinuous, thickened at costa; outer margin grey; hindwing luteous grey, darker along margin, fringe luteous: (the stigmata are not mentioned by the author). Described by the author from a single ♂; Turcomania.
- melachlora.* **M. melachlora** *Stgr.* (4h). Forewing with basal half greenish black, outer half pale dull green, showing a dark interrupted submarginal band; outer line and edge of reniform stigma finely dark; hindwing dark grey; tufts of abdomen and metathorax larger than usual. The only specimen, a ♀, was from Askold Island.
- microglossa.* **M. microglossa** *Ramb.* (4i). Forewing brownish grey; the inner and outer lines finely black, edged with white; stigmata darker brown; submarginal line pale, waved; fringe chequered; hindwing paler; in the ♀ the dark cross lines are absent; in the ♂ the inner line is vertical and the outer outcurved anteriorly, but rising nearer apex than usual; Andalusia. This species is figured twice by RAMBUR; first on plate 7, fig. 1 ♂, 2 ♀; and again on plate 22, fig. 1 ♂, 2 ♀; but the latter figures can hardly refer to the same insect as the former, which, in the absence of a description, must represent the type.
- ditoromixta.* **M. chloromixta** *Alph.* (4h). Forewing white varied with pale olive; the lines fine, black; stigmata white edged with black; a quadrate dark spot between the orbicular and reniform; a black comma beyond the claviform; subcostal space beyond reniform olive green; a brown cloud at middle of the outer margin; fringe brown; hindwing as in *perla*. Described by the author from a single ♂ from the province of Gan-sou, in Western China, where it appears, according to LEECH, widely distributed.
- confucii.* **M. confucii** *Alph.* (4i). Forewing brownish grey; a broad pale fascia between basal patch and inner line; stigmata large and pale; outer line edged with white in lower half; hindwing paler grey-brown. A single ♀, of 35 mm expanse, from the province of Gan-sou.
- griseata.* **M. griseata** *Leech.* Forewing dark grey, clouded with blackish, base and outer margin paler; inner and outer lines black, dentate, with pale edges; a whitish spot on inner margin before inner line; stigmata with dark grey outlines; a whitish spot on costa above the reniform; fringe grey and white; hindwing fuscous brown. 3 examples only from Central China in coll. LEECH.
- stictica.* **M. stictica** *Mén.* Forewing vinaceous grey; inner and outer lines fuscous, plainest towards costa, the outer line flexuous; hindwing externally fuscous and with a dark submarginal fascia; a small species of 18 mm expanse. Lenkoran, Transcaucasia. This species is omitted in STAUDINGER's catalogues; possibly on this account LEECH identified what he considered a form of *algae* occurring in Japan with *stictica*.
- literata.* **M. literata** *Moore* (4h). Forewing ochreous white with a greenish tinge; lines black edged with white; stigmata blackish edged with black and white; inner line followed by a dark cloud forming a blotch on inner margin reaching outer line; submarginal line black and dentate, preceded by a black spot on costa; a row of black marginal lunules; fringe white mottled with black; hindwing whitish with a broad grey submarginal band, and dark cell spot; fringe white; sometimes the median area of forewing is wholly black, with a pale spot between the stigmata; the white shoulders and patagia are distinctly edged with black. Goorais Valley, Kashmir; described originally from the N. W. Himalayas; one of the largest species of the genus, expanding 36 mm.
- seladona.* **M. seladona** *Christ.* (4f). Forewing bright green, as in *umocii* and *murialis*; lines as in the former, but faint and interrupted; some black spots along costa and outer margin; hindwing dark brown, with pale fringe. Described from a single ♂ from Kasikoparan, of 30 mm expanse. This species also is omitted in STAUDINGER's Catalogue.
- obscura.* **M. obscura** *spec. nov.* (4h). Forewing dark olive green; lines black; basal line ending in an oblique black blotch on inner margin; space between basal and inner lines broadly paler, without dark shading; inner line more oblique than in *algae*, approaching outer line on inner margin; stigmata large, outlined in black; submarginal line distinctly zigzag, black; hindwing brownish fuscous; a small species with costa of forewing curved. In Tring Museum 4 ♂♂ from Japan (ex PRYER coll.) and 1 ♂ from Fushiki, July 1887 (ex coll. LEECH).
- assimilis.* **M. assimilis** *spec. nov.* (4i). Forewing grey-green clouded with darker; lines exactly as in *obscura*, but farther apart and the outer not denticulate or angled; lower half of median area rosy brown; orbicular stigma a black dot close to inner line; reniform large but indistinct; submarginal line obscurely pale; fringe greenish; hindwing brownish fuscous; underside greenish grey, dusted with fuscous, paler in hindwing, where there is a grey cellspot and postmedian line; 21 mm. 1 ♂ from Tsu-sima. July—October 1891.
- rectilinea.* **M. rectilinea** *spec. nov.* (4i). Forewing pale dull grey; the basal and median areas darker; lines finely black; basal curved; inner line nearly vertical and straight; outer also vertical from 7 to 4, then inbent; stigmata large, subquadrate, with grey edges, but very obscure; some black marginal spots; fringe

grey, the basal half darker; hindwing grey, paler towards base; fringe whitish: face pale grey, thorax and abdomen darker; wings short and broad; scaling smooth. 1 ♀ from Haifa, Syria, November 1902 (LANGE).

M. commixta *spec. nov.* (4i). Forewing grey, densely black-speckled, with a few greenish scales; *commixta*. lines and stigmata much obscured, the latter filled in with dull greyish olive; fringe paler; hindwing pale grey, whiter towards base; face white; thorax thickly black-speckled; 1 ♀, 1 ♂ from Kuliab province, N. Afghanistan; 32 mm. In the ♂ the apex of forewing is whitish.

The 3 following species agree with *maconis* in having the ciliations of the antennae of the ♀ much longer.

M. precisa *spec. nov.* Forewing bone-colour, suffused with pale rufous and dusted with dark scales; *precisa*. the markings olive fuscous; costa with large dark spots; inner line waved, nearly vertical; outer excurved between veins 6 and 2; submarginal line preceded by an irregular dark shade forming a blotch on costa; marginal lunules blackish; the pale fringe with dark chequering; orbicular stigma round; the reniform a precise figure of 8; hindwing whitish, with distinct grey cellspot, outer line and submarginal shade. Underside of forewing smeared with fuscous; hindwing dusted with fuscous along costa only, with a large dark cell-spot and an outer line from costa to midwing; tarsi spotted with black. — Expanse 24 mm. A good series of both sexes from Mazagan, Morocco (W. RIGGENBACH), October 1902, in the Tring Museum.

M. sabulosa *spec. nov.* (4i). Forewing sandy grey with a slight olive tint; lines and stigmata *sabulosa*. illdefined, olive-fuscous; inner line oblique, dark-spotted on costa and inner margin; outer line as usual, but only clear in lower half: a diffuse cloud beyond basal line, a diffuse median shade, and a slight dark submarginal shade; orbicular stigma small, round; reniform with dark outer edge; a row of dark marginal lunules; fringe concolorous; hindwing dull whitish, with coarse grey speckling towards outer margin; fringe white; head, thorax and abdomen sandy grey; underside of body and wings and the legs creamy white without markings; 1 ♀ from Gauden. Askhabad, Kopet-Dagh, of 30 mm expanse, in the Tring Museum.

M. pulverosa *spec. nov.* (4i). Forewing pale dusty grey; inner and outer lines crenulate, dark grey, *pulverosa*. edged with paler; orbicular stigma blackish, rounded; reniform almost obsolete; marginal area darker grey, the submarginal line faint; hindwing dull whitish, like underside of both wings; 1 ♂, 8 ♀♀, from the Goraiss Valley. Kashmir; May. June 1887; in the Tring Museum.

3. Subfamily: **Euxoinae.**

In the arrangement of the more typical Noctuae it has seemed advisable to follow in the main, but with certain necessary modifications, the system employed by Sir G. F. HAMPSON in the fourth Volume of the Lepidoptera *Phalaenae* in the British Museum; first, as being the latest and therefore presumably the most up-to-date attempt; secondly, because, whatever objections may be made to it, it proceeds on definite consistent lines. Thus the present subfamily, the *Euxoinae* will be characterised primarily by the presence of spines, not claws, on the tibiae. In the great majority of species all the tibiae are spined, and in some cases the spines of the fore tibiae are very strong; these are placed first, followed by those in which the spines are weaker and less developed; then come the genera in which first the spines of the fore tibiae are wanting and next those of the middle tibiae, till in the final species only a few spines are to be found on the hind tibiae only; in proportion as the spines of the tibiae disappear, their place is taken by fringes of hair.

A second characteristic is that the large rounded eyes are, except in a few genera towards the end, naked, neither haired themselves, nor surrounded by cilia.

The frons is either smooth or uneven; in the first case it is either flat or slightly rounded; in the second it shews either two rounded cheeks or else a slightly projecting point in the middle, or a combination of these two; or the central prominence is developed into a roughened mamilla, generally round, but sometimes vertically lengthened; or into a craterlike projection with roughened rim. The last is made by HAMPSON the characteristic of the genus *Euxoa*, and the lengthened ridge of *Felbia*; but in as much as the different modifications vary much in development, and are liable to be merged imperceptibly into one another, two or three phases of development sometimes occurring within the limits of the same species, it seems sufficient to include under one genus *Euxoa*, all the species showing an unevenly protuberant frons. Similarly the 3 genera *Agrotis*, *Epipsilia* and *Lycophotia*, all characterised by the smooth frons, but separated by HAMPSON mainly by differences in the vestiture of the thorax, will be merged into one genus.

The differences in antennal structure are employed mainly for sectional subdivision. The palpi are of moderate length, usually upcurved, more rarely porrect. The tongue and the frenulum are always present. The neurulation is consistently simple and uniform, but in all cases vein 5 of the hindwing is obsolescent, a false, not a true vein.

The larvae are smooth, not hairy, the tubercles bearing each a single bristle, with all the prolegs present: feeding by night and concealed by day. Pupation is subterranean, without cocoon.

20. Genus: **Euxoa** *Hbn.*

This is characterised by the protuberant frons, bearing typically a central crater-shaped prominence; the spines of the tibiae, especially of the fore tibiae, are stout and well-developed. It is divisible into 5 sections; in the first the antennae of the ♂ are bipectinated to apex; in the second the apical third is serrate: in section 3 the segments of the antennae end in pedicellate fascicles of cilia, the apical third being serrate; in the fourth the segments end in tuberculate or serrate fascicles; in the fifth the antennae are simply ciliated or pubescent.

Section I: Antennae of ♂ bipectinate to apex; the pectinations long.

- obesa.* **E. obesa** Bsd. (= *lipara Ramb.*) (5a). Forewing pale ochreous with brownish-fuscous suffusion; veins slenderly black on pale streaks, the intervals brown; stigmata large, fuscous, with black edging; claviform darkest: orbicular diamond-shaped, with dark centre; reniform wholly fuscous; cell dark; hindwing in ♂ whitish, grey towards termen; in ♀ darker; head, thorax and abdomen brownish ochreous. — Occurs in the south of Europe, Spain, France, Italy and S. Russia and in Algeria; also in W. Asia, Armenia, Syria, Persia and Turkestan. — Larva (teste *Millière*) pale green, the dorsum browner with pale middle line; feeds on flowers of *Pterotheca nemaucensis*.
- scytha.* **E. scytha** Alph. (5a). Smaller and paler than *obesa* Bsd., the hindwing white; head, thorax and abdomen whitish; the patagia with distinct black submarginal border; found in Spain, Russia and Turkestan; apparently a good species, not an aberration of *obesa* Bsd.
- polybela.* **E. polybela** Joan. (5b). Forewing olive ochreous, the inner margin rufous; veins pale with the intervals brown; stigmata brown, prominent, the orbicular produced to touch the reniform; hindwing whitish, with grey dusting. — Algeria; described by JOANNIS from a single ♀.
- crassa.* **E. crassa** Hbn. (= *huguenini Rühl*) (5a). Forewing pale brownish grey; lines and stigmata darker but indistinct; hindwing white in ♂, dirty whitish with dull grey terminal area in ♀. Found throughout S. Europe, in Algeria, and in Armenia and Asia Minor, Turkestan, and Siberia. Larva dirty brown, with double black dorsal line; feeds on roots of grass. — The ab. **lata** Tr. (5a) is darker, greyer without the brown tinge; ab. **golickei** Ersch. (5b) is much paler, with all the markings distinct, and occurs only in W. Asia; a third ab. **brunnea** ab. nov. (5b), occurring in Syria (Haifa), is large and dark reddish brown, with the hindwings in the ♀ much darker, and often with a black marginal band beneath: the markings plain; 3 ♂♂, 3 ♀♀ in coll. ROTHSCHILD.
- dirempta.* **E. dirempta** Stgr. Forewing sordid pale grey; the inner line vertical; orbicular and reniform stigmata bluish grey, the former preceded by an additional small spot; hindwing white, with the outer half broadly black; a dark cell spot showing through from beneath; described by STAUDINGER from a single ♀ taken in Spain; apparently near *E. crassa* Hbn.
- lasserreii.* **E. lasserrei** Oberth. (? = *sabura Mab.*) (5b). Forewing reddish ochreous-grey, darker in cell; the stigmata plain; the claviform long, with black edging; orbicular pale, with dark ring, flattened; reniform dark grey; veins towards margin dark; submarginal line conspicuous, formed of pale lunules preceded by dark wedged marks; hindwing white, with a faint outer line of grey points on veins; described from Algeria and Tunis, on the N. African coast; the (so-called) ab. **unctus** Christ. from West Turkestan and Palestine is bone colour, without any reddish tinge; judged from the figure merely, it might well be a distinct species.
- rugifrons.* **E. rugifrons** Mab. (5c). Forewing rufous, the costal area pale; stigmata edged with black; a white streak along submedian fold from the apex of the claviform stigma, as in *polybela*; hindwing whitish; described from a ♂ from Gabes, Tunis.
- boetica.* **E. boetica** Bsd. (5c). Forewing yellowish; all three margins bluish grey, with the centre reddish; a black basal streak below cell; all the stigmata plain, black edged, the claviform large, the round orbicular and the reniform small; abdomen and hindwing white; a local species, at present known only from the S. W. coast of Spain.
- pierretii.* **E. pierretii** Bugn. (= *marsdeni Baker*). Forewing greyish ochreous, tinged with rufous; veins and reniform stigma pale slaty grey; orbicular pale and round, ringed with black; reniform with inner edge white and black; hindwing pale grey, the fringe white; a small species, with large pectinations to the antennae; recorded only from Egypt.
- lanzarotensis.* **E. lanzarotensis** Ibl. (5c). Forewing white with the margins brownish tinged; the cell rufous; an oblique black basal streak; stigmata all present; orbicular small, round, with dark centre; reniform grey, preceded and followed by black scaling; hindwing white with the veins and costal area brownish; head, thorax and abdomen white and rufous. Described by REBEL from a ♂ from Lanzarote Island, one of the Canaries.
- matritensis.* **E. matritensis** Vasquez. Forewing dark grey; costa mottled dark and light; outer line whitish; median vein white; claviform stigma elongate, dark; orbicular pale with dark centre; reniform subquadrate, dark; hindwing pale grey, whitish basewards. A small species from central Spain, caught in September; described as a *Heliophobus*, but placed here by HAMPSON; possibly the ♂ of *chretieni Dumont*.
- carthalina.* **E. carthalina** Christ. Forewing reddish grey, with a coneshaped blotch in middle of cell; some dark streaks in marginal area; the costa, stigmata, a streak along submedian fold, and the submarginal

line, rufous whitish; hindwing luteous grey; cellspot and a faint curved median and postmedian fascia fuscous. The species is known only from the 2 ♂♂ originally described from Transcaucasia.

E. trifida *Fisch.-Wald.* (= *rogneda* *Stgr.*). Forewing fuscous brown dusted with black; the veins, *trifida*. except 5, all broadly whitish, interrupting the transverse shadings; stigmata black-edged, distinct; hindwing white. Occurs in Spain, S. Russia and Asia Minor.

Section II: Antennae of ♂ bipectinate for ²₃; the pectinations shorter.

E. fatidica *Hbn.* (5c). Forewing reddish-grey-brown; the veins darker on grey streaks; stigmata *fatidica*. black-edged; the claviform elongate; the other two small; the orbicular produced externally; the reniform followed by dark streaks; hindwing fuscous brown; the ♀ has the wings aborted, only about half as large as those of the ♂. A mountain species, occurring in Europe in the Pyrenees, the Swiss Alps, the Dovrefeld in Norway, and the Urals in Russia, while in Asia it is found in Mt. Caucasus in Armenia, the Altai Mts. in W. Siberia, and in Mongolia. — The larva is said by MILLIÈRE to be bluish green with darker dorsum, and obscure lines; the tubercles black and single-haired; head reddish yellow marked with black, the thoracic shield black; feeding on grasses. — The form occurring in Siberia and Mongolia, known as ab. **bombycia** *Eversm.* is much darker, the wings clouded with blackish brown, obscuring the markings. *bombycia*.

E. sabulosa *Ramb.* (12a). Forewing brownish grey, the veins blackish; a blackish blotch before *sabulosa*. margin above middle; a black streak from base, more irregular than in *endogaea* *Bsd.*; claviform large, black; orbicular and reniform both black with grey rings; the cell black between them; hindwing pure white. — Recorded from Andalusia only: it resembles the common *exclamationis*, but has longer antennal pectinations.

E. chretieni *Dumont* (5d). Forewing uniform dark ash-grey; the costa narrowly darker; claviform *chretieni*. stigma narrow, black, continuing a black streak from base; orbicular all but obsolete; reniform irregularly diamond-shaped, with a black dash before and beyond it; veins finely black, with cloudy fuscous intervals; hindwing pale brownish fuscous; antennae blackish. Recorded only from Cataluna, La Granja, Spain.

E. bifurca *Stgr.* Much like a small dull *obesa*, but with both costa and inner margin darker; the *bifurca*. median vein black on a broad white streak, forked outwardly; antennae less strongly pectinated. One of the smaller species, described from a single ♂ from Saisan.

E. segetum *Schiff.* (= *praecox* *Hbn.*, nec *L.*, *fervida* *Hbn.*, *sicula* *Bsd.*, *dimidia* *Zell.*, *sicania* *Guen.*, *segetum*. *certificata* *Wlk.*, *ingrata* *Bthr.*, *fuscata* *Bthr.*) (5d). Forewing typically clear reddish brown, the lines and stigmata distinct; costa and outer margin sometimes blackish; hindwing shining white, with veins and margin dark; ♀ darker, sometimes black, with all the markings obscured. Abundant throughout Europe, Asia and Africa, occurring in the temperate regions from June to August. — ab. **pallida** *Stgr.* (5d, e), *pallida*. smaller than the type. has the ground colour whitish-grey, with less defined markings, and occurs, like many other pale forms, in the regions of Central Asia and Amurland. BUTLER's types of *ingrata* and *fuscata* are both from Japan, and WALKER's of *certificata* from N. China; other types are from extra-palaearctic localities. Of this very variable species no less than 12 aberrations have been described or figured by European and British Authors. — ab. **segetis** *Hbn.* has the forewing grey with the costa broadly black-*segetis*. brown; — ab. **caliginosa** *Esp.* (= *segetum* *Hbn.*, nec *Schiff.*, *sordida* *Haw.*) is redbrown, like typical *segetum*, *caliginosa*. but much clouded with blackish, especially on outer margin; — while ab. **fuscata** *Esp.* is pale grey with *fuscata*. a slight redbrown tinge and blackish outer margin; — ab. **catenatus** *Haw.* is a whitish grey insect, with *catenatus*. outer line monili-form, touching the reniform, the marginal spots confluent into a line; — ab. **pectinatus** *pectinatus*. *Haw.* resembles the preceding, but the claviform stigma is very small and the outer line lunulate dentate; — ab. **spinulus** *Haw.* has the outer line excurved round the reniform, not touching it and an obsolete row of *spinulus*. pale spots before outer margin; — in ab. **connexus** *Haw.* the upper stigmata are united by a double line *connexus*. and the acute claviform emits a line to outer margin; — ab. **corticus** (recte *corticeus*) *Haw.* has the *corticeus*. orbicular tridentate instead of round and the transverse lines obsolete; — ab. **venosus** *Haw.* is distinguished *venosus*. by the veins being broadly fuscous; — ab. **monileus** *Haw.* has the pale grey ground dusted and clouded *monileus*. with black; — ab. **subtratus** *Haw.* is blackish with the outer line represented by a row of pale dots; and *subtratus*. lastly ab. **nigricornis** *Vill.* (= *nigricornutus* *Haw.*) is entirely black in forewing, with the antennae also *nigricornis*. black: as a rule, the dark forms are ♀♀. — Larva greyish ochreous with the lines dark-edged; head and thoracic plate pale brown; on roots of low plants, often very destructive.

E. robusta *Eversm.* (= *trifurca* *H.-Sch.* non *Eversm.*) (5e). Forewing dark redbrown; base of costa *robusta*. blackish; veins dark on pale streaks; stigmata with black outlines; the claviform elongate; the orbicular large and round; submarginal line dentate, grey, preceded by dentate black markings; hindwing fuscous brown. — From the Ural Mts. in Russia, the Altai Mts. in W. Siberia, and from Mongolia; a large robust species.

- characteristica*. **E. characteristica** *Alph.* A large insect, coloured and marked exactly like *fatidica*, but with the wings of the ♀ fully developed; the hindwing with acute apex: the ovipositor strongly exerted; the orbicular stigma large, rounded outwardly, pointed towards base. Alpheraky described the species from a single ♀ taken at Ordos, W. China. ? = *robusta* ♀.
- trifurcula*. **E. trifurcula** *Stgr.* (5e). A facsimile of *robusta* *Er.* but smaller: orbicular stigma smaller, and projecting externally: the subcostal vein diffusely white. Recorded from Mongolia and Siberia.
- trifurca*. **E. trifurca** *Er.* (5e). Like *robusta* *Er.* with the veins dark on pale streaks, the intervals black brown: costal area blackish, inner margin below vein 1 grey; stigmata with black outlines; claviform elongate: orbicular small, elongate, with black centre ringed with pale, as the reniform; hindwing luteous-grey, the margin and veins darker. An Asiatic insect, occurring in the Ural Mts., Russia; the Altai Mts., W. Siberia: in Tibet and E. Siberia.
- ruta*. **E. ruta** *Er.* Forewing dark grey with darker irroration: costa and outer margin diffusely blackish: stigmata black-edged: the claviform elongate; the orbicular produced outwardly, and like the reniform with fuscous centre in a pale ring; outer lines indistinct; hindwing fuscous, paler towards base and on inner margin. Also an Asiatic species, occurring in Mongolia and Siberia.
- corticea*. **E. corticea** *Schiff.* (= *transversa* *Walk.*, *fraterna* *Moore*, *amurensis* *Stgr.*) (5f). Forewing brownish-grey covered with dark striae; costal area darker: stigmata outlined with black; hindwing grey. Occurs in June and July throughout Europe and Asia, except China and Japan. — Larva brownish grey with dark tubercles; the lines pale with darker edges: feeds on low plants and hibernates. — Of this species *Turr* enumerates over a dozen aberrations based on the difference of ground colour: in the first 5 the forewing is whitish grey. — ab. **clavigerus** *Haw.* is without dark dusting, the stigmata distinct, the lines variable. — ab. **irrorata-pallida** *Tutt* is dusted with blackish scales, the lines and stigmata both well-marked: often with a series of dark submarginal dashes. — ab. **costa-irrorata** *Tutt* is a form of the last with the costa intensely black. — ab. **virgata-pallida** *Tutt* has both basal and marginal areas dark, with the central space pale grey. — ab. **sincerii(a)** *Frr.* is the reverse of the last, the base and margin being pale grey, with the central space so darkened by black scales as to form a median band. In the next 3 the ground colour is fuscous. — ab. **obsoleta-fusca** *Tutt* is smoky grey without black scales, the lines obscure but the stigmata distinct. — ab. **irrorata-fusca** *Tutt* differs in being wholly irrorated with blackish especially towards costa. the lines as well developed as the stigmata. — ab. **subfuscus** *Haw.* is like the last, but the dark fuscous suffusion so dense that the ground colour and stigmata are almost hidden. The next 3 are reddish-brown. — ab. **brunnea** *Tutt* is partially irrorated with fuscous, the lines and stigmata distinct. — ab. **sordida** *Hbn.* is like the last, but duller in colour, with outer margin dark. — ab. **suffusa-brunnea** *Tutt* has the suffusion of black scales so strong that the lines and stigmata are obscured. — ab. **obscura** *Frr.* (5f) has the basal and marginal areas brown, with the central area black, corresponding to ab. *sincera* with grey margins. In the last 4 the ground colour is black. — ab. **brunnea-virgata** *Tutt* has the whole forewing black except the outer margin which is bright ochreous or pale brown. — ab. **venosa** *Tutt* is wholly black, with the veins all pale ochreous. — ab. **transversa** *Tutt*, commoner than the two preceding, is black with the transverse lines pale and conspicuous: — and lastly, ab. **nigra** *Tutt*, the extreme form, is wholly black, with the stigmata and lines more intense.
- turatii*. **E. turatii** *Standf.* Forewing like *cutimnicola*, brownish yellow with simple markings, but shorter and more rounded: stigmata cloudy: lines faintly marked: the termen narrowly paler: hindwing greyish brown. — A local insect, so far found only in the Mountains near Digne, S. France.
- hemispherica*. **E. hemispherica** *Hamp.* (12a). Forewing brownish grey, with darker dusting and suffusion; claviform stigma hardly marked: the other two grey with black outlines: submarginal line defined inwardly by a dark shade and represented by a series of small white teeth; hindwing white, with brown terminal suffusion. Described by *HAMPSON* from a ♂ from the Mts. of Cyprus.
- anarmodia*. **E. anarmodia** *Stgr.* Forewing dull brownish grey; the lines faint, with paler edges; stigmata with whitish rings, the orbicular oval, the reniform with lower lobe blackish; hindwing of ♂ dull-white, of ♀ blackish, with pale fringe. — Haifa, Syria.
- Section III: Antennae of ♂ with pedicellate fascicles of cilia to $\frac{2}{3}$.
- patula*. **E. patula** *Walk.* (= *septentrionalis* *Moeschl.*) (5g). Forewing brownish fawn, mixed with grey towards base and along costa, altogether pale grey beyond the dentate submarginal line; lines and stigmata black and distinct, the outer line strongly dentate; hindwing fuscous with terminal area darker: lateral tufts of abdomen dark. — This species, originally described from N. America, is said to have occurred in Siberia also.
- endogaea*. **E. endogaea** *Bsd.* (= *arenicola* *Stgr.*) (5g). Forewing narrow; grey along margins, brownish ochreous in, below, and beyond cell; claviform stigma thin, black, continuing a black line from base;

orbicular elliptical, pale, with brown centre and black edge: reniform dark grey, its inner edge black and white; veins finely dark, the interspaces brown: hindwing white; in ♀ with a grey shade along outer margin. — Restricted to Corsica and Sardinia: the imago emerges in October, and the larva is said to feed on grasses on sandhills.

E. distinguenda Led. (= *aquilina* Bsd. non Hbn., *hastifera* Donz. fig. 2 only) (5f). Exceedingly *distinguenda*. like *aquilina*, but the ♂ has the antennae clothed with long fascicles of cilia; claviform stigma large, outlined in black: hindwing white. — Found in S. France, Switzerland and Hungary; originally recorded from the Altai Mts. in W. Siberia.

E. spinifera Hbn. (= *spinula* Hbn., *biconica* Koll., *exigua* Koll., *spiculifera* Guen., *aristifera* Guen., *spinifera* ferina Feld., *hodnae* Oberth.) (5g). Forewing pale ochreous, in the ♀ suffused with fuscous; stigmata distinct, black-edged: the claviform very elongate, black brown: reniform fuscous: orbicular flattened, elongate; the cell before and beyond it black brown: subterminal line alone plain, dentate, preceded and followed by dark wedged-shaped marks; hindwing white. Flies along the mediterranean coasts of Europe and Africa; in the Canaries and Sicily; and in the West of Asia, in Syria, Persia and Kashmir (also throughout Africa and Southern India). Larva, according to MILLIÈRE, on grasses: greenish grey, with the dorsum ochreous: the dorsal lines black, the lateral white.

E. cinerea Schiff. (= *obscura* Hbn., *murina* Er.) (5g). Forewing ashy grey, with darker irro- *cinerea*. tion; claviform and orbicular stigmata obsolete; reniform a small dark lunule; a distinct diffuse dark median shade; hindwing whitish, in the ♀ grey-tinged. — A local species, but widely distributed throughout Europe and in Western Asia. — Larva greenish grey, with the dorsal and subdorsal lines pale, edged with dark; the spiracular line dark; feeds on roots of grass, thyme, sorrel, etc.; — in the ab. **alpigena** Tur. the *alpigena*. wings are paler and the markings indistinct, while in ab. **livonica** Teich (5h) they are very much *livonica*. darker. — ab. **fusca** Bsd., a ♀, is larger than the typical form, and black brown: — subsp. **tephrina** *fusca*. *Stgr.* (5g) is smaller, with forewing narrower, and the markings much clearer; this form is *tephrina*. confined to the South of England. TUTT, writing in 1892, Brit. Noct. 11, p. 76, evidently with only British specimens before him, did not notice that the British race was per se distinct from continental forms, so that the aberrations which he there put forward must be considered as applying solely to the British race: — these are ab. **pallida** Tutt, pale grey without median shade and all ♂♂; — ab. **obscura** *pallida*. *Tutt* nec Hbn. a unicolorous dull brown form generally (but not always) confined to ♀♀; and ab. **virgata** *obscura*. *Tutt* pale grey with a distinct reddish median shade, and all ♂♂. *virgata*.

E. christophi Stgr. (5h). Forewing greyish ochreous; the costal area paler, but the costal edge *christophi*. dark; a black streak at base below cell; the cell blackish, the two stigmata brown with grey rings and black outlines: claviform small and black, emitting a dark line along fold; veins dark beyond middle; marginal area fuscous, except at apex; hindwing ochreous white, with veins and margin brownish. — Known only from S. Russia and W. Turkestan. — In the ab. **lugens** Stgr. the forewing is darker and *lugens*. more uniform in colour. — Larva, according to HAMPSON, ochreous with darker mottling; the lines indistinct, except the dorsal, which is said to be double; tubercles brown; stigmata black.

E. proleuca Hamps. (5f). Forewing dull grey-brown; costa ochreous grey, interlined with dark; *proleuca*. cell dark between the stigmata; orbicular produced and pointed basewards; all the lines obscure; hindwing whitish with grey margin. A small species, described from a single ♂ from S. Russia; very close to *basigramma* Stgr.

E. hastifera Donz. (5h). Forewing purplish fuscous; costa broadly pale ochreous to outer line; cell *hastifera*. blackish: stigmata outlined with black; orbicular and reniform with brown centres and ochreous rings, the former round: hindwing white, with grey margin. S. Europe, France, Austria, S. Russia, Transylvania; West Asia, Armenia, Asia Minor, Persia and the Altai Mts.

E. obelisca Schiff. (= *praticola* Hbn., *declarans* Walk.) (5h, i). Forewing purplish brown; costa *obelisca*. pale to outer line; cell dark brown; stigmata large, greyish ochreous: the claviform dark; hindwing in ♂ white, with narrow grey shade along margin, in ♀ more or less grey-tinged throughout. — Widely distributed throughout Europe, except Great-Britain and Scandinavia: Algeria, and Asia except the extreme East; — in ab. **fictilis** Hbn. [fig. 710] (5i) the forewing is more variegated, the submarginal line preceded by a row *fictilis*. of distinct black teeth; — ab. **ruris** Hbn. (5i), larger than typical, reddish grey or reddish brown, with or *ruris*. without the pale costa: stigmata large and pale: — ab. **villiersii** Guen. (5i) is also larger than typical; *villiersii*. forewing ochreous grey with costa and both stigmata whitish, darker in the ♀; — ab. **plectoides** Guen. the *plectoides*. same size as type, forewing with more acute apex, deep shining violet brown, with traces of subterminal only: costa and stigmata (which are small) pale testaceous; the orbicular somewhat angulated, the reniform constricted in middle; claviform obsolete: the cell deep black; hindwing very dark; described from a ♀ only from Lapland; omitted by STAUDINGER, but probably a distinct species: — a very distinct form from the Urals, which may be called ab. **carbonis** nov. (6a) has the ground colour purplish black, with the *carbonis*.

costal streak and upper stigmata pale and the cell deep black; all the lines indistinct: several examples of both sexes sent from Uralsk by M. BARTEL.

- puta*. **E. puta** *Hbn.* (= *erythroxylea* *Tr.*, *catalaunensis* *Mill.*) (6 a). Forewing yellowish grey, the costal and outer margins reddish; hindwing yellowish white, with outer margin reddish. This type form is very rare and found only in Italy; — ab. **renitens** *H.-G.* pale grey in ♂, darker in ♀, basal area more or less black: reniform stigma alone black, no central shade; — ab. **lignosa** *God.* grey with transverse shade *radius*. distinct, the ♀ darker with 2 dark lines; — ab. **radius** *Haw.* ♂ (= *radiola* *Stph.* ♀) grey with longitudinal dark markings; — ab. **obscura** *Tutt* uniform dull greyish fuscous, with basal area and a costal patch containing reniform darker: — ab. **nigra** *Tutt* black with the lines and stigmata deeper, the orbicular sometimes paler: this is apparently the extreme dark form of the ♀, as *obscura* is of the ♂. The species is common and generally distributed throughout Europe: occurring also in Algeria, and in W. Asia, Syria, Asia Minor, Persia, Turkestan and Mongolia. — Larva dull brown, paler above; dorsal segments with dark freckles on each side of the black-edged dorsal line; subdorsal line brown with its lower edge pale; head and thoracic plate brown; feeding on various low plants.
- armena*. **E. armena** *Ev.* (= *deserta* *Stgr.*) (6 a). Forewing grey with darker freckling; the subquadrate orbicular and the reniform whitish: subterminal line diffusely dark; hindwing yellowish white, the termen *obscura*. fuscous: abdomen pale. Resembles *cursoria*, but paler: Sarepta, S. Russia. — In the ab. **obscura** *Stgr.* the forewing is suffused with darker and the markings are obscured.
- bogdanovi*. **E. bogdanovi** *Ersch.* (= *grumi* *Alph.*) (6 a). Forewing rufous ochreous; a distinct rufous median shade; stigmata outlined with rufous, the claviform obsolete; hindwing ochreous. A local insect, confined to W. Turkestan; in appearance resembling a *Leucania*, to which genus it was originally referred.
- emolliens*. **E. emolliens** *Hamps.* (= *mollis* *Stgr.* nec *Walk.*) (6 b). Forewing shining pale greyish brown; the lines mostly obsolete; orbicular and reniform stigmata slightly indicated; a dark shade preceding submarginal line; hindwing whitish, with the margin grey. — W. Turkestan, Transcaspia.
- canariensis*. **E. canariensis** *Rbl.* (6 b). Forewing bluish grey-brown; a short black basal streak below cell; claviform stigma absent; orbicular and reniform brown, ringed with grey, the cell dark; hindwing brownish white, darker towards margin. This is another local species, occurring in the Canary Islands.
- tibetana*. **E. tibetana** *Moore* (= *modesta* *Moore*, *monticola* *Hamps.*) (12 a). Forewing dull grey-brown; stigmata outlined in black: orbicular and reniform large, with dark suffusion between them; hindwing fuscous; the markings generally obscure, but in some cases distinct. Tibet and Kashmir.
- fissa*. **E. fissa** *Stgr.* (6 b). Forewing grey with a reddish tinge; stigmata defined by black; the rounded orbicular and the reniform small and grey; median vein and its branches before outer line streaked with grey; hindwing fuscous brown, paler towards base. Recorded from the Thian-Shan Mts. in E. Turkestan, and from Mongolia.
- humigena*. **E. humigena** *Püng.* (12 a). Forewing reddish brown; the lines dark and distinct; claviform and orbicular stigmata quite small; the reniform large, dark grey, connected by a streak with outer line; marginal area dark at middle; hindwing paler brown. From Kuku-Nor, Tibet.
- pallidifrons*. **E. pallidifrons** *Hamps.* (6 b). Forewing pale grey-brown, with black dusting; stigmata indistinct, the upper two separated by a black spot; outer line strongly dentate; hindwing pale fuscous; palpi blackish; frons whitish; head and thorax grey-brown in ♂, paler, more ochreous, in ♀. Described from Central Asia.
- cognita*. **E. cognita** *Stgr.* (6 b). Forewing grey with dense dark brown dusting; lines all indistinct; stigmata obscurely defined by black scales; subterminal line pale; hindwing fuscous. From W. Turkestan.
- Section IV: Antennae of ♂ with tuberculate or serrate fascicles of cilia.
- acuminifera*. **E. acuminifera** *Ev.* (12 a). Forewing pale redbrown dusted with black: a costal streak and the median vein white; a black streak below cell from base; stigmata black-edged; the claviform small, emitting a pale streak to outer line; orbicular oval, oblique, with a white ring like the reniform; hindwing white, fuscous along termen. From Russia and W. Turkestan.
- submolesta*. **E. submolesta** *Püng.* (12 a). Resembles *exclamationis* *L.*, but the hindwing is brown in both sexes; stigmata paler, the claviform short; a darker streak before the reniform and a dark geminate streak beyond it towards margin. Kuku-Nor, Tibet.
- adumbrata*. **E. adumbrata** *Ev.* (= *obscura* *Stgr.*) (6 b). Forewing dark fuscous brown in ♂, black brown in ♀, with an undertint of red in the paler spaces; stigmata black-edged, the orbicular and reniform in ♀ with whiter rings; hindwing dull grey with a dark cellspot, becoming blackish along termen. Found in *polygonoides*. Russia, Armenia, Turkestan, E. Siberia and Tibet; — the ab. **polygonoides** *Stgr.* represents a paler form, variegated with grey and brown, and with the markings plainer.

E. robiginosa *Stgr.* (6c). Forewing dull rust colour, the markings almost obsolete; the edges of the *robiginosa*. stigmata dark; hindwing pale grey becoming rust coloured in outer half. Described by STAUDINGER from a single ♀ from Palestine.

E. cursoriodes *Hamps.* (6c). Resembles the preceding species, but reddish-ochreous in tint, and *cursoriodes*. with the lines and stigmata plain; the claviform small and brown; hindwing hyaline whitish in basal half, ochreous beyond. 1 ♂ from Syria.

E. heringi *Stgr.* Also like the preceding species, but yellowish-ochreous with the markings in- *heringi*. distinct except a dark submarginal shade; hindwing ochreous white with brownish veins and fuscous margin. From Asia Minor and Persia; — in ab. **signata** *Stgr.* the markings are stated to be more conspicuous. *signata*.

E. viguræa *Püng.* (6c). Forewing pale ochreous grey dusted with darker scales; the costal area *viguræa*. whiter; markings almost absent; the reniform stigma dark grey, ill-defined; a faint dark submarginal shade; hindwing white in ♂, in ♀ brownish along termen. Aksu, Mongolia.

E. homicida *Stgr.* (12f). Like *adumbrata* *Ev.*, but smaller and paler; hindwing whitish with brown terminal *homicida*. area, broader in ♀. Asia Minor.

E. confusa *Alph.* (= *subconspicua* *Stgr.*). Forewing brownish grey; claviform stigma black-edged; *confusa*. orbicular and reniform whitish, with incomplete outline; hindwing pale brown, ochreous along inner margin; abdomen with yellowish anal tuft. Turkestan and Mongolia.

E. moechilla *Püng.* Forewing uniform dull yellow grey, with two dark costal spots; stigmata nearly *moechilla*. obsolete, reniform with lower lobe dark; outer line a curved row of dots; hindwing paler, the veins dark. Described from a single ♂ from Aksu, Mongolia.

E. subdecora *Stgr.* Like *decora* *Schiff.*, but smaller, with narrower darker wings; both wings dark *subdecora*. grey, the forewing with yellowish scales intermixed, the lines and stigmata with yellowish edging. Fergana, Samarcand, Issykkul.

E. clauda *Püng.* (= *subdecora* *Hamps. nec Stgr.*) (6c). Forewing yellowish grey, varied with whitish; *clauda*. the inner line nearly vertical, straight; stigmata absent; hindwing white with veins and termen fuscous, the fringe white; abdomen with ochreous anal segment. Known only from Asia Minor and W. Turkestan.

E. birivia *Schiff.* (= *honoratina* *Donz.*, *dolis* *Grote*) (6c). Forewing dark ashgrey, with pale dusting; *birivia*. lines themselves ill-defined, but marked by paler scaling; orbicular and reniform stigmata ochreous, or with the centres dark but ringed with ochreous; hindwing fuscous grey, paling towards base. Occurs in S. Europe, in the French and Swiss Alps, in Italy, Austria and Hungary; — in the ab. **taurica** *Stgr.* the *taurica*. pale scales are ochreous yellow, instead of white; this form occurs in Asia Minor and Turkestan. GROTE'S description of *dolis* as American was due to an erroneous label.

E. grisescens *F.* (= *candelisequa* *Hbn.*, ? *ignicola* *Hbn.*, *latens* *Boisd.*, *corrosa* *H.-Sch.*) (6g). Fore- *grisescens*. wing shining pale or brownish grey; the lines black and very distinct; orbicular and reniform stigmata ill-defined, but separated by a quadrate black spot, sometimes placed on a broad median shade; hindwing dull white, towards termen fuscous brown; a widely spread species in Europe, occurring in the Mts. of France, Switzerland, Italy, Hungary and Scandinavia; the 2 forms **thianshanica** *Stgr.* and **hyrcana** *Stgr.*, — *thianshanica*. *hyrcana*. the former smaller, with whitish grey, less marked, forewings, the latter yellowish grey, — both occur only in W. Asia, the former in Turkestan, the latter in Persia. — Larva (teste RÜHL) brownish green, with white lines and dark oblique subdorsal streaks; the head yellow green varied with dark; feeding on *Leontodon taraxacum*.

E. impexa *Püng.* Forewing grey, with the inner and outer lines well-marked, lunulate, approximated *impexa*. on inner margin; superficially much like *E. grisescens* ab. *thianshanica* *Stgr.*, but apparently a good species.

E. parnassiphila *Stgr.* Forewing narrow, dark greenish grey, darker in middle of inner margin; *parnassi-* markings faint; outer line the plainest, edged with pale; orbicular stigma pale, reniform with a pale ring; *phila*. costa with dark and light mottlings; hindwing blackish with yellowish fringe. A mountain species described from a ♂ from the Ala tau Mts., placed by STAUDINGER between *decora* *Schiff.* and *birivia* *Schiff.*

E. haverkampfi *Standf.* Allied to *decora* *Schiff.*; forewing narrower and brighter, pale bluish grey; *haverkampfi*. the dark lines and stigmata mixed with yellow scales; fringe mottled; hindwing grey. Occurs only in Corsica.

E. decora *Schiff.* (= *nebulosa* *Hbn.*, *marcens* *Chr.*) (6d). Forewing dull ashgrey, sometimes with *decora*. a brownish or ochreous tinge; lines dark, often obscure; stigmata pale, sometimes ochreous; claviform, when present, yellowish; hindwing dull fuscous, with the base paler in ♂. Common on the Mountains of Central Europe and in Armenia; — in ab. **livida** *Stgr.* (6d) the ground colour is dark purplish grey and the *livida*. stigmata well-defined; the orbicular round and sometimes filled up with ochreous.

- cucuna.* **E. cucuna** *Püng.* (6d). Forewing bluish grey, with a slight brown flush: lines and stigmata obscure; lower part of reniform dark: hindwing paler. Superficially much like *candelarum* *Stgr.*, which, however, has the forehead smooth. Kuku-Nor, Tibet, in August.
- decorata.* **E. decorata** *Stgr.* (6d). Forewing luteous grey, tinged with darker and flushed with yellow; the stigmata yellow; hindwing yellowish fuscous; a species from W. Turkestan, allied to *decora* *Schiff.*
- simplonia.* **E. simplonia** *H.-G.* (6e). Forewing pale ashgrey or bluish grey, often flushed with yellow scales, with all the lines blackish and well-marked; reniform stigma blackish and diffuse, the other two absent; hindwing fuscous grey with pale fringe and dark cellspot. Found on the Alps of France, Switzerland and Italy.
- culminicola.* **E. culminicola** *Stgr.* (6e). Like *simplonia*, but larger; the forewing pale fuscous suffused with pale yellow and roughly dusted; orbicular and reniform stigmata diffuse; hindwing with the base paler. Switzerland and the Tyrol.
- constanti.* **E. constanti** *Mill.* (12f) Forewing pale yellow, dusted with darker especially in median area; the lines fine; the subterminal punctiform; stigmata very faint; hindwing white, with the fringe and margin yellowish. Recorded only from the Ardèche, France.
- trux.* **E. trux** *Hbn.* (= *lenticulosa* *Dup.*) (6e). Forewing ochreous grey, dappled and striated, and often, especially in ♀, suffused with dark fuscous; claviform stigma black-edged; reniform large, filled in with black: orbicular small, round, with a pale ring; fringe rufous; hindwing dull whitish, with fuscous terminal suffusion, broader in ♀; or with a curved row of dark dashes on veins and no suffusion; a variable species, occurring throughout S. Europe, in Algeria, the Canaries, S. Russia and Asia Minor; — in ab. *olivina* *Stgr.* (6f) the forewing is smooth olivegrey, with no or little irroration, the markings concisely red-brown; — ab. *terranea* *Frr.* (6f) has the suffusion and markings rufous; — ab. *amasina* *Stgr.* (6f) is fuscous grey, with blackish median shade, the ground colour darker in the ♀; — subsp. *lunigera* *Stph.* (6f). Forewing fuscous or pale grey, varied with yellowish; the lines distinct; orbicular stigma small; reniform large and blackish; claviform black; occurs on the south coast of England and Ireland; — ab. *pallida* *Tutt* is whitish grey with a slaty tinge, not irrorated with yellow; — ab. *virgata* *Tutt* with a dark shade before reniform stigma and the outer third of wing dark; — ab. *suffusa* *Tutt* has the whole wing suffused with blackish grey, except the pale orbicular and a small patch between reniform and outer line; — ab. *nigra* *Tutt* has the forewing unicolorous blackish, the lines and stigmata more intense, the orbicular sometimes visible; — and ab. *rufescens* *Tutt* like the type but tinged throughout with reddish. — Larva dull brownish, paler at sides, sometimes greenish; lines paler with dark edges; head brown mottled with black; thoracic plate black, divided by a pale line; feeds on various low plants.
- cursoria.* **E. cursoria** *Hufn.* (6g). Forewing sandy ochreous, often much suffused and speckled with brownish grey; claviform stigma absent, or with dark outline only; orbicular and reniform with dark centres and pale rings, the lower lobe of reniform always deeper; sometimes the cell, the claviform, and a basal streak before it are dark olive brown; hindwing dull greyish ochreous with fuscous termen and pale cilia; a variable insect, occurring on sandy wastes; in Britain restricted to coast sandhills; found in France, Germany, and Russia in Europe, and widely spread through central Asia; — ab. *obscura* *Stgr.* has the forewings almost wholly red-brown, the stigmata with white rings, and occurs on the shores of the Baltic; — ab. *currens* *Stgr.* has both wings dark; — while ab. *vaga* *Stgr.* is uniform brownish grey; — lastly, ab. *sagittata* *Stgr.* is a more variegated form, with red-brown suffusion and little dusting, and the costal streak, the upper stigmata, and the postmedian area whitish; the three last are Central Asian; specimens from Asia Minor have the hindwings wholly white. — Besides the above aberrations there are a few of minor importance named or quoted by *Tutt* from British specimens. — ab. *coerulea* *Tutt* and ab. *costacoerulea* *Tutt* are both slaty grey with the lines and stigmata ochreous and grey, the latter distinguished by having a pale costa: — three have the ground colour greyish white: ab. *mixta* *F.* which has the transverse lines distinct; — ab. *pallida* *Tutt* with longitudinal markings; — and ab. *distincta* *Tutt*, with the cell, the claviform stigma, and a basal streak deep blackish brown; — two forms are yellow ochreous: — ab. *obsoleta* *Tutt* with all the markings obsolete and ab. *ochrea* *Tutt* with the markings longitudinal; — and lastly, three with a reddish-brown ground colour; — ab. *brunnea* *Tutt* with the transverse markings distinct; — ab. *marginata* *Tutt* wholly red-brown except a narrow ochreous border on outer margin; — and ab. *sagitta* *Hbn.* with the veins sharply white, the outer margin dark, and the whole wing variegated. — Larva pale ochreous tinged with greenish; the lines paler, edged with grey-green; the head pale ochreous; feeds on sand grasses and low plants.
- nigricans.* **E. nigricans** *L.* (6h). Forewing black brown with all markings obscured, or dark red-brown with the markings plainer; the edges of stigmata finely black; some ochreous scales on outside of reniform, along the course of submarginal line and at base below cell; hindwing brownish fuscous, the basal half

paler in ♂. A widely spread species throughout Britain, Central Europe and W. Asia. — More than 20 aberrations are noted by Turr. grouped, as usual, according to coloration; — the first two, with ground colour grey, are rare; — ab. *pallida* Tutt with a reddish tinge, and the lines and stigmata all but obsolete; — and ab. *flavopallida* Tutt, similar, but with the lines and stigmata yellow; — the following 5 are pale reddish; — ab. *rufa* Tutt, with lines and stigmata pale; — ab. *ruris* Haw. with the markings yellow; — ab. *obeliscata* Haw. with cell black on each side of the orbicular stigma; — ab. *striata* Tutt with the base, stigmata, lines, and outer nervules yellow ochreous; — and ab. *rufovariegata* Tutt mottled red and yellow, the stigmata edged with black; — the next 5 are dark reddish-brown; — ab. *rubricans* Esp. with the lines paler; — ab. *vilis* Hbn. with stigmata and lines yellow; — ab. *quadrata* Tutt, like the last, but with a square black blotch between the stigmata, as in ab. *obeliscata* Haw.; — ab. *ochrea* Tutt, with faint lines but the stigmata and veins ochreous; — ab. *fuscovariegata* Tutt, purplish brown mottled with ochreous and with the dark blotch between the stigmata; — in the next 4 the ground colour is blackish brown or blackish fuscous, as in typical *nigricans* L.; — ab. *dubia* Haw. with lines and stigmata deeper, and with a conspicuous waved white submarginal line; — ab. *fumida* (= *fumosa* God. nec F.), smoky brown with ochreous reniform and yellowish submarginal line; — ab. *marshallana* Westw. sooty brown with dark lines and ochreous stigmata; — ab. *ursina* God. with lines and stigmata dark, a submarginal row of wedge-shaped spots and the outer edge of reniform stigma whitish; — ab. *rustica* Er. much smaller than the last, with the markings obsolete; — the last group has the ground colour black; — ab. *carbonea* Hbn. with lines and stigmata yellowish; — ab. *fumata* (= *fumosa* Haw. nec F.) with the upper stigmata pale-edged; — ab. *fumosa* F. with a submarginal row of whitish wedge-shaped spots; — and ab. *fuliginea* God. wholly black, with the very faintest of markings. — Larva ochreous grey, paler, more greenish, at sides; lines greenish edged with black; the subspiracular line whitish and double; head with black speckling; feeds on various low plants.

E. nyctopis Hamps. (6i). Like the dark red-brown forms of *nigricans*; the basal area of forewing and the thorax often irrorated with pale; the tegulae uniform in colour, without a dark line across them. Kashmir. *nyctopis*.

E. enixa Püng. (6h). Resembles pale specimens of *E. nigricans*; stigmata and lines of forewing paler; the reniform without yellow scaling; hindwing whiter. Fergana, Issykkul, Alexander Mts., Aschabad. *enixa*.

E. intolerabilis Püng. (6h). Forewing uniform mouse-brown; inner and outer lines distinctly double; stigmata hardly outlined; the two upper generally separated by a darker shade; hindwing scarcely paler; fringe of both wings with pale line at base. Kuku-Nor, Tibet. *intolerabilis*.

E. conspicua Hbn. (= *agricola* Boisd., *lycarum* H.-Sch., *squalida* Ev.) (6h). Forewing luteous grey, dusted and shaded with fuscous, the dark and light shades contrasting; the lines double; the median shade distinct; claviform stigma with black outline; orbicular and reniform large, generally conspicuously pale, or with pale outlines; cell fuscous; hindwing dull grey with the base whitish; in Europe restricted to the South, occurring in the Canaries, Spain, France, Greece and S. Russia, and widely distributed through West and Central Asia; — in the ab. *abscondita* nom. nov. (= *abdita* Stgr. nec Joan.) (6i) the markings are all obscured by a luteous grey suffusion. *conspicua*.

E. hilaris Frr. (= *conifera* Chr.) (6i). Forewing dirty grey, with darker dusting; the stigmata and lines obscure; the former black-edged, the upper two generally with a dark shade between them; a dark shade before submarginal line; hindwing dull grey. A very obscure Asiatic species, found in Armenia, Asia Minor, Persia, Turkestan and Siberia. — ab. *incognita* Stgr. has the claviform smaller and filled in with black; another form, from Persia, is red-brown, with the claviform obsolete; examples from the Ural Mts. differ in having the hindwing white in both sexes. *hilaris*.

E. seditiosa Püng. Closely resembling *hilaris* Frr., but the forewing more pointed, the outer margin slightly crenulate; claviform stigma short and black; orbicular small and round; outer line less strongly excurved; hindwing darker fuscous. Described from 2 ♂♂ from Fergana. *seditiosa*.

E. nili Baker (12f). Forewing brownish grey; stigmata with black outlines, the claviform small, ochreous-tinged; the orbicular small, lobed externally, with a dark centre and grey ring, like the reniform; hindwing pure white. Alexandria, Egypt. The species resembles *mustelina* Chr. *nili*.

E. mustelina Chr. (7a). Forewing pale grey, with fuscous dusting; the lines double and distinct; stigmata outlined with fuscous, the orbicular round; cell dark fuscous; hindwing white, with veins and termen fuscous. Found in N. Persia; — the ab. *centralis* Stgr. (= *mustela* Stgr.) (7a) is a more distinctly marked insect, with body and forewings darker, and occurs in Asia Minor, Turkestan and Siberia. *mustelina*.

E. cos Hbn. (= *tephra* Boisd., *vacillans* H.-Sch., *millieri* Stgr., *aphe* Mab.) (6i). Forewing dull grey, thickly peppered with dark scales; stigmata and lines very ill-defined; hindwing whitish, the veins and

- nagyagensis*. margin fuscous; occurs in all the countries of S. Europe, in Tunis, Sicily and W. Asia; — in ab. **nagyagensis cycladum** *Frr.* the lines are distinct; — ab. **cycladum** *Stgr.*, from the island of Naxos is smaller and rufous in colour.
- opipara*. **E. opipara** *Morr.* (= *islandica* *Puck. nec Stgr.*, *labradoriensis* *Stgr.*, ? *norwegica* *Stgr.*) (6i). Forewing pale grey; a blackish basal streak below cell; claviform stigma large, elongate, black, continued as a black streak to postmedian line; upper stigmata grey, the cell and space beyond black; slight fuscous suffusion before the outer lines: hindwing brownish, with a dark cell-spot and outer line. A North American species, of which a single specimen has occurred in Norway.
- nigrita*. **E. nigrita** *Graes.* (6k). Forewing deep purple fuscous: the double lines filled in with reddish; stigmata all black-edged: the round orbicular and the reniform with reddish annuli, the cell between them black; submarginal line with rows of black dentate marks on each side; hindwing fuscous brown. Raddefka, Amurland; this species is distinguished by its short and broad wings.
- recussa*. **E. recussa** *Hbn.* (= *telifera* *Donz.*, *florigera* *Er.*, *transylvanica* *H-Sch.*) (6k). Forewing purplish-grey, with redbrown suffusion; claviform stigma large, blackish; orbicular and reniform brown with grey annuli; the cell black; no black streak below cell; hindwing luteous grey with the termen dark. Generally distributed in Europe, also found in Turkestan and Siberia.
- tritici*. **E. tritici** *L.* (= *pratincola* *Bhh.*, *domestica* *Fab.*) (6k). Forewing dark brown, with costa and inner margin more or less irrorated with whitish: the median vein white; a black streak from base below cell; hindwing grey with fuscous terminal suffusion. Found abundantly throughout Europe and Asia except the extreme east. — The chief aberrations are ab. **aquilina** *Schiff.* (= *fictilis* *Hbn.* fig. 479 (6k) larger and dull brown, with luteous instead of white scaling, the costa generally paler; — ab. **obelisca** *Stph.* (and Brit. authors) resembles in a way the true *obelisca* *Schiff.*, but is smaller, with the antennae less developed; — in ab. **eruta** *Hbn.* (6k) the dark ground colour is overlaid with grey and the markings are obscured; — while in ab. **siliginis** *Guen.* the ground colour itself is greyer; — ab. **obscurior** *Stgr.* is a blackish form from Ussuri; — ab. **detorta** *Er.* from Mongolia and Siberia is reddish ochreous with pale brown costa and distinct lines; — in ab. **varia** *Alph.*, also from Central Asia, the costa, veins, and stigmata are conspicuously white; — ab. **distincta** *Stgr.* from S. Russia and Armenia may be specifically distinct, for besides being larger, with bright clear markings and white hindwing, the antennae are said to be thicker. — In addition to these more widely spread continental forms a considerable number have been proposed or quoted by *Tutt*, based on a comparison of British specimens and grouped according to ground colour and the presence or absence of a pale costal streak. Thus those having a pale slaty grey ground colour are ab. **obsoleta** *Tutt*, with the costa concolorous, and all markings obsolete, but sometimes the lower lobe of reniform dark. This form must be very near the following species *sabuletorum* *Boisd.* and its ab. *squalida* *Ev.* — ab. **costaobsoleta** *Tutt* is like the last but with the costa paler and the markings faint; — the next two have the ground colour clear slate or dove colour; — ab. **coerulea** *Tutt*, with concolorous costa and ab. **costacoerulea** *Tutt*, with the costa pale, the markings in both cases more or less distinct; the next two are greyish white; — ab. **pallida** *Tutt*, with costa concolorous and the markings fairly distinct; — and ab. **sagittifera** *Stph.* with the costa pale, the markings all distinct, and with a dark mark between stigmata; — those with pale greyish fuscous coloration are ab. **fusca** *Tutt* with concolorous costa and well developed markings (very close to the ab. *siliginis* *Guen.*), and ab. **costafusca** *Tutt*, with costa and median nervure pale, the lines and wedge-shaped spots well-developed; two others have a dark greyish fuscous ground colour; — ab. **sordida** *Haw.* with costa concolorous and distinct markings; — and ab. **pupillatus** *Haw.* with the stigmata subocellate and the median area pale; two with a yellowish ochreous ground are ab. **ochracea** *Tutt* with the costa concolorous and the lines clear, akin to *virgata* *detorta* *Er.*; and ab. **virgata** *Tutt*, which is pale reddish ochreous, with the space between inner and outer lines deep red-brown; the claviform stigma black, the upper two quite pale; — with ground colour reddish brown there are ab. **valligera** *Haw.* (= *cuneigera* *Stph.*) with costa concolorous, the markings and wedge-shaped spots distinct, the cell dark; — and ab. **albilinea** *Haw.* (= *lineolata* *Haw.*, *aquilina* *Hbn.* fig. 536) like the last, but with both costa and median vein white; — the following three are blackish brown; — ab. **venosa** *Stph.*, well-marked, but with costa concolorous; — and ab. **hortorum** *Stph.*, which is more ash-coloured; — and ab. **nigrofusca** *Esp.* with the costa pale and the markings obscured; and lastly, we have two with ground colour black; — ab. **nigra** *Tutt* with the markings distinct and the costa concolorous; — and ab. **ocellina** *Stph.* (= *costanigra* *Tutt*) with the costa pale or whitish. — Larva brownish ochreous; dorsal line pale; subdorsal lines dark with pale lower edge; lateral and spiracular lines greenish fuscous; on a variety of low plants; in Britain especially common on the sandhills of the coast.
- sabuletorum*. **E. sabuletorum** *Boisd.* (= *foeda* *Led.*, *nigrina* *Stgr.*) (7a). Forewing dull grey with a brown tinge; the dark markings as in *tritici* *L.* but never black brown and often altogether absent, except the dark lower end of the reniform stigma; this unmarked form, = ab. **squalida** *Ev.* (7a), never occurs in *tritici* or its various forms. S. Russia.

E. solida Ersch. Forewing pale grey, without any markings except the black marginal lunules. *solida*. Described by ERSCHOFF from a single ♂ from Khokand; perhaps an extreme form of *sabuletorum* Bois.

E. tristis Stgr. Nearest to *tritici* ab. *cruta* Hbn.; all the wings much darker; the lines and stigmata *tristis*. clear; underside of hindwing with the basal two thirds pale, with a dark lunulate cellmark; antennae of ♂ ciliate only, not serrate. Dauria and Mongolia.

E. basigramma Stgr. (7 b). Forewing grey, with purplish, sometimes red-brown, suffusion; the lines sub- *basigramma*. obsolete; the costal area slightly paler; a black basal streak below cell; stigmata with dark outlines; the cell black; hindwing whitish, with fuscous suffusion; a sombre species found in S. E. Russia and Turkestan only.

E. privigna Püng. Forewing pale luteous grey; stigmata pale with black outlines; cell dark; a short *privigna*. dark streak from base below cell; outer line obsolete; hindwing white. Atschan, E. Turkestan; described from a single ♀.

E. fallax Ev. Like some forms of *tritici* L., but the ground colour whiter, with coarser dusting; *fallax*. the inner and outer lines marked by points on veins; submarginal broadly pale, the margin beyond dark-grey; hindwing of ♂ white, of ♀ grey, darkest along termen; palpi whitish. From the Kirghiz Mts.

E. sulcifera Chr. Forewing reddish fuscous; the nervures, some lines between the nervules, and *sulfifera*. the two upper stigmata luteous; fringe luteous with dark mottling; hindwing luteous grey. Kasikoparan, Armenia. Perhaps near *tritici* L., but neither sex nor antennae are given.

E. vitta Esp. (7 b). Distinguished from *recussa*, and *islandica* and the forms of *tritici* by the broad *vitta*. greyish white costal streak; a local species, found only in Switzerland, Austria and Hungary.

E. arenosa Stgr. Forewing pale ashgrey; costal streak broadly and median vein narrowly white; *arenosa*. claviform stigma slight and dark; orbicular and reniform ringed with white; cell black; hindwing white, with termen grey. Described by STAUDINGER from a single ♀ taken on the sand dunes of Chiclana, Spain, and according to him nearest to *vitta* Esp.

E. islandica Stgr. (= *rossica* Stgr., *nigra* Stgr.) (7 b). Like *recussa*, but with longer and narrower *islandica*. wings. Described in the first instance from Iceland, but since found also in Livonia and the Ural Mts. in Russia, in Mongolia, Siberia, Amurland and Kashmir.

E. lidia Cram. (7 c). Forewing velvety olive-black, sometimes vinous-tinged beyond outer line; lines *lidia*. white, sometimes pinkish-tinged, edged with black; subcostal and median veins finely white; base of cell and both stigmata chalk white, the stigmata with rufous and grey centres; a small white subapical blotch; claviform stigma deep black, sometimes followed by a vinous streak; hindwing whitish brown, fuscous before margin; fringe white; head and thorax mainly black; the shoulders pinky white; anal tuft of abdomen rosy. A local species, found only in Holland and N. Germany; — the ab. **inexpectata** Alph., *inexpectata*. recorded from Ussuri, E. Siberia is larger, with grey instead of white markings.

E. oberthüri Leech (7 c). Forewing purplish red-brown; costal area pale, towards base ochreous *oberthüri*. white; claviform stigma black; orbicular and reniform grey, with dark centres; the cell blackish; hindwing ochreous fuscous, darker in ♀. From Japan and W. China.

E. intracta Walk. (= *ambigua* Btlr.) (7 c). Forewing dark liver brown; the lines black, double; *intracta*. stigmata unicolorous, with black edges, the reniform externally with a partial ochreous ring; teeth of outer and submarginal lines dotted with ochreous; hindwing dark fuscous, paler towards base in ♂. Found in Japan, W. China, Kashmir and Tibet; also occurring in various localities in N. India, whence it was originally described.

E. xanthiodes Hamps. (7 c). Forewing rufous ochreous; the lines obscure; orbicular and reniform *xanthiodes*. stigmata paler, indistinct, separated by a brown cloud; hindwing greyish ochreous, the fringe and termen yellower; the ♀ is paler, and shows the markings more distinctly. Kashmir.

E. honesta Stgr. (12 g). Forewing grey brown; the median vein whitish; upper stigmata grey with pale *honesta*. outline, the orbicular open above; cell, claviform stigma, and submedian space before it black; hindwing brown. Mongolia, Siberia.

E. duosigna Hamps. (7 d). Forewing fuscous, with the stigmata much as in *exclamationis*, but the *duosigna*. reniform more irregular, its lower part always angled inwards along the median vein; hindwing not so white in the ♂. Kashmir.

E. informis Leech (7 c). Like *exclamationis* but larger, darker in colour, and with stronger markings; *informis*. hindwing white in ♂, suffused with brown in ♀. Japan. — In ab. **confluens** Leech the two upper *confluens*. stigmata coalesce.

exclamationis. **E. exclamationis** L. (7 d). Forewing pale to dark brown; costal area often darker; claviform stigma black; reniform large, dark fuscous; orbicular small, round, sometimes extended to touch the reniform; hindwing of ♂ white, of ♀ fuscous brown. Generally distributed in Europe and W. Asia. — ab. **serena costata** Alph. (= *pallida* Tutt) (7 d) from Central Asia, Spain and Britain, is paler, whitish grey; — ab. **costata picea** Tutt has the forewing greyish with the costa broadly reddish; — ab. **picea** Haw. is a black form of the ♀, without lines, the orbicular and claviform stigmata oblong, the reniform round; — ab. **rufescens** Tutt has the forewing clear reddish grey with the lines well-developed; — ab. **brunnea** Tutt is dark red-brown; — ab. **obsoleta** Tutt grey-brown with all markings obsolete; — ab. **unicolor** Hbn. the same, but with the claviform and reniform outlined in dark; — ab. **plaga juncta** Stph. without markings except a long black claviform stigma, the other two being represented by a brown dash; — ab. **juncta** Tutt with all 3 stigmata united in the form of black streaks; — and ab. **lineolatus** Tutt with the reniform broken up into short lines, which also take the place of the wedge-shaped spots. — Larva brown, with paler dorsal and subdorsal lines and some lateral shading; spiracles large and black; common at roots of grass and low plants.

Section V: Antennae of ♂ ciliated or pubescent.

- decussa*. **E. decussa** Stgr. (7 e). Exactly like *E. recussa*, but the antennae of the ♂ are almost simple, and the stigmata are filled in with reddish. Described from Issykkul, Tibet.
- difficilis*. **E. difficilis** Ersch. (= *albivenata* Stgr., *alpherakii* Chr.) (12 f). Forewing fuscous and brown; costal area yellowish white; inner area dusted with white; veins white-streaked; the intervals between bases of subcostal nervules pinkish; claviform stigma with dark scales at its apex; the small round orbicular and the reniform with pink and white rings, outlined with black; hindwing yellowish white, externally suffused with brown. Mongolia, Tibet, E. Siberia.
- marcida*. **E. marcida** Chr. (7 e). Forewing grey suffused with fuscous and towards termen rufous-tinged; stigmata black-edged; the claviform with a black streak above and below it; the orbicular and reniform grey; the orbicular narrow, oblique; the reniform narrow with dark centre; cell between them black-brown; hindwing grey washed with fuscous. A small species, found at Aschabad, Persia.
- eremicola*. **E. eremicola** Standf. (12 f). Forewing pale ochreous; stigmata pale, indistinct, with a square black spot between them; the claviform absent; subterminal line pale with blackish shading on each side; hindwing pure white with narrow dark margin. West Turkestan. Like *kirghisa* Ev., but larger, the markings less developed; the inner line not angled.
- clara*. **E. clara** Stgr. Forewing ochreous whitish, dusted with dark; the lines fairly distinct; the stigmata obscure; hindwing ochreous white, the termen tinged with fuscous. Turkestan; — ab. **celebrata** Alph. is a dark form with the markings plainer, while ab. **verecunda** Püng. (7 e) is altogether paler and marked only by two dark costal spots.
- ignara*. **E. ignara** Stgr. (= *ignobilis* Stgr. 1895, nec 1888) (7 e). Darker than *clara* Stgr., uniform brown-grey, also with the stigmata obsolete; distinguished by the hindwing which is fuscous brown with the fringe pale. Mongolia.
- singularis*. **E. singularis** Stgr. (12 g). Forewing ochreous white, with very slight yellowish dusting; orbicular and reniform stigmata outlined with black, the orbicular round; inner line thick and black; outer line marked only by black spots on costa and inner margin; hindwing ochreous white, with fuscous termen. Recorded only from W. Turkestan and Palestine. — Larva (teste HAMPSON) pale ochreous, with red-brown striae; the lines indistinct, the dorsal double; stigmata on the lower edge of a broad lateral fascia.
- amoena*. **E. amoena** Stgr. (7 e). Forewing pale luteous with grey dusting; the inner line is evenly curved and thick, the outer complete; reniform stigma in a dark ring; hindwing white. Armenia, Asia Minor and W. Turkestan.
- peperida*. **E. peperida** Hamps. (7 e). Forewing pale grey dusted with black; lines interrupted, marked by dark points on veins; stigmata all but obsolete; a rufous shade in and beyond the cell and on submedian fold; a fuscous cloud at its lower angle; hindwing white, with the veins brown, the inner and outer margins also brown. Goorais Valley, Kashmir.
- opisoleuca*. **E. opisoleuca** Stgr. (7 f). Forewing long, the apex rounded; pale brown, with dark irroration; the rounded orbicular stigma and the reniform with pale rings and outlined in black; outer line irregularly dentate; a fine ochreous terminal line; hindwing ochreous white, the veins brownish; traces of a subterminal band, plainest towards anal angle; the markings of the forewing are in some cases almost obsolete. N. Persia.

E. forficula *Er.* Near *forcipula* *Schiff.*, from which it differs in having the two upper stigmata *forficula*. yellowish without dark centres; a distinct black point in the fold beneath the orbicular; a yellowish grey submarginal streak. Armenia.

E. forcipula *Schiff.* (= *denticulosa* *Esp.*) (7 f). Forewing dull brown; stigmata outlined in black; *forcipula*. the round orbicular and the reniform with whitish rings; subterminal line formed of ochreous points and black wedge-shaped markings; hindwing pale brownish, with whitish fringe. Occurs throughout the South of Europe and in western Asia; — the ab. **bornicensis** *Fuchs* is a more unicolorous form, with obscure *bornicensis*. markings: — and ab. **nigrescens** *Hofm.* (7 f), as its name implies, is blackish and larger. *nigrescens*.

E. exacta *Stgr.* (7 f). Forewing grey, dusted with black; the veins streaked with black; the *exacta*. stigmata whitish, with black outlines: the orbicular pointed towards base; the cell blackish; outer line edged externally with whitish; hindwing fuscous; anal tuft of abdomen in ♂ ochreous. Turkestan.

E. glaucescens *Chr.* (12 g). Forewing pale brown with an admixture of white scales; stigmata *glaucescens*. margined with black; the claviform white, the other two with dark centres and white rings, the orbicular small, produced outwardly, the reniform projecting inwardly on median vein; the outer line edged outwardly with white; hindwing white, brownish-tinged, especially at margin. E. Turkestan.

E. turbans *Stgr.* (7 f). Forewing brownish grey with pale speckling; the veins streaked with black; *turbans*. a thin dark streak below base of cell to the whitish claviform stigma, which is elongate and black-edged; orbicular flattened, reniform narrow, strongly angled inwards on median vein; both with dark centres and pale rings edged with black; hindwing pale fuscous. W. Turkestan, Afghanistan.

E. signifera *F.* (7 g). Forewing brownish grey with a reddish tinge; the costal area, the median *signifera*. and submedian veins speckled pale grey and black; the veinlets blackish; a black streak from base below cell; stigmata as in *turbans*, but the reniform broader and not angled inwards; marginal area more prominently streaked with dark; hindwing whitish, with a fuscous tinge towards margin, especially in the ♀. Widely spread, occurring in the Alps of France and Switzerland, in Germany, Austria, Hungary and Russia, and throughout W. Asia; Armenia, Asia Minor, Syria, Persia, Turkestan and W. Siberia; — in the ab. **improcera** *Stgr.* (7 g), which is a duller insect, more like *turbans*, the markings are all obscured; — ab. **improcera**. **orientis** *Alph.* (7 g) is much paler, uniform smooth ochreous grey, with the black basal streak and costal *orientis*. spots prominent; both these aberrations are confined to W. Asia.

E. celsicola *Bell.* (7 g). Forewing reddish brown with pale dusting; the veins finely black; stigmata *celsicola*. large; a black streak from base to claviform, which nearly reaches outer line, and is sometimes filled in with blackish; orbicular pointed at each end, inwardly produced as a streak to base, and outwardly sometimes joined to reniform, the lower part of which is ringed with white; fringe fuscous, unchequered; hindwing whitish, with the outer half fuscous; fringe white. In Europe this species is only found in the French Alps; in W. Asia it is recorded from Syria, Persia and Turkestan.

E. improba *Stgr.* (7 h). Forewing a mixture of brown and grey; a sinuous black streak from base *improba*. to the claviform stigma, which is elongate and black-edged; orbicular and reniform with pale annuli and black edges, the former sometimes connected with the reniform, which is somewhat angled inwards on median vein; marginal area with blackish dentate marks; hindwing brown, the fringe whitish. W. Turkestan.

E. haifae *Stgr.* Near to *multicuspis* *Ev.*, according to STAUDINGER, but the ground-colour is *haifae*. brighter and browner; the orbicular stigma elongate and touching reniform; hindwing of ♀ white. Described by STAUDINGER from 2 ♀♀ only, from Haifa, Syria.

E. spissilinea *Stgr.* (= *spissa* *Stgr.* nec *Guen.*) (7 h) allied to *multicuspis* *Ev.* Forewing violet- *spissilinea*. grey, the costal area broadly whitish grey, with the veins finely dark; the cell dark; stigmata white-ringed, the orbicular long and narrow, the reniform widening downwards; claviform elongate, with black outline. Uliassutai, Mongolia.

E. multicuspis *Er.* (= *spinosa* *Stgr.*, *spinifera* *Chr.*, non *Hbn.*) (7 h). Forewing brownish dark grey, *multicuspis*. sprinkled with pale scales; the veins dark grey; a pale streak from base along submedian fold nearly to outer line; orbicular and reniform stigmata dark grey, the former very elongate, the latter semilunate, both whitish-edged; submarginal line whitish, preceded by prominent dark wedge-shaped marks diffusely white-edged; fringe dark grey with white base; hindwing fuscous, in ♂ paler towards base. Mainly a W. Asiatic species, found in Armenia, Asia Minor and Turkestan, and also occurring in S. E. Russia; in STAUDINGER'S aberration **issykula** (7 h), from Issykkul, the pale scales predominate, and the course of the inner line is *issykula*. visible above inner margin. Frons with central ridge and cheeks all prominently projecting.

- aequicuspis*. **E. aequicuspis** *Stgr.* (12g). Exceedingly like *multicuspis* *Ev.*, but paler grey, with less distinct markings; marginal lunules small and regular instead of large and irregular. From Korla, Thianschan Mts., Turkestan and from Mongolia; dubiously distinct.
- pygmaea*. **E. pygmaea** *Hamps.* (7k). Forewing dark fuscous, dusted with grey; a black streak below base of cell; claviform stigma small, black-edged; orbicular and reniform with dark centres ringed with white; hindwing white with dark veins and termen. W. Turkestan. Quite a small species.

21. Genus: **Rhyacia** *Hbn.*

Distinguished from *Euxoa* by the smooth rounded frons. Type *R. lucipeta* *Schiff.*

Section I: Antennae of ♂ bipectinated to apex or nearly so.

- graslini*. **R. graslini** *Ramb.* (7i). Forewing pale ochreous, the veins and a costal streak greyish white; stigmata distinct; claviform dark, narrow at base, the pale inner line angled below it; orbicular small, flattened, ochreous with centre dark; reniform dark grey with inner edge pale; the cell dark; hindwing white. Restricted to the west coast of France, where the larva is said to feed on the grasses of the sand-dunes.
- messaouda*. **R. messaouda** *Oberth.* (7i). Resembles *graslini* *Ramb.*, yellower ochreous, the cell and submedian interspace suffused with olive brown; costa and veins pale; claviform stigma much longer; orbicular without dark centre: outer and submarginal lines strongly dentate; hindwing white, with apex evenly rounded. Algeria and Morocco.
- vestigialis*. **R. vestigialis** *Rott.* (= *valligera* *Gmel.*) (7i). Forewing greyish ochreous, with olive fuscous shading varied with whitish; stigmata large, outlined in black; claviform elongate, orbicular and reniform with fuscous centres in a pale ring; orbicular small, often conjoined to reniform; submarginal line preceded by black dentations; hindwing white, with brownish veins and margin; the ♀ always darker, with the hindwing wholly brownish. — In the typical form the markings are distinct on a pale grey ground; — ab. **sagittiferus** *clavis* *Haw.* differs only in having the ground dark fuscous; — ab. **clavis** *Esp.* is pale reddish ochreous; the forms in which the markings are more or less obsolete differ similarly in coloration; — thus ab. **signata** *trigonalis* *Boisd.* has a pale grey ground; — ab. **trigonalis** *Esp.* is a small fuscous form with the stigmata large and outer margin dark; — and ab. **nigra** *Tutt* (= var. *B. Guen.*) is blackish fuscous with the course of the median vein pale; — in ab. **lineolata** *Tutt* the wedge-shaped markings, usually submarginal only, extend through to the outer margin. — The imago occurs in August in sandy districts throughout Europe and in W. Siberia. — Larva greyish or greenish; dorsal line pale, with a strong black edge; lateral lines pale with darker edges; feeds on grasses and low plants.
- subrosea*. **R. subrosea** *Stph.* (= *rhomboidea* *Stph.* nec *Esp.*) (7i). Forewing rufous grey, dusted with pale grey; stigmata large, pale grey; the cell rufous or red-brown; the claviform obsolete; hindwing greyish ochreous, with diffusely darker border; fringe ochreous. Typical *subrosea* *Stph.* occurred formerly within a restricted area in the fens of Britain, but is now extinct. — The form **subcoerulea** *Stgr.* (7k) which is bluer grey, is found in Sweden, Prussia, Russia and in Amurland. — Larva reddish grey, with paler lines; the spiracular line brighter yellow; food plants *Myrica* *Gale* and *Salix*.
- velata*. **R. velata** *Stgr.* (7k). Forewing purplish grey along the margins, suffused with purplish brown along middle of wing, the cell still darker; the two upper stigmata small and grey; claviform obsolete; lines paler, not dentate; hindwing pale grey. Ussuri, Amurland.
- alpicola*. **R. alpicola** *Zett.* (= *iveni* *Hbn.*). Forewing grey shaded with fuscous, with only a slight reddish tint in the middle, the stigmata, which are large, and the lines, fairly distinct; hindwing fuscous with pale fringe; the ♀ smaller than the ♂; — ab. **hyperborea** *Zett.* (7k) has the grey ground more varied with reddish and fuscous, the markings clearer; — in ab. **aquilonaris** *Zett.*, grey clouded with brownish fuscous, the markings are blurred; all these greyer forms are from Lapland; — ab. **alpina** *Humphr. & Westw.*, is buff grey varied with red, occurring in the North of Scotland and Ireland; — ab. **coerulescens** *Tutt* is the rich red-brown form with lilac-grey markings and blackish wedge-shaped streaks, found in the Shetland Isles; — ab. **carnica** *Hering* (= *glacialis* *H.-Sch.*) is the rufous insect taken in the Carinthian Alps. The species occurs also in Switzerland, on the mountains of Silesia and Hungary, in Russia and in Amurland. — Larva brown-red; dorsum with dark striae forming a row of V-shaped marks; dorsal and subdorsal lines ochreous, partially black-edged; spiracular pale and obscure; feeding on various low-growing mountain-plants, such as *Vaccinium*, *Arbutus*, etc.
- coraxa*. **R. coraxa** *Püng.* (= *quadrangula* *Ev.* nec *Zett.*, *oblongula* *Stgr.*, *quadriplaga* *Bart.*) (7k). Forewing grey-brown; the cell brown; stigmata concolorous with wing, the claviform rarely plain; all the markings indistinct; marginal area rather darker; hindwing paler grey-brown. A local species found in the Ural Mts. Russia, in W. Turkestan and Mongolia.

R. pancta *Püng.* Forewing grey-brown with a lilac flush; costal streak faintly paler; a thin short *pancta*. black basal streak; the lines neat; cell filled in with dark, the stigmata with yellowish rings; hindwing brownish grey with rufous fringe. Described by PÜNGELER from a single ♂ from the Alexander Mts. — A small species with short and broad forewings, and strongly pectinated antennae.

R. straminea *Leech* (11d). Forewing ochreous; the costa narrowly brown; lines indicated by brown *straminea*. vein-dashes; reniform prominent and brown; median shade swollen into a brown blotch on inner margin; fringe with pink tips; hindwing dark-brown; fringe yellow. A single ♂ from W. China.

R. herrich-schaefferi *Alph.* (12g). Forewing ochreous grey; a black patch near base of submedian *herrich-schaefferi*. interval; cell black, the two stigmata whitish, the claviform edged with black at end; the inner and outer lines approximated or touching on inner margin; submarginal line shown by a row of small black teeth; hindwing greyish fuscous. Changhai Mts., Mongolia and Uliassutai.

R. vittata *Stgr.* (8a). Forewing pale liver-colour; costal streak pinkish ochreous; median vein *vittata*. broadly rufous cream-colour; the upper stigmata cream-colour with rufous centres; the orbicular narrow, oblique; cell and a streak below the median velvety black; hindwing pale grey; tegulae broadly whitish, with black base and brown tips. Tibet, Kuku-Nor and Amdo.

R. tibetana *Stgr.* (8a). Forewing grey-brown; median area brown, becoming dark brown in cell; *tibetana*. orbicular stigma large and grey, bluntly triangular, dependent from the grey costal streak; reniform grey and large; both with slender pale outlines; hindwing pale grey, darker towards termen. Kuku-Nor and Amdo, Tibet.

R. infantilis *Stgr.* (8a). Forewing pearl-grey or rufous grey; veins towards margin marked with *infantilis*. dark, the cross lines showing paler; cell brown; orbicular stigma pale, narrow and oblique; reniform dark with a pale outline; hindwing pale grey, glossy; tegulae, face and palpi whitish. Kuku-Nor and Amdo, Tibet.

R. parvula *Püng.* (8a). Forewing lilac-grey, the cell and costal area suffused with red-brown; the *parvula*. two lines red-brown, double, distinct, the inner angulated, the outer hardly dentate; submarginal line preceded by a red-brown shade, blotched on costa; claviform stigma large, velvety black; orbicular small, obscure, round; reniform brown, anvil-shaped, the lower lobe projecting on each side; fringe brownish; hindwing pale grey. — Quite a small species, from Kuku-Nor, Tibet.

R. deparca *Btlr.* (8a). Forewing ochraceous at base and broadly along costa to end of cell; the *deparca*. rest of wing suffused with brown; claviform small, blackish, or marked by a black dot at apex, or wholly wanting; orbicular round, concolorous; reniform pale ochreous, with lower lobe blackish and outer edge white; hindwing uniform dark brownish fuscous, the fringe pinkish ochreous, like anal tuft of abdomen. — Japan. Much larger than, and quite distinct from any Indian form, as also (teste LEECH) from *stictica* *Pouj.*

R. stictica *Pouj.* (= *varia* *Swinh.*, ochracea *Hamps.* part, nec *Walk.*) (8a). Forewing dingy grey, *stictica*. when fresh with a reddish suffusion; stigmata concolorous with ground, partially pale- and black-edged; fringe concolorous, with two darker lines, and the base brightly pale; hindwing dull grey, the cell spot and termen darker, fringe pale; — a form occurring not uncommonly along with the type form, ab. **semipleta** *nov.* (8b), has the cell before and beyond the orbicular stigma black, as in *ruptistriga* *Walk.* *semipleta*. from India, but in this case the black between the stigmata reaches no higher than the cell fold. — *POUJADE* described his *stictica* from a single ♂ from Mou-pin, W. China; *varia* *Swinh.* which is fairly abundant in North India, occurs also in the Goorais Valley, Kashmir.

R. olivascens *Hamps.* (8b). Forewing pale brownish fawn-colour; costal and inner margins slightly *olivascens*. darker; cell dark brown; the stigmata pale with dark centres; the orbicular flattened; lines obscurely marked; hindwing dull grey. — Originally described from India, but occurring also in Tibet.

R. coturnicula *Graes.* (= *herzi* *Chr.*) (12b). Forewing rufous; the lines and edges of stigmata *coturnicula*. deeper; stigmata large, concolorous; hindwing fuscous, with paler fringe. — Petrofka, Amurland; Mongolia and S. E. Siberia.

R. senescens *Stgr.* (8b). Forewing dull grey, with all markings obscured; the cell brown; hind- *senescens*. wing grey. — Altai Mts., W. Siberia; W. and E. Turkestan; Amurland; — the ab. **senilis** *Stgr.* (8b) *senilis*. agrees exactly in markings, but the forewing at base and along costa is white, especially in the ♀, and the markings are plainer; hindwing fuscous brown with white fringe.

R. kungessi *Alph.* Fore- and hindwings white, the latter tinged with fuscous and with traces of *kungessi*. outer lines. Turkestan.

Section II: Antennae of ♂ bipectinate to just beyond middle; the pectinations short and stiff.

R. ypsilon *Rott.* (= *suffusa* *Schiff.*, *spinula* *Esp.*, *spiniferus* *Haw.*) (8c). Forewing narrow, grey- *ypsilon*. brown, suffused in parts with smoky fuscous; claviform stigma small, black-edged; orbicular oval; reniform

followed by a sharp black tooth facing two black teeth from submarginal line; hindwing pearly white, with *annexa*. veins and margins dark. A species of universal distribution. — ab. *annexa* *Stph.* nec *Tr.* is a small aberrant *pallida*. form; — ab. *pallida* *Tutt* from the Hebrides has the outer margin of forewing white. — Larva dirty grey-brown, with the lines paler but obscure; tubercles black; head light brown; polyphagous on low plants.

Section III: Antennae of ♂ with pedicellate fascicles of cilia.

- tokionis*. **R. tokionis** *Btlr.* (= *nigricostata* *Stgr.*) (8c). Forewing greyish ochreous in ♂, brownish grey in ♀; the cell and costal area above it suffused with plumbeous black; stigmata black-edged; the claviform narrow; orbicular round or flattened; reniform large, preceded and followed by velvety black scaling; marginal area beyond submarginal line blackish; hindwing fuscous, becoming blackish towards termen. Japan; Amurland. — In the ♀ the markings are often much obscured by the dark suffusion.
- plana*. **R. plana** *Leech* (8c). Forewing plumbeous fuscous; the lines finely black, the outer lunulate-dentate; claviform stigma absent; the two upper blackish, with fine black margins, sometimes lined with pale scales; hindwing dull whitish grey, darker in ♀. West China.
- subcorticea*. **R. subcorticea** *Stgr.* (= *parvula* *Alph.*) (8c). Forewing reddish-grey, dusted with black, paler in the ♂; basal and terminal areas somewhat darker; lines neat, as in *plana*, but the inner more oblique, the teeth of the outer produced along the veins; claviform stigma slight; orbicular and reniform distinct, their centres dark, ringed with rustred and black; hindwing greyish-fuscous, paler towards base. Kuku-Nor and Amdo, Tibet.
- cissigma*. **R. cissigma** *Mén.* (= *umbra* *Stgr.*) (8d). Forewing paler brown than *plana*, with a purplish flush; lines not so definite, the outer irregularly crenulate, preceded by a diffuse dark median shade; reniform stigma a dull dark blotch; a dark shade before submarginal line; hindwing dull grey. W. Siberia, Amurland, ? Corea.
- faceta*. **R. faceta** *Tr.* (= *variicollis* *Delahaye*) (8c, d). Forewing red-brown, suffused with purplish grey, especially at base and along costa; orbicular stigma round, pale; reniform rufous and fuscous on a thick median shade; lines very fine, deeply denticulate; hindwing fuscous; ♀ much darker purplish brown; head and tegulae grey; thorax dark brown. A Southern species, occurring in Portugal, Spain, France, Italy and Corsica; and in Algeria and Morocco on the N. African coast.
- kolymae*. **R. kolymae** *Herz.* Forewing reddish grey, the apex subacute; the markings like those of *punicea* *Hbn.* and *descripta* *Brem.*, but the orbicular stigma is triangular in shape and placed upon a sort of saddle formed by the coalescence of the black spots on either side of it; hindwing reddish grey, darker towards margin. N. Siberia.
- serraticornis*. **R. serraticornis** *Stgr.* (8d). Forewing sulphur yellow; reniform stigma alone marked, as a grey ocellus; outer and submarginal lines pale grey; cilia grey at tips; hindwing white, greyer before the fringe. Recorded only from Castille, Spain. The antennal pectinations are quite short and stiff.
- digna*. **R. digna** *Alph.* (8d). Forewing purplish grey, the costal edge rufous; a short black streak on submedian fold near base, with a white patch above it; antemedian line very acutely angled; cell rufous, the two stigmata with white rings and rufous centres; the claviform small, rufous, with white scales round it; marginal area pinkish; hindwing dull flesh-colour, the termen fuscous, the cilia pink. Kuku-Nor and Amdo, Tibet.
- panda*. **R. panda** *Leech* (8d). Forewing purple-grey, the lines and shades ferruginous; a black streak below cell from base, pale-edged above; upper stigmata ferruginous, with grey rings; the orbicular small and oblique, the reniform angled inwards along median vein; the cell filled in with blackish; hindwing pale brown. The type from Pu-tsu-fong, W. China.
- molothina*. **R. molothina** *Esp.* (= *velum* *Germ.*, *ericae* *Boisd.*) (8e). Forewing fuscous brown, with an undertint of reddish; a patch at base of costa and the stigmata grey; the cell and a submedian basal streak black-brown; markings indistinct; hindwing dull whitish with grey termen in ♂, brownish fuscous in ♀. A local species frequenting heaths. Widely distributed in Europe, but not occurring in Britain. — The ab. *occidentalis*. **occidentalis** *Bell.*, from S. France, has the forewings black. — Larva reddish grey above, faintly dark-dotted, more yellow beneath; dorsal and subdorsal lines ochreous with black edges; spiracular line dark; head yellowish brown. Feeds on *Calluna vulgaris*.
- perigrapha*. **R. perigrapha** *Püng.* (8e). Forewing lilacine grey; the cell and lines black; orbicular stigma large, oblique, irregularly V-shaped, merged with the costal streak, reniform merged externally in the ground-colour; hindwing pale grey. Amdo and Kuku-Nor, Tibet.
- lutescens*. **R. lutescens** *Ev.* (= *dilucida* *Ev.*, *leonina* *Stgr.*) (8e). Forewing sandy ochreous, dusted with dark; stigmata fuscous, the orbicular small, claviform absent; outer and submarginal lines blackish, dentate

and distinct; marginal third sometimes darker; hindwing of ♂ white, of ♀ ochreous grey, smoky grey along termen. Ural Mts., Russia.

R. romanovi Chr. (12c). Forewing sulphur yellow; upper stigmata as in *lutescens*, but reddish brown: outer and submarginal lines reddish brown; marginal points and tips of cilia reddish; hindwing yellowish ochreous. Armenia.

R. dizyx Püng. (8f). Forewing (♂) ochreous grey; the upper stigmata quadrate, white; costa and base whitish: claviform indistinct, with a dark spot at its apex; ♀ dull chalk-white; a square spot between stigmata, another at base, and the praesubmarginal shade fuscous; hindwing fuscous. Tibet, Kuku-Nor.

Section IV: Antennae of ♂ serrate or subserrate, with sessile fascicles of cilia.

R. musiva Hbn. (8f). Forewing grey-brown with a reddish tint; costal area broadly cream-white to outer line; the edges of the two stigmata also cream-white, their centres grey; the cell and a blotch below it at base black brown, like the upper part of shoulders; lines all indistinct; hindwing cream-white, the veins and apex grey; fringe yellowish white. In Europe this species extends from S. Russia through Hungary, Austria and Germany to Switzerland and is wide spread through Asia, occurring in Armenia and Asia Minor, in the Altai Mts. in Siberia, W. and E. Turkestan, Mongolia and Amurland. — Larva mottled yellowish brown and dark, with oblique subdorsal streaks; the lines dark; on various low plants.

R. clarivena Püng. (12d). Like *musiva*, but the median vein of forewing is finely white, and the hindwing is yellowish fuscous instead of white. Kuku-Nor, Tibet.

R. exoleta Leech (8e). Forewing dull yellow with an olive tinge; a small patch at base of costa and a larger blotch at its middle purplish brown, the latter comprising and obscuring the two upper stigmata; claviform a small dot; the ordinary lines obsolescent; submarginal pale between two brownish shades; hindwing yellowish white, the veins and fringe yellow; head and thorax brown; face and tips of palpi yellowish. W. China.

R. glareosa Esp. (= *decempunctata* Vill., *hebraeica* Hbn., *l-geminum* Dup.) (8f). Forewing pearly grey, with fine dark dusting; cell before and beyond orbicular stigma velvety black brown; subbasal and inner lines marked each by a black spot on costa and another below median vein; outer and submarginal lines pale; hindwing whitish, dusted with grey, especially in ♀. — The species is confined to Europe, in the South being found in N. Spain, France, Italy, the Tyrol and Switzerland; also in Germany, Belgium, Denmark, Sweden, and the British Isles in the North; — the form **edda** Stgr. (= *suffusa* Tutt), occurring in the Shetland Islands is dark, with forewing red-brown and the hindwing dark brown; — **rosea** Tutt (= var. *A. Guen.*) is lilac grey suffused with rosy; — **limbata** Gouin, from the Gironde in France, has the forewing tinged with bluish green, and the marginal area darker than usual. — Larva pale brown, darker along the sides; the dorsal and subdorsal lines pale, dark-edged; spiracular line ochreous yellow; on all kinds of low plants.

R. castanea Esp. (= *laevis* Haw.) (8g). Forewing pale grey, with a more or less general rufous tinge; lines and stigmata all obscure; lower lobe of reniform dark; hindwing fuscous; anal tufts of abdomen of ♂ reddish. — In the ab. **cerasina** Fr. (8g) the red tints predominate to such an extent that the whole forewing is dull deep red, while in ab. **neglecta** Hbn. (8g) the red is wholly lost and the insect is dull grey; this is the common form in Britain, where the typical *castanea* is rarer and *cerasina* unknown; — the form **xanthe** Woodf. should have the ground-colour yellow; — ab. **pallida** Tutt from Scotland is whitish ochreous; the stigmata outlined in red; submarginal line formed of red spots. — The species occurs on heaths throughout Europe, where its foodplant *Calluna* grows. Larva varying from green to dull pink, with darker irroration; spiracular line broadly white, the others merely pale. HAMPSON records a form from Syria, with the hindwing white and termen fuscous, which may well be a distinct species.

R. descripta Brem. (= *pachnobides* Stgr.) (8g). Forewing lilac grey, crossed by reddish brown shades; space between subbasal and inner, and that between outer and submarginal lines, and the median shade red-brown; cell dark brown; stigmata grey; claviform slight; reniform often obscured by the median shade; hindwing fuscous grey, a darker cellspot, the outer and submarginal lines showing through; the red tint on the forewing is brighter in the ♂. Amurland.

R. tecta Hbn. (= *ampla* Hbn., *carnea* Tr.) (8g, h). Forewing rufous, the base, costal streak, the terminal area, lines and stigmata grey; hindwing pale brown. — A boreal species, occurring in Scandinavia and in Livonia, Russia. — Larva reddish brown with black striations; segmental incisions black; lines indistinct, except the dorsal which is finely white, edged with black; spiracles white ringed with black; feeding on various low-growing mountain plants.

R. festiva Schiff. (8h). Forewing with basal area grey, outer area red-brown; the lines and stigmata grey; hindwing dull grey with a dark lunule and transverse line and the fringe reddish; as a rule

- the ♂ is paler than the ♀; a very variable species alike in colour and plainness of markings; — ab. *congener* *Hbn.* (8h) is wholly red-brown with the stigmata yellowish; — ab. *subrufa* *Haw.* (8h, i) is distinguished by having the cell dark at base and between the stigmata; — ab. *conflua* *H.-S. nec Tr.* (= *rufovirgata* *Tutt*) (8h, i) has the ground-colour reddish ochreous mottled with darker; — ab. *mendica* *F.* (8i) is like the last, but shows black or dark brown spaces in the cell; — ab. *ignicola* *H.-Sch.* (8i) has the ground-colour yellowish ochreous, with the markings distinct; — *primulae* *Esp.* is the same form but with the cell filled in with blackish; — ab. *ochrea-virgata* *Tutt* is a banded form, the whole space between the median and subterminal line being darker; — ab. *grisea* *Tutt* (= *conflua* *Auct. nec Tr.*) (8i, k) is a small dark grey form with the stigmata clear; — ab. *coerulea* *Tutt* is of a clear slaty or lilac colour with pale stigmata; — lastly, ab. *lamentanda* *Alph.* is a pale uniformly ochreous form from Siberia and Kamschatka. — A generally distributed species in Europe and probably occurring throughout North and Central Asia, where it has been recorded from Armenia and W. Siberia, Turkestan and Tibet. — subsp.
- conflua.* **R. conflua** *Tr.* (= *thulei* *Stgr.*) (8k) is smaller, with narrower, more pointed forewing, reddish brown varied with yellowish; the stigmata large with dark marks in cell; described originally from Iceland and occurring in the Shetlands and Lapland; — ab. *borealis* *Zett.* (8k) is a grey brown form without any red but with the cell blackish; — *obsoleta* *Tutt* (8k) resembles *borealis*, but the cell is unicolorous and the markings obscure; — ab. *diducta* *Zett.* has the forewing grey with a broad rusty-testaceous fascia, and the markings obscured. — Larva varying from ochreous grey to greenish grey, and sometimes dark brown; the lines pale; the subdorsal with a series of dark marks above it, sometimes developed into oblique streaks; on various low plants and shrubs.
- tenuis.* **R. tenuis** *Bthr.* (12b). Forewing reddish, the costal edge red-brown; inner and outer lines double, but indistinct; stigmata indistinct; the orbicular large and attached to the pale costal area; hindwing pale brown, darker externally. Described by BUTLER from the Punjab, India, but occurring also in Kashmir.
- lorezi.* **R. lorezi** *Stgr.* (8k). Forewing rufous ochreous, the median area darker; end of claviform stigma marked by a dark spot; the upper stigmata pale with brown margins: subterminal line preceded by a brown shade; hindwing pale suffused with fuscous externally, but the termen itself pale. — A local and rare species, confined to E. Switzerland, and the Tyrol.
- destituta.* **R. destituta** *Leech.* (8k). Forewing bright rufous, suffused, excepting the cell and area round it, with bluish grey and fuscous; the lines all double; the upper stigmata small and grey, the orbicular round, detached; hindwing brownish, the fringes reddish. The unique type from Pu-tsu-fong, W. China.
- homochroma.* **R. homochroma** *Hamps.* (8l). Forewing deep chocolate red, sprinkled with silvery bluish; the upper stigmata with silvery blue brown-edged rings: the lines double; hindwing whitish with brown suffusion, and reddish fringe. Yatong, Tibet. — Resembles *destituta*, but darker and smaller.
- nyctimerina.* **R. nyctimerina** *Stgr.* (= *subdecora* *Stgr.*, *decorans* *Stgr.*) (8l). Forewing ochreous, densely dusted with dark scales and in the disc with orange; lines double; orbicular and reniform stigmata partially defined by orange and with a median shade between them; hindwing fuscous brown, the fringe ochreous. Turkestan.
- similis.* **R. similis** *Stgr.* (= *polita* *Alph.*). Forewing like that of *nyctimerina*, but paler, the orange scales replaced by yellowish flesh-colour; the thorax and patagia with patches of the same; fringe of both wings pale with a dark line. Alexander Mts., W. Turkestan.
- psammia.* **R. psammia** *Püng.* Closely resembling *similis* *Stgr.*, but smaller, more uniformly brownish grey, without darker dusting; markings as in *similis*, but very obscure. Described by the author from a single ♂ from Askhabad.
- thapsina.* **R. thapsina** *Püng.* Also near *similis*, but still smaller, dull yellowish grey, with all the markings indistinct; hindwing paler towards base, with yellowish white fringe. Fergana, Turkestan.
- leaena.* **R. leaena** *Püng.* Forewing sandy ochreous, without dusting; the lines slender and single; upper stigmata slightly paler; hindwing dusted with grey, the basal half paler. Described by PÜNGELER from a single ♀ from Fergana, Turkestan.
- psammoda.* **R. psammoda** *Stgr.* (8l). Forewing ochreous yellow, with rufous streaks in the folds and before the termen; reniform stigma only visible, edged with rufous; the veins whitish; hindwing white. This species, which superficially resembles a *Leucania*, is found in the Uliassutai Mts., Mongolia.
- sikkima.* **R. sikkima** *Moore* (8l). Forewing dark grey, suffused in places with blackish and dappled with pale grey, especially along submedian fold; stigmata conspicuously ringed, and sometimes filled up with white; the praesubmarginal shade dark, interrupted by a pale streak from apex; hindwing whitish, the veins and termen dark grey. — Occurs at Yatong, Tibet, as well as in N. India.
- junctimacula.* **R. junctimacula** *Chr.* (12h). Forewing luteous grey; stigmata white, grey-centred; claviform continued as a narrow white streak to base, with a black streak below it; orbicular narrow, oblique; reniform sinuous,

retracted basewards along median, and often coalescent with orbicular; submarginal line white, preceded by a row of long wedge-shaped marks beyond a diffuse pale grey band; fringe grey with the base pale; hindwing greyish fuscous, the fringe paler. Found in N. Persia, W. Turkestan and Tibet. An example from Tura in the British Museum is larger, with more white showing in forewing and a white space along termen of hindwing.

R. erschoffi *Stgr.* (= *ledereri* *Stgr.* nec *Ersch.*) (81). Forewing dingy fuscous with rather prominent apex: the lines pale-edged; orbicular stigma pale grey, oblique, merging into a grey costal blotch; reniform dark with pale sinuous edges: a thin black streak from base below cell; hindwing brown with grey fringe. W. Turkestan. *erschoffi.*

R. militaris *Stgr.* (9a). Forewing chalk white, with some grey shades; claviform stigma very long and narrow, black-edged, continuing a black streak from near base; the upper stigmata white, black-edged, separated by a black median shade; marginal area fuscous; hindwing white, with dark irroration along costa and outer margin; veins with a row of dark postmedian black streaks. Ussuri, Amurland. *militaris.*

R. fidelis *de Joan.* (9a). Forewing bluish grey; the veins black powdered with white scales; a black streak below cell from base; both folds traversed by rufous streaks; the lines interrupted; claviform stigma elongate, partially black-edged; the orbicular and reniform grey with black edges; marginal area darker, crossed by black streaks; hindwing white with brown-tinged veins; the termen brown. Portugal. *fidelis.*

R. porphyrea *Schiff.* (= *strigula* *Thunb.*, *ericae* *Haw.*, *birivia* *Blk.* nec *Schiff.*) (9a). Forewing brick-red; the veins white; lines dark, irregularly edged with white; stigmata edged with white and black scales; the claviform elongate, slender; the orbicular small and round; hindwing ochreous fuscous. Common on heaths of N. Europe, occurring in Britain and the Shetland Isles, France, Germany, Denmark and Russia, also in the Pyrenees and N. Italy. — The form **marmorea** *Grasl.* from France, has a pale blurred appearance; — **concinna** *Esp.* (= *varia* *Vill.*, *picta* *F.*) is deep purple in colour; — while **suffusa** *Tutt* from the Shetlands is larger than the type and brown-red. — Larva pinkish ochreous; the lines white, broken up and edged with fuscous marks; spiracular line pinkish white, edged above with dark; feeding on heath. *porphyrea.* *marmorea.* *concinna.* *suffusa.*

R. flavina *H.-Sch.* (12c). Forewing white flushed with very pale sulphur; the lines and stigmata denoted only by scattered black scales; hindwing whitish, with a cloud along termen. A west asiatic species occurring in Armenia, Asia Minor, Syria and Kurdistan; and found also in Roumelia. *flavina.*

R. ochrina *Stgr.* (12b) Forewing pale dingy ochreous; the 3 stigmata paler, interruptedly outlined with brown scales; the lines dentate, hardly visible; fringe concolorous; hindwing paler, clouded along termen; fringe whitish. Found in Syria only. *ochrina.*

R. kermesina *Mab.* Forewing dull brick-red; stigmata obsolete except the dark lower end of reniform; inner and outer lines marked by costal spots, the latter also by dots on veins; hindwing and fringe white. Found only in Spain and Corsica. *kermesina.*

R. petersi *Chr.* (12h). Forewing ochreous yellow with dark brown irroration and the veins streaked with white; lines brown; the inner indistinct, the outer and submarginal dentate; an obscure lunule on discocellular; fringe whitish; hindwing white with an ochreous tinge along termen. W. Turkestan, Askhabad. *petersi.*

R. ripae *Hbn.* (= *instructa* *Walk.*) (9a). Forewing rufous brown or rufous grey, mixed with white; a costal streak and the veins whitish; stigmata outlined with brown, the reniform with the centre dark; marginal area often paler; hindwing in ♂ white, in ♀ with the veins and margin grey. A seacoast species or surviving in wastes once washed by the sea; occurring in Britain, France, Germany, Denmark, Sweden and Russia; in Mongolia and Siberia, and in Egypt; — a remarkably variable species of which the chief forms are ab. **nebulosa** *Stph.* a pale grey form, with the costa, base, and outer margin fuscous; — ab. **desertorum** *Bsd.* (= *deserticola* *Ev.*, *alexandrensis* *Baker*) (9b) from S. Russia, Siberia and Egypt is grey with the lines and stigmata dark and distinct; — in **brunnea** *Tutt* the ground-colour is deep reddish ochreous with lines and stigmata fuscous; — **grisea** *Tutt* is dark slaty grey with the markings obscured; a row of small whitish subterminal dots; — ab. **desillii** *Pierret* (9b, c) is a reddish grey form, sometimes mixed with yellowish, with the markings well-developed; — **albicosta** *Tutt* is like it, but with a white costal streak in addition; — lastly, we have two nearly white forms ab. **weissenbornii** *Frr.* (9b), whitish only of lines and stigmata. — Larva greenish or yellowish grey, shining; the lines obscure; the dorsal and lateral pale with dark edges: head and thoracic plate yellow brown; feeds on various seacoast plants. *ripae.* *nebulosa.* *desertorum.* *brunnea.* *grisea.* *desillii.* *albicosta.* *weissenbornii.* *obotritica.*

R. farinosa *Stgr.* (9c). Forewing white, tinged with brown and dusted with fuscous; the lines obscure, except the outer which is dentate on the veins; stigmata partially defined by a few black scales; hindwing pure white in ♂, brownish in ♀ with the fringe white. Recorded only from Ili, in E. Turkestan. *farinosa.*

cuprina. **R. cuprina** *Stgr.* (12c) Forewing dark leaden grey, flushed with red; all the lines much obscured; the stigmata interruptedly edged with white and black scales; hindwing white, with the veins and outer margin brownish. Found in the Thian-Shan Mts. in W. Turkestan.

Section V: Antennae of ♂ ciliated.

subsequa. **R. subsequa** *Schiff.* (9c). Forewing rufous grey; orbicular and reniform stigmata with pale outlines, the former oblique, the latter always darker; lines obscure; a small black brown blotch on costa before submarginal line; hindwing yellow, with large blackish lunular cell-mark and submarginal band; fringe yellow. Occurs throughout Europe, including North Britain, and in W. Asia, but always rarer than *consequa*. *orbona* *Hufn.* — In the ab. **consequa** *Hbn.* (= *sarmata* *Ramb.*) (9c) the forewing is longer, greyish fuscous, with all the markings blackish and much plainer; the lines pale grey, the outer conspicuously paler at costa; the stigmata dark brown; a southern form, occurring in Spain, S. Russia and Afghanistan; and very probably specifically distinct. — Larva ochreous fuscous, the lines yellower; the dorsal and spiracular broad with black edges; a subdorsal row of oblique blackish bars; on various low plants.

orbona. **R. orbona** *Hufn.* (= *subsequa* *Esp.* nec *Schiff.*, *pronuba-minor* *Vill.*, *comes* *Hbn.*) (9d). Forewing reddish brown with reniform stigma brown, and hindwing orange with dark border and discal lunule; distinguished from *subsequa* *Schiff.* by the absence of the black costal mark before submarginal line; commoner than *subsequa* *Schiff.*, but with the same range of distribution, occurring besides in Algeria and the Canaries; — the form **adsequa** *Tr.* (9c, d) differs in being pale grey; — **grisea** *Tutt* is dark grey; — and **ochrea** *Tutt* pale ochreous; — in **rufescens** *Tutt* (= *rufa* *Tutt*) (9d) the forewing is wholly reddish; — in **prosequa** *Tr.* the markings all come out very prominent; — while the ab. **curtisii** *Newm.* (= *consequa* *Curt.* nec *Hbn.* and of which *nigrescens* *Tutt* seems merely a dark form) (9d) has the forewing suffused with brownish fuscous; the lines, edges of stigmata and base of fringe yellow; the costa dull red above and below; hindwing with basal yellow area clouded with blackish, and the fringe bright yellow; the costa on underside broadly black; — ab. **nigra** *Tutt*, with both wings wholly suffused with blackish, is a melanic form from *bergensis*. Scotland only; — in ab. **bergensis** *Sp.-Schm.* from Norway the forewing is partially suffused with fuscous; — in ab. **virgata** *Tutt* the median shade is exaggerated to form a dark band; — ab. **attenuata** *nom. nov.* (= *subsequa* *Haw.* nec *Schiff.*) has the black border of hindwing narrow and submarginal; — ab. **conjuncta** *nom. nov.* (= *subsequa* *Curt.* nec *Schiff.*, var. *C. Guen.*) is burnt brown in colour, with the stigmata conjoined, and the veins pale; — lastly, a very distinct ab. **fumida** *nov.* (9e) from Cyprus has a dark fuscous forewing tinged with grey; the lines and edges of stigmata grey; the fringe wholly fuscous; hindwing wholly smoky orange; underside with no red tinge; the forewing dull yellow-grey, the hindwing greyish yellow. — Larva ochreous; dorsal and subdorsal lines faint, the latter connected by a bar on segment 11; spiracular line pale, with a row of triangular spots above it; feeds on all low plants.

pronuba. **R. pronuba** *L.* (9e). Forewing pale grey (typical) or ochreous, or reddish brown, or dark brown, often with dark and light mottlings, and with a pale costal streak; stigmata also variable; reniform with lower lobe generally dark; a double black spot on costa before submarginal line; hindwing orange with a submarginal black band; shoulders and tegulae frequently not concolorous with forewings; — a common *innuba*. species throughout Europe, in West and Central Asia, and occurring in Egypt; — in the ab. **innuba** *Tr. hoegei.* (9e) the whole forewing and body are dark brown without markings; — ab. **hoegei** *H.-Sch.* is small, and the hindwing shows a black discal spot; all the specimens of this form were bred, so that it may have *connuba*. been the result of hybridisation; — ab. **connuba** *Hbn.* (9e) is a dwarf form, with the markings indistinct, and the hindwing paler yellow. — Larva dirty ochreous, with the lines pale and a series of oblique black streaks on each side; on all low plants. Besides the above-mentioned forms *Tutt* has proposed names for several mere colour variations, such as *ochrea*, *rufa*, *brunnea*, *coerulescens*, together with subvarietal names, based on the presence or absence of a pale costal streak and dark interspaces in the cell of forewing.

atlantica. **R. atlantica** *Warr.* (9f). Forewing dull reddish brown; the markings indistinct; orbicular stigma round, concolorous; reniform filled up with fuscous; a small black streak on costa before submarginal line; hindwing dull yellow, suffused throughout with smoky grey; a dull blackish submarginal band; veins and extreme margin dull rufous; fringe yellowish. Azores.

stentzi. **R. stentzi** *Led.* (9f). Forewing grey-brown with a vinous tint and purplish fuscous suffusion towards base; costal streak, as far as outer line, broadly cream-colour; the cell, a triangular blotch on costa before apex and another at base black; stigmata grey, with pale outline; claviform bullet-shaped; orbicular semicircular, dependent from costal streak; hindwing brownish fuscous; tegulae velvety-brown with creamy base. Altai Mts., in Siberia; Fergana, W. Turkestan; Ili, E. Turkestan; Amdo, Tibet. A smaller species than *triangularis* *Moore*; the outer line finely black; the submarginal preceded by a row of black spots.

dulcis. **R. dulcis** *Alph.* Like *stentzi* *Led.*, but smaller, with narrower wings; forewing with the same markings, and in addition the median vein yellowish white; the outer line faint and the costal bar before

submarginal line duller; a row of sagittate marks before it plain; anal tuft of abdomen luteous. Kuku-Nor, Tibet. *R. clarivena* Püng., from the same locality, is larger, with serrate antennae in ♂.

R. refulgens *spec. nov.* (9 f). Differs from *stentzi* Led. in having the ground-colour glossy purplish black; *refulgens*. the costal streak olive ochreous; the reniform stigma narrower, its inner pale edge more curved; the claviform outlined with dark and pointed at the end; the subcostal vein and sometimes the median finely, white; smaller than *stentzi*, and with narrower forewings. Occurs in Kashmir and Tibet as well as in N. India, and may be a form of *dulcis* Alph.

R. triangularis Moore (9 f). Forewing deep purple brown; costal streak reddish ochreous; orbicular *triangularis*. stigma triangular, reddish ochreous, merged in the costal streak; reniform with inner edge ochreous; a velvety brown-black blotch at base below median vein; a dark costal bar before submarginal line which, like the outer, is pale and thick; hindwing brownish fuscous; tegulae velvety brown-black, with base ochreous. Described originally from N. W. India; the species occurs in Kashmir and Japan also.

R. musivula Stgr. (9 g). Forewing ruddy brown, paler and greyer towards termen; costal streak *musivula*. broadly pale ochreous, with the edge brown; costal and subcostal veins whitish; cell and a submedian basal blotch deep olive brown; stigmata grey with pale edges; the claviform minute and obscure; orbicular triangular, sometimes wholly white; marginal area narrowly darker; hindwing pale greyish fuscous; fringe rufous. Tibet, Amdo and Kuku-Nor.

R. c-nigrum L. (= *nun-atrum* Esp., *gothica* var. *singularis* Esp.) (9 g). Forewing purplish grey or *c-nigrum*. purplish fuscous with a leaden gloss; costal area at middle ochreous, merged with the bluntly triangular orbicular stigma; cell, a submedian basal blotch, and costal spot before apex purplish black; claviform stigma minute; reniform large, the lower lobe purplish; hindwing ochreous whitish, in ♀ with the termen broadly fuscous. Throughout Europe; N. and C. Asia; China, Japan, Korea. — Larva red-brown, with obscure paler dorsal and subdorsal lines and a broad pale ochreous spiracular line; on low plants generally.

R. degenerata Stgr. (9 g). Forewing pale drab grey, dusted with darker in ♂; grey-brown in ♀; *degenerata*. costa paler, at least in middle; cell and a basal submedian blotch deep olive brown; stigmata as in *C-nigrum*, but paler; hindwing whiter; in the ♀ the basal blotch is less conspicuous and the pale lines plainer. Turkestan.

R. stupenda Bth. (= *stupens* Oberth.) (9 h). Forewing deep purplish brown; costa broadly straw- *stupenda*. colour to outer line; lines pale with dark edging; orbicular and reniform stigmata dark, with their upper parts varied with straw-colour; the cell, a basal blotch, and the submarginal line, especially at costa, black-brown; hindwing straw-colour with broad dark fuscous margin; tegulae like costal stripe, with the tips dark. — A large and striking species, found in Amurland, W. China, Japan and Korea. — Amurland specimens are paler, with the reniform stigma erect, not curved.

R. flammatra Schiff. (= *deleta* Koll., *basiclavus* Walk., *bimaculata* Mill.) (9 g). Forewing grey with *flammatra*. a brown or lilac tinge; costa towards base paler; a submedian basal streak, the base of cell, and the upper half of tegulae velvety black; orbicular and reniform stigmata large and grey, the cell between them sometimes dark; markings variable in intensity; hindwing ochreous fuscous, paler at base. A large species with elongate wings, widely spread through Europe, but rarer northwards; in W. Asia it occurs in Kashmir, Persia, Asia Minor and the Altai Mts. in W. Siberia. — Larva green, with pale lateral streaks; on various low plants.

R. mandarina Leech (9 h). Forewing red-brown; costal streak reddish ochreous; the two upper *mandarina*. stigmata the same; claviform obscure; cell black; hindwing yellowish brown; tegulae pale red, with the tips darker. West China.

R. spania Püng. Forewing narrow, blackish grey; markings obscure; a fine black streak from *spania*. base; lines black, double; claviform stigma absent; cell black; the upper stigmata dark grey, the orbicular round, the reniform with lower lobe swollen to touch the outer line; submarginal line pale yellowish; hindwing dull grey. — A smooth and finely scaled insect, most resembling *velata* Stgr.; — described by PÜNGLER from a single ♀ from the Thian-Shàn Mts.

R. karschi Graes. Forewing elongate, blackish with a bluish lustre: lines faint, placed as in *karschi*. *nigricans* L.; the 3 stigmata with black outlines; a black streak from base to claviform, intersected by the pale basal line; cell filled up with black; reniform stigma laterally marked by some pale brown scales; submarginal line formed of black and brown spots; hindwing dark grey, with yellowish white fringe. Amurland.

R. vidua Stgr. (9 h). Forewing purple brown; the costa curved, concolorous; tegulae ochreous with *vidua*. black tips; otherwise like *mandarina* Leech, but the submarginal line shown by a row of pale spots. W. China; Amurland.

- subpurpurea.* **R. subpurpurea** *Leech*. Forewing rufous brown; the marginal areas, stigmata, and veins frosted with lilac scales: subcostal vein broadly, and median narrowly, rufous; the cell black: a blackish submedian basal patch and costal spot before apex; hindwing fuscous brown; head and thorax dark; anal tuft of abdomen rufous; underside uniform olive brown. West China.
- con-sanguinea.* **R. consanguinea** *Moore* (9h). Forewing dull rufous brown; costal streak brownish ochreous, the edge brown: the cell, a broad streak from base below median, and some wedge-shaped marks before submarginal line black brown; hindwing fuscous brown, paler towards base. Kashmir, Tibet, ? Japan.
- costaestriga.* **R. costaestriga** *Stgr.* (9h). Forewing rufous brown; costal area between inner and outer line purplish: the cell black; stigmata edged with black; a slight black costal mark before apex; hindwing pale fuscous. Tibet.
- kollari.* **R. kollari** *Led.* (9i). Forewing purple grey; the median area suffused with vinous brown; lines distinct: base of submedian interval, the cell, and a costal spot before apex black; claviform stigma small, followed by a brown streak to median shade; orbicular and reniform with red centres and grey rings; hindwing brownish fuscous. Ural Mts., Russia; Altai Mts., Siberia; Amurland; Kamschatka; — the ab. **plumbata** *Bthr.* from Japan is darker, more suffused with purple, with the markings more obscure.
- triangulum.* **R. triangulum** *Hufn.* (= *sigma* *Esp.*, *intermedia* *Tutt*) (9i). Forewing grey brown, with a rufous tinge: a small blotch at base, a praeapical costal spot, and the cell prominently black brown; hindwing fuscous. Occurs throughout Europe, and in Armenia and Kashmir. — Larva ochreous brown, black speckled; the lines pale; a row of oblique dark subdorsal bars; feeds on all low plants.
- ditrapezium.* **R. ditrapezium** *Bkh.* (= *tristigma* *Tr.*, *sigma* var. *God.*) (9i). Forewing darker than in *triangulum* *Hufn.*, smooth vinous brown; the dark markings not so black; hindwing distinctly yellowish-tinged. Generally distributed in Europe, Siberia, Turkestan and Amurland. Larva like that of *triangulum*, but pinker.
- depuncta.* **R. depuncta** *L.* (= *mendosa* *Hbn.*) (9i). Forewing grey brown, the basal and inner lines edged with dark brown to middle; orbicular and reniform stigmata large, grey, with fine pale annuli; claviform hardly defined; a distinct brown median shade; hindwing pale ochreous fuscous. Widely spread, but not common, in Europe; — ab. **pontica** *Stgr.*, from Amurland and Turkestan, has the forewing reddish grey and the hindwing whitish; — ab. **consenesens** *Stgr.*, likewise from Asia Minor, is yellowish grey. — Larva dull brown; dorsal line marked by a row of dark-edged lozenge-shaped spots; spiracular line dark, with a whitish line below it; on various low plants.
- baja.* **R. baja** *F.* (= *tricomma* *Esp.*, *smithii* *Snell.*) (9k). Forewing dull red-brown, with slight lilac grey tinge in places; a distinct black praeapical costal bar; upper stigmata large, with slight pale rings; lower lobe of reniform dark; median shade forming a brown space between the stigmata; a black dot near base of cell; hindwing ochreous or yellowish grey. Common throughout Europe and N. Asia to Japan; — ab. **bajula** *Stgr.* (9k) is smaller than the type and suffused with grey, without any red tinge; — in the northern form **punctata** *Auriv.* the lines are prominently marked by dots on the veins; — *purpurea* *Tutt*, *grisea* *Tutt* and *coerulescens* *Tutt* are merely colour variations. — Larva polyphagous, brown or grey, with a red tinge; the lines pale; a row of oblique dark sublateral bars; a pale bar on segment 12; head pale brown.
- plecta.* **R. plecta** *L.* (9k). Forewing red-brown suffused with purple; costal streak broadly cream-colour to outer line, sometimes red speckled; cell and a basal streak below median vein blackish or deep red; orbicular and reniform stigmata with bright pale rings and grey centres, the latter followed by a small black blotch; lines rarely visible; hindwing whitish; patagia red-brown; dorsum greyish fuscous, sometimes with basal half cream-coloured, sometimes wholly cream-coloured. Common throughout Europe, occurring also in W. Asia, Amurland, Japan and Corea. — ab. **unimacula** *Stgr.* (9k) from Spain has the orbicular stigma obsolete; — in ab. **anderssoni** *Lampa* from Scandinavia the forewing is blackish purple; — in *glaucimacula* ab. **glaucimacula** *Graes.* (10a) from Amurland the stigmata are smaller, as in *leucogaster* *Frr.* and pearl-grey in colour; the outer line of forewing well-marked and indicated on hindwing also by vein-dots; patagia black-brown; — ab. **ignota** *Swinh.* (10a), described in the first instance from Ceylon, has the cell red like the rest of wing; European examples of this form are generally entirely pale red, with the costal streak red-speckled, and usually ♀♀. — Larva yellow-brown, greener laterally; dorsal and subdorsal lines reddish; spiracular line broadly yellowish; on all low plants.
- leucogaster.* **R. leucogaster** *Frr.* (10a). Like *plecta* *L.*, but the forewing is longer and narrower, with less reddish, and more of an olive-brown tinge; the costal streak rufous ochreous; the two stigmata much smaller, white-ringed; hindwing pure white; dorsum white, with anal segment rufous-tinged; patagia black-brown, not reddish. Restricted to the South of Europe, France, Spain, Portugal, Italy, Greece, and to Palestine in Asia. — Larva dorsally brownish grey with fine white lines and a broad yellow lateral line; venter grey; — on Lotus and other low plants.

R. sigma Schiff. (= *charactera* Esp., *ditrapezium* Esp. nec Schiff., *signum* Fab., *umbra* View.) (10a). *sigma*. Forewing black brown or deep brown, with a faint vinous tinge; costal area diffusely brownish-ochreous; the lines ochreous; cell dark brown; upper stigmata large, grey with black edges; claviform small, blackish; hindwing dark fuscous. A central European species found in France, Switzerland, Germany and Austria; also in Armenia, Siberia and Amurland. — Larva reddish yellow, with dorsal and lateral lines white; a dark oblique bar on each segment with a white dot above it; feeds on low plants. — The form *nubila* Esp. has *nubila*. the costal and apical areas of forewing dull woodcolour.

R. albipennis Btlr. (10b). Forewing greyish pink, the veins finely darker; the lines fine, olive *albipennis*. brown, generally faint; inner line connected along submedian fold with basal line, then projected to middle of inner margin; outer line preceded by an olive brown shade at costa embracing the reniform stigma; orbicular and claviform marked only by dark edging; a dark costal blotch before submarginal line; hindwing luteous white in ♂, pale fuscous in ♀; fringe yellow. The species, originally described from N. W. India, is found also in W. China and Kashmir.

R. rhomboidea Esp. (= *stigmatica* Hbn., *tristigma* Stph. nec Tr.) (10b). Forewing olive brown, *rhomboidea*. with a dull purplish, more rarely a deep vinous, tinge; cell and lines on costa deep olive; upper stigmata large, subquadrate, with fine pale outlines; claviform small, with the base only dark; marginal area dark; hindwing olive fuscous. Generally distributed throughout Europe. Larva redbrown; dorsal and subdorsal lines obscure, greenish ochreous; spiracular line pale ochreous; oblique dark bars on segments 8–11, and on the last a pale bar; on various low plants.

R. punicea Hbn. (10b). Forewing pale olive rufous, the veins dusted with grey; a broad olive *punicea*. median shade, and the space between outer and submarginal lines olive; the lines paler edged with olive; stigmata obscurely outlined, the claviform absent; hindwing greyish luteous, the fringe pink. Widely spread in Europe, except the northern parts, also found in Mongolia, Siberia and Amurland. — Larva dark brown, with dark pale-edged oblique streaks on segments 4 to 11; a pale dorsal line; and a dark lateral stripe above the spiracles; thoracic plate brown with 3 white streaks; on low plants.

R. brunnea Schiff. (= *lucifera* Esp., *arvensis* Gmel., *fragariae* Bkh., *carnea* Thunbg., *subdolens* Btlr.) *brunnea*. (10b). Forewing pinkish or purplish plumbeous; the costal half with a fulvous and yellow tinge; cell deep olive brown; claviform marked by a dark spot at its end; orbicular oblong, of the ground-colour; reniform outlined or filled with ochreous; hindwing luteous fuscous; cilia pink. Throughout Europe, except the South, Siberia, Amurland, ? Japan. — Larva dark brown; dorsal and subdorsal lines pale, lateral lines whitish; a row of pale yellow dark-edged oblique stripes, and a yellow stripe across segment 11; on low plants.

R. exusta Btlr. (10c). Forewing dull greyish brown, with a purplish, more rarely a rufous, tinge; *exusta*. a black dot at base; stigmata large, with fine pale annuli; lines pale, obscure; the outer not dentate; hindwing olive fuscous. Japan, West China, Amurland. — ab. *nigromaculata* Graes. (10b) has the cell black, *nigromaculata*. forming two spots, and the markings somewhat clearer.

R. umbrosa Hbn. (= *sexstrigata* Haw.) (10c). Forewing greyish rufous, the veins dark grey; *umbrosa*. stigmata with dark outlines; the claviform with the apex only marked; orbicular sometimes paler; lines and shades all dark and distinct; hindwing luteous fuscous, darker towards termen; fringe yellowish. An European species of restricted range, found in Great Britain, Scandinavia, Holland, France, Germany and Switzerland. — Larva yellowish brown; dorsal and subdorsal lines pale, the latter black-edged above; lateral lines greyish brown and yellow; on low plants.

R. obuncula Hamps. (10c). Near *umbrosa* Hbn., but the forewing yellower brown; the costa and *obuncula*. cell dark brown; the upper stigmata grey, the reniform filled up with fuscous, the lower lobe dark; claviform outlined only; a brown cloud on costa before submarginal line; hindwing yellowish grey, the fringe yellow. Kuku-Nor, Tibet.

R. orphnina Ping. Very near *obuncula* Hamps., but smaller, duller and greyer; the lines and *orphnina*. median shade clearer; cell not darker, rendering the stigmata less prominent, the claviform absent. — Described by PÜNGELER from a single ♀ from Aksu, Mongolia.

R. mandarinella Hamps. (= *mandarina* Leech, Tr. E. S. 1900, p. 47) (10c). Forewing rufous with *man-* purplish tinge; claviform stigma small, ill-defined; the others rufous edged with ochreous, the orbicular small *darinella*. and round; hindwing pale brown; fringe reddish. Described from West China, occurs also in Tibet, Yatung.

R. rubi View. (= *radica* Esp., *bella* Bkh., *quadratum* Hbn., *posticata* Walk.) (10c). Forewing dull *rubi*. greyish pink, with the cross lines and shades olive; the cell brown; reniform with whitish outline; claviform with a dark speck at its end; marginal area dark; hindwing pale luteous grey with pink fringe. Confined to Northern and Central Europe; Great Britain, Scandinavia, Russia, Austria, Germany, France; Siberia, Turkestan, Kamschatka.

- florida*. The ab. **florida** *Schmidt* (10c) appears to be only a brightly coloured and well-marked form, which does not occur in Britain. Larva brown with pale dorsal and subdorsal lines and broad yellowish lateral line; on all low plants.
- xanthographa*. **R. xanthographa** *Schiff.* (= *tetragona* *Haw.*, *cohaesa* *H.-Sch.*) (10d). Forewing dull brown; the upper stigmata with pale annuli, the reniform sometimes wholly pale, the orbicular round; claviform absent; hindwing ochreous white, suffused with fuscous towards termen only in ♂, more broadly in ♀. Generally distributed in Europe and throughout Western Asia; in ab. **budensis** *Frr.* (10d) the ground-colour is grey; in ab. **elutior** *Alph.* (10d) the forewings are more brightly coloured, being cinnamon brown or yellowish grey; and in ab. **palaestinensis** *Kalchb.* (10d), while the ground-colour is paler, all the markings are more distinct. — ab. **obscura** *Tutt* and ab. **nigra** *Tutt* represent the reddish black and greyish black forms, with the stigmata sometimes clear, at others almost obsolete, which occur in the North of Scotland, the hindwing also being blackish; *rufescens* *Tutt* and *rufa* *Tutt* are merely colour varieties. — Larva greenish ochreous, with pale dorsal and subdorsal lines edged with dark; between them a row of oblique marks; on various low plants.
- nivisparsa*. **R. nivisparsa** *Btlr.* (10e). Forewing grey, with black irroration; the lines black, double; claviform stigma blackish; the round orbicular and the reniform grey with darker centres; the cell and space beyond reniform black; submarginal line whitish with dark suffusion on both sides; hindwing fuscous. Goorais Valley and Rala, Kashmir; originally described from N. India.
- nebula*. **R. nebula** *Leech* (10e). Forewing stone grey; lines fine and broken; a dark olive brown median shade thickened round the reniform stigma, which is concolorous with the ground but ringed with paler; orbicular round; a dark dot at tip of claviform; a dark cloud before subterminal line at costa and smaller ones at middle and above inner margin; hindwing fuscous grey, with dark cell spot and paler fringe. Found in several localities in Western China; the ♂ is unknown at present.
- flavibrunnea*. **R. flavibrunnea** *Leech* (10e). Like *canescens* *Btlr.* in size and colour, but broader winged; lines marked interruptedly with black; upper stigmata very large, pale-edged, with a brown shade between them; claviform obscure, with a dark dot at the tip; a brown band between outer and submarginal lines; hindwing fuscous. W. China.
- dahlia*. **R. dahlia** *Hbn.* (= *descripta* *Auct. nec Brem.*, *erythrocephala* *Haw.*, *candelisequa* *Stph.*, *rufa* *Tutt*) (10e). Forewing reddish brown with an ochreous tint in the ♂, darker, purplish brown in ♀; lines plain in the paler ♂♂; stigmata of the ground-colour, the reniform with the lower lobe dark, the upper sometimes ochreous; claviform with a black dot at the tip; a distinct dark median shade; in the ♀ the submarginal line is pale; hindwing dull fuscous, the fringe pinkish. — A variable species occurring in Great Britain, France, Germany, Austria and Russia; and generally distributed throughout N. Asia, China and Japan, under different forms: ab. **nana** *Stgr.* from S. E. Siberia is a dwarf form, not much more than half as large as the typical insect; ab. **canescens** *Btlr.* (= *subdolens* *Btlr.* ♂) (10e) is on the contrary always larger than the European examples.
- tarda*. **R. tarda** *Leech* (10f). Forewing dark greyish purple, paler at middle of costa; cell blackish; stigmata pale ochreous with ochraceous centres; the orbicular oblique, the claviform slight and obscure; a dark cloud on costa before subterminal line; hindwing dark fuscous, the fringe paler. Described from a single ♀ from Hakodate, Japan.
- rubicilia*. **R. rubicilia** *Moore* (= *nigrosigna* *Moore*) (10f). Forewing uniform olive yellow; the round orbicular and the reniform with obscure outlines; tip of claviform marked by a dark dot; hindwing fuscous; fringes bright red. A north Indian species, which occurs also in Kashmir.
- ruficauda*. **R. ruficauda** *spec. nov.* (= *rubicilia* *Hamps.* part) (10f). Forewing like *deparca* *Btlr.* but smaller; the antennae of ♂ ciliated, not pectinated; the costal area paler, olive fulvous, the rest of wing dull red-brown; in markings resembling *rubicilia* *Moore* from India; the stigmata edged by black dots and striae; the outer line followed by a double row of black vein-dots with a pale dot between them; hindwing dark fuscous with reddish fringe; head and thorax reddish; abdomen of ♀ grey, of ♂ whitish, the lateral and anal tufts bright rufous. Japan and W. China. — In *rubicilia* *Moore* the head, thorax, and forewings are wholly olive yellow.
- basistriga*. **R. basistriga** *Moore* (10f). Forewing tawny brown with a slight lilac-grey flush; median shade and lines velvety brown; the inner line strongly angled outwards below vein 1; stigmata with dark brown margins; the claviform distinct; a dark cloud along inner margin from base; hindwing in ♂ dirty whitish, the veins, cell-spot, and outer margin grey; in ♀ wholly brownish grey; fringe pink. Described by Moore from N. India; it occurs also in Tibet and W. China.

R. tincta *Leech* (10 f). Forewing dull deep red with some lilac-grey scales at base; the orbicular stigma filled up and the reniform outlined with the same grey; hindwing fuscous with red fringe. Described by LEECH from a single ♀ from Omei-shan, W. China. — Very close to *R. cerastioides* *Moore* from N. India.

R. griseivena *Hamps.* (10 g). Forewing pale olive fuscous, the veins bluish grey; all three stigmata distinct, pale grey, edged first with whitish and externally with black; submarginal line pale and distinct, preceded by wedge-shaped black marks; hindwing greyish fuscous. Taken in Kashmir, as well as in N. India.

R. trigonica *Alph.* (10 g). Forewing pale reddish grey; the lines pale and indistinct; inner line in ♀ very oblique; cell redbrown; orbicular stigma a wide triangle, merged above in the costal area, its apex below not reaching median vein; hindwing white, the veins and termen pinkish grey; in ab. *capnoptera* *Püng.* the veins of forewing are dark, and on the underside the forewing and costal area of hindwing are deeper red than in the type form. W. and E. Turkestan.

R. eugramma *Hamps.* (10 g). Forewing fuscous; the median area darker towards the lines, which are pale and edged with black; orbicular stigma round, containing ochreous scales in a black ring; reniform black; subterminal line preceded by a row of conspicuous black wedge-shaped marks; hindwing pale grey with cloudy outer and submarginal lines. 1 ♀ from Ta-chien-lu, W. China. The spines on foretibia at its extremity and along outer side are said by HAMPSON to be very stout, as in his genus *Porosagrotis*; is it possible that this species is identical with the Siberian insect referred by STAUDINGER to *patula* *Walk.* from Labrador and the Rocky Mountains?

R. fennica *Tausch.* (= *tauscheri* *H.-Sch.*) (10 g). Forewing narrow, elongate, black brown, the inner margin with a broad ochreous or flesh-coloured streak; claviform stigma narrow, black or black-edged; orbicular and reniform pale grey, the latter ochreous-tinged, and with lower lobe dark; a pale patch at apex often present; hindwing whitish, dark grey along termen; ♀ uniform dark ashy grey; lines faintly darker; stigmata dirty white. Switzerland and Russia; Siberia, E. Turkestan and Amurland. — Larva brown mottled with black; dorsal line obscure; subdorsal formed of white dots in rows; lateral line white, double; on all lowgrowing plants.

R. collina *Boisd.* (= *montana* *Frr.*) (12 b). Forewing greyish red; the lines black; a short black streak from base; cell darker, often black; orbicular stigma pale, often conspicuously so; reniform pale-edged; veins, especially towards outer margin, grey; hindwing fuscous grey. — Widely distributed in central Europe, occurring in the Mountains of S. France, Switzerland, Silesia, Galicia, Roumelia, Sweden and Russia; and in Asia in W. Turkestan, Tibet and E. Siberia. — The form *kenteana* *Stgr.* from the last locality is much browner with the markings of the forewing obscured. — Larva purplish grey; a pale black-edged dorsal line, and a row of subdorsal black dots; lateral lines yellowish with a row of black dentate marks above them; spiracles white with black rings; on 11th segment a yellow bar; on various low plants.

R. dewitzi *Graes.* Superficially resembling *O. polygona* *F.*; forewing broader; inner and outer lines double, but obscure, the outer filled up with whitish towards costa; all three stigmata large, pale yellowish with dark centres; the cell black; costa with black spots; hindwing dull luteous, paler at base, with a grey cellspot. Amurland. — A small species, described by GRAESER from 2 ♂♂ from Chabarofka: the antennae are not mentioned.

R. melancholica *Led.* (12 b). Forewing purplish grey; median area, especially the cell, darker; inner and outer lines pale grey with a fine dark line in the centre; stigmata pale grey with whitish outlines, the reniform narrow and angled; hindwing ochreous white with grey terminal area and traces of an outer line. From central Asia only; Siberia, Tibet, Amurland.

R. sareptana *H.-Sch.* Forewing dull purplish grey; a patch at base of submedian fold and the cell black-brown; terminal area darker; stigmata of ground-colour, with slight pale edging; hindwing fuscous. — A species of inconspicuous appearance, occurring at Sarepta, S. E. Russia and in Asia Minor.

R. bonza *Püng.* (12 c). Forewing in size, shape, and markings like *senna* *H. G.*, but lighter brown in ground-colour; the costa paler; the lines edged with yellowish; stigmata small but clear; the cell filled up with black; hindwing pale yellowish, darker along termen; an elongate angled cell mark. Found at Kuku Nor, Tibet, and in the Alexander Mts., W. Turkestan.

R. poliogramma *Hamps.* (6 g). Forewing dark grey, much varied with pale scales, which give it a powdery look; the veins pale grey; claviform stigma black, pointed, joined by a pale streak to outer line; upper stigmata grey with whitish outlines; lines edged with pale grey; hindwing fuscous grey. Kashmir. Only the ♀ is known.

- albifurca.* **R. albifurca** Ersch. (= *costata* Stgr.). Forewing blackish brown, the lines ochreous; median and submedian veins and the three median nervules finely black, edged with ochreous; a broad ochreous streak above inner margin from inner to outer line, joined by an oblique pale streak from base of median vein; claviform stigma large and dark-edged; orbicular and reniform ochreous, the latter with the swollen lower lobe dark; an ochreous patch at base of cell and another on costa beyond outer line; space before submarginal line black, beyond it purplish; hindwing pale fuscous, with whitish fringe. — Widely distributed in central Asia, occurring in W. and E. Siberia, W. and E. Turkestan, Tibet and Mongolia.
- agalma.* **R. agalma** Püng. (10h). Forewing pale grey along costal, inner and outer margins; lines pale and clear, with strong black edging; subcostal and median veins finely whitish; the other veins thickly scaled with reddish grey; stigmata with reddish grey centres; both folds and a row of wedgeshaped spots before submarginal line deep redbrown; hindwing greyish fuscous. — Kuku Nor, Amdo, and Sinin Mts., Tibet.
- juvenis.* **R. juvenis** Stgr. (= *coelebs* Stgr. Iris XII, nec *caelebs* Stgr. Iris VIII) (12c). Very close to *capnistis* Led., but rather smaller; forewing grey with black dusting and pale cross lines; the hindwing (♂) as in *capnistis*, white. — Zeitun, in Asia Minor.
- deplanata.* **R. deplanata** Ev. (= *deplana* Frr., *autumnalis* Oberth.) (10h). Forewing greyish fuscous; termen darker; cell black; the upper stigmata pale grey; inner line sharply angled outwards on subcostal and below vein 1, concave between; hindwing of ♀ fuscous grey. An asiatic species, found in the Ural Mts., in W. Siberia, Tibet and Amurland.
- multangula.* **R. multangula** Hbn. (10h). Forewing greyish fuscous; the cell, the base of claviform stigma, and a streak from its tip to outer line blackish; termen darker, with the submarginal line indistinct; hindwing brownish grey. The ♂ is paler and smaller, with hindwing whiter. — ab. **subrectangula** Stgr. (= *rectangula* Boisd. part) is merely a darker form; ab. **dissoluta** Stgr. (10h) is greyer and paler, the dark markings by contrast more conspicuous. The species occurs throughout S. Europe, in Asia Minor, Armenia, Persia, Turkestan, Tibet and Amurland. — Larva earthbrown; dorsal line white with conspicuous black edges; subdorsal lines dull, pale, with an elongate black spot on each segment; lateral lines whitish; spiracles black; thoracic shield brown with 3 white lines; head blackish brown with two dark streaks; said to feed on Galium.
- capnistis.* **R. capnistis** Led. (10i). Forewing olive grey, with all the veins paler; cell black; orbicular stigma a small dark-centred ring; claviform long and narrow, pale-edged; inner line forming a long acute tooth below vein 1; feminal area with the intervals between the outer and submarginal lines blackish; hindwing white; the veins towards termen dark; abdomen whitish. Asia Minor, Syria, N. Persia, W. and E. Turkestan.
- semna.* **R. semna** Püng. Close to *capnistis* Led., but paler, the markings clearer; the veins all pale grey and the lines pale; a row of blackish wedgeshaped marks before submarginal line; hindwing white. Askhabad.
- rectangula.* **R. rectangula** Schiff. (= *exclamans* Ev.) (10i). Forewing purplish brown with grey irroration; costa with dark brown triangular spots; cell between upper stigmata and the base (sometimes the whole) of claviform blackish; edges of stigmata very slenderly ochreous, the reniform retracted along median vein to touch orbicular; hindwing dull whitish, darkening gradually to termen; antennae of ♂ with rough black scales at base. — ab. **andereggii** Boisd. (12c) is darker, without the grey irroration, the lines not showing paler; while in ab. **acutangula** Stgr. the forewing is browner, and the stigmata more conspicuous. In Europe this species occurs in Switzerland, Italy, Austria, Roumelia and S. Russia; in Asia Minor, W. and E. Turkestan and W. and E. Siberia. — Larva grey; dorsal line narrow divided by a row of yellowish spots; subdorsal lines yellowish; lateral lines broadly brown, with the white black-bordered spiracles on their lower edge; head yellow brown with 3 black streaks; on low plants, among which are enumerated clover and melilot.
- moerens.* **R. moerens** Stgr. Forewing blackish, tinged with purplish-grey; the lines indistinct; claviform stigma large, black-edged; cell and space beyond to outer line black, defining the upper stigmata; hindwing dark fuscous, paler in cell. Described by STAUDINGER from a single ♂ from Urga, Mongolia.
- melanura.* **R. melanura** Koll. (10i). Forewing creamcolour; lines marked by black spots on costa and interrupted marks across wing, the outer line with a swollen spot on each fold; a broad black marginal border; fringe dark, with base and tips paler; reniform stigma alone sometimes represented in outline; hindwing white, the dark border paler and more diffuse. — The form **grisescens** Stgr., which is smaller, is said to have the forewing dull grey; — **melanurina** Stgr., queried by him as gener. *aestiva*?, is only half as large as the typical examples with forewing yellower and more slender dark border. — The only European locality is Dalmatia, whence it was first described; in Asia it occurs in Asia Minor, Persia and W. Turkestan; the form *grisescens* comes from Persia and Pontus; and *melanurina* from S. Palestine.
- kirghisa.* **R. kirghisa** Ev. (= *vallesiaca* Frr. nec Boisd.) (10i). Forewing pale grey dusted and suffused with black; the lines black and well-marked; stigmata defined by black; submarginal line pale, with a row of dentate black marks before it and blackish shading beyond; hindwing white, with veins and marginal area

brownish; in ♀ wholly brown. Occurs in W. Asia, Persia, Syria, Armenia, Turkestan, W. Siberia and Kashmir, also in S. E. Russia; — the form **squaldior** *Stgr.* is more brownish grey, with the markings plainer; the hindwing of ♂ with termen brownish; — **squalorum** *Ev.* (10i, k) is paler, the veins only of hindwing of ♂ being brown, and in the ♀ only the outer margin.

R. putris *L.* (= *subcorticalis* *Hufn.*, *lignosa* *Hbn.*) (10k). Forewing ochreous, the costal area, including cell, dark brown; dark brown patches at outer margin on both folds, the upper connected with outer line by a dark double streak; inner line strongly angulated; outer represented by a double row of vein-dashes; orbicular and reniform stigmata with dark centres and rings; the former small and round, more rarely flattened; the latter large; hindwing whitish, variably suffused with grey. Found throughout Europe, and recorded from Armenia, W. Siberia and Amurland; — the form **triseriata** *Moore*, originally described from N. India, but occurring in Japan and Corea as well, is larger and darker. — Larva speckled brown, with an irregular pale dorsal line and a subdorsal row of oblique dark-greenish streaks, edged below with pale ochreous; an ochreous bar on segment 11; spiracular line pinkish or yellowish; on various low plants.

R. ravida *Schiff.* (= *obscura* *Brahm.*) (10k). Forewing greyish fuscous; costal area reddish; a black dash on submedian fold before inner line; cell sometimes blackish; stigmata dark-edged; orbicular very variable in shape, round, or flattened, sometimes produced basewards; hindwing dull whitish, the veins and termen grey. Generally distributed throughout Europe, in Northern and Central Asia, Amurland, China and Japan; — ab. **obducta** *Esp.* has the whole forewing grey brown, including the costa; — and ab. **bigramma** *Esp.* is like it, but with the cell black between the stigmata; — ab. **rufa** *Tutt* is the reverse of the two preceding, the whole wing being reddish like the costa, while ab. **austera** *Esp.* (= *crassa* *Haw.*), also reddish brown throughout, has the cell black; — ab. **suffusa** *Tutt* is blackish fuscous with the lines and stigmata more or less obscured; — ab. **valida** *Walk.* (= *nipona* *Fldr.*, *caliginea* *Btlr.*) (10k) from Japan and China is always larger than typical European specimens. — Larva ochreous brown, with pale dorsal line, and a subdorsal row of oblique yellowish bars edged above with fuscous; feeds on a variety of low plants.

R. stabulorum *Bienert* (10k). Distinguished from *ravida*, which it resembles in size and shape, by its dull rufous green tint, by the very obscure lines, and the absence of the black streak from base; stigmata often hardly visible. Schahrud, Persia. (CHRISTOPH'S figure in *Rom. Mem.* II, pl. 12, fig. 5 wrongly shows the hindwings white; BIENERT calls them fuscous.)

R. glis *Chr.* (12d). Forewing reddish brown; inner and outer lines luteous, the former denticulate, the latter angled; stigmata concolorous or grey, with fuscous outlines; hindwing luteous grey, darker towards termen. Described by CHRISTOPH from 2 ♀♀ from Persia.

R. aucta *Alph.* (12d). Doubtfully distinct from *squalida* *Guen.*, which is itself said to be a very variable insect; — originally described from W. China, and recorded besides from Kuku Nor, Tibet, where *squalida* also occurs.

R. squalida *Guen.* (= *confinis* *Stgr.*) (11g). Forewing brownish grey with dark dusting; the inner line strongly angulated; stigmata indistinct; hindwing whitish, with brown suffusion along termen and veins; said to be a very variable insect, some specimens being much darker and more distinctly marked. — Occurs throughout N. Asia, except China and Japan. Distinguished from *sibirica* *Boisd.* and *lucens* *Btlr.* by the paler hindwings.

R. augur *F.* (= *omega* *Esp.*, *assimulans* *Bkh.*) (11g). Forewing uniform brownish grey with a reddish tinge; stigmata concolorous, black-edged; claviform narrow; orbicular variable, round, or flattened, sometimes prolonged to touch inner line; reniform with outer edge swollen in the middle, sometimes followed by a dark shade; hindwing a little paler. Common throughout N. Europe, Amurland and Japan; — **hippophaes** *H. G.* is a grey form with the reddish tinge wanting; — **helvetina** *Knaggs* is a pale blurred form with obscure markings, and the fringe of hindwing pink. — Larva varying from purplish brown to greenish grey with a double row of whitish spots on dorsum and oblique dark streaks; a dark brown blotch across segment 12, swollen at each end, and edged behind with pale; on all low plants.

R. sibirica *Boisd.* Forewing uniform brown grey, much as in *augur*; the lines and edges of stigmata finely but distinctly black, not filled up with paler; hindwing also dark. Siberia; recorded also from Korea.

R. lucens *Btlr.* (11f). Forewing dull blackish grey; lines and stigmata filled up with paler grey; marginal area paler beyond submarginal line; hindwing fuscous. The unique type is a ♀ from Tokio, Japan; it is very close to *sibirica* *Boisd.*, of which only the ♂ is known.

R. deplorata *Stgr.* (11g). Intermediate between *ravida* and *sema*, both in size and markings; without the red tinge of *ravida*; the cell blackish, the two stigmata small, rounded and greyish; hindwing brownish-

sennina. grey; — the ab. *sennina* Stgr. comes nearest to *senna* H. G.; in it both the head and forewings are browner and darker. Uliassutai Mts. in Mongolia.

senna. **R. senna** H. G. (= *valdensis* Boisd.) (11a). Forewing earth-brown; lines distinct, black-spotted on costa; outer line strongly lunulate-dentate, the lunule between veins 5 and 6 touching reniform stigma; a fine black streak on submedian fold and a spot of black and white scales on vein 1, before inner line; cell blackish; upper stigmata grey; claviform slight; submarginal line close to margin, preceded by a dark shade; hindwing fuscous, with white fringe. A local species, found only in S. France, Switzerland and S. W. Germany. — Larva pale or dark brownish grey green; dorsal line double, brown and slender; on each segment 2 dark brown oblique streaks, broader in front and extending over the broad pale brown lateral stripe; head and feet shining brownish grey, the head streaked with paler; feeds on *Artemisia* in sandy places and hibernates.

anachoreta. **R. anachoreta** H.-Sch. (11a). Forewing reddish brown, with slight black dusting; median area darker; the cell black-brown; lines edged with pale scales; upper stigmata edged, and often filled up with whitish, the reniform confluent along median vein with the orbicular; often a paler band before submarginal line with the veins across it dark; hindwing yellow with black marginal border; the fringe yellow; anal tuft of ♂ yellow. A small species found in the Caucasus Mts., Armenia.

luperinoides. **R. luperinoides** Guen. (= *chardinyi* H.-Sch. nec Boisd.) (11a). Differs from *anachoreta* H.-Sch. in the forewings being uniform greybrown without the red tint; the stigmata of the ground-colour and indistinct; occurs in the same locality as *anachoreta*, of which it is most probably a form.

stridula. **R. stridula** Hamps. (11a). Forewing dark reddish fuscous; the veins finely grey; lines black, edged with pale reddish; upper stigmata grey, ringed with pale reddish; the reniform angled inwards along median vein; submarginal line preceded by black wedge-shaped marks; hindwing fuscous. W. Turkestan.

westermanni. **R. westermanni** Stgr. (= *wockeii* Moeschl., *scopulana* Morr.) (11b). Forewing greybrown, rufous-tinged below middle; a thick black streak at base of submedian fold; claviform stigma elongate, pointed, black-edged; upper stigmata grey, the reniform with reddish centre and angled inwards on median vein; cell blackish; hindwing greybrown, with darker cell-mark and outer line; in the ♀ the contrast between the light and dark shades is greater. An American species occurring in Greenland, Labrador, and the White Mts. in New Hampshire, U. S. A.; said to have been received from Ala-Tau Mts., W. Turkestan, but its claim to be Palaearctic is dubious.

cuprea. **R. cuprea** Schiff. (= *haematitidea* Esp.) (11a). Forewing dull brown, the median area below subcostal vein dark brown; veins and edges of stigmata very finely pale, the stigmata deeper brown; costa darker with fine pale speckling; a dark shade before submarginal line; hindwing greybrown, the fringe yellowish. North Europe (except Britain), Armenia and Kamschatka. — Larva dull brown, with 3 whitish dorsal lines, some oblique black subdorsal streaks, and a grey lateral line; on various low plants.

ononensis. **R. ononensis** Brem. (= *cicatricosa* Graes., *praecipua* Stgr.) (12d). Forewing deep purplish brown, with a red tinge; a black streak from base below cell, which also is filled up with black brown; the two stigmata small and pale, wide apart; hindwing fuscous, with paler base and rufous fringe. E. Siberia, Amurland and Mongolia.

scaramangae. **R. scaramangae** Alph. (11b). Forewing whitish grey; veins finely black lined with white; submarginal line formed of black wedged-shaped marks, the marginal area beyond dark grey; stigmata, cell, and basal streak as in *ononensis* Brem.; hindwing grey; patagia whitish grey. This form from Turkestan, Mongolia, and Tibet seems to be distinct from *ononensis* Brem.

musculus. **R. musculus** Stgr. (= *citillus* Alph.) (11b). Forewing olive grey, slightly brownish; cell dark brown, with the stigmata paler; claviform edged with black, with some black scales from its end to outer line; lines blackish, waved and interrupted; marginal area pale; hindwing greyish fuscous, the fringe whitish. Issyk-kul, W. Turkestan.

lasciva. **R. lasciva** Stgr. (12d). Very much like the following species, *juldussi* Alph., but larger; the hindwing is ochreous white instead of dark fuscous; and the basal half of tegulae is whitish, whereas *juldussi* has only a white central bar. Turkestan.

juldussi. **R. juldussi** Alph. (11b). Forewing dull brickred; duller and darker, more brownish grey, beyond outer line; the cell olive brown; a broad costal streak cream-colour, with costal edge red; stigmata white, the orbicular broadly triangular, merged in the costal streak; hindwing fuscous, the fringe pale. W. and E. Turkestan.

modesta. **R. modesta** Stgr. (11c). Forewing greyish-red, darker basewards; lines obscure; upper stigmata ochreous, with faint red centres; hindwing whitish; tegulae deep redbrown, contrasting with the rufous thorax. W. and E. Turkestan. — A small species, possibly another form of the variable *argillacea* Alph.

R. isochroma *Hamps.* (11c). Like a small *homochroma* *Hamps.*, but the orbicular is a small dark *isochroma*. spot, the reniform a mere dark lunule; hindwing paler. Recorded from the same locality Yatong, Tibet.

R. violetta *Stgr.* (11c). Forewing elongate, pinkish grey; all the markings ill-defined; stigmata *violetta*. pale with grey centres; lines defined by pale grey shades; hindwing dull whitish grey. W. Turkestan.

R. alaina *Stgr.* (11c). Forewing ochreous, almost covered with dark olive grey irroration; the base *ataina*. and outer margin pale grey; two upper stigmata dark with rufous outline; the cell ochreous; fringe rufous; hindwing pale grey, with two outer lines and the cellspot darker; the base rufous-tinged. Turkestan. — The forewing has the outer margin vertical, shortly oblique below; the antennae of ♂ with cilia quite short.

R. junonia *Stgr.* (11c). Forewing pale ochreous, yellower in median area; orbicular and reniform *junonia*. stigmata slategrey, the former round, the latter narrow, angled; submarginal line pale beyond a grey shade; hindwing pale grey, the fringe luteous. W. Turkestan. — The forewing has the outer margin oblique throughout, the apex prominent; antennae of ♂ with sessile fascicles of cilia.

R. suavis *Stgr.* (11d). Forewing biscuit-colour, dusted with slatyblue; lines of the same hue, *suavis*. starting from strong costal spots; claviform stigma oval, with bluish ring; orbicular nearly obsolete; reniform diffuse; submarginal line preceded by a dentate slaty line, thickened on the folds and at costa; hindwing whitish, with traces of postmedian line and submarginal band. — Occurs in the Mountains of Mongolia.

R. simulatrix *H. G.* (= *nictymera* *Boisd.*) (12e). Forewing dirty grey with a luteous tinge; lines slightly *simulatrix*. deeper, edged with paler; median shade and marginal area darker grey; reniform stigma a dark lunule; hindwing brownish fuscous with white fringe. The form **dalmata** *Stgr.* has the ground-colour more ochreous. *dalmata*. Found only in France, Spain and Dalmatia in Europe; and in the Taurus Mts. in Asia Minor. — Larva black, greenish below and at sides; 3 white striae on each segment above subdorsal line; feeding on *Festuca ovina*.

R. wiskotti *Standf.* Exactly like *simulatrix* *Hbn.*, but yellower, with the markings darker. Taken *wiskotti*. high up on the Swiss Alps.

R. lucernea *L.* (11d). Forewing pale grey, with a green flush; lines black defined by pale grey; *lucernea*. broad dark median and submarginal shades; orbicular stigma grey, pale-edged, generally obsolete; reniform a dark lunule; fringe grey; hindwing fuscous, darker towards termen; fringe white; the ♂ is generally blacker than the ♀. A mountain species, occurring in Britain, France, the Pyrenees, Switzerland and Finland. — The form from Scotland, to which Stephens gave the name **renigera** is blackish grey, much darker *renigera*. than European examples. — **cataleuca** *Boisd.* has the dark median shade prominent. — Larva blackish, *cataleuca*. with obscure markings; a subdorsal row of blackish dentate marks containing pale spots behind them; on various lowgrowing plants.

R. asella *Püng.* (= *ignobilis* *Hamps.* nec *Stgr.*) (11d). Forewing dark brownish fuscous, the lines *asella*. double, blacker; median shade prominent; upper stigmata with fulvous rings; hindwing fuscous. W. Turkestan.

R. defessa *Led.* Allied to *nictymera* and *lucernea*; forewing luteous tinged with fawn colour; the *defessa*. lines fine; terminal area pale leaden grey; submarginal line hardly expressed; orbicular stigma faint, reniform plainer with dark centre; hindwing dirty whitish with diffuse broad terminal shade. — Described by LEDERER from 3 ♀♀ from Mt. Lebanon, Syria.

R. bipartita *Graes.* Forewing grey-brown, with black irroration from base to beyond middle; outer *bipartita*. area darker with a few pale scales intermixed; inner line obscure, outer plainer, nearly straight and inwardly oblique; stigmata plain, with fine brown outlines; hindwing dark grey with the fringe paler. Amurland. — Described by GRAESER from a single ♂ from Wladiwostok. Perhaps near *defessa* *Led.*

R. helvetina *Boisd.* (= *birivia* *Hbn.* nec *Schiff.*, *livia* *Frr.*) (11e). Forewing uniform dull olive grey *helvetina*. brown, the median area darker; the edges of the stigmata and the lines paler; hindwing a little paler. — Found in the Mountains of Switzerland, S. France, N. Italy, Germany and Austria; also in Armenia.

R. lucipeta *Schiff.* (11e). Forewing dull greenish grey on a yellow ground, which shows through *lucipeta*. in the ♀ as a general yellow irroration; the edges of the lines and rings of the stigmata yellow; marginal line yellow; fringe chequered with yellow; hindwing yellowish ochreous suffused with fuscous; fringe with basal half yellow, outer half white; a large species, occurring throughout Central Europe and in Asia Minor. This species, the type of *Rhyacia* *Hbn.*, has a smoothly rounded frons. — Larva greenish grey; dorsal line paler; 4 black tubercles on each segment; paler, more mixed with yellow, along the sides; spiracles black; head and feet brownish yellow; — on various low plants, Tussilago, Petasites, Euphorbia.

R. proterva *Püng.* Forewing ochreous grey, slightly dusted; margin beyond submarginal line paler; *proterva*. outer and inner lines dark grey with pale edges; a dark lunule on discocellular; hindwing dark grey. — Quite a small species, from Altyn Tagh, Tibet.

- plumbea*. **R. plumbea** *Alph.* Forewing leaden fuscous, frosted with pale scales; the lines whitish; stigmata defined by whitish, the orbicular small and round; hindwing whitish, suffused with fuscous along termen; fringe white. W. and E. Turkestan.
- subplumbea*. **R. subplumbea** *Stgr.* (11 e). Forewing brownish fuscous, the costal half generally blackish; a reddish tinge along submedian fold; the upper stigmata black with reddish grey margins; the orbicular variable, round, or oblong, or large and subquadrate; submarginal line pale; hindwing dirty whitish, with veins and margin grey; head and thorax blackish, contrasting with the whitish abdomen. Kuku Nor, Tibet.
- astigmata*. **R. astigmata** *Hamps.* Forewing rufous fuscous in the ♂, blackish fuscous in ♀; the basal and terminal areas darker; the lines black; veins towards outer margin blackish; no stigmata, but a dark stain on the discocellular; a bright white line at base of fringes; hindwing fuscous. Gyantse, Tibet.
- quadrangula*. **R. quadrangula** *Zett.* (= *rava H.-Sch.*) (12 e). Forewing sombre fuscous, the stigmata darker with faintly paler edging, but very obscure; hindwing fuscous. Greenland, Labrador, Nova Scotia, Iceland.
- rattus*. **R. rattus** *Alph.* Forewing brownish grey with a vinous tinge; like *quadrangula*, to which it is nearly allied, but the two stigmata are farther apart, and the antennal ciliations shorter; hindwing pale grey. Described by ALPHERAKI from a single worn ♂ from Tibet, Amdo.
- laetifica*. **R. laetifica** *Stgr.* (12 e). Forewing ochreous grey, with darker grey suffusion, especially along costa; veins dark; stigmata indistinct, with dark centres and paler rings; orbicular flattened; reniform with lower lobe blackened; submarginal line pale; hindwing pale grey. Mountains of Mongolia.
- diplogramma*. **R. diplogramma** *Hamps.* (11 f). Like *proterva Püng.*, but smaller; forewing fuscous grey; inner and outer lines blackish, paler edged; a dark median shade; stigmata hardly visible; hindwing fuscous grey. Askhabad.
- ignobilis*. **R. ignobilis** *Stgr.* (= *monogramma Hamps.*) (11 h). Forewing shining grey, thickly and minutely black-speckled; the two upper stigmata pale, with dark centres; claviform often obsolete; outer line strongly dentate; hindwing pale grey. W. Turkestan and Kashmir.
- ledereri*. **R. ledereri** *Ersch.* (12 e). Forewing olive brown with a yellowish tinge; lines dentate, the edges of the teeth marked by black spots; stigmata indistinct, separated by a dark shade; hindwing dull grey. Recorded from Turkestan, Mongolia and E. Siberia; — the ab. **mus** *Alph.* is altogether darker, without the yellow tinge of the type.
- simulans*. **R. simulans** *Hüfn.* (= *tristis F.*, *radicea Esp.*) (11 f). Like *latens Hbn.* but larger; the forewing paler, the stigmata with distinct pale and dark outlines. Occurs in most of the countries of N. Europe, also in Armenia, Kurdistan, Turkestan and W. Siberia in Asia; recorded also from Algeria; — **pyrophila** *Schiff.* is ochreous grey; — **suffusa** *Tutt* (= *obscurata Stgr.*) is darker, the forewing being blackish grey; — *latens*. **latens** *Stph.* (11 f) is unicolorous black, with still more intense markings. — Larva dark brown; the subdorsal area brownish flesh-colour; dorsal line thin, pale, edged with black; a row of dorsal V-shaped marks; an interrupted white lateral stripe; on various low plants.
- lapidosa*. **R. lapidosa** *Graes.* Like *simulans Hüfn.*, but forewing darker, more uniformly coloured, the apex more produced; a black streak from base; the two lines double, black, both more oblique than in *simulans*; stigmata partially dark-edged; hindwing dark grey. Amurland. Described by GRAESER from 2 ♂♂ from Pokrofska.
- latens*. **R. latens** *Hbn.* (= *murina Frr.*, *latitans Guen.*) (11 f). Forewing dingy luteous grey, varying from pale to dark; in pale examples the outer and inner lines are sharply black; stigmata in all cases indistinct; hindwing of ♀ fuscous, of ♂ dull whitish with grey border; the veins and postmedian line grey. Occurs in France, Germany, Austria, Hungary and Switzerland; recorded also from Italy and Norway. — Larva yellowish brown; dorsal and subdorsal lines pale, the latter bordered inwardly by a black line thickened at middle of each segment; lateral line conspicuously black; head yellowish brown, with two dark streaks. On grass and low plants.
- ashworthii*. **R. ashworthii** *Dbl.* (= *vallesiaca Stn. nec Boisd.*) (11 f). Smaller than *candelarum*, pale slate grey, thickly dusted with blackish, without any rufous tinge; median shade generally thick and diffuse, forming a spot between the pale stigmata; outer line sharply dentate; a dark blotch on costa before submarginal line; hindwing brownish grey, paler in ♂; fringe whitish. North Wales. — Larva dark greenish grey or blackish green with an obscure row of subdorsal black rectangular dashes; feeding on various mountain low plants.
- candelarum*. **R. candelarum** *Stgr.* (= *candelisequa Hbn. Noct. nec Hbn., Vög. & Schm.*) (11 g). Forewing chalk grey, tinged with brownish and dusted with grey; costa dark-spotted; upper stigmata with brown edges; submarginal line preceded by a grey shade; hindwing white, towards termen fuscous. Generally distributed

through north and central Europe, except Britain, and found in W. Turkestan and Tibet. — The form *signata* Stgr. is whiter with the outer line conspicuous; — *jotunensis* Auriv. from Scandinavia is the dark form. — Larva blackish brown more or less greenish-tinged; dorsal line double, black; on the sides of each segment after the third two thick black streaks, darkest on the 4 last segments; spiracles white; venter dotted with white; head reddish yellow with two brown streaks: on various low-growing plants. *signata.*
jotunensis.

R. denticulata Warr. Forewing purplish brown, dusted with blackish; some fuscous suffusion on inner margin near base and beyond outer line which is conspicuously dentate; stigmata with dark margins, the upper two large: hindwing brownish fuscous, the fringe white. A large species, described originally from N. India, but occurring in the Goorais Valley, Kashmir. *denticulata.*

R. occulta L. (11g). Forewing pale grey, more or less suffused with dark grey; a black streak from base below cell; stigmata large, grey, with black outlines, the cell dark: inner and outer lines filled in with whitish: submarginal line formed of large black and white teeth; hindwing fuscous, the fringe white. This fine species occurs throughout Northern and Central Europe and Asia. — The form *implicata* Lef. (= *passetii* Th.-Mg., *aethiops* Robson) (11h) is nearly black, a mountain form, found in Finland, on the Harz Mts. in Germany, and in Scotland. — ab. *extricata* Zett. from Lapland is an intermediate form. — Larva brown, darker-mottled; dorsal and subdorsal lines yellowish; spiracular white; a series of oblique lateral dark stripes; on various low plants. *occulta.*
implicata.
extricata.

R. erythrina Ramb. (11i). Forewing purplish-red, sometimes suffused with dark brown, varied with whitish scales: the costa blackish; lines black defined by white scales; upper stigmata denoted by a few white scales; hindwing brownish ochreous, the fringe whitish. A local species restricted to S. France, Switzerland, and Spain. *erythrina.*

R. saucia Hbn. (= *aequa* Hbn.) (11h). Forewing grey-brown, varied with fuscous, generally with a strong reddish tinge: the stigmata outlined with brown, the lower half of reniform fuscous; hindwing semihyaline white; the veins dark; the marginal area brown. — Widely spread throughout Europe, and occurring in the countries of Western Asia, also in N. Africa and the Canaries. — The form *margaritosa* Haw. includes the more strongly marked and varied specimens, and wholly grey in colour; *majuscula* Haw. is fuscous black; ab. *nigrocosta* Tutt (11i) is greyish fuscous, sometimes tinged with reddish or ochreous; with a broad black shade along costal area which sometimes encloses the stigmata; ab. *ochreacosta* Tutt (11h) on the contrary has the inner marginal area darker while the whole costal area is pale; ab. *rufa* and *brunnea* Tutt are mere colour varieties. — Larva reddish-brown; dorsal line pale yellow, dark-edged; spiracular line pale, black-edged above; a transverse black mark across segment 12; anal plate pale; head black-spotted: on numerous low plants. *saucia.*
margaritosa.
majuscula.
nigrocosta.
ochreacosta.
rufa.
brunnea.

R. eminens Led. (= *excellens* Stgr.) (11i). Forewing earthbrown; inner and outer lines double, confluent on inner margin; stigmata large, grey; cell blackish, the base of intervals between veins 2 and 6 also blackish; hindwing white, fringe white. Siberia and Turkestan. *eminens.*

R. elegans Ev. (= *grammiptera* Bsd., *cancellata* Frr.) (11i). Forewing pale brown, the veins whitish; lines black and white; stigmata margined with white and black, the claviform large and pointed, the reniform angled inwards on median nervure; submarginal line white preceded by a row of black wedge-shaped marks; hindwing of ♂ white with slight subterminal brownish band; of ♀ more or less suffused with fuscous. A South European species, found in Spain, France, Greece, and S. Russia; widely spread in W. Asia, and also in Siberia and Turkestan. *elegans.*

R. larixia Guen. Like *elegans* Ev. but with all the markings, as it were, blurred and inconcise; slightly larger in size, and occurring always at a higher elevation than that species. In Europe it is found in the Alps of S. France and N. Italy: and in the Mts. of Armenia, Persia, and W. Turkestan in Asia. *larixia.*

R. tamerlana Hamps. (11k). Forewing pearl grey, slightly dusted; upper stigmata large, grey, confluent in lower half, the cell blackish, forming an angled mark before orbicular and a triangular one between the stigmata in upper part of cell; lines indistinct; the subterminal preceded by dark lunules; hindwing white. W. Turkestan. *tamerlana.*

R. chaldaica Bsd. (11k). Forewing pale grey with a rufous tint; lines black; upper stigmata large, narrowly white-ringed, the cell black before and between them; subterminal line grey preceded by a reddish shade; hindwing pure white. Sarepta and Ural Mts. in S. E. Russia, W. Siberia and Turkestan. — The form *spodia* Püng. (11k) is grey without the rufous tint, and must be very near *tamerlana*. *chaldaica.*
spodia.

R. funkei Püng. (12i) Forewing greyish ochreous with darker irroration; claviform stigma distinct, edged with black; the upper stigmata pale ochreous, the cell black; a black mark beyond reniform to outer line; submarginal line preceded by a row of dark teeth; hindwing greyish white, the fringe white. W. Turkestan. *funkei.*

- ocellina*. **R. ocellina** Schiff. (= *phyteuma* Esp.) (11k). Forewing dark brown with more or less of a red tinge; veins pale to outer line; stigmata pale; the upper with dark centres; the orbicular small, round or oval, the reniform angled inwards along median vein to touch the orbicular; the cell black; hindwing brown. A small species occurring on the Mountains of Europe, of Western Asia, and of North and Central Asia. — The form **transiens** Stgr., from Central Asia only, is paler, and approaches the following species. — Larva brown; dorsal line pale; lateral lines pale, inwardly brown-bordered, the whole dorsal field between them darker; spiracles brown, each with 2 pale-ringed black tubercles above them; head and anal plate brown; thoracic plate black with 3 yellow streaks; on various low plants.
- alpestris*. **R. alpestris** Bsd. (= *ocellina* Hbn., nec Schiff.) (11k). Hardly separable from the preceding, but the reniform stigma less produced and not touching orbicular; occurs in nearly the same localities as *ocellina*; both species are dayfliers and are found at rest on flower heads.
- multifida*. **R. multifida** Led. (= *sanctomoritzi* Bang-H.). Forewing reddish brown, with darker partial suffusion; all the veins finely picked out in whitish; a black streak from base below cell; cell black, with the two stigmata pale with grey centres; the orbicular oblique and oval; inner and outer lines meeting at inner margin; hindwing white, with veins and margins brownish. A local species found in the Tyrol, and Hungary; also from Armenia.
- degeniata*. **R. degeniata** Chr. (= *persica* Stgr.) (13a). Forewing greyish brown; a black streak at base of submedian fold; the cell black; the stigmata dark ochreous; a black streak from reniform and claviform to outer line; submarginal line ochreous preceded by a black shade; hindwing pale ochreous, clouded with brown. Persia. — The form **defuncta** Stgr. (13a) from Turkestan is browner, all the markings more conspicuous.
- truculenta*. **R. truculenta** Led. (12i). Forewing dark ochreous grey; lines hardly marked; claviform stigma long, black-edged, joined by a black streak to base; upper stigmata pale-edged and dark-centred, the cell between them dark; the orbicular flattened and produced to base; dark wedged marks before submarginal line; hindwing white. An asiatic species found in the Altai Mts. in W. Siberia, and in W. and E. Turkestan.
- toxistigma*. **R. toxistigma** Hamp. (13a). Very close to the preceding species, but the claviform filled in with dark, and the orbicular a flattened oval. — Described by HAMPSON from a single ♂ from Syria.
- hahni*. **R. hahni** Chr. (12i). Forewing smooth, ochreous suffused with fuscous, blackish along termen; the cell black, well defining the stigmata; claviform joined by a black streak to outer line; hindwing white, with brownish veins and termen. The ♀ is greyer, with darker fuscous suffusion, obscuring the markings. Occurs in Armenia, N. Persia, and W. Turkestan.
- candelisequa*. **R. candelisequa** Schiff. (= *sagittifera* Hbn.) (13a). Forewing pale or dark grey, the transverse lines shadowy; orbicular stigma flattened, the reniform lunate, a brown shade between them; a strong black streak from base along submedian fold, forking along the edges of claviform stigma; another above the median below the upper stigmata reaching submarginal line, which is vague and indicated by wedged marks; veins finely black; hindwing white, the veins darkened before termen. Found in the Mountains of S. Europe, France, Italy, Switzerland, Austria and Hungary and in Armenia and Asia Minor; — ab. **rana** Led., which is restricted to Western Asia, viz, the Altai Mts., Persia, and Turkestan, is whiter with the lines and stigmata obsolete. — Larva dark brown, with obscure darker lines, the sides and venter varied with white; on *Jurinea mollis*.
- gaurax*. **R. gaurax** Püng. (12i). Forewing lilac grey, rufous-tinged, especially in terminal half and lower median area; inner line oblique, black, touching the black of cell, which runs up between the large pale stigmata; hindwing white. Recorded from the Alexander Mts., W. Turkestan.
- margaritacea*. **R. margaritacea** Vill. (= *l-intactum* Hbn., *glareosa* Tr., nec Esp.) (13b). Forewing pearl grey, slightly flushed with pink; lines marked by black costal spots; upper stigmata large, obscurely marked, separated by a square black spot; hindwing white, with the veins and terminal area darkened in ♀ and slightly also in dark well-marked ♂♂. Occurs throughout S. Europe, in France, Italy, Switzerland, S. Germany, Austria, Hungary, Roumelia, S. Russia; also in Asia Minor, Armenia, W. Siberia, and Turkestan. — Larva yellowish brown, marbled with dark above; dorsal and subdorsal lines white, with oblique black streaks between; a red and white lateral line dark-edged above; on low plants.
- insignata*. **R. insignata** Led. (= *intermedia* Ev.) (13b). Forewing pale mouse grey; lines concise, blackish towards costa; stigmata all large, smooth dark grey, finely tinged with ochreous; hindwing white with the veins brownish externally, in the ♂ grey-tinged before the white fringe. Mainly an Asiatic species, occurring in W. Siberia, Persia, and Turkestan, and at Sarepta in S. Russia; — the ab. **palescens** Chr. is a pale form with the markings almost obsolete, found in Persia and Turkestan.
- sordescens*. **R. sordescens** Stgr. (13b). Forewing olive grey, flushed with purplish; subbasal and inner lines alone blackish and distinct; stigmata pale grey, the two upper separated by a black blotch; hindwing white, with brownish termen. W. Turkestan.

R. pulverea *Hamps.* (13b). Forewing uniform dull brownish grey dusted finely with darker; the *pulverea*. costal edge pale ochreous; the two upper stigmata with darker centres and pale ochreous rings; lines scarcely traceable; hindwing of ♂ whitish, of ♀ grey; the fringe white. — Described by HAMPSON from the Mts. of Cyprus. The forewings much resemble those of pale *xanthographa*.

R. vallesiaca *Bsd.* (13b, c). Forewing pale brownish grey speckled with darker; central area with *vallesiaca*. a dark cloud; stigmata pale grey with incomplete black edging; lines obscure, except the submarginal which is whitish and preceded by a black zigzag shade; hindwing smoky fuscous, broadly black along termen, with the fringe white. Valais, Switzerland.

R. poecila *Alph.* (= *superba* *Stgr.*) (13c). Forewing with the costal area and all the veins whitish *poecila*. dusted with black; the two folds streaked with flesh-colour, which often tinges both stigmata; lines black, double, dentate, strongly defined; orbicular stigma pointed outwardly; reniform large, angled, the lower end fuscous or black; hindwing shining pale fuscous; fringe white. E. Turkestan and Mongolia. — The dark markings vary in intensity.

R. fugax *Tr.* (13c). Forewing dark grey, densely dusted with blackish, which obscures the stigmata; *fugax*. the two lines black with pale edging; a faint rufous tinge along each fold; a darker shade before submarginal line; marginal area sometimes pale; hindwing dull whitish, darker towards termen; veins dark; fringe whitish. A South East European species found in Austria, Hungary, and Russia. — Larva shining brownish grey, with a faint double dark dorsal line and an obscure broad lateral stripe containing the black spiracles; venter and feet pale grey; thoracic plate whitish with two black streaks and two black spots; head pale brown, with a black edge; on various low plants, especially Euphorbia, and maize to which it is said to do harm.

R. ala *Stgr.* Resembles *fugax*, but the upper stigmata of forewing are plain, with whitish rings; *ala*. the orbicular round. Found in Armenia and Turkestan.

R. photophila *Guen.* (= *ignipeta* *Oberth.*) (13c). Differs from the W. Asiatic *sollers*, to which it is otherwise *photophila*. closely allied, by the wholly white and markless underside, and by the paler hindwings. Algeria, C. Bon.

R. sollers *Stgr.* (13d). Forewing dull grey, with the lines and markings as in *fugax* but all less *sollers*. clear; hindwing dull brownish grey, the fringe whitish, with a grey line; underside pale with cellspots and outer lines grey; the cell and inner margin of forewing brown-grey. Persia. — ab. **obumbrata** *Stgr.* from *obumbrata*. Issyk-Kul is a dark leaden grey form with blackish hindwings; to which ab. **obscurior** *Stgr.* (13d) from *obscurior*. Samarcand forms a transition.

R. candida *Stgr.* (13d). Smaller and much paler than *sollers*, with similar but clearer markings; *candida*. submarginal line preceded by obscure dark wedged-shaped marks; hindwings whitish, slightly grey-tinged; underside of both wings pure white. Issyk-Kul. — Described by STAUDINGER with a? as an aberration of *sollers*.

R. electra *Stgr.* (13d). Like *devota* *Chr.*, but smaller and paler, greyish white dusted with darker; the *electra*. stigmata hardly visible; all the lines indistinct; hindwing pale fuscous, the fringe white. W. Turkestan only.

R. caradrinoides *Stgr.* (= *hydrilloides* *Alph.*) (13e). Forewing dark fuscous brown, with all the *caradri-* markings obscure; the upper stigmata faintly paler; hindwing brownish white. Recorded from the Ural Mts. *noides*. in Russia, and the Uliassutai and Changai Mts. of Mongolia.

R. hadjina *Stgr.* (15i). Like *renigera*, but the forewing darker, with a blue grey tinge, and an ochreous *hadjina*. flush along the folds; the two upper stigmata pale; hindwing dark fuscous with pale fringe. Occurs only in Syria and Asia Minor. — The ab. **zeituna** *Stgr.* is paler, ochreous grey instead of blue grey. *zeituna*.

R. ornata *Stgr.* (= *macrina* *Hamps.*) (13d). Forewing ashy grey, the central area more or less *ornata*. filled in with blackish, in which the large cream-coloured stigmata show conspicuously; all three, as well as the costal area between the subbasal and antemedian lines, are, chiefly in the ♀, tinged with red; hindwing pale fuscous, with the fringe whitish. — Described by STAUDINGER as a *Hydrilla*, from the Alexander Mts. in W. Turkestan: in 2 pairs from Kuliab Province, Afghanistan, the extreme outer margin is without the yellowish tinge of the type.

R. devota *Chr.* (15i). Much like *renigera*, but with an olive-yellow tinge; the stigmata very obscure. *devota*. Found in Armenia, and W. Turkestan.

R. renigera *Hbn.* (= *dumosa* *Donz.*) (13e). Forewing greyish ochreous, thickly dusted with fuscous *renigera*. or grey, especially the space between outer and submarginal lines; markings obscure; lines marked by dark spots on costa; stigmata faintly yellowish; hindwing greyish fuscous. — A south European species, found in Spain, France, N. Italy, Switzerland, Carinthia, Bosnia, and Hungary; also in Armenia, Asia Minor, Syria, Persia, Turkestan, and Mongolia; the Asiatic forms differ in coloration from the European; they have

turana. been separated by STAUDINGER as ab. *turana* Stgr., which is pale ochreous, with the grey tinge less conspicuous; ab. *intermedia* Stgr. (13 e), which is dark violaceous grey with markings obscure; ab. *erubescens* Stgr., *erubescens* in which the ochreous deepens into fulvous or reddish, and the markings become distinct; and ab. *funnebris* *funnebris* Stgr. (13 e), which is leaden grey; but *erubescens* and *intermedia* may well form a species apart, as STAUDINGER himself suggested.

oreas. **R. oreas** Püng. Allied to *renigera*, but the forewing pale sandy grey, with no dark suffusion; the lines and stigmata blackish and more distinct. Aksu, Mongolia.

pubica. **R. pubica** Stgr. (13 f). Forewing light orange, dusted with dark; inner line swollen into spots on both margins and at submedian fold; outer line diffuse and waved; a distinct median shade; a costal patch before the faint submarginal line; hindwing whitish, with a grey tinge; in the form *griseola* Stgr. the orange ground colour is washed with purplish grey. — W. and E. Turkestan and Mongolia.

umbrifera. **R. umbrifera** Alph. (13 f). Forewing pale brickred dusted with dark scales, the marginal third suffused with fuscous; stigmata undefined; the reniform a dull lunule preceded by a diffuse fuscous median shade; band before submarginal line darker; hindwing dark fuscous, the basal half paler; underside of both wings and the fringes pale pinky ochreous, with a broad dark fuscous marginal border. — A local species, found hitherto only in Turkestan and Mongolia, easily distinguished by the underside.

fimbriola. **R. fimbriola** Esp. (= *maravigna* Dup.) (13 f). Forewing dark greyish ochreous, often much suffused with fuscous; stigmata of the ground colour, often indistinct, the upper two always separated by a fuscous black blotch forming part of a thick median shade; submarginal line preceded by a blackish shade; the marginal area fuscous; hindwing fuscous brown. — The ground colour of ab. *raddei* Chr. (13 f) is paler and brighter, the dark suffusion less, and the markings clearer; the underside likewise much paler. — A south European species, found in France, Spain, N. Italy, Switzerland, and Hungary; occurring also in Western Asia, in Armenia, Asia Minor, Syria, Persia and W. Turkestan, these Asiatic examples being usually the form *raddei*. Larva dark brownish grey; dorsal and subdorsal lines paler; between them on each segment two oblique black streaks; similar streaks also between the subdorsal and the conspicuous dark lateral lines; thoracic plate brown with 3 white streaks; head shining brown; on a variety of lowgrowing plants.

brunnescens. **R. brunnescens** Hamps. (13 g). Scarcely distinguishable from *canescens* Bth. from Japan and West China. Described by HAMPSON from a single ♂ from Hai-ning, N. China.

praecurrens. **R. praecurrens** Stgr. (= *bisagittata* Graes.) (13 g). Much resembling *praecox* L. in shape and colour; the band before submarginal line broader and duller vinous, containing distinct black wedged markings between the veins; the stigmata greenish white; the orbicular not round but, like the reniform, more figure of 8-shaped, with similar dark grey centres. — Evidently a development of *praecox*; found at present only in Amurland and Japan.

praecox. **R. praecox** L. (= *praeceps* Schiff.) (13 g). Forewing narrow and elongate, dull pale green, dusted with whitish; the three stigmata ochreous concisely black-edged; orbicular round, with a rounded rufous centre, reniform with a fine angled line swollen at each end; submarginal line preceded by a dull vinous band; apex whitish; hindwing fuscous brown. In Northern Europe this species occurs in Britain, France, Germany, Scandinavia, and Russia, also in Switzerland; and in Northern Asia in Mongolia, Amurland, and Japan: — The ab. *flavomaculata* Graes., bluish green with the ochreous tints more yellow and the hindwings much darker, is confined to the Asiatic localities, but LEECH states that some Irish specimens resemble it. — Larva dark or light brown or ochreous; becoming grey green laterally; lines whitish; the dorsal swollen into a row of confluent blotches with darker edges; on grasses and low plants, especially on coast sandhills.

22. Genus: **Nyssocnemis** Led.

Frons smooth; all the tibiae spined, the spines fine; antennae of ♂ strongly bipectinate to apex, of ♀ also with short pectinations bearing a bristle; forewing broad.

Type *N. obesa* Ev., the only species.

obesa. **N. obesa** Ev. (= *eversmanni* Led., *ledereri* H.-Sch.) (13 g). Forewing purplish blackbrown; inner line oblique; claviform defined by black; orbicular oblique, with dark edge and centre; reniform narrow, white, with red brown double centre; submarginal line waved, ochreous, preceded by a dark shade; hindwing yellowish white, the terminal third fuscous, beyond a dark outer line. Mainly an Asiatic species, found in the Altai Mts. in W. Siberia, in E. Siberia and Amurland; also in S. Russia.

23. Genus: **Opigena** Bsd.

Frons smooth and shining; head and thorax strongly tufted; the antennae also, which in the ♂ are simply pubescent, have a tuft of scales on basal joint; second and third segments of palpi with the hairs produced to a point; forewing narrow, with the costal and inner margins nearly parallel; tibiae all spined.

Type *O. polygona* F.

O. polygona F. (= *nigrofulva* Esp., *pyramis* Borkh.) (13g). Forewing grey brown, suffused *polygona*. with purplish fuscous; paler specimens have the inner marginal half brownish ochreous; claviform stigma small, black-edged, sometimes wholly black; orbicular and reniform with pale centres and double brown outlines, the reniform always the paler; cell blackish; a dark costal bar before submarginal line; hindwing greyish fuscous, paler towards base; the fringe pale. Occurs throughout the south of Europe, in Asia Minor, Turcomania, and Siberia. Larva green with a darker white-edged lateral line, feeding on various low plants.

24. Genus: **Hermonassa** Walk.

Differs from **Opigena** Bsd. only in the less distinctly tufted head and thorax, and in having the terminal segment of palpi, which varies in length, smoothly scaled. A group of narrow-winged, generally small-sized species.

Type *H. consignata* Walk. from India.

H. cecilia Btlr. (13h). Forewing brownish; veins at base pale; all three stigmata blackish with fine *cecilia*. ochreous outlines; inner line pale, preceded by black marks between veins; outer line strongly dentate; a dark costal patch before submarginal line; hindwing brownish fuscous. China and Japan.

H. arenosa Btlr. Smaller than *cecilia* Btlr.; forewing sandy grey with the markings all very distinct; *arenosa*. the stigmata with more angular outlines. Tokio, Japan.

H. consignata Walk. (13h). Forewing deep red brown, often with a vinous or olive tinge in costal *consignata*. half, sprinkled with blue-grey scales; stigmata deep black with pale black-edged rings; the claviform crossed by the inner line; the orbicular large and rounded; the reniform vertically oblong, stout; hindwing brownish. — Described from N. India in the first instance, but occurring in Kashmir and Tibet.

H. lunata Moore (13h). Forewing purplish brown like the thorax; differs from *consignata* in the *lunata*. shape of the stigmata; the claviform small, bullet-shaped; the orbicular broadly conical, the point towards base; the reniform narrower and distinctly lunate; hindwing glossy, greyish. Kashmir and Tibet.

H. chalybeata Moore. Forewing fuscous brown, with slight blue-grey dusting; all the markings *chalybeata*. obscured; the claviform stigma obsolete. Yatong, Tibet.

H. clara Leech (15h). Forewing rufous ochreous; stigmata small, black outlined with white and black; *clara*. a distinct bent median shade; hindwing dull whitish, the veins and termen fuscous grey; tegulae tipped, with whitish. Described by LEECH from a single ♂ from Pu-tsu-fong, W. China.

H. pallidula Leech (15h). Forewing whitish ochreous; lines distinct, brown; stigmata dark brown *pallidula*. ringed with pale; claviform obsolete; hindwing fuscous whitish. Omei-shan, W. China.

H. finitima spec. nov. Forewing dark brown, with the base and costal area to beyond middle olive- *finitima*. green; stigmata edged with pale and then with black; hindwing fuscous. Kashmir and Tibet. — Nearest to the Indian *incisa* Moore, of which the forewing is wholly olive-green.

25. Genus. **Amphitrota** gen. nov.

Distinguished from **Rhyacia** by the abdomen of the ♀ having a pair of large foveal depressions on the sides of the penultimate segment; the ♂ with the claspers long and exerted; face smooth; antennae of ♂ ciliated; palpi with second segment hairy in front.

Type *A. unicolor* Walk.

A. unicolor Walk. (= *clandestina* Harris, *nigriceps* Walk.) (v. Vol. VII). Forewing greybrown, dusted *unicolor*. with darker; markings like those of *ravida* Schiff.; head and tegulae and often the thorax black brown, much darker than the abdomen. The types were all from N. America, but the species has been found in Kamtschatka. — Larva pale mottled with brown; a narrow pale dorsal line; rows of subdorsal and lateral stripes on segments 5 to 12, the former large and white-edged; on all low plants.

A. suecica Auriv. (15h). Forewing reddish brown with a purplish gloss and dusted with fuscous; *suecica*. orbicular and reniform small, with slight black edging; otherwise, like the last species, greatly resembling *ravida* Schiff. Scandinavia, and S. E. Russia.

26. Genus: **Perissandria** *gen. nov.*

♂ fully developed, as in *Rhyacia*; ♀ only one-fourth as large as ♂, with hindwings aborted, and slight slender abdomen: superficially like a dull Tineid rather than a Noctuid; the contrast between the sexes is absurd.

Type *P. argillacea* Alph.

- argillacea.* **P. argillacea** Alph. (= decolor *Stgr.*, agama *Stgr.*) (13h). ♂: forewing very variable; either uniform greyish ochreous without markings of any kind; or suffused with pinkish brown, with the upper stigmata only, generally grey with pale rings, rarely blackish; — in one example, ab. **lineata** ab. nov. (13h), the inner and outer lines are double, waved, and marked by dark scales; — or suffused with dull reddish, the lines all marked with blackish scales and the stigmata white, ab. **albistigma** ab. nov. (13h); the costa mottled dark and light; in all but the palest there is a dark dash at base of cell; hindwing pale to dark grey; ♀ dingy grey or yellowish grey, without markings. Kuku-Nor, Tibet.
- poliochroa.* **P. poliochroa** Hamps. Forewing of ♂ stone grey with a greenish tinge; lines black; the stigmata with a thick black edge; fringe whitish, with two dark lines through it; hindwing pale grey; fringe white; ♀ paler, with the markings minute; the stigmata replaced by two dark dots. Gyantse, Tibet.

27. Genus: **Spinipalpa** Alph.

Distinguished, according to ALPHÉRAKY, by the terminal segment of palpi ending in two horny spines; frons smooth; all the tibiae strongly spined; eyes naked, but ciliated; thorax and legs rough-haired; antennae bipectinate.

Type *S. maculata* Alph.

- maculata.* **S. maculata** Alph. (= aletes *Hamps.*). Forewing pale brownish grey; costa at base and the outer veins paler, somewhat grey; no stigmata or cross lines; the wing is marked instead by longitudinal black streaks, at base, in the cell, and between the veins of the disc and outer margin; hindwing uniform brownish grey; thorax like wings; tegulae marked with a white bar. Described from a single ♂ from Amdo, Tibet; — also occurs in Sikkim, whence comes the type of *alates* *Hamps.* who compares the insect in appearance to a *Leucania*.

28. Genus: **Xestia** Hbn.

Frons smooth; all the tibiae spined, and the foretibiae also fringed on outer side with long hair; pectus rough-haired; forewing with apex somewhat produced; the two lines approximating on inner margin.

Type *X. ochreago* Hbn.

Section I: Antennae of ♂ moderately bipectinated to near apex.

- antiqua.* **X. antiqua** *Stgr.* (15h). Forewing grey, with slight brown markings: some brown scales near base, a suffusion along vein 1, a small spot at lower end of cell, and patch on costa before subterminal line also brown: hindwing dark fuscous. Occurs in W. Turkestan.
- koepfeni.* **X. koepfeni** Alph. (15h). Forewing pale grey-brown, whiter towards base; the two lines both distinct, marked on costa by dark spots; stigmata obscure, the orbicular oblique, the reniform small; hindwing pale grey with dark cellspot. W. Turkestan.
- ochreago.* **X. ochreago** Hbn. (= ochrojois *Hbn.*, rubecula *Tr.*) (13i). Forewing ochraceous tinged with red; lines fine and indistinct; upper stigmata large, brown-edged, the reniform with lower lobe dark; a diffuse dark shade before submarginal line; hindwing rufous ochreous, paler just before terminal line. A local species found in France, Switzerland, and Italy; also recorded from Armenia.
- Section II: Antennae of ♀ with pedicellate fascicles of cilia.
- miniago.* **X. miniago** *Frr.* (13i). Forewing ochreous brown with a pink flush; lines fine, whitish, not dentate; *variago.* stigmata with slight pale outlines; hindwing white. — The form **variago** *Stgr.* has fuscous irroration on forewing, head, and thorax. — An eastern species, found in S. Russia and Armenia; Siberia and Turkestan.
- xestiodes.* **X. xestiodes** *Hamps.* (13i). Forewing rufous ochreous, darker beyond inner and before submarginal line; inner and outer lines rufous, finely waved; stigmata outlined with rufous, the upper two paler; hindwing fuscous ochreous. Goorais Valley, Kashmir.
- fuscisignata.* **X. fuscisignata** *Hamps.* (13i). Forewing rufous ochreous; lines whitish with darker edges; stigmata with pale outlines; the orbicular large, the reniform dark in both lobes; a narrow shade before submarginal line; hindwing ochreous yellow. — Described by HAMPSON from a single ♀ from the Goorais Valley, Kashmir.

X. brunneago *Stgr.* (13k). Forewing rufous ochreous, suffused with brownish; lines brown, single, *brunneago*. the outer dentate; stigmata brown-edged; the claviform small and narrow; reniform with lower lobe dark; hindwing ochreous, tinged with fuscous externally. Tibet, Kuku-Nor and Amdo.

29. Genus: **Aplectoides** *Btlr.*

Frons smooth; antennae of ♂ typically ciliated; separated from *Rhyacia* by the foretibiae being only slightly spined and on the inner side only. A genus of alpine and arctic species, of which only two are palaeartic, all the rest, the type *A. condita* *Guen.* included, being N. American.

Section I: Antennae of ♂ with strong pectinations nearly to apex.

A. propitia *Püng.* Almost exactly like *A. speciosa* *Hbn.*, but much smaller; the reniform stigma *propitia*. narrower and more hollowed out, the outer line less strongly dentate; distinguished at once by the pectinated antennae. Described by PÜNGELER from a good pair from Kuku-Nor, Tibet.

Section II: Antennae of ♂ ciliated only.

A. speciosa *Hbn.* (= *schoenherri* *Guen.*, nec *H.-Schöff.*) (13i). Forewing whitish, black-dusted, a short *speciosa*. black basal streak; inner and outer lines double, white with black edges; claviform stigma grey, black-edged; the other two pale grey with white black-edged borders, the orbicular elliptical; a row of black teeth before submarginal line; hindwing greyish, with traces of discal spot and two grey outer lines. The palaeartic localities for this species are Germany, Switzerland, Scandinavia, and Russia in Europe, and Mongolia in Asia. — The form **obscura** *Frey* (13k) from Switzerland is blackish, with the white of the *obscura*. lines and stigmata conspicuous; — **arctica** *Zett.* (13k) from Lapland and **aegrota** *Alph.* from Mongolia are *arctica*. both small, the former suffused with grey, the latter pale; — **janae** *Herz* from N. Siberia is smaller, like *aegrota*. *aegrota*. *janae*. but darker, as in *obscura*, some examples being almost black. — Larva shining brown, with black mottling above, the ventral surface greenish; dorsal and subdorsal lines white, with a row of oblique forked streaks between them; lateral lines yellowish; on *Vaccinium* and other mountain plants.

30. Genus: **Anomogyna** *Stgr.*

Like *Aplectoides* in build and appearance, but the foretibiae are altogether without spines, and those of the middle and hind tibiae are fine. — A genus of arctic species, dubiously distinct from *Eurois* *Hbn.*

Type *A. laetabilis* *Zett.*

A. laetabilis *Zett.* (= *schoenherri* *H.-Sch.*, *distensa* *Er.*) (13k). Forewing dull brownish grey, the *laetabilis*. basal and terminal areas and the upper stigmata paler; lines and edges of stigmata blackish; orbicular roundish, open above; hindwing dull whitish, dusted with grey, especially towards termen, with dark cellspot and traces of two grey outer lines. Scandinavia, and Finland. — ab. **minor** *Herz* from N. Siberia is smaller *minor*. and paler than the type form; the ♂♂ with broader rounder forewings and the ♀♀ with the apex subacute.

A. obliterated *Zett.* (18a). Differs from *laetabilis* *Zett.* in the forewing being much more rounded in shape *obliterated*. and coarser in scaling; the marginal shade not so dark on forewing and absent altogether on hindwing, which is uniform grey brown. Lapland.

A. sincera *H.-Sch.* (= *zelleri* *H.-Sch.*) (13k). Forewing brownish grey with dark irroration; a short *sincera*. black streak from base; stigmata with black outlines, the two upper large and pale; submarginal line preceded by black streaks, the two beyond cell being prominent; hindwing dusky grey. — Mountains of Switzerland, Germany, Scandinavia, and Finland; Amurland. — In the form **rhaetica** *Stgr.*, occurring in the *rhaetica*. Alps, the whole forewing is browner.

A. albuncula *Ev.* (= *subgrisea* *Stgr.*) (13k). Forewing bluish grey with dark irroration; a sinuous *albuncula*. black streak from base; lines obscure, defined by bluish white; claviform stigma small, black; orbicular and reniform bluish white, black-edged; hindwing pale fuscous. Siberia.

A. gelida *Sp.-Schn.* (= *comparata* *Sp.-Schn.*, nec *Moeschl.*) (14a). Forewing fuscous grey, a black *gelida*. streak from base below cell; claviform long, with black edges, which are continued as a black streak to outer line; orbicular stigma large, edged with pinkish and then with black; reniform a diffuse pinkish patch; hindwing ochreous-whitish. Norway and Sweden; Lapland; N. Siberia. — The ab. **mevesi** *Auriv.* has both *mevesi*. wings brownish, the forewing without the pinkish patch on reniform.

A. vega *Herz.* Forewing elongate, ashy grey; the lines only plain towards inner margin; orbicular *vega*. stigma with pointed ends, reniform with yellowish brown centre, both sharply outlined with black; two black dashes before outer margin, and a thin black streak from base; hindwing uniform pale grey, darker along termen. N. Siberia.

leucocyma. **A. leucocyma** *Hamps.* Forewing red brown, with dark dusting towards base; the veins black; a black streak below base of cell; stigmata outlined in black; the claviform narrow, emitting a black streak to outer line; orbicular wedged-shaped, oblique; reniform with whitish lunule on outer edge; submarginal line white, wavy, accompanied by black streaks; hindwing dull white, tinged with brown externally. — Described by HAMPSON from 2 ♀♀ only, from Nubra, Kashmir.

31. Genus: **Eurois** *Hbn.*

Frons smooth; palpi porrect, hairy, the terminal segment not elongated; foretibiae hairy, without spines.

Type *E. prasina* *F.*

- prasina*. **E. prasina** *F.* (= *herbida* *Hbn.*, *egregia* *Esp.*, *mixta* *Haw.*, *herbacea* *Guen.*) (14a). Forewing olive green, variously tinged with dark green or blackish; a green-tinged cream-coloured or whitish blotch between the reniform stigma and outer line; stigmata dark green edged with black; inner and outer lines black, conversely edged with white, or whitish green, or concolorous; hindwing fuscous with a paler fringe.
- jaspidea*. Generally distributed through Europe and Northern and Central Asia to Japan. — In **jaspidea** *Bkh.* the *pallida*. pale patch beyond the reniform stigma is wanting and the stigmata are blacker; ab. **pallida** *Tutt* represents the extreme pale form, the whole wing being whitish green, in which the white patch beyond the reniform *suffusa*. is absorbed, and the lines and shades are distinct only in the costal half of wing; — ab. **suffusa** *Tutt* is a rare form in which the green tints are superseded by red brown with the area round the stigmata blackish;
- albimacula*. — in **albimacula** *Hormuz.*, from the Bukowina, the ground-colour is a mixture of dark and light grey, *lugubris*. with the patch beyond the reniform clear white, or filled in with grey; — **lugubris** *Petersen* from Esthland is dark brownish grey with only slight traces of green or white colouring. — Larva purplish brown, with a pale dorsal line intersecting a row of blackish dorsal blotches; spiracular line pale, with a dark edge above; on various low growing plants.
- virens*. **E. virens** *Bth.* (14a). Forewing bright moss green, speckled with dark; the veins lilac-grey, also dark-mottled; costa with black spots; lines green, black-edged; stigmata with green edges, their centres and the cell area blackish; submarginal line preceded by blackish wedged-shaped spots; hindwing dull blackish, with white fringe. — Found in Amurland, West China, Japan, and Corea; originally described from N. India.

32. Genus: **Cerastis** *Tr.*

Agrees with *Mythimna* and *Orthosia* in having the fore tibiae without spines; the frons smooth; pectus and abdomen hairy, the latter flattened. The imagos of the European species appear in spring, the larvae feeding in the summer and passing the winter as pupae.

Type *C. rubricosa* *F.*

Section I: Antennae of ♂ bipectinated.

- leucographa*. **C. leucographa** *Schiff.* (14b). Forewing pale brickred; the median and narrow terminal area brown; upper stigmata prominently pale ochreous grey with dark centres; teeth of outer line very long, the veins dark beyond; hindwing dirty grey; veins and a diffuse terminal shade darker. Occurs in France, Germany, and *lepetitii*. Switzerland, and in Britain, Denmark, and Russia in the North; also recorded from Amurland. — **lepetitii** *Bsd.* *suffusa*. is wholly redbrown, without the pale submarginal band, the stigmata without pale edging; — **suffusa** *Tutt* is an extreme form in which the dark median shade is expanded to cover the whole forewing, making it *rufa*. deep blackish red; — **rufa** *Tutt* is pale bright red, much paler than the type. — Larva green or reddish, with darker mottling; dorsal and subdorsal lines pale; a row of dark lateral oblique stripes; spiracular line pale greenish; feeds on various low plants during summer time, hibernates as pupa, and emerges in spring.
- pallescens*. **C. pallescens** *Bth.* (= *lata* *Stgr.*) (14b). Forewing dull red brown; basal area above vein 1, the semicircular orbicular and costa above it pinkish ochreous dusted with grey; reniform stigma redbrown with inner edge pale and outer partly black; cell velvety black; lines indistinct; the submarginal pale; hindwing grey, the fringe pink. Amurland and Japan.
- caelebs*. **C. caelebs** *Stgr.* (14b). Like the grey form of *sobrina* *Bsd.*, but the ♂ has strongly pectinated antennae. Kuku-Nor and Amdo, Tibet.
- Section II: Antennae of ♂ serrate and fasciculate.
- rubricosa*. **C. rubricosa** *F.* (14b). Forewing red brown, varied with grey, sometimes with a purplish-brown tinge; stigmata grey with fine dark outlines; a broad angled median shade; lines all starting from black costal spots; hindwing fuscous grey; fringe grey. Generally distributed in Europe, except Spain, and found *rufa*. in W. Siberia and W. Turkestan. — The form **rufa** *Haw.* (14b), the usual British form, is almost wholly

rufous, and the fringe pink. — **mucida** *Esp.* is dark purplish red with the costa and subterminal shade *mucida*. slaty grey; — **pilicornis** *Brahm* has the red ground almost obliterated by grey suffusion, the cross lines *pilicornis*. brownish: of this **pallida** *Tutt* is merely an extreme pale form; finally, **mista** *Hbn.* is brickred with costa, *pallida*. cross lines, and outer margin grey. — Larva reddish brown, with dark bands on dorsal segments; dorsal *mista*. line slightly paler: subdorsal pale yellow, narrow; spiracular line brownish, yellow in front; feeding on all low plants.

Section III: Antennae of ♂ ciliated.

C coryphaea *Püng.* (14c). Forewing brownish pink; costal area to submarginal line and the cell *coryphaea*. lilac-grey with a pink flush; basal area below middle irongrey; lines deep brown, thickened towards costa: inner line with a spur beneath orbicular stigma: outer line fine and dentate below vein 6; stigmata large with pale edges; orbicular elongate, curved, merged above in costal streak; reniform with irongrey centre; the two separated by a brown triangle; a brownish costal patch before submarginal line; hindwing white, towards termen pinkish grey; cellmark and veins grey. Kuku-Nor, Tibet. — Described by PÜNGELER from a single ♀; the ♂ has shortly ciliated antennae.

C. sobrina *Bsd.* (= *mista* *Frr.*, *lapponica* *Frr.*) (14c). Forewing ashygrey at base, more or less *sobrina*. strongly dull brickred externally, dusted with blackish, the veins remaining grey; lines and margins of stigmata dark, but often interrupted and obscure; hindwing dull fuscous, paler towards abdominal margin, altogether paler in ♀; fringe pinkish. A mountain species occurring in Scotland, Sweden, and Russia, in S. France, Switzerland, and Germany, and in the Altai Mts. in W. Siberia. — The form **grüneri** *Guen. grüneri*. (= *suffusa* *Tutt*) is greyer, without the red tinge. — Larva reddish-brown, mottled with grey; the lines slightly paler; on *Calluna* and probably other low-growing mountain plants.

33. Genus: **Orthosia** *Tr.*

Frons smooth; mid and hind tibiae spined: foretibiae clothed with hair, without spines; pectus hairy: antennae of ♂ serrate, with sessile fascicles of cilia. In scaling and markings the species resemble those of *Antitype* *Hbn.*

Type *O. caecimacula* *F.*

O. caecimacula *F.* (= *millegrana* *Esp.*, *respersa* *Brahm*) (14c). ♂: Forewing grey with black *caecimacula*. irroration, tinged with brownish in marginal third, especially just beyond the reniform; stigmata large and pale, with brown outlines; the lines obscure, but the inner shows a black brown-edged mark below median vein; submarginal line pale, dentate; hindwing greyish white, the veins darker; a diffuse dark marginal shade: ♀ darker, more brownish grey, in both wings. — France, Switzerland, Italy, Sicily, Dalmatia, Germany, Hungary, and Asia Minor. — The form **sibirica** *Stgr.* (14d) from the Altai Mts. in Siberia, is paler, *sibirica*. with the ground colour ochreous yellow. — Larva greenish brown, dark brown on dorsum, with fine dark dorsal and subdorsal lines, and a white lateral stripe, feeding on low plants.

O. senex *H.-G.* (= *vetula* *Bsd.*) (14d). ♂: Forewing pale grey, irrorated and in parts suffused *senex*. with darker, especially on inner margin in median area and beyond the reniform; claviform stigma small and dark; upper stigmata large, pale grey with dark edges; all the lines indistinct; hindwing white, with veins and margin faintly grey: ♀ darker grey, the hindwing grey. — Coextensive in range with *caecimacula*, but not occurring in Siberia. — The form **mediorhenana** *Fuchs* (14d, e) has the forewing uniform grey, *mediorhenana*. without dark dusting, and with scarcely any markings; a faint ochreous flush along both folds. — Larva ochreous, dotted with brown; dorsal line slender, dark: lateral broad whitish; venter green: on lowgrowing plants.

O. indiana *Guen.* (= *violacea* *Bthr.*) (14e). ♀: Forewing dull olive-brown, sprinkled with whitish, *indiana*. and with purplish red suffusion at base, along median shade, and before submarginal line; stigmata margined, the reniform also filled up, with reddish; a white dot at lower angle of cell; hindwing brownish fuscous; ♂ brown, with no reddish tinge whatever: the two lines black and distinct; base of inner margin of forewing beneath with an oblong white patch. — GUENÉE's type, a ♂, and BUTLER's, a ♀, both from N. India: but, like so many others, the species extends into Kashmir.

34. Genus: **Mythimna** *Tr.*

Frons smooth; pectus rough-haired: foretibiae without spines but thickly haired; antennae of ♂ ciliated. Forewing with inner and outer lines approximating on inner margin, neither waved nor dentate. Imago emerging in autumn, larva feeding up in summer on forest trees.

Type *M. oxalina* *Hbn.*

acetosellae. **M. acetosellae** F. (14f). Forewing greyish ochreous, flushed with brownish or rufous, and with dark irroration: lines pale with dark edging, approximating on inner margin: upper stigmata large with pale outlines: a submarginal row of dark spots between the veins; hindwing greyish ochreous, paler towards base: palpi pink, abdomen ochraceous. A south European species, occurring in France, Germany, Italy, Hungary, and S. Russia: also in Armenia and Asia Minor, and in W. Siberia; the form found in this last locality, **eremicola** Stgr., is paler, but covered with black striations. — Larva dull flesh colour, dusted with black: dorsal line dull ochreous; head and thoracic plate brown; feeding on oak.

oxalina. **M. oxalina** Hbn. (14e). Forewing fuscous grey, sometimes slightly reddish or ochreous; median area darker; lines pale, closely approximating on inner margin; stigmata dark grey with pale rings; an obscure shade, often macular, before submarginal line; hindwing paler, with traces of median and submarginal dark shades. Closely allied to *acetosellae* and with similar range, but smaller and greyer. — Larva pale brown: dorsal line pale; lateral line blackish above, yellowish white below: head brown: thoracic plate black: on Alder and Poplar.

35. Genus: **Hypoxestia** Hamps.

Frons smooth; tibiae fringed with hair; only the mid and hind tibiae spined; antennae of ♂ ciliated, setulose; forewing broad, the termen rounded.

Type *H. dilatata* Btlr.

dilatata. **H. dilatata** Btlr. (14f). Forewing purplish brown; the markings obscure; lines even, not dentate; a darker band before outer line; upper stigmata large, with dark edges, the orbicular greyish; hindwing fuscous, with the fringe pale. Japan and E. China.

fuscostigma. **H. fuscostigma** Brem. (= *lubentia* Btlr., *hysgina* Oberth.) (14f). Forewing purplish brown; median area, except at margins, darker; stigmata large, with slight grey outlines; a black dot at base of cell; a black dash from base below it, and a black costal bar before submarginal line; hindwing yellowish suffused with fuscous, deeper at termen. BREMER'S and OBERTHÜR'S types both from Amurland; BUTLER'S from Japan.

36. Genus: **Naenia** Stph.

Frons smooth; palpi upturned, the terminal segment bare; antennae of ♂ ciliated; foretibiae without spines; forewing broad and short.

Type *N. typica* L.

typica. **N. typica** L. (= *excusa* Esp., *venosa* Hbn.) (14g). Forewing brownish fuscous, the veins pale; edges of the upper stigmata whitish; the cell blackish; lines pale with dark edges; hindwing brownish

issyca. fuscous. — Common throughout Europe and found in Armenia, Turkestan, and Siberia. — The form **issyca** *brunnea* Püng. from Issykkul is redder, and has the termen less crenulate. — **brunnea** Tutt has the ground colour ochreous brown with the veins pale ochreous instead of white. Larva greenish grey, darker dorsally, with subdorsal black patches and a row of indistinct pale oblique streaks along the sides; spiracular line pale, pinkish ochreous, broadly black-edged above; ventral surface yellowish; on dock and various other low plants.

contaminata. **N. contaminata** Walk. (14g). Forewing earth brown, roughly dusted with fuscous; costa black-spotted; lines slightly paler; upper stigmata black-edged, separated by a square blackish blotch; hindwing dark fuscous, with pale fringe; underside of both wings with a velvety black waved outer line. A species only found in Eastern Asia, Amurland, China, Japan, and Korea.

37. Genus: **Epilecta** Hbn.

Frons smooth; palpi porrect, elongate, the terminal segment bare; antennae of ♂ ciliated; foretibiae without spines; forewing elongated, of uniform width; markings distinct; hindwing yellow.

Type *E. linogrisea* Schiff.

linogrisea. **E. linogrisea** Schiff. (14g). Forewing greyish white, diffusely dark grey along costa and inner margin and especially on inner line below median vein; claviform stigma slight, marked by a black line; orbicular and reniform with fine black rings; the former round with pale grey centre, the latter with centre blackish; a quadrate black spot on costa before submarginal line, beyond which the marginal area is brown red; hindwing yellow, with broad black border; the base and costa grey; fringe ochreous. — Occurs chiefly in the South of Europe, Spain, Greece, France, and Germany, but also found in Scandinavia; in Asia in

lutosa. Armenia, Syria, and Asia Minor. — ab. **lutosa** Stgr. has the ground colour yellowish grey instead of white. — Larva purple brown, with double black dorsal line enlarged to patches on the four front segments,

on which also the white and black lateral line is wholly black; a row of oblique black lateral stripes on a grey band; on *Primula acaulis*.

E. accipiter *Fldr.* (14h). Forewing dull purple brown; costal area pale green, more broadly at *accipiter*. base and beyond cell; lines and stigmata tinged with vinous; stigmata black-edged, the reniform with curved green central line; submarginal line preceded below costa by two black sagittate marks; hindwing pale yellow with broad fuscous border; fringe yellow; head and tegulae ochreous, streaked with brown and sprinkled with black. — Yatong, Tibet. Recorded originally from N. W. Himalayas.

38. Genus: **Triphaena** *Hbn.*

Frons smooth; tibiae hairy; only the mid and hind tibiae spined; palpi hairy, the terminal segment short; forewing long, with subparallel margins, as in *Epilecta*: antennae of ♂ ciliated. A genus of stoutly built moths, with strongly developed legs.

Type *T. interjecta* *Hbn.*

T. efflorescens *Bthr.* (= *jankowskii* *Oberth.*) (14h). Forewing mossy green in basal two-thirds, then *efflorescens*. purplish: veins lilac grey, black-spotted; stigmata green, with dark centres and black edges; cell black; a large diffuse white blotch beyond cell; hindwing orange, with broad black border; costal and inner margins and a submedian streak from base more narrowly black; cellspot large and black; fringe yellow. Restricted to E. Asia, occurring in Amurland and Japan.

T. semiherbida *Walk.* (= *decorata* *Bthr.*) (14h). Forewing pale green, mixed with lilac- or purplish- *semiherbida*. grey, especially on inner and outer margins and along the veins; upper stigmata rufous and green with black lateral edging; a black dagger-shaped mark below costa before submarginal line; hindwing orange with broad black border; the inner margin from base brownish; cellspot large and black. Occurs in W. China and Japan; originally described from N. India, where it is widely spread.

T. fimbria *L.* (= *domiduca* *Hufn.*) (14i). Forewing ranging from pale ochreous and rufous in the ♀ *fimbria*. to redbrown and olivegreen in the ♂; ochreous ♂♂ are rare; markings slight in the ♀, strong in the ♂; inner line dark; outer and submarginal pale; upper stigmata large, pale-edged, often touching; a dark costal blotch before submarginal line; hindwing and fringe orange, with a very broad black border; the pale rufous forms are known as ab. *rufa* *Tutt* (14i), and the deep redbrown forms as ab. *brunnea* *Tutt*; — *rufa*. the dark olivegreen ♂♂ are *solani* *F.* (14i), while the paler more ochreous green specimens (? ♂♂) *brunnea*. are ab. *virescens* *Tutt*; — a rare and handsome form of the ♂ called by *Tutt* ab. *brunnea-virescens* has *sotani*. the deep redbrown and olivegreen tints combined. — Generally distributed throughout Europe, and *virescens*. occurring in Algeria, Asia Minor, and Armenia. — Larva reddish-ochreous, paler at the sides and spotted *virescens*. with brown; dorsal line paler; a dark pale-edged bar across the 12th segment; spiracles pale on dark spots; feeds on *Primula*, and probably other low plants.

T. interjecta *Hbn.* (15a). Forewing greyish rufous, sometimes darkened with fuscous; lines and *interjecta*. stigmata a little darker, often very obscure; hindwing orange yellow with a broad marginal black border; costal and inner margins, a submedian streak from base, and the cell blackish; fringe yellow. Found throughout South and Central Europe and in Britain. — Larva pale ochreous with black dots; the lines pale, with darker edges; on various low plants.

T. janthina *Schiff.* (15a). Forewing purple and brown: costal edge, like the head and shoulders, pale *janthina*. ochreous; upper stigmata edged with ochreous; claviform absent; a chestnut red costal blotch before submarginal line; hindwing orange yellow with a broad black outer border, the base and inner margin suffused with blackish. The species agrees with *T. fimbria* in distribution. — In ab. *rufa* *Tutt* (15a), the whole *rufa*. forewing is bright rufous; on the other hand the form *latimarginata* *Röb.* (15a), occurring only in the *lati-* Harz Mts., is deep purple black, with a very broad black border in the hindwing; in ab. *flavomaculata* *Spuler* the orange ground is reduced to a rounded blotch at centre. — Larva greenish ochreous, the dots *flavo-* black; dorsal line pale: a series of oblique dorsal and lateral marks, sometimes obscure, and two black- *maculata*. spots on 12th segment: on various low plants.

T. undosa *Leech* (15a). Forewing grey brown, darker in parts; median area black above median *undosa*. vein, with wavy lines below it: the stigmata black-outlined; submarginal line whitish, wavy, preceded by a black costal patch; hindwing dark fuscous, the fringe ochreous yellow. Found only in Japan.

39. Genus: **Eueretagrotis** *Smith.*

Characterised by the rough-haired pectus and femora; second segment of palpi broadly fringed in front with hair, the third depressed: antennae of ♂, in the palaearctic species, with pedicellate or tuberculate fascicles of cilia.

Type *E. sigmoides* *Guen.* from N. America.

- patricia*. **E. patricia** *Stgr.* (15 b). Forewing pale brown with deep brown suffusion; the inner and outer lines, especially at costa, paler; sometimes the whole basal area; median area dark, especially above middle; upper stigmata dark, the black annuli mixed with ochreous scales; claviform quite small; hindwing fuscous; antennae of ♂ with pedicellate fascicles of cilia. Amdo and Kuku-Nor, Tibet.
- agathina*. **E. agathina** *Dup.* (= *lidia* *Bsd.* nec *Cram.*, *albimacula* *Stph.*, *leucographa* *Stph.*) (15 b). Forewing greyish rufous; costal area paler for $\frac{2}{3}$, edged below at base by a fine dark streak; claviform stigma small and obscure; cell black brown; the two stigmata pale, orbicular variable, sometimes large, sometimes contracted to a white spot; hindwing dark grey; antennae of ♂ serrate, with sessile fascicles of cilia. A heath-frequenting species, found in Britain, France, Belgium and Spain. In the form **hebridicola** *Stgr.*, from the Hebrides, the forewing becomes paler and loses the red tinge; in **scopariae** *Mill.* from France the red tinge is overpowered by black suffusion. — Larva green, with pale dark-edged lines, the spiracular broad and conspicuous; on Calluna.

40. Genus: **Rhynchagrotis** *Smith.*

Differs from *Eueretagrotis* in the much less hairy palpi, pectus, and femora; terminal segment of palpi straight, not depressed.

Type *R. gilripennis* from N. America.

- chardinyi*. **R. chardinyi** *Bsd.* (= *hetaera* *Ev.*, *fuchsii* *Wendll.*) (15 b). Forewing olive grey with the shadings darker and tinged with brown, especially along costa; no claviform stigma; the other two with pale edges; a dark marginal line; hindwing orange with a broad black border and the base rayed with fuscous; fringe yellow. A local species occurring in Germany and Central Russia, in the Altai Mts. W. Siberia, Mongolia, and Amurland. Some examples have the basal half of costa and edges of stigmata white.

41. Genus: **Isochlora** *Stgr.*

Frons smooth; foretibiae fringed with hair, without spines; mid and hindtibiae spined; forewing elongate, the apex produced; either green, without markings, or yellowish, with slight and simple markings; antennae of ♂ bipectinate, of ♀ more shortly bipectinate, or merely serrate.

Type *Isochlora viridis* *Stgr.*

Section I: Antennae of ♀ bipectinate.

- maxima*. **I. maxima** *Stgr.* (15 b). Forewing and fringe bright deep green; costal edge white; hindwing dirty greenish fuscous, only the termen and fringe pale green; abdomen whitish, the dorsum dark grey; antennae fulvous. — E. Turkestan and Mongolia.
- chloroptera*. **I. chloroptera** *Hamps.* (15 b). Forewing pea green; the costal edge and tips of cilia white; hindwing white with a greenish flush; abdomen white, with middle segments green; Kashmir, Deosai plains.
- grumi*. **I. grumi** *Alph.* (15 c). Forewing very pale sulphur yellow; costal edge narrowly and inner margin more broadly rosy, the latter with slight projections at the place of inner and outer lines; a rosy spot at lower end of cell; sometimes a submarginal row of dull rosy spots; hindwing white, with grey discal lunule, and sometimes the base and inner margin tinged with dull grey; head, thorax, and abdomen pale sulphur; venter, legs, and palpi rosy; antennae of ♀ pectinated. — Kuku-Nor and Amdo, Tibet.
- xanthiana*. **I. xanthiana** *Stgr.* (15 c). Forewing pale greyish yellow; the lines and a broad median shade ferruginous; outer line lunulate-dentate; orbicular stigma a brown point; reniform a diffused fuscous blotch; fringe ferruginous; hindwing paler; palpi and legs, pectus and venter ferruginous. — Amdo, Tibet. The ♂ only is known.
- herbacea*. **I. herbacea** *Alph.* (15 c). Smaller than *viridis* *Stgr.*, differing in having the discoidal lunule black, and indications of a dusky outer line excurved round cell; hindwing white, uniformly suffused with fuscous; the fringe pure white. — Changhai Mts., Mongolia.

Section II: Antennae of ♀ serrate only.

- viridis*. **I. viridis** *Stgr.* (= *fuscovirens* *Hamps.*) (15 c). Forewing pea green: fringe green; costal edge and discoidal lunule white; hindwing whitish green with base and inner margin smoky grey; abdomen white; — in **viridissima** *Stgr.* the white lunule of the forewing is absent, and the hindwing is paler. — Siberia, Turkestan, Tibet, Kashmir.
- albivitta*. **I. albivitta** *Alph.* (15 d). Resembles *viridis* *Stgr.*, but the forewing bears a white basal streak along the submedian fold, and sometimes an additional spot in the cell. — Tibet.

I. longivitta Püng. Like *albititta* Alph., but with the white streaks in cell and from the base broader *longivitta*. and longer. — Also from Tibet.

I. leuconaura Püng. Forewing green; costa except at base and all the veins broadly white; a *leuconaura*. long fine white line along submedian fold; hindwing dull grey, with the fringe a little lighter. Antennae brownish red, with short stiff pectinations; head and thorax green; abdomen whitish. — Described by PÜNGELER from a single ♂ from Allyn Tagh, Tibet.

42. Genus: **Actinotia** Hbn.

Frons smooth; mid and hindtibiae spined; foretibiae fringed with hair only; antennae of ♂ ciliated; palpi porrect, hairy below; wings with termen suberenulate; forewings marked by longitudinal dark streaks between the veins; lines more or less interrupted and obsolete; the subterminal resolved into wedgeshaped marginal streaks. The larvae of all the species known at present feed on *Hypericum* only, hiding by day on the ground beneath leaves, pupating in a slight cocoon; the larvae of the first brood are fullfed in July, emerging in August, those of the second fullfed in September hibernate as pupae, and emerge in spring.

Type *A. polyodon* Cl.

A. radiosa Esp. (= *lyncea* Hbn.) (15 d). Forewing olive brown; some pale horizontal streaks from *radiosa*. base: orbicular stigma elongate, horizontal, narrow, pale-edged; reniform large, vertical, brown with white linear centre and outline; veins towards margin black, defined by pale olive and whitish, forming sharp wedgeshaped markings separated by dark intervals, and produced as fine white pencils through the dark brown fringe: an interrupted pale outer fascia; hindwing black with a whitish outer fascia from costa to vein 2, crossed by black veins; cell lunule large, black; fringe white. — Throughout southern Europe, and in Asia Minor and Armenia. — Larva reddish greybrown; dorsal and subdorsal lines dark with oblique streaks between them; lateral lines pale-yellow with a reddish tinge along centre, with an elongate blackish mark on each segment above it; thoracic and anal plates brown; head yellowish-brown; on *Hypericum*.

A. polyodon Cl. (= *perspicillaris* L.) (15 d). Forewing bone-colour suffused with olive brown along *polyodon*. costa and inner margin and interruptedly along termen; the reniform stigma also placed on an olive brown cloud: costa and space between veins 2 and 4 tinged with purplish pink; a black streak from base in submedian fold and a double one from inner margin near base; reniform stigma large, pale olive with linear centre and outline creamy white; veins towards margin dark, forming centre of wedgeshaped marks, 3, 4 and 7. 8 broadly edged with ground colour and cutting the dark fringe; outer line marked by dark dots on veins; hindwing bone-colour with broad brownish margin and blackish veins. Widely spread through north and central Europe, occurring in Britain and Scandinavia, Italy and Switzerland, France, Germany and S. E. Russia; also in Armenia and through Siberia and Turkestan to Japan. — Larva reddish brown, dotted with black; a subdorsal row of oblique brown marks; dorsal and spiracular lines yellow; head brown; on *Hypericum*.

A. hyperici F. (15 d). Forewing grey; a thick black streak from base below cell, above which *hyperici*. the basal area is whitish, and below it dark fuscous reddish; this colour often also filling the cell and submedian fold, and the terminal area beyond subterminal line, which is marked by a series of thick black streaks between the veins; outer line finely lunulate-dentate; orbicular and reniform stigmata brown with pale rings, the former flattened; hindwing brownish, paler in the ♂: examples from Spain (Andalusia), ♂♂, have the hindwing white, tinged with grey, and the veins dark: the abdomen pale grey, with the lateral and anal tufts pinkish; a very distinct form which may be called ab. **laetior** ab. nov. — Occurs in south and *laetior*. central Europe and in western Asia, Armenia, Asia Minor, and Syria. — Larva redbrown; dorsal and subdorsal lines yellow, edged by dark brown; spiracular line broad and yellow; on *Hypericum*.

A. conjuncta Püng. (15 d). Forewing grey irrorated with black; a black streak from base below *conjuncta*. cell: orbicular stigma narrow, oblique; reniform whitish, joined to orbicular below by a curved white streak; inner and outer lines dentate: subterminal line ending in a white patch above anal angle; terminal area dark; hindwing whitish suffused with brown, with white patches on margin at middle and anal angle, fringe whitish. — Kuku-Nor, Tibet.

43. Genus: **Palaeagrotis** Hamps.

Frons with slight truncate prominence; antennae of ♂ ciliated; mid and hindtibiae with one or two spines only; foretibiae without spines.

Type *P. inops* Led.

inops. **P. inops** Led. Forewing greenish grey, the markings dull dark leaden colour; claviform stigma small and faint; upper stigmata dark-centred; subterminal line internally well-defined; terminal area paler; hindwing dirty grey, darker along termen. — Siberia.

44. Genus: **Ufeus** Grote.

Frons smooth; mid and hindtibiae only spined; foretibiae naked; eyes ciliated; palpi short, hairy beneath; antennae of ♂ ciliated; abdomen dorsally flattened, the anal tufts large. — Type *U. satyrica* Grote from N. America; except the one here mentioned all the species are N. American.

carnea **U. carnea** Hamps. Forewing pale flesh-colour with some fuscous dusting; median area and a post-median costal patch fuscous; lines indistinct; stigmata outlined in dark; the claviform small; orbicular oblique, oval; reniform angled basewards on median vein, its centre dark; hindwing brownish ochreous. — Narkundah, Kashmir; the type, a ♀, is unique.

45. Genus: **Anhausta** Hamps.

Frons smooth; palpi hairy, porrect; eyes ciliated; antennae of ♀ ciliated; foretibiae without spines; mid and hindtibiae with a few only; tongue absent. — Type *A. exprimata* Stgr. (*Dasyppolia*). Characterised essentially by the absence of the tongue.

exprimata. **A. exprimata** Stgr. Forewing dark grey sprinkled with light grey; all the lines black, well-marked; the submarginal preceded by a black shade; orbicular stigma a black pale-edged spot; reniform with dark linear centre and pale edges; hindwing dark grey with the base paler and darker cellspot and outer line. — Issykkul, Central Asia.

46. Genus: **Blepharita** Hamps.

Frons smooth; eyes ciliated; antennae of ♂ bipectinate to near apex; mid and hindtibiae only spined; foretibiae hairy.

Type *B. amica* Tr.

amica. **B. amica** Tr. (15 e). Forewing brownish white, browner in ♂; median and terminal areas dark fuscous; upper stigmata pale, with whitish outlines and dark centres; a whitish blotch at base of costa; submarginal line dentate, with long teeth on veins 3 and 4; hindwing dull white overlaid with fuscous, with obscure cellspot, and outer and submarginal lines. — In Europe restricted to the east, Germany, Galicia, Bukovina, and Russia; also in Siberia and Amurland in Asia. — Larva dull grassgreen, dotted with yellow; dorsal and subdorsal lines darker dotted with white; lateral lines whitish; spiracles yellow ringed with dark; head grassgreen; the larvae were bred from the egg, and fed up on *Aconitum* and *Prudus padus*.

47. Genus: **Paraxestia** Hamps.

Frons smooth; mid and hindtibiae spined; the eyes overhung by cilia, an unusual characteristic in the genera with spined tibiae; head, thorax, and abdomen long-haired; the claspers of ♂ exaggerated; palpi large, the terminal segment long and naked; forewing elongate, with prominent apex; both wings with crenulate outer margin.

Type *P. flavicaudata* Warr.

flavicaudata. **P. flavicaudata** Warr. (15 e). Forewing pale brown, with an olive tinge; inner and outer lines slender, dark on a pale space; a dark shade before inner line; a dark median shade, and band before submarginal line; stigmata large, with brown lateral edges only; fringe ochreous; hindwing brownish. — A large species described originally from the Punjab, India, but occurring also in Kashmir.

Subfamily: **Hadeninae**.

In the subfamily just concluded the characteristic feature was the presence of spines on the tibiae; in the *Hadeninae*, except in two or three genera where the foretibia only is armed with a curved spine or spines, and in a few in which one or more of the proximal segments of the fore tarsus bears short clawlike spines, the tibiae are unarmed; the eyes are large and round, as in the *Euxoinae*, but in place of being smooth are here covered with very fine short erect hairs; and by this feature all the members of the subfamily can be differentiated. In all other points of structure, such as the shape and development of the palpi, frons, and antennae, and in the vestiture of the body and wings the same variability exists, but the neuration remains in nearly all cases stable.

The larvae are smooth and plump, with all prolegs present, generally of dull coloration and simple pattern, green, grey or ochreous, with longitudinal lines and stripes; the majority feed up in autumn, passing the winter in

the pupal state, though a few hibernate partially or fully fed, and postpone their pupation until spring; they live mainly on low growing plants and shrubs; but those of the concluding genera, *Leucania* and its allies, subsist solely on Gramineaceae, and their imagos are marked by narrower more elongated wings, by the paleness of their coloration, and the greater simplicity of their markings, the usual transverse lines and stigmata being less developed and very often absent, their place being taken by longitudinal shades. In many of these species the ♂♂ exhibit secondary sexual characteristics, sometimes on the parts of the body, sometimes in the structure or scaling of the wings.

1. Genus: **Barathra** *Hbn.*

Tongue well-developed; frons smooth; palpi obliquely porrect, 2nd segment hairy beneath, 3rd small; antennae of ♂ ciliated; thorax and abdomen with crests; separated from *Polia* by the presence of a curved spine or claw at end of foretibiae on the outer side.

Type *B. brassicae* *L.*

B. brassicae *L.* (= *albicolon* *Stph.*, nec *Hbn.*, *ochracea* *Tutt*) (15 e). Forewing grey-brown varied *brassicae*. with fuscous: lines pale, dark-edged; orbicular stigma rounded, reniform large, white-spotted, or filled in with white; hindwing brownish, with a paler mark near end of vein 2. — Common throughout Europe and Asia; generally double-brooded. — The insect varies in opposite directions; — ab. **albidilinea** *Har.* (15 e) *albidilinea*. is a blackish form with the reniform stigma and submarginal line white, occurring occasionally in Europe as well as in Britain; — **scotochroma** *Röb.*, a local German form, is melanic, with both wings blackish, *scotochroma*. much like *albidilinea*, but without the white submarginal line; — **unicolor** *Tutt* (15 f) has all the markings, *unicolor*. dark and light, more or less lost in the fuscous suffusion, the reniform edged only with whitish; — on the other hand **andalusica** *Stgr.* from Spain (? = *straminea* *Failla-Ted.* from Sicily and Italy) is pale grey-*andalusica*. brown with a faint ochreous flush, darker grey in ♀, with all markings obscured except the 3 stigmata which are strikingly pale, with partial blackish outline, especially on their lower edge, the claviform sometimes grey; — **decolorata** *Stgr.* (15 f) from Issykkul and other localities in Central Asia is pale greyish *decolorata*. brown, with the stigmata as in *andalusica*, but with the markings, especially the submarginal ones, not obsolete; — **canescens** *Moore* from Yarkand, which I have not seen, is, judging from the figure, very close *canescens*. to, if not identical with, *decolorata* which it antedates by 10 years. — Larva polyphagous, varying in ground colour from green to brown and blackish, with broad pale spiracular line; a dorsal hump on segment 11: feeding on all low plants.

2. Genus: **Discestra** *Hamps.*

Distinguished from *Polia* by the frons bearing a truncate corneous prominence with strong semi-circular plate below it in the middle; antennae of ♂ with short sessile fascicles of cilia.

Type *D. chartaria* *Grote*, from N. America.

D. eremistis *Püng.* (15 g). Forewing pale sandy grey, dusted with dark grey; blackish spots on *eremistis*. costa at the origin of the lines, which are double; claviform stigma small, grey; upper stigmata pale; orbicular round; reniform strongly black-edged below; hindwing dirty white, tinged with fuscous on veins and at termen, with traces of a wavy postmedian line. Transcaspia and Turkestan. — In the form **vaciva** *Püng.* the pale tints are still more developed. *vaciva*.

3. Genus: **Craterestra** *Hamps.*

Frons with shorter prominence varying in shape and development, and without a prominent plate below it: antennae of ♂ pubescent.

Type *C. lucina* *Druce*, from Central America.

C. media *Walk.* (= *latifasciata* *Moore*, *virinata* *Swinh.*) (15 f). Forewing wood-colour, central area *media*. diffusely, and marginal area beyond submarginal line concisely, fuscous brown: all three stigmata generally of the ground colour, in some cases paler, edged with black; the claviform followed by black scaling; hindwing dingy whitish with brownish-grey marginal border. — A fairly common Indian insect, occurring also in the Goooris Valley, Kashmir. Frontal prominence triangular, roughened, with a vertical ridge above.

C. hoplites *Stgr.* (15 g). Forewing grey mixed with olive brown; black streaks below base of cell *hoplites*. and on inner margin; claviform stigma black-edged, large, pointed, reaching outer line; the two upper stigmata brown, with white and black rings, orbicular oblique, elliptical; ends of veins black, defined by V-shaped white streaks, running out through the grey fringe; hindwing pale brown, outer half darker. — Found in the Ural Mts., Russia, and in W. Turkestan. — Frontal prominence heart-shaped with raised rim.

4. Genus: **Scotogramma** *Smith*.

Differs from the two preceding genera in the frontal projection not being truncate, but simply strongly protuberant.

Type *S. submarina* *Grote*, from N. America.

- trifolii*. **S. trifolii** *Rott.* (= *chenopodii* *Schiff.*, *verna* *Esp.*, *treitschkei* *Hbn.*) (15 g). Forewing grey, dark-speckled; costa black-spotted: claviform stigma small: orbicular round, pale, sometimes whitish: reniform large, the lower lobe dark grey, all three finely black-edged; veins towards termen finely black; hindwing dull whitish, with a broad border and the veins fuscous. — Common throughout Europe; in Algeria, Syria, Siberia, Turkestan, Tibet, and Kashmir. — **saucia** *Esp.* (15 g) is the form showing a tendency to an ochreous tint; — in ab. **farkasii** *Tr.* (15 h) the forewing is more variegated, light and dark, the larger pale orbicular stigma and a pale patch obliquely below it forming a prominent streak; — **indistincta** *Tutt* (15 g) has a uniform dull appearance, without speckling; — **albifusa** *Walk.*, described originally from a N. American specimen, but probably a rare general aberration, has occurred at Portland, on the chalky South coast of England: it is grey with a yellowish gloss, with a pale band as in *farkasii*, joined by a second pale oblique band from apex. — Larva varying from green to brown, thickly dark-dotted; dorsal line fine, pale, subdorsal lines broader, all black-edged: spiracular stripe broad, yellow varied with reddish. On *Atriplex* and *Chenopodium*.
- marmorosa*. **S. marmorosa** *Blh.* (= *odontites* *Bsd.*) (15 h). Forewing dark brown; the orbicular stigma conspicuously pale, with a bifid pale patch obliquely below it; claviform stigma broad, rounded at end: submarginal line dentate, pale; veins 3, 4 and 7 broadly lined with pale to termen; hindwing dark brownish fuscous, the fringe pale. — Occurs throughout S. Europe, in Spain, France, Switzerland, Germany, Austria, Hungary, and Russia; also in Turkestan, Mongolia, and Tibet in Central Asia; — **microdon** *Guen.* is a much darker mountain form from the Alps and Pyrenees. — Larva violet-grey; dorsal line dark; subdorsal and lateral lines yellow, edged with dark dots; on various plants, feeding up in early summer.
- implexa*. **S. implexa** *Hbn.* (= *falovi* *Oberth.*) (15 k). Forewing ferruginous brown, dusted with whitish scales, especially along veins and costal area; the lines marked with white; two upper stigmata brown edged with white; claviform absent; hindwing brown, paler towards base. — Found in Hungary and S. Russia in Europe; in Syria, Armenia, and Transcaucasia in W. Asia; *OBERTHÜR'S falovi* was described from Algeria.
- dianthi*. **S. dianthi** *Tausch.* (= *dentigera* *Er.*, *actinobola* *Er.*) (15 h). Forewing brownish-ochreous; lines black strongly edged with pale; claviform brown, with linear pale centre; a broad pale streak above it and shorter one beyond it: cell brown; the upper stigmata ochreous with paler edges, conversely oblique; teeth of submarginal line produced to termen along veins 3, 4 and 7; hindwing dirty whitish, terminal half blackish, with pale fringe. Hungary and S. Russia in Europe; Asia Minor, Armenia and Turkestan in W. Asia.
- treitschkei*. **S. treitschkei** *Bsd.* (= *pugnax* *Hbn.*) (18 a). Resembles *S. trifolii*, but the colouring and markings more conspicuous; claviform filled in with dark; the wedgeshaped black marks before the submarginal line stronger. Found only in S. France. — Larva velvety black with four yellow lines; spiracles white; head and forelegs black; venter and hindlegs reddish grey. On *Hippocrepis* and other low plants.
- sodae*. **S. sodae** *Ramb.* (15 h). Forewing dull drab; the small claviform and large reniform stigma conspicuously dark with partial black edging; orbicular annular; irregular dark shading on each side of submarginal line; all the lines indistinct; hindwing dingy pale grey becoming smoky fuscous towards termen; the fringe pale. A mediterranean species occurring in autumn on the coasts of Greece, Italy, S. France, Spain, and Algeria. — Larva green, with dark dorsal vessel; each segment with a subdorsal dark streak underlined with white; spiracles white, on dark triangles, above a yellow lateral line; feeding in May and June on *Salsola*, *Chenopodium maritimum* and other coast plants.
- stigmosa*. **S. stigmosa** *Chr.* (15 h). Like *sodae* but the ground colour white, the lines and markings clearer; orbicular stigma more irregular; hindwing white, with the dark border subterminal, preceded by traces of a postmedian line; — a smaller darker form, ab. **grisescens** *ab. nov.* has the ground colour of forewing grey, and the border of hindwing marginal, broad and well defined. — Sarepta in S. Russia, W. and E. Turkestan, Transcaспia, and Afghanistan.
- armata*. **S. armata** *Stgr.* (18 a). Forewing brownish-grey, with median area darker; veins white-lined; a dentate mark at base of vein 2; claviform stigma long, blackish, with pale linear centre; upper stigmata narrow, angular, white-edged; the cell dark; subterminal line white, produced to termen along veins and preceded by dentate black marks; hindwing fuscous with paler base. — Occurs only in W. and E. Turkestan.

S. segnis *Püng.* (15h). Very near *stigmosa* *Chr.*, but somewhat larger and stouter; forewings more *segnis*. varied with brownish; the reniform stigma not filled up with dark, with a grey nucleus in the lower lobe; antennae of ♂ with somewhat shorter ciliations. Described by PÜNGELER from 3 ♂♂ from Lob-Noor.

S. peculiaris *Stgr.* (12i). Forewing whitish, dusted with black and suffused with yellow-brown; the *peculiaris*. lines double; stigmata with brown centres ringed with white and then with black; the lower half of reniform blackish; hindwing white, the termen fuscous and fringe white. W. Turkestan.

S. isoloma *Püng.* (18a). Forewing reddish brown; veins darker, 1, 2, 3, broadly white-lined; clavi- *isoloma*. form stigma long, blackish, with pale central streak; orbicular and reniform small, pale-edged, conversely oblique: subterminal line prominently white; hindwing pale fuscous. W. Turkestan.

S. potanini *Alph.* (18a). Forewing purplish grey; costal area purplish red; a black patch below base *potanini*. of cell; claviform stigma large, black, followed by an ochreous white streak along vein 2; orbicular and reniform ringed with ochreous, and then with black; the orbicular small, round, or elliptical; the reniform ochreous at centre and bent inwards along median vein; submarginal line ochreous white, preceded by conspicuous black dentate marks; marginal area red-brown, with apex ochreous; hindwing fuscous. W. China; also in N. India.

5. Genus: **Haderonia** *Stgr.*

Frons smooth as in *Polia*; but with the antennae of ♂ bipectinate to $\frac{2}{3}$, with long branches.

Type *Haderonia subarschanica* *Stgr.*

H. culta *Moore.* Forewing dark red-brown with purplish grey variation; lines blackish, double; clavi- *culta*. form stigma small, black edged; orbicular and reniform large, brown-edged; subterminal line grey with black dentate marks containing yellow scales; the lines and stigmata are also varied with patches of yellow scales; hindwing fuscous brown. — The ab. *subviolacea* *Leech* wants most of the patches of yellow scales. — A *subviolacea*. large species, described in the first instance from India, but occurring in Tibet and Kashmir; the ab. *subviolacea* in W. China.

H. arschanica *Stgr.* (15i). Forewing grey brown; the lines indistinct; stigmata pale grey with black *arschanica*. edges, the upper stigmata large; cell sometimes blackish; a dark median shade; submarginal line preceded by a thick black shade on submedian interval, and not indented: hindwing rather paler; in the ♀ the forewing is more uniformly grey. W. and E. Turkestan.

H. subarschanica *Stgr.* (15i). Very close to *arschanica*, but differs in the submarginal line of fore- *sub-* wing being indented on submedian fold and there preceded by a black wedge-shaped mark; stigmata of the *arschanica*. ground colour; the upper two sometimes with bright white edging. Only from Kuku-Nor, Tibet.

6. Genus: **Polia** *Tr.*

Tongue present; frons smooth; thorax and abdomen more or less crested. — Larvae, as a rule, feeding up in autumn, and hibernating in the pupa state.

Type *Polia cappa* *Hbn.*

Section I: Antennae of ♂ bipectinate with the branches short.

P. bilinea *Hamps.* (18a). Forewing red-brown, tinged with purplish grey in median area and along *bilinea*. base of inner margin; inner and outer lines black, strongly developed; stigmata outlined with black; the upper two with brownish centres and blue grey annuli; the orbicular in some cases elongated and joined to reniform by a black line; hindwing uniform reddish brown. Tokio, Japan.

P. (?) incerta *Stgr.* Forewing dull grey brown; all the lines marked; claviform stigma large, black, *incerta*. with black outline; the upper stigmata pale; some sharp black wedge-shaped marks before submarginal line; hindwing dull blackish grey; the fringe light yellowish. Described from a single ♂ from W. Turkestan; stated by STAUDINGER to resemble *E. nisus*, but the antennae are expressly said to be shortly pectinated.

Section II: Antennae of ♂ with serrate fasciculate antennae.

P. proxima *Hbn.* (16a). Forewing pale hoary grey varied with darker grey; a black streak from *proxima*. base below median vein; claviform stigma black or black-edged, reaching median shade, rarely elongated with the pointed end attaining postmedian line; upper stigmata pale grey edged with white; hindwing fuscous grey: — ab. *cana* *Ev.* (16a) is a paler form, with the dark shades and markings less defined; in ab. *cana*. **ochrostigma** *Ev.* (16a) a slight fulvous patch appears beyond the claviform and reniform stigmata; — in *ochrostigma*. **extensa** *Ev.* the whole median area is more definitely black. — Larva brown, smooth; dorsal line fine, *extensa*.

whitish; subdorsal lines faint, whitish, edged beneath with darker; spiracles black; on various low plants. — In Europe this species occurs in Switzerland, Germany, Russia, and Lapland; in Armenia in W. Asia; and in Turkestan and Siberia in Central Asia.

orientalis. **P. orientalis** *Alph.* (16 a). Like *proxima* *Hbn.*, but brownish grey with the markings similar, and varied with darker. — ab. **uniformis** *Stgr.* is a more uniform grey form, without these darker variations. — Recorded from W. and E. Turkestan; the aberration from Mongolia.

literata. **P. literata** *Fisch.-Wald.* (16 a). Forewing brownish fuscous, the lines white-edged, especially towards inner margin; submarginal line often splotched with white beyond cell; claviform stigma dark, indistinct, with a black lower edge continued as a black shade to postmedian line, followed above by an irregular pointed pale blotch; orbicular and reniform with whitish edges, the former sometimes wholly white; hindwing dark fuscous. A broad-winged species, known at present only from Sarepta, S. Russia, and Askhabad,

suffusa. — ab. **suffusa** *ab. nov.* (16 b), from Askhabad, is larger, and has the forewing suffused with olive grey, all the white markings of the typical insect becoming duller and obscure, especially the orbicular stigma and the subapical patch at the top of submarginal line; hindwing darker; the head, thorax, and abdomen are all olive grey, showing no admixture of white. Described from a single ♂ in the Tring Museum, taken in May.

luteago. **P. luteago** *Schiff.* (= *olbiena* *H. G.*) (16 b). Forewing yellowish ochreous, with faintly darker, or with brownish shading in median and marginal areas; upper stigmata generally pale; the dark lines fairly distinct; hindwing fuscous yellowish, in the darker specimens more fuscous; veins and a postmedian line darker.

brunneago. — ab. **brunneago** *Esp.* (16 b) is the yellow form with the brown lines and shading well developed; the costa of forewing mottled with brownish. — ab. **argillacea** *Hbn.* (16 b, c) is much more variegated, the dark markings being grey brown and the ground colour greyer ochreous; the hindwing dark brown; of this **barrettii** *Dbl.*, from the coast of Ireland only, is an extreme form. — Larva pale ochreous, sometimes pinkish, with brown dorsal vessel showing through and 4 fine tubercles on each segment; spiracles pale, black-ringed; head pink with black markings; feeds in summer in stems and roots of various kinds of *Silene*. — Widely spread in Europe, occurring in Ireland, Guernsey, France, Spain, Italy, Corsica, Germany, Austria and Russia; in Algeria: also in Asia minor, Armenia, Persia, Turkestan, and Siberia.

andalusica. **P. andalusica** *Stgr.* Close to *luteago* and possibly a form of that species. Forewing dark grey, mixed with ochreous; the two upper stigmata and a patch beneath them beyond claviform palest; hindwing blackish; the antennae of the ♂ are said to bear strongly developed teeth. Known only from the Sierra Nevada in Spain.

tenebra. **P. tenebra** *Hmps.* (18 b). Forewing fuscous mixed with grey and partially tinged with olive; lines edged with grey; stigmata with black margins, the orbicular small, round, with white annulus; reniform indistinct; hindwing pale, suffused with brown, darkest at termen; a dark cellspot and postmedian line. Deosai plains, Kashmir.

pusilla. **P. pusilla** *Püng.* (18 b). Forewing pale grey, suffused with olive brown and dusted with darker; stigmata indistinct; orbicular round, pale, with a dark nucleus; reniform ill-defined externally; hindwing fuscous. Askhabad, Transcaspia.

serratilinea. **P. serratilinea** *Tr.* (= *polyodon* *Hbn. nec Cl.*) (16 c). Forewing pale grey with a luteous tint and densely dusted with dark atoms; lines distinct, but fine, the outer strongly denticulate; claviform stigma dark, small; orbicular and reniform subquadrate, whitish with darker centres; submarginal line pale, preceded by a dark shade; hindwing dull greyish white, the termen darker; cellspot, veins, and a faint postmedian line dark. — Larva brownish grey with black spiracles; head yellowish brown; thoracic plate yellowish, with pale central line; venter greenish: feeding on low plants. Found on the mountains of S. Europe, in Switzerland, Germany, Austria, Hungary; also on the Altai Mts. in W. Siberia and in Armenia.

spalax. **P. spalax** *Alph.* (18 b). Like *serratilinea* but much varied with yellow, so that the insect acquires a yellow tinge; the dusting grey, not black; the cilia waved and with waved lines. An Eastern species only, found in the Ural Mts. in Russia, in Mesopotamia, in W. and E. Turkestan, and the Altai Mts., W. Siberia.

Section III: Antennae of ♂ ciliated only.

peregrina. **P. peregrina** *Tr.* (= *blenna* *Hbn.*, *trimenda* *Hbn.*, *contribulis* *Dup.*, *salsolae* *Ramb.*) (16 c). Forewing greyish ochreous, the median area tinged with brownish or fuscous; claviform stigma indistinct, black-edged, followed by a pale patch at base of vein 2; orbicular and reniform pale, partly black-edged, the lower lobe of the latter dark; submarginal line pale, with brown on each side of it, dentate to margin along veins 3 and 4; costa and apex pale; hindwing dull whitish, browner towards termen; the veins dark. A South European insect, occurring in France, Italy, Turkey, and S. Russia; also in Armenia and Asia Minor: two specimens once taken in the Isle of Wight. — Larva yellow, dotted with brown, especially on dorsal area the brown dots ringed with pale, forming dorsal and subdorsal lines; lateral and spiracular lines yellow; on various low plants.

P. contigua Vill. (= *ariae* Esp., *spartii* Brahm, *dives* Haw.) (16d). Forewing pale ashgrey, suffused with olive brown; a black streak from base below cell, with a pale costal blotch above it; claviform stigma dark, followed by an ochreous white patch at base of vein 2; orbicular stigma whitish, with grey centre, forming with the pale patch beyond claviform and a large pale blotch on inner margin beyond outer line a kind of oblique pale bar; reniform with lower lobe blackish, followed by a fulvous tinge; submarginal line strongly dentate, the teeth on 3 and 4 reaching margin; hindwing whitish grey, the veins and termen darker. — Found in Britain, France, Spain, Italy, Germany, and Russia; also in Armenia, E. Siberia, and Japan. — The form **subcontigua** Ev. (16d) is a dark suffused insect, without the pale patches, from the Ural Mts. in Russia, but similar examples occur in other parts; — ab. **amurensis** Spul. from Amurland is more delicate in the outline of wing, reddish-grey in colour, with the markings less distinct. Larva dull yellowish green, mottled with orange and reddish brown; dorsum with a row of dark V-shaped markings; spiracular line reddish brown; feeding on birch.

P. genistae Bkh. (= *dives* Don., *rectilinea* Haw.) (16d). Differs from *contigua* in having no pale blotch at base of vein 2, or on inner margin beyond middle; pale pearl grey, or brown grey, or purplish brown; median area dark brown; a pale blotch at base of costa, a black streak from base below median vein, and another below claviform to outer line; upper stigmata large and pale; space between outer and submarginal lines forming a pale fascia; hindwing dull grey, darker towards termen. General throughout Europe, also occurring in Armenia, Persia, Turkestan, and Siberia. — Larva brownish yellow, or grey, or greenish; dorsal line dark with pale central thread; a row of dark V-shaped marks along dorsum; head yellow green with two dark lines. On numerous low plants; feeding up in summer.

P. thalassina Rott. (= *gemina* Hbn. part) (16e). Differs from the two preceding species in having no pale grey tints; the red brown ground colour varying only to dark grey; the claviform stigma is produced as a dark dash to outer line; upper stigmata pale with partial black outlines, a black basal streak with pale patch above it; hindwing pale fuscous, paler at base; the form **achates** Hbn. (16e) has the forewing uniform red brown; while **humeralis** Haw. (16e) is fuscous grey with the red tints absent; ab. **nigrifusa** nor. (16e) is wholly suffused with black, the orbicular stigma and traces of outer and submarginal lines remaining pale grey. Larva green or reddish yellow, with two dark oblique stripes on each segment, with 2 dark spots or blotches in front of them; lateral lines pale grey with red edges; on numerous low plants.

P. altaica Led. (16f). Forewing grey, shaded with greyish fuscous and powdered with black; inner and outer lines fuscous with pale edging; submarginal line whitish, generally with dark shades on each side, the teeth on veins 3 and 4 reaching margin; stigmata with black outlines, the claviform dark grey, the two upper pale grey; hindwing fuscous, darker towards termen; the fringe pale. A large species, with long narrow wings, having a powdery appearance, somewhat like a grey *brassica*; occurring in Siberia, Turkestan, and Mongolia.

P. dissimilis Knoch. (= *leucographa* Esp., *dens-canis* Haw.) (16f). Forewing uniform dull red brown, with all the markings obscured, even the black basal streak sometimes obsolete, as well as the usually plain pale submarginal line with its two sharp teeth on veins 3 and 4; hindwing dull fuscous, paler towards base with the veins darker; the form **suasa** Bkh. (= *aliena* Dup. nec Hbn.) (16f), the commonest of all, is pale leather brown, with distinct markings, a black basal streak, blackish claviform stigma, a dark cloud at lower end of cell, and black marginal area; the upper stigmata paler; of this **laeta** Reuter (16g), from Scandinavia, Finland, and the Baltic coast, but occurring also elsewhere, is an extreme form, showing a pale patch at base of costa and black wedged-shaped marks preceding the pale submarginal line; **w-latinum** Esp. nec Hfngl. (16g) resembles the type form in obscurity of markings, but is brownish grey instead of reddish; **confluens** Ev. (= ? *pavida* Guen. nec Boisd.) (16g) is the darkest form of all, being entirely blackish fuscous, with the markings just outlined and the submarginal line sometimes broken up into dots; a pale greyish-red form from Turania, ab. **turanica** Spul., has the markings more or less obsolete, but the submarginal line distinct; finally **extincta** Stgr. from Amurland is also a dark form with the pale markings yellow instead of white. The species occurs throughout Europe and in Siberia, and the Amur district in Asia. Larva reddish yellow, dotted with white and dark grey; dorsal and subdorsal lines grey, the last obscured by dark streaks; lateral lines yellow with blackish edges; feeding on all kinds of low herbage.

P. aliena Hbn. (= *permixta* H. G.) (16g). Forewing grey brown, in some cases reddish-tinged; lines and upper stigmata paler, the latter with grey brown centres; claviform dark, with a slight pale patch beyond it; submarginal line pale, with the teeth on veins 3 and 4 not reaching margin; a slight dark streak from base below cell; hindwing fuscous. Widely distributed in Europe, though not found in Britain; also in Armenia, Siberia, Turkestan, and Japan; — the ab. **amurensis** Stgr., from Amurland and Japan, is markedly darker. — Larva yellow brown; dorsal and subdorsal lines conspicuously dark; spiracles white edged with black, lying on a dark lateral shade; venter and feet greenish grey; head and thoracic plate yellowish green; feeding on low plants.

- ptochica*. **P. ptochica** Püng. (16 h). Forewing pale grey shaded with brownish, especially in median area; a black dash from base bent up to median vein and followed by a dark curved streak; claviform stigma black-edged, sometimes filled in with brown: upper stigmata pale, the cell brown; hindwing dirty whitish with grey marginal band and cellspot. A small species occurring in W. and E. Turkestan and Afghanistan. Examples from the vicinity of Merv are browner, darker, and slightly larger than those from Askhabad and Afghanistan.
- consanguis*. **P. consanguis** Guen. (= *zachii* Bhtsch., *stolida* Leech, abbas Baker) (16 h). Forewing ochreous grey, dusted with dark grey; median and marginal areas dark fuscous; a black bent dash from base below cell; claviform stigma small, dark; orbicular and reniform pale, the former round or oval, the latter narrow, somewhat S-shaped, with darker centres; space between outer and submarginal lines generally pale; hindwing fuscous, darker towards termen; Egypt, Syria, Kashmir, and Japan. A widely spread species, described from India, and occurring commonly in S. Africa, also in Sumatra and Australia.
- alba*. **P. alba** Fall. Forewing pale testaceous grey; inner line double, zigzag, with a black spot on its outer edge at middle; outer line faint, marked only on inner margin by a blackish blotch; orbicular stigma small, round and pale; reniform large, grey, its lower half blackish; subterminal line indicated by a row of whitish lunules, preceded by a dark shade on costa and inner margin; hindwing pale grey, with dark cellspot and broad blackish marginal border, swollen at anal angle. — Bône, Algeria. — Perhaps a form of *consanguis* Guen., which occurs in central and south Africa.
- mortua*. **P. mortua** Guen. (= *nigerrima* Warr., *afra* Graes., *kala* Swinh.) (16 h). Forewing purplish brown-black; the lines and edges of stigmata still deeper black; the reniform with some orange dots on its outer edge; hindwing bronzy fuscous, paler towards base. Amurland, W. China, Tibet; also occurs in India.
- persicariae*. **P. persicariae** L. (16 h, i). Forewing purplish black; the lines and edges of stigmata blacker; reniform filled up with cream white round a rufous centre; submarginal line yellowish white broken up into spots preceded by black wedged marks; hindwing dirty whitish with broad blackish terminal border; the veins and cellspot blackish; fringe paler. — Common throughout Europe, in Armenia, and through Central Asia to W. China and Japan. Japanese examples are all larger than European. — ab. **accipitrina** Esp. (= *unicolor* Stgr.) (16 i) has the reniform dark with a slight paler external border; it does not occur in Britain, though common in Europe, nor have I seen it from Japan, but OBERTHÜR records it from Askold Island. — Larva pinkish brown and green; dorsal line pale; a series of thick green V-shaped marks on dorsum, those on 4, 5, and 11 broader, the 11th segment humped; — on all low plants.
- praedita*. **P. praedita** Hbn. (18 b). Forewing grey, darker in basal half between the margins; a black streak below cell from base; claviform stigma subobsolete, with a dentate pale mark beyond it at base of vein 2; orbicular and reniform brown ringed with white and again with black, the former oblique, elliptical; median nervure and nervules finely whitish; subterminal line with brown on both sides; hindwing brownish white, the termen darker. An Eastern species, found in SE. Russia, Armenia, Kashmir, and Turkestan.
- furcula*. **P. furcula** Stgr. (16 i). Forewing grey suffused with brown, darkest in median and marginal areas; claviform broad, triangular, the pointed apex followed by a bidentate blotch of pale ground colour at base of vein 2; upper stigmata conversely oblique, the orbicular pale, the reniform dark; submarginal line pale, the teeth on veins 3, 4 produced to termen, preceded by black wedged marks; hindwing dull white; the base and inner margin smoky fuscous; veins dark; a broad black marginal band; the fringe white. Kashmir and Turkestan.
- eversmanni*. **P. eversmanni** Stgr. (18 b). Very close to *furcula* Stgr., but larger; the orbicular stigma round, not elliptical; submarginal line whiter, the area beyond it darker. E. Turkestan.
- schneideri*. **P. schneideri** Stgr. (18 b). Also like the two preceding species; as large as *eversmanni* Stgr., but with the orbicular stigma elliptical as in *furcula*, only larger. — W. and E. Turkestan, and Kashmir.
- perdentata*. **P. perdentata** Hamps. (= *bifida* Püng.) (16 i). Forewing olive brown with a purplish tinge; inner line acutely dentate below vein 1; claviform stigma large, blackish, with a pale dash above it at end, and a long pale streak along base of vein 2; upper stigmata conversely oblique; the orbicular brown with bright pale outline; the reniform filled up with leaden grey; a blurred pale smudge beyond cell from outer line to termen; submarginal line toothed to termen on veins 3, 4; hindwing dull fuscous, darker along termen. Turkestan and Kashmir; also from India.
- furca*. **P. furca** Er. (= *fusca* H. Sch., *colleti* Sp.-Schn.) (18 b). Forewing violet grey; claviform stigma large, pointed, brown with black outline, followed by a bidentate white mark on vein 2 at base, which is connected by a white line with the elliptical orbicular which is small and pale; reniform narrow, grey, ringed with pale and dark; submarginal line with blackish dentate marks before it, the marginal area blackish; hindwing fuscous brown, paler at base. An Asiatic species found in Turkestan, Mongolia, Tibet, and E. Siberia; also occurring in Norway and Finland.

P. suavis *Stgr.* (18c). Forewing purplish pink, with dark fuscous suffusion, except in the space beyond outer line and a streak from apex, which remain purplish; claviform stigma large, black-edged, followed by a dentate pinkish patch on base of vein 2; orbicular and reniform large, with black outlines; the orbicular oblique, elliptical, pinkish; the reniform purplish grey, projecting inwards along median vein nearly to touch orbicular; hindwing brownish, the fringe paler. Tibet and E. Siberia.

P. vidua *Stgr.* (18c). Forewing grey suffused with dark brown, especially on median area; stigmata comparatively large; claviform dark with black edges; orbicular and reniform nearly touching, pale with brown centres; marginal area interruptedly dark; hindwing dull whitish, with veins, cellspot, outer line, and marginal border browner. W. Turkestan.

P. splendens *Hbn.* (17a). Forewing pale rufous brown shaded with darker; veins dusted, grey and white; claviform stigma, a bent median shade, and a shade before submarginal line deep brown; upper stigmata edged with whitish, their centres grey; the orbicular oblique; hindwing dirty whitish; cellspot, veins, and postmedian line darker; a broad brownish grey marginal border. Germany, Roumelia, Russia; also from Amurland and Corea: the examples from these eastern localities are bleached and yellow and constitute the ab. **flavescens** *Spul.* — Larva green of various shades, from brassy yellow to blackish olive, thickly irrorated with white dots; differs from larva of *oleracea* in the lateral stripe being broader, yellower, and sharply defined below; the thoracic plate without the 4 black dots.

P. illoba *Bldr.* (17a). Forewing dull grey brown with a violet sheen; all markings indistinct; claviform stigma darker, also lower half of reniform; orbicular pale; veins towards margin marked with black and grey scales; a brown shade before submarginal line; hindwing brownish fuscous; — **pacifica** *Bldr.* (17a) is a paler dingier form, grey brown without any violet tinge; lines and stigmata much clearer; the hindwing dirty whitish, with termen broadly fuscous, the veins and cellspot dark; — **declinans** *Stgr.* (18c) from Amurland has the forewings, head, and thorax tinged with bright rufous. An Eastern species, found only in Amurland, China, and Japan.

P. oleracea *L.* (= *spinaciae* *Bkh.*) (17a). Forewing red brown clouded with darker; veins whitish towards termen; reniform stigma orange in its upper part, dark fuscous below; orbicular round, white-edged, sometimes very small; submarginal line finely white, toothed on veins 3, 4 to termen; hindwing dull whitish, pale fuscous towards termen; the veins dark; — the ground colour varies on one side to black brown, ab. **obscura** *Spul.* (17b), and on the other to rufous, ab. **rufa** *Tutt* (17b[1]); ab. **variegata** *Aust.* (17b), from Morocco, is paler, reddish yellow. Common throughout Europe; in Morocco and Algeria; through Asia Minor, Syria, and Turkestan. — Larva green or brown, dotted with white; tubercles black; spiracular line yellow with darker edging. On all low plants.

P. pisi *L.* (17b). Forewing red brown much mottled with darker; median shade prominently darker; the wavy whitish submarginal line forming a conspicuous white triangle on submedian fold; upper stigmata pale grey; claviform small, black-edged; hindwing dull fuscous, the basal half paler, with dark veins and lunule; — in **splendens** *Stph.* (17c) the brown tint is predominant and the markings are obscured; — in **rufa** *Tutt* (17b [6]), with the markings also obscured, the red tint overpowers the brown; while **pallens** *Stgr.* (= ? *pallida* *Tutt*) (17c) is pale yellowish grey brown, with the markings indistinct; this form is found in W. Turkestan and also in Iceland; — **scotica** *Tutt* (= *rukavaarae* *Hofm.*) is a dark purplish grey form from Scotland and N. England, Finland, Lapland, and E. Siberia; — ab. **suffusa** *Tutt* is a very rare melanic form from Cheshire, West of England. — Larva purple brown or brownish green, with 4 deep yellow stripes of uniform width; the head, feet, and venter flesh colour; polyphagous, on low plants.

P. satanella *Alph.* (17c). ♂: forewing pinkish grey brown; basal half of costal area suffused with black brown including the 3 stigmata, which are all large, black with well-defined deep black outlines; margin beyond submarginal line narrowly dark brown; all other markings faint; hindwing fuscous, the fringe pale; ♀: forewing wholly blackish fuscous, with all markings obscured, the submarginal line marked on submedian fold by a white spot. Kuku-Nor and Amdo, Tibet.

P. softa *Stgr.* (18c). Forewing ochreous grey, flushed with pale brown, especially in the median area; the lines and markings indistinct; stigmata obscurely defined by brown; marginal area narrowly dark; hindwing pure white. At present recorded only from Palestine and Morocco; the species is queried by STAUDINGER as a form of *peregrina*, which it much resembles.

P. nana *Hfngl.* (= *dentina* *Schiff.*, *plebeia* *Haw.*) (17c). Forewing lilac-grey, suffused with olive fuscous, deepest in median area; claviform stigma small, black-edged, followed by a broad bidentate pale patch at base of vein 2; orbicular and reniform pale grey with white edges; marginal area dark; submarginal line preceded by black dentate markings; veins more or less grey-scaled; hindwing fuscous, paler basewards; the fringe pale; — **leucostigma** *Haw.* (17c) has the ground colour whiter; **hilaris** *Zett.* is a form of this in which the whitish orbicular and the pale blotch on vein 2 are confluent and form one long

- odrea*. streak: -- **ochrea** Tutt (17d) is a form, common in Britain, in which the forewing is varied with yellow scales: — **latenai** Pierr. (= *proxima* Ferr. nec Hbn.) (17d) is a melanic mountain form from Switzerland and the Hebrides. — Generally distributed in Europe, and found in Asia Minor, Armenia, Turkestan, Siberia, and Kashmir. — Larva dark brown; dorsal and lateral lines pale; subdorsal lines formed of dark lunular blotches; spiracles black; head glossy black; feeding on Taraxacum, preferring the roots.
- obvia*. **P. obvia** Er. Forewing rounded at apex, whitish grey, slightly clouded with darker; median area blackish: the two upper stigmata whitish: submarginal line whitish, preceded by short black dentate marks; the costa dark; fringe mottled; hindwing blackish with fringe white. Kasan, E. Russia. Described from a single specimen; perhaps a small form of *nana* Hfugl.
- glauca*. **P. glauca** Klcm. (= *poliostigma* Hamps.) (17d). Forewing purplish grey suffused with blackish; stigmata pale grey, with whitish rims edged with black; submarginal line whitish, preceded by black dentate marks; hindwing dark brownish fuscous; the paler- or bluish-grey tint is most developed in the type form; —
- lapponica*. **lapponica** Dup. (= *quadriposita* Zett.) is a more ashy grey form with pale stigmata, from Lapland, Finland, and N. Ireland; —
- aperta*. **aperta** H. G. (17d) represents an exceptionally dark form; while **taunensis** Fuchs, from *taunensis*. the Taunus Mts., is uniform dark ruddy grey, with only the external margins of the claviform and reniform pale. — A mountain species occurring in North and Central Europe, Britain, France, Germany, Switzerland, Scandinavia, and Russia, and in Asia in Turkestan, Amurland, Kamschatka, and Kashmir. — Larva brownish red, with dark dorsal reticulation; dorsal line distinctly paler; subdorsal lines formed of dark lunules, which on the 11th segment meet in a dark patch, beyond which the 12th is yellowish; lateral lines yellowish white; spiracles white, black-edged; on low growing mountain plants, vaccinium etc.
- mista*. **P. mista** Stgr. (17e). Forewing whitish grey, peppered with darker scales; lines white with dark edging: the large claviform stigma, the median area beyond reniform, and the marginal area, brown; a jagged black streak from base below cell; upper stigmata with grey brown centres and slight black outlines; hindwing pale fuscous grey, with the veins dark. Turkestan.
- retrusa*. **P. retrusa** Püng. Forewing uniform dark brown; inner and outer lines slightly marked; stigmata with dark outlines; the claviform short, the orbicular large, round, with dark middle point; the reniform with a yellowish white spot on its outer side; hindwing brownish grey, paler before the termen. — Kuku-Nor, Tibet; described from a single ♂.
- calberlai*. **P. calberlai** Stgr. (17e). Forewing dull greyish fuscous, with a faint brown tinge; median area darker; a short black streak from base below cell; claviform stigma black-edged, continued as a black streak to outer line; upper stigmata of the ground colour, with paler rims; the cell brown black; submarginal line pale grey, not dentate; hindwing greyish fuscous. A small and obscure species confined to the Tyrol and the Campagna, Italy. — Larva grey brown, darker on dorsum and between the segments; dorsal line pale, interrupted, with dark margins; lateral line white; spiracles black with white rings; feeds on Clematis vitalba.
- cappa*. **P. cappa** Hbn. (17e). Forewing chalk-white, the median area flushed with olive brown; lines finely black; median shade and outer line regularly dentate: black teeth before subterminal line; a black streak near base below cell, and another above inner margin; stigmata all pure white with black edges; hindwing white; the veins, cellspot, outer line, and submarginal border brownish; marginal line blackish: fringe white. — A S. European species, found in S. France, Italy, Carinthia, Dalmatia, Crete, and S. Russia; also in Asia Minor, Armenia, and the Altai Mts. — Larva light brownish grey, without well-defined markings; spiracles black; above them the ground colour is paler, more yellowish; on Delphinium.
- corsica*. **P. corsica** Ramb. (17e). Forewing like *serena*, but uniformly darker grey; the edge of basal area less oblique; outer line strongly toothed on vein 3, thence straight to costa; submarginal line more regular with more regular dark grey teeth preceding it. The larva feeds in spring on Asphodelus microcarpus, possibly on other plants as well. Originally described from Corsica, and since found in Sardinia and Andalusia.
- serena*. **P. serena** Schiff. (= *placida* Fsp., *hieracii* Scriba, *bicolorata* Led., *intermedia* Walk. (17f). Forewing bluish grey, the median area dark olive fuscous; claviform stigma black-edged; upper stigmata pale grey with dark centres; hindwing whitish grey, — in ♀ darker, — with veins and marginal border fuscous; —
- leuconota*. in **leuconota** Er. (? = *monticola* Dup.) (17f) the base and outer area of forewing and the head and thorax are pure white; this form occurs in S. E. Russia, and is the prevalent form in Britain; the pale specimens with the marginal area well-marked are differentiated by SPULER as ab. **leucomelaena**, while **albicans** Spul. applies to the rare cases in which the central field as well is broken up by white: —
- leucomelaena*. **obscura** Stgr. (17f) represents a very uniform dark grey aberration. — Occurs throughout Europe: also in Asia Minor, Armenia, *albicans*. Syria, and Siberia. — Larva yellowish green or brown, with dark blotches along dorsal and subdorsal *obscura*. regions; spiracular line yellow, distinct: head greenish yellow; feeds on flowers of various Compositae, hieracium, sonchus, etc.

P. spinaciae *View.* (= *dysodea Schiff.*, *flavicincta-minor Esp.*, *chrysozona Bkh.*, *ornata Vill.*, *ranuncu- spinaciae. lina Haw.*, *dysodea* of Plate 17f). Forewing pale- or greenish-grey, dusted with dark grey; median area darker; all the lines and markings picked out with orange scales; claviform stigma dark; the upper two grey; hindwing dull grey in ♂, dark grey in ♀, with broad dark border, the veins and cellspot dark; **caduca** *H.-Sch.* (17g) *caduca.* is a pale grey form with very little yellow scaling; in **innocens** *Stgr.* (17g) the median area is blacker, and the *innocens.* inner and outer, by comparison, paler, the yellow scaling slight; **koechlini** *Th.-Mg.* (= *turbida Hofm.*) is a *koechlini.* darker form with the orange markings strongly developed. Throughout Europe: in Asia Minor, Persia, Syria, Kashmir, Turkestan, and China. — Larva yellow green, freckled with brown; dorsal line pale, dark-edged: spiracular line yellowish; spiracles black; on flowers and seeds of Compositae, sonchus, lactuca.

P. subflava *nov.* (17g). Forewing pale stone colour (grey) without dusting; the lines and edging *subflava.* of the stigmata black; the median area slightly darker, containing a median shade; claviform quite small; orbicular round; reniform large, with some yellow scales internally on both sides; submarginal line indistinct, marked by pale yellow lunules; a row of black marginal lunules; hindwing pale grey, with a broad darker grey terminal border; the fringe whitish. One ♂ taken in June, from Kyssyl Fart, Turkestan. Possibly a very pale form of *spinaciae*.

P. maderae *Baker* (18c). Forewing grey dusted with fuscous; median area darker; all 3 stigmata *maderae.* white outlined with dark; the claviform oblong; orbicular round; lines black and white; hindwing dull whitish; the veins and terminal area fuscous. Recorded from Madeira only. Perhaps an extreme (insular) form of *serena*; a ♀ from Ouled Farsch, S. E. of Mazagan, Morocco, seems intermediate.

P. confusa *Leech* (18c). Forewing whitish, suffused with olive fuscous and dusted with black; a *confusa.* black basal streak below cell; lines black edged with white; claviform black-edged, followed by a small triangular white spot; upper stigmata white defined by black, the orbicular small and round; hindwing dark fuscous brown; abdomen also fuscous brown, contrasting with the thorax which is white. Described by LEECH from a single ♀ from W. China.

P. mediana *Moore* (17g). Forewing pale hoary grey; median area and marginal area beyond sub- *mediana.* marginal line concisely dark grey; orbicular and reniform pale grey, blurred, contiguous; hindwing grey, paler towards base, the veins darker. A North Indian insect, found also in the Goorais Valley, Kashmir.

P. fasciata *Leech* (18d). Resembles *mediana Moore*, but the ground colour of forewing is brownish *fasciata.* grey, and the median area uniform dark fuscous brown, edged by the white inner and outer lines; all stigmata absent; marginal area brown; hindwing dark brown. Described, like *confusa*, by LEECH from a single ♀, from Kiukiang, Central China: possibly only a dark form of *mediana*.

P. bohemanni *Stgr.* (18d). Forewing dark brown dusted with grey; the lines obscure; claviform *bohemanni.* indistinctly black-edged; orbicular and reniform small, the former round, ringed with grey and then with black; hindwing orange yellow, with brown cellspot and broad terminal band; fringes chequered brown and yellow. An arctic species, found in Lapland, N. Russia, and E. Siberia; superficially resembling *Anarta*, in which genus it is placed by STAUDINGER.

7. Genus: **Harmodia** *Hbn.*

Agrees in general characters with *Polia Tr.*, but distinguished by the abdomen of ♀ being elongated and conically produced, the ovipositor long and exerted; the insects composing the genus form a natural group, their larvae, all very much alike, feeding on the seeds of Cariophyllaceae, *Lychnis*, *Silene*, *Saponaria*, etc. Their pupae also are marked by a slight knobshaped swelling at the extremity of the tongue-sheath.

Type *H. compta Schiff.*

H. rivularis *F.* (= *rivosa Ström*, *cucubali Esp.*) (17g). Forewing brownish fuscous with a violet *rivularis.* sheen; the lines double; claviform stigma large, black; orbicular and reniform grey with yellowish or whitish outlines, conversely oblique and contiguous on median vein; veins dark outlined with grey; submarginal line yellowish or white, dentate; hindwing brownish fuscous, darker in ♀: the ab. **behenis** *Frr.* has the outer half *behenis.* of costa of forewing pale; — **mandarina** *Leech* (17h), from Japan and China, is rather larger and darker, *mandarina.* the markings in consequence somewhat less distinct. The species occurs throughout Europe, except the S-E., in Armenia and Asia Minor; in Kurdistan, Turkestan, Amurland, China, and Japan. Larva greenish grey or yellowish, dotted with white; dorsal line dark with a row of oblique reddish grey stripes on each side; in seed-capsules of *Lychnis* and *Silene*, eating out the seeds; when full grown and too large for the capsules hiding among the lower leaves of the foodplant, like the rest of the genus.

H. bicruris *Hfngl.* (= *capsincola Esp.*, *impressa Esp.*) (17h). Distinguished from *rivularis F.* by the *bicruris.* absence of the violet sheen; the markings white instead of yellow; the upper stigmata not conjoined; a conspicuous black blotch above inner margin near base; hindwing fuscous. Co-extensive in range with the

- preceding species, but not reaching China and Japan. — Larva dull brown, with darker dorsal line and oblique subdorsal streaks; on seeds of *Silene* and *Saponaria*; — **capsincoloides** *Standf.*, from Corsica, has the median area black brown, obscuring the claviform stigma; the white edges of the stigmata and the submarginal line are all finer and sharper; — examples from Uralsk are all decidedly smaller and much blacker than the ordinary form and may be separated as ab. **fuligata** *ab. nov.* (17 h).
- lepida.* **H. lepida** *Esp.* (= *carpophaga* *Blk.*, *perplexa* *Hbn.*) (17 i). Forewing olive grey brown or olive ochreous, clouded with darker; claviform stigma large, dark; orbicular and reniform with brown centres and white rings outlined with black; some black toothlike marks before submarginal line; hindwing dirty grey, darker towards termen; the veins dark. This darker form is the usual one throughout Europe; but is replaced in Britain by **ochracea** *Haw.* (17 i) which is pale ochraceous with slightly darker markings; examples with an actually white ground colour are found on the chalk of the South of England, ab. **pallida** *Tutt.* (17 i); on the other hand the darkest forms of *ochracea* *Haw.*, with few markings but uniform in coloration, are known as **brunnea** *Tutt.* (18 d). The species occurs throughout Europe except in the extreme North, in Armenia, Asia Minor, Syria, Persia, Turkestan and Siberia; the form *ochracea* *Haw.* is said to occur also in Palestine and Syria. Larva pale putty colour, with the lines indistinct; on seeds of *Silene nutans*.
- capsophila.* **H. capsophila** *Bdv.* (= *nisis* *H. Sch.*, *nec Germ.*, *repanda* *H. Sch.*, *capsophoba* *Ramb.*) (18 d). Forewing dark fuscous without any tinge of brown or ochreous, resembling most *bicruris* *Hfngl.* in appearance and markings; but it may always be distinguished by the absence of the pale-scaled patch beneath the cell beyond the claviform stigma, which is invariably visible in that species. Larva stouter and greyer than that of *carpophaga*, feeding on seeds of *Lychnis*. — The darker, almost black, specimens occurring in Ireland and the Isle of Man are the ab. **suffusa** *Tutt.* (18 e).
- lypra.* **H. lypra** *Püng.* (18 e). Forewing olive brown; claviform stigma ending in a black V; the upper stigmata pale, partially outlined with black, the orbicular round; submarginal line preceded by black dentate marks; hindwing fuscous ochreous. W. Turkestan.
- magnolii.* **H. magnolii** *Bdv.* (= *nummosa* *Er.*, *conspurecata* *H. Sch.* ♀) (18 e). Forewing olive fuscous, somewhat purplish-tinged, and dusted with white; lines black, edged with bluish-white; claviform stigma of ground colour, edged with black; orbicular round, white-ringed, distinct; reniform less clear, partially white-edged; hindwing fuscous, paler towards base, with dark cellspot and outer line. Portugal, S. France, Italy, Switzerland, Dalmatia, Austria, Russia; Armenia, Asia Minor, W. Turkestan. Larva greyish yellow, darker at sides; dorsal line dark brown, geminate; the subdorsal stripes dark; lateral line pale; head yellow brown; on *Silene nutans*.
- conspurecata.* **H. conspurecata** *Frr.* (= *conspurecata* *H. Sch.* ♂) (18 e). Smaller and more broken up with white than *magnolii*, the dark patches more evident; a whitish patch on costa at base; claviform stigma followed by a conspicuous white spot; orbicular stigma white, larger than in *magnolii*; reniform whiter; submarginal line white; hindwing fuscous, the fringe whitish. Central and Southern Russia, Ural Mts. This description is made from an example from the FREYER Collection. Apparently a good species; if a form of another, then rather of *compta*; certainly not of *magnolii* or *filigrama*.
- filigrama.* **H. filigrama** *Esp.* (= *filogramia* *Esp.*, *fligramma* *Frr.*, *flavivibica* *Hbn.*) (18 f). Like *magnolii*, but the forewing dusted with ferruginous scales; the type form is brown, like *magnolii*, in ground colour, without white admixture, and is restricted in range, occurring, authentically, only in the Mts. of S. Hungary.
- xanthocyanea.* **H. xanthocyanea** *Hbn.* (18 f) has the ground colour greyer and the white scaling, especially in the ♂♂ stronger, the orange markings more developed; — in **luteocincta** *Ramb.* (18 f) the basal and terminal areas are still whiter and the ferruginous tints show up still more; — **melanochroa** *Stgr.* is a smaller and darker form from Asia Minor and W. Turkestan. Generally distributed in C. and S. Europe (but not occurring in Britain), in Armenia, Asia Minor, Syria, Persia, Turkestan, and Siberia. Larva reddish grey, the segmental divisions paler, with groups of dark dots, especially along the dorsum; spiracles black; head yellowish, with black marks; on *Silene nutans*. The larva is said to resemble that of *caesia* except that it is browner with fainter dorsal markings.
- ignicola.* **H. ignicola** *nov.* (18 f) Nearest to *xanthocyanea*, ab. *luteocincta* *Ramb.*, but distinguished from it and all the allied species by having the thorax and patagia as strongly varied with ferruginous or orange as the forewing; in this the margins of the upper stigmata, a blotch below base of cell, the submedian vein and a row of wedgeshaped marks before submarginal line are all orange; the inner and outer lines also with a few orange scales; hindwing as in *luteocincta*; in the ab. **intensa** *ab. nov.* (18 f) the whole forewing is suffused with rufous even to the fringe, the grey ground colour of the type being quite lost, while the orange markings of the type are all intensified, the submarginal line itself being similarly coloured; the hindwing, its fringe, and the entire underside are all rufous-tinged. 1 ♀ type from Kuliab Province, N. Afghanistan; the aberration from Naryn-Kol.

H. tephroleuca *Bdv.* (18 f, g). Forewing grey with a bluish tinge, the median area sprinkled with yellow; lines fine and ill-defined, edged with pale grey; stigmata small, the claviform black-edged, the orbicular and reniform with brown centres and grey rings, the former round; hindwing fuscous, paler towards base. A local species, of limited distribution, found in the Alps of Switzerland and Piedmont; recorded also from Pontus and Ala-Tau. *tephroleuca.*

H. pumila *Stgr.* (18 g). Forewing whitish much suffused with brown; the lines double filled in with whitish; claviform stigma small, black-edged; upper stigmata whitish with brown centres; the orbicular round, the reniform indented on inner edge; hindwing fuscous, paler towards base, darker in ♀. — A small species restricted to W. Asia, Asia Minor and Syria. *pumila.*

H. albimacula *Bkh.* (= *compta* *Esp.* nec *F.*, *concinna* *Hbn.*) (18 g). Forewing olive brown; the lines black, slightly picked out with white scales; claviform stigma of ground colour edged at end with black, followed by a quadrate white blotch; orbicular round and white with slight grey centre; reniform edged internally with white; both outlined with black; small white blotches beyond orbicular and between veins 2 and 3 at base; a whitish blotch at base of costa and a white costal spot above orbicular stigma; hindwing dark fuscous; basal half greyer, with darker veins. Britain, France, Germany, Switzerland, Hungary, Russia; Armenia, Asia Minor, Persia, and the Altai Mts. in W. Siberia. — Larva brownish ochreous; dorsal line fine, indistinct, marked by blackish spots which connect the subdorsal oblique stripes; lateral lines pale grey; spiracles white ringed with black; on *Silene nutans*. *albimacula.*

H. nana *Rott.* nec *Hfagl.* (= *conspersa* *Schiff.*, *annulata* *F.*) (18 g). Forewing purplish fuscous tinged with olive grey, the white markings of *albimacula* still more extended, the inner margin and apex of forewing being blotched with white; the continental form does not seem subject to variation; but **dealbata** *Stgr.* from Armenia, Turkestan, and Siberia, has the white markings reduced and especially the apical blotch absent: in Britain however several variant forms occur; — **fasciata** *Tutt* has the white blotch on inner margin before anal angle confluent with the white claviform and orbicular stigmata to form a fascia somewhat like *compta*; — in **ochrea** *Gregs.* (18 h) the white markings are replaced by ochreous; while **hethlandica** *Stgr.* from the Shetland Isles is much darker, generally unicolorous brown, with the orbicular alone white; — **suffusa** *Tutt* (18 g) is the dark blackish grey form occurring in N. England, Scotland, and W. Ireland. — Larva brownish ochreous; dorsal line pale, traversing a row of V-shaped dorsal marks; lateral lines fine, dark; spiracular paler; head brownish grey marked with black; feeding on seeds of *Lychnis* and *Silene*. *nana.* *dealbata.* *fasciata.* *ochrea.* *hethlandica.* *suffusa.*

H. compta *Schiff.* (18 h). Forewing smaller than *nana*, with a vertical white fascia, the orbicular stigma, the white blotch beyond claviform and a blotch at middle of inner margin being confluent; no apical white blotch; — in **viscaria** *Guen.* the white fascia becomes yellowish or brownish; — **humilis** *Christ.*, from Armenia and the Taurus Mts., also has the fascia discoloured and much reduced in size, the ground colour often being dull grey. Found throughout Europe, except Britain, S. Spain, Italy, and the Balkans; in W. Asia, Persia, Turkestan, Siberia, and Japan. — Larva reddish grey; dorsal stripe redbrown, blotched on each segment and traversed by a conspicuous white central line; lateral lines yellowish; spiracles white on a cloudy grey shade; head redbrown; feeding on seeds of *Dianthus* and *Silene*. *compta.* *viscariae.* *humilis.*

H. armeriae *Bsd.* (= *guenéei* *Stgr.*) (18 h). Larger than *compta*, the white fascia broader and better defined. Cyprus, Syria, Mongolia, ? S. Russia. *armeriae.*

H. caesia *Schiff.* (= *dichroma* *Esp.*) (18 h). Forewing blue grey, with a furry look, caused by dusky grey irroration; both folds tinged with fulvous; lines and markings often indistinct; upper stigmata pale, with yellow scales in their annuli; a dark antemedian band widened to inner margin and a less prominent dark submarginal cloud; a small dark blotch at middle of costa; hindwing dark fuscous, paler towards base. Widely spread in Europe and occurring in Asia Minor and Armenia; — **manani** *Gregs.* (= *doubledayi* *Mill.*) (18 i) from the Isle of Man and the Irish coast, is uniformly darker slate colour; — **nigrescens** *Stgr.* (18 i), from the Pyrenees, Alps, and Mts. of Scandinavia is much darker, the forewing suffused with black; on the other hand **clara** *Stgr.*, from Armenia and Asia Minor, has the forewing greyer, with a pinkish tinge; the median area paler. — Larva brownish ochreous, freckled with darker; a dorsal series of V-shaped marks; subdorsal line darker; on various kinds of *Silene*. *caesia.* *manani.* *nigrescens.* *clara.*

H. eximia *Stgr.* (18 i). Forewing chalk grey, suffused between inner and subterminal lines with olive-brown; basal line and a blotch on submedian fold black brown edged with white; claviform stigma brown black-edged, followed by a conical whitish blotch at base of vein 2 confluent with the oblique broadly white-edged orbicular stigma; reniform whitish, brown at lower end; marginal area in ♂ chalk white, in ♀ grey; fringe grey with two dark grey lines and grey tips; hindwing dark fuscous, with dark pale-edged outer line before a brown submarginal band; the insect has a different facies from others of the genus, the lines being curved and not dentate. Kuku-Nor and Amdo, Tibet. *eximia.*

8. Genus: **Aplecta** Guen.

Differs from *Polia* in the larger size of the insects composing it, with narrower elongate wings; antennae of ♂ simple, or slightly ciliated. The larvae are hatched in autumn, hibernate half grown, and feed up in spring: pupation in an earthen cocoon.

Type *A. nebulosa* Hfngl.

- advena*. **A. advena** Schiff. (19 a). Forewing pale or dark lilac grey, more or less suffused with grey brown, especially in costal half; a slight dark basal streak below median vein; claviform stigma outlined with black; orbicular and reniform large, paler, with dark centres; reniform with white on outer edge and often followed by a rufous patch; submarginal line preceded by blackish wedge-shaped marks, and acutely indented on submedian fold; hindwing brownish fuscous; — specimens in which the glaucous tint predominates are ab. **nitens** Haw. (19 a); — the much rarer uniformly reddish brown form is **unicolor** Tutt (19 a); — **flavescens** Spul., from the Bukowina, has the forewings pale brownish yellow; — ab. **mongolica** Stgr. (19 b) the common form in central and eastern Asia is uniformly darker grey brown with a reddish undertone, the submarginal line equally distinctly indented. Occurs throughout Central Europe, in Britain, France, Germany, N. Italy, and Russia; in Armenia, Turkestan, Siberia, Amurland. — Larva pale brown; dorsal line pale; some dark oblique streaks; a whitish dark-mottled lateral line containing the spiracles which are bright redbrown, edged with black; on numerous low plants.
- adjuncta*. **A. adjuncta** Stgr. (= *advena* Leech nec Schiff.) (19 b). Larger and broader-winged than *mongolica* Stgr., the form of *advena* which occurs in central Asia; pale rufous brown, more purplish in the ♀; the stigmata without a trace of pale outline; the submarginal line preceded by a continuous brown shade, scarcely indented on submedian fold, and never marked by dark scales; all the lines and markings obscure; the costal half of wing, or, at least, the cell, generally darker than the other half. China, Corea, Japan.
- tincta*. **A. tincta** Brahm (= *trimaculosa* Esp., *argentina* Haw.) (19 c). Forewing paler than in *advena*, more bluish grey, sometimes blue green, without dark suffusion except in median area; stigmata as in *advena*, the orbicular pale and conspicuous; submarginal line preceded by black brown scales on both folds not forming wedge-shaped marks, and not indented on the submedian fold; hindwing fuscous with dark discal lunule and pale postmedian line. — Coextensive in range but rarer than *advena*: the form **obscurata** Stgr. from *hepatica*. Amurland is smaller and darker; **hepatica** Hbn. (19 c) represents the form with blue green coloration and brown suffusion; in **suffusa** Tutt the median area is more concisely brown than the rest of the wing. — Larva reddish brown, with fine dark and light mottling; dorsal line slender, white, edged with black; lateral line broader; head pale brown; on various low plants, such as *vaccinium*: also on birch.
- nebulosa*. **A. nebulosa** Hfngl. (= *thapsi* Brahm, *plebeia* Hbn., *grandis* Don.) (19 c, d). Forewing white tinged with brownish grey; stigmata as in *advena* and *tincta*; submarginal line preceded by black wedge-shaped marks, with one more conspicuous before the indentation of submedian fold; hindwing dull whitish, with cellspot, veins, and a broad marginal border smoky fuscous; — ab. **pallida** Tutt represents a very white form taken in Scotland, with many of the dark transverse markings obsolete; — **bimaculosa** Esp. (19 d) is the darker grey form with blacker markings; — **robsoni** Collins is a strong melanic form from Cheshire in the *asiatica*. W. of England only; there are also two aberrations from E. Asia, — **asiatica** Stgr. (= *lama* Stgr.) being dull grey and smaller than typical, while **askolda** Oberth. from Askold Island is a large brown form; — ab. *conspicua*. **conspicua** nov. (19 e) is a pale brownish grey form in which the submarginal line is conspicuously black and continuous throughout, even more prominently than in the ab. *calabrica*; the underside with the extreme outer margin and fringe prominently pale ochreous; a single ♀ labelled simply Germany; — ab. **calabrica** nov. (19 e) is a very large form; the forewing with pale blue-grey ground colour, irrorated and suffused with dark grey in basal half (in one example all over the forewing), with all the lines and stigmata strongly expressed in black and pale grey, the submarginal line in particular being continuous, black and dentate, the hindwing is likewise much darker, with all the veins, the cellspot, and outer line wellmarked; a series of 4 ♂♂, 10 ♀♀, in the Tring Museum, taken on the Sila Mts., near Botte Donata, Calabria, 800—1000 m, July 1907, by Dr. O. NEUMANN. This form reminds one somewhat of *goliath* Oberth. — Larva brownish grey or luteous, with blackish freckles; large dark dorsal spots divided by the pale dorsal line, with short black oblique stripes at the sides; spiracles black; head brownish with a dark frontal triangle: on numerous plants.
- goliath*. **A. goliath** Oberth. (19 d). Head, thorax, and forelegs chalk white marked with black; forewing white, with all the usual lines and the edges of the stigmata concisely black; a brownish smear between stigmata in cell; a slight grey shade beyond outer and submarginal lines and along inner margin; hindwing dull whitish, with smoky fuscous cellspot, postmedian line, veins, and marginal border. An eastern asiatic species, of large size, found in E. Siberia, W. China, Japan, and Corea.

A. scotochlora Koll. (= *stevensii* Guen.) (20 a). Forewing ochreous whitish, dusted with grey; the median area and outer margin, and sometimes the basal area also suffused with olive fuscous; lines black and distinct; the outer and submarginal lunulate; claviform stigma black; the upper stigmata large, white-ringed, and outlined with black, their centre grey; space between outer and submarginal lines generally pale; hindwing dull fuscous, with a pale patch at margin on submedian fold. Kashmir and Tibet. *scotochlora*.

9. Genus: **Pachetra** Guen.

Differs from *Aplecta* in having the antennae of ♂ strongly bipectinated to the tips; the wings broader and shorter. The larva hibernates fullfed and pupates in spring in a slight cocoon.

Type *P. fulminea* F.

P. fulminea F. (= *leucophaea* View.) (19 e, f). Forewing grey suffused with darker grey and brown; claviform stigma variable in size, blackish; upper stigmata large, white-edged with grey centres, sometimes wholly white; submarginal line diffusely pale, preceded by black wedge-shaped marks; hindwing dirty grey, with darker cellspot, postmedian line, and submarginal cloud; in *vestigialis* Esp. (19 f) there is a prominent white patch at base of costa of forewing; — *ravida* Esp. is a rarer form in which the median and marginal areas are both reddish brown; — *pyrenaica* Oberth. (20 a), from the Pyrenees, is a melanic form in which the forewings are suffused all over with blackish grey; — *bombycina* Ev. (19 f), from the Ural Mts., is smaller and darker, with the median and submedian veins finely white; both the upper stigmata much smaller, white-edged, the reniform not kidney-shaped but narrow with the white lateral edges parallel, the lower end flat, not curved, and according to EVERSMAAN running inwards along the median vein; on the other hand ab. *incana* Mill. is a quite pale form; yet another form, from the Sila Mts., Calabria, seems to require a name ab. *grisescens* nov. (19 f). The 6 ♂♂ seen, rather smaller than typical *fulminea*, are dark grey suffused with fuscous, without any admixture of brown or ochreous; the upper stigmata grey with white outlines, the claviform black; the underside is whitish powdered with grey, the cellspots large; an outer line on both wings. — The species is rare in Britain, commoner in Europe, occurring in N. Italy, France, Switzerland, Germany, Sweden, Finland, and Russia; in Asia it is found in Syria and Asia Minor, Turkestan, and Siberia. — Syrian specimens, according to HAMPSON, have the hindwing white, and the veins only brown. — Larva grey brown mottled with dark; dorsal line yellowish, black-edged; a series of oblique brown subdorsal stripes; lateral lines narrowly brown; on grasses and low plants. *fulminea*, *vestigialis*, *ravida*, *pyrenaica*, *bombycina*, *incana*, *grisescens*.

10. Genus: **Hadena** Schrank.

Frons smooth; antennae of ♂ ciliated; thorax and pectus rough-haired; tibiae fringed with hair; abdominal segments laterally fringed with hair towards extremity.

Type *H. reticulata* Vill.

H. dissectus Walk. (= *crucifer* Feld.) (19 g). Forewing dark olive brown with an undertone of red; lines fine, ochreous white, strongly tinged with rosy; the inner and outer lines with a fine black centre; claviform stigma large, black; orbicular and reniform conversely oblique, with pale lateral edges, the outer edge of reniform conspicuous; an oblique apical streak pinkish ochreous; submarginal line ochreous; veins all pinkish ochreous; hindwing fuscous. Japan and China; described originally from India. *dissectus*.

H. reticulata Vill. (= *saponariae* Esp., *calcatrippae* View., *typica* Hbn., *marginosa* Haw.) (19 g). Forewing dark fuscous, with a purplish sheen when fresh; all the veins white, between outer and submarginal lines black with pale outlines; claviform stigma black and broad; upper stigmata concisely outlined with pale, the reniform with a central pale line; a slight pale apical streak; submarginal line white; hindwing fuscous, the basal half, especially in ♂, considerably paler; — *unicolor* Alph. is said to have no violet tinge; but this is always the case when the insect has been out for any length of time. — Widely distributed, occurring in Britain, France, Germany, Switzerland, Italy, Austria, Hungary, and Russia; in Armenia, the Altai Mts. W. Siberia, Turkestan, Mongolia, Kashmir. — Larva greenish or pinkish ochreous, irrorated with darker; dorsal line faint; lateral lines black and well-marked; head brown: on various low plants. *reticulata*, *unicolor*.

H. texturata Alph. (19 g). Forewing olive fuscous with a purple tinge; veins and lines white; upper stigmata white-edged with brown centres; outer edge of reniform strongly concave; claviform black; submarginal line white, preceded by a blackish shade; hindwing greyish fuscous; fringe whitish. Kuku-Nor and Amdo, Tibet; Ta-Chien-Lu, W. China. In the Chinese specimen the reniform is less concave externally, and altogether less contorted. *texturata*.

H. abrupta Ev. Forewing black; the veins, the inner and outer lines, and the outlines of the upper stigmata, whitish; the fringe grey; hindwing dark grey, blacker towards termen; smaller than *reticulata*. Kirghistan. It seems to be very close to, if not identical with *H. texturata* Alph. *abrupta*.

11. Genus: **Tholera** Hbn.

The imago differs from *Hadena* mainly by the absence of the tongue. The larva feeds at roots of grasses; the thoracic and anal plates being hard and horny; the tubercles raised and black.

Type *Th. cespitis* F.

Section I: Antennae of ♂ bipectinate to apex.

popularis.

Th. ♀ popularis F. (= *lolii* Esp., *graminis* Hbn.) (19 h). Forewing olive fuscous tinged with purple; all the veins white; inner and outer lines double, black; submarginal whitish, preceded by black wedge-shaped spots; claviform stigma of the ground colour outlined with whitish and black and with a pale linear centre; upper stigmata white-ringed with olive centres, reniform with a curved pale line at centre; hindwing in ♂ dull white with fuscous termen, in ♀ wholly fuscous with base alone paler; — ab. **hilaris** Stgr. (19 h) is smaller and paler, the hindwing of ♂ whitish. — Generally distributed in Europe, and occurring in Armenia, Asia Minor, and Siberia; the aberration only in Asia Minor, and S. E. Russia. — Larva shining bronzy brownish, with the tubercles large and black; head and thoracic plate dark brown; at the roots of grasses, living through the winter and feeding up in summer.

Section II: Antennal pectinations of ♂ short.

cespitis.

Th. cespitis F. (= *hordei* Schrank, *autumnalis* Curt, *confinis* Stph., *chloris* Mill.) (19 h). Forewing dark earth brown; lines indistinct; inner and outer black with paler edges; submarginal pale, with black wedge-shaped spots before it; claviform stigma obscure, black-edged; orbicular roundish, brown with pale ring; reniform large with paler outline, especially externally; hindwing whitish, the veins dark; termen diffusely brownish; in ♂ white, with termen narrowly grey; — ab. **ferruginea** Hofm. (= *decolor* Sohn) is much paler with a reddish yellow tint. — Larva shining dark brown; thoracic and anal plates black; head brown; dorsal and subdorsal lines narrow, pale yellow; lateral stripe broader; spiracles black; at roots of grasses. Occurs throughout Europe and in the Altai Mts., W. Siberia; the aberration *ferruginea* in Carinthia and the Tyrol.

ferruginea.

12. Genus: **Thargelia** Püng.

Tongue aborted; frons with a rounded prominence with corneous plate below it; antennae of ♂ serrulate, with short sessile fascicles of cilia; two small claws at end of foretibia, one larger than the other.

Type *T. distincta* Christ.

distincta.

T. distincta Christ. (20 a). Forewing grey dusted and shaded with darker grey; veins blackish; lines obsolete; stigmata concolorous, with the edges black; claviform elongate, with a black streak into it from base; orbicular elongate, flattened; reniform large, angled outwards on veins 3 and 4 and inwards on median vein; submarginal line paler, produced as pale teeth along the black veins; marginal area between these darker; hindwing dull whitish; cellspot, veins, and a submarginal cloud grey. W. and E. Turkestan.

fissilis.

T. fissilis Christ. (20 a, b). Smaller than *distincta*, dingier grey; the stigmata smaller; hindwing white. W. and E. Turkestan.

13. Genus: **Odontelia** Hamps.

Differs from *Thargelia* Püng. in the foretibia being simple, without the small spur at end.

Type *O. margiana* Püng.

Section I: Antennae of ♂ bipectinate to apex.

margiana.

O. margiana Püng. ♂: forewing greyish white, dusted with blackish scales, and in places ochreous-tinged; lines hardly traceable, except just at costa; claviform stigma elongate, outlined with black; orbicular and reniform whitish outlined with black, the former narrow and elongate, the latter with fuscous in upper half, angled inwards on median nervure and its lower outer end produced; veins before termen dark; fringe mottled; hindwing whitish, the veins and terminal half streaked with fuscous. ♀ more ochreous, with black streaks before and beyond claviform; the orbicular confluent or nearly so with reniform, which is bidentate at lower extremity. Merv, and the Tedschen oasis, W. Turkestan.

Section II: Antennae of ♂ with short sessile fascicles of cilia, as in *Thargelia*.

megastigma.

O. megastigma spec. nov. (20 b). Larger and paler than *distincta* Christ, luteous-tinged; the stigmata paler, with thick black outlines; orbicular club-shaped running out from base through cell and coalescing at end with the very large reniform, the angles of which are amplified; hindwing luteous white, with traces of a postmedian line. Dortkujn, West of Merv, May 1903, 1 ♂, 4 ♀♀. Agrees almost entirely with the description of *O. margiana* Püng., the ♂ of which has the antennae strongly pectinated.

O. ochrea *spec. nov.* (20b). Forewing pale greyish luteous, without dark grey or black markings; claviform and orbicular stigmata shaped as in *megastigma*, but the reniform much smaller, shaped as in *distincta*, all three pale without distinct outlines; submarginal line forming teeth along the veins; hindwing luteous whitish. — 1 ♂ Kuldja. — Like *distincta* but luteous, without any grey or black shading.

14. Genus: **Hypobarathra** *Hamps.*

Differs from *Barathra* *Hbn.* in the abdomen having a crest at the base only, and in the outer margins of wings being non-crenulate. The foretibia with a claw at extremity on outer side.

Type *H. icterias* *Er.*

H. icterias *Er.* (20b). Forewing yellow suffused with fulvous, and slightly dusted with darker; *icterias*. costa darker; lines hardly expressed; outer line represented by short dark streaks on veins; claviform stigma small, fulvous and black; orbicular yellow; reniform white with fuscous centre and edged externally with white; marginal area deeper brown; hindwing yellow; apical area and veins towards termen darker. From the Ural Mts., Russia, and Amurland.

H. repetita *Btlr.* (20c). Forewing rufous or ochreous grey, freckled with brown; veins dark-streaked; claviform stigma indistinct; the round orbicular and the reniform fuscous, ringed with grey; submarginal line preceded by dentate rufous marks; hindwing rufous fuscous, paler towards base. Described from N. India: the form occurring at Yatong, Tibet — ab. **laetior** *nov.* (= ab. 1. *Hamps.*) is brighter and more uniformly ferruginous.

The following 10 genera are characterised by having the segments of the foretarsi shortened, their spines developed into claws; the first has also a claw at end of the foretibia.

15. Genus: **Conisania** *Hamps.*

Tongue developed; frons with small rounded prominence; antennae of ♂ ciliated; foretibiae with a spine on outer side near extremity; foretarsal segments with curved claws, which are longer towards extremity of each segment.

Type *C. leineri* *Frr.*

C. leineri *Frr.* (21a). Forewing fawn colour, darker in ♀; all markings obscure; submarginal line whitish, entire, the other lines marked by pale vein-dots; claviform stigma obsolete; orbicular hardly visible; reniform with the lower margin prominently white; median vein and veinlets and the submedian finely marked with dark and pale scales; hindwing luteous grey in ♂, dark grey in ♀; fringe paler. S. E. Europe, Austria, Hungary, the Bukowina; — ab. **cervina** *Ev.*, from the Urals is yellowish rufous, and **bovina** *Stgr.* from Turkestan is browner red, both with the orbicular small but plain; — **furcata** *Ev.* (21a), from the Urals and Turkestan, is brighter rufous with the median vein white, and the lower edge of reniform forked along veins 3, 4; — **pomerana** *Schulz* (21a) has all the veins strongly whitish, the orbicular round and white, and occurs only in Pomerania; — **albina** *Stgr.*, from Mongolia, also has the veins white, but the ground colour greyish ochreous instead of redbrown. — Larva yellowish grey; spiracles white, ringed with dark; the head, thoracic, and anal plates bright yellow. That of ab. *pomerana* is dull reddish grey on back and at sides, dull green beneath; dorsal line finely pale with darker margins; subdorsal lines broader; lateral lines broad, whitish grey; on *Artemisia campestris* and *maritima* in sandy districts.

16. Genus: **Saragossa** *Stgr.*

Forewing narrow; frons with horny plate; palpi perfect, slender, the terminal segment long and thin; antennae of ♂ serrate and ciliated.

Type *S. seeboldi* *Stgr.*

S. seeboldi *Stgr.* Forewing dull grey brown; the lines dentate, white, with dark edges; claviform stigma small, whitish, with black outline; upper stigmata white-ringed; fringe mottled white and grey; hindwing snowwhite. Described from a single ♂ from N. Spain.

17. Genus: **Onychestra** *Hamps.*

Tongue developed; frons with rounded prominence, with a curved corneous process below it from middle, and a corneous plate below the frons expanded laterally; antennae of ♂ serrulate, fasciculate; foretarsi very short and broad, the spines on each side of the first three segments developed into short thick claws; the ungues also enlarged.

Type *O. siccanorum* *Stgr.*

siccanorum. **O. siccanorum** *Stgr.* (19 g). Forewing grey brown dusted with darker; the cell dark; veins fuscous outlined with pale grey; claviform stigma small, dark, followed by a pale patch; orbicular and reniform white with grey brown centres; submarginal line white, preceded by black wedge-shaped marks; hindwing whitish, with obscure outer line; the veins grey-dusted. — A small species from Sarepta, S. Russia, W. Turkestan, and Sefr-Kuh, Afghanistan.

18. Genus: **Protonestra** *Hamps.*

Tongue developed; frons with truncate conical prominence with a vertical ridge at middle and corneous plate below it, pointed in front; the shortened foretarsal segments with claws on outer side throughout.

Type *P. silenides* *Stgr.*

silenides. **P. silenides** *Stgr.* (20 c). Forewing reddish brown; basal and terminal areas suffused with bluish white; claviform stigma blackish, the pointed end touching outer line; orbicular and reniform large, bluish white, the cell dark; hindwing fuscous grey. A mediterranean species found in Spain, Algeria, Tunis, and Syria.

19. Genus: **Aglossestra** *Hamps.*

Tongue aborted; frons with truncate conical prominence with corneous plate below it; antennae of ♂ bipectinate; the shortened foretarsal segments with lateral series of curved claws, which are longer at the extremities of each segment.

Type *A. deserticola* *Hamps.*

deserticola. **A. deserticola** *Hamps.* Forewing whitish suffused and dusted with redbrown; lines defined by white; claviform stigma redbrown; upper stigmata white edged with redbrown, the orbicular round; submarginal line white and forming a large white patch on submedian fold; hindwing white, rufous along termen. Suez, Egypt.

20. Genus: **Epia** *Hbn.*

Tongue developed; frons with truncate conical prominence, with corneous plate below it; antennae of ♂ ciliated; foretarsi with long curved clawlike spines on outer side only of proximal segments.

Type *E. irregularis* *Hfngl.*

picturata. **E. picturata** *Alph.* (20 c). Forewing whitish grey, with a lilac tinge and some brown suffusion; claviform brown, dark-edged, followed by a pale patch, and with a whitish patch at base of vein 2; orbicular and reniform white with brown centres; postmedian and submarginal lines approximated and running more or less parallel to outer margin; hindwing brownish white; a fuscous marginal border separated by a white belt from the grey outer line. W. and E. Turkestan.

irregularis. **E. irregularis** *Hfngl.* (= *brecciaeformis* *Esp.*, *echii* *Bkh.*, *syngenesiae* *Scriba*) (21 a). Forewing olive ochreous, suffused between inner and submarginal lines with pale brown; lines dark brown with paler edges; claviform stigma pale brown, ill-defined; orbicular round, whitish, with grey centre; reniform darker with pale edge; median vein and veinlets often whitish; a pale patch on each fold beyond outer line; hindwing ochreous suffused with brown, deeper along termen, sometimes wholly brown. — Larva pale putty colour with darker lines and indistinct V-shaped dorsal markings; on flowers and seeds of *Silene otites* and *Gypsophila paniculata*. Occurs in Britain (Breck sand district), France, Germany, Switzerland, Italy, Dalmatia, Austria, Hungary and S. Russia; in Asia Minor and Turkestan.

aberrans. **E. aberrans** *Ev.* (= *admiranda* *Oberth.*, *claripennis* *Btlr.*) (20 c). Distinguished from *irregularis* by the whiter ground colour and deeper brown suffusion; thorax unicolorous whitish. — Siberia, Amurland, Japan; restricted to Eastern Asia, and apparently a good species.

nisus. **E. nisus** *Germ.* (21 a). Like *irregularis*, but grey brown without the pale ochreous tinge; submarginal line dentate and preceded by long dentate black marks; claviform stigma definite but small and brown; hindwing fuscous. The type form is from Sicily only: **sancta** *Stgr.*, darker and greyer, with the stigmata filled in with brown, occurs in Spain.

mendax. **E. mendax** *Stgr.* (20 c). Forewing rufous brown, shaded and dusted with blackish; a black streak at base of submedian fold; claviform stigma edged with black; upper stigmata white, orbicular round, reniform narrow; submarginal line whitish, preceded by black teeth; hindwing brownish, paler towards base, darker in ♀. — Recorded only from Asia Minor.

mendica. **E. ? mendica** *Stgr.* (20 c). Resembles *mendax*, but larger and paler, with similar light and dark markings to *S. marmorosa*; inner and outer lines very strongly dentate; a fine black basal streak below

cell; claviform stigma longer than in *mendax*, orbicular stigma smaller, oval; reniform narrow, crescent-shaped, pale with a dark centre; hindwing dark fuscous, paler at base. Recorded from Asia Minor and Mesopotamia.

E. renati Oberth. (= magdalene Oberth.) (20 d). Forewing redbrown, grey-tinged, and partly suffused with fuscous; lines defined by white; claviform stigma small, black-edged; orbicular small, obliquely elliptical; reniform large, constricted at middle, conspicuously outlined with white at lower end; hindwing whitish tinged with brown; veins and terminal area brownish; the ♀ only is known: from the Pyrenees. *renati*.

E. silenes Hbn. (= *sejuncta* H.-Sch.) (20 d). Forewing ochreous white with redbrown suffusion; claviform stigma black; orbicular and reniform large, their centres brown ringed with white; submarginal line white with black wedge-shaped marks in front of it; hindwing brown, deeper towards termen. — Larva pale redbrown; dorsal and subdorsal lines fine, whitish grey; lateral stripe broad and whitish; spiracles white with black rings; on seeds of various kinds of *Silene*. A South European species, found in S. France, Spain, Sicily, Hungary and Macedonia; also in Armenia, Palestine, and Mesopotamia. *silenes*.

E. christophi Moeschl. (20 d). Forewing white suffused with dark brown in median area and beyond cell; a black streak below base of cell, cut by the white subbasal line; claviform stigma black, triangular; upper stigmata white, with brownish centres, the cell blackish; submarginal line white; hindwing brownish white, with veins and cellspot darker, and dark brown submarginal band; — in the form **corrupta** Herz (= *sejuncta* Graes.) all the wings are darker. An asiatic species occurring in the Altai Mts., Siberia, Turkestan, Mongolia, Tibet, and Amurland; in Europe found only at Sarepta, S. E. Russia. — Larva, according to HAMPSON, yellowish white, with white dorsal, subdorsal, and lateral stripes. *christophi*. *corrupta*.

21. Genus: **Cardepi** Hamps.

Differs from *Epia* in the frontal prominence being excised below and ending in a central projecting rim, while in *Epia* the projection is at the lower end of face; claws on foretarsi small, increasing in size towards the extremity of the segments.

Type *C. irrisor* Ersch.

C. ? afra Baker. Forewing pale ochreous grey; lines blackish edged with white, the inner forming 3 curves; claviform stigma outlined with black; orbicular white; reniform dark grey at centre, ringed with white, and partly outlined with black; submarginal line dentate; hindwing white; cellspot and terminal border dark grey. Egypt. The position of this species is dubious; it may be related to *Scotogramma stigmosa*. *afra*.

C. irrisor Ersch. (= *albipicta* Chr.) (21 b). Forewing grey white; lines double, blackish; claviform stigma small, black; orbicular of the ground colour, round, with black edge; reniform filled up with blackish; hindwing in ♀ dirty grey, with dark grey marginal border; in ♂ white with a pale grey submarginal shade. The ♀ is always greyer and darker than the ♂. The insect bears a remarkable superficial likeness to *Scotogramma stigmosa*. — An eastern species, occurring in S. E. Russia, Syria, Kirghistan, and Turkestan; — ab. **deserticola** Hamps. from Syria has the ground colour of forewing more ochreous. *irrisor*. *deserticola*.

22. Genus: **Trichoclea** Grote.

Differs from the two preceding genera in the frontal prominence being simply rounded, with a corneous plate below it; foretarsi with the first or first two segments bearing long curved clawlike spines on the outer side.

Type *T. decepta* Grote from N. America.

T. albicolon Sepp. (21 b). Forewing dull blackish grey; all the markings indistinct, except the small white spots bordering the reniform stigma; hindwing dingy grey, darker towards termen; ab. **brunnea** Tutt (= var. *A. Guen.*) is yellowish brown, with the markings more distinct; the hindwing paler, yellowish-tinged; ab. **cinerascens** Tutt (= *albicolon* Steph.) (21 b, c) has the forewing ashy grey, dusted with black; all the markings distinct; the stigmata paler and clearer; the white edging of the reniform nearly complete: this is the more general British form; the next 3 aberrations are all from W. and Central Asia; — viz. ab. **egena** Led., smaller, paler, the forewing luteous grey; ab. **arida** Led., darker than *egena*, the forewing reddish grey; ab. **odiosa** Stgr. (21 d) from Amdo and Kuku-Nor, Tibet, with the forewing dull ochreous brown, and the hindwing uniform fuscous. Found throughout Europe, in Asia Minor, and Central Asia. — Larva green, dark-speckled along the dorsum; dorsal line dark, obscurely divided; subdorsal lines interrupted, blackish; spiracular line yellow; spiracles white in black rings; feeds up in autumn on low plants. *albicolon*. *brunnea*. *cinerascens*. *egena*. *arida*. *odiosa*.

T. atalantica Hamps. (20 d). Forewing dark brown; median area darker; the lines black; stigmata indistinct, the orbicular oblique, elliptical; some obscure dark dentate marks before submarginal line; hindwing fuscous brown. Described from a single ♂ from Porto Santo, Madeira. *atalantica*.

- simplex.* **T. simplex** *Stgr.* (= *amydra* *Püng.*, *cholica* *Hamps.*) (21 d). Forewing dull grey brown; lines fairly distinct; all the stigmata obscure, outlined by dark scales; submarginal line preceded by dark dentate markings; hindwing fuscous with the termen darker. Tibet, Turkestan, Kashmir.
- sociabilis.* **T. sociabilis** *Grasl.* (20 d). Forewing grey brown; the lines double; claviform stigma small, blackish; orbicular grey, round, black-edged; reniform filled in with blackish; subterminal line whitish, with dark dentate marks before it; hindwing brownish white, the veins and termen browner. Found in S. W. France and Morocco.
- demotica.* **T. demotica** *Püng.* (20 d). Forewing grey tinged with reddish brown; lines dark defined by whitish grey; stigmata with dark edges; subterminal line preceded by black dentate markings; hindwing dull brownish, the termen diffusely darker. W. and E. Turkestan.

The two following genera, while agreeing with those preceding in having the foretarsi beset with clawlike spines, differ in having the frons smoothly rounded, without prominence.

23. Genus: **Manobia** *Stgr.*

Eyes large, rounded, without cilia.

- xena.* **M. xena** *Stgr.* (21 d). Forewing greyish fuscous suffused with purplish; a wedge-shaped mark below cell from base; the largest part of the median area, and often the marginal area darker, purplish brown; stigmata large, purplish grey, the orbicular rounded, the reniform subquadrate and produced basewards along median vein to join a pale purplish grey patch along base of vein 2, the orbicular also sometimes confluent; claviform dark, lost in the dark suffusion; the inner and outer lines conversely oblique, approximating on inner margin; hindwing pale grey, with a violet gloss, and traces of a median line. Amdo and Kuku-Nor, Tibet.
- grisea.* **M. grisea** *Btlr.* (20^e). Forewing dull grey brown tinged with rufous; all the markings inconspicuous; upper stigmata paler, with a darker patch between them; inner and outer lines double, indistinct, approximating at inner margin; submarginal line shown by a dark shade preceding it; hindwing rufous brown, darker along termen. A large species only known from Japan.

24. Genus: **Lasianobia** *Hamps.*

Eyes large, rounded, overhung by long cilia.

- lauta.* **L. lauta** *Püng.* Forewing glossy, purplish grey brown; lines fine, obscure, approximating on inner margin and there connected by a black streak; claviform stigma pale, minute, obscurely defined; orbicular and reniform grey, with yellowish white annuli outlined with dark; submarginal line marked on the two folds with yellowish white scales and preceded by a rufous cloud; hindwing brownish grey, the fringe paler. Kuku-Nor, Tibet.
- decreta.* **L. decreta** *Püng.* (20 e). Forewing greyish brown; the cell and space beyond to submarginal line above vein 2 redbrown; upper stigmata pale grey; the orbicular round, with a small pale patch obliquely below it at base of vein 2; the reniform curved outwards at lower end; lines defined by whitish grey; hindwing brownish grey, with pale fringe; in the ♀ the reddish tints are replaced by fuscous. Kuku-Nor, Tibet.

The 2 following genera agree with *Lasianobia* in having the eyes overhung by long cilia.

25. Genus: **Lasiestra** *Hamps.*

Tongue present; frons smooth; palpi upturned, the second segment hairy in front, the terminal small; head, thorax, and tibiae clothed with rough hair; antennae of ♂ serrate and fasciculate, or simply ciliated.

Type *L. phoca* *Moeschl.* from Canada.

Section I: Antennae of ♂ serrate and fasciculate.

- montana.* **L. montana** *Leech* (20 e). Forewing blackish, irrorated with bluish grey, most abundantly in basal field; lines deeper black, but indistinct, with a slight admixture of orange scales; claviform small, black; orbicular and reniform whitish, with some ochreous at centre, the former round, the latter indented on outer side; submarginal line denoted by a row of dark and pale lunules; fringe mottled; hindwing whitish washed with brownish, the termen itself white; veins brown. Ta-chien-lu, W. China. Described from a single ♂.

Section II: Antennae of ♂ simply ciliate.

L. dovrensis *Wocke* (21 c). Forewing pale grey speckled thickly with dark grey; the lines and shading blackish; outer line acutely dentate; stigmata very obscurely defined, pale with black outlines; space between outer and submarginal line blackish, marginal area pale grey; fringe mottled; hindwing brownish fuscous, with a slightly paler postmedian band, showing a dentate outer line and dark cellspot; fringe white. Mountains of Norway. — **altaica** *Stgr.* from the Altai Mts., W. Siberia is larger; the forewing with a yellow tinge, the black before subterminal line more conspicuous.

L. kenteana *Stgr.* Like *dovrensis* in the upperside of forewing; but the underside of forewing and hindwing is white with a broad black terminal band. Kentei, S. E. Siberia. — ab. **mongolica** *Stgr.* has no dark terminal band on the underside of either wing. Found in the Uliassutai Mts., Mongolia.

L. elwesi *Hamps.* (20 e). Forewing violaceous grey, dusted with black; the median area wholly blackish; lines blackish, indistinct, except the submarginal; stigmata grey, partly outlined with black; hindwing fuscous brown with traces of outer line and cellspot. An Indian insect, occurring at Yatong, Tibet.

L. deliciosa *Alph.* (21 c). Forewing olive grey, with fine dark dusting; lines dull black, dentate, edged by pale scales mixed with yellowish; stigmata pale grey, the median area, especially in cell, rather darker; submarginal line ill-defined; hindwing dark fuscous with white fringe. Kuku-Nor, Tibet; Kashmir.

L. persa *Alph.* (20 e). Forewing grey tinged with olive brown and dusted with darker: the cell dark brown; inner and outer lines conversely pale-edged; submarginal line yellowish white preceded by a row of black lunules; claviform stigma small and dark; upper stigmata olive brown at centre, with pale rings: fringe yellowish white, mottled; hindwing brown, the fringe yellowish. Demavend, North Persia.

L. meraca *Püng.* (21 c). Near *persa* *Alph.*, but the forewing shorter and broader, greyer, with a white mark in place of the claviform stigma; the orbicular larger, the reniform more obscure; the outer line more strongly dentate: a yellowish brown tinge in submedian interval; hindwing brownish grey. E. Turkestan.

26. Genus: **Lasionycta** *Auriv.*

Like *Lasiestra* *Hamps.*, but the hairy clothing coarser; the abdomen with a dorsal series of crests; antennae with tuberculate fascicles of cilia.

Type *L. skraelingia* *H.-Sch.*

L. bryoptera *Püng.* (20 e). Forewing olive yellow, dusted with black, the veins with grey scales; inner and outer lines double, filled in with grey; submarginal line waved, whitish, with blackish suffusion on its inside; claviform stigma marked with black at extremity; orbicular and reniform with dark centres and grey and yellow annuli, laterally defined by black; hindwing fuscous grey, the termen itself yellowish with dark line; the fringe yellowish. Kuku-Nor, Tibet.

L. lurida *Alph.* (21 c). Forewing olive grey suffused with olive fuscous and dusted with grey and yellow scales; median area darkest; the inner and outer lines black, conversely edged with whitish, the former deeply lunulate dentate; claviform stigma blackish, broad; upper stigmata with olive centres and distinct white outlines; submarginal line white, preceded by a concise row of blackish wedge-shaped marks; hindwing yellowish straw colour, the veins, cellmark, outer line, and broad marginal shade olive fuscous; the fringe paler. Kuku-Nor, Tibet. — ab. **laetior** *nov.* (21 c) has the hindwing yellower, not clouded with fuscous except towards apex, the veins thickened towards termen.

L. skraelingia *H.-Sch.* (20 e). Forewing dark fuscous irrorated with bluish grey; inner and outer lines black conversely edged with pale; the area between them darker; submarginal line marked by pale dark-edged lunules; stigmata black-edged, with fuscous centres ringed with white; fringe cut with white; hindwing fuscous, the fringe grey. Sweden and Lapland. — ab. **alpicola** *Hamps.* from the Altai Mts., W. Siberia, has a patch of orange scales on inner margin beyond basal line; claviform large, extending nearly to postmedian line.

L. altaica *Hamps.* (20 f). Forewing pale bluish grey, irrorated with fuscous; lines black, fairly distinct; claviform stigma short, outlined with black; upper stigmata white, with grey centres, defined by black; submarginal line white; hindwing dark fuscous; some white scales along termen at anal angle, and a white patch above it from inner margin to vein 2. Described from a single ♀ from the Altai Mts., W. Siberia.

27. Genus: **Hadula** *Stgr.*

Like *Polia* but the frons has a rounded prominence with a corneous plate below it, instead of being smooth.

Type *H. insolita* *Stgr.*

Section I: Antennae of ♂ bipectinate, the pectinations reaching apex.

- tancrei*. **H. tancrei** *Graes.* (21 d). Forewing whitish grey, dark-speckled, along costa and inner margin; between subcostal and submedian flushed with pale brownish; veins finely dark; antemedian line forming a large projecting tooth on submedian fold, the black-edged claviform stigma from its apex; a pale patch at base of vein 2; upper stigmata large, black-edged; the orbicular round or flattened; the reniform filled with grey, its lower lobe enlarged and externally edged by a curved white mark; submarginal line whitish, strongly dentate; hindwing luteous fuscous, the veins and termen darker; — ab. **graeseri** *Püng.* is smaller, the forewing with less distinct markings. Only from W. and E. Turkestan.
- korghossi*. **H. korghossi** *Alph.* (21 d). Paler and on the average smaller than *tancrei*; stigmata often obsolete in upper half; the orbicular sometimes confluent with the reniform, the whole base of which is edged by a semi-elliptical white streak; submarginal line subdentate, with small teeth, not reaching termen; hindwing whitish, more or less grey-tinged, with a grey submarginal cloud; in ♀ grey. Found in the Altai Mts., W. Siberia, in E. Siberia, W. and E. Turkestan.

Section II: Antennae of ♂ bipectinate, the apex simple.

- turpis*. **H. turpis** *Stgr.* (20 f). Forewing grey white, slightly tinged with redbrown, and irrorated with fuscous; stigmata outlined with fuscous, the claviform darker; orbicular round; reniform with lower lobe marked with fuscous; hindwing brownish grey. E. Turkestan.
- optima*. **H. optima** *Alph.* (20 f). Closely resembling *turpis*, but the submarginal line is more strongly dentate, and the hindwing is whitish dusted with fuscous, and with fuscous termen, instead of being wholly fuscous. Recorded from E. Turkestan and W. China.
- chiklika*. **H. chiklika** *Moore*. Forewing grey, with thick fuscous speckling; the orbicular and reniform stigmata prominently grey in the darker median area; a dark shade before submarginal line; hindwing brown, paler towards costa. South of Chiklik, Yarkand. Judging from the figure, this species must be near *H. optima* *Alph.*

Section III: Antennae of ♂ serrate, with sessile fascicles of cilia.

- praecipua*. **H. praecipua** *Stgr.* (21 e). Forewing dark grey brown, somewhat reddish-tinged; a conspicuous black streak on inner margin near base; stigmata all large, black-edged and filled in with dark fuscous; submarginal line strongly dentate, preceded and followed by black wedge-shaped marks on each fold; hindwing brownish fuscous, with a dark curved middle line. Kuku-Nor, Tibet.
- longicornis*. **H. longicornis** *Graes.* (21 e). Forewing pale grey dusted with darker, slightly olive, grey; the median area somewhat darker; stigmata paler; the claviform at apex edged with black; the orbicular and reniform separated by a dark quadrate blotch; submarginal line denoted by dark patches before it on the folds and at costa; hindwing pale grey, with dark middle line; fringe white. E. Turkestan.

Section IV: Antennae of ♂ ciliated.

- sabulorum*. **H. sabulorum** *Alph.* (21 e). Forewing whitish grey, slightly flushed with ochreous and dusted with darker; stigmata black-edged, the small claviform most thickly; upper stigmata large; submarginal line preceded by black wedge-shaped marks; hindwing pale grey, the termen darker with the fringe white.
- distincta*. Occurs in W. and E. Turkestan; — ab. **distincta** *Stgr.* from Issyk-kul is larger, with violet grey forewings, and the underside more clearly marked; — **rhodina** *Christ.* from Ordubad, Armenia, described from a single ♂, is rosy brown.
- lupa*. **H. lupa** *Christ.* Forewing grey clouded with luteous; stigmata distinctly outlined with fuscous, the claviform short and rounded, filled in with brown; subterminal line strongly dentate preceded by dark sagittate marks; hindwing fuscous, whitish towards base, with two short darker obscure fasciae: recorded from Schah-kuh, Persia; apparently near the preceding species.
- insolita*. **H. insolita** *Stgr.* (20 f). Forewing brownish grey; the lines brownish; stigmata indistinct, the claviform obsolete, the upper two large, incompletely defined; submarginal line brown, with some short black marks before it; hindwing brownish white, darker along termen. W. and E. Turkestan.
- impia*. **H. impia** *Püng.* (20 f). Forewing grey, dusted and suffused with brown; lines brown defined by pale grey; claviform stigma small, with brown outline; orbicular and reniform with centres brown, outlined with darker; submarginal line pale, defined by brown on inner side; hindwing fuscous brown. Recorded from Aksu, E. Turkestan.

Section V: Antennae of ♂ pubescent only.

- unica*. **H. unica** *Leech* (21 e). Forewing brownish grey, dusted with darker; the median area fuscous; claviform stigma small, outlined with black; orbicular and reniform large, grey with brown centres and

outlined with black, the former elliptical, the latter subquadrate, angled inwards on median nervure; subterminal line pale, preceded by some brown shading; hindwing brownish ochreous, the veins and termen brown with an ochreous spot towards anal angle. Japan.

H. incommoda *Stgr.* (= *lacrimosa* *Graes.*) (20 f). Forewing purplish grey, with some darker dusting and suffusion; a black spot below base of cell; claviform brown, pointed at end; orbicular and reniform conversely oblique, grey with dark centres and brown outlines; submarginal line waved, whitish, the area beyond it fuscous; hindwing ochreous white, becoming brown towards termen. Amurland.

28. Genus: **Tiracola** *Moore.*

Tongue developed; frons smooth; antennae of ♂ ciliated; thorax and abdomen crested; outer margin of forewing crenulate; hindwing with cell shortened; vein 2 from near angle, 3 and 4 stalked, 6 and 7 shortly stalked.

Type *T. plagiata* *Walk.*

T. plagiata *Walk.* (= *plagifera* *Walk.*, *spectabilis* *Walk.*, *grandirena* *H.-Sch.*) (21 f). Forewing greyish ochreous or fuscous, thickly freckled with darker, sometimes much suffused with brown or fuscous, in other cases rufous brown throughout and then generally with the speckling slight or absent; submarginal line sinuous, generally pale; the marginal area beyond it, except at apex, and a triangular blotch at middle of costa enclosing the reniform stigma, darker; in the ♂ this triangular blotch is much more conspicuous by reason of the reniform being black; hindwing fuscous, the fringe pale. — Larva dull purple brown, dusted with grey; a dorsal row of grey triangular blotches; sublateral stripes pale; head small; 11th segment dorsally humped; a few fine hairs along dorsum; on Emilia. A widely distributed tropical insect, recorded from Moupin, W. China.

29. Genus: **Hyssia** *Guen.*

Tongue developed; frons smooth; antennae of ♂ pubescent, head and thorax roughly scaled.

Type *H. cavernosa* *Ev.*

H. cavernosa *Ev.* (= *ornata* *H.-Sch.*) (21 f). Forewing violet grey, suffused with fuscous; inner margin below vein 1 prominently yellowish white, a sharp-pointed black streak from base below vein 1; lines vertical; stigmata large and conspicuous, deep olive brown; claviform bullet-shaped; orbicular round, black-edged, open at top; reniform with dark centre; outer line minutely dentate, pale-edged, with 2 longer grey teeth along veins 3, 4 touching subterminal line, which is white, preceded by double dark blotches on the folds and at costa, and an oblong grey blotch between veins 6 and 7; hindwing fuscous, with cellspot and terminal area darker. A South European species found in Italy, Switzerland, Hungary, Austria and S. E. Russia: extending from the Altai Mts. in W. Siberia to Ussuri in E. Siberia, and occurring in W. and E. Turkestan and Mongolia.

H. violascens *Hamps.* (20 g). Forewing violet grey, darker, suffused with reddish brown, as far as outer line; inner and outer lines approximated on inner margin; upper stigmata large, greyish; orbicular oblique, elliptical; reniform with lower lobe dark; veins in outer area somewhat speckled; hindwing pale grey, more brownish terminally. Described from a single ♂ from Foochau, N. China.

H. musculina *Stgr.* (20 g). Forewing pale ochreous, dusted with fuscous and grey; wholly suffused with fuscous beyond outer line and along a band before inner line; upper stigmata ill-defined, pale ochreous; claviform absent; submarginal line obscured; hindwing with basal area pale, becoming brownish grey in terminal half; the fringe ochreous. The ♀ is said to have the ochreous scales replaced by bluish white, and the darker tints reversed; the median area being dark and the basal and marginal lighter; the stigmata with dark centres and white rings. Described by STAUDINGER originally from Malatia, W. Kurdistan; the pair described by HAMPSON from Syria. The ♀ may well belong to a distinct species.

30. Genus: **Eriopygodes** *Hamps.*

Tongue developed; frons smooth; abdomen without crests; antennae lamellate; palpi with 2nd segment long-haired, 3rd short. Imago of small size; the ♀ smaller than the ♂, with narrower forewings.

Type *E. imbecilla* *F.*

Section I: Antennae of ♂ flattened, tuberculate-fasciculate.

E. imbecilla *F.* (= *aliena* ♂ *Hbn.*, *alpina* ♀ *Hbn.*, *disparilis* *O.*, *nexa* *Dup.*) (21 g). Forewing rufous ochreous, sometimes grey-tinged, in the ♂, rufous brown in the ♀; veins finely brownish; inner and outer

lines brown: submarginal obscure, the marginal area beyond it generally darker; reniform stigma externally whitish, preceded by a brownish median shade; hindwing greyish fuscous: fringe rufous. — Larva dirty grey, with a few yellowish grey hairs; dorsal line fine, whitish, traversing a series of black or brown oval blotches; lateral stripes dark grey, with a pale line at middle; spiracles black, each with a shining black point above it; head blackish, with 3 white lines; feeds on *Stellaria* and other low plants. Fairly generally distributed in Europe, occurring in France, Switzerland, Scandinavia, the Baltic provinces of Russia and the Ural Mts., Austria, Hungary, Bulgaria; Armenia, W. Turkestan, Siberia, Mongolia, and Amurland.

Section II: Antennae of ♂ simply lamellate.

impar. **E. impar** *Stgr.* (21 g). Forewing grey brown in the ♂, black brown in the ♀; inner and outer lines brown, wavy or denticulate, near together, especially on costa, where they start from 2 brown spots, and on inner margin; submarginal line indistinct, greyish, outlined by the dark marginal area beyond it; orbicular stigma round, brown, grey-ringed; reniform with white outline, especially externally; hindwing pale greyish fuscous, with traces of 2 darker outer lines. S. E. Russia; the Caucasus; W. Turkestan.

31. Genus: **Monostola** *Alph.*

Tongue developed; frons smooth; antennae of ♂ bipectinate to apex; vestiture hairy; tibiae fringed with long hair.

Type *M. asiatica* *Alph.*

asiatica. **M. asiatica** *Alph.* (21 f). Forewing rufous; the median and marginal areas darker; veins finely brown; lines brown, wavy, approximated on inner margin; stigmata edged with dark rufous; claviform inconspicuous, of the ground colour; the two upper paler; hindwing luteous grey, darker terminally; fringe in both wings rufous. Tibet: Kuku-Nor and Amdo; W. China.

infans. **M. infans** *Alph.* (= *pectinata* *Alph.*) (20 g). Smaller than *asiatica*; claviform not expressed; hindwing dark reddish brown. Kuku-Nor, Tibet, W. China. Perhaps a form only of the preceding.

32. Genus: **Xylomania** *Hamps.*

Tongue developed; frons smooth; palpi short; pectus and tibiae hairy; antennae of ♂ varying from bipectinate to ciliate; neuration of hindwing variant, veins 3, 4 and 6, 7 being shortly stalked. The imago emerges in early spring.

Type *X. hiemalis* *Grote.*

Section IV: Antennae of ♂ ciliate.

conspicillaris. **X. conspicillaris** *L.* (= *musicalis* *Esp.*) (21 g). Forewing pale lilac grey in lower half, becoming pale lilac brown in costal; markings usually much confused; inner line and median shade thick, brown; claviform stigma outlined with black; orbicular round, reniform large, both pale; outer line denoted by a row of black dashes on veins; marginal area beyond submarginal line darker; hindwing pearly white, slightly tinged with grey; the apex and veins brown; — ab. **melaleuca** *View.* (= *conspicillaris* *Guen.*) (21 g) has the forewing suffused with dark brown or black, except the inner area and a narrow praesubmarginal band, which are pearly grey or white; — in the ab. **intermedia** *Tutt* (21 h) the outer costal half of wing is also pale brownish grey; both of these aberrations are commoner than the pale type form. — Larva brownish, mottled dark and light; a row of dark dorsal blotches; subdorsal line slightly marked; spiracular stripe broad and pale, with dark edges; spiracles white with black rings; feeds in summer on low plants. Britain, France, Germany, Italy, Austria, Sweden, Livonia; Armenia, Asia Minor, Kurdistan, W. Turkestan, W. Siberia.

bella. **X. bella** *Btlr.* (21 h). Forewing pearly grey suffused with flesh colour; median area between median vein and submedian fold, the cell, a shade along vein 5, and the marginal area dark olive brown; claviform stigma black, continued as a black streak to outer line; orbicular and reniform large, conversely oblique, pale grey tinged with rufous; the dark blotch before orbicular continued obliquely basewards to costa, and the blotch between the two stigmata to costa above it; hindwing white, with cellspot and outer line fuscous; marginal border broadly fuscous from apex to vein 2. Yokohama, Japan.

saxea. **X. saxea** *Leech* (20 g). Forewing pearly grey, faintly yellow-tinged, dusted and suffused with purplish brown; basal area, except at extreme base, brown, the veins black; a black streak below cell from base; claviform stigma large, defined by black below, with a black brown streak from it to termen; orbicular and reniform large, pale, very ill-defined and almost touching below; submarginal line obscure, the area beyond it brown; hindwing red-brown. Described from a single ♀ from Yokohama, Japan.

33. Genus: **Perigrapha** Led.

Tongue developed; frons smooth; eyes with very long hair; antennae varying from bipectinated to ciliated; thorax bearing a ridge-shaped dorsal crest; a dorsal crest on first segment of abdomen; abdomen flattened, laterally rough-haired; in the hindwing veins 6, 7 are shortly stalked. The imagos appear in early spring, frequenting sallow-bloom, like those of the following genus *Monima*.

Type *P. l-cinctum* Schiff.

Section I: Antennae in both sexes bipectinate to apex, the branches shorter in ♀.

P. circumducta Led. (21 h). Forewing pale olive grey, faintly flushed with pink, and dusted with *circumducta*. dark scales: median area chocolate brown, the costa remaining dark grey and the 3 conjoined stigmata, which are sandy brown, concisely outlined in white; hindwing pale fuscous; thorax and tegulae chocolate brown, the latter tipped with whitish. An Eastern species, occurring in S. Russia, the Altai Mts. in W. Siberia, and in W. and E. Turkestan.

P. l-cinctum Schiff. (= *cincta* F.) (21 i). Like *circumducta*, but darker grey, the contrast between *l-cinctum*. the light and dark shades not so striking; the stigmata not white-edged; the orbicular not oblique; the claviform shorter and broader; tegulae and thorax grey. Austria, Hungary, Ural Mts., S. Russia; Altai Mts., W. Siberia. — Larva pinkish; the dorsal, subdorsal, and lateral lines yellow, the last edged below with orange; venter yellow; head red; on rumex and low plants.

34. Genus: **Monima** Hbn.

Differs from *Perigrapha* Led. only in the absence of the dorsal ridge on thorax and of the crest on first segment of abdomen.

Type *M. miniosa* F.

Section I: Antennae bipectinate to near apex in both sexes, the branches shorter in ♀.

M. carnipennis Btlr. (21 i). Forewing greyish luteous, with a slight flesh-coloured tinge; a coal-*carnipennis*. black spot at base below median vein and a dot on costa, representing basal line; inner and outer lines hardly marked, except by a few black scales, and by the darker tint of the median area, conjoined on submedian fold by a velvety black bar widened at each end; orbicular and reniform stigmata pale, large, with still paler outlines, which sometimes contain black scales; submarginal line pale, sometimes accompanied by black scales; hindwing whitish, sprinkled with grey towards termen; the veins darker; — ab. **biconifer** *biconifer*. *nov.* (22 a) has the inner and outer lines more approximated in submedian interval, where the typical long black bar is reduced to two black cone-shaped marks, conjoined by their apices. Yokohama, Japan.

M. rorida Fric. (22 a). Forewing lilac grey, with a faint brownish flush, and thickly dusted with *rorida*. black atoms; lines ill-defined, starting from black costal dashes; outer line finely dentate-lunulate, the teeth marked by black dashes on veins; a diffuse fawny median shade, bent in middle, and passing over the narrow grey-edged reniform stigma; hindwing ochreous grey, like the forewing peppered with black atoms; fringe rufous ochreous; — in the ab. **sieversi** *Christ.* the lines are better defined, and the outer median *sieversi*. area is tinged with pink. A South European species occurring in Istria, Dalmatia, Bulgaria, and S. Turkey; in Armenia, Asia Minor, Syria, and Transcaucasia.

Section II: Antennae of ♂ bipectinate, the apex serrate; of ♀ serrate throughout.

M. porosa Er. (22 a). Forewing fuscous grey; mottled with blackish markings; these are a black *porosa*. spot at base below median vein, the cell, the claviform stigma, a small blotch before outer line on submedian fold, a costal patch before submarginal line, and another at middle; upper stigmata grey, flattened; lines dark edged with grey, generally ill-defined; the submarginal line pale; hindwing paler grey, tinged with luteous towards inner margin, with dark cloudy cellspot, outer line, and submarginal shade. From Sarepta and the Ural Mts. in S. E. Russia, and W. Turkestan. — Larva green with whitish lines, becoming afterwards brownish lilac with paler marblings, and when fullfed much darker; feeding on *Artemisia* and *Tanacetum*.

M. gothica L. (= *nun-atrum* Hbn.) (22 b). Forewing purplish red-brown; the lines pale, ill-defined, *gothica*. except by black spots at costa; the cell black; stigmata pale and large; claviform connected with outer line by a black bar; above which the base of vein 2 is often surrounded with rufous; hindwing fuscous. The size of the orbicular stigma is variable, and the amount and shape of the black filling in of the cell is determined by this variation; — in ab. **gothicina** *H.-Sch.* (22 b) the black markings are replaced by *gothicina*. olive brown or rufous; it is a northern form, occurring in Scotland, Scandinavia, and Finland, and in the Tarbagatai Mts.: — **askoldensis** *Stgr.* from Amurland and Japan has a more violet grey ground colour; — *askoldensis*.

- pallida*. ab. **pallida** Tutt (22 b) has a pale whitish ochreous ground colour; — in **rufescens** Tutt (22 b) the reddish
rufescens. grey tint is predominant: — in **rufa** Tutt the ground colour is red; — and in **brunnea** Tutt the rufous
rufa. tints give place to purplish brown; — ab. **hirsuta** nov. (22 b), apparently a dark powdered form of ab.
brunnea. **pallida**, is grey with a faint rufous tinge, plainest, as usual, at base of vein 2, thickly dusted with dark
hirsuta. grey; the lines black, the inner preceded, the outer and subterminal followed, by a thick fuscous blackish
shade: the black mark on submedian fold before outer line slight, and the black of the cell reduced to
two narrow spots, one horizontal, pointed outwardly, touching inner line, the other narrow, oblong, and
vertical, before reniform; hindwing pale luteous grey with broad fuscous terminal border, the whole dusted
with darker; the cellspot well-marked; the fringe pale rufous. 1 ♂ from Silvaplana, the Engadine, Switzer-
land, received with several of the *pallida* form and others of typical coloration. Like the examples of
pallida, the underside of this specimen has the cellspots and outer lines strikingly black and thick. Generally
distributed in Europe and through Central Asia to Amurland and Japan. — Larva green dotted all over
with yellow; dorsal and subdorsal lines yellowish white; spiracular line broad, white, with dark upper edge;
head pale green; on various shrubs and trees.
- castanei-* **M. castaneipennis** Hamps. (20 g). Forewing deep rufous striated with fuscous; the cell darker;
pennis. orbicular and reniform stigmata mixed with fuscous, their edges pale; postmedian and submarginal lines
nearer than usual, the interval striated with fuscous; hindwing reddish grey. Described from a single ♂
from Narkundah, Kashmir.
- ferrosticka.* **M. ferrosticka** Hamps. (20 g). Forewing pale lilac grey, faintly flushed with brown; the lines in-
distinct, the outer lunulate-dentate, the teeth marked dark on the veins; a diffuse brownish median shade
bent in middle; orbicular and reniform stigmata with obscure yellowish edges and defined below by curved
reddish brown marks; marginal area brown, the submarginal line marked by dark teeth on the veins;
hindwing brownish grey; the fringe white. Described, like the preceding species, from a single ♂ from
Narkundah, Kashmir; it appears to much resemble *M. vorida* ab. *sieversi* Christ. from Tiflis, Armenia.
- munda.* **M. munda** Esp. (= *gemina* Bkl., *geminatus* Hawc., *bimaculatus* Hawc., *lota* Dup.) (22 c). Forewing
brownish grey, not much dusted; the lines generally obscure, the outer line marked by dark vein-dashes;
the submarginal pale with black spots before it, two, the usual number, beyond cell, the others more rarely
expressed; orbicular and reniform large, with pale outlines, the latter often blackish in lower lobe; one, or
the other, or both may be obsolete; the median shade is equally variable; hindwing dull brownish grey; —
immaculata. the ab. **immaculata** Stgr. (22 c) shows the submarginal line without any black spots. The ground colour
pallida. also varies as much as the markings: thus ab. **pallida** Tutt (22 c) has the ground whitish, and ab. **grisea**
grisea. **Tutt** (22 c) has it grey, without brown or rufous admixture; — ab. **rufa** Tutt (22 c) is uniform rufous with
rufa. the markings slight; — in **striata** Tutt there is a black streak from near base along subcostal vein and
striata. another along median to the lower lobe of reniform stigma. Widely distributed in Europe, Britain, France,
Germany, Switzerland, Hungary and Russia; Amurland and Japan. The Japanese specimens are, as usual,
larger than European, and all of a dull brown grey, with few markings, one ♀ of the *immaculata* form being
all but unicolorous; but the black spots of the submarginal line are, as a rule, well-developed. — Larva
pale ochreous, much mottled with dark; the tubercles white; dorsal line pale, brown-edged; spiracular line
pale, edged above with blackish, and partially with white; segment 12 with a transverse pale line and two
brown spots before it. On various trees and shrubs.
- lizetta.* **M. lizetta** Btlr. (22 d). Forewing dull greyish brown, like the tint of the Japanese *miniosa*, rarely
rufous-tinged, often sprinkled with dark scales; inner and outer lines marked only by blackish vein-dots;
submarginal pale, preceded by patches of rufous scales in the folds and at costa, and followed by a rather
prominent blackish shade beyond cell; stigmata obscure, with faint pale outlines; orbicular often obsolete;
pallescens. reniform with lower lobe always dark fuscous; hindwing dingy fuscous, paler in ♂; — in ab. **pallescens**
nov. (22 d) the ground colour is pale ochreous stone colour, the thorax and abdomen the same, the only
dark markings being the lower lobe of reniform, the shadings of the submarginal line, and the series of
marginal black spots; the hindwing the same colour or slightly darker. From Yokohama, Japan, and
Kiu-shiu Island.
- populi.* **M. populi** Ström. (= *populeti* F., *subplumbeus* Hawc., *ocularis* Fr., *tremuleti* Tetenus) (22 d). Fore-
wing dull brownish grey in ♂, darker, purplish fuscous, in ♀; the lines indistinct, but plainer in the darker ♀♀;
stigmata large, of the ground colour or darker, always with pale rings; submarginal line pale accompanied
by rufous or dark spots between the veins; median shade generally visible; hindwing greyish fuscous; —
obsoleta. ab. **obsoleta** Tutt represents the palest and least-marked form of all; — in **intermedia** Steph. the darker
intermedia. purple tints prevail, the majority being probably ♀♀; — **nigra** Tutt is a rare perfectly black form; — in
nigra. **donasa** Esp. the stigmata and the surrounding area are described as rufous. A somewhat rarer and local
donasa. species, occurring in Britain, France, Germany, Switzerland, Scandinavia, Livonia, and the Urals. — Larva pale
green; the lines whitish; head greenish, marked with black; feeds on poplars only.

M. miniosa *F.* (22 d, e). Forewing sandy rufous, black-speckled, median area generally deeper *miniosa*. rufous; lines browner, edged with pale, the outer dentate-lunulate; stigmata with yellowish outlines and grey centres: submarginal line rufous and yellowish; hindwing white, rosy-tinged along termen; cellspot, outer line, and veins sometimes well-marked: — **rubricosa** *Esp. nec F.* (22 e) is the form in which the red of the *rubricosa*. median area is most emphasised; — **pallida** *Tutt* (22 e) [3] is greyish ochreous, with hardly a vestige of rufous; — *pallida*. in **virgata** *Tutt*, while the basal and marginal areas are grey, the median space is rufous. — Larva pale *virgata*. or dark blue grey; dorsal and subdorsal lines yellow; the sides black with a yellow spiracular line, marked with a white spot on each segment; head whitish with coarse blackish mottling; on various trees. Occurs in Britain, France, Germany, Scandinavia, Russia, Bulgaria, Italy, and Corsica; also in Asia Minor.

M. stabilis *Vier.* (= *cerasi F.*, *cerasus Haw.*) (22 e). Forewing reddish grey, more or less dusted *stabilis*. with dark; inner and outer lines blackish, indistinct; orbicular and reniform stigmata ringed with ochreous; submarginal line ochreous preceded by a fuscous or rufous shade; claviform mostly unmarked; veins towards termen pale; hindwing grey, the fringe paler. The species varies according to the amount of red present; — ab. **pallida** *Tutt* (= *grisea Spul.*) (22 e [6], f [6]) is pale grey, sometimes with an ochreous flush; — *pallida*. **obliqua** *Vill.* is darker grey with markings clearer; — **suffusa** *Tutt* (= *stabilis Hbn.*) is an equally well- *obliqua*. marked blackish grey form; of these grey forms the second only *obliqua Vill.* is common; — on the other *suffusa*. hand when the red tints predominate we get the form **rufa** *Tutt* (22 f), which is also rare; — in **junctus** *Haw.* (22 f) the upper stigmata, usually separate, are coherant; this accidental connection occurs in all the *junctus*. forms occasionally; — in ab. **rufannulatus** *Haw.* (22 f) the stigmata are edged with, and the submarginal *rufannulatus*. line is coloured rufous instead of ochreous; — in subsp. **japonica** *nov.* (22 f) from Japan the veins of fore- *japonica*. wing are not pale, and the hindwing shows more clearly a dark dotted median line; the apex of forewings is more acute. — Larva green thickly dotted with yellowish white; all the lines yellowish white; anal segment with a yellowish white cross bar; head green, with black spots; on numerous shrubs and trees. Occurs in Central and Northern Europe, Britain, Scandinavia, France, Germany, Switzerland, Russia; also in Asia Minor and Syria; it has been recorded also from Portugal.

M. stenoptera *Stgr.* (20 g). Forewing pale redbrown, darker, more fuscous, terminally; all the lines *stenoptera*. yellow, also the edges of stigmata, which are smaller and narrower; hindwing brownish ochreous. Ussuri, Amurland.

M. pulverulenta *Esp.* (= *cruda Tr.*) (22 g). Forewing grey brown, dusted with dark grey and *pulverulenta*. reddish atoms; inner and outer lines marked by black spots on veins; submarginal line pale, indistinct; upper stigmata dark grey edged with pale and then with rufous; hindwing dull grey. Like *stabilis*, which it resembles in coloration, it varies according to the amount of red shown; — thus **pallida** *Tutt* is a very *pallida*. pale grey form without red, but sometimes slightly ochreous-tinged; — **pusillus** *Haw.* (22 g) is a darker *pusillus*. grey form without red admixture; — **nanus** *Haw.* is like the typical form, reddish grey, but paler; — *nanus*. **rufa** *Tutt* (22 g) is a rarer, reddish form; — lastly, **ambigua** *Hbn.* represents a dark redbrown or grey- *rufa*. brown insect with the lines and markings well shown. The species has nearly the same distribution as *ambigua*. *stabilis*. — Larva yellowish green, sometimes brown; dorsal and subdorsal lines fine, yellowish white; spiracular line broader and yellower; anal segment with a yellow cross bar; spiracles white with black rings; on oak, maple, and various other trees, living between leaves spun together.

M. fausta *Leech* (22 k). Forewing ochreous grey- or dull red-brown, more or less strongly dusted *fausta*. with darker; inner and outer lines marked by dark vein dots; submarginal line indistinctly pale, but preceded by a row of dark spots between the veins; upper stigmata with slight pale rings; hindwing dark fuscous. Japan. The termen of both wings appears more decidedly crenulate than in other species.

Section III: Antennae of ♂ with tuberculate fascicles of cilia. .

M. odiosa *Bth.* (22 k). Forewing dull dark brick red dusted with lilac grey scales; lines hardly *odiosa*. visible, marked by pale scales; upper stigmata deeper red, with slender pale outlines, the orbicular round; submarginal line followed by lilac grey scaling forming a blotch in a sinus between veins 4 and 6; hindwing grey, with traces of cellspot and submarginal shade, sometimes reddish-tinged. Japan; Kiu-shiu.

M. incerta *Hufn.* (= *instabilis F.*, *trigutta Esp.*, *nebulosus Haw.*) (22 h). Forewing grey, varied *incerta*. with fuscous dusting and striation, and often more or less tinged with rufous; inner and outer lines, where visible, marked by dark dots on veins; submarginal line variable, sometimes obscure, at others pale, and preceded by a dark shade, which may be complete or broken up into 3 blotches; upper stigmata large, the reniform generally dark, both edged with pale; a strong thick median shade, sometimes bent at middle and entire, often marked only at costa and inner margin; hindwing pale or dark grey with dark cellspot and pale fringe. The markings are all clearer in the grey unsuffused forms: of these the chief are **pallida** *pallida*. *Lampa* (22 h) from Sweden with the ground colour pale grey, finely striated with dark, and the two dotted *coerulescens*. cross lines; — **coerulescens** *Tutt* with the ground colour pale bluish grey; — **subsetaceus** *Haw.* (22 i) *subsetaceus*. which is dark slaty grey without reddish tinge, and **subcarnea** *nov.* (22 i), greyish flesh colour with median *subcarnea*.

and praesubmarginal shades deep brown. the hindwing dull white with submarginal band and cellspot dark: — of the darker forms **contacta** *Esp.* (= *instabilis* *Esp.*) (22i) is suffused with rufous brown, lending up to **fuscatus** *Haw.* (22i) which is dark purplish liver colour: — **angustus** *Haw.* is a rarer form, mottled with chesnutbrown and fuscous; — **atra** *Tutt* and **rufa** *Tutt* are two equally rare forms, the former unicolorous sooty blackish, the latter bright reddish. These dark suffused forms are commoner in Britain, where the paler and more typical forms are rare. Two other distinct forms are **pallidior** *Stgr.* (= *pallida* *Stgr.*), from Fergana and Issykkul and Spain, with the forewing greyish white, and the hindwing whitish; and **evanida** *Btlr.* from Japan, which resembles *pallidior*, but is larger and has the subterminal line strongly preceded by rufous shading. Still another form, apparently undescribed, **olivacea** *nov.* (22i) has the forewing ashy grey with a strong olive flush; the median shade and the clouds before submarginal line also deeper olive; of two ♂♂ one is much more varied with olive fuscous and with the lines better marked than the other; the ♀ is wholly dark olive fuscous, with the edges of the stigmata and the submarginal line paler; in all 3 the reniform stigma is broader and less oblique than in typical *incerta*; the hindwing varies from pale to dark grey with an olive tinge, with dark cellspot and whitish fringe. 2 ♂♂, 1 ♀, together with some more or less typical specimens, from Cedre, Hautes Pyrenees. Generally distributed in Europe, except the south, occurring in Asia Minor, Armenia, the Altai Mts., and through Central Asia to E. Siberia and Japan. — Larva green. dotted with yellowish white; dorsal line yellowish; subdorsal less distinct; spiracular line pale yellow, edged above with blackish; spiracles white, ringed with black; on various trees and shrubs.

opima. **M. opima** *Hbn.* (= *firma* *Hbn.*, *mediolugens* *Schultz*) (22k). Forewing dull lilac grey speckled with darker: inner and outer lines purplish brown, the median area either filled with brown or with a broad brown median shade: submarginal line broadly pale with dark line before it, nearly straight; upper stigmata large, outlined with pale; hindwing dull brownish grey. Distinguished from *incerta* by the straighter costa and more produced apex of forewing. — In this insect the continental forms are darker than those found in Britain, of which the commonest is ab. **grisea** *Tutt* with pale ochreous grey ground with the pale edges of stigmata strongly marked and broad submarginal line: — **brunnea** *Tutt* has the whole wing brownish, but the edges of stigmata and the submarginal line still pale; — but in **unicolor** *Tutt* the whole wing is brown. — Larva purplish brown above, yellowish green below; dorsal and subdorsal lines finely pale; spiracular line broad, dark brown above, becoming yellowish red below; spiracles pale, black-ringed; on various trees, but more local in its occurrence than other species. Found throughout Europe except the South, also in the Altai Mts. in W. Siberia and the Ala Tau Mts. in W. Turkestan.

paromoea. **M. paromoea** *Hamps.* (22k). Forewing greyish rufous or dull greyish brown, more or less thickly irrorated with fuscous; the markings much as in *stabilis*, which also occurs in Japan, but altogether duller and more obscure; distinguished at once by the antennae of the ♂ not being pectinated. Japan.

gracilis. **M. gracilis** *F.* (= *collinita* *Esp.*, *lepida* *Scriba*, *sparsus* *Haw.*) (22k). Forewing in ♂ pale grey or ochreous grey, in ♀ dark grey, generally more or less irrorated with dark grey; orbicular and reniform stigmata with pale outlines, filled up with grey, the lower half of reniform dark grey; outer line marked by black dots on veins, the inner mostly obsolete; submarginal line ochreous or rufous, sometimes preceded by a dark shade; hindwing in ♂ whitish, becoming grey towards termen, and blackish immediately before the pale fringe, in ♀ wholly grey; — **pallida** *Stph.* (22k) is a whitish form with hardly any dusting; — in **rosea** *Tutt* (22l) the ground colour is flesh coloured; — **rufescens** *Cockw.* (22l) is redbrown; — the Japanese form **ella** *Btlr.* (22l) differs only in being more strongly marked, sometimes with a redbrown flush. Throughout Europe, in Armenia, Amurland, and Japan. — Larva bluish green; dorsal and subdorsal lines whitish; spiracular line white, black-edged above; spiracles white with black rings; on sallow, sloe, and various low growing plants, such as *Lysimachia*, *Artemisia* etc.

35. Genus: **Clavipalpula** *Stgr.*

Distinguished from *Monima* by the palpi, the terminal segment of which is horizontally porrect from the apex of the second, smoothly scaled, narrow at base and broadly spatulate at extremity; the termen of both wings is strongly crenulate; the antennae of the ♂ slightly flattened, with sessile fascicles of cilia.

Type *C. aurariae* *Oberth.*

aurariae. **C. aurariae** *Oberth.* (22l). Forewing browngrey, with a slight reddish tinge; median area velvety brown, deepest in cell, paler above subcostal vein and below vein 1; stigmata large, pale grey, the reniform filled up with reddish, indented on outer side; inner line oblique outwards, outer line oblique inwards from vein 4 where it is angled; some brown spots at base and a small blotch on costa before submarginal line, beyond which the marginal area and fringe are sandy brown; all the veins pale; hindwing brownish fuscous, darker in terminal half, with large dark cellspot and waved postmedian line; fringe pale. An Eastern species, known only from Amurland and Japan.

36. Genus: **Euchoristea** *nov.*

Tongue developed; palpi short, second segment well-haired, third quite short; frons smooth; antennae of ♂ with pedicellate fascicles of cilia; abdomen without crests.

Type *E. limbata* Btlr.

E. limbata Btlr. Forewing cream-white, which colour, however, shows only in the marginal area *limbata*. beyond the biconcave submarginal line; the rest of wing is washed with brownish and speckled with fuscous; lines black, angulate; space between basal and inner lines from costa to median vein, and the entire space between outer and submarginal lines filled in with black brown; upper stigmata with black outlines, the reniform always, the orbicular often, filled in with brown; claviform minute; space between orbicular and reniform generally pale; veins black; fringe brown; hindwing greyish ochreous, with dark cellspot and postmedian line. beyond which, especially towards apex, the terminal area is fuscous; fringe white. Japan.

37. Genus: **Brithys** *Hbn.*

Tongue feebly developed; palpi short and stout, obliquely porrect, thickly scaled; frons smooth; antennae of ♂ flattened and thickened, subserrate, pubescent; legs short and thick; scaling smooth; thorax and abdomen without crests.

Type *B. encausta* Hbn. A small, but natural genus; its affinities are with other tropical genera; the larvae feed upon Liliaceae growing on the sea-coasts.

B. pancratii Cyr. (20 h). Forewing dull blackish fuscous with an undertone of wood-brown, showing *pancratii*. chiefly along submedian interval and the space between outer and submarginal lines; lines finely black, the outer lunulate dentate; claviform stigma small, black; orbicular obsolete; reniform dark with the lower half outlined with pale; submarginal line pale, macular, preceded by a redbrown cloud; the marginal area dark; hindwing satiny white, in the ♀ tinged with smoky brown along costa and termen. Occurs only in the South of Europe, in France, Portugal, and Italy; also in Algeria. — Larva stout, reddish grey or brown, with a transverse row of round white spots on the fore- and hindmargins of each segment; thoracic plate black, cut by a white line; anal plate black ringed with yellow; head, breast, and forefeet yellow; feeding up in autumn in the shoots of *Paneratium maritimum*.

B. encausta Hbn. (20 h). Forewing dull chalk white, the base, inner margin, and a band between *encausta*. outer and submarginal lines dull flesh colour, this tint being more largely developed in the ♂; lines finely black, approximating below middle, the outer conspicuously lunulate dentate; claviform stigma outlined with black; a horizontal black line in cell takes the place of the orbicular; reniform with centre brown; a black festooned marginal line, the margin itself narrowly white beyond the waved grey submarginal line; fringe grey; hindwing white. On the coasts of Italy, Sicily, Greece, and Corcyra. — Larva like that of *pancratii*, but paler: living in a similar way.

38. Genus: **Cerapteryx** *Curt.*

Tongue well-developed; frons smooth; palpi short, second segment hairy, terminal small; antennae of ♂ bipectinate to apex; pectus and abdomen hairy, the latter with lateral tufts of hair; ♀ always larger and generally paler than ♂. Larva feeding in spring and summer on the roots of grasses, sometimes doing widespread damage.

Type *C. graminis* L. The genus is distinguished from *Tholera* by the fully-developed tongue, which in that genus is all but obsolete.

C. graminis L. (= *tricuspis* Esp. ♀, *ochrea* Tutt) (20 h). Forewing olive grey or olive rufous, or olive fuscous; median and marginal areas sometimes deeper coloured, otherwise the 3 lines are undefined; stigmata pale, especially the reniform, which at base is white, emitting a ray basewards along the median vein, and two externally along veins 3 and 4; claviform elongate; orbicular flattened; hindwing dark fuscous grey, with the basal area pale, sometimes whitish; the fringe white; — in the form **tricuspis** ♂ Esp. *tricuspis*. (= *rufa* Tutt) the reniform with its trifold lower end is more strongly developed than usual; — of this **obsoleta** Tutt is only an extreme form in which the other markings are obsolete; — **rufo-costa** Tutt (20 i) *obsoleta*. is a grey form with red costal streak, from the Hebrides; — in **hibernicus** Curt. (20 i) the base of cell of *rufo-costa*. forewing bears a pale, elongated, sometimes forked patch; — in **albipuncta** Sven the white lower end of *hibernicus*. reniform is entire, without pale ramification; — **gramineus** Haw. (= *albinea* Bdr.) (20 i) has all the veins *albipuncta*. whitish, the intervals dark olive, without any rufous mixture, the stigmata and base of cell more conspicuously *gramineus*. pale; the submarginal line prominently pale and dentate along the veins, the teeth alternating with the

dark teeth of the marginal area: this is the commoner form in the North of Britain, of which the form *pallida*. *pallida* Tutt is evidently an extreme development, the pale claviform, median vein, and two upper stigmata *grisea*. coalescing to form a broad white band from base; — *grisea* Spul. from N. Germany is a grey form with the median area well-defined, and may be only an offshoot of *gramineus*, which is not much known on the continent. Widely spread through North and Central Europe; also in Armenia, Turkestan, and E. Siberia. — Larva pale or dark bronze-brown above, yellowish ventrally; dorsal and subdorsal lines pale, dark-edged; spiracular line double, containing the black spiracles; thoracic and anal plates blackish, horny; at the roots of grasses.

megala. **C. megala** Alph. (20 i). Forewing dull olive brown: the median and marginal areas darker; the submarginal line simply waved: orbicular stigma large, round, with dark centre; reniform large, curved, white externally, trifid below along median and veins 3, 4; claviform obsolete; fringe concolorous; hindwing slightly paler than forewing, brownish, with the fringe brownish grey, not white. Armenia: W. and E. Turkestan: much larger than *graminis*, the ♂♂ exceeding the size of the largest ♀♀ of that species.

The species composing the next 4 genera are remarkable on the whole for the comparative simplicity of their coloration and markings; the ground colour varying from ochreous to brown and the suffusion from grey to rufous; the stigmata are often obsolete, and the lines reduced to series of spots on the veins; in a large proportion there is a tendency to series of light and dark longitudinal streaks. The larvae all feed on Gramineaceae, hibernating and feeding up in the spring: in many cases, perhaps generally in warmer climates, there is a summer brood as well.

39. Genus: **Hyperiodes** nov.

Distinguished from the following genera by the cell of both wings in the ♂ being clothed on the underside with long shaggy hair, in the hindwing extending above the cell to costa; femora and tibiae of ♂ fringed with long and dense hairs: the insects, as a rule, are larger and of stouter build; frequenting woods rather than open marshes; the larvae feeding on species of *Luzula*.

Type *H. turca* L.

turca. **H. turca** L. (= *volupia* Rott.) (23 a). Forewing pale rufous ochreous, dappled throughout with rufous fuscous, and very finely dusted with black atoms; inner and outer lines dark, conversely oblique; reniform stigma alone represented, forming a pale streak on discocellular, the lower end whiter, followed by a slight dark cloud: hindwing rufous, suffused in varying degrees with fuscous; a fairly common species occurring in Sweden, Britain, France, Germany, N. Italy, Russia; Armenia, Mongolia, Siberia, China, Corea, and Japan; — the form *limbata* Btlr. from Japan generally has the inner line of forewing more strongly *limbata*. angled beneath costa, while the legs are more heavily tufted; — ab. *turcella* Stgr. from Dauria is smaller *turcella*. and paler. — Larva yellowish grey, mottled with darker, especially in front: dorsal and subdorsal lines pale ochreous; a dorsal series of dark streaks; spiracles with black rings; on grasses growing in woods, especially *Luzula*.

grandis. **H. grandis** Btlr. (23 a). Forewing browner, less red than in *turca*; outer line not so near termen; basal and marginal areas often paler than median; the dark cloud round the reniform larger; underside in particular less red; a large diffuse blackish shade over the 3 median nervules. China, Corea, and Japan. Perhaps only a form of *turca*.

divergens. **H. divergens** Btlr. (23 a). Forewing olive grey-brown with very slight striation; the reniform a large pale lunule, with a black dot in the whiter lower lobe, followed by a diffuse rosy brown flush; inner line more oblique outwards. Occurs in E. Siberia and Japan.

curvata. **H. curvata** Leech (23 b). Forewing olive ochreous, densely striated with dark grey and without red tints; inner line slightly but regularly curved; veins finely whitish, more conspicuously in ♀, where the dark striations are slighter; the pale reniform stigma preceded by a black dot at lower end of cell, and externally edged with blackish; hindwing wholly fuscous, the fringe alone pale rufous. China and Japan. — *obsolescens*. In ab. **obsolescens** nov. the transverse lines are almost obsolete.

fuliginosa. **H. fuliginosa** Hamps. (24 a). Forewing fuscous irrorated with grey; a slight pale mark on discocellular; a pale line at base of fringes; hindwing pale fuscous, the fringe and inner margin pink. Japan.

40. Genus: **Hyphilare** Hbn.

Tongue developed; frons smooth; head and thorax rough-haired; antennae of ♂ ciliated; abdomen of ♂ with a pair of lateral tufts of long hair from base. Larva feeding on Gramineaceae; lying concealed by day, hibernating, and pupating in spring: some species double brooded.

Type *H. albipuncta* F.

In the first 8 species the wings of the ♂ on the underside are glossed with golden or silvery scales.

H. obscura Moore (= *rudis* Moore, nepos *Leech*) (24 b). Forewing greyish rufous thickly dusted with dark; a slight pale streak on median vein and white dot at lower angle of cell, with a fuscous patch beyond it; an outer row of black dots on veins; marginal area sometimes slightly darker; veins towards margin paler; hindwing fuscous brown; ventral tufts black. The type of *nepos* *Leech* from Omeishan, W. China; MOORE'S types were both Indian. *obscura*.

H. lithargyria Esp. (= *anargyria* *Bdv.*) (23 c). Forewing pale greyish rufous, speckled with dark; lines indistinct, dark grey; the outer regularly lunulate-dentate, the teeth marked by black dashes on veins; reniform stigma obscure, ending in a cloudy pale spot at lower end of cell; hindwing greyish ochreous; ventral tufts black. The species varies in coloration: **ferrago** *F.* (= *ferruginea* *Scriba*) is the reddest form; — **grisea** *Haw.* is grey without any rufous admixture, with the markings generally clearer; — **fulvescens** *Tutt* is rare, with fulvous in the place of red; — ab. **marginata** *Tutt* has silvery grey hindwings with broad dark border. Generally distributed in Europe, also in Asia Minor, Armenia, Syria, Persia, Turkestan and Tibet. — Larva brownish yellow; dorsal line white; lateral lines broad, whiter, containing the black spiracles. *lithargyria*. *ferrago*. *grisea*. *fulvescens*. *marginata*.

H. albipuncta *F.* (23 d). Forewing rufous brown, dusted with grey; costal edge whitish; lines brown, conversely edged with paler; outer line obscurely lunulate-dentate, the teeth not marked by dots on veins; submarginal line pale, diffuse, edged outwardly with darker; reniform stigma forming a distinct white spot at lower end of cell; hindwing dark or pale grey, sometimes tinged with rufous or ochreous; — in the form known as **italogallica** *Mill.* the wings are darker, dull brown; — **flecki** *Carad.* (23 d), from Rumania and the Bukowina, is rather smaller, the forewing dull grey brown, the hindwing fuscous; — in **fasciata** *Spul.* the darker brown tints are more strongly developed in median area so as to form a kind of fascia; besides the above already named forms there appear to be two more, equally deserving of a separate name; — ab. **ochrea** *nov.* (23 d) is ochreous, dusted with grey, and with a slight flush, rufous in ♂, reddish brown in ♀, with the lines dark grey and the marginal area darker; the white spot at end of cell as usual; hindwing dirty whitish in ♂ with termen greyer, more wholly grey in ♀; 2 ♂♂ from Silvaplana, Engadine, Switzerland, and 1 ♀ without locality; — the other, ab. **expallidata** *nov.* (23 e) is quite small, smooth pale grey with a flesh-coloured tinge; the inner line hardly traceable, but the outer black and distinct throughout; the lunules and the teeth all alike strongly marked; but the usual marginal dark area is here concolorous with rest of wing; the median vein shows dark below the white discal spot; hindwing dirty white, greyer towards termen: 1 ♀ from Digne, Basses Alpes, June 1908. — Larva dull reddish grey; dorsal line white, dark-edged; subdorsal line black, edged beneath with white and then a dark shade; spiracles black on a paler stripe. Not so common as *lithargyria*; occurring in Spain, Italy, Rumelia, France, Germany, and Britain, but only on the south coast; also in Asia Minor, Armenia, and Persia. *albipuncta*. *italogallica*. *flecki*. *fasciata*. *ochrea*. *expallidata*.

H. argyritis *Ramb.* (23 c). Smaller than *lithargyria*, most resembling its aberration *grisea*, but a neater insect; pale grey with a faint rosy tinge; markings quite indistinct; hindwing whitish, rosy grey towards termen. Occurs only in S. Europe, Spain, S. France, Italy. *argyritis*.

H. pryeri *Leech* (24 a). Forewing violaceous ochreous; an olive brown streak occupies the cell, widening outwards towards apex; the costa above it paler; a black streak from base below cell; reniform stigma represented by a white dot at lower end of cell conjoined to the white outer half of median nervure; veins pale lined with brown, the intervals with brown streaks; a whitish oblique apical streak; hindwing fuscous whitish, darker in terminal half. Recorded only from Japan. *pryeri*.

H. congrua *Hbn.* (= *amicola* *Ramb.*) (23 e). Forewing greyish ochreous with a flesh-coloured tint; veins pale with their grey outlines and the streaks in the intervals distinct; median nervure finely pale, swollen into a whitish spot at lower end of cell, with grey suffusion beneath it; the two folds paler; dark outer dots on veins 2 and 5; hindwing dark grey, in the ♂ mixed with whitish. A South European species, found in S. France, Spain, Italy, Corsica, Sicily, Dalmatia and Croatia; also in Armenia and Palestine. — Larva reddish grey, with 5 white brown-edged stripes; spiracles black; head and thoracic plate yellow brown. *congrua*.

H. subsignata *Moore* (23 e). Forewing yellowish or rufous ochreous dusted with grey; lines obscurely marked by dark grey dots; orbicular and reniform stigmata pale, the latter followed by a small grey cloud; a grey subapical shade; hindwing greyish ochreous, darker towards termen. A small species, described from N. India, and occurring in the Goorais Valley, Kashmir. *subsignata*.

H. simplex *Leech* (24 a). Forewing rufous ochreous, with little dusting; cell and space beyond faintly browner; a brown triangular shade below apex; a faint pale spot at lower end of cell; hindwing ochreous whitish, the terminal half dark grey. From Central China only. *simplex*.

- loreyi*. **H. loreyi** Dup. (= *caricis* Tr.) (23 e, f). Forewing greyish ochreous; the veins pale lined with brown. the intervals with brown lines; a short black streak from base below cell; median nervure thickly outlined with fuscous to beyond cell: reniform stigma indicated by a white dot at lower angle of cell; outer line by a row of black dots on veins; a triangular brown subapical patch edged above by an oblique pale streak from apex: hindwing white, the veins towards termen fuscous; abdominal tufts beneath formed of coarse scalelike brown black hairs. A tropical species, an occasional visitant only in Britain, and in Europe mainly occurring in the South: Spain, Portugal, Italy, France, Switzerland, Austria; Egypt, Morocco, the Canaries, and Madeira; Asia Minor, Armenia, Syria, Japan. — Larva reddish grey, yellowish between the segments; dorsal line fine, grey, double; subdorsal lines divided, interrupted, all clearer towards the anal segments: spiracles ringed with black.
- proxima*. **H. proxima** Lecch (24 a). Forewing ochreous suffused with dark brown, in places shaded with blackish: lines ill-defined; a conspicuous white hook-shaped mark at lower end of cell; a black streak from base below cell, passing through a pale patch in the submedian interval; veins towards termen streaked with white, especially 3 and 4; the pale oblique streak from apex preceded and followed by black between the veins; hindwing brownish ochreous. Nitou, W. China.
- L-album*. **H. L-album** L. (23 f). Forewing greyish ochreous, tinged with olive brown through cell towards apex and along outer margin below apex; outer half of median vein white, shortly hooked at end; veins 3 and 4 whitish; a black streak from base below cell; veins pale outlined with dark; the oblique streak from apex with black marks between veins on each side; a pale submarginal band below middle; hindwing grey, becoming fuscous towards termen. Widely distributed in Europe, but not occurring in Britain; Morocco, and Algeria; W. and Central Asia. — Larva yellowish brown: dorsal line fine, paler, with black edges; subdorsal line black, edged above with pale; below it some faint dark lines; spiracles black.
- riparia*. **H. riparia** Ramb. (23 f). Forewing ochreous with a yellowish or flesh coloured tinge; veins whitish, very finely picked out with dark grey scales; the intervals towards termen with long grey streaks; outer line marked by black dots on veins; a pale apical streak; hindwing dull whitish, becoming rufous grey or brown along termen. A South European species, from France, Italy, Corsica, and Syria; reported also from S. Siberia. — Larva marked by a distinct double black dorsal line, which shows paler at the segmental incisions; on Calamagrostis.
- albicosta*. **H. albicosta** Moore (23 f). Forewing greyish ochreous shaded with olive brown except along the folds; all the veins, those of costal area as well, white with fine dark outlines; median vein and vein 4 broadly pale ochreous; the pale apical streak narrow and distinct, followed by a brown triangular shade; lines marked by black dots on veins; a white streak along lower half of cell, ending in a black dot; hindwing fuscous grey. Found in Japan, W. China, Kashmir, and Tibet: also from N. India.
- flavostigma*. **H. flavostigma** Brem. (24 a). Forewing pale ochreous tinged with rufous in the median area, more rarely over the whole wing, and dusted with black scales: lines fuscous, strongly lunulate-dentate; orbicular and reniform stigmata pale but indistinct; the reniform with a black spot in lower lobe and the median vein below it white; the area beyond and below it often darker; a grey shade below apical streak; marginal black spots large; hindwing fuscous grey, with pale fringe. Amurland, Kashmir. — In the form **singularis** Btlr. (23 f, g) from Japan, Corea, and China, the ground colour is yellower ochreous and the markings are much less distinct.
- inornata*. **H. inornata** Leech (23 g). Forewing whitish ochreous in ♂, yellower in ♀; irrorated with black scales; median nervure paler towards end, with a black dot at lower end of cell; an outer row of black dots on veins: black marginal spots distinct; fringe pinkish; hindwing greyish fuscous; fringe ochreous. Known only from Japan; it is distinguished from *flavostigma* Brem. by the absence of stigmata.
- littoralis*. **H. littoralis** Curt. (23 g). Forewing smooth pale ochreous suffused with brown except along costa; median vein white, outlined with fuscous; the nervules towards termen whitish; the terminal interspaces with brown streaks; hindwing pure white. A coast species found in Britain, Denmark, N. Germany, Holland, Belgium, France, and Spain. — Larva reddish yellow; dorsal line fine, pale with dark edges; subdorsal lines blackish; spiracles black on a pale lateral stripe; head and thoracic plate yellowish: on grasses, especially Calamagrostis arenaria.

41. Genus: **Sideridis** Hbn.

Differs from *Hyphilare* Hbn. in the absence of the black lateral tufts of hair at base of abdomen.

Type *S. evidens* Hbn.

- conigera*. **S. conigera** Schiff. (= *floccida* Esp.) (23 g). Forewing pale fulvous suffused with darker; lines fine, brown; inner line angled on submedian fold; outer sinuate, nearly parallel to outer margin; orbicular and

reniform stigmata pale, indistinct, except lower lobe of reniform, which is marked by a snowwhite spot, and is often surrounded by a grey cloud; hindwing pale rufous, darker towards termen: — *suffusa* Tutt *suffusa*. is a melanic form, without any yellow tint, from North England and W. Ireland. Generally distributed in Europe; and found in Asia Minor, Armenia, Central Asia, Siberia, and Japan. — Larva dull yellow brown; dorsal line white, with dark edges; subdorsal line black; lateral lines white flecked with red, with a broad brown stripe running beneath them and above the black spiracles.

S. angulifera Moore (23 h). Forewing yellower than in *conigera*, tinged with rufous in median and marginal areas; the stigmata pale, larger than in *conigera*, the reniform without the snow white spot at lower end; hindwing yellowish, suffused with fuscous. Kashmir. *angulifera*.

S. albicosta Moore (= *pallidicosta* Hamps.) (23 h). Forewing fulvous, suffused and streaked with rufous grey; costal edge white; veins finely grey; a white or grey dot at lower angle of cell; stigmata pale fulvous with darker centres; lines lunulate dentate; hindwing rufous grey, paler towards costa. An Indian species, also recorded from West China. *albicosta*.

S. inanis Oberth. (23 h). Forewing purplish grey, dusted with dark; veins whitish; inner and outer lines dark: a pale mark at lower end of cell; marginal area somewhat darker; hindwing pale brownish. Japan and E. Siberia. *inanis*.

S. rufipennis Btlr. (= *semicircula* Graes.) (23 h). Forewing rufous densely strigulated with brown; the two lines fuscous: stigmata very indistinct; the reniform with a dark spot in lower half; a dark submarginal shade from apex; hindwing dark grey. Amurland, Japan, Korea. *rufipennis*.

S. vitellina Hbn. (23 i). Forewing pale yellowish ochreous, typically strongly flushed with rufous; veins finely rufous; lines fine, more or less angulated, the inner and outer approximated on inner margin; stigmata indistinct: the orbicular slight, often obsolete; reniform rufous, with a dark spot in lower end; hindwing ochreous white, greyer in ♀, the veins often fuscous; the pale, less highly coloured, specimens, with whiter hindwings, ab. *pallida* nov. (23 i), which seem to be comparatively rare in Western Europe, though occurring in Switzerland and the Canaries, are the usual form in Syria and Turkestan. Mainly a South European species, found in Britain (occasionally), France, Germany, Hungary, Spain, Portugal, Italy, Dalmatia, Sicily, the Canaries, and Algeria; in Syria, Kashmir, and Turkestan. — Larva pale flesh colour; dorsal and subdorsal lines white, with darker edges; spiracles black on a pale yellow lateral line; head brown with black markings. *vitellina*. *pallida*.

S. evidens Hbn. (23 i). Forewing pale brownish ochreous, generally suffused with grey; the lines brown; inner and outer fine: median and submarginal shades diffuse; the veins and margins of all 3 stigmata fine and brown; the reniform with a dark dot at its lower end; fringe brown; hindwing ochreous white, fuscous towards termen, with a dark cell spot and outer line; darker in the grey-suffused forms. Germany, Austria, Hungary, Switzerland, Rumania, Russia, the Ural and Altai Mts. — Examples from Uralsk are mostly brown without any grey suffusion, and may be separated as ab. *brunnea* nov. (23 k). — Larva reddish yellow, with light cross lines on each segment; head small, yellowish; spiracles white, with black rings: reputed to feed (besides grasses) on ? flowers of Umbelliferae, as Pimpinella, Seseli, etc. *evidens*. *brunnea*.

S. nigrilinea Leech (= *fasciata* Moore praeocc.) (23 k). Forewing greyish ochreous, faintly flesh-coloured; veins pale, lined with brown; vein 4 white; a black streak below cell from base; a black brown streak from base through cell, widening to apex; lower ends of orbicular and reniform stigmata indicated by black marks with pale edges; hindwing dirty whitish, towards termen more smoky grey. Japan; also occurring in India, whence it was in the first instance described. *nigrilinea*.

S. prominens Walk. (= *hispanica* Bell.). Forewing greyish ochreous; veins pale, lined with brownish, the interspaces also towards termen brown-streaked; median nervure white, with a brown black streak below it from base: veins 3 and 4 whitish: a black and white dot at lower angle of cell; hindwing dull white: veins and termen grey. Spain, Algeria, and Morocco; occurring also through Central and S. Africa. — Larva yellowish or reddish brown; the lines white, with brown edges; the spiracles black. *prominens*.

S. salebrosa Btlr. (23 k). Forewing ochreous, suffused, except along costa, with orange fulvous, the veins remaining pale; outer third of median nervure broadly white; outer line represented by an interrupted row of black points on veins; a red-brown triangular subapical blotch; hindwing fuscous, paler at base. China and Japan. *salebrosa*.

S. velutina Ev. (23 k). Forewing drab grey, suffused, except along costa and inner margin, and in an oblique fascia-form submarginal area, with blackish, the veins and folds remaining pale; a whitish lunule on discocellular: the pale submarginal fascia externally throws off pale teeth along the veins to termen, the wedged-shaped intervals being filled in with black; hindwing fuscous grey. An Eastern insect, found in the Ural Mts. in Russia, the Altai Mts. in W. Siberia; in W. and E. Turkestan, in the Changai Mts. in Mongolia, and in E. Siberia. Distinguished from *comma* by its larger size, black suffusion and white reniform. *velutina*.

- comma*. **S. comma** L. (= *turbida* Hbn., congener Hbn.) (25 a). Forewing like *velutina*, but smaller and browner; a long black streak from base below cell: median vein white, with only a small white spot at end of cell and a minute black point above it; veins whitish with black terminal streaks in the intervals: hindwing dark greyish fuscous. Common throughout Europe, in Armenia, Asia Minor, Turkestan, Siberia, Mongolia; — ab. **suffusa** Tutt (25 a) is a melanic brown form common in Britain, occurring, but rarely, in the Alps; — **ochracea** Tutt (25 a) is a brownish ochreous form, also rare, apparently, on the continent. — Larva reddish brown, with scattered black dots: dorsal and subdorsal lines black and fine; venter paler; thoracic plate black with 3 white lines; head brown.
- rhodocomma*. **S. rhodocomma** Püng. Like *comma*, but the forewings, head, and thorax purplish red. Only from W. Turkestan.
- lineatipes*. **S. lineatipes** Moore (= *percisa* Moore) (25 a). Forewing smooth brownish ochreous, sparsely black-dusted; veins pale, the intervals along termen with pale brown streaks; median nervure and vein 4 white: an olive brown streak from base below median to beyond cell, and a brown shade above vein 4 widening to apex; a small black dot in lower angle of cell; an indistinct outer row of black dots on veins: hindwing whitish, suffused with brownish grey. An Indian species, occurring also in the Goorais Valley, Kashmir.
- perrufa*. In the redder form. — ab. **perrufa** nov. (25 a) the whole forewing, the head, and thorax are dull pinkish; the streak below median vein deep pink.
- propensa*. **S. propensa** Püng. Forewing brownish grey, with a few black scales along costal and inner margins: a fine black basal streak below cell; veins pale grey finely outlined with brown, with brown streaks in the intervals between them; a faint greyer triangle on margin below apex; hindwing dull grey, the veins darker, the fringe white. Described from a single ♀ from Ili, Turkestan.
- deserticola*. **S. deserticola** Bartel (25 a). Forewing brownish ochreous; all the veins whitish; towards termen, like the median vein itself, very broadly white, edged with brown streaks: each interspace with two fine white lines containing a brown line between them; a brown shade below median vein; a black dot in lower angle of cell: hindwing whitish with the centre grey to termen. Ural Mts., Russia.
- insecuta*. **S. insecuta** Walk. (= *intermissa* Walk., *striata* Leech) (25 b). Like *loreyi* Dup., but the ♂ without any black lateral tufts on abdomen; this species appears confined to China and Japan.
- postica*. **S. postica** Hamps. (24 b). Forewing ochreous white; veins defined by red-brown streaks, and the intervals streaked with red-brown: a diffuse ochreous white streak along both folds; a black dot at lower angle of cell; hindwing fuscous, paler at base. Japan.
- sinuosa*. **S. sinuosa** Moore (24 b). Forewing ochreous; median vein brokenly white, slightly hooked at lower angle of cell, edged below by a reddish brown streak broadening beyond cell and running obliquely to apex; orbicular and reniform stigmata pale defined by darker; hindwing dark brown, the fringe paler. An Indian species, but found in W. China.
- andereggii*. **S. andereggii** Bdv. (= *valesicola* Guen., *rupicapra* Led.) (25 b). Forewing pale olive brown, streaked with dark brown and dusted with black; veins pale, 3, 4 and 6, 7 more broadly and diffusely, the two last sometimes lost in a pale smudge; a blackish streak from base below median vein, and another on inner margin below vein 1; a black dash in outer half of cell, continued beyond cell on each side of vein 5; a black spot beyond upper end of cell; hindwing dark brown; — **cinis** Frr. (25 b) is a darker form with the veins white: — **engadinensis** Mill. (25 b, c) is much suffused with brown, the veins more narrowly grey or pale; a distinct dark inner and outer line is visible, this latter regularly lunulate-dentate; it is found in the Alps and Pyrenees, and in Bosnia.
- lineata*. **S. lineata** Er. (25 c). Forewing smooth olive-tinged ochreous; the veins thickly white; a dark brown streak from base below median vein and a shorter one at lower end of cell, continued along vein 5 to termen, widening to apex; hindwing fuscous, with dark cellspot and pale fringe: from the Ural Mts. in Russia.
- phlebitis*. **S. phlebitis** Püng. (24 b). Forewing grey brown shaded with darker; paler streaks below subcostal, median, and submedian veins; all the veins pale, especially the median and its branches; a diffuse brown streak along median and vein 5 to margin; a diffuse pale spot on discocellular; hindwing fuscous. Aksu, Mongolia. Somewhat like a small *velutina* Ev.
- jordana*. **S. jordana** Bartel (24 c). Forewing pinkish ochreous, the costal area greyer; veins thickly white, strongly defined by blackish scales; the two folds black; discocellular pale, margined on both sides with black; hindwing rufous grey, paler towards base; abdomen with fuscous bands on dorsum. Jordan Valley, Palestine.
- sicula*. **S. sicula** Tr. (25 c). Forewing pale ochreous, slightly rufous-tinged; veins faintly defined; median nervure white, defined below by a blackish streak from base, and above by a streak in outer half of cell

continued towards termen along vein 5; a black dot at lower end of cell; hindwing whitish suffused with greyish in both sexes, but more strongly in ♀; a small local, mainly S. European species occurring in Italy, Sicily, Sardinia, also in Morocco; — the form **albivena** *Grasl.* (= *fuscilinea* *Grasl.*), from Belgium and *albivena*. N. W. France and ? Middle Italy, shows an outer series of dark dots on veins; — **cyperi** *Bdv.* (25 c) from *cyperi*. Italy and Sicily is wholly without the dark streaks of forewing; Sicilian examples of this form are also smaller than typical *sicula*, with pure white hindwings; their appearance suggests specific difference. — Larva said to resemble that of *pullens* *L.*

S. alopecuri *Bdv.* (24 b). Forewing pale greyish ochreous, the costa paler; the veins whitish; a slight brown shading beneath median vein and along termen between the veins; a whitish spot, with black dot on the inside, at lower end of cell; hindwing whitish, greyer towards termen; ♀ without the brown shadings, and with an outer row of dots on veins in the forewing. S. E. Russia. The insect appears to be intermediate between *lineata* *Er.* and *sicula* *Bdv.* *alopecuri*.

S. punctosa *Tr.* (25 c). Forewing luteous grey; costa paler; a grey brown shade along median vein and outer margin; veins grey; lines finely zigzag, mostly broken up into linear points; a slightly elongated whitish spot at lower angle of cell on a grey cloud; hindwing white. S. France, Switzerland, Spain, Sicily, Morocco: Syria. Asia Minor, W. Turkestan. — Larva yellowish grey, paler at sides; dorsal line fine, white, black-edged; subdorsal blackish, interrupted, whitish-edged beneath; spiracles brown in a red ring, above a white line. *punctosa*.

S. putrescens *H. G.* (= *boisduvalii* *Dup.*) (25 d). Distinguished from *punctosa* by the greyer tone and black irroration; a black streak from base below cell; the white spot at lower end of cell round, not elongated; terminal interspaces with black streaks. Britain, France, Spain, Portugal, Sicily, Italy, Dalmatia, Algeria, W. Turkestan. — Larva reddish ochreous; lines pale edged with dark; the subdorsal lines not interrupted. Subsp. **canariensis** *Rbl.*, from the Canary islands, is smaller, the forewing darker, with a distinct black cellspot on underside. *putrescens*.

S. herrichii *H.-Sch.* (24 b). Forewing grey dusted with darker and tinged throughout with rustred; a black streak from base below cell; the lines fine, angulated; orbicular and reniform stigmata represented by faint ferruginous marks, the latter forming a white point at lower angle of cell; veins towards termen dark; marginal area deeper shaded; hindwing ochreous white, with veins and termen fuscous. Crete, Asia Minor, and Syria. A larger species with broader forewings. *herrichii*.

S. palaestinae *Stgr.* Forewing ochreous; a white point at lower end of cell; a fuscous fascia in and beyond cell; an outer series of dark dots on veins; terminal interspaces with dark dentate marks; hindwing yellowish white, darker towards termen. Palestine. *palaestinae*.

S. zaeae *Dup.* (25 d). Forewing dull ochreous; costal and inner margins and the veins dusted with grey and white scales; a white spot at lower angle of cell; lines fuscous, the inner obscure, the outer dentate-lunulate; hindwing white, with a few dark marginal spots towards apex. S. France, Spain, Italy, Dalmatia, Greece; Egypt. — Larva pale grey; dorsum tinged with brownish yellow; dorsal line pale edged with dark grey; subdorsal lines narrow, darker; spiracles small and black; head, thoracic, and anal plates yellowish brown. *zaeae*.

S. indistincta *Christ.* (25 d). Like *zaeae*, but larger, the forewing darker; the hindwing with veins and termen fuscous. W. Turkestan. — ab. **putrida** *Stgr.* (25 d) is merely a curious dark-shaded form, with broad blackish streak from base through cell and beyond, and the marginal area blackish, cut by the pale veins: both forms, ♂♂, from Oasis Tedschen, Herirud R., West of Merv, April, May 1903; and a ♀ from Uralsk, August 1906 (BARTEL). *indistincta*.

S. scirpi *Dup.* (= *caricis* *H.-Sch.* nec *Tr.*) (25 e). Forewing pale grey, thickly dusted with darker; a white dot at lower angle of cell preceded by a black point; outer line lunulate-dentate, the teeth on the veins showing plainer than the lunules between them and giving the appearance of a double line; hindwing grey; the ♂ is smaller, unspotted, pale pinkish ochreous, with the lines hardly visible; the hindwing white, pinkish grey along termen. France, Germany, Austria, Switzerland, Spain, Italy, Dalmatia, Sardinia; Asia Minor, Armenia. The ab. **montium** *Bdv.*, from the Alps of Wallis and S. Tyrol, is darker, with the lines plainer. *scirpi*.

S. dactylidis *Bdv.* (24 b). Forewing smooth, flesh-coloured ochreous, without dusting; a white spot with black dot in front at lower end of cell; a very obscure outer row of dark points on the veins; hindwing pure white. S. France, Spain, Portugal. *dactylidis*.

S. opaca *Stgr.* (24 c). Forewing grey thickly dusted with reddish brown; lines dark but indistinct; a white dot at lower angle of cell, with fuscous scales before and beyond it; hindwing brownish white. E. Turkestan. *opaca*.

S. mesotrosta *Püng.* (24 c). Forewing deep redbrown dusted with black, especially along the veins; lines blackish but obscured; a whitish lunule on discocellular ending in a white spot at lower end; hindwing redbrown. Amdo and Kuku-Nor, Tibet. *mesotrosta*.

- unipuncta*. **S. unipuncta** *Haw.* (= *extranea* *Guen.*, ? *luteomaculata* *Brem. & Grey*) (25 e). Forewing ochreous grey, freckled with darker grey, often suffused with rufous: markings obscure; orbicular and reniform stigmata pale or yellowish, the latter with a white dot at lower end; an outer row of dark dots on veins, joined by a dark streak from apex; hindwing fuscous grey, paler basewards, the veins dark. Of almost world-wide distribution, commonest in S. America. Occurs in Madeira, the Canaries, Spain, Portugal, France, Britain (occasionally); in Kashmir, S. E. Siberia, China, and Japan. — Larva green to brown, freckled with darker; the lines obscure; dorsal line almost lost in a dark clouding; subdorsal lines plainer, with the upper edge diffuse; lateral and spiracular lines white.
- placida*. **S. placida** *Btlr.* (25 e). Forewing greyish ochreous, finely irrorated with dark atoms, often with a yellowish undertone; lines marked by black dots on veins, those of the inner line large and sometimes confusedly connected; reniform stigma pale, rarely distinct, with a black dot in lower lobe, and followed by a blackish cloud; hindwing dark fuscous. Common in China and Japan. A large species, with broader and paler wings than *unipuncta* *Haw.*
- stellata*. **S. stellata** *Hamps.* (24 c). Forewing ochreous; the veins defined by, and the interspaces streaked with, pale brown; median nervure defined below by a reddish brown streak; an oblique pale streak from apex, darker-edged on both sides; a black dot at lower angle of cell; outer line marked by dark dots on veins 2 and 5; hindwing ochreous white, terminally fuscous; the fringe pale. A single specimen from Yokohama, Japan.
- radiata*. **S. radiata** *Brem.* (25 f). Forewing yellowish ochreous: veins defined by rufous streaks and the intervals with rufous lines; a streak of rufous from base below median vein; a pale oblique streak from apex, its edges forming two darker streaks on each side; an outer row of black points on veins; hindwing grey, with the veins and cell spot fuscous; costal area and fringe pale ochreous. E. Siberia, Japan.
- venalba*. **S. venalba** *Moore* (= *linearis* *Lucas*) (24 c). Forewing rufous ochreous; veins white, outlined with rufous or redbrown; streaks of the same colour along the intervals, the cell and space beyond rather more strongly rufous; a pale oblique streak from apex; hindwing white, slightly tinged with ochreous at termen towards apex. Occurs in China, also in India and Australia.
- fasciata*. **S. fasciata** *Moore* (= *furcifera* *Moore*) (25 f). Forewing dingy greyish ochreous dusted with darker atoms; median vein and base of 3 and 4 greyish white; a brown streak, edged above with pale, from base along submedian fold; a brown streak beyond cell above vein 4, joining a subapical brown triangle; orbicular and reniform stigmata pale; outer line double, lunulate-dentate; hindwing dull fuscous.
- ferrilinea*. **S. ferrilinea** *Leech* (25 f). Hardly to be distinguished from *fasciata* *Moore*, the brown streak beyond end of cell is narrower and edged below with black. W. China.
- sesamiodes*. **S. sesamiodes** *Hamps.* (24 c). Forewing whitish ochreous suffused with pale rufous; the costa and veins paler; an outer row of black points on veins; fringe pale; hindwing yellowish white, the veins and terminal area fuscous; the ♀ is slightly paler. Algeria. — Larva feeds on *Arundo phragmites* along with that of *Sesamia nonagrioides*, the perfect insects being almost indistinguishable.
- favicolor*. **S. favicolor** *Barr.* (25 k). Forewing pale olive brown; veins concolorous, slightly defined by brown; the intervals at termen with brown streaks; a small black dot at lower end of cell; an outer row of black dots on veins, sometimes reduced to two only, on veins 2 and 5; hindwing fuscous whitish; — ab. **lutea** *Tutt* is paler and yellowish; — in ab. **rufa** *Tutt* the head, thorax, and forewings are bright rufous; abdomen and hindwing tinged with rufous; — **argillacea** *Tutt* has the forewing greyish luteous, the fringe pink; hindwing smoky; — ab. **cenea** *Mathew* is deep orange, the hindwing smoky; the veins darker and the fringe pale; — **obscura** *Mathew* is cinnamon-brown with smoky clouding between the veins in places; hindwing smoky; fringe pale; — **pallida** *Mathew* has the forewing very silky, pale creamy buff, the termen flushed with rosy; hindwing whitish grey; — lastly, **fusco-rosea** *Mathew* is rosy buff: the hindwing pale rosy; the veins conspicuously dark brown; close to the ab. **rufa** *Tutt*. At present found only in Britain, in the Essex Marshes. Larva pinkish ochreous reticulated with darker: dorsal line pale, narrow, with darker edges; subdorsal greyish white; a broader grey stripe above the spiracles and a pinkish ochreous one below them: on various grasses.
- impura*. **S. impura** *Hbn.* (= *fuliginosa* *Haw.*, *punctina* *Haw.*) (25 f). Forewing ochreous, with a rufous tinge; veins, especially the median, whiter, lined by fine brown streaks, which also appear in the interspaces: a dark shade below median nervure; a black dot at lower angle of cell; outer row of dots shown only by those on veins 2 and 5; hindwing dull grey. Britain, France, Germany, Italy, Sweden, Denmark, Russia, Asia Minor, Syria, Turkestan, Tibet, E. Siberia, Japan. — ab. **dungana** *Alph.*, from Turkestan and Tibet, is a darker, more fuscous, form in which the dark streaks become obscured; — ab. **transbaikalensis** *Stgr.* from Dauria has the forewing dusted with redbrown, and the dark streaks almost obsolete; — ab. **amurensis** *Stgr.* is wholly darker; the forewing with the white veins and the dark markings more distinct; — in ab. **fuscipennis** *nov.* (25 f) from Calabria and La Grave, Hautes Alpes, smaller than typical, the hindwing is blackish fuscous — Larva greyish ochreous, sometimes flesh-coloured; the lines pale with darker edges; spiracular line brown.

S. alboradiosa *Er.* (25 g). Forewing ochreous; veins white, the median nervure and veins 3, 4 most strongly; the veins outlined finely with brown; the interspaces with brown streaks; a diffuse dark streak from base below cell and a slighter one from cell to termen along the upper fold; hindwing dark grey in ♀, paler in ♂; — ab. **pauper** *ab. nov.* (25 g) has all the dark markings absent; the median vein hardly paler; but the hindwing remains grey. An eastern species found only in the Ural Mts. in Russia, the Altai Mts. in W. Siberia, and in Turkestan.

S. straminea *Tr.* (25 g). Forewing pale ochreous with slight dark dusting and a faint reddish tinge; veins finely defined by brown streaks, which are also distinct in the intervals; a diffuse brown shade below median vein; outer dots on veins 2 and 5 only; hindwing whitish ochreous, grey-tinged along middle from base, with a postmedian line of dark grey dashes on veins. — A local species, found in Britain, France, Germany, and Russia. — Larva ochreous with grey freckles; lines paler edged with dark grey; subspiracular line paler; on *Arundo phragmites*. Three distinct aberrations are mentioned by *Tutt*, all apparently British; **obsoleta** *Tutt*, a very rare pale form, with all the dots of forewing absent, the median nervure pure white, and the hindwing white without dots; in **rufolinea** *Tutt* the coloration is bright rufous, so that the forewing appears to consist of alternate fine lines of red and white; lastly in **nigrostriata** *Tutt* the coloration is blackish, the wing appearing to be a succession of black and white lines; the shade beneath median vein is almost black, and the hindwing is much darker; the majority of these darker forms are ♂♂.

S. pallens *L.* (25 g, h). Forewing yellowish ochreous, often with a rufous tinge; veins pale, defined by grey brown streaks, and with similar streaks in the intervals; dark spots on veins 2 and 5 beyond middle; hindwing white, grey at centre, the veins dark; — ab. **ectypa** *Hbn.* (= *rufescens* *Haw.*) (25 h) is the form in which the red tints are strongest; in **arcuata** *Stph.* the hindwing shows a complete row of dark dots on the veins. — The species is generally distributed throughout Europe and Central Asia to Amurland. Larva yellowish or reddish with grey irroration; dorsal line white, with dark edges; spiracles black, lying in a yellowish white lateral stripe, which is edged with blackish.

S. melania *Stgr.* (= *infumata* *Alph.*) (25 h). Forewing pale ochreous sometimes tinged with yellow or rufous; costal edge white; veins, except median, hardly paler, not defined by darker streaks; a distinct black dot at lower angle of cell; traces of a faint dark shade below median vein; hindwing whitish, suffused except at costa with pale grey. Turkestan and Tibet. — A neater smoother insect than *pallens* *L.*; the apex of forewing more prominent; no sign of black outer dots on forewing.

S. obsoleta *Hbn.* (25 h, i). Forewing greyish ochreous, dusted with black; veins whitish defined by blackish lines and with black streaks in the intervals; a distinct white point at lower angle of cell; an outer series of dark dashes on veins, sometimes an inner one too; hindwing whitish with veins and terminal area fuscous: — the ♀ is much less grey than the ♂; in some cases the grey scales are much developed between the veins and along the cell of forewing, and form the aberrations **nigrostriata** *Tutt* (25 i) and **grisea** *Tutt*, according as the ground colour is tinged with reddish, or remains grey. The species occurs in Britain, France, Germany, Italy, Scandinavia, Russia, the Balkans; Turkestan and Tibet. Larva yellowish grey with a flesh coloured tinge; dorsal and subdorsal lines fine, whitish; the space between them freckled with dark; spiracular line pale; spiracles white with black rings; on *Arundo phragmites*, eating the leaves, but hiding by day and finally pupating in the hollow cut stems.

S. pudorina *Schiff.* (25 i). Forewing flesh coloured ochreous densely dusted with grey atoms; the veins slightly paler; the upper half of cell and of submedian interval often paler without dusting, the streak in cell continued to margin; sometimes a darker streak in lower half of cell also continued to termen; hindwing dark grey, with pale fringe; — **impudens** *Hbn.* (25 i) is a less marked grey form, without reddish tinge; — **rufescens** *Tutt* is a rare British form, bright rosy red, with pale grey dusting; **striata** *Tutt* (= *obscurata* *Stgr.*) darker, with the grey intervals blackish. Widely spread in Europe and occurring in Armenia, Asia Minor, E. Siberia. — Larva dirty yellowish white; dorsal line white; subdorsal also white, edged above with black; 3 fine whitish lateral lines and a narrow grey stripe containing the black spiracles; feeding on reed and marsh grasses.

S. languida *Stgr.* (25 i). Forewing pale brownish ochreous, the veins rather darker; an outer row of dark dots on veins; hindwing whitish tinged with grey; the veins blackish. — Syria. — The apex of forewing is pointed, as in *melania* *Stgr.*

42. Genus: **Meliana** *Curt.*

Tongue present; frons with a rounded prominence and corneous plate below it; antennae of ♂ ciliated; abdomen slender, smooth; forewing narrow and elongate; the costa curved; the termen oblique; scaling fine and smooth. Type: *Meliana flammea* *Curt.*

M. flammea *Curt.* (= *dubiosa* *Tr.*, *arundinicola* *Dbl.*) (25 k). Forewing rufous grey speckled with brown along inner margin; paler grey with the veins white in costal third; middle third occupied by an olive brown streak widening and paling outwardly; the veins pale, the intervals brownish; an outer series of dark dots on veins; hindwing pale grey, the fringe white. Britain, Holland, Denmark, France, Germany, Austria, Hungary; Amurland: — the form occurring in this last locality, **stenoptera** *Stgr.* is smaller, with the fore-

wing still narrower, and the brown central streak more distinct. — Larva pale putty-colour; the lines pale with grey edges, the spiracular whiter; feeds on *Arundo phragmites*; hiding by day and ultimately pupating in the old cut reedstems.

Subfamily: **Cucullianae.**

The distinguishing characteristic of the third subfamily, the Cucullianae, is that the rounded eyes of the imago are fringed, more or less completely, with long curved overhanging lashes. When the insect is in fresh condition, these are easy of observation; but otherwise they are often only to be detected with difficulty and liable to be overlooked. The legs are without spines and the eyes without hairs; so that the insects comprised in it are at once separable from the two preceding subfamilies; in a few genera the fore-tibiae are armed with claws or the fore tarsi with short spines, a development which is found also, to an equally limited extent, in the **Hadeninae**. In the structure of the palpi, frons, and antennae the usual variation is met with; the neu-ration alone remains unchanged. In the genus *Cucullia*, — which gives its name to the subfamily, — and its nearest allies the tegulae are produced backwards so as to form a kind of hood; in these genera the wings are narrow and elongate, and the abdomen is also long; their larvae and those of the following genera are usually brightly coloured, and feed on the flowers of their food plants, generally by night, hiding by day under the lower leaves; but in the majority of cases the wings of the imago are broader, and the larvae subsist on the leaves of low plants, shrubs, and trees. The larvae all possess 8 pairs of feet; and pupation takes place either in the ground or among leaves and rubbish on its surface.

1. Genus: **Brachygalea** *Hmps.*

Tongue present; fore tibiae not clawed; frons with a truncate prominence the rim of which is raised; tegular hood slight; antennae of ♂ slightly ciliated. Type *Brachygalea albolineata* *Blachier*.

albolineata.

B. albolineata *Blachier* (= *leucorhabda* *Hmps.*) (28d). Forewing bluish white, with thick dark grey dusting, the veins blackish; a white streak below base of cell, a second in the cell, widening outwards, both defined by fine black streaks; claviform elongate edged by black streaks; upper stigmata absent; interspaces of terminal area with oblique white streaks below veins 6 and 4, and shorter double ones, separated by black scales, below veins 3 and 2; hindwing fuscous grey, the basal half paler. Biskra, Algeria; Tunis.

2. Genus: **Cucullia** *Schrank.*

Tongue well-developed; fore tibiae not clawed; frons with slight rounded prominence; tegulae produced behind to form a hood; antennae of ♂ simple. Forewing long and narrow with produced apex; abdomen elongate especially in ♂, with lengthened anal tufts. Type *Cucullia artemisiae* *Hufn.*

The first 4 species are conspicuous with silvery markings.

magnifica.

C. magnifica *Frr.* (= *scopula* *Fisch.-Wald.*) (26 a). Forewing glossy white; lines olive grey marked with black externally, the centre paler; inner line near base, median twice angled and below middle confluent with lower part of outer line, which is otherwise only marked by a black subcostal spot; costa from inner line to apex, and inner margin between the two lines olive grey; marginal spots black; fringe white; hindwing white with black marginal dots. An Eastern species, occurring in Austria (Vienna), Sarepta, S. Russia, and the Ural Mts.; also in W. Turkestan.

jankowskii.

C. jankowskii *Oberth.* (26 a). Forewing white, glossy, this ground colour only showing in the space between inner and middle lines; the rest of the wing suffused more or less completely with olive grey brown; lines double, edged with black, the middle and outer lines confluent below, enclosing above a large brown reniform stigma with bright white edging; terminal area whiter with a straight pale brown submarginal shade; hindwing brownish fuscous, the basal half whitish, the fringe white. E. Siberia and Amurland.

argentea.

C. argentea *Hufn.* (= *artemisiae* *Schiff. nec Hufn.*) (26 a). Forewing olive green, with silvery white blotches: these are an oblique band near base, a large blotch below cell, a submarginal band interrupted above middle, and a marginal narrow band; orbicular and reniform round and silvery white, the lower half of former and middle of latter obliterated by a darker green streak through cell; fringe white, with grey green base; hindwing white, becoming greenish fuscous along termen. Widely distributed in Eastern Europe, occurring in Germany, Austria, Hungary, Scandinavia, Russia, Dalmatia and Greece; also in the Altai Mts. W. Siberia, in Turkestan, and Amurland; the ab. **subcaerulea** *Stgr.* (26 a), from W. Siberia and W. Turkestan, is paler, more bluish green. Larva dull green, with a narrow reddish brown or pinkish streak on each segment; dorsal and subdorsal lines yellowish, interrupted by the streaks so as to form spots; spiracular lines yellow; spiracles yellow with black rings; head reddish; feeds up in autumn on the flowers and seeds of *Artemisia vulgaris* and *campestris* in sandy localities, and turns to a greenish pupa.

argentina.

C. argentina *F.* (26 b). Forewing pale olive ochreous suffused with golden brown along inner margin; a broad silvery white streak from base reaching submedian fold below and ending bluntly at the end of cell,

beyond which there is a pale streak to termen: a dark fuscous diffuse shade from below apex to inner margin at $\frac{3}{4}$; outer line marked by brown dots on each side of vein 6 and by an oblique brown line above middle of inner margin; hindwing white. In Europe occurring only in Hungary and S. Russia; in Algeria; in Asia Minor, Persia, Turkestan, and W. Siberia: — **achalina** Pueng. (26 a) is a form from Aschabad with the brown markings of forewing darker, and the hindwing also suffused with brown. — Larva whitish blue, with seagreen longitudinal lines marked with streaks of black points in the incisions of the segments; on Artemisia. *achalina.*

C. spectabilis Hbn. (26 b). Forewing resembles *jankowskii*, but much more suffused with olive fuscous, the only pale spaces being a pearly grey patch on submedian fold below cell and a broad submarginal line; inner and outer lines pale, diffusely edged on each side with olive fuscous, the inner waved, but vertical, the outer lunulate-dentate; upper stigmata both large, filled in with olive brown and with distinct pale annuli; fringe and marginal line dark, intersected by pale rays; hindwing fuscous, paler towards base, with a dark cell spot. — S. Russia; Armenia; W. Turkestan; Altai Mts., W. Siberia. — Larva shining pale yellow, browner on the dorsum; the dorsal and lateral lines dark brown; head reddish; feeding on Artemisia. *spcctabilis.*

C. mandschuriae Oberth. (26 b). Forewing bright bluish or lilac grey, much suffused and slightly dusted with olive; the cell olive, containing the very indistinct stigmata, which are united along median vein by a bright white dash; lines very indistinct, olive; the outer curved and followed by an olive shade which is broader at each end; submarginal shade with black dashes below veins 2 and 5; a slight black streak from base below cell; hindwing brownish fuscous, paler at base. E. Siberia. *mandschur-riac.*

C. fraudatrix Ev. (= *pontica* Bsd., *pyrethri* H. Sch.) (26 b). Forewing pale grey suffused with olive brownish; inner, median, and outer lines oblique outwards parallel to one another, each followed by olive brownish suffusion; the inner line acutely angled on submedian fold, the outer bluntly angled inwards towards it; stigmata pale grey, the reniform large, with a black streak from its lower end between veins 4 and 5, a shorter black streak below veins 2 and 6; a strong black streak from base below cell; hindwing fuscous, basal half paler; fringe white. Only found in the East of Europe, Germany, Hungary, Galicia, Rumelia, Russia; W. and E. Turkestan, W. and E. Siberia. — Larva greenish white, with a slight flesh-coloured tinge; the white surface dusted with green atoms; the warts brown; dorsal line pale with a row of oblique reddish streaks on each side; a subdorsal row of oblique brownish green stripes; lateral line whitish, darker-edged; spiracles pale brown in black rings; on Artemisia vulgaris, in autumn, turning to a yellowish pupa. *fraudatrix.*

C. maculosa Stgr. (28 a). Forewing purplish grey; a fine dark streak in submedian fold from base to inner line, which is strongly dentate outwards between the veins and inwards on them; outer line indistinct, with a prominent black spot before it in submedian fold; upper stigmata with brown centres and obscure grey rings partly black-defined; veins black just before termen; a faint black streak above vein 4, and another below vein 2, placed on brownish spots; hindwing fuscous with paler basal half. Ussuri, E. Siberia; described from a single ♀. *maculosa.*

C. mixta Frr. (= *consors* Ev.) (26 b). Much like *maculosa*; both folds paler grey; the subterminal intervals with brown streaks; hindwing fuscous, with paler basal half; the veins and cellspot darker. — Sarepta and Ural Mts., S. Russia; W. and E. Turkestan. The record from Hungary is doubtful. *mixta.*

C. graeseri Pueng. (26 b). Forewing whitish, with redbrown suffusion; the veins faintly darker; inner line double, oblique, forming diffused black spots towards costa; postmedian line forming similar spots towards both costa and inner margin; upper stigmata reddish brown at centre with yellowish white annuli defined by black; some brown streaks before termen as in *mixta*; hindwing dirty whitish, the terminal half fuscous. Aksu, Mongolia. *graeseri.*

C. cineracea Frr. (26 c). Forewing pale ashy grey, slightly dusted with darker; the lines fine and obscure; the teeth of inner line very strong; claviform stigma long; orbicular and reniform large with black outlines and centres; a fine black line from base along submedian fold; some black streaks towards apex above vein 6; veins finely dark; fringe grey; hindwing whitish, dark grey along termen; the veins dark; the fringe white. The Alps of S. France, the Ural Mts. in Russia, Turkestan, and Mongolia. *cineracea.*

C. defecta Stgr. (26 c). Larger than *cineracea*; forewing dark ashy grey, without markings; the veins dark; lines scarcely perceptible; hindwing dirty whitish, with cell spot, veins, termen, and inner margin fuscous grey. Dauria; Kuldja. *defecta.*

C. maracandica Stgr. (= *herzi* Alph.) (28 a). Forewing deep blue grey with ochreous irroration, and at base suffused with ochreous; the lines ochreous; the stigmata defined by ochreous; an indistinct row of ochreous streaks in subterminal area; hindwing ochreous in basal area, fuscous towards termen; fringe pale. W. Turkestan and Mongolia. — A large species. *maracandica.*

C. artemisiae Hufn. (= *abrotani* F.) (26 c). Forewing grey with grey brown suffusion along costa and the course of the lines; lines double, dark; the inner angled outwards between and inwards on, the veins, *artemisiae.*

the outer clear only below middle; veins finely black; a pale space below cell represents the claviform stigma, which is sometimes edged above and below by two fine black lines: orbicular and reniform distinct, with brown centres and whitish grey annuli outlined with black; subterminal line followed by a diffused row of dentate brownish marks; hindwing brownish, paler towards base. — The species appears to be generally distributed throughout Europe, but not common; and occurs also in Armenia, and W. and E. Siberia; — the ab-

tindei. **lindei** Heyne (26 c), from the neighbourhood of Moscow only, is a local form in which the forewing is suffused throughout with blackish grey. — Larva green, with darker segmental lines; dorsal line white, fine; lateral stripe broad, yellow, somewhat interrupted; spiracles white in black rings; tubercles red; head brown, blackish behind, with a pale-edged frontal triangle; venter pale green with two fine green lines, which on 3rd. and 4th. segments show redbrown: on various kinds of *Artemisia*.

propinqua. **C. propinqua** *Ev.* Forewing violaceous grey, with fuscous suffusion and tinged in places with rufous; a slight dark basal streak on submedian fold, above which the basal area is whitish; a violaceous white patch between inner and outer lines from submedian fold to inner margin; submarginal line defined by violaceous white suffusion inwardly and by a darker cloud beyond, containing short black dashes below veins 5 and 2; veins finely black before termen; orbicular stigma with rufous centre and black points on it, the white annulus outlined with black; the reniform reddish brown with an indistinct grey ring; hindwing fuscous brown, paler towards base. Occurs in the Ural Mts., Russia, the Altai Mts. of W. Siberia, in Mongolia, and E. Siberia.

tescorum. **C. tescorum** *Pueng.* Forewing whitish, flushed with brownish in and beneath cell; markings dark grey; a fine black streak from base below cell; costa with numerous more or less confluent black flecks; lines very obscure; inner line angled outwards on submedian fold; outer indicated only by dark scales on costa and at inner margin; orbicular and reniform stigmata close together, their pale centres outlined in brown; the orbicular oblique, the reniform broadened below; some dark scaling at anal angle; hindwing brownish grey; fringe whitish. Near *propinqua* *Ev.* Described from a ♂ from Altyn Tagh.

generosa. **C. generosa** *Stgr.* (26 c). Forewing pale grey with a violaceous tinge; a strong black streak from base below cell; the veins also finely black; costal area including the cell reddish brown, also an oblique shade from apex to end of cell; inner and outer lines connected by a black streak above inner margin; some black streaks before termen; orbicular and reniform stigmata brown at centre, the whitish annuli outlined with black; hindwing brownish fuscous, paler in basal half. E. Turkestan.

embolima. **C. embolima** *Pueng.* (26 c, d). Forewing brownish grey, suffused with brown in ♂, pale ashy grey without brown in ♀; veins all slightly darker; a fine dark streak from base below cell; stigmata indistinctly defined by brown; outer line wavy dentate, distinct throughout, angled on vein 5, where it is followed by a dark cloud towards apex; a small dark streak above vein 4 just beyond cell, and another, more oblique, below vein 2 towards termen; hindwing uniform reddish fuscous; fringe whitish. Kuku Nor, Tibet.

umbristriga. **C. umbristriga** *Alph.* (26 d). Appears to differ from the following species *duplicata* *Stgr.* only in the brownish suffusion of forewing, especially near base, whereby the blue grey tint of *duplicata* is obscured. Recorded from Kashgar, E. Turkestan; Aksu, Mongolia; and W. China. It probably is the same as *amoena* *Stgr.*

duplicata. **C. duplicata** *Stgr.* (26 d). Forewing pale ochreous grey with a slight bluish tint; veins finely black at termen; a long fine black line from base along submedian fold; lines black brown, distinct on costa and inner margin; the inner strongly angled outwards in the intervals, intruding into the orbicular and claviform stigmata; upper stigmata with brown centres and pale annuli outlined with black; black, pale-edged streaks between the veins of subterminal area; a strong black streak on submedian fold from outer line to termen; hindwing fuscous, the basal half paler. W. and E. Turkestan, Mongolia, and Tibet; **amoena** *Stgr.* is darker, the forewing brownish grey with less distinct markings.

santonici. **C. santonici** *Hbn.* (26 d). Like *duplicata*, but the forewing wholly blue grey, paler in the ♂; the black markings less expressed; the lines single, not double; the orbicular stigma smaller, and, like the reniform, filled in with grey only; in the ♀ the reniform is accompanied by dark fuscous shading on each side; the hindwing of the ♂ is pearly white, with the veins and termen only dark. Recorded from S. Russia, Armenia, and *odorata*, W. Turkestan. — The form called **odorata** by *Guenée* (26 d), from Switzerland, Italy, and Corsica is larger and paler, with less pronounced markings. — Larva green; dorsal line white, traversing a series of whitish oblique markings, forming an angle in front and edged with reddish; lateral line white; spiracles white, black-ringed; head greenish; on different species of *Artemisia*.

alpherakyi. **C. alpherakyi** *Stgr.* (26 e). Forewing bright blue grey; a brown shade before the inner line from costa to vein 1; this line oblique and wavy from costa to submedian fold where it is sharply angled; a brown shade before the lower half of outer line; a black streak on middle of inner margin; orbicular and reniform stigmata with brown centres, the pale annuli outlined with black; short dark streaks in the intervals of terminal area above veins 6, 4, and 1; hindwing dark brown, paler towards base. Urga, Mongolia.

C. formosa Rghfr. (26 e). Forewing greenish white, slightly darker speckled; the veins finely black; *formosa*. a strong black streak from base below cell: the inner and outer lines double, blackish, approximated to each other and forming with a thick diffuse black median shade a broad dark band across middle of wing; stigmata with brown centres and distinct pale rings; hindwing white, the termen fuscous only in the ♀. Occurs in France and Hungary; also at Kuku Nor, Tibet. — Larva on *Artemisia camphorata*, said to resemble that of the common *C. absinthii*.

C. hemidiaphana Graes. (26 e). Forewing whitish with an ochreous flush, speckled with dark grey, *hemidiaphana*. especially along costa: the lines obscure except towards inner margin; orbicular and reniform stigmata whitish, quadrate, interrupted along the middle; the orbicular with 3 black dots on upper and lower edge alternating with white; the reniform with only the inner four plain, its outer edge undefined; veins black outlined with white; the intervals with grey brown streaks; marginal black dots conspicuous; fringe white; hindwing wholly white. W. Turkestan.

C. relecta Pueng. (26 e). Forewing pale purplish grey, with brown dusting; the veins finely black, *relecta*. and a black streak from base below cell: a distinct black median shade; orbicular stigma round, with brown centre ringed with white and outlined in black; reniform indistinct, a brown lunule in the centre; a fine black streak from it above vein 4 to outer line, meeting an oblique dark shade from apex; a conspicuous black streak below vein 2 before termen; hindwing whitish, tinged with ochreous, the terminal area brown. Kuku Nor, Tibet.

C. perforata Brem. (26 e). Forewing grey suffused with darker, forming diffuse clouds along the course *perforata*. of inner and outer lines; inner line angled as usual, outer distinct only above inner margin, preceded by a black blotch on submedian fold; a black streak from base below cell; the veins black before termen; short black dashes below veins 5 and 2; orbicular stigma with brown centre and white annulus; reniform dark and obscure; hindwing dirty whitish, with veins and termen broadly fuscous. E. Siberia, Japan, Corea, N. China. As in the following species the ♀ is darker than the ♂.

C. absinthii L. (= *punctigera* Hufn.) (26 f). Like the last species, but all the markings much clearer, *absinthii*. especially the stigmata; a black blotch from costa between the stigmata; the edges of the inner line broadly black; stigmata marked by black spots; terminal area more uniformly grey; hindwing dingy whitish, becoming fuscous before termen. Occurs in Britain, Sweden, France, Italy, Switzerland, Germany and Russia; also in Siberia and Turkestan. — Larva dull green, with a reddish brown patch on each segment interrupting the lines; dorsal and subdorsal lines white, slender; spiracular line broader, white; feeds on flowers of *Artemisia absinthium*.

C. umbratica L. (= *lucifuga* Esp. nec Schiff., *lactucae* Hbn. nec Esp., *tanaceti* Stph. nec Schiff., *umbratica*. *sonchi* Hein.) (26 f). Forewing dull brownish grey, the cell and space beyond paler, dull greyish buff; a fine black line from base below cell; the usual lines and stigmata ill-defined; orbicular represented by 2 or 3 dark points, reniform by a curved black line at lower end; slight black dashes before termen above vein 3 and below vein 2, and a longer black streak above middle of vein 4; hindwing of ♂ white, with the veins and termen narrowly fuscous; of ♀ wholly brown, with paler base. Of general distribution throughout Europe and West and Central Asia. — Larva dirty brownish yellow with large black warty tubercles: the head and thoracic plate black brown; feeds on flowers of *Sonchus*.

C. clarior Fuchs. (26 g). Forewing pale whitish grey, dusted with darker grey; the cell and space *clarior*. beyond less dusted; markings much the same as in *umbratica* and slightly clearer; the fringe white; hindwing in ♂ white with veins and marginal line dark, in ♀ brown with paler basal area; fringe white. Sarepta, S. Russia; Altai Mts., W. Siberia; Issykkul and Ili, Turkestan. Probably only a white form of *umbratica*, corresponding to the pale *amota* Alph. form of *dracunculi* Hbn.

C. virgaureae Bsd. (= *dracunculi* Ev. nec Hbn.) (26 g). Forewing dark grey; the cell and space *virgaureae*. beyond dull buff; costal and inner margins, especially in the ♀, dark fuscous; veins finely black; orbicular and reniform stigmata very ill-defined, with pale brown scales in centre and 4 blackish spots in their annuli, the reniform with a curved dark line at lower end; lines hardly visible except above inner margin; hindwing fuscous, paler towards base. Ural Mts., Russia; Altai Mts., W. Siberia; W. and E. Turkestan.

C. distinguenda Stgr. (26 g). Like *virgaureae*, but paler and much larger; the costal and inner margins *distinguenda*. diffusely darker; the cell of the ground colour; lines and stigmata well-defined, the stigmata with slightly rufous centres and fine black outlines, the reniform swollen in lower half; hindwing uniformly brownish fuscous. W. and E. Turkestan; E. Siberia; Tibet.

C. chamomillae Schiff. (= *fissina* Haw., *lucifuga* Dup. nec Hbn.) (26 g). Forewing grey brown; the *chamomillae*. veins distinctly black; a whitish spot on submedian fold between the angles of inner and outer lines, which are more distinct in their lower portions; stigmata very indistinct, sometimes denoted by black points on their margins; a fine black streak from base along submedian fold; a black streak above middle of vein 4, and below

- terminal end of vein 2; a row of whitish streaks in the subterminal intervals; hindwing brown, paler towards base, especially in the ♂. Generally distributed in Europe, found also in Egypt and Morocco, in Madeira and the Canaries; in Asia Minor, Syria, and W. Turkestan; — in *chrysanthemum* *Hbn.* (26 h), found more especially in the Alps, in N. Germany, and Hungary, the forewing is suffused with dark smoky fuscous, especially in median area, the hindwing also becoming deeper brown; in *calendulae* *Tr.* (26 h), on the other hand, the ground colour is paler grey and the markings slighter; this is a southern form from Dalmatia, Sicily, and Corsica, of which *leucanthemum* *Rmb.* from Andalusia is a yellower form. — Larva shining strawyellow, mixed with green and red, with a subdorsal series of oblique olive green dark-edged markings; lateral and spiracular lines also interrupted, and oblique; on *Matricaria* and *Anthemis*.
- boryphora.* **C. boryphora** *Fisch.-Wald.* (= *lignata* *Guen.*, *rimula* *Frr.*, *improba* *Chr.*) (26 h). Forewing dull whitish dusted with fuscous and with fuscous suffusion in cell, broadly along basal half of inner margin, and narrowly along an oblique streak from below apex to below end of cell; a streak from base below cell and the veins black; 3 black streaks above veins 6, 5, 4, and another below vein 2; inner line acutely dentate, outer obscure, but forming a black mark across submedian fold; stigmata obsolete; hindwing whitish, fuscous along termen. S. Russia; Armenia, Asia Minor, Persia, W. and E. Turkestan. — A small species, distinguished by the pale ground colour and dark suffusion.
- achilleae.* **C. achilleae** *Guen.* (24 h). This species, of which little seems to be known except from Guenée's original description of the specimens in Boisduval's collection, resembles the preceding both in size and markings, but, teste Guenée, is quite distinct. Andalusia.
- tanacetii.* **C. tanacetii** *Schiff.* (26 h, 27 a). Forewing ashy grey, with oblique grey streaks from costa, denoting the beginning of the lines, which otherwise, like the stigmata, are usually hardly discernible; a fine black line from base along submedian fold; a short line above it before vein 2; a long conspicuous black line from vein 2 to vein 4 beyond cell, where it often forms a kind of lunule; a black streak above vein 4, and two or three short ones from apex; veins black towards termen; hindwing white with the veins dark; termen fuscous, narrowly in ♂, broadly in ♀. Widely distributed in central Europe, occurring in France, Germany, Austria, Hungary, Switzerland, Sweden, Russia; also in Asia Minor, Armenia, W. and E. Turkestan. In the Tring Museum there are 4 ♂♂ and 1 ♀, unfortunately without locality, which deserve to be distinguished as ab.
- albidior.* **albidior** *nov.* (27 a); the ground colour is grey white or even chalk grey, with the black streaks conspicuous, the underside, both of body and forewings pale buff. — Larva pearl grey, with bright yellow lines, the dorsal line distinct, the others somewhat interrupted; the white surface mottled with black points and cross streaks; — on flowers of *Tanacetum*, *Artemisia*, *Achillea* and *Anthemis*.
- fraterna.* **C. fraterna** *Btlr.* (24 h). Forewing greyish-brown; the veins brown; a black streak from base along submedian fold; inner line dentate as usual; outer only plain above inner margin; stigmata obsolete, the reniform represented only by a curved black streak below end of cell; a median shade from costa to lower end of cell; a black streak above vein 4 connected with a dark subapical triangle; an oblique brown streak below end of vein 2; hindwing whitish, the veins and termen fuscous. Japan and E. China.
- lactucae.* **C. lactucae** *Schiff.* (= *pustulata* *Ev.*, *campanulae* *H. Sch. nec Frr.*) (27 a). Forewing dark grey, the lines and shadings still darker; the inner and outer lines and a median shade from costa fairly distinct; a black streak from base along submedian fold; a black streak above vein 4 and a shorter one below vein 2 before termen; hindwing brownish fuscous with paler base, especially in the ♂. — France, Germany, Austria, Hungary, Switzerland, Scandinavia, Russia; Armenia, Asia Minor, W. and E. Siberia, Mongolia. — Larva white; dorsal line yellow, broadened out into a blotch on each segment, with a row of large round black spots on each side of it, between which before the segmental incisions stands a row of black oblong vertical spots; above the feet a row of yellow spots marked on both sides with black flecks; spiracles black; head black with a white angular marking; on flowers of *Lactuca*, *Sonchus*, *Hieracium*, and in the Mountains especially on *Prenanthes purpurea*.
- dracunculi.* **C. dracunculi** *Hbn.* (= *incana* *Ev.*) (27 b). Forewing pale grey, the cell and space beyond dull greyish-yellow, sometimes also the submedian fold; the upper stigmata obscurely marked with dark points; a basal streak below cell and the veins black; a slight black streak above vein 4 and below vein 2; hindwing whitish, brown towards termen, always paler in the ♂. — Hungary, S. Russia, the Altai Mts. in W. Siberia: — the ab.
- amota.* **amota** *Stgr.*, from W. and E. Turkestan, has the forewing whitish grey without any yellow brown admixture except at the place of the stigmata. — Larva yellowish grey, striated with darker; dorsal and lateral lines rufous; sublateral line white; on *Artemisia dracunculus*.
- anthemidis.* **C. anthemidis** *Guen.* (27 b). Like *dracunculi* but paler grey, with the markings plainer. Digne, S. E. France — Larva reddish ochreous, with a faint double brown dorsal line and broad brown black-edged subdorsal line; spiracular broad, reddish white, dark-edged above; spiracles yellowish, ringed with black; head dark with two curved brown lines; on *Aster acris*.

C. linosyridis *Fuchs*. Like *dracunculi*, but darker, more iron grey; but along with the darker forms *linosyridis*. there also occur paler examples heavily powdered with white. — Wiesbaden, W. Germany, and Sarepta, S. Russia. — Larva earthy grey, with darker lines, and the lateral line almost white; feeds on *Chrysocoma linosyris*; fullfed nearly two months earlier than *anthemidis*. Both this and the preceding species are by some considered to be only forms of *dracunculi*.

C. pullata *Moore* (27 b). Forewing brownish grey, with some darker irroration; lines indistinct; the *pullata*. inner dentate as usual, the outer visible only in the lower half; stigmata likewise indistinct, the orbicular incompletely outlined with black, often reduced to 4 dark points, the reniform marked above by a slight dark line and below by a curved streak; a black streak above vein 4, with a series of slight brown streaks above it; hindwing white; a broad terminal black band, of which the inner edge is waved and bent outwards at anal angle; a large black lunule on discocellular connected with a black costal streak. W. China. The species was described in the first instance from the Punjab, N. India.

C. santolinae *Rmb.* (= *wredowi Costa*) (27 c). Like *lactucae* but smaller and with narrower wings; *santolinae*. characterised by the whitish patch in the region of the stigmata and a whitish blotch between the inner and outer lines on submedian fold; veins and a submedian streak finely black; a curved dark streak below end of cell represents the reniform stigma: a black streak above vein 4 and a shorter one below vein 2 before termen; hindwing uniformly brown. A South European species found in S. France, Switzerland, Andalusia, Corsica, Italy and Algeria; recorded doubtfully from Mongolia and W. Turkestan. — Larva dirty green or reddish, with some white spots representing the dorsal line; on each segment at the sides some violet streaks; venter pale with black wavy lines; head pale; feeds on *Artemisia arborea*.

C. tecca *Pueng.* (27 b). Forewing rather short, greyish white, with fuscous brown shadings, the lines *tecca*. brownish along costa; some brownish dashes in the intervals before termen; veins finely black; a fine black streak from base along submedian fold through outer line, meeting a black line from termen below vein 2; a whitish patch on submedian fold between the angles of the two lines; orbicular stigma obsolete; reniform with a curved black line at its lower edge; some black and white streaks from apex to vein 4; hindwing brownish, with paler base; the ♂ seems to be generally whiter in ground colour, with less suffusion, and the shadings and markings more distinct. W. Turkestan, Aschabad; Palestine, Jerusalem.

C. nderiensis *H. Sch.* (27 c). Forewing dirty whitish, almost wholly overlaid with dull greyish fus- *nderiensis*. cous; the lines only visible below middle; veins towards termen finely black, the intervals with long whitish streaks; a strong black curved line from base along submedian fold outlined with pale scales; reniform stigma represented by some ochreous and whitish scales; hindwing smoky grey, with darker veins; the termen darker. — Ural Mts., S. Russia, the Kirghiz steppes, and Issykkul in W. Turkestan. — Larva pale bluish-green; dorsal line yellowish green, narrow; segmental incisions yellow; dorsum finely and thickly marbled with white edged by fine white subdorsal lines; spiracular line broadly white; head pale green with 3 small black points on each side; on *Artemisia dracunculus*, feeding in spring, and fullfed in June; the imago appearing from November to January. This extraordinary inversion of the usual relative times of appearance of larva and imago rests on the statement of Christoph, Stett. Ent. Zeit. 1893, p. 33.

C. praecana *Ev.* (27 c). Forewing pale grey, the shadings darker; costal beginning of the oblique *praecana*. lines marked more strongly on the subcostal vein; veins black before termen; a black streak from base below cell; cell pale greenish yellowish; the edges of the very obscure stigmata marked by dark points; an oblique dark grey shade from below apex to below end of cell; a black streak before termen below vein 2; hindwing fuscous brown, paler brown in basal half with a bronzy green sheen. Denmark, Germany, the Baltic provinces of Russia, and the Ural Mts. — Larva golden green, the dorsum dusted with blackish green; dorsal line pale, interrupted; subdorsal lines plainer, also pale; segments with reddish brown blotches on each side of dorsal line; the spiracles also on brown spots; head pearl grey, marbled with green; on flowers and seeds of *Artemisia vulgaris* and *abrotanum*.

C. campanulae *Frr.* (27 c). Forewing dark purplish grey; the strongly dentated inner line distinct *campanulae*. throughout, the outer line only below middle; a black streak from base along submedian fold; a streak above vein 4, from the outer edge of reniform stigma, which has its lower edge only margined by a curved black line; a short black dash at termen below vein 4 and a longer one below vein 2; hindwing dark brown, the base paler with the veins dark. — Austria, Germany, Switzerland, Russia, and Armenia; the records from S. W. France and the Urals are doubtful. — Larva pearl white; dorsal stripe formed of oval yellow blotches; lateral line of small yellow spots; some twelve black tubercles on each segment; head with dark spots; — on *Campanula*, especially *C. rotundifolia*, devouring leaves and stems as well as flowers and seeds.

C. lucifuga *Hbn.* (27 d). Resembles *campanula*, but the forewing is broader and darker, more mixed *lucifuga*. with brownish; the stigmata with faint black outlines, which sometimes become obsolete; the reniform with a curved black line at its lower end; the black streak below vein 2 before termen prominent, especially in the ♀;

hindwing in ♂ hyaline grey, darker along termen and with darker veins; in ♀ almost uniform dark brownish fuscous; the cellspot large and dark. France, Germany, Austria, Hungary, Sweden, and Russia; Armenia, W. Siberia, E. Siberia, Mongolia, and Tibet. — Larva glossy black, with a double row of large round orange red spots down the back, and a single row on each side; on the last segment a transverse orange-red stripe; head black; on flowers of *Sonchus*, *Daucus*, and *Prenanthes*.

grisescens. **C. grisescens** *Leech* (27 d). Larger than *lucifuga*, otherwise greatly resembling it. — Described from a single ♀ from W. China.

celsiae. **C. celsiae** *H. Sch.* (27 d). Forewing pale wood colour suffused with brown; this paler tint, however, only showing at base of inner margin and along terminal area; the rest of the wing suffused with black, extending on costa from base to apex; the lower parts of inner and outer lines only are visible, the outer being followed by pale ochreous lunules and marked with black dots on the veins; a long dark streak before termen below vein 2; veins black at their ends on brown spots; fringe mottled; hindwing brown with dark veins, somewhat paler in the ♂. Found only in Eastern Europe, Hungary, Bulgaria, S. Turkey, and in Palestine. — Larva green; dorsal, subdorsal, and spiracular lines white and slender; lateral line broad, its upper half green; on *Hesperis desertorum*. — A small dark species, easily recognized.

xeranthemi. **C. xeranthemi** *Bsd.* (27 d). Forewing whitish or bluish grey, with dark fuscous suffusion along the course of the lines, especially at costa; stigmata with pale brown centres and whitish grey annuli, the orbicular 8-shaped, the reniform less defined; inner line double, strongly dentate; outer line variable, sometimes distinct throughout, at others only above inner margin, always preceded on submedian fold by a blackish cloud, and followed by a black streak below vein 2; hindwing dingy whitish, the veins dark, the terminal area smoky black. A Southern species occurring in S. France, S. Germany, Austria, Hungary, the Balkans, and S. Russia, W. Turkestan, W. Siberia. — Larva, when full fed, violet with paler, ill-defined, longitudinal streaks; lateral lines white; feeds in August and September on *Chrysocoma linosyris*.

gnaphalii. **C. gnaphalii** *Hbn.* (27 e). Like *xeranthemi*, from which it is distinguished by the more rounded orbicular, not 8-shaped; by the absence of a black shade before outer line in submedian fold, while the black line beyond it is thickened and more conspicuous; the outer line being bent at right angles on the fold, its lower half vertical; above vein 4 a black streak from the reniform stigma, interrupted in the middle; a black streak along middle of inner margin; hindwing brownish, the basal half paler, but not nearly so pale as in *xeranthemi*. Of nearly the same distribution and equally rare as *xeranthemi*: occurring also in Britain and N. Italy — in Armenia and W. Siberia. — Larva deep green; dorsal stripe broad, red-brown; spiracles yellow on an interrupted redbrown streak; head green; feeds on flowers of *Solidago virgaurea*, hiding by day under the leaves close to the ground. The larva referred by Millière to *xeranthemi* and said to feed on *Helianthemum* may belong to a distinct species, but the description agrees fairly well with that of *gnaphalii*, certainly not with that of *xeranthemi*.

elongata. **C. elongata** *Bldr.* (= *albescens* *Moore*, *atkinsoni* *Moore*, *postera* *Stgr.*) (24 i). Forewing purplish grey, dusted with brown; the costa fuscous; cell and area beyond it rufous; veins finely black; a thin black streak from base along submedian fold; lines obscurely marked, except above inner margin; stigmata with rufous centres and grey annuli outlined with black, both somewhat constricted at middle; a black streak above middle of vein 4 and another, more prominent, below end of vein 2; hindwing brown, the basal area paler. Altai Mts., W. Siberia; Amurland, and Ussuri, E. Siberia; Amdo, Tibet; the Goorais Valley, Kashmir; occurs also in N. India, whence both of Moore's types and Butler's type were described.

asteris. **C. asteris** *Schiff* (27 e). Forewing pale grey; costal area dull reddish brown; the cell and space beyond rufous-tinged; stigmata obscure, incompletely defined by brown, the reniform with a dark curved streak at its lower end; outer line defined only below vein 2 on submedian fold where it forms a double redbrown lunule, followed by a white one beyond which is a thick brown blotch or two streaks; both the inner and outer lines are marked by very oblique dark brown streaks on inner margin; hindwing brownish, the basal half dull whitish grey with dark veins. Occurs throughout Europe (except Spain and Portugal) and Central Asia, extending to W. China and Japan. — Larva yellow green; dorsal, subdorsal, and spiracular lines yellow with black edges; head yellow brown, with black spots. — On flowers of *Aster* and *Solidago*.

ledereri. **C. ledereri** *Stgr.* (27 e). Like *asteris*, but larger, not so uniformly grey in colour, the costa and inner margin more broadly dark; as in *asteris*, the lower halves of the two stigmata show clearer and paler; hindwing more hyaline white in basal area, followed by a better defined broad blackish band along termen. Described by Staudinger from Kamshatka. In a ♀ from Raddefka, quite perfect, sent as *postera* by Herr Tancré, the cell and space beyond in forewing is hardly lighter redbrown; but in 2 ♀♀ from Japan this space is very decidedly pale rufous ochreous and the costal area altogether paler; but all three agree in the hindwings. The paler Japanese specimens answer well to the description of *ledereri*, while the example from Raddefka is remarkably like true *postera*.

C. stigmatophora *Hmps.* (27 e). Forewing rufous-whitish; the costal area fuscous; lines indistinct, except below vein 2, the outer forming there a whitish lunule between brown lines, preceded by brown suffusion, and a smaller similar lunule above inner margin; inner margin dark brown between the lines; oblique brown streaks from apex to vein 6, a streak above middle of vein 4, and a strong oblique streak below end of vein 2; stigmata pale, but indistinct, with two slight brown streaks between them; hindwing reddish brown, paler at base; cilia white, redbrown at tips. Kuldja, E. Turkestan. Described in the first instance from the Punjab. *stigmatophora.*

C. scrophulariphaga *Rmb.* (27 f). Forewing pale smooth grey along costa, below the median whitish slightly grey-speckled above; the cell and space beyond dull rufous-ochreous; the stigmata paler, ochreous without the deeper tinge, subquadrate, and marked by dark dots at their angles, especially on the median, the reniform with a faint black external border; outer line forming two oblique white lunules above and below vein 1, preceded by a flattened triangular dark brown shade stretching along margin to inner line, and followed by a long black brown oblique streak to end of vein 2, prolonged above it along termen to vein 4; two faint brown streaks between veins 4 and 6 before termen; hindwing brown, paler in basal area. — Restricted to the island of Corsica. — Larva greenish white or yellowish; subdorsal lines yellow; sides with a row of yellow blotches bearing the spiracles and 4 black points; dorsal segments with 4 black tubercles sometimes united to form an X; head yellowish red, with black dots; feeds, in spring, May and June, on the flowers and stalks of *Scrophularia ramosissima*. *scrophulariphaga.*

C. scrophulariphila *Stgr.* (27 f). Forewing dark grey along costa and at base for $\frac{1}{3}$; the whiter area below the median vein being restricted to the median and outer areas; the cell and space beyond only slightly ochreous; outer line and the dark streaks on each side of it below vein 2 nearly as in *scrophulariphaga*; some brown streaks in the intervals below apex, the streak at apex black; stigmata as in *scrophulariphaga*; hindwing pearly white with the veins and termen quite narrowly blackish. — Andalusia; and Morocco. — Larva extremely like that of *scrophulariae*, but the dorsal spots more numerous and lengthened into streaks which reach down to the lateral blotches and on segments 6—9 coalesce with the yellow dorsal spots; feeds on *Scrophularia sambucifolia*. *scrophulariphila.*

C. blattariae *Esp.* (= *caninae* *Rmb.*, *scrophularivora* *Guen.*) (27 f). Forewing with costal area dark irongrey; the cell and space beyond olive brownish; below the median pale violaceous grey; stigmata indicated by brown points; outer line forming a double white lunule on each side of vein 1, the upper followed by a thick brown streak to margin running up to vein 3, the lower preceded by the dark edging of the inner line; slight brown streaks from apex to vein 6, and from below apex to end of cell; hindwing dull fuscous brown in ♀, whitish with fuscous termen in ♂. A Central and South European species, but local; occurring in France, Germany, Austria, Hungary; Spain, Dalmatia and S. Russia; also in Asia Minor, Syria, Armenia, and Kashmir. — Larva yellow, with the black spots of the dorsal region often connected to form an X; the sides varied with black spots and streaks; spiracles black; head yellow dotted with black; on flowers of various kinds of *Scrophularia*. *blattariae.*

C. thapsiphaga *Tr.* (27 f, g). Smaller than *blattariae*, the forewing broadly pale ochreous, the grey costal streak much narrower; stigmata plainer, protruding as pale spaces into the costal streak, and marked with dark dots; hindwing paler, especially in the ♂; the darker terminal border intensified on each side of vein 2. Of nearly the same distribution in Europe as *blattariae*, in Asia only occurring in Armenia. — Larva bluish or greenish white; dorsal line broadly and conspicuously yellow; the sides and venter with fine black transverse and longitudinal lines; spiracles black-edged, on a pale obscure line; head pale brown dotted with black; feeding on flowers and leaves of *Verbascum*. *thapsiphaga.*

C. anceps *Stgr.* (27 g). Forewing whitish, towards costa gradually suffused with grey; the costa itself blackish grey, the lines marked on it black and pale; stigmata faint, marked on median with black dots; outer line forming an oblique black streak across submedian fold ending in a black triangle on vein 6, followed by a white crescent, the streaks before and beyond it black; a row of black streaks from apex to vein 6 and another from below apex to end of cell; fringe with a strong white line at base; hindwing dark grey, the veins and termen deeper. Recorded from Armenia, Asia Minor, Syria, Persia, W. and E. Turkestan. *anceps.*

C. lychnitis *Rmb.* (27 g). Forewing narrow, pale ochreous with a more rufous tinge than in *thapsiphaga*, the costal streak darker; hindwing in both sexes whitish, the terminal shade narrower in the ♂. Generally distributed in Europe, occurring in Britain; also in Armenia and Asia Minor. Larva greenish white with a pale yellow band on each segment; a dorsal row of curved black bars alternating with rows of 4 black spots; a row of black spots along the sides; feeding on flowers and leaves of *Verbascum lychnitis*. *lychnitis.*

C. verbasci *L.* (27 g, h). Forewing broad, brownish ochreous; the costal streak and those preceding and following the lower part of outer line deep redbrown; the lunules following the line white and conspicuous; space below median paler, becoming almost whitish above the outer dark brown streak; stigmata marked by dark brown spots; a row of deep brown streaks from apex to vein 6, and another, more faint, from below

apex to end of cell; hindwing in ♂ whitish, with dark veins and cellspot, becoming diffusely fuscous along termen; in ♀ darker throughout. The species is generally distributed throughout Europe, and found also in Asia Minor, Syria, Armenia, and E. Siberia. — Larva bluish white, with a yellow band on each segment; a double dorsal series of bent black marks alternating with black spots; a spiracular row of yellow spots with black marks; head yellow, black-spotted; feeding on *Verbascum* and *Scrophularia*.

scrophulariae.

C. scrophulariae *Cap.* (27 h). Not quite so broad as *verbasci*, the forewing paler and duller in coloration; the dark brown costal streak overlaid with grey and so paler than those on inner margin; the ground colour below median hardly paler, not strikingly whitish; hindwing much as in *verbasci*. With much the same distribution as *verbasci*, but not so common in Britain. — Larva hardly distinguishable, on *Scrophularia*, especially *S. nodosa*, and *Verbascum*.

rivulorum.

C. rivulorum *Guen.* (= *lychnitis* ab. *auct.*) Larger than *lychnitis*. Forewing somewhat more dentate, warmer ochraceous in colour, with the costa deeper, more sharply grey black; stigmata with the brown points better defined; hindwing darker, with cellspot plainer. Terminal segment of palpi blunter and more truncate at top. Larva more elongate than that of *lychnitis*, greener, without the yellower variety; the black blotches still more connected together than in *lychnitis*; the incisions concolorous; feeding exclusively on *Scrophularia*, in moist places, whereas *lychnitis* frequents dry and arid slopes. This species is referred by Guenée himself and all continental writers to *lychnitis*; it seems to me much more likely to be a form of *scrophulariae*, if of anything. I prefer to leave it as a distinct local species, occurring only in S. France.

prenanthis.

C. prenanthis *Bsd.* (= *ceramanthea* *Frr.*) (27 i). Forewing violaceous grey, outer half of costal area shaded darker; lower half of submedian fold before the outer line broadly streaked with whitish; stigmata entirely absent; a black streak along inner margin to outer line, and a broader black streak beyond it below vein 2, continued as a fine marginal line to apex and cut by the whiter veins; a row of dark streaks from apex to vein 6; hindwing brown in both sexes, though often paler in the ♂. — Germany, Austria, Hungary, Switzerland, Rumelia, Galicia, Russia; and Asia Minor. — Larva green; dorsal and subdorsal lines yellow, spiracular line white; head green; tubercles yellowish white; feeds on flowers and seeds and afterwards on the leaves of *Scrophularia vernalis* and *nodosa*.

biornata.

C. biornata *Fisch.-Wald.* (27 h, i). Forewing pale ash grey with minute darker grey atoms; a broad pale golden yellow streak from middle of cell expanding to near termen; a narrow yellow streak along submedian fold from base to termen containing a fine black streak from base; inner line finely black, visible only in the outward teeth; outer line forming black marks on submedian fold; a black streak below end of cell from vein 2 to 4, apparently representing lower margin of reniform stigma; hindwing in ♀ with basal half white, terminal diffusely fuscous; fringe white; in ♂ wholly white. — S. Russia, W. and E. Turkestan, W. Siberia. — A large and striking species.

balsamitae.

C. balsamitae *Bsd.* (27 i). Smaller and greyer than *biornata*, without yellow rays along the folds; the cell paler and sometimes slightly ochreous; the black streak from base along submedian fold strong; the veins black, with some pale streaks in the intervals before termen; lines and stigmata ill-defined and almost obsolete; a curved black mark below base of the reniform; hindwing grey brown with base paler in the ♀, white with brown veins and slight brown terminal shade in ♂. In Eastern Europe only; S. E. Germany, Hungary, Austria, Galicia, S. E. Russia; also at Issykkul, W. Turkestan. — Larva pale yellow; dorsal line orange, interrupted at the incisions; subdorsal lines represented by double rows of black points; spiracular lines formed by large orange blotches with a row of black points along them; spiracles black; head yellow with black marks; feeds from midsummer onwards on flowers of *Hieracium*, *Pencedanum*, *Thalictrum* and other plants.

lampra.

C. lampra *Pueng.* Forewing white with grey suffusion, somewhat yellowish below costa; lines and stigmata obsolete; a fine distinct black streak from base; veins in parts finely black; a short arch below origin of vein 3 and a straight horizontal streak above vein 4 black; hindwing whitish with the veins brown; intermediate between *balsamitae* and *sabulosa*. Aksu, East Turkestan.

sabulosa.

C. sabulosa *Stgr.* (28 b). Forewing ochreous white, tinged with pale brown except in the cell, which is whiter; veins brown; hindwing white, the veins brown; the termen faintly and partially brown. The sandy steppes near Naruen, S. Russia.

lactea.

C. lactea *F.* (27 i). Forewing white irrorated with grey, especially in the ♀; hindwing white, the veins brown; terminal area tinged with pale brown. Sarepta, S. Russia; Armenia; Altai Mts., W. Siberia.

3. Genus: **Copicucullia** *Smith.*

Distinguished from *Cucullia* *Schrank* by the foretibia bearing a curved claw on inner side; the frons with a slight roughened prominence with a corneous plate below it. Type *Copicucullia eulepis* *Grote* from N. America.

C. syrta *Mab.* (29 a). Forewing greyish white, ochreous-tinged in parts, and more or less suffused *syrta*. with black; veins black; a black streak from base along submedian fold; lines distinct only below 2, where their angulations are visible; a row of short streaks from below apex to angle of cell; two short streaks before end of vein 2; hindwing whitish, the veins dark; the terminal area suffused with fuscous. Biskra, Algeria; the Canaries.

C. naruenensis *Stgr.* (29 a). Forewing white shaded with pale blue grey; the veins and folds finely *naruenensis*. black; a short black streak from base below cell; lines marked by oblique dark streaks from costa; the inner with the usual angulations; the outer forming a black lunule on submedian fold, preceded by a black streak along inner margin; a row of black streaks from below apex to lower end of cell, and another from vein 4, the streak below 2 large; reniform stigma alone visible, white with brownish centre; hindwing whitish, the terminal area diffusely fuscous; the fringe white. — Naruen, S. E. Russia, W. and E. Turkestan, Mongolia. — ab. **dimorpha** *Stgr.*, from Uliassutai, has the markings of the forewing more distinct; — ab. **eumorpha** *Alph.*, *dimorpha*. *eumorpha*. from Kaschgar, and Aksu, is more ochreous white.

C. sublutea *Graes.* (29 a). Forewing pale ochreous yellow; a rufous streak from base below cell; a *sublutea*. rufous streak on inner margin from before middle to tornus; an oblique row of short rufous streaks from below apex to lower end of cell, and another from vein 4 to vein 1; hindwing yellowish white, the terminal area suffused with rufous. — Kaschgar, E. Turkestan; W. Gobi Desert, Mongolia.

4. Genus: **Cheligalea** *Hmps.*

Characterised by the presence of a small median terminal claw on the foretibia, covered by a pointed tuft of hair; frons with slight rounded prominence, with a corneous plate below it. Type *Cheligalea fuchsiana* *Ev.*

C. fuchsiana *Ev.* (= *fuchsii* *Frr.*, *scopariae* *Dorf.*) (29 a). Forewing resembles *spectabilis*, but very *fuchsiana*. much smaller and greyer; the orbicular stigma with a white annulus and a distinct dark quadrate spot between it and the obscurer reniform; hindwing fuscous, with basal half paler, and the fringe white; in both sexes the insect occurs of two sizes. Ural Mts. Russia, Altai Mts. W. Siberia; E. Siberia; Kuku Nor, Tibet. — W. and E. Siberia and S. Russia are also localities quoted for *scopariae*, besides Austria, Hungary, Styria, and Armenia. — Larva redbrown, pale brown, or olive green, paler laterally; dorsal line pale reddish, edged with black; a row of pale red, broadly brown-edged oblique streaks along the sides, with the white black-edged spiracles on their lower area; a broad white line above the feet; head pale brown; feeds on *Artemisia scopariae*.

5. Genus: **Argyromata** *Hmps.*

Like *Cheligalea* *Hmps.* the foretibia has a short median terminal claw, but not covered, as in that genus, by a tuft of hair; the frons is armed with a truncated somewhat heart-shaped prominence with raised edges. Type *Argyromata splendida* *Cram.*

A. splendida *Cram.* (= *argyrea* *Frr.*) (29 a). Forewing silvery blue green, the inner margin ochreous *splendida*. from before middle to tornus; fringe white; hindwing pale fuscous grey, darker towards termen; the fringe white. Sarepta, Ural Mts., Russia; Altai Mts., W. Siberia; W. and E. Turkestan; Mongolia; Tibet. Found feasting on flowers of *Cephalaria*.

6. Genus: **Lophoterges** *Hmps.*

Tongue well-developed; palpi porrect, reaching well beyond frons, both second and third segments long, the former hairy beneath; frons smooth; antennae simple, lamellate; frons and vertex with ridges of hair; tegulae somewhat produced to form a hood; but the wings are not narrow and elongate as in *Cucullia* and its allies, the apex not pointed; nor is the abdomen prolonged or armed with long tufts of hair. Type *Lophoterges fatua* *Pueng.*

L. millierei *Stgr.* Forewing greyish white; the cell and area beyond it redbrown nearly to termen; *millierei*. costal area at base white; a black streak, white-edged above, from base below cell; lines broken up, marked by oblique streaks on costa; orbicular and reniform stigmata white with brown centres and outlines, the orbicular narrow, very oblique, extending below cell, and connected with the reniform, which is also narrow and crescentic; a black streak above vein 4 beyond cell, with a row of short streaks from it to apex; hindwing white, the termen in ♀ suffused with brown. Spain, Catalonia. Larva grey green; dorsal line white, dilated between segments 4—9 and filled in with reddish, ending in a dorsal bifid hump on segment 11; lateral line yellow; head brownish; on *Lonicera*.

centralasiae. **L. centralasiae** Stgr. Larger than *millierei*; the thorax grey with a brown tinge; forewing with the cell and area beyond slightly brownish; orbicular and reniform not confluent, but well separated; hindwing white with terminal half suffused with fuscous in ♂, almost wholly fuscous in ♀. W. Turkestan.

fatua. **L. fatua** Pueng. Forewing fuscous grey; veins slightly black; a short white streak on a brown patch at base below cell; lines dentate, double, blackish, filled in with grey; stigmata narrow, with brown grey centres and white rings, the orbicular oblique, touching a small semi-oval spot below cell, reaching close to lower end of reniform; an oblique black streak from apex to end of cell, crossed by black dashes and preceded by a paler space; a curved dark subterminal shade from vein 4 to inner margin, with white scales on submedian fold; hindwing rufous brown, paler towards base; fringe whitish. Kuku Nor, Tibet.

7. Genus: **Callierges** Hbn.

Tongue present; frons smooth, but bearing 2 ridges of hair; palpi obliquely porrect, the 2nd segment hairy below, the terminal depressed; antennae of ♂ bipectinate; abdomen with dorsal crests at base. Type *Callierges ramosa* Esp.

ramosa. **C. ramosa** Esp. (24 d). Forewing pale grey speckled with darker; a velvety black brown streak from base below cell, into which it projects shortly before its middle, again projecting to vein 3 before anal angle, its upper edge concave between, its lower limited by the submedian fold, below which the inner margin is dark grey, though often as black, at least in its inner half, as the streak itself; the outer projection is met by a smoky brown oblique shade from apex, containing black dashes; the anal angle is black, separated from the black shade by a white lunule; orbicular and reniform large, confluent below, slightly black-edged above; outer line denticulate; fringe mottled; hind wing white, tinged with dark rufous grey in ♀, but only along termen in ♂; a round grey cell spot. Generally distributed in Europe except the North, occurring in France, Germany, Austria, Hungary, Switzerland, N. Italy, Spain; Larva brownish yellow, varied with white on dorsum, and with oblique black subdorsal stripes; lateral stripe dark; on Lonicera; — the form **ramosula** Stgr. from Ussuri, Amurland, is darker; the forewing with better defined stigmata.

8. Genus: **Hypomeccia** Stgr.

Tongue present; frons smooth, rounded; palpi obliquely porrect, 3rd. segment short; antennae of ♂ bipectinate; head and thorax clothed mainly with scales; abdomen smooth, without crests; build slender. Type *Hypomeccia quadrivirgula* Mab. Contains only the one species, which has the forewing long and narrow.

quadrivirgula. **H. quadrivirgula** Mab. Forewing whitish, suffused with fuscous, the costal area ochreous; veins finely dark; lines hardly visible; orbicular stigma a whitish patch with a few black scales on it; reniform a white point at lower angle of cell, with some black scales on it inside; below base of cell an undefined white streak with some large black scales on it; subterminal line formed by white dashes with ill-defined black dentate marks before them, below vein 4 forming an oblique white band to inner margin; hindwing white with brown terminal line. Described from Algeria, occurring also in Palestine.

9. Genus: **Copiphana** Hmps.

Tongue present; palpi obliquely porrect; frons with large horny prominence raised at rim, with a central process hollowed out in front; head, thorax, pectus, and tibiae rough-haired; foretibia with a curved claw at extremity on inner side; forewing with costa slightly, inner margin strongly sinuous, the anal angle lobed. Type *Copiphana olivina* H. Sch.

Sect. I. Antennae of ♂ bipectinate; abdomen not crested.

gassana. **C. gassana** Blachier. Forewing ochreous whitish suffused with brown, and with some fuscous scaling before outer line; veins before termen marked in black; lines double, filled in with whitish; the outer widely outcurved and followed on costa by a black mark; reniform stigma alone visible, as a slight pale lunule; fringe mottled; hindwing ochreous white tinged with brown; a slight curved outer line. Algeria.

Sect. II. Antennae of ♂ lamellate, serrate beneath; abdomen crested on 2nd. segment.

oliva. **C. oliva** Stgr. (24 d). Forewing whitish; basal half of wing and terminal area except at extremities reddish brown; veins dark; inner line at middle of wing excurved as the outer line usually is; upper stigmata absent; claviform small and pale, outlined with brown; outer line indicated only by an oblique costal streak; some whitish streaks in terminal intervals; hindwing pale, suffused with brown on basal half and fuscous on terminal. Occurs in Asia Minor and Armenia.

C. olivina *H. Sch.* (= *ferrieri* *Bell.*) (24 d). Forewing olive ochreous suffused with pale olive brown, especially in the ♀; a diffuse darker cloud across wing before middle; an undefined whitish dash at lower end of cell; in terminal half of wing both folds show paler than the ground; veins slightly brownish; fringe chequered olive and ochreous white; hindwing dark fuscous; fringe whitish dappled with rufous grey. A Mediterranean species, found in Italy, Dalmatia, Bulgaria; Syria, and Asia Minor. Larva slender, shining reddish-yellow; dorsal line narrowly pale with dark edges; several fine brown lines on each side of it, and a stouter dark brown line at the sides above the small black spiracles; head pale brown, with 3 dark lines; feeding on *Dianthus*. *olivina.*

11. Genus: **Harpagophana** *Hmps.*

Differs from *Copiphana* *Hmps.* in having 2 long claw-shaped spines on the first segment of fore tarsus instead of a claw at end of tibia; antennae of ♂ with sessile fascicles of cilia; forewing with costal and inner margins both straight. Type *Harpagophana hilaris* *Stgr.*

H. hilaris *Stgr.* Forewing grey speckled with darker; inner line denoted by a partially double row of dark spots; outer line indistinct, minutely dentate; orbicular stigma obscure, round, touching inner line; reniform a narrow lunule, outlined in fuscous, with a dark spot at lower end of cell; a very ill-defined submarginal line; hindwing fuscous grey. Recorded from Spain only. *hilaris.*

H. picturata *Rothsch.* Forewing creamcolour, more or less suffused with pale olive grey, the lower half of median area alone remaining pale; lines thick, ferruginous; the inner oblique, marked only between median and submedian veins; the outer oblique from inner margin to end of cell, interrupted by a diffuse white streak along vein 2; subterminal line white, only marked from costa to median vein, above which it is sharply indented; space between outer and subterminal lines filled in with dark olive grey and brown scales, below vein 2 with ferruginous; some scattered ferruginous scales in cell and a ferruginous streak beyond it, above the indentation of subterminal line; fringe fawn grey, chequered with white; hindwing grey, paler at base, darker along termen; the fringe white with the basal third grey; head, thorax, and abdomen creamcolour, the abdomen somewhat greyer. Described from a single ♀ captured in April 1909 at Mraier, Southern Sahara, Algeria. In this species veins 6, 7 of hindwing do not appear to be stalked. *picturata.*

12. Genus: **Metopoceras** *Guen.*

Like *Harpagophana* in shape of wing and other points, but differing in having the fore tarsus quite simple, without spines on the first segment; antennae of ♂ lamellate, without ciliation. Type *Metopoceras felicina* *Donz.*

M. beata *Stgr.* Forewing dark brownish grey mixed with paler; the terminal area paler; lines double, filled in with grey; upper stigmata small, dark-centred, with whitish annuli outlined with dark, the orbicular round; fringe whitish; hindwing brownish grey with broad fuscous border along termen; a cellspot and sinuous outer line — Asia Minor. Described originally from a single ♀. *beata.*

M. canteneri *Dup.* (= *insueta* *H. Sch.*) Forewing redbrown dusted with darker; inner line double, outer black and dentate, the teeth produced to form white spots on the veins; subterminal line black with a diffused fuscous shade preceding it; upper stigmata bright rufous, the orbicular small, round, outlined with black, the reniform black-edged internally only, externally diffused, with a black dot in its upper end; hindwing redbrown, darker along termen, with a faint curved outer line. S. France, Spain, Algeria. *canteneri.*

M. felicina *Donz.* (24 d). Forewing dull reddish brown, darker in median area, varied with scattered paler raised scales; lines obscure, darker brown, dentate; submarginal line of pale scales, waved, and interrupted; upper stigmata dark rufous, very indistinct; veins slightly paler; hindwing rather paler, with signs of a dark outer line; fringes concolorous. S. France, Spain, Portugal, Morocco. This insect is somewhat roughly scaled; the thorax and anal tufts of ♂ are brighter red. *felicina.*

M. delicata *Stgr.* (= *gauckleri* *Pueng.*) Forewing ochreous white flushed with rufous; lines redbrown, the inner diffused and oblique, the outer minutely waved, the area beyond it redder; subterminal line also waved and curved; a diffuse redbrown median shade; orbicular stigma a small brown spot; reniform a brown spot obscured by the median shade; hindwing ochreous outwardly suffused with brown; fringe white. R. Jordan, Palestine. *delicata.*

M. khalildja *Oberth.* (24 b). Forewing rufous grey, with some black irroration; inner line oblique and waved, preceded by blackish suffusion; a diffused black median shade; outer line dentate, followed by brown suffusion; submarginal line marked only by a black streak on costa and a few black scales below it; orbicular represented by one small black spot, the reniform by two; fringe whitish, with rufous line of points near base; hindwing fuscous brown, greyer at base; fringe also brown. Algeria; a single ♂ only. *khalildja.*

omar. **M. omar** Oberth. (= *maritima* Failla-Ted.) (24 e). Forewing mouse grey, tinged with reddish, and dusted with blackish; lines double, black, minutely waved; subterminal line regularly waved, sometimes interrupted into spots; stigmata small, slightly defined by black; hindwing brownish ochreous in basal half, *felix.* dark fuscous terminally. — Sicily and Algeria. — **felix** Standf. (= *sacra* Stgr.) (24 e), from Syria and Palestine, is a darker form, the forewing dark leaden grey, the hindwing with an angulated middle line of dark spots; *caspi.* — **caspi.** Alph. from Turcomania, W. Turkestan, is a larger form, in colour pale ashgrey.

13. Genus: **Ammetopa** Hmps.

Differs from the preceding genera in that the corneous prominence with raised rim of the frons ends in a shovel-shaped process from the lower end. Type *Ammetopa codeti* Oberth.

codeti. **A. codeti** Oberth. (24 c). Forewing whitish suffused with bright ferruginous; the inner and outer lines rufous, but inconspicuous, minutely waved; also an indistinct rufous median shade; stigmata inconspicuous, the orbicular a whitish ring, the reniform nearly obsolete; subterminal line with a faintly darker shade before it; hindwing brownish white, paler at base. Biskra, Algeria.

14. Genus: **Cleophana** Bsd.

Tongue present; palpi obliquely porrect; frons as in *Copiphana*; head and thorax hairy, with small crests; forewing with costal and inner margins sinuous, the anal angle lobed and with a scale-tooth; fore tibia simple, without claw. Type *Cleophana baetica* Rmb.

Sect. I. Antennae of ♂ with moderate pectinations decreasing to base and apex.

chabordis. **C. chabordis** Oberth. (24 e). Forewing pale grey green, flushed with reddish beyond outer line except towards costa; median nervure and the nervules blackish; lines black and white; extreme base white with slight black streak in base of cell; an oblique white streak above median before inner line, another on submedian fold before outer line; reniform a white lunule, externally defined by black, angled inwards on median nervure and externally produced at top; submarginal line strongly angled to termen on veins 4, 3, 2; fringe mottled; hindwing white in basal half and along inner margin; terminal half fuscous; fringe white. Occurs on the south Mediterranean coast in Tunis and Algeria; also in Palestine. — ab. **albicans** Stgr. (24 e), from Biskra, has the head, thorax, and abdomen white; the forewing white, faintly flushed with ochraceous.

baetica. **C. baetica** Rmb. (= *choenorrhini* Dup., *penicillata* H. Sch.) (24 e). Forewing pale grey; inner and outer lines white, vertical, towards each other edged with black, and marked by black points on veins; the inner accompanied by a dark grey cloud; the outer followed by a rufous tinge; a black spot at base of median vein; orbicular a few white scales, reniform a prominent white lunule; a tuft of white scales in middle of submedian fold; veins towards termen broadly white, running out into the fringe; hindwing olive brownish, the veins darker; basal half whitish; fringe mottled brown and white. Found only in S. Europe; S. E. France, Spain, Sardinia; Algeria; Asia Minor, Syria, Palestine, Georgia. — Larva green with yellow dorsal, red lateral and spiracular lines; spiracles yellow ringed with dark; feeding on *Helianthemum*.

pectinicornis. **C. pectinicornis** Stgr. (24 f). Forewing whitish suffused with redbrown; veins black as far as outer line; base itself fuscous; cell white at base with a slight black mark; a fine black streak at base below cell; lines black, double; space between inner and median lines blackish fuscous; costal area beyond outer line fuscous; subterminal line diffusely white and curved; orbicular stigma a small pale spot; reniform a narrow whitish lunule with fuscous centre; hindwing white, the veins, costal area, and termen broadly fuscous. — Spain, Algeria, Tunis.

Sect. II. The pectinations of antennae shorter and stouter.

jubata. **C. jubata** Oberth. (24 f). Forewing whitish irrorated with fuscous and suffused in places with rufous fuscous; lines black, double, filled in with white; a faint pale disco-cellular lunule, and a diffused blackish median shade; veins towards termen black lined with white; fringe chequered; hindwing white, the veins and terminal area except towards inner margin brownish. Algeria.

opposita. **C. opposita** Led. (24 f). Forewing pale grey in outer half and at extreme base; lines finely black; the inner curved, preceded by rufous fuscous suffusion, followed by a broad blackish fuscous band, of which the outer edge is well defined by the paler grey ground through which the sinuous outer line runs, followed by an olive fuscous sinuous band, before a paler submarginal line; veins beyond middle interruptedly marked with black; a pale lunule on disco-cellular with dark linear centre; fringe brown; the outer half chequered, dark and pale; hindwing dark smoky fuscous, the base paler. — Found only in S. E. Europe, Bulgaria and Macedonia; in the west of Asia it occurs in Armenia, Syria, and Asia Minor.

Sect. III. Antennae of ♂ serrate only.

C. vaulogeri Stgr. (24 f). Forewing brownish grey with black dusting; slight black streaks in base of cell and submedian fold; the veins blackish; inner and outer lines double, both inangled strongly on submedian fold and joined by a short black streak; upper stigmata quite small, pale, with dark centres and outlines; subterminal line pale and broad, preceded by a dark suffused band; hindwing pale at base and along inner margin, the rest of wing and the veins fuscous. Algeria. *vaulogeri*.

C. diffluens Stgr. (24 f). Forewing dark grey; the basal half of the median area filled with blackish fuscous; lines black; the inner oblique and sinuous; the outer bisinuate, angled basewards on both folds; upper stigmata small and grey, with dark centres; hindwing rufous fuscous, the basal area paler; — ab. **versicolor** Stgr. is smaller, with the basal and terminal areas of forewing tinged with ochreous. The type form from Spain; the aberration from Algeria. Larva reddish; lateral lines above the feet broadly yellow; some fine lateral streaks; on seeds of Helianthemum. *diffluens*. *versicolor*.

C. yvanii Dup. (24 f). Much like *vaulogeri* Stgr., the inner and outer lines similarly incurved and connected on submedian fold; orbicular and reniform stigmata very small, with fuscous centres and greyish annuli, separated by a diffuse brown median shade; submarginal line grey, obscure, whitish and oblique at costa; fringe brown in basal half, chequered in outer; hindwing fuscous, the base paler; — **korbi** Stgr. is paler, without the black streak in base of cell of forewing. S. France and Spain. — Larva yellowish white, the lateral lines red, the dorsal line dark, interrupted; feeding on seeds of Helianthemum. *yvanii*. *korbi*.

C. marocana Stgr. (24 f). Forewing bright redbrown, the veins slightly darker, basal area dusted with fuscous; a slight black streak in base of submedian fold; lines indistinct; the inner oblique, the outer angled inwards on both folds with dark suffusion beyond it; subterminal line pale and dentate; a pale lunule with dark centre on discocellular; fringe redbrown, the tips only chequered; hindwing fuscous brown in terminal half, pale towards base. Morocco. *marocana*.

15. Genus: **Amephana** Hmps.

Tongue present; palpi upcurved, the 2nd segment hairy, 3rd long, spatulate; frons with a corneous prominence with raised rim, the lower edge produced to a shovel-shaped process, as in *Ammetopa*; forewing with costa slightly concave, the inner margin sinuous, the anal angle produced with a tooth of scales; head, thorax, and abdomen rough-haired. — Type *Amephana anarrhini* Dup.

Sect. I. Antennae of ♂ bipectinated.

A. warionis Oberth. (24 g). Forewing bright green, dusted with fuscous, more thickly towards termen; lines white, the inner biangulate, the outer indistinct; a white lunule on discocellular, and a white median shade below middle; subterminal line angled and forming streaks along veins to termen; fringe chequered, white and fuscous; hindwing fuscous, paler towards base, and with a curved whitish median band. Algeria. *warionis*.

Sect. II. Antennae of ♂ simple, lamellate.

A. anarrhini Dup. (24 g). Forewing pale olive-ochreous, tinged with rufous before inner and beyond outer line, the median area brownish grey; lines black, angulated irregularly on veins, the inner preceded and the outer followed by an ochreous line; veins black in outer area; an obscure whitish lunule on discocellular; fringe chequered, white and olive-brown; hindwing olive-brown, the basal area and fringe whitish. S. France and Spain only. *anarrhini*.

A. aurita F. (= *dejeanii* Dup.) (24 g). Forewing pale grey, suffused with dark olive-fulvous, especially before inner and beyond outer line; lines white, finely edged with black brown; the inner outcurved above, and inangled on, submedian fold; the outer strongly incurved below median vein; reniform stigma triangular, dark brown, edged with white, most strongly at lower end; veins towards termen dark, edged on each side with powdery white; fringe chequered olive and white; hindwing brownish fuscous, paler at base. A mediterranean species found in S. France, Spain, Italy, and Greece; in Asia Minor; and Algeria. — Larva pale yellow; dorsal line finely dark, subdorsal lines red and white; spiracles black on yellow lateral blotches; feeding on Helianthemum, eating the flowers and seeds. *aurita*.

16. Genus: **Omphalophana** Hmps.

Distinguished from *Cleophana* and *Amephana* by the frons having only a small rounded prominence with a corneous plate below it. Type *Omphalophana antirrhini* Hbn.

Sect. I. Antennae of ♂ with short, clavate serrations.

antirrhinii. **O. antirrhinii** *Hbn.* (24 g) Forewing pale grey suffused with olive and rufous; the lines blackish, double, filled in with pale; orbicular and reniform stigmata distinct, dark with pale grey annuli; terminal intervals with short black streaks, not reaching termen; fringe chequered olive and white; hindwing olive fuscous, with broad blackish terminal border, preceded by an obscurely whitish band; the fringe pale. A species of wide distribution, found in Spain, Italy, France, Germany, Austria, Hungary, and the Balkans; also in Armenia, Asia Minor, and Syria. — Larva dull green, darker on the dorsum; dorsal line broad, pale yellow, with 4 fine whitish lines on each side; spiracles white, edged with black; head green marked with black; feeds on flowers and seeds of *Antirrhinum* and *Scabiosa ochroleuca*.

serrata. **O. serrata** *Tr.* (= *arctata Guen.*) (24 g). Forewing bluish-white, suffused, except in basal area and towards termen, with olive fuscous; median and submedian veins finely pale; inner and outer lines white, edged with black, below the median vein approximated; orbicular and reniform stigmata olive fuscous, ringed with bluish white and outlined with black, the orbicular round, the reniform filling up the outward curve of the outer line; terminal intervals with thick black streaks that run to termen, that between 3 and 4 shorter and outlined with white scales; veins towards apex olive relieved with whitish; fringe chequered olive and white; the pale basal area with a short black streak at base of both folds; hindwing dark olive fuscous, paling basewards; fringe chequered olive and white. Confined to the mediterranean coasts; S. Spain, Sardinia, Sicily, and Algeria. Larva brownish green; dorsal line pale yellow dark-margined; spiracular lines pale yellow, black-edged above; dorsal region with numerous fine dark longitudinal lines; feeding on Scabious.

serratula. **O. serratula** *Stgr.* (24 g). Forewing whitish with brown suffusion; the veins blackish; a white streak at base of cell; a diffuse white streak below cell, containing a short black subbasal streak and emitting a streak to termen; a slight pale lunule on discocellular; lines black, double, filled in with white, the inner strongly incurved; veins of terminal area outlined with white; fringe chequered; hindwing brown, deeper along termen, and paler at base. An Asiatic species from W. and E. Turkestan only.

pauli. **O. pauli** *Stgr.* Forewing grey with brown suffusion; inner line curved, double; outer blackish and diffuse, strongly incurved below middle and approximated to inner line; some brown and white dentate marks before termen; claviform stigma small, outlined with white; orbicular and reniform small, dark brown, the orbicular round, placed in a white patch filling end of cell and extending partly round the reniform; fringe chequered, brown and white; hindwing brownish fuscous. Recorded from Palestine and also from Morocco,

adamantina. **O. adamantina** *Blachier.* Forewing greyish white, tinged with pink in basal and terminal areas; inner and outer lines black edged with brown internally, widely separate at costa, approximating below middle, becoming confluent at vein 1, then separating; median area brown; upper stigmata brown with white annuli and a white patch between them; an oblique brown fascia from termen below apex; fringe chequered white and brown; hindwing black, the basal area paler. Rabat, Morocco.

Sect. II. Antennae of ♂ simply ciliated.

anatolica. **O. anatolica** *Led.* (= *serrata Frr. nec Tr.*) (29 b). Forewing bluish grey; the median area darkened by a thick diffuse blackish median shade; lines black and double, filled in with bluish grey; the inner vertical and slightly curved, the outer excurved above, and approaching inner line below median; upper stigmata grey, somewhat obscured, with dark centres; a distinct short black streak near base of submedian fold; some irregular black streaks in the subterminal intervals; fringe chequered, black and white; hindwing dull bluish grey with broad black terminal border. Recorded from Italy, Turkey, Rhodes, Palestine, Asia Minor, and Askhabad, W. Turkestan.

17. Genus: **Calophasia** *Stph.*

Tongue present; palpi obliquely porrect, the 2nd. segment hairy, the 3rd. short; frons smooth; antennae of ♂ simple; frons and vertex with ridges of hair; pectus, legs, and abdomen hairy, the abdomen without crests. Type *Calophasia lunula* *Hufn.*

acuta. **C. acuta** *Frr.* (= *producta Led., pygmaea Stgr.*) (29 b). Forewing bluish white dusted with brown; the veins slightly darker; lines double, indistinct, the outer strongly incurved below middle; stigmata white outlined with black, the claviform small, the orbicular round; subterminal line formed of brown clouds; a short black streak above vein 4 before termen, and another above vein 2 to termen; fringe chequered, brown and white; hindwing uniformly fuscous brown. An Eastern species occurring in S. E. Turkey, Asia Minor, and Syria.

lunula. **C. lunula** *Hufn.* (= *linariae Esp.*) (29 b). Forewing bluish grey, suffused with olive fuscous, especially in median area and along an oblique fascia from apex to before anal angle; lines double, filled in with grey, but only distinct below middle, curved and approximating; claviform stigma elongate, bluish grey edged with black; orbicular small, flattened, white edged with black; reniform conspicuous, white with black lateral edges; some black streaks in the intervals across the oblique apical fascia; fringe chequered, olive brown and grey;

hindwing dingy grey with the veins and traces of outer line darker; a smoky blackish broad terminal border. Generally distributed in Europe (except in the extreme north), and occurring besides in Armenia, in W. Turkestan, in the Altai Mts., W. Siberia, and in Amurland. — Larva bluish grey, with all the lines yellow; a dorsal series of transverse oblong velvety black blotches, and lateral series of black spots; feeds on *Linaria*.

C. kraussi *Rbl.* (24 g). Forewing pale brownish ochreous suffused with dark grey, except in basal area, *kraussi*. in the upper half of submedian interspace, and along an oblique streak from apex to cell; veins finely black; the submedian fold more strongly streaked with black, with a black point beneath it below end of cell; lines absent, existing only as oblique costal streaks; two slight black streaks in end of cell; one beyond cell above vein 5 meeting an oblique dark fascia from below apex; fringe chequered ochreous and blackish; hindwing fuscous, paler towards base and inner margin. Algeria.

C. almoravida *Grasl.* (28 b). Forewing purplish grey, irrorated with brown, the veins blackish; claviform *almoravida*. stigma narrow, white, traversed by a black streak along submedian fold which runs through to termen; median area below claviform black and running basewards; lines represented by oblique costal streaks and curved lines from middle of wing to inner margin; upper stigmata absent; terminal intervals with black streaks; fringe chequered black and white; hindwing brownish white, the veins darker; terminal border wholly dark fuscous. Spain and Portugal. — Larva on *Linaria vulgaris*.

C. hamifera *Stgr.* (29 b). Forewing greyish white, tinged with purple and dusted with black; the veins *hamifera*. blackish; median area below cell dark fuscous, extended basewards below submedian fold; interval between vein 3 and submedian fold fuscous to termen; a black streak below basal half of cell; lines represented by oblique costal streaks and slight curved lines below middle to inner margin; claviform stigma elongate, white, outlined with black, joined by a short black streak to outer line; a faint pale subterminal line; black streaks above veins 6 and 7, and longer ones above vein 4 and below vein 3; fringe chequered fuscous and white; hindwing white, with the veins fuscous; the termen broadly fuscous. Spain and Portugal. — Larva very much resembles that of *platyptera*; the black spots of the subdorsal series larger and more uniform; the black marks of the head and anal plate larger; living on *Linaria nivea*.

C. platyptera *Esp.* (= *canterius Vill.*, *tenera Hbn.*) (29 b). Forewing pale grey, with slight partial *platyptera*. darker dusting; the veins finely dark; a thin black streak on submedian fold from base traversing a faintly paler claviform stigma; lines marked by oblique costal strigae and double curved marks on inner margin, the outer line there preceded by a curved dark grey cloud; terminal area with a double series of black streaks in the intervals interrupted by a pale submarginal line; fringe chequered fuscous and grey; hindwing dingy grey in ♀, whitish in ♂; the terminal half fuscous in ♀, reduced to a narrow grey border in ♂; — ab. **subalbida** *Stgr.* (29 c), (queried by *subalbida*. him as possibly only the summer brood) from Sicily and Algeria is much whiter, the dark markings of the forewing obsolescent; the hindwing nearly wholly white; — **olbiena** *Dup.* (29 c) has the dark markings of forewing *olbiena*. intensified and blackish brown. — Found in Germany, Austria, Hungary, Switzerland, France, Sicily, and Algeria; also in Asia Minor, Syria, and Crete. — Larva like that of *lunula*, whitish with yellow lines and transverse black blotches; but these are smaller and more numerous, and the yellow lines are more interrupted at the segmental incisions; feeds on *Linaria* and *Antirrhinum minus*.

-C. freyeri *Friv.* (= *lintea Frr.*, *orontii H.-Sch.*, *senescens Ev.*) (29 c). Forewing dull greyish white, *freyeri*. tinged in places with brown; basal area with irregular darker smears and spots; the 3 stigmata whitish, but without definite shape; outer line dark grey edged with paler, acutely angled below costa, then oblique to middle of inner margin, with a slight kink on vein 1; submarginal line broadly white, slightly curved, between two ochreous grey bands, marked with black on its edges between the veins; fringe white with grey waved outer lines; hindwing dark brownish fuscous, blacker along termen; the fringe white. Occurs in S. Turkey, Armenia, Asia Minor and Syria.

C. casta *Bkh.* (= *opalina Esp.*) (29 c). Forewing pure white; outer half of wing with leaden grey and *casta*. fulvous shading, forming a broad median band, sometimes interrupted, and a cloud on each side of the outer line below middle; a black spot on costa represents the basal line, and another, with smaller spots on median and submedian veins, the inner line; the outer line is only visible below middle, black and waved, edged externally with white; submarginal line also interruptedly white, followed by irregular black and brown terminal patches between the veins; fringe brown at base, then brown overlaid with grey scales, the outer half chequered brown and white; hindwing white, with brown terminal border, broader and darker in the ♀; fringe white. A south European species found in Spain, Italy, Dalmatia, Switzerland, France, Germany, Austria, and S. Russia; also in Armenia and Asia Minor, W. and E. Turkestan. — The form **naruenensis** *Spul.* has the white ground *naruenensis*. colour overlaid with yellow, the fringe with the white chequering ampler, the dark border of the hindwing slighter; S. W. Ural Steppes. — Larva yellowish white, more yellow on the dorsum, with two rows of larger or smaller black spots along dorsum, and numerous large and small black spots along the sides and above feet; black streaks also in the incisions of the segments; head small, blue grey, spotted and marked with black; on various kinds of *Linaria*, *Antirrhinum majus*, and *Delphinium*.

The 3 genera following have the tongue absent or aborted.

18. Genus: **Leucochlaena** Hmps.

Tongue minute; palpi shortly porrect, hairy below; frons smooth; antennae of ♂ bipectinate to apex, the branches long, of ♀ ciliated or serrate; body hairy; ♀ with fully developed wings. Larva on grasses, hibernating, and feeding up in spring. Type *Leucochlaena oditis* Hbn.

Sect. I. ♀ with serrate antennae.

fallax. **L. fallax** Stgr. (28 b). Forewing ochreous suffused with reddish-brown except along costa and inner margin; the veins ochreous; the lines double, filled in with ochreous; claviform defined by ochreous and black at extremity; orbicular and reniform narrow, their centres brown ringed with ochreous and outlined with black, conversely oblique and confluent on median vein; subterminal line broadly ochreous, internally defined by black dentate markings; hindwing brownish ochreous, with an obscurely marked outer line. Sarepta, S. E. Russia. — Larva reddish grey, finely dotted with black, somewhat lighter at sides; head pale yellow; on grasses.

Sect. II. Antennae of ♀ ciliated.

oditis. **L. oditis** Hbn. (= *hispida* H. G., *pilosa* Bsd., *hirta* Dup. nec Hbn.) (29 c). Forewing deep olive brown; all the veins whitish; inner and outer lines broadly whitish with a dark line in centre, the first outwardly oblique, the outer outcurved above and oblique below middle, emitting pale tooth-shaped marks along veins to submarginal line which is broad, whitish internally and rufous or brownish externally, toothed between the black marginal lunules; the line is preceded by black wedge-shaped blotches lying between the teeth of outer line; claviform stigma brown, black-edged; upper stigmata pale ochreous, finely outlined with black, the orbicular with the centre reddish; fringe with basal half brown, outer half ochreous; hindwing dull whitish, becoming brownish grey towards termen, with a dark outer line; specimens from the chalk at Portland are much paler and constitute the aberrations **pallida** Tutt and **obsoleta** Tutt; the former pale grey with a faint brown tinge; the costa whitish; the broad submarginal line white like the fringe; hindwing and fringe almost wholly white; the latter is dull grey with scarcely any paler markings; ab. **hispanica** ab. nov. (29 c, d) differs in being smaller, yellowish brown, with all lines, veins, and markings ochreous, not white, except the inner linear edge of the submarginal line; it is distinguished at once by the lower half of outer line being vertical instead of oblique, in a straight line with the inner edge of the reniform; 3 ♂♂ and 1 ♀ from Granada, Andalusia, (C. Ribbe). Occurs in S. England, France, Spain, Portugal, Sicily; also in Morocco and Palestine. Larva yellowish green or brownish; dorsal and subdorsal lines pale with dark edges; spiracular line broad, yellowish white; on grasses.

hirsutus. **L. hirsutus** Stgr. Forewing dull grey-brown; the lines and veins dark outlined with whitish; upper stigmata with pale annuli outlined with black, the orbicular elongate, oblique, with pale centre, the reniform with centre dark; subterminal line waved, pale, preceded below middle by 3 dentate black marks; hindwing dirty white, fuscous-tinged towards termen. Marasch, Asia Minor.

orana. **L. orana** Lucas. (28 c). Forewing whitish tinged with brown, darker in median area, except at costa; lines obscure, waved or dentate; stigmata small, outlined with black, the upper ones narrow, with brown centres; an oblique diffused whitish streak from apex to outer line; submarginal line whitish; hindwing brownish white, with curved outer line, and obscure diffuse subterminal band. Algeria.

leucocera. **L. leucocera** Hmps. (29 d). Forewing brownish white, slightly dark-dusted, the costal area greyer; veins finely blackish; lines black conversely pale-edged; claviform stigma small, yellow, with black outline, the yellow interrupting the inner line; orbicular small, white, outlined with black, with a rufous centre; reniform white, also with brown centre and black outline, narrow, angled inwards on median vein; submarginal line whitish preceded by a dentate brown band; fringe pale; hindwing greyish fuscous; the fringe pale. — Described from a single ♀ from the Seinde Valley, Kashmir. — A large species for the genus.

19. Genus: **Ulochlaena** Led.

Differs from *Leucochlaena* in having the tongue wholly absent; the ♀ with the wings aborted. Type *Ulochlaena hirta* Hbn.

Sect. I. Wings of ♀ minute.

superba. **U. superba** Alph. (28 c). Forewing reddish brown; an ochreous streak in base of cell running below costa to middle; another below the cell, with black edges, confluent with the claviform; inner area at base ochreous; median vein ochreous; orbicular and reniform stigmata ochreous, narrow, outlined with black, the latter angled inwards on median nervure and emitting strong teeth on veins 4, 3, 2; a subquadrate patch of ochreous beyond and below middle of costa confluent with a similar patch at apex; outer line only shown, ochreous; a subterminal row of ochreous striae from apex to inner margin; fringe ochreous at base, the outer half chequered ochreous and brown; hindwing uniform brown, the fringe ochreous. Nan-Schan Mts, Tibet.

U. hirta Hbn. (29 d). Forewing olive-fuscous or olive-rufous, speckled with black; the veins, a costal streak, the two lines, and the stigmata paler, sometimes whitish; the lines broadly whitish, conversely black-edged, the outer bent on vein 6, then oblique to middle of inner margin; claviform stigma large, often prominently pale; the orbicular and reniform small, flattened, with dark centres and pale black-edged annuli, the orbicular sometimes a pale point only; submarginal line pale, preceded by a dark band, often containing black teeth between the veins, and followed by a paler area; hindwing fuscous or rufous grey, with traces of a dark outer line. The ♀ is ochreous brown tinged with fuscous. S. France, Sicily, Dalmatia, Rumelia, Bulgaria, and S. Russia; Algeria; Armenia, Asia Minor, Syria. — Larva bone colour; dorsal and subdorsal lines yellowish, slender; spiracular line yellow, broad; head yellowish; feeding on grasses.

Sect. II. Wings of ♀ partially aborted, the costa arched and fringed with hair.

U. scillae Chrét. Forewing purplish fuscous; median area ochreous white on costa and inner margin; outer area purplish red; veins of median area pale ochreous; inner and outer lines blackish, double, filled in with ochreous, the inner strongly curved; claviform stigma large and dark; orbicular round, purple, with black outline; reniform ochreous, containing a white line on discocellular, edged with black, angled inwards on median vein; the cell dark; hindwing brownish ochreous, darker towards termen, with dark curved outer line; ♀ forewing redder; the median area redbrown throughout; veins without pale streaks; reniform stigma redbrown; sub-terminal line pale, with a series of whitish points; terminal area redbrown. Bone, Algeria. — The ab. **datini** Oberth. (28 c) has the forewing much paler; brownish ochreous, with a slight fuscous suffusion; the inner line is more oblique from costa to submedian fold; claviform stigma paler; orbicular and reniform ochreous with black outlines, and confluent on median vein; the outer area brownish ochreous; hindwing ochreous white, suffused with brown only along termen. Tunis.

20. Genus: **Derthisa** Wlk.

Tongue absent; palpi obliquely porrect, hairy beneath, 3rd segment short; vestiture hairy; differs from the two preceding genera in the frons being slightly rounded and roughened in front; wings of ♀ equally developed as of ♂. The imagos are inert in habit, flying little, and only at midnight; the larvae hibernate and feed up in spring, the perfect insect emerging in autumn; they feed on plants of the order Liliaceae. Type *Derthisa trimacula* Schiff.

In the first 4 species the upper stigmata are large and extend below the median vein.

D. sareptana Alph. (29 e). Forewing grey brown with darker dusting and with a slight reddish tint; inner and outer lines thick, blackish, conversely edged with pale; cell deep brown; upper stigmata large, grey, the orbicular confluent below cell with another pale mark; submarginal pale, preceded by a faintly darker shade, more marked on costa; hindwing brownish white, darker along termen. — Sarepta, S. Russia. The species may be distinguished by the dark brown head and thorax contrasting with the paler abdomen.

D. trimacula Schiff. (29 e). Forewing brownish-grey, dusted with darker; median area more or less suffused with dark fuscous except along costa and inner margin; a dark streak from base below vein 1; the cell always darker; the stigmata large, of the pale ground colour, reaching below the pale median vein and confluent with a large blotch along vein 2; lines dark, wide apart; the inner obliquely curved, the basal area within it pale; the outer oblique and sinuous from $\frac{4}{5}$ of costa; submarginal line indistinct, denoted by difference of tint merely; fringe broad, concolorous; hindwing dull grey; — **hispana** Bsd. (= *meridionalis* Calb.) (29 e) is a large pale grey form with a bluish tinge, with the pale stigmata and veins well developed; — **dentimacula** Hbn. (29 e) is a small form; pale stone grey in tint, with the dark suffusion confined to the edges of the inner and outer lines and to the cell, where it forms dark spots on each side of the orbicular; — **glaucina** Esp. (29 f) is a more or less uniform rufous insect, with the dark markings greyish olive and indistinct; — **tersa** Schiff. (29 f) is pale yellowish or ochreous, with all the dark markings obsolete except the dark blotches in cell on each side of the orbicular; **gruneri** Bsd. (= *albida* Oberth.) is the same form with a white ground colour, found in Sicily and Morocco; **tersina** Stgr. seems to be the same, but with the ground colour grey; in **unicolor** Dup. (29 f) even these marks have disappeared and the insect is wholly pale yellowish or ochreous. Generally distributed in S. Europe; occurring also in Algeria and Morocco; in Armenia, Asia Minor, and W. Turkestan. — Larva grey brown, with a violet sheen; dorsal line pale, indistinct; spiracles black; thoracic and anal plates shining dark brown; feeding on *Muscari racemosum*, *Anthericum liliago*, and *Ornithogalum*.

D. lederi Chr. (29 f). ♂ Forewing pale grey with a luteous tinge; the lines black, interrupted by the veins, the inner followed, the outer preceded by brownish fuscous scaling; the cell brown; stigmata of the ground colour, large, and reaching below the median vein; veins paler across the dark tints; hindwing luteous whitish. ♀ darker, suffused with brownish fuscous, the median area darker; hindwing brownish grey; — ab. **discors** Stgr. (= *declinans* Stgr.) is more ochreous in the ♂ with less defined stigmata, the brown suffusion in median area absent; the lines less plain; the fringe rufous; the ♀ is whiter, with indistinct markings, the hindwing whitish tinged with brown; — in **rubellina** Stgr. the forewing is uniform reddish; in **concors** Stgr. nearly wholly whitish. An Eastern species, occurring in Asia Minor, Armenia, Palestine, Transcaucasia, and W. Turkestan.

- amasina*. **D. amasina** Hmps. (29 f). Forewing ochreous white, washed with purplish-rufous; the base and costal area to postmedian line white; the veins pale; inner and outer lines ochreous white, converging towards inner margin; upper stigmata pale and large, extending below median vein, obscurely edged with reddish; subterminal line faintly paler: hindwing white, the veins and base of fringe yellowish. Amasia, Asia Minor.
- In the remaining 3 species the upper stigmata are smaller and regular.
- antherici*. **D. antherici** Chr. (28 e). Forewing white flushed with pale reddish, especially on outer half of costal area; cell deep red-brown; upper stigmata large, whitish, partially outlined with brown, the orbicular irregularly triangular, the reniform oblong and oblique; lines hardly visible, the outer and submarginal faint, edged with pale red-brown; hindwing nearly pure white. — Persia, W. Turkestan. — Larva pale yellow with fine brown transverse striae; dorsal stripe brown, broad, with irregular edges, the dorsal line itself fine and pale; subdorsal stripes brown, also irregularly edged; tubercles yellow; spiracles ringed with black; head reddish marked with brown; feeding on Anthericum.
- scoriacea*. **D. scoriacea** Esp. (= *capreae* Hbn.) (29 f, g). Forewing pearl grey, the median area darkened with grey brown suffusion, and in the ♀ also the basal and terminal areas; inner and outer lines dark filled in with pale; upper stigmata pale, especially the reniform which has a rufous centre, outlined with dark; claviform quite small: a dark cloud on costa before subterminal line which is pale, preceded by some grey brown scales; fringe mottled dark and light grey; hindwing whitish, in the ♀ slightly grey-tinged. Larva green; dorsal and subdorsal lines white; lateral stripe broad and white; head and thoracic plate yellowish; feeds on Anthericum. Occurs only in S. Europe, France, Italy, Dalmatia, Austria, Hungary; also in Asia Minor.
- korsakovi*. **D. korsakovi** Chr. (= *paenulata* Chr.) (29 g). Forewing greyish creamcolour with a slight fleshcoloured tint, finely dusted with greyish; inner and outer lines pale, hardly visible, approximating on inner margin, the inner marked with black in and below cell, the outer faintly towards costa; upper stigmata with pale annuli, very obscure; claviform absent; submarginal line preceded by a grey shade; fringe concolorous; hindwing very pale grey brown, darker along termen; fringe whitish; in the ♀ the markings are even less distinct; the sides of the palpi only slightly brownish, while in the ♂ they are blackish. — Armenia and Asia Minor.

21. Genus: **Oncocnemis** Led.

Tongue developed; frons smooth; fore tibia short, with curved claw at extremity on the inner side, (sometimes with a slight one on outer side); head and thorax clothed mainly with scales; abdomen without crests. Type *Oncocnemis strioligera* Led. The species are Confined to Central Asia and S. E. Russia.

- exacta*. **O. exacta** Chr. (28 c). Forewing pale grey brown dusted with darker; the terminal area suffused with fuscous; inner line waved, oblique; outer line followed by a band of whitish suffusion, and below middle with white before it; claviform faintly dark; upper stigmata ochreous white, outlined with black, their centres brown, the orbicular small, elongate; hindwing white with fuscous veins and the termen broadly fuscous; fringe whitish; the
- mongolica*. ab. **mongolica** Stgr. is darker, the basal half of forewing with a reddish tinge. Turkestan and Mongolia.
- campicola*. **O. campicola** Led. (29 d). Forewing brownish fuscous; the lines black; the inner vertical, forming two equal outward curves; the inner is preceded and the outer followed by patches of whitish scales, the lower ones on the inner margin more conspicuous; stigmata brown outlined with black, the claviform small; a thick diffuse dark median shade; subterminal line pale, interrupted, preceded and followed by dark streaks between the veins; hindwing whitish; the terminal half blackish, the fringe whitish. W. and E. Turkestan, W. and E. Siberia, Mongolia.
- confusa*. **O. confusa** Frr. (= *diffusa* Guen.) (29 d). Forewing dark grey thickly dusted with fuscous, and sometimes with a rufous tint along the folds; lines double, dark, waved and indistinct; stigmata of the ground colour, very obscure; the two upper separated by a black blotch; submarginal line pale, preceded by a dark shade containing dentate marks; hindwing dirty grey with broad black terminal border; in the ab. **rufescens** Stgr. (29 d) the ground colour of both wings is wholly rufous grey, the head, thorax, and abdomen the same. Found at Sarepta and in the Ural Mts, S. Russia, in Armenia, and W. Turkestan.
- nigricula*. **O. nigricula** Ev. (28 c). Forewing narrow, glossy olive fuscous; all the lines and stigmata indistinct, more or less obscured by the dark suffusion; some dark dentate marks before subterminal line; hindwing brownish white, the termen broadly fuscous. Sarepta, S. Russia, — Altai Mts., W. Siberia, W. Turkestan, Kamschatka.
- strioligera*. **O. strioligera** Led. (29 e). Forewing pale stone grey, with a faint luteous tinge, slightly speckled with blackish; inner and outer lines black, fine and distinct, approximating on inner margin; upper stigmata with pale brown centres, ringed with paler, and neatly outlined with black; submarginal line preceded by long black sagittate markings; marginal line finely black followed by a bright pale line at base of the grey fringe; hindwing whitish, the veins fuscous; a diffuse broad fuscous border and white fringe. — Syria, W. and E. Turkestan, W. Siberia, and Mongolia.

22. Genus: **Copitype** *Hmps.*

Differs from *Oncoenemis* in the frons having a slight rounded prominence; antennae of ♂ simply lamellate; vestiture chiefly hairy; foretibia with a long claw at extremity. Type *Copitype pagodae* *Alph.*

C. pagodae *Alph.* Forewing pale grey brown, irrorated with fuscous; a black streak below base of cell; lines black, fairly distinct, the inner thrice angulated, the outer outcurved and wavy, followed by a blackish streak on submedian fold; orbicular and reniform large, outlined in black, a dark blotch formed by median shade between them; subterminal line pale, preceded by some dark dentate marks; hindwing fuscous grey. Kuku Nor, Tibet.

23. Genus: **Brachionycha** *Hbn.*

Tongue aborted, minute; frons smooth, rounded; foretibia with long curved claw at extremity; vestiture hairy; thorax and abdomen without crests; antennae of ♂ bipectinate, with long branches throughout, or with short thick branches decreasing to base; of ♀ subserrate. Larva stout, naked, thickened behind, with a hump on segment 11; velvety green; resting with the fore part of the body obliquely raised, and the head thrown black, as in *Cerura* and some *Sphingidae*; feeding on trees in the summer, and emerging either in November or in March and April. Type *Brachionycha nubeculosa* *Esp.*

Sect. I. Antennae of ♂ with long pectinations from base to apex.

B. sphinx *Hufn.* (= *cassinea* *F.*) (29 g). Forewing pale luteous grey, more or less strongly dusted with olive grey; a thick black streak from base below cell, with a finer streak above and beyond it, and another beyond it below submedian fold; outer line marked by black vein dashes on a paler space; orbicular flattened, elongate, edged with black; reniform large irregularly S-shaped, the lower half angled and reaching below median vein; submarginal line pale, preceded by black wedged marks between veins and followed by black streaks from termen in the intervals, the indentation on submedian fold more strongly marked; veins towards margin finely black; fringe chequered pale and dark grey; hindwing whitish, grey-speckled, the veins darker; a dull grey cellspot, and marginal row of black lunules; the ♀ is darker throughout, more brownish tinged. — Larva bright velvety green; dorsal and subdorsal lines chalk white, the latter commencing only at segment 4; spiracular line yellowish white, with dark upper edge; face green with two yellow streaks; on elm, oak, ash and various other trees. Mainly a N. European species, found in Britain, France, Germany, Austria, Switzerland, N. Italy, Scandinavia, and S. Russia.

B. syriaca *spec. nov.* (29 g). Smaller than *sphinx*, the forewing more uniformly grey; neither inner nor outer line indicated; the black streak from base below cell shorter and more slender; the orbicular elongate, club-shaped, continued as a dark line towards base; reniform absent, in its place a biangulate median line; the pale submarginal line narrow and simply curved, the black streaks on each side of it coalescing to form longer marks; no black confluent shading before the indentation on submedian fold; fringe pale grey, unchequered; hindwing more powdered with grey. 1 ♂ in Tring Museum from Akbès, Asia Minor.

Sect. II. Antennae of ♂ with short stiff pectinations, serrate at base.

B. nubeculosa *Esp.* (= *centrolinea* *F.*, *sphinx* *Hbn.* nec *Hufn.*) (29 h). Forewing rufous grey, thickly speckled and in parts suffused with black; the veins black; inner line hardly marked; outer strongly lunulate-dentate, followed by a paler line; claviform elongate, pointed, outlined in black, connected with base by a thick black line; orbicular pale, black edged, very variable in size, sometimes only a dot, at others a large elongated oval, placed near the reniform, which is large and pale, thickly outlined with black below the median; submarginal line not marked except by difference of tint, the terminal area being pale grey with black dashes in the intervals, preceded in the darker specimens by a broad blackish fuscous shade; black wedge-shaped marginal spots; fringe grey; hindwing grey densely powdered with brown; veins and cellspot dark, also some marginal spots: — ab. **grisescens** *Spul.*, from S. Urals and Amurland, is a pale grey form without the dark suffusion; on the other hand ab. **perfumosa** *ab. nov.* (29 h), has the whole forewing, except the extreme terminal area and the upper part of the reniform, suffused with blackish fuscous; but intermediate forms occur, and the ♀ is always darker than the ♂. Occurs in Scotland, France, Germany, Austria, Hungary, Switzerland, Scandinavia, Russia; also in the Ural Mts., in E. Siberia and Amurland. — Larva velvety green; dorsal stripe yellowish, often interrupted and appearing as a point only on each segment, with yellow tubercles on each side; on the 3rd segment a thick, yellow red-edged oblique streak, and another on each side of the hump on segment 11; spiracles white, edged with brown; feeding on birch, elm, apple, and various trees.

24. Genus: **Dasypolia** *Hbn.*

Tongue aborted, minute; frons smooth; vestiture hairy; palpi obliquely porrect, hairy below, terminal segment short; antennae of ♂ bipectinate, or serrate-fasciculate. Larva on Umbelliferae; feeding when first

hatched on the flowers, on which the egg is laid, then entering the stalk and boring downwards to the roots, in which it lives and ultimately pupates; the imago emerges in autumn and hibernates. Type *Dasyptolia templi* Thnbg.

Sect. I. Antennae of ♂ bipectinate to apex.

mitis. **D. mitis** Pueng. Forewing very pale yellow, tinged with rufous in the median area; lines rufous; the inner waved, the outer lunulate-dentate; veins before termen rufous; subterminal line very faint, with a slight shade before it on costa only; orbicular and reniform stigmata white, slightly outlined with rufous; the orbicular round and quite small, the reniform with inner edge straight; fringe white; hindwing white. Askhabad, W. Turkestan.

Sect. II. Antennae of ♂ serrate, with sessile fascicles of cilia.

ferdinandi. **D. ferdinandi** Ruehl, (29 i). Forewing olive grey-brown, the cell and costal area above it rather darker; inner and outer lines alone marked, brown, approximating on inner margin; orbicular stigma a greyish ochreous dot; reniform small, rounded, with dark centre and ochreous grey annulus; submarginal line hardly visible; fringe greybrown; hindwing greyish brown. Zermatt, Switzerland. Differs from *D. templi* Thnbg. by the absence of yellow scaling.

templi. **D. templi** Thnbg. (29 i). Forewing pale yellow grey in the ♂, simply pale grey in the ♀, densely dusted with darker; the lines diffusely darker still, outwardly edged with pale ground colour; median area often darker, the reniform, and sometimes the orbicular, showing paler; submarginal line pale, waved; fringe chequered, grey and yellowish; hindwing a little paler, with cellspot, outer, and sometimes a submarginal line greyer; — ab. **alpina** Rghfr. (= *caflischi* Ruehl) (29 i). is an alpine form, with the ground colour more bluish grey, the stigmata picked out with chalk-white, and the outer line of hindwing more strongly marked. Larva yellowish grey, tinged dorsally with red; when fullgrown, fleshcolour, with large tubercles; head, thoracic, and anal plates brown: feeds on Umbelliferae, especially *Heracleum sphondylium*. Found in Britain, Scotland, the Shetlands, France, Germany, Austria and Switzerland; also recorded from Armenia.

fani. **D. fani** Stgr. (28 d). Forewing reddish greybrown; the veins often darker; the outer half of median area darker; inner and outer lines grey, waved; orbicular and reniform stigmata small, with redbrown centres and pale annuli, outlined with brown; a waved dark median shade; submarginal line pale, with a grey shade before it; fringe chequered; hindwing pale redbrown, with the cellmark, outer line, and subterminal band darker; — ab.

lama. **lama** Stgr. (= *asiatica* Alph.) is more yellowish grey, with the markings of forewing less defined. An asiatic species, occurring in W. and E. Turkestan, Tibet, Mongolia, and E. Siberia. — Smaller than *D. templi*.

gerbillus. **D. gerbillus** Alph. (28 d). Forewing yellowish-grey; inner line angled outwards below costa, then oblique and waved; outer line minutely dentate; orbicular and reniform whitish, fuscous-edged; the orbicular elongate, oval; hindwing grey, with cellspot, a sinuous outer line and subterminal band darker, as in the last species. Nan-Schan Mts., Tibet.

25. Genus: **Bombycia** Stph.

Tongue well-developed; palpi obliquely porrect, hairy below, the terminal segment short; antennae of ♂ bipectinate; vestiture hairy; abdomen laterally tufted, and with slight dorsal crests. Larva on *Salix*, living between united leaves, feeding up in spring and emerging in summer. Type *Bombycia viminalis* F.

viminalis. **B. viminalis** F. (29 i, k). Forewing dark or pale grey varied with fuscous; the base diffusely darker; the median shade broadly blackish; lines pale, approximating below middle, where they are conversely marked with black; a short black streak on base of submedian fold; claviform stigma long, black-edged, touching or connected with outer line; orbicular and reniform pale, with black outlines, the reniform sometimes white; submarginal line pale, preceded by a rufous grey shade; hindwing brownish grey; fringe pale, often rufous, like the lateral and anal tufts of abdomen; in **saliceti** Bkh. (29 k) the inner half of wing is dark, limited by the median shade, the outer half much paler; ab. **stricta** Esp. (29 k) is a grey or brown form, with the terminal area only pale, and the costal edge red; a rarer form of which, ab. **rufescens** ab. nov. (29 k), has the whole forewing and the underside of both wings suffused with rufous; **obscura** Stgr. (29 k) is a darker common form, more uniformly dark grey, of which **unicolor** Tutt, from the north of England, a nearly black form, is an extreme development; **scripta** Hbn. (30 a) the commonest form in the S. of England, has the ground colour white or grey white; ab. **suffusa** ab. nov. (30 a) is a form with the white forewing suffused with smoky brown obliterating the lines, and leaving only the stigmata with their black outlines visible; **asiatica** Bang-Haas from Siberia is described as being grey and fuscous without any brown tinge; and **uralensis** Bart. (30 a) from the Urals, a small grey form, with some rufous along both folds, has the hindwings whitish, with a faint outer line and grey speckling. The species occurs throughout N. and Central Europe, Armenia, W. and E. Siberia. — Larva whitish green, with all the lines whiter, and the tubercles whitish; feeding between united leaves of willow.

26. Genus: **Hillia** Grote.

Tongue developed; frons smooth, with a large tuft of hair; palpi obliquely porrect, hairy below, the terminal segment well-marked; vestiture hairy; abdomen without crests. Type *Hillia iris* Zett.

H. iris Zett. (= *crasis* H. Sch. f. 139, *semisigna* Walk., *senescens* Grote, *vigilans* Grote) (28 d). Forewing purplish red on a fuscous ground, with some whitish irroration, principally on the veins; inner and outer lines obscure, the outer indicated by the dark shade beyond it; claviform stigma marked by a black point at its end; orbicular oblique, strongly edged laterally with black; reniform with black outline internally, with the annulus white and a white lunule at centre; subterminal line whitish, broken up into points, preceded by a ferruginous shading and some black between veins 1 and 3; hindwing ochreous grey, with darker cellspot and submarginal band: **erdmanni** Moeschl. is an aberration with reddish forewings; — **crasis** H. Sch. f. 134 (= *schildei* Stgr.) is much darker, the forewings purplish black. An arctic species, occurring in N. Sweden, Lapland, N. Russia, N. Amurland; also in Labrador and Canada. *iris*. *erdmanni*. *crasis*.

27. Genus: **Aporophyla** Guen.

Differing mainly from *Derthisa* by the presence of the tongue; frons with rounded roughened prominence; the vestiture hairy; wings rather long and narrow. Larva living on low plants, hibernating and feeding up in spring; the imago emerge in autumn. Type *A. australis* Bsd.

Sect. I. Antennae of ♂ bipectinate.

A. miouleuca Tr. (= *chiouleuca* H. Sch., *corticoxa* Led.) (28 d). Forewing fuscous, varied with white and with a bluish grey suffusion; inner and outer lines double, filled in with paler; claviform stigma small, black; orbicular and reniform with dark centres and pale annuli outlined in black; submarginal line whitish, with a fuscous shade in front of it; some black marginal lunules; hindwing whitish, the cellspot, veins, and a slight subterminal band fuscous. Found only in the S. W. of Europe, Spain, Italy, Sicily, and in Algeria. *miouleuca*.

A. lutulenta Bkh. (= *electrica* F., *fusca* Haw., *orthostigma* Stph.) (30 a). Forewing fuscous brown with a purplish grey gloss, which is more pronounced in the ♀♀, the ♂♂ varying from dark to pale rufous brown; lines and markings obscure; median area often darker; hindwing in ♂ white, with the terminal line dark, in ♀ uniform brownish; — ab. **consimilis** Stph. (30 b.), is a pale grey brown form, generally without distinct markings, and resembling the ordinary coloration of the ♂; — **tripuncta** Frr. (30 b.), is a very distinct dull brown and iron-grey form, with the outer edge of the reniform whitish, slightly smaller than typical; — **luneburgensis** Frr. (= *albidilinea* Tutt) (30 b), from N. W. Germany, Holland, and Scotland, is purplish grey with all the lines and stigmata very neatly marked and edged with paler; the median area darker; a decidedly smaller and neater insect than the type. (This description is made from a specimen from the Freyer Collection marked by himself): — **sedi** Dup. (= *pallida* Calb.) is ashy grey, with the 3 lines dark and neatly marked, the median area often dark; it seems to me that this may really be identical with Freyer's *luneburgensis* which Guenée knew only from Herrich-Schaeffer's figures; the insects described by Tutt, Brit. Noct. III, p. 58, as *sedi*, from Sligo, Ireland, and Loch Laggan and Rannoch, Scotland, agree perfectly with *luneburgensis* Frr. Generally distributed throughout Europe. — Larva green, dorsally reddish-tinged in front, and laterally throughout; dorsal and subdorsal lines brownish, interrupted; spiracular line sometimes red-edged above; feeding on various low plants, *Myosotis*, *Stellaria*, *Lithospermum*, etc. *lutulenta*. *consimilis*. *tripuncta*. *luneburgensis*. *sedi*.

Sect. II. Antennae of ♂ with tuberculate fascicles of cilia.

A. australis Bsd. (30 b, c). Forewing whitish grey with a slight lilac tinge; the veins darker, the costa, inner margin narrowly, a median shade between the stigmata, some wedge-shaped subterminal blotches in the interspaces before subterminal line, and the dark chequering of the fringe brown; inner and outer lines both strongly dentate, but rarely plain, except as streaks on inner margin; stigmata finely outlined with black, the orbicular narrow, oblique, the reniform broader, both, when clear, with a dark centre; the streak from base on submedian fold brown and indistinct; a brown shade often visible on submedian fold between claviform stigma and outer line; hindwing in ♂ white, in ♀ slightly flushed with brown; for this type form Guenée gives Provence and Corsica as localities; — ab. **costata** ab. nov. (30 c) is a larger form, with the brown tints of the type replaced by blackish fuscous, the costal area of forewing and the fringe especially darkened; the lines equally indistinct; of this I have seen a pair from Rome, a ♀ marked simply Germany, and a single ♂ from Amasia: — **scriptura** Frr. (30 c) is uniform dark grey, with the inner and outer lines distinct and dentate; — of this **ingenua** Frr. (30 d) (= *orientalis* H. Sch., *morosa* Bell.) is an extreme dark form with the markings in some cases quite lost in the dark suffusion; these last forms are from Greece, Turkey, and Asia Minor; — **cinerea** Stgr., from Morocco, is also described as having the forewings unicolorous grey; — **pascuea** Curt. (= *britannica* Stgr.) (30 d) is the British form, which is nearest the type, but whiter, with all the markings very strongly developed and black in the ♂, the ♀ pinkish grey; the orbicular stigma varies much in this *australis*. *costata*. *scriptura*. *ingenua*. *cinerea*. *pascuea*.

form from a small round to a long elliptical mark becoming confluent with the reniform. — Larva yellowish green, dorsally suffused with reddish; dorsal line pale red, between V-shaped black marks; a subdorsal series of black marks; spiracular line pale yellow; feeding on various low plants.

nigra. **A. nigra** *Haw.* (= *aethiops* *O.*, *nigricans* *Hbn.* nec *L.*) (30 d). Forewing deep black, the outer area beyond outer line often appearing brown; the inner and outer lines and the edges of stigmata deeper black; outer edge of reniform marked with yellowish spots; subterminal line rarely visible; hindwing in ♂ white, sometimes with veins and termen clouded with fuscous, in ♀ smoky grey-brown, more whitish towards base;

scileri. — ab. **scileri** *Fuchs* (30 e) includes the intenser black forms without any trace of brown. — Larva yellow green, with 3 well-marked red dorsal lines and a similar coloured lateral line; spiracles white; or green with the dorsal lines confluent, brownred, divided finely by white; the brownred subdorsal and spiracular lines confluent into a broad band, with a yellow red-edged streak below it; polyphagous on low plants. Found in Britain, France, Germany, Switzerland, Italy, Dalmatia, Hungary, S. Norway (once); also in Palestine and Asia Minor.

28. Genus: **Chloantha** *Guen.*

Tongue present; frons rounded; palpi obliquely porrect, hairy beneath, 3rd segment short; antennae of ♂ minutely serrate with short sessile fascicles of cilia; head and thorax clothed mainly with scales; forewing elongate, the costa curved. Type *Chloantha solidaginis* *Hbn.*

solidaginis. **C. solidaginis** *Hbn.* (30 e). Forewing pale bluish grey, with dark grey or blackish shadings and suffusion; veins finely black; a slender black line in and below base of cell; inner and outer lines double, dentate; submarginal line whitish, wavy and dentate, preceded by a blackish shade containing black dentate marks; orbicular stigma double, formed of 2 round grey spots placed obliquely, the inner one often absent; reniform large, white and black; hindwing dirty grey, darker along termen; a dark grey cell spot; ab. **cinerascens** *Stgr.* *pallida*. (30 e) is more uniformly grey, the markings not bright and conspicuous; ab. **pallida** *Tutt* is a very pale form from Cannock Chase, Britain; ab. **obscura** *Lutzu* is suffused with dark. — Larva purplish brown; dorsal line blue grey, with darker edges; spiracular line broad, pale yellow, with fine black upper edge; feeds on *Vaccinium*. Found in Britain, France, Germany, Austria, Hungary, Switzerland and Russia; in the Altai Mts., W. Siberia and in Amurland.

pulla. **C. pulla** *Hbn.* (= *felixii* *Frr.*) (30 f). Forewing grey, suffused with blackish grey along costa and outer margin and along the course of the inner line and median shade; veins blackish; lines black, dentate; the inner thickened, connected by a black blotch on submedian fold with outer line; stigmata pale grey, undefined; median shade thick, often intensified by black lines; fringe chequered light and dark grey; hindwing white with dark veins. Occurs in S. France, N. Italy, Sicily, Austria, Hungary, S. Russia, and Crete. — Larva green, marbled with white, with white lateral stripes; on numerous low growing plants.

29. Genus: **Euscotia** *Btlr.*

Differs from *Chloantha* in having the costa of forewing straight and the apex produced; 3rd segment of palpi thrown forward, long and spatulate; the thorax and abdomen strongly crested; the patagia well developed. Larva on *Berberis*. Type *Euscotia inextricata* *Moore*.

inextricata. **E. inextricata** *Moore* (30 f). Forewing brownish grey, grey only along inner margin; lines strongly dentate, both thickened and stronger below middle, the outer preceded by a bidentate whitish mark on submedian fold; a diffused dark brown shade from it to termen just below apex and shorter ones below veins 4 and 3; orbicular and reniform pale, outlined with brown, the orbicular brown at centre, elongate, produced below and confluent with the reniform; hindwing white, with veins and termen brownish. A North Indian species, occurring in Kashmir. Larva dark ochreous mottled with brown; tubercles pale with dark edges; dorsal line fine, edged with brown; subdorsal lines obsolete; spiracular yellow edged above by brown, forming lateral patches on each segment; a brown bar across segment 11; head chocolate brown; on *Berberis*.

saga. **E. saga** *Btlr.* (= *aurilegula* *Oberth.*, *incognita* *Btlr.*) (30 f, g). Forewing like that of *inextricata*, but rather broader; hindwing dirty grey, the veins darker, the terminal half of wing diffusely blackish fuscous. Japan, Corea, E. Siberia, Amurland.

30. Genus: **Lithophane** *Hbn.*

Tongue developed; palpi with second segment hairy beneath, the third long, porrect, somewhat spatulate; frons rounded; antennae of ♂ ciliated, with porrect tufts of hair from their base; a double erect crest on prothorax; dorsum strongly crested; the abdomen flattened; forewing long and narrow, with longitudinal

markings; the lines indistinct. Larva feeding exposed on trees in summer, the imago emerging in autumn; the ♀♀ hibernating. Type *Lithophane socia* Rott.

L. semibrunnea Haw. (= *oculata* Germ.) (30 g). Forewing dull wood-brown, the inner-marginal half suffused with black brown, blackest on inner margin and in outer half of submedian interspace; veins marked with black scales; lines indistinct; the outer marked by pairs of black dots on veins and a white crescent on submedian fold; the submarginal line by a slighter one; hindwing greyish brown, paler in ♂, with the terminal area darker. — Occurs in Britain, France, Germany, Austria, Hungary, Bulgaria and Italy. — Larva green; dorsal and subdorsal lines white; spiracular line broad, yellowish white, much varied with white dots and streaks below; head greenish; feeding on Ash and other trees. *semi-brunnea.*

L. socia Rott. (= *petrificata* F., *petrificosa* Hbn., *petrolignea* Hbn.) (30 g). Forewing broader than in *semibrunnea* Haw., with a blackish streak from base below cell; the inner marginal area not so completely darker; the stigmata plainer, pale ochreous, conversely oblique, the reniform reaching below median and edged below with a thick black line; a more or less plain dark median shade; black wedge-shaped marks before submarginal line; ab. *umbrosa* Esp. (30 g), of which *pallida* Tutt seems to be only an extremely pale, less-marked, form, is more uniform ochreous brown, without dark suffusion; *rufescens* Tutt is a much rarer form, from the West of England and Ireland, in which the ochreous is suffused with rosy. Commoner than *semibrunnea*, occurring in the same localities as that species, and besides found in S. Scandinavia, Russia, Livonia and the Ural Mts., Armenia, W. Siberia and Amurland. — Larva apple green; dorsal line broadly white; subdorsal and spiracular lines more slenderly white; head green with dark mottling; feeds on lime, oak, elm, and fruit trees. — *socia.*
umbrosa.
pallida.
rufescens.

L. ledereri Stgr. (30 g). Forewing grey with a brownish tinge; the markings ferruginous; an oblique angled median shade; some marks before and beyond submarginal line; the chequering of the fringe; short oblique costal streaks, and the edges of the double lines; hindwing ochreous overlaid with dark grey; the veins darker. Pontus and Amasia in Asia Minor; Rhodes. *ledereri.*

L. rosinae Pueng. (30 h). Forewing reddish brown on a grey ground speckled with coarse black scales; a black streak from base below cell; lines double, obscure, represented by dark points on veins; all the stigmata distinct and outlined with black; a dark median shade broadened at costa; dark marginal clouds beyond submarginal line on both folds; hindwing reddish brown with broad dark terminal border. Amurland. *rosinae.*

L. brachyptera Stgr. Forewing grey-white; a sinuous black streak at base of submedian fold; lines black, double only on costa; a dark median shade; claviform outlined in black joined by a black streak to outer line; orbicular and reniform with brown centres ringed with white, and outlined with black; subterminal line formed of slight brown lunules; hindwing pale brown. Ussuri, E. Siberia, *brachyptera.*

L. ornitopus Rott. (= *ornithopus* Hein., *rhizolitha* F.) (30 h). Forewing grey-white; a bifurcate black streak from base below cell; lines indistinct, pale with dotted edges; stigmata grey with partial black outlines and paler rings; the lower lobe of the reniform orange-tinged; claviform sometimes connected by a black streak with outer line, and often a dark spot between the stigmata; submarginal line waved, white, preceded by dark marks; hindwing grey; the whiter forms are separated as ab. *pallida* Spul. (30 h). Generally distributed in Europe, and occurring in Asia Minor and Siberia. — Larva bluish-green dotted with white; dorsal and subdorsal lines white; spiracular line yellowish white; feeding on oak and other trees. *ornitopus.*
pallida.

L. pruinosa Btlr. (30 h). Forewing greyer than in *ornitopus*, and distinguished at once by the lower lobe of the reniform being always dark grey, without any rufous tinge; the black streak from base upcurved, not forked; the whole wing more speckled and the markings less plain. Japan. Two forms seem to call for a distinct name; ab. *nigrata* ab. nov. (30 h), in which the dark grey scales have become black and form black blotches on the folds between the stigmata and beyond the claviform; and ab. *unicolor* ab. nov. (30 i), which has the forewing uniform dull grey, without light or dark speckling, the only visible markings being the black streak from base, the edges of the stigmata, and the black streak beyond claviform. *pruinosa.*
nigrata.
unicolor.

L. lamda F. (= *rufescens* Mén.) (30 i). Forewing dark blue grey, very finely irrorated with olive brown; a short black streak from base below cell with rufous suffusion below it; another on submedian fold between inner and outer lines with dark suffusion above it; lines obscure, interrupted; orbicular stigma triangular, blue grey, outlined with black; reniform large, its lower lobe curved below and edged with black, filled up with rufous suffusion which basewards joins the orbicular; submarginal line ill-defined; hindwing brownish fuscous, darker towards termen; fringe brownish white; underside dull red; ab. *zinckenii* Tr. (30 i) is a much gayer insect; the ground colour is pale silvery grey, and the dark suffusion deep olive, without the brown or rufous tint, which only exists, and that to a much smaller extent, in the lower part of the reniform; all the dark markings and the lines are emphasised with white; the submarginal line is distinct followed by a dark inangled shade; hindwing fuscous brown, with nearly white fringe; ab. *somniculosa* Hering (30 i) is smaller than the type, with darker, purplish grey, ground colour, the stigmata and lines hardly visible but *lamda.*
zinckenii.
somniculosa.

with a distinct sinuous median dark olive shade; the two dark streaks both strongly expressed; hindwing brown, with the fringe rufous. Britain, Belgium, Germany, Austria, Switzerland, Scandinavia, Iceland, Finland, N. Russia, Amurland. Larva blue green dotted with white; dorsal and subdorsal lines white; spiracular line yellow; spiracles white edged with brown; on *Vaccinium* and *Myrica* gale.

furcifera. **L. furcifera** *Hufn.* (= *bifurca* *Esp.*, *conformis* *Hbn.*) (31 i). Forewing purplish grey irrorated with olive; a thick black streak from base below cell, upcurved and forked, edged above by a white line; another from claviform to outer line; lines black, edged with pale grey, fairly distinct; claviform and orbicular pale blue grey edged with black; reniform inwardly bearing a fulvous crescent, its lower edge curved and black; a dark median shade and a narrow one before submarginal line; hindwing brownish fuscous, darker towards termen, sometimes showing a large cellspot and dark outer line; ab. **rufescens** *Spul.* (31 a) has the forewing more or less flushed with reddish; nearly all of these, however, seem to be ♀♀, while the ♂♂ remain dark purple grey without the red tinge; — ab. **suffusa** *Tutt* from the West of England is violet black; ab. **variegata** *Spul.* (31 a), corresponding to the *zinkenii* form of *lamda* is much more variegated, the dark markings being relieved by silvery grey. Generally distributed in North and Central Europe and in W. Siberia. — Larva redbrown or earthbrown marbled with black dots and streaks; the lines pale yellow; a dorsal series of diamond-shaped marks and subdorsal series of oblique black streaks; another form of the larva is said to be green marked with yellow; — on Alder and Birch.

ingrica. **L. ingrica** *H.-Sch.* (= *conformis* *Frr.* nec *Hbn.*, *cinerosa* *Guen.*) (31 a). Forewing silvery grey, more or less overlaid with purplish brown; the pale patch at base of costa, and the pale rings of the stigmata distinguish it at once from *furcifera*; all the markings, both lines and stigmata, are more conspicuous: **grisea** *Graes.* (= *obscura* *Carad.*) (31 a) is a dark form from Amurland; **basidiluta** *Strand* from Norway and St. Petersburg has the whole basal area paler. Occurs in France, Germany, Austria, Hungary, Rumelia, Switzerland, Norway, N. Russia, E. Siberia, Amurland, Kamschatka. — Larva grey brown with velvety black interrupted dorsal, subdorsal, and spiracular lines, mixed with yellow and red; feeding on *Alnus glutinosa* and *incana*.

ustulata. **L. ustulata** *Btlr.* (31 b). Distinguished by the general dark purplish brown ground colour of the forewing, somewhat obscuring the markings; a pale blotch at base of costa above the black streak from base on submedian fold; a dark blotch between the stigmata in cell and beyond claviform in the submedian interval; all the 3 stigmata, as well as the basal blotch, tinged with rufous; hindwing greyish fuscous, paler towards base, darker fuscous in ♀, generally without the brown tinge of the allied species. Japan.

lapidea. **L. lapidea** *Hbn.* (= *leautieri* *Bsd.*) (31 b). Forewing pale grey, dusted with olive grey; lines strongly dentate, but much obscured, marked by short oblique costal streaks; upper stigmata ill-defined, but united at their base by a long black line; the reniform with fulvous in lower half; claviform elongate, black-edged, united by a short black streak with outer line; a well-marked black streak from base on submedian fold; submarginal line indicated only by black dentate marks preceding it, of which the two on the folds are longest; fringe mottled dark and light grey; hindwing pale brownish grey, darker towards termen; ab. **sabinae** *H. G.* (31 b) is rather smaller, blue-grey, more distinctly marked, especially the median shade and submarginal teeth; reniform stigma with hardly any fulvous in it; the two black lines on submedian fold hardly visible; ab. **cupressivora** *Stgr.* is larger, uniformly dull dark grey, with the markings still less distinct; the hindwing browner, (? spec. dist.). S. France, Switzerland, Spain, Italy, Crete, Balkan Mts., and in W. Turkestan. — Larva dark green, dorsal and subdorsal lines white, segmentally swollen and partially interrupted; spiracular line yellowish white; feeding on Juniper and Cypress.

merckii. **L. merckii** *Rbr.* (= *ripagina* *H. G.*, *simplex* *Frr.*) (31 b). Forewing dark lilac-grey, suffused with olive-brownish; the veins dotted black and white; lines indistinct, marked by pairs of black dots on veins; stigmata pale, ill-defined, slightly black-outlined; the reniform black-edged below; median shade strong, forming a fulvous patch between the upper stigmata in cell and a dark one between the claviform and outer line in submedian interspace; a fine black line from base below cell; submarginal line preceded by dull rufous teeth and on each fold followed by dark clouds; hindwing dark fuscous, paler towards base. S. France, Italy, Corsica, Switzerland, Hungary, Bulgaria. — Larva yellowish green, dotted with white; all the lines yellowish; head pale green with dark mottling; feeding on *Alnus viscosa* only.

tephroptila. **L. tephroptila** *spec. nov.* (31 b). Forewing ashy grey, almost wholly suffused with dark grey, a blotch at base of costa, another in submedian interval before inner line, the area between outer and subterminal line, and the upper stigmata remaining paler; lines double, black, filled in with pale; the inner wavy and oblique, the outer lunulate-dentate, strongly inangled and black on submedian fold; stigmata with black outlines, the claviform large and dark grey, nearly joining outer line; a strong black line from base below cell, curving upwards round the pale basal patch; fringe dark grey, with a pale festooned line at base; head and thorax dark grey like the forewings; abdomen much paler, whitish peppered with grey, like the hindwings, which are

browner towards termen, with dark round cellspot and marginal line, the fringe whitish grey; underside whitish; forewing suffused with grey; hindwing with a round black cellspot. 1 ♀ in Tring Museum from Amasia. Distinguished by its uniform grey coloration.

31. Genus: **Xylina** Tr.

Tongue strong; palpi short and stout, not reaching beyond the thickly haired frons; antennae of ♂ subserrate, with short sessile fascicles of cilia; thorax squarely scaled; tegulae concave in front, separated by a projecting ridge in middle; pectus and femora well haired; abdomen flattened; forewing long and narrow. Larva on low-growing plants, feeding up in spring and summer; the imago emerging in autumn and hibernating, the ♀ not laying her eggs till spring. The imago rests with the wings closely apprest and infolded, so as to resemble a piece of decayed wood. — Type *Xylina vetusta* Hbn.

X. vetusta Hbn. (31 c). Forewing pale greyish ochreous, the inner marginal half suffused with fuscous, *vetusta*. or blackish brown, less strongly beyond middle; orbicular stigma obsolescent, marked by a brown dot or two, rarely outlined; reniform large, pale, with double brown outline, followed by a patch of brown scaling, joined by a black brown sagittate mark to the pale serrate subterminal line; a diffuse black blotch in the dark scaling represents the claviform stigma; lines very indistinct, indicated by dark vein spots; hindwing brownish fuscous. Generally distributed in Europe, except the extreme north; also found in Asia Minor, W. and E. Siberia, and Turkestan. In the ab. **albida** Spul. (31 c) a diffuse streak of white scales runs from *albida*. base along the middle of wing extending to the space below the reniform and obliquely upwards to apex; in the ♀♀ the dark markings are more mixed with blackish grey and in the ♂♂ with brown; in ab. **brunnea** *brunnea*. Tutt (31 c) the ground colour is brighter ochreous, and the dark shading brown or black brown, the grey and white scaling being altogether absent. Larva bright green or olive brown; dorsal and subdorsal lines yellowish, the latter with 3 yellow tubercles above them on each segment; spiracular line yellow, black-edged above, with the spiracles red; on various low growing plants.

X. exsoleta L. (31 d). Differs from *vetusta* in being mainly dark or blackish grey, the ochreous *exsoleta*. ground showing only in a longitudinal streak above the median vein broadening along vein 5; orbicular stigma large and well-marked, with black linear centre and outline; lines marked by pairs of black spots on veins; submarginal line preceded by two wedgeshaped black marks which do not reach the reniform; hindwing dark fuscous. Co-extensive in range with *vetusta*; the form occurring in Central Asia is differentiated by Staudinger as ab. **impudica**, the ground colour being paler, more ashy grey, with less distinct markings; in ab. **obscurata** *impudica*. Spul. the whole forewing is suffused with brown; the opposite to this, in which all the black grey shading *obscurata*. is absent and the whole forewing, except narrowly along costa, is pearly grey, may be called ab. **pallescens** *pallescens*. ab. nov. (31 d); in this the markings are as distinct as in the type form, and the hindwing is quite pale fuscous; there are 4 ♂♂ of this form in the Tring Museum from Europe, one marked Crimmitschau and the other 3 without more precise locality. Larva green; dorsal and subdorsal lines broadly yellow; spiracular line red, pale-edged beneath, with the yellow spiracles above it; tubercles white with broad blackish rings; on various low plants.

X. fumosa Btlr. (31 d). Slightly larger, like most Japanese species, than *exsoleta*, the ground colour *fumosa*. more brownish grey; the hindwing smoky fuscous brown throughout, not paler towards base as in *exsoleta*. Japan.

X. formosa Btlr. (31 e). Forewing dull fuscous grey, varied with darker, the costa suffused with *formosa*. darker, especially before submarginal line; lines double, dentate-lunulate, filled up with paler and marked darker on veins; claviform obscure, but marked by a dark curve at its tip; orbicular extending below median, with a triple leaden grey centre surrounded by paler and partially outlined finely with black; reniform large, leaden black, containing a rufous lunule; submarginal line ochreous between redbrown or rufous shades; marginal area paler beyond it; hindwing uniform fuscous. Japan. The forewings are a little broader with the costa more curved than in the typical species. The face, shoulders, and abdominal tufts are pale ochreous.

X. lunifera spec. nov. (31 e). Forewing ochreous, much varied with brown; the inner marginal half suffused *lunifera*. with grey brown; the costal edge black, with conspicuous white dots towards apex; basal and inner lines acutely dentate, dark brown; outer line marked by black vein points; reniform stigma large, reaching below median, its centre a broad white lunule, laterally brown-edged, then outlined with brown and finally with black; the two teeth of the inner line in the cell are enclosed in a pale black-edged rounded space, which occupies the usual place of the orbicular stigma, but the real orbicular is a small round black-edged spot lying in the dark median shade which precedes the reniform; submarginal line pale, zigzag, preceded and followed by dentate brown shades, the inner one marked by black in midwing; hindwing brownish fuscous, with the fringe ochreous beyond some black marginal lunules; face above and shoulders bright pale ochreous; tips of shoulders and lower part of face brown; thorax and patagia dark black brown. 1 ♂ from Amasia in Tring Museum, expanding 50 mm.

32. Genus: **Dichonia** Hbn.

Tongue present; palpi with 2nd segment oblique, long-haired, third porrect, drooping; frons smooth, rounded; antennae of ♂ simple, thick, lamellate; vertex and frons strongly tufted; pectus and femora hirsute; dorsum with crests and lateral tufts. Larva (of the only European species) feeding on *Lonicera* in summer, swollen in middle and attenuated at both ends, living by day extended on the inner woody branches, pupating in a spun cocoon on the ground; the imago emerges in early spring. Type *Dichonia areola* Esp.

areola. **D. areola** Esp. (= *lithorhiza* Bkh., *operosa* Hbn.) (31 f). Forewing pale grey varied with darker, darkest in median and marginal areas; veins black-speckled; a black streak from base on submedian fold, with a whitish patch above it; the two lines black, approximating below median, conversely edged with white; orbicular and reniform stigmata large, 8-shaped, pale grey, with darker centres, the orbicular projecting obliquely below median and connected there with reniform; submarginal line white, serrate, followed by a row of black marginal lunules; fringe deep, grey mottled with paler; hindwing pale grey, the cell spot, veins, and outer line darker: in the form **suffusa** Tutt the dark median area below the stigmata becomes blackish and forms with the black streak from base a curved black marking. Of general distribution throughout Europe and occurring in Syria and Asia Minor. The larva is dull pinkish ochreous, with a paler dorsal line and dark brown blotches on dorsum on segments 7 and 8; the 11th segment is slightly humped; on *Lonicera*.

33. Genus: **Thecophora** Led.

Tongue present; palpi hairy in front, the terminal segment porrected from the oblique second segment; frons smooth, but bearing a large tuft of hairs; antennae of ♂ slightly ciliated; pectus and tibiae hairy; abdomen with dorsal series of crests and long protrusible lateral tufts; hindwing with a large oval scaleless fovea lying along subcostal vein; hind tibiae in ♂ shortened, the first tarsal segment correspondingly elongated, so that the spines on it can scratch the dilated end of subcostal vein in the fovea, by which means a slight sound is emitted during flight. Larva feeding up in spring, pupating in a spun cocoon between leaves; the perfect insect emerges in autumn of the same year. Type *Thecophora fovea* Tr.

fovea. **T. fovea** Tr. (31 f). Forewing dull purple-fuscous, the lines wavy, blackish, conversely edged with whitish; claviform stigma large, black; orbicular roundish, olive brownish, edged with black; reniform large, pale cream-colour, with its inner edge darkened; the outer line forms a pale ochreous patch on inner margin; submarginal line pale, preceded by a bronzy olive area and followed by dull dark purple; hindwing fuscous, the foveal space of the ♂ pale. Found only in Hungary and Dalmatia. Larva yellowish, with reddish heart-shaped dorsal blotches traversed by the pale dorsal line; a similarly coloured series of lateral specks: living in May on low-growing oak-bushes.

34. Genus: **Dryobota** Led.

Like *Thecophora*, but the ♂ shows no secondary sexual characters, and the antennae are armed with sessile fascicles of cilia. The larva of the only species feeds on *Quercus ilex*. Type *Dryobota furva* Esp.

furva. **D. furva** Esp. (= *occlusa* Hbn., *didymoides* Dup.) (31 f). Forewing purplish fuscous, duller, less varied than in *T. fovea*; lines double, wavy, filled in with paler; claviform small, blackish; orbicular and reniform rufous fuscous, outlined with black, the outer $\frac{3}{4}$ of reniform brightly white in the ♀, rufous ochreous in the ♂; submarginal line pale rufous grey; hindwing fuscous. Found in France, Germany, Austria, Hungary, and Switzerland; also in Algeria, and Asia Minor. The imago appears in November and December. — Larva greenish-white: dorsal and subdorsal lines yellow, also a stripe above the feet; a lateral row of dark V-shaped marks; head deep yellow, outlined in black; feeds up in May on *Quercus ilex*, especially the flowers.

35. Genus: **Meganephria** Hbn.

Tongue developed; palpi hairy in front; frons smooth; thorax somewhat quadrately scaled; dorsum with slight basal crests; pectus and legs long-haired; forewing elongate, the outer margin oblique and slightly indentate above anal angle; stigmata very large; outer line forming (generally) a conspicuous pale crescent-shaped mark at inner margin. Larva flattened, with large flat head; the 11th and 12th segments humped, bearing pointed tubercles; living on trees and shrubs on the stems of which it hides by day, feeding up in summer; the imago emerges in autumn. Type *Meganephria oxyacanthae* L.

Sect. I. Antennae bipectinate in both sexes; terminal segment of palpi longer.

tancrei. **M. tancrei** Graes. Forewing grey, with darker dusting and suffusion; the two folds tinged with brownish ochreous; a black streak from base below cell; lines double, the inner wavy, the outer lunulate-dentate, both filled in with whitish, the outer forming a white crescent on submedian fold; all 3 stigmata large, outlined with

black, with brown centres and ochreous rings; subterminal line pale, preceded by a brown shade; the area before it paler grey with black streaks on the veins and a thicker streak below vein 2; hindwing fuscous, with darker outer line, bent and accompanied by whitish spots at vein 2. Amurland.

Sect. II. Antennae of ♂ shortly bipectinate, of ♀ serrate; terminal segment short.

M. oxyacanthae L. (31 g). Forewing reddish grey, varied with fuscous; the nervures and inner margin lined with green scales; a strong black streak from base below cell; lines finely black, the inner sharply angled outwards at the end of the basal streak, the outer marked with a bright white crescent on submedian fold; stigmata all large, pale pinky brown, outlined with black; a diffuse black shade to termen below vein 2; submarginal line faintly paler, the area before it generally paler; hindwing luteous whitish in ♂, grey in ♀. Occurs throughout Europe except in the extreme North, in Armenia, Syria, Asia Minor, and Central Asia. The form found in Syria, **benedictina** Stgr. (31 g) has the forewings dark grey brown; the hindwings paler; but those of the ♀ are darker grey; — another form, occurring in Pontus, Palestine and Ussuriland, **asiatica** Stgr. has the forewings pale grey; **capucina** Mill. (31 g h) is a form restricted, apparently, to the British Isles, rich deep brown with darker shading in the ♂, darker duller brown in the ♀, with the lines and markings distinct, the hindwings of the ♂ often rufous-tinged; in this the green scaling is altogether absent; — **corsica** Spul. from the Island of Corsica, is said to be paler, of a more vivid yellowish red colour; — **pallida** Tutt, from Ireland and Berkshire, has pale reddish grey forewings, with only a slight amount of green along inner and outer margins. Larva dull slaty grey or brownish grey, covered with irregular-shaped black marks; on each side of segment 4, which is slightly raised, an oblique dark streak; tubercles pale on dark spots; spiracles fine, white, with black rings; feeds in spring on Crataegus and Prunus.

Sect. III. Antennae of ♂ simple.

M. extensa Btlr. (31 h). Forewing pale pearly grey, varied with lilac and pale brown, the subcostal, median, and submedian veins marked in parts with yellow green scales; a thick black streak from base below cell crosses the black inner line and joins the large acutely pointed black-edged claviform stigma, which lies in the diffusely enlarged median shade; upper stigmata large, pale lilac grey, with blackish edging; submarginal line pale preceded by a distinct dentate brown shade; 3 strong black streaks to margin above veins 2, 3, and 4; veins slightly black-scaled; the white crescent of outer line small; hindwing dull dark grey, with the veins darker; the form **cinerea** Btlr. is darker, the whole inner marginal area of forewing being suffused with dark brown. The forewings are somewhat more elongate than in the other species.

M. bimaculosa L. (31 h). Forewing whitish grey, speckled with darker scales, the shadings olive brownish, this colour filling up the outer half of median area between subcostal vein and submedian fold; a thick dark streak from base below cell; inner line double, oblique and angulated, darker externally; outer line lunulate-dentate, double; stigmata all large, rounded, pale grey with darker dusting, the reniform externally white, with a black line along its base above the median vein; veins towards termen black-dotted, the intervals on margin with redbrown dentate markings, the submarginal line with a rufous dentate shade before it, crossed by a diffuse dark shade on submedian fold; hindwing pale and darker grey; a large cell blotch and blotch at margin on submedian fold blackish; an obscure darker outer line; marginal area pale grey. A South European species occurring in France, Germany, Austria, Hungary, Switzerland, Spain, and Italy; also in Asia Minor, Pontus, and Persia; a single specimen is recorded from the west of England, taken many years ago. Larva brown, darker in front; dorsal line narrow, pale, with 4 white tubercles on each side; lateral lines waved, dark-edged above, paler below; 11th segment with a two-pointed hump; living in spring on Prunus and Ulmus.

M. funesta Leech. (32 a). Forewing pale grey, largely suffused with dark redbrown or fuscous, the whole thickly irrorated with black; lines indistinct; claviform stigma large, partly edged with black; upper stigmata large, pale, with fuscous centres and outlines; a short black streak below vein 2 from outer line to termen; hindwing whitish, tinged with reddish brown; an outer line and some marks on termen at vein 2 and middle dark. Japan; ♀♀ only known.

M. sabulosa Graes. Forewing pale grey, dusted with darker; these dark scales form irregular patches at middle of base, in the cell between the stigmata, and on termen; a black mark near base of cell; stigmata large and grey, with dark centres and black outlines; reniform with a white spot at lower end and angled inwards along median vein; lines grey, evenly dentate; submarginal line broad, whitish, with brown patches before it at submedian fold and costa; hindwing grey with a dark terminal line and yellowish fringe. Amurland.

36. Genus: **Calotaenia** Stph.

Tongue fully developed; palpi upturned, the second segment fringed with long hair in front, the third short, porrect; frons smooth, carrying a tuft of hair; another tuft between antennae, which are fasciculate in ♂; thorax quadrate, clothed with scales; the prothorax and metathorax slightly crested; tibiae fringed with

long hair; abdomen with crests on basal segments, that on the 3rd large. Larva stout, cylindrical, feeding in sandy localities on the roots of grasses, and pupating in situ. Type *C. celsia* L.

celsia. **C. celsia** L. (32 a). Forewing blue green or yellow green; a brown spot at base; a vertical brown central fascia, darker in outer half, widened on costa and inner margin and bent and widened at middle, where it emits a short arm inwardly into cell and sometimes another outwardly, which is more often represented by a brown spot at its end; fringe brown, preceded by a brown marginal band, swollen at costa and on the two folds; costa finely brown with white spots before apex; hindwing dark fuscous brown. — Larva dirty yellowish grey, with the dorsal vessel showing through; tubercles black with short pale hairs; head large, red-brown; thoracic and anal plates yellowish brown; feeding in summer in clumps of various grasses; extremely like the larva of *monoglypha* Hufn. Found in sandy places in S. Scandinavia, the Baltic provinces of Russia, E. Germany, Switzerland, Hungary, Central and S. Russia; in the Altai and Tarbagatai Mts, E. Siberia, and Amurland.

tenuis. **C. tenuis** spec. nov. Forewing pale green; all the brown markings finely edged with white, especially the marginal band before fringe; the median vertical band always much thinner than in *celsia* and interrupted between subcostal and median veins; costal edge white in basal half; hindwing paler fuscous, the fringe whiter, chequered with dark. Kuku Nor, Tibet.

jankowskii. **C. jankowskii** Alph. (32 a). Forewing pale green; the whole median space, between the inner and outer dark streaks which are mixed with white, purple grey brown; stigmata pale green, the orbicular small, the reniform large; a white cruciform mark at base; the terminal area and hindwing as in *celsia*. S. Ussuri.

37. Genus: **Eumichtis** Hbn.

Tongue present; palpi obliquely upturned, 2nd segment hairy, terminal short; frons smooth; antennae of ♂ bipectinate, of ♀ simple, with a slight tuft in front of the basal segment; thorax and pectus hairy; dorsum without tufts. Larva on low-growing plants, hibernating and feeding up in spring; the imago emerges in autumn, occurring mainly, if not entirely, along the seacoast. Type *Eumichtis lichenea* Hbn.

lichenea. **E. lichenea** Hbn. (32 a). Forewing dark to light green, varied with reddish along the inner margin and the course of the lines and round the stigmata; inner and outer lines grey, double; submarginal line pale, preceded by rufous wedge shaped marks; claviform stigma small, dark; orbicular and reniform whitish, often dusted with grey, with dark centres and blackish outlines; fringe green; hindwing of ♂ white, of ♀ light or dark grey, with grey discal spot and outer, sometimes also a submarginal, line; in the form *viridicincta* Ferr. (23 a) the ground colour is grey tinged with olive, the central fascia generally darker olive, all the red tints replaced by dark green; *tephra* H. G. is a paler grey form with the green tints also obsolete; *aetna* Turati, from Sicily, is blackish, the markings on forewing distinct. Found on the coasts of Britain, S. W. France, Spain, Portugal, Dalmatia and Sicily; also in Morocco. Larva pale green or brownish mottled with darker; spiracular line pale; head yellowish; on low-growing coast plants, such as Senecio, Rumex etc. —

muscosa. **E. muscosa** Stgr. (23 b). Smaller than *lichenea* Hbn.; pale grey, shaded with darker, with a faint olive tinge; central area darker; the lines more clearly defined; the inner simply curved; the stigmata neater and smaller, the claviform obsolete; hindwing white, with slight grey suffusion towards termen; the ♀ darker, with the stigmata clearer. Armenia, Syria, Asia Minor.

38. Genus: **Crino** Hbn.

Tongue well developed; frons smooth, but like the vertex rough-haired; palpi upturned, stout, the second segment hairy, the third short; antennae of ♂ usually serrate and shortly fasciculate; pectus and femora hairy; abdomen with dorsal crests. A genus of species of much stouter build than *Eumichtis*; only distinguishable from those of *Parastichtis* Hbn. by the cilia overhanging the eyes and these often difficult of observation. Larva feeding on low plants. Type *C. sommeri* Lef.

Sect. I. Antennae of ♂ bipectinate.

albstigmata. **C. albstigmata** B.-Baker. Forewing purplish-red, dusted and shaded with blackish brown; the median area and narrow terminal border dark; a diffuse blackish streak from base below cell; inner and outer lines dark, conversely edged with whitish; claviform black-edged, pointed, joined by a black streak to outer line; orbicular and reniform white with brown centres outlined in black, the former oblique and elliptical, the latter large, long and narrow; submarginal line formed of small white lunules with a series of dark marks on both sides; hindwing pale brownish; the cellspot, veins, and outer line darker. Madeira.

atlanticum. **C. atlanticum** B.-Baker. Forewing brighter, more uniformly red than *albstigmata*, the median area not suffused with black brown; orbicular stigma round, of the ground colour; the reniform only slightly white, but with a white line on outer edge; the subterminal line purplish red and more strongly marked; otherwise like *albstigmata*, of which it may be a form. Madeira.

Sect. II. Antennae of ♂, with sessile fascicles of cilia.

C. magnirena *Alph.* Forewing rufous grey-brown, dusted with darker; a black streak on base of submedian fold and another, oblique, from inner margin near base; inner and outer lines double, conversely pale-edged; claviform blackish or black-edged, emitting a black streak to outer line; orbicular grey, black-edged; reniform with a large ochreous patch on its outer edge in the ♂, in the ♀ white, the rest outlined in black; submarginal line ochreous preceded by a redbrown shade, the interval between it and outer line paler except at costa; the terminal area dark except at costa; hindwing brownish-grey, darker along termen, and with dark cellspot and outer line. Tibet, Central and West China.

C. tenerifica *Hmps.* (? = *atlanticum* *Rbl.* nec *B.-Baker*) (32 b). Forewing redbrown, with some darker dusting; median vein greyish; a black streak from base below cell; lines all indistinct; the cell and terminal area darker brown; stigmata of ground colour, defined by black, the reniform with some white scaling on its edges; hindwing reddish brown, more fuscous towards inner margin. The Canaries.

C. melanodonta *Hmps.* (= *porphyrea* *Leech* nec *Esp.*) (32 b). Forewing grey brown, with a dull pink or fulvous tinge, especially along the two folds, and the costal and inner margins; a thick black streak from base below cell, with a pale grey patch above it at base of costa; a second, equally thick, from inner margin before inner line; lines blackish conversely pale-edged; median area, especially below middle, black-brown; claviform more or less obscured in a black shade between the two lines; upper stigmata large, pale grey, the reniform externally whitish; submarginal line obscure, but preceded by prominent black sagittate marks; hindwing brownish fuscous. Japan.

C. satura *Schiff.* (= *porphyrea* *Esp.*) (32 b). Shorter- and broader-winged than *melanodonta*. Forewing dull reddish throughout, more or less hidden by the purplish black suffusion; the upper stigmata, the basal patch, the submarginal area, and the subterminal line all dull reddish; the wedge-shaped marks before the last much shorter and less conspicuous; otherwise as in *melanodonta*; hindwing dark brownish-fuscous, with cellspot and slight outer line marked; a pale terminal streak at anal angle. Occurs throughout Europe except Scandinavia and Spain and Portugal; also in W. and E. Siberia. Larva reddish brown, darker along dorsum; dorsal line interrupted and obscure; spiracular yellowish green; an obscure subdorsal row of oblique grey streaks; feeding on a variety of low plants and shrubs.

C. adjuncta *Moore* (32 b). Forewing grey irrorated with fuscous, almost wholly suffused with dark reddish brown; the lines, markings, and stigmata much as in the two preceding species, but the stigmata plainer, with pale annuli; the submarginal line white and subdentate, preceded by blackish wedge shaped marks; hindwing brownish white, often reddish-tinged, the veins and termen darker. Described originally from N. India, but the species occurs in several localities in Kashmir and also at Yatong in Tibet.

C. adusta *Esp.* (= *porphyrea* *Scriba*, *aquilina* *Bkh.*, *valida* *Hbn.*) (32 c). Forewing rufous-brown clouded with darker; the veins black dotted with white; a slight black mark below base of cell, and a short black streak from inner margin near base; inner and outer lines blackish, double, forming black white-tipped teeth on the veins; claviform stigma blackish, acute, lying on a black streak joining the two lines; orbicular and reniform reddish grey edged with black, the reniform with some whitish in outer half; submarginal line white preceded by black wedge-shaped marks; hindwing of ♂ whitish with the termen grey; the cellspot and veins dark; much greyer in ♀. Of general occurrence throughout Europe and in Asia found in Armenia, Asia Minor, W. and E. Siberia, W. and E. Turkestan and Tibet; — the form **vulturina** *Frr.*, (= *pavida* *Bsd.*, *chardinyi* *Dup.*) (32 c), from S. Russia, has the forewing darker and variegated with white; — **duplex** *Haw.* (= *satura* *Stph.*) is also a dark but unicolorous form, occurring in Scotland and the North of England; — **sylvatica** *Bell.* (= *grisescens* *Stndfs.*) is a grey, obscurely marked, insect without brownish tinge, from Corsica; — **septentrionalis** *Hoffm.* is a small black form from Finland, the Baltic provinces and the Ural Mts., of which **moesta** *Stgr.* from Dauria is possibly a synonym; — **vicina** *Alph.* from Central Asia is paler, more violet brown, with the markings clearly expressed; **anilis** *Bsd.* (= *albescens* *Guen.*) is whitish, thickly dusted with black, with no trace of reddish brown tinge. — Larva grey green, suffused dorsally with reddish, with many small fine streaks; dorsal and subdorsal lines dark; spiracular line pale, whitish or yellowish; head greenish ochreous; feeding on a variety of low plants.

C. solieri *Bsd.* (32 c, d). Resembles *adusta*, but smaller, the forewing more rounded at apex; ground colour uniformly testaceous brown; the inner and outer lines generally more approximated on inner margin; the submarginal line less distinct; the terminal area beyond it conspicuously darker; hindwing of the ♂ whiter, less clouded with dark along termen, with the cellspot and outer line more strongly marked; that of the ♀, on the other hand, uniformly darker fuscous; ab. **grisescens** *ab nov.* (= ab. 1. *Hmps.*) (32 d) is grey without red tinge; from Italy, Capri, and Algeria, Biskra. Restricted to the mediterranean area, occurring in S. France, Spain, N. Italy, Dalmatia, Greece, and S. Russia; in Algeria; Asia Minor and Syria. — Larva yellowish brown with fine dorsal line and oblique dark lateral streaks; spiracular line paler, the white, black-ringed spiracles on its upper edge; on different low-growing plants.

- baltica*. **C. baltica** *Hering* (= *vulturina* *H. Sch.*) (32 d). Forewing uniform rufous grey; only the median area with the markings distinct and the black brown shading present; the stigmata unicolorous, not marked with white; the wedge-shaped marks before submarginal line absent; hindwing dull grey in both sexes, paler towards base. In North Germany, Finland, and the Baltic provinces of Russia.
- sommeri*. **C. sommeri** *Lef.* (= *groenlandica* *Zett.*, *picticollis* *Zett.*, *surtur* *H. Sch.*) (28 d). Resembles *adusta*, but without any brown admixture, the tints being grey and fuscous. This type form was described from Greenland and Labrador;
- islandicae*. the ab. **islandicae** *Mill.*, from Iceland, the Faroe Islands, and Lapland is brighter coloured, the forewing being more or less tinged with redbrown. Larva rosy brown above, yellow ventrally, with slender dark brown lines; spiracles white with dark rings; head and feet yellow; on various low plants.
- lama*. **C. lama** *Stgr.* (32 d). Forewing grey dusted with darker, and partly suffused with pale brown, especially beyond outer line; the lines and markings much as in the preceding species, but without any black-brown shading; hindwing greyish, darker along termen. W. and E. Turkestan.
- haasi*. **C. haasi** *Stgr.* Described as an *Aporophyla*, and differentiated from *A. nigra* by the forewing not being deep black, but partly mixed with redbrown, with more distinct markings. Spain, Castile.

39. Genus: **Agriopsis** *Bsd.*

Tongue present; palpi obliquely porrect, hairy in front, the terminal segment smooth, depressed; antennae of ♂ shortly ciliated; abdomen tufted at base and laterally fringed with hair; characterised especially by the fore femora, which are greatly dilated. Larva thick and fleshy, mottled; feeding on *Quercus* and resin; by day in the chinks of the bark, the colour of which it mimics: the larvae feed up in early summer, the imago emerging in autumn. Type *Agriopsis aprilina* *L.*

- aprilina*. **A. aprilina** *L.* (= *runica* *Schiff.*) (32 d). Forewing whitish green; lines and markings velvety black, the median shade especially thick; upper stigmata large; all the black markings emphasised by white; hindwing blackish grey; the cellspot, outer line, and submarginal shade darker; a white terminal space before
- bouveti*. the black marginal line; the ab. **bouveti** *Lucas*, from France, has the head, thorax, and forewings greener, the median area of forewing without black markings. Generally spread throughout Europe and occurring in Asia Minor. Larva greenish black, with a fulvous tinge; a dorsal series of dark medallions; dorsal line pale, interrupted, with black edges; spiracular line pale like the venter; on *Quercus robur*.
- aeruginea*. **A. aeruginea** *Hbn.* (32 e). Forewing dull purplish grey; a patch at base of costa and the two upper stigmata pale grey green edged with black; a black streak from base below cell with some yellow scales at end; claviform stigma of the ground colour followed by a pale patch before the black incised outer line which is succeeded by a yellow patch followed by a black patch cut by the wavy pale submarginal line, which is often marked by greenish or yellowish scales; costa with lichen-grey intervals between the darker lines; hindwing in ♂ white, with a subterminal grey shade; the cell spot and veins darker; in ♀ uniform brownish fuscous
- miroleuca*. whiter along costa; in the form **miroleuca** *Hbn.* (= *chiroleuca* *Tr.*) (32 e), the whole forewing is suffused with purplish grey, and the greenish white and yellowish scales are all obscured. Found in France, Germany, Austria, Hungary, Italy, Dalmatia, Bulgaria, Galicia, and in Asia Minor. Larva pale yellow; dorsal line pale, intersecting a series of spade-shaped spots; subdorsal and spiracular lines yellowish; on *Quercus pubescens*.
- convergens*. **A. convergens** *F.* (= *spicula* *Esp.*) (2 e). Differs from *aeruginea* in being pale ashgrey, paler in the ♂, suffused with dark grey, particularly in the central area; the black basal streak prominent, with a pale grey patch above it; the upper stigmata rather paler than the ground colour, the claviform concolorous; the patch above submedian fold, beyond a whitish crescent in the outer line, always ferruginous; hindwing grey, darker in ♀. A south European species recorded from France, Germany, Austria, Hungary, Switzerland, N. Italy, and Bulgaria. Larva sand-coloured; dorsal line distinct, whitish, with redbrown edging; on each side of it irregular redbrown or blackish blotches with two white dots in their duller centres; laterally washed with brown, with separate white dots; spiracular line yellowish white; feeding on *Quercus*.
- pryeri*. **A. pryeri** *Leech* (32 f). Forewing purplish grey, varied with paler, not uniformly dark as in *aeruginea*, and suffused throughout with dull olive; the lines and markings as in the preceding species; the upper stigmata larger and paler grey, the claviform dark, followed by a conspicuously paler and larger subquadrate patch; submarginal line pale marked with olive green scales; hindwing grey, paler in the ♂; altogether a more roughly and coarsely scaled insect than the preceding species. Japan.

40. Genus: **Lamprosticta** Hbn.

Tongue developed; palpi porrect, the second segment hairy beneath, the third blunt; head and thorax clothed with broad spatulate scales; antennae lamellate, simple, with a tuft of hair from basal segment; basal half of dorsum with crests. Larva stout, thickened in front; on moss growing on stems of trees, such as *Crataegus*, *Prunus*, *Pyrus*, etc., especially in gardens, hiding by day among moss and lichen; feeds up in autumn, hibernating as pupa; the imago appears in the following summer. Type *Lamprosticta viridana* Walch.

L. viridana Walch. (= *culta* Hbn., *adjuncta* Walk.) (32 f). Forewing olive brown; the veins marked *viridana*. with black and white scales; inner and outer lines black edged with white; costa spotted black and white; the 3 stigmata white with blackish centres and outlined with black; median shade black and prominent; submarginal line finely black; marginal lunules black and white; fringe white doubly chequered with black; hindwing white, in ♂ with some black spots only on vein 2, in ♀ clouded with brown along termen, with the outer line and veins dark. Generally distributed in South Europe, except Spain, also recorded from Syria. Larva brownish green, the thoracic segments with black hook-shaped markings on dorsum and at the sides; the subdorsal region tinged with flesh-colour and dotted with white; the 11th segment humped; head green, black-spotted; on Mosses on trunks of trees in autumn.

41. Genus: **Crypsedra** gen. nov.

Differs from *Lamprosticta* in the antennae of the ♂ bearing short sessile fascicles of cilia, without any tuft of hair at base; the head and thorax more finely scaled; the larva feeds on grasses in spring, forming a shelter of grass stems and frass spun together, in which it lives and finally pupates; the imago appears towards the end of summer. Type *Crypsedra gemmea* Tr.

C. gemmea Tr. (32 f). Superficially resembling *L. viridana*, the ground colour being the same olive- *gemmea*. brown and the markings black and white; the orbicular stigma, however, is always round, not irregular in shape; the claviform of the ground colour, black-edged, sometimes with a few whitish scales in it, and of the ordinary shape, not triangular; the costal area is sprinkled with white scales; submarginal line white, preceded by black dentate marks; fringe brown with fine white chequering; hindwing in both sexes brownish grey, paler towards base, with cellspot and veins dark. Found in Germany, Austria, Denmark, Switzerland, and Corsica. — Larva glossy bluish or greenish grey; tubercles black carrying a single pale hair; head, thoracic, and anal plates black brown: on grasses.

C. niphopasta Oberth. (32 g). Forewing white, dusted with darker and suffused in median and terminal *niphopasta*. areas with pale brown; a black streak from base below cell and a black semicircular mark on costa near base; lines double, black, filled in with white; stigmata all white, with black centres and outlines; median shade black; submarginal line lunulate, white, preceded and followed by black lunules; fringe mottled white and black; hindwing and fringe white. Described from a single ♂ from Akbès, Syria.

C. munda Leech (32 g). Forewing pale olive ochreous, more or less hidden by purplish grey suffusion *munda*. and dark lines; lines double, black, filled in with pale; claviform stigma outlined in black followed by a patch of pale ground colour; upper stigmata olive ochreous, subquadrate, edged with black; subterminal line lunulate, black, traversing a series of olive ochreous marginal spaces; hindwing uniform brownish fuscous. Described from a single ♀ from Ta-chien-lu, West China.

C. viridula Stgr. (32 g). Forewing dirty olive green; the lines paler, waved; the median area darker, *viridula*. containing the pale green, rather large, upper stigmata which are partially white-edged; inner and outer lines double, waved, filled in with pale olive; submarginal line sharply white, black-edged; in the paler space between it and the outer line are some white black-marked points on the veins; hindwing blackish grey, paler towards base, with a dark curved outer line; the fringe white; at end of vein 2 a dark white-edged spot. Amdo, Tibet

42. Genus: **Dryobotodes** gen. nov.

Like *Agriopis*, but the fore femora are not dilated; antennae of ♂ subserrate, clothed with short sessile fascicles of cilia; abdomen crested on basal segments and with lateral fringes of hair. — Larva on oak in spring and early summer; the imago comes out in late autumn. Type *Dryobotodes protea* Bkh.

D. accipitrina Esp. (= *tenebrosa* Esp., *saportae* Dup., *ilicis* Frr.) (32 g). Forewing redbrown, with *accipitrina*. fuscous shading and suffusion; the median area darker, especially along the folds; inner and outer lines dark; edged with reddish grey; a black streak below submedian fold from inner to outer line; claviform stigma dark, black-edged, followed by an oblique rufous patch; upper stigmata rufous grey, with partial white annuli; the reniform followed by a rufous smear; submarginal line rufous, indistinct, the margin beyond it blackish above vein 4; hindwing whitish in both sexes, the cellspot, and veins, outer line, and terminal border fuscous, the

latter including a submarginal band. Found in South Europe, Spain, S. W. France, N. Italy, Dalmatia, and Greece; also recorded from Germany. — Larva said to feed on *Quercus ilex*, grey when fullfed, green when young.

monochroma **D. monochroma** *Esp.* (= *distanis* *Hbn.*) (32 g). Forewing dark grey, suffused with blackish fuscous, but without the red tinge of *accipitrina*, with which it agrees in markings, but the stigmata are more unicolorous, *suberis*. and the hindwing is darker grey; the form **suberis** *Bsd.* (32 g h), is much brighter, all the paler grey areas of the type form being whitish grey, especially the space between outer and submarginal lines, the stigmata, and the basal area; and these white areas are more conspicuous in the ♂ than the ♀; the black streak from base below cell is much more prominent than in the darker type. Throughout S. Europe, Spain, France, Switzerland, Italy, Dalmatia, Sicily, Corsica, Sardinia, Germany, Austria, and Hungary. Larva yellowish green; dorsal line narrow, pale yellow; spiracular line also yellowish with dark lower edge; spiracles white in black rings; on *Quercus*.

roboris **D. roboris** *H. G.* (32 h). Forewing pale greenish grey, this ground colour only remaining in the area beyond outer line, the orbicular stigma, and a patch beyond claviform, the rest of wing, especially the median area being suffused with darker olive brown and green; lines double, blackish; claviform stigma reddish, edged with black, with a black dash to outer line; reniform large varied with red and brown; marginal area slightly darker, but always with a blackish green spot on submedian fold; hindwing brownish grey, with darker cellspot, *cerris*. outer line, and submarginal band; **cerris** *Bsd.* is a rufous-grey form without any olive tinge. Generally distributed in S. Europe and also occurring in Asia Minor. Larva reddish grey dotted with darker; dorsal line pale, traversed on segments 4 to 11 by a dark arched line, with white points in the curves; lateral lines dark; a white dot before each spiracle; on *Quercus*, especially *Q. ilex*.

protea **D. protea** *Esp.* (32 h, i). Forewing olive green mixed with light or dark grey, varied in places with pale brown or reddish, the latter tints appearing along the two folds, the whole wing having a mossy appearance; lines blackish, indistinct; a black streak between inner and outer lines, below the claviform which is followed by a rufous patch; upper stigmata slightly paler grey, tinged with green or reddish; submarginal line pale, followed by blackish scaling on each fold; hindwing dull grey, with darker cellspot, outer line, and submarginal diffuse *variegata*. band; — **variegata** *Tutt* (32 i), is much brighter and gayer; the dark shades, especially in the median area, being intensified, and the paler areas, — viz, the stigmata, the inner margin on each side of the median area, and the space between outer and submarginal lines, — lightened; the apex also is prominently paler and the *corsica*. terminal area more largely blackened; — **corsica** *Spul.*, from the island of that name, is a rough brownish olive *grisea*. green form; — from Amasia comes a form, which may be called **grisea** *nov.* (32 i), in which the tints are merely *dejecta*. dark and light grey, with only the least touch of green or brown, and a second form, **dejecta** *nov.* (33 a) decidedly smaller, and uniformly dark grey with the markings all more or less obscured and the hindwing darker, whereas *incolorata*. in *grisea* the pale areas are conspicuous and the hindwing whitish; ab. **incolorata** *ab. nov.* (32 i), has the ground colour pale or dark grey, without coloured tints except a faint rufous flush along the two folds and the course of the submarginal line. Common throughout Europe and occurring also in Asia Minor and Syria. — Larva greenish, dotted with dark; dorsal line pale yellow; spiracular line yellow; spiracles black; head green; on *Quercus*.

intermissa. **D. intermissa** *Btlr.* Like typical *protea* but rougher-scaled and darker, and slightly larger; the reniform stigma and a patch on submedian fold beyond outer line redder fulvous; hindwing wholly dark, blackish brown in both sexes. Japan. The Japanese equivalent of *protea*.

contermina. **D. contermina** *Graes.* (33 a). Forewing grey tinged with brownish green; the median area browner, except along costa and inner margin; inner and outer lines double, filled in with pale; claviform stigma large, brown edged with black, pointed at end, followed by a pale patch; orbicular and reniform with pale brownish centres and whitish rings edged with black, the former small, oval, the latter with upper end produced; subterminal line pale with a dark shade on each side; hindwing brownish grey with darker cellspot, outer line, and submarginal band. Recorded only from West Turkestan.

concinna. **D. concinna** *Leech* (32 h). Forewing olive yellow dusted with black, the centre of the median area suffused with black; a reddish flush beyond reniform and on costal area beyond middle; veins blackish; a waved black streak below cell from base; inner and outer lines black, double, filled in with yellow; the inner excurved and wavy; the outer excurved above and incurved below, followed by a greyish white patch in submedian interval; subterminal line pale with slight dentate blackish marks on its inner edge, crossed on each side of vein 4 by slight black streaks reaching terminal lunules; claviform stigma represented by two black streaks reaching outer line; orbicular and reniform yellowish, with fuscous dusting, outlined in black; fringe chequered yellow and fuscous; hindwing fuscous grey, with dark cell spot, outer line, and subterminal band; marginal lunules black; fringe white. Known only from a single ♀ taken at Wa-sou-Kow, W. China.

venusta. **D. venusta** *Leech* (33 a). Forewing whitish green; all the markings velvety black; a thick black streak from base below cell, touching a spot in cell; median area black, except costa and inner margin; the stigmata green with dark centres, the claviform large and solid; lines black, interrupted; submarginal line formed of

black teeth, that on submedian fold large, commencing as a black oblique bar from costa; marginal lunules black, that below vein 2 enlarged; hindwing brownish grey, towards termen dark fuscous; cell spot and outer line darker. Described from a single ♂ from Japan. Superficially much resembling *A. aprilina*, but the whole dorsum is black.

43. Genus: **Valeria** *Stph.*

Tongue well-developed; palpi with 2nd segment upturned, hairy, third porrect, smooth; frons and vertex tufted; thorax rough-scaled; pectus and femora hairy; abdomen crested towards base and with lateral fringes of hair; forewing broad at termen, the costa straight, the inner margin sinuate. Larva slender, bearing bristly tubercles, and with two blunt points on the penultimate and antepenultimate segments; feeding on *Prunus* and *Crataegus*, especially on old bushes covered with lichen to which its coloration corresponds, in summer; the imago appears in early spring. Type *Valeria oleagina* *F.*

Sect. I. Antennae in both sexes pectinated, more strongly in ♂.

V. oleagina *F.* (33 a, b). Forewing purple; the veins, especially at termen, broadly green; lines *oleagina*. blackish, indistinct; claviform small, obscure; orbicular round, green with a white ring; reniform large, white, with a dark speck at each end; submarginal line whitish, lunulate, preceded by purple brown contiguous lunules; fringe irongrey cut by white pencils; hindwing white, with fuscous cellspot, outer line, submarginal band, and fringes; marginal line wavy, black. A local species, found in Germany, Austria, Hungary, Switzerland, Spain, N. Italy, Bulgaria, and Syria; recorded once, many years ago, from Great Britain. Larva brownish-grey, paler in front; the hind segments laterally with oblique pale streaks; a pair of blunt points on the 11th and 12th segments; spiracles black between two yellow lateral lines; head black with an orange yellow corslet; on sloe and blackthorn.

Sect. II. Antennae almost simple in both sexes.

V. jaspidea *Vill.* (33 b). Differs from *oleagina* in the ground colour being rather paler purple; the *jaspidea*. orbicular stigma subquadrate, the reniform filled up with purplish, with only the central line and the annulus white; hindwing with the terminal area more broadly fuscous. Less widely distributed than *oleagina*, being found only in France, Germany, Switzerland, and Spain. Larva grey brown, the thoracic segments darker, with a grey streak on each side; segments 4 to 10 with reddish brown tubercles with white centres, each bearing a single hair; the 11th segment, rather humped, with a black, white-edged anvil-shaped marking; lateral line dull whitish; head grey brown with reddish corslet; on Sloe.

44. Genus: **Antitype** *Hbn.*

Differs from *Valeria* in the vestiture being hairy with few scales intermixed; palpi obliquely porrect, the second segment hairy, the third short and simple; antennae in ♂ subserrate with sessile fascicles of cilia, except in the first two species, which have tuberculate fascicles; a slight spreading tuft of hair from their base; thorax and dorsum only slightly tufted. Larva plump, cylindrical; feeding up in spring and summer on low plants; the imago emerges in autumn. Type *Antitype chi* *L.*

Sect. I. Antennae of ♂ with tuberculate fascicles of cilia.

A. serpentina *Tr.* (33 b). Forewing blackish fuscous, with a faint tinge of dark green, dusted sparsely *serpentina*. with whitish scales; a slight tinge of olive brown along the folds; lines black, obscure, the outer sharply dentate; reniform stigma with outer $\frac{2}{3}$ snowwhite with a curved line in it; orbicular roundish, very indistinct; submarginal line pale, very faint, preceded by black lunules; hindwing of ♂ white with black marginal line; of ♀ greyish white, darker along termen, with the cellspot and outer line dark. Confined to the mediterranean area whence it is recorded from Carniola, Italy, Dalmatia and Greece; also Syria and Asia Minor. Larva flesh coloured; the segmental incisions darker; dorsal line dark brown; spiracular brown; spiracles black; venter and feet yellowish; on low plants.

A. rebecca *Stgr.* (33 c). Forewing pale yellow with an orange flush, especially on the folds, dusted *rebecca*. slightly with fuscous; the median area darker fuscous, also the costa before inner line; lines black, conversely edged with yellowish, the inner waved, the outer dentate; upper stigmata pale yellow, the orbicular small, round, with a dark centre, the reniform large but ill-defined; a dark median shade; submarginal line faint, indicated only by dark scales preceding it; hindwing in ♂ yellowish white, slightly dusted; a sinuate dark post-median line; in ♀ wholly suffused with brown and with a diffuse submarginal band. Recorded from Palestine only.

Sect. II. Antennae of ♂ serrate with sessile fascicles of cilia.

A. polymita *L.* (= *seladonia* *F.*, *ridens* *Hbn.*) (33 c). Forewing olive-green; all the lines and edges of *polymita*. the stigmata black edged with white, sometimes (? in ♀ only) bluish white; white scaling along basal half of

subcostal vein and of inner margin; claviform stigma of ground colour, black-edged; the upper two with white rings; submarginal line white, lunulate, preceded by a series of black lunules; fringe olive chequered with white; hindwing in ♂ whitish, with diffuse grey submarginal cloud; cellspot and veins dark; in ♀ wholly suffused with dark grey. Widely distributed in Europe, though not occurring in Great Britain; France, Germany, Austria, Hungary, Scandinavia, Dalmatia, Sicily, the Balkans and S. W. Russia. Larva dull reddish; dorsal and subdorsal lines whitish; tubercles white; a redbrown shade on each segment with a white point in it; venter and feet pale yellow; feeds on low plants in autumn as well as spring.

*manisad-
sadjiani.*

A. manisadadjiani *Stgr.* (33 e). Forewing pale grey speckled with olive; median area filled with olive fuscous; the base narrowly, two terminal patches, and a costal patch before submarginal line also olive fuscous; the lines indistinct; claviform stigma dark olive edged with black; orbicular round, olive, variable in intensity; reniform grey and olive; the pale areas paler in ♂ than ♀; hindwing of ♂ white, dusted with grey, of ♀ grey, paler at base. Pontus, Asia Minor. This seems a good species, and not merely a form of *polymita*.

flavicincta.

A. flavicincta *F.* (= *flavicincta-major* *Esp.*, *dysodea* *Esp. nec Hbn.*) (33 c, d). Forewing pale grey speckled with darker olive grey, especially in median area; the edges of the stigmata, the course of the basal and submarginal lines, and vein 1 marked by orange scales; lines dark olive; upper stigmata paler; the claviform darker; median shade distinct; hindwing grey, darker in ♀, with veins, cell spot, outer line, and submarginal shade darker; the species varies in depth of colour; the darker forms are known as ab. **meridionalis** *Bsd.* (33 d) from Spain and Corsica; — **calvescens** *Bsd.* (33 d) on the other hand is a pale grey form with the yellow scaling all but obsolete, occurring in S. France, Italy, and Sicily; ab. **albescens** *ab. nov.* (33 d) is dull white, without grey dusting except in median area, the upper stigmata also whitish; hindwing paler. Of general occurrence throughout Europe and recorded from Asia Minor. Larva pale bluish green, with a darker dorsal vessel and broad pale spiracular stripe; head green; polyphagous on low plants.

*meridio-
nalis.*
calvescens.
albescens.

rufocincta.

A. rufocincta *Hbn.* (33 d, e). Larger than *flavicincta*, more dusted with dark grey; the median area between the inner and outer lines always dark grey, and a costal blotch before inner line; the yellow scaling developed along the two folds and the submarginal line; the lines and the markings more obscured; hindwing of ♂ dull greyish white, with cellspot, outer line, and submarginal band darker, of ♀ wholly dull grey, the outer line pale-edged; — **mucida** *Guen.* (= *farinosa* *Frr.*) (33 e) is a paler, more bluish grey form, with the yellow scaling much reduced; **flavidior** *ab. nov.* (33 e) is a more mealy looking insect with a strong yellowish tint, the orange scaling much developed; all the examples from Amasia, Syria, of which there is a long series of both sexes in the Tring Museum, and a single one from Akbès, are of this form. Not occurring in Britain, Scandinavia, or in the Spanish peninsula, otherwise found throughout Southern Europe, in Asia Minor and Syria. Larva yellowish green; the segmental incisions yellow; dorsal lines obscure, lateral lines yellowish white; tubercles black; spiracles black; head brownish; on all kinds of low plants.

mucida.
flavidior.

argillaceago.

A. argillaceago *Hbn.* (= *venusta* *Bsd.*) (33 e, f). Forewing brick yellow; the median area dull mealy green; the bands on each side of it rufous fulvous; lines blackish, generally ill-marked; claviform stigma small, obscure; upper stigmata yellowish with grey centres; marginal area beyond the very indistinct submarginal line, sometimes pale greenish grey; hindwing of ♂ white, of ♀ grey; ab. **deliciosa** *Oberth.*, from Algeria, in forewing is salmon pink, with grey or deep pink markings, with or without black dusting; cilia of hindwing pink. A local species found in Spain and S. France, S. Russia, Palestine, and Algeria. Larva greenish; dorsal line fine, dark; lateral lines whitish, edged above with yellow and with dark green below; the pale spiracles on a yellowish green ground; head green; feeds in autumn as well as in spring on various plants, among which are named *Cistus albidus* and *salviaefolius*, *Spartium junceum*, *Calycotome spinosa*.

deliciosa.

subvenusta.

A. subvenusta *Pueng.* (33 f). Forewing flesh-pink; the base of costa and inner margin, the outer half of median area, and the extreme termen suffused with fuscous-olive; veins dusted with dark and white; lines fuscous, dentate lunulate, the teeth tipped with white; submarginal line waved, but indistinct; upper stigmata pale, defined by brown; hindwing of ♂ white, of ♀ fuscous, with the costal area whitish. Palestine. Very close to *A. argillaceago*, but the outer line runs obliquely from costa to median vein, without the outward angulation below costa of that species.

millina.

A. millina *Pueng.* (33 f). Forewing fulvous dusted with blackish, and suffused with black on median area at inner margin and before submarginal line; lines black, conversely edged with yellow; orbicular and reniform stigmata with fulvous centres and yellowish annuli edged with black; submarginal line indicated by the dark suffusion before it; fringe yellow; hindwing whitish, with dark suffusion along median nervure, a dark sinuate outer line, and dark curved subterminal and terminal bands; a dark aberration, which may be called **nigrescens** *ab. nov.* has the black scaling both of body and wings greatly intensified, the whole median area being black; the pale yellow edges of the lines and the fulvous stigmata being rendered prominent; the hindwing also is much blacker. W. Turkestan.

nigrescens.

calamistis.

A. calamistis *Hmps.* (33 f). Forewing pale greenish ochreous, dusted with darker; lines dark, lunulate; the median shade distinct; upper stigmata large and pale; submarginal line indistinct, formed of pale spots,

preceded beyond cell by a blackish patch with two wedge-shaped marks; hindwing dull grey, darker towards termen; the veins, cellspot, and outer line darker. Described from a single ♂ from Dras, Kashmir.

A. dubia Dup. (= *caerulescens* Bsd.) (33 f). Forewing mealy whitish, speckled and clouded with pale grey, the median area and costa towards base with darker grey; the two lines grey but indistinctly marked; upper stigmata large, pale grey, diffusely edged, separated by a darker space formed by the median shade; subterminal line indicated by a grey shade preceding it; hindwing dull white, slightly grey along termen with a faint grey cellspot and outer line; the ♀ has the forewing darker grey, with the markings still darker and plainer, especially the median area; the hindwing grey-suffused; — in the form **typhonia** Mill. the forewings are marked with leaden grey; — in **rondoui** Stertz, from the Pyrenees, they are marked with steel-blue. S. France, Spain, Italy, Corsica. Larva reddish grey, pale rosy beneath; dorsal and subdorsal lines fine; small black tubercles on each segment; the spiracles small and blackish; lateral stripe yellow; feeds through the winter and spring, emerging in late autumn: on various low plants, *Centranthus*, *Calitrapa*, *Cistus*, &c.

A. apora Stgr. (33 g). Very much like *dubia*, but without the mealy appearance of that species, the speckling finer and thinner; the median area darker grey; the lines and stigmata clearer; hindwing of ♂ pure white, rarely with the veins terminally dark, of ♀ grey, blackish grey at termen. Palestine, and Syria, Beyrout and Amasia.

A. plumbea Stgr. Forewing pale grey, densely dusted with fuscous; inner line whitish, wavy; outer line strongly dentate, forming white points on veins; orbicular and reniform stigmata with whitish annuli, the former small and round; subterminal line pale, ill-defined; fringe white, with dark lunules; hindwing of ♂ pure white, the veins slightly darker towards termen; of ♀ fuscous. Palestine.

A. canescens Dup. (33 g). Forewing luteous whitish, rarely yellowish, with minute olive-fuscous irroration; the two lines blackish, conversely dentate-lunulate, approximated below vein 2, the teeth marked darker on the veins; upper stigmata large, pale, ill-defined, the reniform with a dark spot in middle; submarginal line defined by a zigzag grey shade before it; hindwing of ♂ white, or with the veins terminally dark; of ♀ dark greyish fuscous, base and fringe paler; in **asphodeli** Rmb. from Corsica, the broader forewing is darker, being more thickly irrorated with fuscous, and less clearly marked; the two upper stigmata stout and conspicuously pale; **pumicosa** H. G. is also darker, but much dusted with yellow; **ochracea** Spul. from Dalmatia has the ground colour yellow with the markings, especially the submarginal line, stronger and more continuous. A mediterranean species found in S. France, Spain, Italy, Dalmatia, the islands of Malta and Rhodes, in Asia Minor and Syria. Larva either pale green, with fine dark green dorsal line traversing a conspicuous reddish blotch on the middle segments; the spiracular line reddish, edged below with whitish; spiracles yellowish with brown rings; head small, brownish green; or dorsally the larva is vinous red with a yellow tinge, and pale yellowish green ventrally; feeding in spring on *Asphodelus microcarpus* and other plants.

A. illecebrosa Pueng. (33 g). Forewing grey suffused with dull olive brown, the outer area, except at costa, remaining greyer; an orange streak at base of submedian fold; lines double, blackish, filled in with grey; stigmata grey with partial orange outline; subterminal line pale, marked with orange scales, and shaded with darker on each side; fringe whitish with double black mottling; hindwing uniform fuscous brown. Kuku Nor, Tibet.

A. xanthomista Hbn. (33 h). Forewing greyish white, thickly dusted with blackish grey, the median area filled up with blackish; the edges of the lines and stigmata and the course of vein 1 picked out with yellow scales; the upper stigmata large and paler, the orbicular with a dark dot in middle; submarginal line preceded by wedged-shaped black marks; hindwing of ♂ white, with the veins blackish and sometimes a slight grey submarginal band before the blackish marginal line; of ♀ uniform dark grey; — **nigrocincta** Tr. (33 h), the more common form, is blacker, with the yellow scales more or less obsolete; — **nivescens** Stgr. (33 h) from the chalk district of the Jura, Switzerland, has the ground colour of the basal and marginal areas much whiter; — **statices** Gregs. (33 h, i) is a dark smaller race from the Isle of Man; its main difference is that the inner and outer lines edging the blackish median area are more distinctly and broadly white, especially below the middle; the amount of yellow scaling is variable. Found in Britain, France, Germany, Austria, Hungary, Switzerland, Spain, Italy, and S. Russia. Larva reddish-brown, thickly speckled with dark atoms, which form a dorsal and two broader subdorsal lines; tubercles white; spiracles white with black rings; feeds up in spring and summer on a variety of plants.

A. hostilis Pueng. (33 i). Forewing luteous grey, dusted with darker, the basal area suffused with dark fuscous, the terminal with brownish fuscous, the median area remaining pale, on inner margin extending to anal angle; lines obscure; claviform stigma absent; the other two very indistinct; submarginal line preceded by a dark blotch on costa, and by black teeth below middle; hindwing luteous white with the veins and terminal area dark; the fringe pale. Described from a single ♀ from W. Turkestan.

A. pentheri Rbl. Forewing yellowish ochreous, dusted with grey; lines dark grey, double, the outer dentate; the stigmata ill-marked; submarginal line denoted by a dark shade; hindwing ochreous, terminally brownish. Asia Minor. Evidently related to *calamistis* Hmps.

- kalchbergi*. **A. kalchbergi** *Stgr.* Forewing pale ashy grey, dusted with darker, the median area fuscous; inner and outer lines double, dentate-lunulate; orbicular and reniform stigmata small, dark-centred, with pale annuli defined by black; the claviform obsolete; subterminal line slightly defined; fringe pinkish yellow with double series of dark points; hindwing dark grey, the fringe as in forewing; underside of wings and body yellowish. Haifa, Syria. Quite a small species, perhaps not truly referred here.
- jonis*. **A. jonis** *Led.* (33 i). Exactly like the following species, *suda*, but darker, and with the hindwing wholly white except a faint submarginal band. Asia Minor.
- suda*. **A. suda** *H. G.* (33 i). Forewing pale bluish grey, more or less yellowish-tinged; the median area darker grey; lines dark grey, lunulate-dentate, closely approximated below middle; stigmata pale, slightly dark-edged, the reniform with a dark curved central line; terminal area grey beyond the faint submarginal line; hindwing in ♂ white, in ♀ grey with darker outer line, and submarginal band. Switzerland. The form **amasina** *Stgr.*, said to be darker blue-grey, marked with black and white, from Syria (Amasia) is probably referable rather to *jonis* *Led.*
- chi*. **A. chi** *L.* (33 i, 34 a). Forewing chalk white, grey-speckled; the lines double, grey; median area darker, the stigmata pale grey and conspicuous; the claviform at extremity edged with black and joined by a black dash to the inner blacker arm of outer line; submarginal line formed of whitish spots preceded by black wedged-shaped marks; hindwing of ♂ white with interrupted grey submarginal band; of ♀ blackish grey, with darker cellspot, veins, and outer line; the ♀♀ are always darker grey than the ♂♂; — **olivacea** *Stph.* (34 a) from Scotland is suffused throughout with olive grey; — **subcaerulea** *Graes.*, from N. E. Amurland, is dark bluish-grey in the forewing; — **suffusa** *Robson* is a dark grey form from the North of England, of which the ♂♂ are equally dark with the ♀♀; an extreme local development of this form from the neighbourhood of Huddersfield, Yorkshire, ab. **nigrescens** *Tutt* is nearly black; ab. **langei** *Harrison* (34 a) is like *olivacea* but the submarginal line is absent, and the black marks preceding it wholly or nearly obsolete. Fairly generally distributed through Europe, and found also in West and East Siberia. Larva green, finely dotted with yellow; dorsal and subdorsal lines whitish; spiracular line yellowish white, diffusely dark green above; feeds up in spring and summer on numerous moorland plants.

45. Genus: **Rhizotype** *Hmps.*

Tongue developed; palpi obliquely porrect upwards, the second segment beneath long haired, the third quite short, depressed; frons smooth and, like the vertex, thickly haired; thorax crested; abdomen with lateral tufts; antennae of ♂ with tuberculate fascicles of cilia; forewing elongate, the apex prominent, the termen crenulate. Larva on low plants in spring. The imago appears in the autumn. Type *R. flammea* *Esp.*

- flammea*. **R. flammea** *Esp.* (= *empyrea* *Hbn.*) (34 a, b). Forewing purplish grey-brown, the grey predominating in basal area; median area velvety blackish between subcostal vein and vein 1; the claviform stigma velvety black, followed by an elongated patch of ground colour along vein 2 which is black; orbicular reddish grey, oval and flattened, with pale annulus; reniform very large, creamwhite, containing two grey lines, angled acutely inwards along median vein; inner margin diffusely creamy white; a long black streak above it from near base; submarginal line paler than the ground colour, followed by a dark cloud; hindwing shining luteous brownish in outer half, with large dark cellspot and dark veins and outer line. Occurs in Britain, France, Spain, Dalmatia, Switzerland, Germany, Austria, and Hungary. Larva wood brown mottled with grey; a row of diamond-shaped reddish brown blotches traversed by the pale dorsal line; tubercles black, with white centres; subdorsal lines pale, with fine dark edges; spiracles yellowish white; feeds on *Ficaria ranunculoides*, Privet, Ash, &c.
- iodea*. **R. iodea** *Guen.* (34 b). Resembles the preceding, but smaller and duller; the inner margin of the ground colour, likewise the reniform stigma; hindwing of ♂ whiter. Found only in France and Spain. Larva said to feed on Broom and Sloe, probably on various low plants and shrubs.

46. Genus: **Stenostigma** *gen. nov.*

Differs from *Rhizotype* in the abdomen being without lateral tufts; the anal parts less developed; antennae of ♂ simple, with small sessile fascicles of cilia; the claviform stigma very narrow and acute; wings long and narrow, of sombre coloration, agreeing with that of the desert steppes of Central Asia where the various species are found. Type *Stenostigma curva* *Stgr.*

- remota*. **S. remota** *Pueng.* (34 b). Forewing smooth olive-tinted grey; the median area tinged with pinky brown; inner and outer lines black, conversely paler-edged; stigmata of the ground colour with black outlines; a black streak from base below cell, and one from claviform stigma to outer line; orbicular stigma very large and long, touching reniform; reniform also large and grey; submarginal line pale, with grey on each side; hindwing brownish grey, the fringe pale. Kuku Nor and Amdo, Tibet.
- poliorhiza*. **S. poliorhiza** *Hmps.* (34 b). Forewing dark brownish grey; the ordinary lines indistinct, wide apart; stigmata somewhat paler, with black outlines; claviform very narrow; orbicular elongate touching reniform;

an oblique row of black streaks between veins above and below middle; the veins blackish; hindwing dark grey, the veins and outer line darker. Yatong, Tibet. The ♀ only is known.

S. mongolica Stgr. (34 c). Forewing bluish grey, with slight dark irroration; a black streak below base of cell; inner and outer lines black, distinct, strongly angulated; claviform stigma narrow, pointed, black-edged; orbicular irregularly elongate, touching reniform at its base; reniform with fuscous centre and white ring, edged with black; submarginal line with the black shading before it strongly angled inwards on the two folds, and outwards on the veins, the margin beyond it darker; hindwing grey, darker towards termen, in ♀ wholly fuscous grey. Altai Mts., W. Siberia; Mongolia.

S. paucinotata Hmps. (= *subdetersa* Stgr.) (34 c). Forewing ashy grey, finely black-speckled; the markings all indistinct and interrupted, disposed as in *mongolica*; in the ♂ more bluish grey, with both folds tinged with dull pink; the marginal area beyond submarginal line darker; hindwing grey, darker terminally. The type of *paucinotata* was described by Hampson from Kashmir, that of *subdetersa*, by Staudinger from Kuku Nor, Tibet; both types are ♀♀; it is possible that *mongolica* Stgr. is a well-marked ♂ of the same species.

S. curva Stgr. (34 c). Forewing smooth pale luteous grey, slightly darker in the median and terminal areas; the inner and outer lines blackish, the former strongly angled outwards on submedian fold, the latter acutely inwards, the two angles connected by a black line; claviform stigma obsolete; orbicular oblique, elongate, touching base of reniform, both ill-marked, without dark edging; submarginal dark streaks as in the allied species; hindwing whitish in basal half, terminally fuscous; the veins and outer line darker; fringe whitish. Issyk-Kul, W. Turkestan; Kashgar, E. Turkestan.

47. Genus: **Athaumasta** Hmps.

Tongue present; frons smooth; frons and vertex both hairy; palpi obliquely upturned, the second segment hairy beneath, the third quite short; dorsum with slight tuft at base; forewing short and broad, the termen crenulate. Type *Athaumasta expressa* Led.

Sect. I. Antennae of ♂ bipectinate.

A. expressa Led. Forewing greyish white, dusted with blackish, varied in places with orange scaling; inner and outer lines blackish, double, filled in with pale; claviform stigma slight, black-edged; orbicular and reniform orange at centre ringed with whitish and outlined with black; submarginal line lunulate, whitish, the lunules filled in with black; fringe mottled, black and white; hindwing white, suffused with fuscous, except along costa, with diffuse sinuate inner, outer, and submarginal bands. Some examples are much more strongly marked with orange than others, both on thorax and forewings; these constitute the form **ochracea** Stgr.; on the other hand **nana** Stgr. is a small form, with the dark tints of the forewing condensed. The species occurs only in Asia, W. Turkestan, W. Siberia, and Mongolia.

A. siderigera Chr. Forewing blackish, the lines black; inner and outer lines conversely lunulate and edged with white; orbicular stigma with stout white annulus; reniform with a white spot externally; subterminal line dentate with white spots on each side; fringe mottled black and white; hindwing grey, with darker cellspot and diffused outer lines. Sajon Mts., E. Siberia.

Sect. II. Antennae of ♂ with sessile fascicles of cilia.

A. cortex Alph. Forewing ochreous, irrorated and in parts suffused with rufous and fuscous; a dark streak below base of cell; lines double, dark, filled in with white; claviform stigma black-edged; upper stigmata with fuscous centres and edging and pale annuli: subterminal line pale, dentate, preceded by rufous; the veins towards termen dark; hindwing yellowish white, the veins and terminal space with redbrown dusting; the cellspot, outer sinuous punctiform line, and a diffuse subterminal band darker; the form **corticula** Pueng. is greyer, suffused with dark brown. W. and E. Turkestan.

48. Genus: **Bryomima** Stgr.

Distinguished from the allied genera by the head and thorax being clothed with hair only, with but a few scales intermixed; the thorax smooth, without crests; the tibiae fringed with long hair on outer side; antennae with sessile fascicles of cilia. Imagos of comparatively small size. Type *Bryomima carducha* Stgr.

B. johanna Stgr. (34 d). Forewing whitish ochreous, slightly dusted; median area faintly olive brownish; a black streak below base of cell; inner and outer lines black, conversely white-edged; claviform stigma quite small, emitting a black streak to outer line; the upper stigmata distinct, brownish at centre with white rings and black outlines; submarginal line faint, defined by the dark terminal area beyond it; hindwing white, with slight rufous grey tinge along veins and termen. Recorded only from Palestine.

B. centralasiae Stgr. (= *modesta* Moore) (34 d). Forewing olive grey tinged with yellowish, thickly sprinkled with dark grey; inner and outer lines double, blackish, filled in with ground colour, the area between

- them slightly darker: claviform stigma insignificant; the two upper paler, with grey centres and ochreous grey annuli; subterminal line pale, sinuous, the terminal area beyond it darker; hindwing dark fuscous, the fringe whitish; the ♀ is generally darker, with less yellow, than the ♂; — **transversa** Moore (= *asiatica* Alph.) (34 d), has the basal and terminal areas paler grey more varied with yellow scales, the median area more prominently darker. Recorded from W. Turkestan, and Kashmir; also from N. India.
- extrita.* **B. extrita** Stgr. (34 d). Forewing greenish grey, dusted with darker grey, the median area darkest, showing a waved dark median shade; the filling up of the lines, the annuli of the stigmata, and the submarginal line white, instead of ochreous grey, as in *centralasiae*; hindwing blackish grey. W. and E. Turkestan and Mongolia.
- tenuicornis.* **B. tenuicornis** Alph. (34 e). Forewing pale olive grey slightly tinged with fleshcolour in ♂, more strongly in ♀, the median area darker; inner and outer lines blackish, the latter strongly dentate-lunulate; median shade distinct; orbicular and reniform stigmata pale grey with whitish annuli; submarginal line pale, slightly defined by darker on each side; hindwing brownish fuscous, paler at base; the fringe whitish. W. and E. Turkestan.
- chamaeleon.* **B. chamaeleon** Alph. (34 d, e). Forewing pale grey, with dense dark grey irroration, and a faint olive tinge; inner and outer lines thick, olive fuscous, the former wavy and oblique, the latter lunulate-dentate, widely separated on costa, but approximated on inner margin; the median area in cell and beyond it darker; claviform stigma subquadrate, dark grey with blackish outline; upper stigmata large, whitish grey; submarginal line indicated by slight grey lunules; hindwing fuscous grey, darker beyond the curved outer line. W. and E. Turkestan and Kashmir; also N. India.
- virescens.* **B. virescens** Hmps. (34 e). Forewing olive grey, thickly dusted with darker, with yellowish scales intermixed; lines hardly darker; upper stigmata paler, large, defined mainly by the darker grey spaces on each side of them; submarginal line yellowish, wavy, preceded by a grey cloudy shade; hindwing dark fuscous, with dark outer line and a slight pale mark from anal angle. Kashmir. The ♀ does not differ at all from the ♂.
- carducha.* **B. carducha** Stgr. (34 e). Forewing greyish ochreous, thickly sprinkled with blackish; the median area darker; lines grey, indistinct; claviform stigma small; upper stigmata with dark centres, edged with ochreous and outlined with black, the orbicular round and small; submarginal line shown by a series of grey spots; fringe ochreous and fuscous; hindwing fuscous, with basal and inner marginal areas paler. Syria and Mesopotamia. The antennae of the ♂ are almost simple.

49. Genus: **Euxenistis** *gen. nov.*

Distinguished from the next genus *Blepharidia* Pueng. by the dorsum bearing tufts; by the pectinated antennae of the ♂, the pectinations being thickened and bent forward at extremity; and by veins 6, 7 of hindwing being stalked. Type *Euxenistis amicina* Stgr.

- amicina.* **E. amicina** Stgr. (34 f). Forewing greyish pink, dusted with olive brown; the median area suffused with olive brown, except the stigmata and costal streak; costa and terminal area with a lilac grey tint; lines pale, obscure; upper stigmata of the pale ground colour with somewhat paler annuli; subterminal line indicated mainly by the darker olive shade beyond it which is stronger on the two folds; hindwing brownish grey, darker terminally. Tibet, Kuku Nor.

50. Genus: **Blepharidia** Pueng.

Tongue present; palpi obliquely porrect, second segment long-haired below, third slender, smooth; frons and vertex rough-haired; vestiture hairy; dorsum without crests; antennae of ♂ with fasciculate cilia; veins 6, 7 of hindwing from end of cell. Type *Blepharidia lama* Pueng.

Sect. I. Antennae of ♂ with pedicellate fascicles of cilia.

- grumi.* **B. grumi** Alph. (34 f). Forewing lilac-grey; the median and terminal areas olive-brown; the costal area, the inner margin, and the veins lilac grey; lines blackish, conversely edged with grey; claviform stigma brown, black-edged; orbicular grey, reniform white, both black-edged, with fuscous centres; the orbicular round; subterminal line emphasised by the darker edge of the terminal area, preceded on costa by a dark blotch and in middle by 3 wedge-shaped marks; fringe with double dark line and pale mottling; hindwing brownish, with the fringe pale; in the ♀ the grey areas of forewing are darker, and the submarginal line whiter. Kuku Nor, Tibet.

Sect. II. Antennae of ♂ with serrate fascicles of cilia.

B. costalis *Btlr.* (34 f). Forewing dull greyish brown; the lines dark but indistinct; the costal area *costalis*. ochreous white, its inner edge sinuous, touching submedian fold at base, and subcostal vein in middle of wing, then triangularly swollen to include the reniform stigma and running out to a point at apex; the reniform represented by two brown lines preceded by a brown spot; fringe ochreous; hindwing brownish, paler towards base; fringe ochreous; head and shoulders ochreous white like costal stripe; thorax and dorsum brown; Yokohama, Japan. The ♀ only known.

B. anachoretoides *Alph.* Forewing fuscous; the veins ochreous; claviform stigma small, black-edged; *anachoretoides*. orbicular and reniform yellowish white with black outline, the former round, the latter angled inwards and emitting a fascia along median vein to base; outer and subterminal lines ochreous, the latter preceded by a dark costal blotch; hindwing brownish ochreous, dark brown terminally. Kuku Nor, Tibet.

B. paspa *Pueng.* (= *grumi* *Alph. praeoc.*) (34 f). Forewing with median area, except at costa and *paspa*. inner margin, and terminal area deep olive brown; the basal and submarginal spaces paler olive brown mixed with lilac grey; lines double, dark, filled in with lilac grey, conversely oblique towards inner margin; a black streak on submedian fold near base; claviform stigma small, dark brown, black-edged; orbicular and reniform with brown centres, whitish annuli, and black outlines, the former oblique and elongate; submarginal line pale, preceded by a pale olive brown shade, the terminal area beyond it much darker; hindwing brownish fuscous, with a darker, pale-edged, outer line. Kuku Nor and Gyantse, Tibet; Kashmir.

B. lama *Pueng.* Resembles the preceding, but the orbicular stigma is round; in the basal area is *lama*. a patch of green scales above vein 1, with some black scales on its inner edge. Kuku Nor, Tibet.

B. dianthoecina *Stgr.* (= *montana* *Leech*) (34 g). Forewing golden olive-brown; some yellow and white *dianthoecina*. scaling below base of cell, containing short black marks; lines black, conversely white-edged; claviform black-edged, of the ground colour; orbicular and reniform with brown centres and white annuli, outlined in black, the former round; a blotch of whitish scales on inner margin beyond outer line; submarginal line white, with a few dentate black marks before it; fringe with fine white mottlings; hindwing pale olive brown, with a paler outer line; the ♀ is darker, more suffused with fuscous. Tibet and W. China.

Sect. III. Antennae of ♂ simply ciliated.

B. conspicua *Leech* (34 g). Forewing black brown, with slight whitish irroration; inner line repre- *conspicua*. sented by white dashes on costa and inner margin and a spot on median, which is met by a whitish streak from below base of cell; outer line black followed by grey, marked by a white bar on costa, and white lunules on submedian fold; orbicular and reniform stigmata white with brown centres; submarginal line whitish, interrupted, accompanied by rufous scaling; fringe mottled black-brown and white; hindwing dark-brown, the base pale. Described by Leech from a single ♂ from Ta-chien-lu, W. China.

B. griseirufa *Hmps.* Forewing coppery red with grey mottling, the terminal area greyish; inner *griseirufa*. and outer lines double, filled in with grey; orbicular and reniform stigmata very small, the latter with a pure white spot at centre; subterminal line marked only by the difference of colour; fringe coppery red; hindwing shining grey brown. Occurs at Yatong, Tibet; described in the first place from India.

B. sublimbatus *Pueng.* Forewing dark brownish grey, the scaling dull and coarse, the lines dark but *sublimbatus*. obscure; the inner curved, the outer dentate, the submarginal waved; a yellow line at base of fringe; hindwing fuscous, the fringe yellowish; underside of both wings with a pale terminal band.

51. Genus: **Dimya** Moore.

This genus differs scarcely at all from the preceding; the thorax is clothed wholly with hair, without any admixture of scales and without crests; the abdomen is laterally more strongly fringed with hair; antennae of ♂ with sessile fascicles of cilia. Type *Dimya sinuata* Moore from India.

D. fulminea *Leech* (34 g). Forewing dull dark redbrown, all three margins paler, suffused with grey; *fulminea*. the inner and outer lines pure white, slender, meeting above middle of inner margin, the inner oblique and straight, the outer angled outwards at vein 5, then incurved; orbicular and reniform stigmata large, greyish-red, irregular in shape; hindwing redbrown, darker towards termen. Described by Leech from a single ♀ from Ta-chien-lu, W. China.

D. junctura *Hmps.* (34 g). Forewing with the median area below middle yellowish olive; the clavi- *junctura*. form stigma and the cell and space beyond reniform deep purplish-brown; the costal streak, upper stigmata, and lines pinkish ochreous; the basal and terminal areas a mixture of yellow olive and fuscous; reniform stigma large and sinuous, prolonged thickly along median vein to touch the orbicular; inner line oblique, outer angled outwards at veins, then oblique inwards, its upper part followed by a pale space; veins towards margin grey; some deep black marginal lunules; hindwing dull greyish fuscous, paler in basal half. Originally described from Sikkim, India, but found also at Yatong, Tibet.

- endroma.* **D. endroma** *Swinh.* (34 g). Forewing deep russet brown with an olive tinge; inner and outer lines narrowly double, brown filled in with bluish silvery, the inner oblique and straight, but sharply angled on vein 1, the outer bluntly elbowed outwards at vein 5, then oblique inwards; the basal area and a broad band beyond outer line thickly frosted with bluish silvery, filling up in the latter case the teeth of the submarginal line; upper stigmata indistinct, with orange annuli and slight bluish dusting; the costal area, a median shade, and the terminal veins also slightly bluish; fringe and extreme termen brown; hindwing bluish grey, freckled with olive, with darker cellspot and outer line; fringe orange rufous; ab. **inornata** *ab. nov.* (34 g), has the ground colour deeper red and the silvery bluish dusting on each side of the median area absent; ab. **cuprea** *ab. nov.* (34 g), has the median and basal areas olive brown, and the stigmata, the inner margin, and the outer area beyond outer line a dull olive yellow-brown, the dentate submarginal line showing darker; fringe of both wings of the same tint. Described from Sikkim, N. India, occurring in Yatong, Tibet.
- hampsoni.* **D. hampsoni** *Leech* (34 h). Forewing black brown, deepest in the median area, sparsely irrorated with blue scales; lines orange brown, the inner straight and oblique to below vein 1, then acutely angled and running inwards nearly to base; the outer excurved, and running inwards along inner margin to inner line; stigmata grey brown, dusted with blue, edged with dull orange, the reniform produced along median vein to touch the orbicular; submarginal line yellow brown, preceded and followed by black teeth; hindwing brownish fuscous, the fringe yellowish. W. China; apparently common.
- dentata.* **D. dentata** *Hmps.* (34 h). Forewing rufous brown, the basal and postmedian areas suffused with bluish grey in the ♂; darker, more purple brown in the ♀, the suffusion purplish grey; inner and outer lines double, filled in with bluish grey; the outer dentate at middle; stigmata blue grey, the orbicular large, oblique; the reniform very narrow; claviform small and dark; terminal area brown, limited by the submarginal line; hindwing luteous grey, with darker cellspot, outer line, and submarginal shade. Also an Indian species, but occurring at Yatong, Tibet.
- albiluna.* **D. albiluna** *Hmps.* (34 h). Forewing dark purple brown, dusted with bluish white scales except in lower half of median area; lines blackish, double, filled in with grey; claviform stigma dark, black-edged; orbicular round, dusted with bluish, and edged with black; reniform with an ochreous white lunule on its outer edge; submarginal line yellow brown with dark shades on each side; hindwing as in the last species. Yatong, Tibet; described from 2 ♀♀ only.
- cuprescens.* **D. cuprescens** *Hmps.* (34 h). Forewing cupreous brown, with a purplish grey tinge, especially in basal and postmedian areas; lines and stigmata indistinct, except the reniform which is white with a narrow dark lunule; subterminal line represented by the contrast between the grey and cupreous areas; hindwing ochreous white at base suffused with cupreous brown, darkest at termen. Described from a single ♀ from Yatong, Tibet.
- sikkimensis.* **D. sikkimensis** *Moore* (34 i). Forewing dark grey, suffused with fuscous and dusted with faint yellowish scales; inner and outer lines black, conversely edged with pale grey; claviform stigma of the ground colour, outlined with black; orbicular small, whitish, defined by black; reniform white with black centre and outline; subterminal line of whitish lunules, bordered with dark; hindwing dull greyish white in basal half, dark grey in terminal, with outer line and submarginal shade. The ♀ has the whole forewing suffused with dark, the stigmata and lines all obscured. Chumbi Valley, Tibet, also occurring in India. Quite a small species.
- herchatra.* **D. herchatra** *Swinh.* (34 i). Forewing deep black brown, irrorated with yellow; veins purplish grey, marked in places with whiter; a yellow, somewhat triangular, patch at base of submedian interval; lines deep black, obscure, but conversely edged with purplish grey; claviform dark, indistinct; orbicular and reniform with grey-dusted centres and yellow lateral edges; subterminal line yellow, externally edged with black, interrupted by the pale veins; fringe olive brown, the basal half dark and spotted with yellow, the apical half yellowish; hindwing luteous, tinged with grey; the cellspot, outer line, submarginal shade and veins darker; fringe yellow and grey. Yatong, Tibet. Described originally from India.

52. Genus: **Dasy sternum** *Stgr.*

Tongue present; palpi obliquely porrect, the second segment long-haired, the third smooth; head and thorax hairy, without crests; abdomen, pectus, and legs hairy; wings with the termen not crenulate. Type *Dasy sternum tibetanum* *Stgr.*

Sect. I. Antennae of ♂ bipectinate.

- lea.* **D. lea** *Stgr.* Forewing whitish, thickly dusted with pale reddish; lines grey, conversely whitish-edged; submarginal indistinct preceded by a dark costal shade; median shade distinct; upper stigmata pale, ill-defined; hindwing yellowish-white, with diffuse dark outer line. Palestine only.

D. juditha Stgr. (34 i). Forewing pale yellowish, with slight brown grey irroration, which is strongest *juditha*. in cell and along submedian interspace; lines grey, edged with yellowish, the outer dentate on the veins; sub-terminal line pale, also dentate, preceded by a brownish shade; orbicular stigma yellow with brown centre; reniform large and yellowish with a grey line in it; hindwing brownish ochreous, darker along termen; fringe yellowish white. Palestine.

D. bacheri Pueng. (34 i). Forewing rufous ochreous with grey suffusion, strongest in lower half of *bacheri*. median area and beyond inner line; the lines as in *juditha*; orbicular stigma pale, round; reniform larger, both defined by brown; subterminal line preceded by dentate dark marks; hindwing ochreous white with brown outer line and suffused submarginal cloud. Like the preceding from Palestine.

Sect. II. Antennae of ♂ serrate with sessile fascicles of cilia.

D. haeretica Pueng. (34 i). Forewing dirty white with grey irroration; inner and outer lines slender, *haeretica*. blackish, the inner waved, the outer dentate; the cell fuscous, defining the stigmata, which are of the ground colour edged with black; outer line followed by a dark suffused band which is outwardly limited by the submarginal line; hindwing pale dull grey. W. Turkestan.

D. anceps Stgr. Forewing dull white with fuscous dusting, the median and terminal areas suffused *anceps*. with fuscous, also the base of cell; the two lines indistinct; upper stigmata pale, ill-defined; outer line followed by a pale space; submarginal line obscurely marked, the terminal area beyond it darker; hindwing yellowish white, tinged with fuscous, darker towards termen in ♂, in the ♀ more uniformly fuscous except along costa. Syria and Palestine.

D. eristicum Pueng. (34 i). Forewing redbrown on a grey ground; lines indistinct and partially inter- *eristicum*. rupted, marked clearly only on costa; a dark suffusion along inner margin near base; stigmata pale but indistinct; submarginal line preceded on costa by a dark patch, the termen dark beyond it; fringe mottled brown and whitish; hindwing paler redbrown, with darker cell spot, outer line, and submarginal shade. Aksu, Mongolia.

Sect. III. Antennae of ♂ lamellate, simple.

D. tibetanum Stgr. (35 a). Forewing slaty grey dusted with dark grey, on a dull yellowish ochreous *tibetanum*. ground, which shows in the stigmata, along the course of the lines, and at base of submedian interspace; lines black, distinct, the inner double, waved, the outer dentate-lunulate; stigmata grey and yellow; submarginal line dull yellowish, the terminal area beyond it dark grey; termen spotted, dark and light; fringe grey; hindwing uniform brownish fuscous with pale yellow fringe. Kuku Nor and Amdo, Tibet; Ta-chien-lu, W. China.

53. Genus: **Dasythorax** Stgr.

Resembles *Dasyternum* in most respects, but the forewing has the apex and outer margin strongly rounded. Type *Dasythorax polianus* Stgr.

D. polianus Stgr. (35 a). Forewing olive grey dusted with ochreous scales, the central area rather *polianus*. darker grey, especially above inner margin; lines thick, dark grey, the inner oblique, sinuous; the outer dentate; stigmata faint, with indistinct outlines; submarginal line just traceable; fringe whitish, faintly chequered. W. and E. Turkestan.

D. anartinus Pueng. (35 a). Like *polianus*, but with a dark patch on costa beyond subbasal line; *anartinus*. the stigmata obsolete; a diffuse median shade obscuring the inner median area; submarginal line a series of indistinct yellowish spots, preceded by dentate dark marks; fringe mottled yellowish and fuscous; hindwing greyish fuscous with slight purple gloss; fringe yellowish white. W. Turkestan.

D. hirsutula Alph. (35 a). Forewing olive grey, the lines and stigmata showing paler; inner line oblique, *hirsutula*. outer incurved and dentate; submarginal interrupted into pale spots; fringe grey; hindwing pale dingy grey, with the veins dark. Kashgar, E. Turkestan; ? Switzerland, the Engadine.

D. hirsuta Stgr. (35 b). Forewing olive fuscous dusted with darker, almost totally obscuring the *hirsuta*. underlying ochreous ground colour, which shows only on the edge of the dark lines, especially the submarginal; reniform only a slight dark lunule; fringe deep, the basal half fuscous, the outer mottled with paler; hindwing glossy grey, the fringe pale. Switzerland; Persia, W. Turkestan.

D. rasilis Pueng. (35 b). Like *hirsuta*, but paler and longer-winged; the markings more visible; *rasilis*. underside uniform glossy ochreous grey, without any markings. Issykkul, W. Turkestan.

D. simplex Stgr. (35 a, b). Forewing glossy mouse-grey, with two very faint darker lines and linear *simplex*. cell-mark; the outer line bisinuate, outcurved in upper, incurved in lower half of wing; a fine yellowish line at base of fringe; hindwing grey, paler near base. Kuldja.

glebicolor. **D. glebicolor** *Ersch.* (35 b). Forewing greyish yellow, overlaid with olive fuscous suffusion; lines thick, blackish; inner waved, and projecting below median vein, with a yellow tinge before it; outer line followed by a yellow space, outcurved above, incurved below median, then vertical; reniform a distinct blackish spot; submarginal line preceded by dark grey shading and followed by yellowish; fringe slightly mottled; hindwing greyish ochreous with sometimes a faint reddish tinge; a dark cell spot, outer line, and submarginal shade; underside glossy ochreous grey, with distinct black cellspot in hindwing. W. and E. Turkestan; Amurland.

daishi. **D. daishi** *Alph.* Forewing redbrown; lines black; the inner waved, vertical; the outer excurved above, then oblique; stigmata marked only by a quadrate black interval; subterminal line marked by a slight shade below costa; hindwing redbrown, with pale fringe. Setchuen, W. China.

submarginata. **D. submarginata** *spec. nov.* (35 c). Like *D. rasilis*, but with the yellow spaces more marked, especially the edging of outer line towards costa; the underside of both wings is glossy ochreous, but with a broad well-defined dark marginal border, which shows itself on the upper side also, especially of the hindwing. A single ♂ in the Tring Museum from between Osch and Usgent, Turkestan, July—August.

54. Genus: **Rhynchaglaea** *Hmps.*

Tongue well-developed; palpi long, porrect, the second segment somewhat hairy below, the third long, porrect, and spatulate; vertex and frons thickly tufted; pectus and femora woolly; thorax and abdomen smooth; antennae of ♂ ciliated. Type *Rhynchaglaea scitula* *Btlr.*

scitula. **R. scitula** *Btlr.* ♂. Forewing dark purplish-brown in median area, rufous with many striae in the basal and outer areas; inner and outer areas double, filled in with rufous, wavy and dentate; upper stigmata small, with rufous outlines; submarginal line pale, preceded by dark suffusion at costa and some tooth-shaped brown marks below, the terminal area beyond it, except at apex, purple brown; hindwing brownish-fuscous; ♀ paler, the ground colour being ochreous brown to bright rufous. Yokohama, Japan.

lepida. **R. lepida** *Btlr.* Forewing shining rosy brown; inner and outer lines slender, irregularly dentate, blackish; orbicular and reniform stigmata conjoined with a black basal streak below median vein; a bisinuate submarginal series of brown spots with pale edges; hindwing fuscous, darker towards termen, with the fringe pale. Japan.

55. Genus: **Eupsilia** *Hbn.*

Tongue present; palpi short, second segment hairy, third, small and smooth. Antennae of ♂ with sessile fascicles of cilia; vertex and frons strongly tufted; pectus and femora hairy; thorax and abdomen smooth, except a slight crest on prothorax; abdomen laterally fringed; wings with termen crenulate. Larva feeds up in early summer on various trees; the imago emerges in autumn and hibernates. The larva is active and of carnivorous habits. Type *Eupsilia satellitia* *L.*

satellitita. **E. satellitia** *L.* (= *transversa* *Hufn.*) (35 c). Forewing grey brown, with deeper suffusion; inner and outer lines fine, and more or less erect, the inner straight, the outer waved; a bent median shade, one before the inner line, and another close beyond the outer; submarginal line pale, interrupted, preceded and followed by dark shades; claviform and orbicular stigmata obsolete; reniform in the type form orange yellow, with a white dot above and below it; fringe concolorous, preceded by pale marginal lunules; hindwing fuscous brown. Linné's type form, showing a yellow reniform with two white dots, especially in combination with the grey brown ground colour, is decidedly rare; as a rule, when the reniform is yellow, the tendency is for the upper, and often the lower also, of the two dots to become yellow also; when all 3 spots are deep reddish orange we have the form **brunnea** *Lampa* (35 c); **albipuncta** *Strand* (35 d) is the form with white reniform, in which the dots also are always white; the term **rufescens** *Tutt*, in which the ground colour is more or less rufous-tinged, would apply to the more ordinary European form as well as to the British. Larva velvety brown black; dorsal and subdorsal lines obscurely paler; spiracular line swollen on segments 1, 2, 5, and 11 into snow white spots; head pale brown; polyphagous on trees and shrubs. Throughout Europe, and found also in Asia Minor, Armenia, W. Siberia, and W. Turkestan.

tripunctata. **E. tripunctata** *Btlr.* (35 d). Forewing violaceous grey, with a purple gloss; the lines dull chocolate brown; the submarginal indicated only by the brown shade preceding it; reniform stigma and the spots at each end twice the size of those in *satellitita*, creamy white, sometimes yellowish-tinged, especially the upper of the two smaller ones; hindwing brown grey, with the costal area pale. Japan. This appears rightly a distinct species from *satellitita*.

quadrilinea. **E. quadrilinea** *Leech* (35 d). Forewing pale rufous tinged with violet grey; the lines rufous, nearly erect; subbasal reaching submedian fold, as usual; the inner and median slightly inbent on submedian fold;

submarginal indicated only by a dentate-lunulate darker shade preceding it; a slight dark cellspot at lower end of cell; hindwing rufous fuscous. Japan.

E. strigifera *Btlr.* (35 d). Forewing rufous dusted with grey and fuscous; lines pale ochreous, nearly *strigifera*. straight, slightly oblique inwards, and edged basewards with darker, the inner and outer also somewhat concave; faint blackish points at ends of cell; subterminal line ochreous, preceded by a deeper rufous shade, touching termen at end of vein 2 and angled inwards; hindwing greyish rufous. Japan.

56. Genus: **Epiglaea** *Grote.*

Tongue present; palpi porrect, short, the 2nd segment long-haired below, the 3rd short; antennae of ♂ subserrate, with sessile fascicles of cilia; vertex and frons thickly haired; thorax with a triangular crest; pectus and femora woolly; abdomen without crests, flattened, with lateral fringes of hair. Type *Epiglaea decliva* *Grote.* from N. America.

E. contracta *Btlr.* (35 d, e). Forewing dark brown, grey brown, or rufous; lines pale; inner straight *contracta*. and oblique; outer vertical from costa to vein 5, then oblique, slightly concave, inwards; submarginal sinuous, the terminal area beyond it darker; upper stigmata large, fuscous, with pale outlines; hindwing greyish fuscous, with large dark cellspot, Yokohama, Japan.

57. Genus: **Orbona** *Hbn.*

Distinguished from *Conistra* by the larger size, longer legs, and produced apex of forewings; and structurally by the different form of the anal claspers. Type *Orbona fragariae* *Esp.*

O. fragariae *Esp.* (= *domiduca* *Blk.*, *orbona* *Rossi*, *serotina* *Ochs.*) (35 e). Forewing rufous brown, dark *fragariae*. brown, or pale brown, in dark examples thickly peppered with black; veins towards termen finely pale; inner line oblique and straight, outer sinuous, rarely well-defined; median area rather darker; upper stigmata large and pale; submarginal line nearly straight, dark brown edged externally with pale ochreous; hindwing blackish fuscous with an olive tinge, the basal half paler, with a large dark cellspot; the abdominal margin beyond submedian fold, the termen irregularly, and the fringe yellow; segments of dorsum fringed with yellow; the form, **pallidior** *nov.* (35 e, f), from Japan, is paler, the submarginal line preceded by a dark shade. Larva deep yellow, *pallidior*. redder on dorsum, paler beneath; head brown; on various low plants and grasses. Found in Switzerland, Italy, Germany, Austria, Hungary, Roumelia, and S. Russia; in Asia, in Siberia, Amurland, and Japan.

58. Genus: **Xantholeuca** *Stph.*

Tongue present; palpi thickly haired above and below, the terminal segment depressed and rostriform, in a line with the slope of the frontal tuft; antennae of ♂ ciliated; prothorax with an erect triangular crest; pectus and femora woolly; abdomen flattened, with lateral fringes of hair. Larva on trees in early summer; thick, with large round head, humped 11th segment, and horny thoracic plate; the imago emerges in late autumn and hibernates. Type *Xantholeuca croceago* *F.*

X. croceago *F.* (= *aurantiagio* *Don.*) (35 f). Forewing dark yellow, thickly irrorated with orange red, *croceago*. in a few instances with blackish dusting; the costa with 4 white dashes in median area; lines generally marked with olive grey, sometimes blackish; inner line pale, waved, edged externally by darker, angled outwards in submedian interval; outer line at $\frac{3}{4}$, curved, marked by dark veinspots; upper stigmata large, pale orange, with yellow annuli, the reniform S-shaped and projecting outwards below cell; median shade broad, dark grey, running from inner margin to outer dark edge of reniform, along which it appears to run, its upper arm from costa above orbicular being more or less obscured and often obsolete, distinct only in the darker orange and black-speckled examples; submarginal line grey, sinuous; veins towards termen often darker; hindwing white, slightly pinkish-tinged, with cellspot and outer line; fringe white; — **fulvago** *Esp. nec L.* (35 f) has the *fulvago*. orange suffusion deeper, the dark irroration stronger, the upper arm of median shade well-marked; **corsica** *corsica*. *Mab.* (35 f), from Corsica, is of a very pale biscuitcolour, the irroration and lines very pale olive brownish; the stigmata large and pale, without annuli or centre; hindwing whiter. Larva yellowish grey dotted with dark red; the tubercles white; dorsal line pale, inconspicuous; on segments 4—11 a row of brown V-shaped marks; 11th segment with a slight hump and two broad white spots behind it; head large, redbrown, pale-dotted; feeding in May and June on oak-bushes. Of general occurrence in Europe; also in Algeria, Asia Minor, and Armenia.

X. sericea *Btlr.* (35 f). Quite distinct from the European *croceago*, from which it differs as follows; *sericea*. the white costal dashes are less conspicuous but more continuous, and reach to near apex; the ground colour is always deeper orange, like the tint of the ab. *fulvago*, and more uniform; the two stigmata are larger and plainer, with distinct yellow annuli, the orbicular S-shaped as well as the reniform; the lower arm of the median shade runs to the inner edge of the reniform and is clearly connected with the upper arm; the outer line is grey, conti-

nuous, and double, more prominent than in *croceago*; the submarginal line, on the contrary, instead of being grey and conspicuous, is yellowish, waved, with slightly deeper edge; hindwing more strongly pink-tinged, especially towards termen. E. Siberia: Japan. The different position of the median shade is a sure criterion.

59. Genus: **Conistra** *Hbn.*

Differs from *Xantholeuca* in the prothorax having no distinct erect crest; in the frons having a diffuse, rounded tuft; in the non-rostriform palpi, the third segment being merely depressed and smoothly scaled. Larva feeding up in spring and early summer on trees and shrubs; the imago emerging in autumn and hibernating. Type *Conistra veronicae* *Hbn.*

Sect. I. Antennae of ♂ with lateral scale-tufts on each segment accompanied by very long curved bristles.

evelina. **C. evelina** *Btlr.* (35 f). Forewing greyish rufous; the veins finely paler; inner and outer lines fine, pale, wavy, conversely edged with rufous; submarginal line formed by black or deep rufous spots between the veins; upper stigmata, sometimes unicolorous, generally darker at centre, with distinct fine pale annuli; the angled median shade dark and distinct; hindwing fuscous, darker before termen; fringe pale rufous. Japan only.

Sect. II. Antennae of ♂ with sessile fascicles of cilia.

castaneo-fasciata. **E. castaneofasciata** *Motschl.* (= *fornax* *Btlr.*) (35 g). Very much like *rubiginea* *F.*, perhaps only the larger Japanese form thereof. The ground colour warmer, more fulvous rufous; the spots forming the lines more fuscous than black; the terminal area not so dark; hindwing paler, rufous along costa and termen, before which there is a distinct grey submarginal band; in the European *rubiginea* the hindwing is uniformly dark fuscous. Japan. STAUDINGER, ignoring MOTSCHULSKY, as usual, sinks *fornax* *Btlr.* as a synonym of *rubiginea* *F.*, but it is, at least, as good an aberration as the three he admits.

eriphora. **C. eriphora** *Pueng.* (35 g). Forewing ashy grey; the median area more rufous; a fine black streak from base along submedian fold reaching the small black claviform stigma; lines pale, with darker edges; the inner oblique to submedian fold, there angled; the outer sinuous, excurved above middle; subterminal line pale, defined internally by small black dentate markings; orbicular and reniform small, outlined in black, the former oblique and pointed; hindwing brownish, the fringe pale. Aksu, Mongolia.

erythrocephala. **C. erythrocephala** *F.* (35 g). Forewing dull redbrown, suffused to a greater or less degree with grey; lines obscure, indistinctly double; the submarginal with a darker blotch before it on costa; upper stigmata generally filled up with grey, with paler brown-edged annuli, often obscure and unicolorous: the reniform generally with black spots round its lower end; hindwing greyish fuscous; the fringe pale ochreous; in ab. **glabra** *Hbn.* (35 g) the ground colour is darker, more purplish-brown, with the costal streak, the two stigmata, and a submarginal fascia pale grey; the lines are also generally paler and more evident; — ab. **impunctata** *Spul.* (35 g) has the reniform stigma unmarked by black points, the other markings being often in these cases more obscure, and the ground colour striated with dark; in **pallida** *Tutt* (35 g) the dark ground colour is overlaid and hidden by pale grey suffusion. Larva grey brown or yellowish-brown; dorsal and subdorsal lines fine and pale, the latter sometimes obsolete; the dorsum dotted with white; spiracles black; feeding first on oak, and then on various low growing plants. Britain, France, Germany, Austria, Hungary, Switzerland, Italy, Russia, (Livonia), Denmark, Sicily, and in Asia Minor, (Amasia).

vau-punctatum. **C. vau-punctatum** *Esp.* (= *silene* *F.*) (35 h). Forewing rufous or dull purplish, overlaid with grey; the veins finely pale; lines indistinct, paler, with slightly darker edges; submarginal with a rufous cloud before it on costa; some dark marginal lunules; stigmata pale grey, the orbicular with a black crescent in lower half, the reniform with black spots, separated by the pale veins, on lower and outer edges; a small dark spot at base of cell; the costa and base of wing with lilac grey striations; hindwing pale fuscous, with large dull cellspot; fringe pale, sometimes rufous-tinged; — **immaculata** *Stgr.* is a rare form in which the stigmata are without the black spots on their margins; — **gallica** *Led.* (35 h), from France and the Pyrenees, is a local form in which the purplish ground colour is less obscured by the grey suffusion; the area beyond outer line being dark with the submarginal line well-marked across it; and the bent median shade is also purplish; at the same time the grey suffusion, especially at base and along costa, is more strongly expressed. Larva brown, the dorsal and subdorsal lines pale yellowish; oblique mottled lines meeting to form V-shaped marks on dorsum; spiracles black; head red brown; venter grey; living at first on *Prunus*, afterwards polyphagous on low plants. Generally distributed in Europe, except Britain.

acutula. **C. acutula** *Stgr.* (35 h). Forewing brownish grey, with dark striations; the costal half of wing rufous-tinged to near apex; veins streaked with pale; inner and outer lines blackish, double; the bent median shade blackish; upper stigmata dark with fine pale annuli; a diffuse grey submarginal band preceding the very indistinct submarginal line; hindwing brownish ochreous, with dark outer line and interrupted submarginal band; fringe tipped with pink; — in the form **scortea** *Stgr.* the forewing is dark grey, without the brown red tinge. At present recorded only from Palestine.

C. canicostata *Graes.* Forewing red-brown mixed with fulvous and dusted with grey; costal area wholly grey as far as outer line; veins grey; inner and outer lines grey, conversely edged with dark; upper stigmata with grey annuli; subterminal line macular, preceded by brown shading; hindwing dull ochreous at base, becoming fuscous terminally, with a dark cellspot; fringe fulvous. Ussuri, E. Siberia; the ♂ only known. *canicostata.*

C. ciliata *Stgr.* Forewing ochreous to grey brown or chocolate brown in the ♂, reddish yellow in ♀; sub-basal and inner lines ill-marked except in the darkest examples; stigmata with slight dark centres and pale annuli; outer line obscure; submarginal line defined by black marks preceding it; hindwing dark, paler at base; fringe yellowish white. Also from Ussuri, E. Siberia; the species is queried by Staudinger himself as probably the same as the previous one, *canicostata* *Graes.*, the difference being much the same as that between *erythrocephala* and its ab. *glabra*; both are possibly identical with *ardescens* *Btlr.* in one or other of its forms. *ciliata.*

C. politina *Stgr.* (35 h). Forewing greyish white, with slight lilac grey irroration; the veins paler; inner and outer lines indistinct, double, the former oblique and waved; median shade diffuse and fairly prominent; stigmata grey with pale, brown-edged, annuli, the lower half of reniform fuscous; submarginal line preceded by a short black streak from costa and dark spots between the veins; hindwing yellowish white, clouded with brown; — in the ab. **subspadiceana** *Stgr.* the thorax and forewing are suffused with pale chestnut red in the ♂ and with purplish red in the ♀; in the latter the markings are distinctly defined by grey and the veins grey; in the ♂ all markings are obscure, except the subterminal spots. Recorded only from W. Turkestan. *politina.*

C. veronicae *Hbn.* (= *dolosa* *Hbn.*, *intricata* *Bsd.*) (35 h). Forewing purplish overlaid with grey, sometimes with brown or black irroration; all the markings slightly darker, but inconspicuous; the stigmata of the ground colour, with pale annuli, the lower end of reniform somewhat darker; submarginal line preceded on costa by a brown bar and broken up, like the outer line, by the pale veins into rufous lunules; a row of black dots between veins *before* the termen; hindwing greyish fuscous; the fringe pale, tinged with rufous; — ab. **obscura** *Spul.* has the forewing deep redbrown, with the veins, the annuli of stigmata, and the lines yellowish; another form, ab. **conspicua** *ab. nov.* (35 i) has the ground colour dull grey brown, without any trace of red, with the veins all paler. — Larva dark brown, mottled; dorsal and subdorsal lines fine, pale yellow; spiracles black; head and thoracic shield black, the latter with two yellow lines; on various low plants. A South European species, found in France, Switzerland, Italy, Germany, Austria, Hungary, Macedonia, and Asia Minor. *veronicae.*

C. ardescens *Btlr.* (35 i). Forewing light or dark redbrown, sometimes with a slight grey tinge; all the markings inconspicuous; the lines rather darker than the ground colour; the inner and outer double, filled in with paler; the bent median shade generally evident, its angle touching a square black blotch in the lower end of the reniform, which is nearly always prominent; submarginal line formed of interrupted lunules, generally rufous brown lying on a paler band; hindwing greyish fuscous, the fringe rufous; in the ab. **unimacula** *ab. nov.* (35 i) the ground colour is grey tinged more or less deeply with rufous, the lines showing only as faintly darker waved shades, with no distinct markings except the black blotch in the reniform; in a second ab. **nigroliturata** *ab. nov.* (36 a) the rufous ochreous ground colour is densely sprinkled with black atoms, especially below the middle of wing; the lines are all blackish and distinct, but interrupted by the pale veins to form series of spots and lunules, the cell showing brickred, with the stigmata pale and the black blotch of reniform less prominent; in **pallidistigma** *ab. nov.* (= ab. 1. Hmps.) (35 i) the forewing is dark brown, with the veins, the upper stigmata, and the terminal area pale ochreous; lastly in ab. **uniformis** *ab. nov.* (36 a) the whole forewing is dull grey brown with all the markings indistinct, the fringe of both wings grey brown. Japan, Yokohama. The species is as large as *erythrocephala*, but the wings are broader, more strongly elbowed near base. *ardescens.*

C. albipuncta *Leech* (36 a). Forewing nearly uniform rufous and like the aberration *unimacula* of the previous species, but instead of the black mark in reniform a prominent white one. Japan, Yokohama. Perhaps, in fact, a form of *ardescens*. *albipuncta.*

C. vaccinii *L.* (36 a). Forewing dark or light chestnut brown, with the lines and edges of stigmata rather darker but not conspicuous; lower lobe of reniform filled in with fuscous; a median shade often visible, especially in its lower half; submarginal line represented by a series of dark dots; hindwing dark, sometimes blackish, fuscous, with the fringe rufous. The species varies greatly both in colour and in clearness of markings. The lighter chestnut brown ground colour may become ochreous yellow, ab. **ochrea** *Tutt.*, apparently a very rare form; again the two shades may be prominently intermixed, the lines, the submarginal band, and often the median area being light brown, while the shadings are darker; the hindwing paler, and showing a diffuse rufous outer band and terminal area as well as fringe; this is ab. **mixta** *Stgr.* (36 a); — **glabroides** *Fuchs* (36 b) is one development of this form, where the whole of the forewing, except the pale band containing the subterminal spots, is suffused with dark rich brown, sometimes mixed with blackish; — another is the form **spadicea** *Hbn.*, (36 b) where, the median and submarginal areas remaining paler, the shade before the inner line, generally more or less reaching the base, and that beyond the outer line, as well as the narrow terminal space, become black brown or black; the ground colour in this form is sometimes dark brown or grey brown as well as light; this form is **conspadicea** *Fuchs*; — when this black *vaccinii.*

- shading is shown only in the outer band and stigmata, the ground colour being pale or dark grey, we have the ab. *signata* Klem. (36 b, c); — *sebdouensis* Aust. from Algeria is a form almost unicolorous except for the subterminal and terminal rows of black points; — while *nigra* B.-Haas, also from Algeria, is wholly blackish; — *ocellata* Spul., a rare development is like the dark-suffused *glabroides* Fuchs, but with the dark spots lying in the pale submarginal band isolated by the dark brown veins so as to assume an ocellate look; other forms separated by Tutt mainly, but not wholly, from a study of British examples are: — ab. *variegata* Tutt, like *ochrea*, but more marbled with reddish, especially in middle of wing and with pale nervures; — ab. *rufa* Tutt (36 c), a bright red form with markings almost obsolete; ab. *suffusa* Tutt (36 c), which appears to be a development of *glabroides*, with the dark suffusion mostly confined to the central area of the wing, the suffusion, however, being not deep brown, but slaty or greyish-black; and ab. *obscura* Tutt where the ochreous or reddish tints are entirely lost, the ground colour being dark or light grey, with the veins and edges of stigmata paler, approaching *signata* Klem. Larva yellowish or pinkish brown, with dark mottlings; dorsal and subdorsal lines pale; subspiracular line pale tinged with green; spiracles black; feeding at first on oak and other trees, and afterwards on all low plants. Occurs throughout Europe, except Spain and Portugal, also in Armenia, Asia Minor, and W. Siberia, and in Algeria.
- ligula*. **C. ligula** Esp. (= *subnigra* Haw.) (36 c). Forewing deep red brown or purplish brown, darker than *vaccinii*; a pale submarginal band, grey or brownish grey, on which stand the spots forming the submarginal line; the lines and edges of the stigmata, and often the veins pale; hindwing brownish fuscous; — *polita* Hbn. (= *dolosa* Dup. nec Hbn.) (36 c) is dark grey to blackish grey without any red or brown tints; — the grey brown forms of this, with a slight rufous tint, appear to be the ab. *brigensis* Bsd.; *subspadicea* Stgr. (= *spadicea* Haw., *polita* Dup. nec Hbn.) (36 d) is unicolorous dark purplish or reddish brown, with all markings semiobsolete; a paler form of this, red brown or rufous, ab. *canilinea* ab. nov. (36 d), has the inner and outer lines pale leaden grey or ochreous grey; close to these comes *canescens* Esp. (36 d), a dark brown form, slightly sprinkled with paler scales, in which the veins are conspicuously paler, and the pale cross lines and edges of the stigmata are all prominent; — *turtur* Hmps. (36 d) is like *polita*, but with the grey markings distinct and the veins grey. Larva yellowish brown; the lines pale, but obscure; spiracular line pinkish ochreous, dark-edged above; spiracles black; feeding at first on *Prunus* and afterwards on all kinds of low plants. The species, if species it be, has the same distribution as *vaccinii*, and occurs besides in W. Turkestan and E. Siberia.
- torrida*. **C. torrida** Led. (36 d, e). Forewing purplish redbrown, dusted with white along costa and vein 1; inner and outer lines obscurely double, conversely toothed to black and white points; median shade variable; orbicular and reniform stigmata defined by black, the former oblong and oblique, the latter with the lower half fuscous with some white scales on it; submarginal line a series of ochreous and black dentate marks; hindwing dark fuscous, paler along termen; in the ab. *faillae* Turati the costa, stigmata, and the submarginal line and band are yellowish, Larva reddish yellow, darker on dorsum, yellow below; dorsal and subdorsal lines finely yellow, interrupted, partially dark-edged; spiracles black; head small, reddish yellow. Occurs in S. E. France, Switzerland, Italy, Sicily, Carniola, and Bulgaria.
- rubiginea*. **C. rubiginea** F. (= *pulverea* Hbn., *neurodes* Hbn., *rubigo* Rmb.) (36 e). Forewing fulvous yellow; the lines fulvous brown, marked by black spots on veins; the basal, inner, and outer lines double; median shade often broad and diffuse, rarely swollen so as to darken the central area on inner margin; orbicular and reniform of the pale ground colour, undefined, the former with a black centre, the latter with lower lobe black, the lateral margin on each side of it pale yellow; terminal area narrowly brown; hindwing blackish fuscous, the fringe rufous; — specimens suffused with fulvous brown form the ab. *tigerina* Esp. (36 e); — *unicolor* Tutt has body and forewing brickred, the black points few, restricted to base of submedian fold, the centre of orbicular stigma, the submarginal and marginal points, and the lower part of the reniform; hindwing reddish ochreous with dark brown suffusion; — ab. *modesta* Hmps. has the thorax and forewing deep fulvous, except the basal area and the out-lines of the stigmata, which remain yellow; — ab. *completa* Hmps. (36 e) has the thorax and forewing uniformly deep fulvous. Larva dark brown, with a black blotch on each segment on the dorsum; lines obscurely paler; a dark line above the feet; feeds on numerous low plants. The larva, which is anomalously protected by brownish-yellow hairs, is said to be found, as well as the pupa, in ants' nests. Of general occurrence, but not common, in Europe, also in Armenia and Asia Minor.
- staudingeri*. **C. staudingeri** Grasl. (36 e, f). Forewing dark bluish grey or slaty grey to pale bluish grey; head and thorax and a patch at base of inner margin of forewing and the fringe rufous ochreous in the paler specimens; in the darker specimens the thorax and fringe is dark grey and the basal patch very slight; the median shade varies in colour in the same way, being dark grey and prominent, or rufous and more obscure; lines nearly always obscurely expressed, disposed as in *C. rubiginea*; stigmata of the ground colour, scarcely outlined; the orbicular with a central dark dot, the reniform with the lower end black; hindwing dark slaty grey, with the fringe rufous; the species varies greatly, even in examples from the same locality; (all those in the Tring Museum are from Digne, S. France); and the difficulty in rightly separating the forms is increased by the fact that of the insects from which Staudinger's brief descriptions in his last Catalogue were made some were referred by him to *ligula* Esp., and others to *rubiginea* F.; — *livina* Stgr. (36 g) is a dark leaden grey or fuscous form, with the markings usually obscure,

the fringe grey, not yellow; — while the intermediate examples with a grey ground tinged with bluish, or greenish, or luteous or fuscous, with more definite markings are probably **obscura** *Spul.*; — **scortina** *Stgr.* (36 f) is greyish fuscous, luteous-tinged, with the markings clear, and the fringe pale yellowish; of this a unicolorous grey form, without markings except the black spot in reniform stigma and some costal spots, is separable as ab. **unicolor** *ab. nov.* (36 f), and in the opposite direction a more luteous-tinged example with the black markings strongly developed, and the terminal area dark, as ab. **multiscripta** *ab. nov.* (36 f); — **uniformis** *Stgr.* (36 g) is a more uniform yellowish-grey insect, with the markings more obsolete; — **graslini** *Stgr.* is very distinct, the ground colour being brown of different shades strongly flecked with ashy whitish scales, and the markings slightly expressed; — lastly **lusitanica** *Spul.*, from Portugal, has the head and collar and streaks at base of forewing ochreous yellow, the forewing itself a mixture of dull dark ochreous and brown with the markings nearly obsolete, except the terminal row of points, the dark lobe of the reniform, and a spot near base. The recorded localities are E. Pyrenees, Spain and Portugal, Digne, S. France, and Switzerland. To judge merely from the Digne forms, the species seems more nearly related to *daubei* than any other.

C. daubei *Dup.* (36 g). Forewing stone grey with a luteous tinge and speckled with black in basal area and along inner margin; submarginal line formed of a series of blackish spots, commencing as a brown bar or shade on costa, shortly angled on vein 7; median shade sometimes visible, dark grey, angled on median vein; the other lines obsolete, marked only by black spots on costa; reniform sometimes expressed by a black spot or two at base and faintly outlined; a marginal row of black dots: hindwing fuscous, paler along costa, with dark cell-spot and terminal area, and sometimes an outer pale-edged line; — ab. **pallida** *ab. nov.* (36 g) has the ground colour whiter, without the luteous tinge, the speckling and lines stronger; — ab. **innotata** *ab. nov.* (36 g) is luteous grey, with still fainter markings and smaller in size; ab. **submarginata** *ab. nov.* (36 h), marked like the type, is also smaller, with the hindwing pale, showing a dark cellspot and diffuse submarginal band. In all the forms the underside shows a large crescentic dark cellspot and more or less plain dark outer line. — Larva green; dorsal and subdorsal lines darker green behind, like the dorsum; spiracular line broadly white, edged below with black, and diffuse above; head yellowish; feeds on *Vaccinium* and *Buxus*. A local species found only in S. France.

60. Genus: **Omphaloscelis** *Hmps.*

Distinguished from *Conistra* and its allies by the frons not being smooth, but bearing a semicircular corneous projection with raised rims and a corneous plate below it; palpi obliquely porrect, hairy below, the terminal segment short; antennae of ♂ serrate, with sessile fascicles of cilia. Larva on grass and low plants. Agreeing in habits with the allied genera. Type *Omphaloscelis lunosa* *Haw.*

O. lunosa *Haw.* (36 h). Forewing varying from pale greyish ochreous to rufous and dark purple brown, the veins generally pale; upper stigmata distinct and filled up with dark, with distinct pale outlines; inner and outer lines double with paler centres, the inner obliquely outcurved, the outer simply sinuous; submarginal line pale, preceded by a row of dark spots, and on costa by a black blotch or bar; hindwing whitish, suffused with grey, especially in the ♀, with large grey cellspot and interrupted submarginal band. The type form is dull red without pale veins; the red forms with pale veins are ab. **rufa** *Tutt*; — the palest form of all is **obsoleta** *Tutt* without pale nervures; a somewhat darker, more brownish form, with the veins pale is **humilis** *H. & Wwd.* (= *pallida* *Spul.*) (36 h); **brunnea** *Tutt* (36 h) has the ground colour deep redbrown with pale veins; in **subjecta** *Dup.* (= *neurodes* *H. Sch.*) (36 h) it is dark grey brown, the extreme development of which, **agrotoides** *Guen.* (36 h), is blackish grey; — **olivacea** *Vasq.*, from Spain, has the forewing pale olive ochreous, and **rubra** *Vasq.*, also from Spain, has it pale reddish ochreous. Larva greenish or reddish-yellow, sometimes wholly green; the dorsal and subdorsal lines pale; spiracular fine, black-edged; on grasses and low plants. — Local, and found only in Britain, France, Spain, and Algeria.

61. Genus: **Spudea** *Snell.*

Differs from *Conistra* in the antennae of the ♂ possessing short pedicellate fascicles of cilia; the vertex and face hairy; the abdomen not so broad or flattened. Larva feeds up in spring and summer, spins a slight cocoon in July among leaves but does not pupate till late autumn, and the imago appears in quite early spring. Type *Spudea ruticella* *Esp.*

S. ruticella *Esp.* (= *serpylli* *Hbn.*, *ilicis* *Bsd.*, *saportae* *Frr.* per err.) (36 i). Forewing greyish red, with the lines and markings well-developed; inner and outer lines double; median shade distinct; submarginal pale with a black bar at costa; stigmata obscure; the orbicular round and pale, the reniform with slight pale outline and a blackish spot in lower lobe; hindwing rufous fuscous; a greyer form exists without the red tints, and with all the markings dull and the hindwing greyer, ab. **grisea** *ab. nov.* (36 i); and on the other hand a dull red brown form, in which the markings are all more or less obscured, and the hindwing dark reddish fuscous, may be defined as ab. **castanea** *ab. nov.* (36 i). Larva brown with pale wavy markings; dorsal line faintly darker; spiracles black; head round, shining black; on oak. Occurs throughout Europe, except Britain, and Scandinavia; and in Syria and Asia Minor.

witzenmanni. **S. witzenmanni** *Stulfs.* (36 i). Forewing pale luteous grey or whitish, deeper in ♀, slightly dusted; the costal edge rufous; lines hardly visible; the double outer line is generally present and traces of the inner; no distinct stigmata, but the interval between them filled up by an olive fuscous dentate mark from subcostal vein; dark marginal spots; fringe concolorous; hindwing dark grey in ♀, paler in ♂; ab. **subcastanea** *Stgr.* (36 i) has the body and wings suffused with rufous, the ♀ darker in both wings. — Larva green; first segment with a fine black line; the head reddish; extremity of feet reddish, the rest dull green or brown; spiracular line yellowish white; dorsal and subdorsal lines pale green, indistinct; tubercles black; on *Salix capraea*. S. E. France. As the hind tibiae of this species show two or three spines, it can certainly not be left here, and should probably be removed to a separate genus in the neighbourhood of *Blepharoa Hmps.*

62. Genus: **Orrhodiella** *Spul.*

Characterised by the wings of the ♀ being reduced in length and misshapen, the apex being produced and the outer margin beneath it excised; the costa of the forewing convex; the anal angle of the hindwing sharp. The ♂ is of normal structure, agreeing with *Conistra*, the antennae with sessile fascicles of cilia. Type *Orrhodiella ragusae Failla-Ted.*

ragusae. **O. ragusae** *Failla-Ted.* Forewing glossy reddish brown on a yellow ground; the markings all inconspicuous; inner and outer lines obscurely double; median shade traceable in lower half; stigmata faint, except the dark lower lobe; a row of dark lunules on each side of the submarginal line; hindwing grey, the fringe reddish. At present recorded from Sicily only.

63. Genus: **Amathes** *Hbn.*

Differs from *Conistra* only in the abdomen being more slender and not flattened, whereas in *Conistra* it is broadly flattened and cut square at anal segment. Type *Amathes litura L.*

Sect. I. Antennae of ♂ with sessile fascicles of cilia.

rupicapra. **A. rupicapra** *Stgr.* (36 k). Forewing greyish rufous, dusted with dark; the inner and outer lines faint; the outer double, marked by dark teeth on veins; orbicular and reniform stigmata of ground colour, ringed with rufous; median shade present; submarginal line rufous, paler externally, straight except for a slight angle on vein 7; hindwing brownish fuscous, the fringe pale. Recorded only from Asia Minor.

humilis. **A. humilis** *F.* (36 k). Forewing grey with a luteous tinge, dusted with darker grey; the veins finely pale; inner and outer lines brown, double, with pale centres, both slightly bent and scarcely waved; median shade dark and distinct, parallel to outer line; stigmata large, outlined with pale, the orbicular with a small dark spot within its upper inner edge; submarginal line pale; a row of dark dots before termen; hindwing fuscous grey, with pale fringe; rarely a form occurs in which the sombre grey of the type is darkened and becomes black brown while the veins remain pale, ab. **obscura** *Spul.* Larva green; dorsal and subdorsal lines and tubercles white; spiracular stripe white with the upper edge black; on various low plants. Occurs only in central Europe, France, Belgium, Germany, Austria, Hungary, and Switzerland.

lychnidis. **A. lychnidis** *F.* (= *schaenobaena Esp.*, *lineola Don.*, *sphaerulatina Haw.*) (36 k). Forewing bright rufous or reddish ochreous with the veins paler, often dusted with darker; inner and outer lines double, dark, with the centre rufous, often very faint, but always marked by black spots on costa; submarginal line preceded by a row of dark lunules between the veins and by a dark bar at costa; median shade distinct; stigmata blackish, distinct, especially the narrow oblique orbicular; hindwing dark grey, the fringe rufous. This species varies in colour exceedingly; the brighter rufous specimens, with pale veins, represent typical *lychnidis F.*; the duller brownish forms, also with pale veins, are **pistacina** *F.* (= *venosa Haw.*) (37 a); **rubetra** *Esp.* (37 a) is the bright rufous unicolorous form with all markings indistinct, and the costal edge often conspicuously white at middle, of which **ferrea** *Haw.* (37 a) is an offshoot, having only the 4 costal blotches and the stigmata dark; the paler, reddish ochreous, unicolorous form is **obsoleta** *Tutt* (= *pistacina Haw.*) (37 a); of the forms without red colouring, **serina** *Esp.* (37 b) has the markings plain, while in **pallida** *Tutt* they are obscure, the ground colour being greyish ochreous or yellowish; — of the brownish rufous or brownish grey forms, **brunnea** *Tutt* is a more sombre form than *pistacina* without pale nervures; **canaria** *Esp.* (37 b) is a form in which the lines and veins and edges of the stigmata are dull fulvous and the ground colour blackish, as a rule much darker in the ♂ than in the ♀; dark specimens like these also occur but with the light shades only dull brown and the dark interspaces not so black; **caerulescens** *Calb.* (37 b), from Italy, is a bluish or lilac grey insect; this form also occurs in Asia Minor; a large number of examples from Amasia, especially ♀♀, agree exactly, while the rest, mainly ♂♂, become greyish luteous, as in *serina*, with the markings varying in intensity; — Larva varying in colour, green, grey, or brown; the dorsal and subdorsal lines sometimes pale, at others dark; spiracular line broadly whitish; on a variety of low plants and grasses. Of general distribution in Europe, except Russia and Scandinavia, also in Syria, Armenia, and Asia Minor.

scabra. **A. scabra** *Stgr.* (37 c). Forewing rufous ochreous, slightly dusted with dark scales; some black dots at base; inner and outer lines indistinct, double, dark filled in with ochreous; subterminal line consisting of

faint yellowish spots preceded by black points; the terminal area paler; stigmata small, obscure, with ochreous outlines; the orbicular oblique, elliptical, with a black dot in upper part; the reniform irrorated with black in the upper half, and wholly black in the lower; hindwing whitish, suffused with pale brown; with darker cellspot, outer line, and submarginal shade; the fringe ochreous. Recorded from Palestine, Jerusalem, only.

A. kindermannii *F. v. R.* (= *ballotae* *Dup.*, *consueta* *H. Sch.*) (37 c). Forewing pale ochreous, dusted with olive grey and suffused with pale olive often mixed with reddish; the terminal area always pale ochreous; lines olive grey or fuscous, double, waved and dentate; the outer with black and white teeth on the veins; subterminal line darker, waved, but often defined only by the pale outer ground colour; median line distinctly lunulate-dentate; stigmata confused; the orbicular pale, undefined; the reniform with lower half dark, the upper half speckled; a row of dark spots before termen; hindwing grey, the veins and cellspot darker; — in **pauli** *Stgr.* (37 c) the brickred tints predominate over the olive, and the base and costal area of forewing, as well as the termen, are more conspicuously pale ochreous; in another ab. **fuscoliva** *ab. nov.* (37 c, d) the inner and outer lines are accompanied by broad olive fuscous bands. Larva reddish with broad white lateral stripes; feeding on low plants. Local; recorded from Dalmatia and Sicily?; Armenia, Asia Minor, Palestine.

kindermannii.

pauli.
fuscoliva.

A. laevis *Hbn.* (37 d). Forewing greyish brown with a slight rufous or ochreous tinge; all markings distinct; inner and outer lines double; median shade slight; subterminal line pale, slightly waved and angled on veins 1 and 7, preceded by a brown lunular shade and a slight bar on costa; a row of dark spots before termen; stigmata with pale outlines; orbicular very obscure, reniform filled up with brown, the lower end with black; hindwing fuscous grey. Larva pale brown; dorsal line yellowish; head brown; thoracic plate black crossed by two white lines; on all low plants. France, Germany, N. Italy, Switzerland, Austria, Hungary, S. Russia, Asia Minor.

laevis.

A. haematidea *Dup.* (37 d). Forewing smooth, deep chestnut brown, darker along inner margin, paler in terminal area; cell and median shade deeper chestnut; lines indistinct, the outer double; submarginal line preceded by a row of small black marks and on costa by a blackish blotch; stigmata small, undefined, pale; the orbicular oblique nearly touching reniform at bottom; hindwing fuscous, the fringe pinkish. S. France, Spain, Italy, Algeria. The forewing has the apex acute and termen oblique.

haematidea.

A. lota *L.* (= *hippohaes* *Rossi*, *munda* *Hbn.*) (37 d). Forewing grey brown or leaden grey, often with a reddish tinge; inner and outer lines double, conversely lunulate-dentate, but rarely visible; a thick dark median shade; stigmata grey, with pinkish annuli edged with rufous, the lower half of reniform black; submarginal line nearly straight but angled on vein 7, pale with rufous inward edging; hindwing dark grey, with cellspot and submarginal cloud showing darker; the reddish examples in which the grey tints have entirely given place to rufous, form the ab. **rufa** *Tutt* (37 d); in rare cases the grey is darkened into black; this is ab. **suffusa** *Tutt* from Ireland; an equally rare form from England, in which the ground colour is whitish-grey is **pallida** *Tutt*; in a form from Amasia, ab. **subdita** *ab. nov.* (37 e), the grey ground is duller and paler in both wings, and the black in lower lobe of reniform is much reduced. Larva reddish brown, mottled with black; dorsal and subdorsal lines white, often interrupted; spiracular stripe broadly whitish; feeding on Poplar, Sallow, Alder, Sea buckthorn etc.; when young concealed in the young shoots, afterwards hiding by day in the chinks of the bark. Throughout Europe except Scandinavia; in Armenia, Asia Minor, and the Altai Mts., W. Siberia.

lota.

rufa.
suffusa.
pallida.
subdita.

A. macilenta *Hbn.* (= *flavilinea* *Haw.*) (37 e). Forewing ochreous washed with pale fulvous; the inner and outer lines very faint, marked chiefly by the dark teeth on the veins; a dark spot at base of wing; median shade variable; stigmata of the ground colour, with slight pale outlines, the lower end of the reniform nearly always black; submarginal line ochreous edged inwardly with rufous, nearly straight except for the angulation on vein 7; hindwing grey, the fringe rufous; — in the ab. **nigrodentata** *Fuchs* the basal, inner, and outer lines are all strongly marked, blackish and dentate. Larva ochreous or reddish brown; dorsal, subdorsal, and spiracular lines all whitish, the dorsal swelling out on each segment into an oval spot; when young feeding on the young shoots of trees, later on low plants, living concealed by day in the chinks of the bark of tree trunks. Throughout Europe except Russia: also in Asia Minor.

macilenta.

nigro-
dentata.

A. circellaris *Hufn.* (= *fuscago* *Esp.*) (37 e). Forewing yellow ochreous or ferruginous, sometimes much dusted with fuscous; the lines and edges of stigmata rufous; the inner line waved, the outer lunulate-dentate; submarginal wavy, ochreous, with a rufous line inside it; lower part of reniform blackish; a small dark spot near base of wing; median shade generally present; hindwing grey, the costal area ochreous, the fringe rufous ochreous. The paler ochreous form is the type; the deep ferruginous examples are **ferruginea** *Esp.* (= *undata* *View.*, *undosa* *Bkh.*) (37 e); in **macilenta** *Hbn. fig.* 688, (37 f), the forewings are darkened by fuscous shading, especially along inner and outer margins; the hindwings are blackish-grey; the ab. **fusconervosa** *Petersen* (37 f) has all the nervures dark throughout; in **nigridens** *Fuchs*, a rare form, the cross lines are strongly black and dentate. Larva reddish brown, dotted with darker; dorsal line pale, passing through a series of V-shaped dark markings; a pale spiracular line with dark markings in a row above it; feeding at first on the buds

circellaris.

ferruginea.
macilenta.
fusconervosa.
nigridens.

and young shoots of Poplar and Sallow, afterwards on low plants. Throughout Europe, in Asia Minor and Armenia.

- helvola*. **A. helvola** L. (37 f). Forewing dull reddish or bright reddish; inner, outer, and submarginal lines brownish, formed of lunules between the veins, those of the inner line more continuous; a distinct brownish angulated median shade; stigmata usually very indistinct, of the ground colour or slightly darker, with paler annuli; hindwing grey, with costal and terminal areas and the fringe generally ochreous or rufous; the basal area before inner line and the space between outer and submarginal lines darker, forming more or less prominent bands; the dull reddish examples with these bands well-developed are typical *helvola*; the bright red ones are *rufina* L.; — *catenata* Esp. (37 f) is a form in which the space between the outer and submarginal lines is not filled up with darker, so that the dark lunules forming those lines are more conspicuous; the examples with a greenish grey or ochreous ground colour, with the bands also developed are ab. *ochrea* Tutt (37 f); — those with a yellowish ground and purplish-brown bands are *punica* Bkh.; the lines and bands are often obscured and semiobsolete; these less-marked forms with dull reddish ground are *unicolor* Tutt (37 f); — with bright red ground *rufa* Tutt; — and with greenish ochreous ground *extincta* Spul.; *sibirica* Stgr. (37 g), from Central Asia, is a form with pale yellow forewings; *cinnamomea* Fuchs has much grey suffusion, the area beyond outer line darker brown; specimens from Amasia, though reddish in a few cases, mostly ♀♀, are generally much paler than European, dull brownish or ochreous-grey, with indistinct or obsolete markings; in particular the hindwings are much whiter with the grey and rufous suffusion usually slighter and more restricted in area; ab. *pallescens*. **pallescens** ab. nov. (37 g). Larva reddish brown or yellowish brown, sometimes greenish; dorsal line yellowish; spiracular line broadly white; living at first on various trees and afterwards on low plants. Generally distributed through Europe, and found in Armenia, Asia Minor, W. Siberia, and W. Turkestan.

Sect. II. Antennae of ♂ simply pubescent.

- litura*. **A. litura** L. (37 g). Forewing bluish grey or violet grey, the basal half slightly paler; the lines all marked by black spots on costa, the submarginal with an oblique bar; inner and outer lines dark, obscurely double, with pale centres; stigmata large with pale annuli, the reniform generally with darker centre; hindwing dull fuscous; — *polluta* Esp. (37 g) is the large dark form; — *ornatrix* Hbn. (37 h) a small dark form; both with the costal spots well-developed; — *borealis* Sp.-Schn. (= *saturata* Schultze) has the basal half of wing prominently pale; — *meridionalis* Stgr., a Southern race, is paler, bluish-grey or yellowish-grey with prominent grey brown or redbrown median shade; — *ochreata* Spul., from Central Europe, is purplish grey with a yellow tinge, the basal half often whitish ochreous; — in *rufa* Tutt (37 h) the ground colour is reddish brown instead of purple grey; ab. *luteogrisea* ab. nov. (37 h), from Amasia, is pale stone colour, with distinct but not prominent markings, the underside paler. Larva grey, brown, or reddish; dorsal line pale, generally with several fine lines close to it; spiracular line white with the lower edge yellow; head brown; thoracic and anal plates dark green with 3 white lines. General throughout Europe, also in Armenia and Asia Minor.
- gratiosa*. **A. gratiosa** Stgr. (37 h). Forewing pale brick red, dusted thickly with darker; the veins white; inner and outer lines double, dark filled in with white, the inner curved, the outer slightly sinuate; median shade thick, angled on median; submarginal line whitish, straight, except for the subcostal angle, preceded by a row of black marks, and a black bar from costa; stigmata large with whitish, black-outlined annuli; hindwing reddish-fuscous; the fringe pale. Asia Minor, Amasia.
- lucida*. **A. lucida** Hufn. (= *nitida* F., ? *insueta* Frr.) (37 h). Forewing dull grey brown, with a faint reddish flush; inner and outer lines dark brown, double, accompanied by a dark shade; the median shade strong and bent; stigmata large, darker than the ground colour, with pale outlines; submarginal line marked by black spots between the veins, the termen beyond it dark; veins pale; — *obscurata* Spul. (37 i) has the ground colour dark redbrown, the postmedian area with darker lines and shades, the hindwing blackish; — *garibaldina* Turati (37 i) has the prothorax and forewing bright fulvous Larva greenish; dorsal and subdorsal lines white; a dorsal row of dark V-shaped marks; spiracular line pale green, spiracles black; on various low plants. Of general occurrence in Europe, except Britain and Belgium; and found, like most of its congeners, also in Asia Minor Syria, and Armenia.
- deleta*. **A. deleta** Stgr. (37 i). Forewing rufous, sometimes tinged with brown or olive grey; the lines usually indistinct, disposed very much as in *helvola* L., from which it may always be distinguished, not only by its smaller size, but by its wholly dark grey hindwings, and by the reniform stigma not being black in its lower half; — *decolorata* Stgr. (37 i) has the ground colour grey brown without red tinge, the transverse markings, especially towards termen, clearer, and the veins slightly pale; — ab. *intermedia* ab. nov. is rufous grey, with the markings still clearer and the veins pale; in ab. *brunnea* ab. nov. (37 k) the forewings are deep brickred suffused with brown, the markings almost obsolete; hindwing dark grey, with rufous fringe. Known only from Armenia and Asia Minor.
- mansueta*. **A. mansueta** H.-Sch. (37 k). Forewing pale greenish grey with a luteous tinge, which becomes rufous towards inner margin in the median area; inner and outer lines slaty or greenish grey, double; the median shade

becoming rufous below middle; costa marked with darker spots at origin of the lines; submarginal line marked by the terminal area beyond it being darker; orbicular stigma small, round, annular; reniform large, filled up with dark slaty green; fringe with a rufous tint; hindwing greyish fuscous; the fringe pale; ab. **pontica** *Stgr.* (37 k) is without any luteous tinge in the forewing, the whole wing being pale greenish-grey, the markings, on the whole, not so clearly defined. Recorded from Sicily, Armenia, Asia Minor, and Palestine. *pontica.*

A. iners *Germ.* (= congener *H. G.*) (37 k). Forewing pale luteous grey, with hardly any rufous or brownish tinge; the lines and shading only slightly darker; the median shade distinct; the upper stigmata large, with distinct whitish outline; submarginal line pale, wavy, the terminal area beyond it darker; hindwing dull grey; of this form the very palest specimens with scarcely any markings are ab. **pallida** *Tutt.*, while the dark grey examples with no rufous or luteous tinge whatever are **grisea** *Tutt.*; — **suspecta** *Hbn.* (37 k) is more mottled with darker, brownish red, shades; — in **nigrescens** *Tutt.* (38 f) these dark shades are intensified and the whole insect becomes blackish red brown; the bright red specimens, with lines and markings clear are **rufa** *Tutt.*; — while the red brown forms mixed with purplish grey and with paler stigmata are **variegata** *Tutt.* (38 f). Larva purplish brown; dorsal line yellowish white, well-defined; subdorsal lines faint; tubercles prominent; underside pale yellowish; living when young in the catkins of poplars, afterwards on low plants generally. Occurs throughout Europe, except Spain, and through Central Asia to Japan and Kamschatka. *iners.*
pallida.
grisea.
suspecta.
nigrescens.
rufa.
variegata.

64. Genus: **Atethmia** *Hbn.*

Tongue present; frons smooth, with a large tuft; palpi obliquely porrect, hairy below; antennae of ♂ serrate, with short sessile fascicles of cilia; vestiture hairy; thorax and abdomen without crests, the latter short; forewing with apex produced, termen crenulate, somewhat bent at middle. Larva short and stout; feeding in spring, first in the young shoots of trees, afterwards hiding by day in the chinks of the bark of the trunk, and feeding by night; pupating in a spun cocoon on the ground; the imago emerges in autumn. Type *Atethmia xerampelina* *Esp.*

A. xerampelina *Esp.* (= centrago *Haw.*) (38 f). Forewing deep yellow, with a greyish purple central fascia, the terminal area beyond submarginal line of the same colour; the central fascia is edged inwardly by a pale vertical inner line, and outwardly by an obliquely sinuous outer line; the fascia does not reach above the middle except beyond the reniform stigma which is similarly coloured; fringe greyish purple; a small dark spot shows at base of cell; hindwing dull white, becoming yellowish rufous towards termen; the whole forewing is sometimes suffused with purplish, only the two lines showing yellowish and the central fascia darker; the hindwing redder; this is ab. **unicolor** *Stgr.* (38 f); — **pallida** *Stgr.* from Asia Minor is a paler form, reddish or greyish ochreous in the forewing, with the hindwing whiter; — **maculifera** *Stgr.* from Syria and Palestine is also a paler but yellowish form, with the reniform stigma large and dark, and the outer pale line more strongly excurved above; the hindwing greyish yellow; the forewing shorter with less produced apex. — Larva grey or reddish grey, with dark mottled markings; dorsal and subdorsal lines pale, with oblique black streaks between them; head small, brown; feeds on ash. Widely distributed, but not common, throughout Europe, except Scandinavia and Italy; also in Asia Minor, Armenia, Syria and Palestine. *xerampelina.*
unicolor.
pallida.
maculifera.

A. ambusta *F.* (38 g). Forewing dull redbrown, darker, less reddish, in the ♀; the lines fine and pale; the inner line as in *xerampelina* but more flexuous; the submarginal wavy; reniform stigma of ground colour with pale outline; hindwing whitish, towards termen rufous in ♂, brownish in ♀, the fringe varying in a similar way; **rubens** *Stgr.* from Asia Minor and Palestine is paler, more yellowish red, with the hindwing whiter. More local than *xerampelina*, occurring only in France, Germany, Austria, Hungary, Switzerland, and N. Italy; also in Asia Minor and Palestine. — Larva dirty flesh colour; dorsal and subdorsal lines whitish, with oblique brown streaks between them; spiracular line yellow; feeds on Pear trees. *ambusta.*
rubens.

A. rufa *spec. nov.* (38 f). Forewing bright brick red; inner and outer lines deep red, conversely edged with pale; the inner nearly vertical; the outer shaped as in *xerampelina*; fringe concolorous; hindwing ochreous white, tinged with brickred towards termen, with traces of an outer line. Described from a single ♀ taken September 1907 at Herkulesbad, Hungary (*Aszner*). *rufa.*

65. Genus: **Cosmia** *Tr.*

Distinguished from *Atethmia* in having the terminal segment of palpi longer, in the tegulae being simple, not produced into a dorsal ridge; the termen of wing smooth, not crenulate. Larva when young in catkins or on the flowers of trees, afterwards descending to the ground and feeding on various low plants; the imago emerging in autumn. Type *C. fulvago* *L.*

C. aurago *F.* (= praetexta *Esp.*) (24 h). Forewing yellow, deeper in ♀ than ♂, the basal area greyish purple, limited by the wavy yellow inner line, and yellow itself at costa; terminal area beyond the yellow *aurago.*

- outer line greyish purple, traversed by an interrupted yellow submarginal line, sometimes swollen at apex; orbicular and reniform stigmata purplish, diffuse and ill-defined, the former round; traces of a curved median line; hindwing yellow, reddish towards termen; in **rutilago** *F.* (24 h) the ground colour is deep orange, with scarcely a trace of stigmata, the base of the basal area and the broader submarginal line also deep dull orange; — another form, quite as common apparently as the typical, has the yellow central area thickly mottled with orange, ab. **marmorata** *ab. nov.* (24 h); **lutea** *Tutt* is a rare form in which the whole forewing is pale yellow, with only the lines greyish-purple; two other, more or less unicolorous, forms are found; one in which the orange ground colour overpowers the purplish and spreads over the whole wing, ab. **unicolor** *Tutt*, the other, **fucata** *Esp.* (24 i), (= ? *virgata* *Tutt*) is more or less wholly purplish ferruginous, with the terminal area showing still darker. In all the forms, owing to their deeper ground colour, the ♀♀ show the difference between the two colours less. Larva redbrown, paler, somewhat greenish, in front; dorsal line whitish, interrupted at the segments, edged with dark; tubercular dots pale, inconspicuous; feeding on beech, at first on the flowers, then between united leaves, and finally on the ground. Occurs almost everywhere throughout Europe where its food plant flourishes.
- pallidago**. **C. pallidago** *Stgr.* Dull sulphur yellow; the lines double, indistinct; the upper stigmata slightly defined by fuscous, the orbicular round, the reniform with a pale dark-edged spot on its lower part; hindwing dirty white, darker towards termen. Asia Minor.
- siphuncula**. **C. siphuncula** *Hmps.* (24 i). Forewing ochreous-yellow; inner and outer lines rufous, double; median shade wavy, rufous; claviform stigma outlined with rufous; the orbicular and reniform outlined with dark, the lower part of reniform fuscous; submarginal line wavy, rufous, followed on costa by a brown triangular cloud; fringe yellow mottled with brown; hindwing whitish yellow. Mongolia, and E. Siberia.
- lutea**. **C. lutea** *Ström.* (= *flavago* *F.*, *rubago* *Don.*, *silago* *Hbn.*) (24 i). Forewing deep yellow, the markings purplish brown; a blotch on costa beyond basal line; inner line wavy, interrupted; median shade curved, interrupted; outer line double, lunulate dentate, the space including median and outer lines shaded with purplish; orbicular stigma yellow, marked only by one or two reddish points; reniform yellow with its upper part slightly and its lower completely marked with purplish; the interval between the stigmata a purplish blotch; submarginal line indicated only by purplish spots; fringe yellow chequered with purplish; hindwing yellowish white, more yellow along termen, often showing a dark grey outer line; **ochreago** *Bkh.* differs only in having a red central band instead of the purplish brown one, — in **togata** *Esp.* (24 k) the median and double outer lines remain clear without any dark suffusion. Larva brownish grey, dotted with red and yellow; dorsal line pale, with darker edges, but obscure; spiracular line broadly pale; feeds at first in the catkins of willow, then in united leaves, and finally on the ground, on various plants. — Widely distributed, occurring throughout Europe and Central Asia, and also in N. America. Distinguished from the next species by the purple head and shoulders.
- fulvago**. **C. fulvago** *L.* (= *cerago* *F.*) (24 i, k). Forewing pale yellow; markings the same as in *lutea*, but the cloud on costa beyond submarginal line, the costal end of the median shade, and the subbasal costal blotch prominently dark brown; the dark blotch at base of reniform with a pale centre; the fringe yellow; head and shoulders pale yellow; hindwing whitish; — **flavescens** *Esp.* (24 k) is an unicolorous form in which all the brown lines and shading are absent, the lines and edges of the stigmata being sometimes represented by slender faint rufous lines, the lower end of the reniform stigma alone remaining deep brown and the fringes reddish brown; an intermediate form occurs in which the markings are pale reddish brown, either distinct or faint, and approaching *flavescens*; this is ab. **cerago** *Hbn.* (24 k) non *F.*; **asiatica** *Hmps.* from the Sir Daria, has more orange yellow forewings, with dark brown markings, the antemedian and postmedian costal patches absent; the fringe dark brown at tips. Larva hardly distinguishable from that of *lutea*, living in the same way. The species occurs throughout Europe and Central Asia to Japan, but is not recorded from America.
- tunicata**. **C. tunicata** *Graes.* (24 k). Differs from *fulvago* in having the space between median shade and outer line, (on costa and inner margin reaching to submarginal line), suffused with brown, sometimes only in the costal half of wing; the patagia and thorax also brownish. Recorded from E. Siberia and Japan. Probably merely a form of *fulvago* *L.*
- gilvago**. **C. gilvago** *Esp.* (28 g). Forewing deep yellow ochreous with a brownish flush; markings all blackish; inner and outer lines double; the former oblique, outwardly lunulate, its inner arm thick and blotchy; the latter inwardly lunulate, concise, the outer arm thick; submarginal line a row of dark spots preceded by a dark costal blotch attached to outer line, and followed by a diffuse dark shade; median shade blackish, thick and diffuse; orbicular stigma of the ground colour with a dark ring, separated by the median shade from the equally pale reniform which has its lower lobe black; fringe concolorous mottled with dark; hindwing yellowish, the inner marginal area grey; — when the brown tinge of forewing is intensified (sometimes darkening the whole wing), and the dark markings likewise, forming a partially continuous dark band from median shade to outer line, we have the ab. **suffusa** *Tutt* (28 g); — on the other hand the yellow tinge may be nearly absent, the ground colour becoming olive grey, and the markings dark grey, the hindwing whitish; this is ab. **griseosignata** *Spul.* (28 g); a rarer form — **cinnamomeago** *Spul.* (28 h), — has the ground colour uniform fulvous, with the markings finer, those of the

terminal area, and often those of the basal area also, more or less obsolete, the hindwing deeper yellow; — lastly from the Goorais Valley, Kashmir, there is a paler ochreous form of which the extreme development, *ab. derasa ab. derasa. nov.* (= *ab. 2 Hmps.*) is wholly pale ochreous with only the lower half of reniform and the fringe dark brown, exactly corresponding to the unmarked form *flavescens* of *fulvago* L. Larva pinkish brown; dorsal and subdorsal lines pale, dark-edged; a dorsal series of dark V-shaped marks; spiracular line pale; feeding on the seeds of elm, particularly wych-elm, *not* poplar. Generally distributed throughout Europe, except Spain and Portugal, and found in Armenia, Asia Minor, W. Turkestan, and Kashmir.

C. erythrago *nov. nom.* (= *palleago* Hbn. fig. 442, nec 192, 193, *gilvago* ab. 1. *Hmps.*, ? *intermedia erythrago. Habich*) (28 h). Forewing reddish ochreous or yellowish ochreous, with all the markings very slightly deeper except the black-spotted submarginal line and a pale grey dot at lower end of reniform, which are distinct; the other markings are disposed as in *gilvago*; hindwing whiter. This species has been referred to *gilvago* as an aberration, but is raised to specific rank in Staudinger and Rebel's Catalogue 1901, No. 2150, under the name of *palleago* Hbn.; (Hübner's earlier *palleago* figg. 192, 3 is not quoted in the Catalogue); and this seems almost certainly right; for if a form of *gilvago*, it would surely occur in Britain and other localities where *gilvago* under all its variations appears; on the contrary it seems restricted on the continent to a limited area (Zeller's specimens are all labelled „Frankfort“ and the Italian and S. French localities refer rather to Hübner's other *palleago* = *ocellaris* Bkh.); and again, the larva of *gilvago* is said to feed on catkins of poplar as well as seeds of elm; but as *gilvago* in Britain feeds solely on elm, the poplar feeders probably are *erythrago*; — *austauti* Oberth., a much paler form, *austauti.* from Algeria, luteous grey or whitish in thorax and forewing, is referred here by Staudinger; the exact limits of the species must remain doubtful for the present.

C. ocellaris Bkh. (28 h). Forewing pale yellowish grey, more or less strongly tinged with reddish grey; the *ocellaris.* inner and outer lines pale, slightly darker-edged; median shade dark grey, diffuse; submarginal line pale, preceded by a row of dark dots, often faint or obsolete, except that above vein 6; fringe rufous; stigmata with pale grey-edged annuli, the reniform with a whitish, dark-edged dot at lower extremity; hindwing whitish, the inner marginal third pinkish grey; — the pale form without any red tinge is *palleago* Hbn. fig. 192 (28 h); — *ab. palleago. carneago ab. nov.* (28 i) is pink, only the basal and terminal areas faintly greyish, the markings very faint, and the fringe pink; — *lineago* Guen. (= *gilvago* Hbn. fig. 193) (28 h, i) has the forewing more thickly and darkly suffused with grey, *lineago.* the pale veins and markings coming out more prominently; — *intermedia* Habich is said to be transitional between *intermedia.* typical *ocellaris* and *gilvago*; it may be, I think, the same as the yellower form of *palleago* Hbn. fig. 442; and if so, would supplant the name *erythrago* for the preceding species. Larva yellowish grey; the dorsal and subdorsal lines fine and faint; spiracular line broadly white; feeding in the catkins of poplars at first, afterwards on the ground on fallen leaves and low plants. Of equally wide distribution with *gilvago* both in Europe and Central Asia.

C. sulphurago F. (28 i). Forewing yellowish strawcolour, the median area often washed with brownish; the *sulphurago.* lines brown or brownish fuscous; the inner indistinctly marked, the outer sinuous; the submarginal formed of brown spots, with a grey shade beyond it; the median shade sinuous, always very strongly marked; fringe brown-tipped; stigmata double, the orbicular consisting of two dark dots, one above the other; the reniform of two pale dark-edged annuli in the same position; hindwing yellowish-white; *innotata* Failla-Ted. is a form *innotata.* from Italy in which the subbasal and inner lines, the two stigmata, and the terminal spots are more or less obsolete. Larva ashy grey, sometimes reddish-tinged, with pale dorsal and subdorsal lines and oblique streaks between them; spiracular line broadly white with a reddish tinge and edged above with dark; feeds on maple and probably lime. More local than its congeners: occurring in Germany, Austria, Hungary, Sweden, N. Italy, Sicily, Switzerland, and in Armenia.

C. cypreago *Hmps.* (28 e). Forewing yellow washed with fulvous, and dusted with grey in terminal half; *cypreago.* the veins paler; lines ferruginous, the inner and outer double, the arms of the inner far apart; the outer line sinuous; median shade vertical, thick, ferruginous; orbicular stigma pale, round, with black centre; reniform ferruginous, with some black scaling at lower end; submarginal line pale, preceded by a grey shade; fringe ferruginous, the tips dark brown; hindwing whitish. Described from a single ♀ from the Mountains of Cyprus.

C. vulpecula Led. (= *vulpina* Ev.) (28 f). Forewing olive ochreous tinged with grey; the veins and lines *vulpecula.* darker, olive-brown; costa grey brown; inner line curved outwards below middle; outer line double, vertical, outwardly curved from costa to inner margin; a broadly diffuse median shade; stigmata dark-edged, the orbicular round, pale; the reniform with dark linear centre and obscured by the suffusion of the median shade; submarginal line formed of dull spots between the veins, preceded on costa by a triangular brown spot; fringe grey brown; hindwing olive ochreous suffused with grey, except along costa and termen; a dark cellspot, outer, and submarginal line. An Asiatic species found in the Altai Mts., W. Siberia, the Saján Mts., and in E. Siberia, Amurland.

C. citrigo L. (= *ochrigo* Esp.) (28 i). Forewing yellow, thickly freckled with orange; veins finely ferruginous; *citrigo.* lines ferruginous brown, the median thick; all running more or less parallel to each other and to termen; the inner oblique outwards from costa to subcostal vein and again from vein 1 to inner margin where it touches the

median; stigmata of the ground colour, with brown rings; the orbicular large, round; both with brown centres; submarginal line formed of disconnected pale lunules edged inwardly with darker; hindwing pale yellow; *aurantiago*. **aurantiago** Tutt (28i) is a darker form, deeper orange, and sometimes darkened by grey dusting, occurring in Britain; *incolorata*. equally meriting a distinctive name is a rare form, ab. **incolorata** ab. nov. (28i) in which the ground colour is pure pale ochreous, without any orange freckling, the veins and lines faintly brownish, the stigmata all but obsolete; the fringe pale; hindwing white; I have seen only 1 example, a ♀, certainly British, but without exact locality; *subflava*. the form **subflava** Ev., from Denmark, the Baltic, St. Petersburg, and the Ural Mts., recorded also from Asia Minor, has quite a different appearance, the 3 lines, inner, outer, and submarginal being accompanied by brown bands of uniform width, the stigmata marked with brown, and the hindwing with brown veins and terminal border. Larva grey brown with a pink tinge; dorsal and subdorsal lines whitish; between them a black spot surrounded with white tubercles on each segment; spiracular stripe yellowish white, broad; feeding on lime, when young living between spun-together leaves, afterwards resting by day in the chinks of the lime trunks. General in Europe, except Spain and Portugal, and in Asia Minor.

ledereri. **C. ledereri** Stgr. (28 k). Forewing ochreous yellow irrorated with rufous and tinged in places with grey; veins finely rufous; lines rufous; the inner fine, rectangularly bent on submedian fold, the angle in the pale, rufous-edged, claviform stigma; outer line excurved below costa, below vein 6 oblique and flexuous inwards; upper stigmata pale yellow ringed with rufous, the orbicular large and round, the reniform with some white at its lower inner angle and some grey and black scales at the outer; median shade diffusely brown, angled at base of reniform; submarginal line pale, preceded by grey lunules, the space between it and outer line sometimes filled in with grey; hindwing yellowish with sparse rufous dusting, the veins, an outer line, and a faint submarginal cloud rufous. Recorded from W. Turkestan only. In this and the following species the costa of forewing is quite straight to apex, which is acute and prominent.

approximata. **C. approximata** Hmps. (28 k). Forewing olive ochreous irrorated with olive rufous; the veins finely brown; the lines and edge of stigmata also brown; inner line fine, oblique outwards, touching median shade at inner margin; outer line slightly bent below costa then oblique inwards; median shade thick; stigmata large, conversely oblique; an olive grey band beyond outer line, limited by the dentate-lunulate submarginal line; hindwing dirty yellowish white, the inner marginal area grey — Recorded only from Kashmir.

melonina. **C. melonina** Btlr. (28 k). Forewing deep yellow with some orange red dusting; the veins red; lines brown, double; inner line angled basewards on veins, outwardly curved; outer line fine, dentate-lunulate, followed by a clear yellow band; submarginal line also followed by yellow and preceded by a grey band; median shade brown and distinct, bent in middle; stigmata pale and large, outlined with reddish; hindwing pale yellow; the inner marginal area reddish; a reddish outer and broader reddish submarginal line, not reaching costa. Described by Butler from the Punjab, N. India, but since recorded from Kashmir.

66. Genus: **Telorta** gen. nov.

Distinguished from *Cosmia* Tr. by the produced subfalcate apex of forewing and the sinuous termen; the inner and outer lines are nearly straight and conversely oblique; the coloration of both wings generally darker. Type *T. divergens* Btlr. The genus contains only 3 or 4 species, all of eastern origin.

edentata. **T. edentata** Leech (28 k). Forewing brownish rufous; inner and outer lines deeper red, finely edged conversely with pale yellow, the inner oblique outwards, slightly curved below, the outer nearly vertical and straight; the basal area before inner line and the postmedian area beyond outer somewhat deeper in colour; submarginal line slightly paler, waved; a diffuse median shade forming a brown spot between stigmata; these are large, pale, with paler outline; hindwing pale yellow; the inner margin below cell-fold dark grey, not reaching termen except at anal angle; fringe yellow; a strong dark grey cellspot. Recorded from Japan only.

divergens. **T. divergens** Btlr. (= *coriacea* Graes.) (28 k.) Forewing grey brown with a reddish tinge, finely dusted with fuscous; veins finely dark; outer and inner lines, and the edges of stigmata redbrown; the lines straight and conversely oblique; stigmata large, with rather darker centres, the reniform traversed by the broad median shade, which is bent in the lower lobe; submarginal line generally very faint, waved, consisting of dark lunules; marginal dark lunules; fringe brown with a pale base; hindwing dark fuscous, sometimes with traces of an outer line; anal tuft of the abdomen of the ♂ yellowish. Japan and E. Siberia.

acuminata. **T. acuminata** Btlr. (28 k). Forewing pale olive grey, with distinct darker fasciae before inner and beyond outer line; these are reddish brown, conversely oblique and edged with pale ochreous; the veins pale; stigmata dark, large, closely approximate, with pale dark-edged outlines; submarginal line dentate lunulate, pale; median shade broad, oblique inwards below middle; hindwing dull olive grey, with the apical area broadly yellow or greyish-yellow from costa to vein 2; the fringe yellow; anal tufts of abdomen yellow in both sexes. China and Japan. This species differs from the others in having the termen of forewing strongly crenulate.

Subfamily **Amphipyrinae**.

The species of the subfamily *Euxoinae* are characterised by the spinose tibiae; those of the *Hadeninae* by the hairy eyes; those of the *Cucullianae* by the ciliated eyes. The imagos of the next, the *Amphipyrinae*, are distinguished by the absence of all these characteristics; as might be expected in a group from which all the preceding subfamilies have been gradually developed, the species embraced by it are much more numerous than in any of the others, this subfamily being, roughly speaking, as large as all the others put together. Alike in structural peculiarities and in shape of wing the imagos will be found to be very variable; the neuration of the wings also, in a few genera, differs from the ordinary scheme of the *Noctuidae*, the areole being sometimes absent in the forewing, and in other cases vein 8 of the hindwing anastomoses for some distance with the upper margin of cell; but, with these few exceptions, the scheme of neuration remains stable. Here and there secondary sexual characteristics are noticeable in the ♂♂, especially in the genus *Eriopus*, as displayed in the distorted antennae and the hair-tufting of the tibiae.

The larvae are smooth, with single bristles from the tubercles, and have all the *prolegs* present; their habits vary as much as those of the preceding groups, the majority pupating in the ground, others spinning a cocoon among leaves, while those feeding within the stems of plants and reeds utilize these for their final transformations.

1. Genus: **Perinaenia** Btlr.

Tongue present; frons smooth, with large pad of scales; palpi strongly developed, upturned, third segment nearly as long as second, both with thick pads of scales below; antennae of ♂ shortly ciliated; thorax thickly scaled, without crests; abdomen dorsally flattened, without crests; forewing with costal and inner margins subparallel, the apex blunt, the termen nearly vertical. Type *Perinaenia lignosa* Btlr.

P. lignosa Btlr. (38 a). Forewing greyish ochreous, densely covered with grey brown striae, in some cases wholly grey brown, with black speckling; lines darker, often ill-defined; the inner vertical, waved; the outer excurved below costa, then vertical and dentate; a diffuse black streak along cell, upon which the two stigmata are represented by patches of white scales; a row of black marginal dots, preceded above middle by long black streaks in the intervals; hindwing dull yellowish suffused with smoky fuscous, with broad black marginal border, and large dark cell mark; fringe yellowish mottled with fuscous. China and Japan.

2. Genus: **Pyrois** Hbn.

Differs from *Perinaenia* Btlr. in the less developed palpi, of which the second segment is merely fringed with hair below, the terminal segment shorter, and smoothly scaled; in the antennae of the ♂ being pubescent only; and in the thorax, abdomen, and legs being clothed with hair instead of scales; the abdomen with lateral fringes of hair. Larva hibernates small, feeding up in spring, pupating in a spun cocoon among leaves and rubbish. Type *Pyrois cinnamomea* Kleem.

P. cinnamomea Kleem. (= *conica* Esp., *perfusa* Hbn.) (38 a). Forewing greyish ochreous varied and in lower half suffused with reddish brown; veins marked by black and white scales; lines and shading reddish brown; inner line acutely dentate, outwards in the intervals and inwards on the veins; outer line indistinct, except at costa and inner margin; submarginal line pale, defined by the preceding redbrown dentate-lunulate shade; a dark streak from base below cell; base of cell dark, continued narrowly above median vein to end of cell, marked at end, as well as the shorter upper part, by pale scales, representing the orbicular and reniform stigmata; hindwing dull cupreous red, darker towards termen, often with traces of a dark outer line. — Larva yellowish green; dorsal line whitish; lateral lines yellowish; on segments 10 and 11 an oblique yellow lateral streak from the dorsal to the lateral lines; head bluish green; feeds on Poplar, Elm, Spindle, etc. — An inhabitant of Central Europe, where it is found in France, Germany, Austria, Hungary, Switzerland and N. Italy; also in Asia Minor.

P. effusa Bsd. (38 a). Forewing greyish ochreous thickly speckled with fuscous and blackish; lines blackish starting from black costal spots; inner line waved, double; outer lunulate-dentate, the teeth pale ochreous on the veins; all 3 stigmata pale, with slight dark outlines; claviform small; orbicular rounded; reniform with a grey 8-shaped mark in its centre; a prominent black spot between the upper two and a dark dash beyond reniform; submarginal line pale, sometimes interrupted into spots, preceded by a dark shade marked with black wedged-shaped marks below costa and beyond cell; hindwing pale or dark fuscous; — the form *sciaphila* Stgr., from Dalmatia, Greece, and Sicily, is much paler, owing to the absence of the

usual dark shading and markings. — Larva pale to dark green, with a white red-tinged stripe above the feet; feeding on various lowgrowing plants, — *Heath*, *Cistus*, and *Cytisus*. Mainly a South European species, occurring in France, Spain, Italy, Sicily, Corsica, Dalmatia, Greece, and Germany; also in Syria, and in Algeria.

3. Genus: **Amphipyra** *Tr.*

Differs only slightly from *Pyrois* *Hbn.*, the second segment of palpi being smoothly scaled like the terminal, instead of fringed with hair, and the terminal longer and more pointed. Larva as in *Pyrois*, but only emerging from the egg in spring. Type *Amphipyra tragopoginis* *L.*

- pyramidea.* **A. pyramidea** *L.* (38 a). Forewing brownish fuscous, sometimes much speckled with white or ochreous; lines darker, double, filled up with pale, both nearly vertical; the inner bluntly angled outwards in the intervals and inwards on the veins; the outer sinuous above middle, lunulate-dentate below; submarginal pale, preceded by darker shading, often containing black wedgeshaped marks; median shade diffuse, broad; cell filled up with blackish, and often a fine black line along submedian fold; orbicular stigma only represented, as a pale black-centred ring; hindwing deep coppery red, the costal third bronzy fuscous; — ab. **albisquama** *ab. nov.* (38 a) has the pale ring of the orbicular, the submarginal line, and the marginal spots brightly white and the outer line more broadly filled up with distinct cream white; the ground colour is uniformly dark brownish fuscous, obscuring all the horizontal pale markings and the pale veins, so that only the transverse lines are visible; thus it resembles the much larger eastern species
- variegata.* **A. monolitha**: all the examples are from Herculesbad, Hungary; — ab. **variegata** *ab. nov.* (38 b) from Algeria has the basal half of forewing and the terminal area sprinkled with pale scales, and the annulus of the orbicular stigma is broadly white; — in ab. **virgata** *Tutt* the median area, between inner and outer lines, forms a broad dark band, and the terminal area is dark on each side of the subterminal line, as in *pyramidoides* *Guen.* from N. America. Larva green; dorsal line white; subdorsal lines yellowish white, interrupted; spiracular greenish white; head green; 12th. segment with a large conical prominence, bent obliquely backwards, its apex redbrown, thickened and hardened; feeding on oak, elm, birch, and other forest trees. Generally distributed in Europe; occurring also in Armenia, Asia Minor, Persia, and W. Turkestan; and in Japan and Corea.
- albisquama.* **A. monolitha** *Guen.* (= *surnia* *Fldr.*) (38 b). Like *pyramidea* but much larger; the ground colour darker, more uniformly brownish fuscous; outer half of median area generally forming a well-marked blackish fascia across wing; the outer line is edged with white, which sometimes forms a broad diffused space reaching nearly to submarginal line; — in ab. **strigata**, *ab. nov.* (= ab. 2. *Hmps.*) (38 b) there is no blackish fascia across the wing, but a thick black streak from orbicular along cell to outer line; —
- strigata.* on the other hand, in the ab. **obscura** *Oberth.* (= *obliquilimbata* *Graes.*) (38 b), from Amurland, the dark tints are intensified, and the hindwing is darker and deeper red. Guenée's type came from Sylhet, N. India; the insect is common in Japan, W. China, and Amurland.
- obscura.* **A. livida** *F.* (= *scotophila* *Hbn.*) (38 c). Forewing deep bronzy purplish-brown, without markings; hindwing pale coppery yellow; costal area and upper half of terminal area and the fringe purplish brown;
- livida.* — in ab. **restricta** *ab. nov.* (38 c), from Uralsk, the hindwing is brighter yellow, with the apical area much more narrowly darkened; — examples from Amasia, Syria, have the hindwing wholly pale coppery red, with similar slight apical clouding = ab. **cupreata** *ab. nov.* (38 c); — a third form, ab. **infusata** *ab. nov.* (38 c) from Ichikishiri, Yesso, differs in the opposite direction, the hindwing being more or less wholly suffused with smoky fuscous. Larva yellowish green; dorsal line darker, edged with paler green; subdorsal lines yellowish; lateral stripe yellow; feeding on various low plants. Found in France, Germany, Austria, Hungary, Italy, Corsica, Rumelia, Russia; in Armenia and Asia Minor, W. and E. Siberia, and Yesso, Japan.
- restricta.* **A. corvina** *Motschl.* (38 c). Larger than *livida*, the forewing more purple, the hindwing more coppery. Japan, Corea, West and Central China.
- cupreata.*
infusata. **A. tripartita** *Btlr.* (38 c). Forewing black; inner and outer lines represented by broad white bands, the outer somewhat curved and ending at anal angle; submarginal line silvery bluish white, irregularly dentate-lunulate, becoming broadly white at anal angle where it joins the outer band, from which it is separated by some fulvous scaling; a row of silvery bluish white spots just before termen, preceded by black wedgeshaped marks and lunules; hindwing fuscous black. Japan, Central China.
- corvina.* **A. jankowskii** *Oberth.* (38 d). Forewing black from base to outer line, the basal field slightly greyer than the central; lines white; inner irregularly waved, vertical; the outer dentate-lunulate, outcurved to near anal angle; terminal area ochreous grey, traversed by a paler submarginal line, preceded at costa by

a black blotch and below by black streaks in the intervals; a white dot represents the orbicular stigma; hindwing pale fuscous, darker towards termen, with a darker curved outer line. E. Siberia, Corea.

A. erebina *Blr.* (= *perflua* *Leech* nec *F.*) (38 d). Forewing brownish grey; the basal field and inner half of central area suffused with rufous-brown, the outer half only black-brown; inner line double, angulated, the edges black; orbicular stigma pale with dark centre; submarginal line pale, preceded by a black blotch on costa; hindwing fuscous, with rufous grey fringe. E. Siberia, Japan, China, Corea.

A. perflua *F.* (= *pyramidina* *Esp.*, *ulnea* *Schrank*) (38 d). Differs from *jankowskii* in having the basal area grey as well as the terminal; the central fascia dull black, its inner half often paler; the inner and outer lines pale grey, double; the outer arm of the latter ochreous grey and lunulate-dentate; veins towards termen darker; submarginal line wavy, dentate, not preceded by a dark costal blotch; terminal area with dark dashes in the intervals; orbicular stigma very indistinct; hindwing pale fuscous. — Larva pale green; dorsal line white; lateral lines yellowish white, interrupted in middle; 12th. segment humped, an oblique yellow line running forwards from it along segment 11 and a white line backwards; feeding on elm, sawow, and other trees. Occurs in France, Germany, Austria, Hungary, Switzerland, Scandinavia, Russia, (Livonia, Kurland, and the Urals); also in Armenia, W. and E. Siberia.

A. tetra *F.* (38 d). Forewing deep redbrown, dusted with fine grey scales, without any markings, except the usual 3 or 4 praeapical pale costal spots, which are often absent; hindwing dull greyish coppery, greyer along termen; the fringe grey; — **pallida** *Stgr.* (38 d), from Asia Minor, Syria, and Persia, is a paler duller brown form, the hindwing suffused with fuscous. — Larva green; dorsal line darker; subdorsal lines yellowish white; head black, with a pale line in middle; on *Hieracium*. This species is found in Germany, Austria, Hungary, Switzerland, and S. Europe except Spain; in Algeria; Armenia, Asia Minor, Syria, Persia, and the Altai Mts., W. Siberia.

A. tragopoginis *L.* (= *luciola* *Hufn.*, *repressus* *Grote*) (38 d). Forewing dull brown, dusted with paler scales, varying from pale to blackish brown; submarginal line only visible, indicated by a paler tinge preceded by a darker shade; orbicular stigma a blackish dot; reniform represented by two, one above the other, at end of cell; hindwing rufous fuscous, paler towards base; — **turcomana** *Stgr.* (38 e) is pale ashy grey, with no trace of submarginal line, and the stigmata very faint and more or less obsolete; the hindwing also much paler, dull whitish, becoming grey towards termen; (this central asiatic form is probably a good species: the forewing has the apex more decidedly prominent); — the blacker forms are separated as ab. **nigrescens** *Spul.* (= *tetra* *Haw.* nec *F.*). Larva green, dorsal and subdorsal lines yellowish or white; spiracular line yellowish; spiracles black; feeds on a variety of low growing plants. Abundant throughout Europe (except the extreme North, and not occurring in the South of Spain, Sicily, or the Balkans); also in Armenia, Asia Minor, Syria, Persia, W. Siberia, and Kashmir, extending thence into the Punjab, N. India.

A. stix *H. Sch.* (38 e). Forewing blackish, speckled with grey scales; submarginal line pale, whitish at inner margin, nearly vertical; the terminal area beyond it fuscous grey; orbicular and reniform obscure dark spots; hindwing brownish grey, darker towards termen. One of the smaller species, in Europe found only in the Balkans; but occurring in Armenia, Asia Minor, and Palestine.

A. schrenckii *Mén.* (38 e). Forewing dark fuscous brown, with a slight purplish or rufous tinge; inner and outer lines blackish, conversely pale-edged; the inner strongly angled outwards in the intervals and inwards on the veins; the outer excurved from costa, then lunulate-dentate; a chalkwhite apical patch; orbicular stigma a white dot; reniform a dark shade with a few white scales on it; hindwing rufous fuscous; a form occurs in Central China without the white apical blotch, ab. **uniformis** *ab. nov.* Found only in Eastern Asia, Amurland, Japan, China, and Corea. A large species.

A. subrigua *Brem. & Grey* (38 e). Forewing blackish fuscous, grey-speckled; the two lines black, conversely edged with paler; the inner vertically waved; the outer twice outcurved, indented beyond cell, where it is accompanied by some pale scales; a row of whitish dots in the intervals just before termen; orbicular a dark dot in a very faint pale ring; reniform a dark patch; hindwing fuscous strongly tinged with bronzy rufous. North and West China.

A. micans *Led.* (= *frivaldskyi* *Mocsáry*) (38 e). Forewing ochreous grey, suffused with blackish fuscous, sometimes uniformly over the whole wing, at others with the central area or its outer half blacker; the lines black, disposed much as in the preceding species; submarginal line pale, close before termen, the space preceding it generally with black streaks in the intervals; orbicular stigma white, usually placed in a horizontal black streak through cell; sometimes an ochreous streak along submedian fold forming a paler patch beyond outer line; hindwing wholly dark fuscous. In Europe only in the South East, in Hungary and Bulgaria; also in Syria and Asia Minor.

- molybdea*. **A. molybdea** Chr. (39 c). Like *micans* but paler; the reniform stigma faintly expressed; hindwing much paler. Recorded only from Sarepta, S. Russia, and Asia Minor. Perhaps not truly distinct.
- alpherakii*. **A. alpherakii** Stgr. (38 e). Forewing pale ashgrey from base to submarginal line, before which the grey is darkened, and sometimes becomes fuscous, with the veins pale between outer and submarginal lines; inner and outer lines very indistinct; the former obliquely waved outwards, the latter excurved above, then vertical; costa marked with dark spots where the lines rise; orbicular stigma a flattened oval, whitish; reniform pale, defined by darker; the cell sometimes dark; terminal area beyond submarginal line whitish grey; marginal lunules black and regular; hindwing luteous whitish, becoming rufous fuscous along termen; the fringe white. Hi, E. Turkestan.
- cancellata*. **A. cancellata** spec. nov. (= *alpherakii* Hmps. ab. 1., nec Stgr.) (38 e). Decidedly larger than *alpherakii*, greyish brown in coloration, becoming dark brown before the white submarginal line, with the traversing veins white; the cell also dark brown; the orbicular a small pale ring with grey centre; the reniform a pale lunule; lines as in *alpherakii*, but both more distinct; terminal area and fringe pale ochreous grey; hindwing fuscous, with a coppery tinge basewards; the fringe pale grey. Tedschen oasis, Merv, W. Turkestan. Apparently an intermediate form between the preceding species *alpherakii* Stgr. and the next species *sergei* Stgr.
- sergei*. **A. sergei** Stgr. (39 c). Larger than the last species, but with the same coloration and markings; the stigmata blackish with fine white annuli. W. and E. Turkestan.

4. Genus: **Gracilipalpus** Calb.

Distinguished from *Amphipyra* Tr. by the presence of crests on the prothorax and metathorax; the second segment of palpi is broadly fringed with scales in front, while the third is long and porrect instead of being erect; the antennae of the ♂ are ciliated. Type *Gracilipalpus ephialtes* Hbn.

- turcomanica*. **G. turcomanica** Chr. (42 a). Forewing grey suffused with blackish brown, slightly reddish-tinged; median area darker except just beyond the reniform, the postmedian area darker in costal half; inner and outer lines dark, double, filled in with grey; orbicular stigma hardly visible, rounded; reniform dark with pale annulus; subterminal line whitish, preceded by a grey shade; hindwing fuscous, with a pale oblique line just beyond middle. W. Turkestan.
- ephialtes*. **G. ephialtes** Hbn. (= *nubilaris* Grasl.) (42 a). Forewing glossy grey brown dusted with darker; lines dark conversely pale-edged, the inner nearly vertical, the outer excurved above; the reniform stigma a diffuse dark patch; orbicular absent; submarginal line pale, defined by the preceding dark shade; hindwing rufous fuscous. Spain, Italy, Sicily, Morocco.

5. Genus: **Stygiostola** Hmps.

Agrees with *Gracilipalpus* in having the prothorax and metathorax crested; but the antennae of the ♂ are heavily bipectinated to apex, those of the ♀ having tufts of scales on each segment; palpi with second segment thickly fringed with hair, the terminal shortly porrected; pectus and legs woolly; ♀ smaller, with narrower wings, than ♂. Larva hatched in autumn hibernates, feeding up in spring; pupation subterranean. Type *Stygiostola umbratica* Goeze.

- umbratica*. **S. umbratica** Goeze (= *tenebrosa* Hbn.) (38 f). Forewing dull fuscous brown, sometimes greyer-tinged, at others more fulvous along inner margin and across wing; the lines dark, but usually indistinct, though indicated on costa by pale spots; inner line waved, oblique outwards; outer line more vertical, lunulate-dentate; submarginal line paler, preceded by a darker shade; median shade broad, diffuse, generally well-developed; passing between the upper stigmata, which are rarely clear; the orbicular small and round, the reniform with whitish scales on outer edge; hindwing dull fuscous; the greyer. Examples are ab.
- phaeus*, *ferruginea*, *obscura*. **phaeus** Haw. ♂ (= *obsoletissima* Haw. ♀) (38 f); — **ferruginea** Stph. (? Esp.) (38 f) is the form with partial fulvous suffusion; — ab. **obscura** Tutt (38 f) has the ground colour unicolorous blackish brown with the markings more obscured, occurring in Scotland and other localities. Larva thick, dark red-brown; dorsal and subdorsal lines yellowish; between them a series of oblique dark streaks; spiracular line grey; spiracles black; head dark brown; feeding on *Fragaria* and *Geum*, and other low plants. Of general distribution throughout Europe, (except the extreme South, Spain, Greece), also occurring in Armenia.
- ripleyi*. **S.?** **ripleyi** Holl. Forewing grey, the basal half paler than the terminal; inner and outer lines double, blackish, filled in with greyish white; an irregular black spot at base edged with white; orbicular

stigma pale edged with black; reniform black with grey ring; median shade dark and broad at costa; in the terminal area are 3 subparallel narrow black lines, the inner two running obliquely from costa to termen, the third interrupted reaches inner margin before the *ternus*; hindwing rufous grey, the termen broadly blackish; fringes whitish chequered with dark; frons white; prothorax grey bordered with white; thorax and abdomen lustrous pearly grey. Japan. Placed here provisionally; it does not seem to have been observed since its original capture in some numbers by Dr. Holland.

6. Genus: **Orthogonia** *Fldr.*

Tongue well-developed; palpi large, obliquely upturned, second segment broadly fringed with hair in front, the third also rough with hair; frons smooth, but with a pad of hair; antennae of ♂ minutely ciliated; thorax clothed with scales; the tegulae produced to form a ridge; prothorax triangularly crested; wings ample; forewing with costa arched at base, the apex produced; the termen crenulate and bent at middle. This and the succeeding genus are distinguished by their large and ample wings. Type *Orthogonia sera* *Fldr.*

O. sera *Fldr.* (38 g). Forewing pale grey, often tinged with rufous, or mossgreen, or fuscous, dusted and striated with darker; basal line developed into an irregular oblique band swollen on median and below vein 1; inner line angled outwards on median vein, sinuous above and below; outer biconcave, slightly projecting outwards on vein 4; central area olive brown, often tinged with rufous or purplish, deeper towards the edges and beyond the median shade; claviform stigma obscure, hidden by a dark shade, with a dark spot at its tip; orbicular and reniform large, oblong, the former erect, the latter oblique, generally filled up with leaden purple; submarginal line pale, diffuse, preceded by an olive shade containing a pair of blackish spots one on each side of vein 5, and followed by a darker terminal area obliquely cut off above 5; inner margin with a broad pale streak, whitish, ochreous, greenish, or orange red; hindwing deep olive fuscous; the fringe white with the base yellow or grey; — ab. **purpurata** *ab. nov.* (38 g) has the ground deep plum colour, undusted, with the dark areas, especially the terminal, much obscured; ab. **purpurata**.
carneata *ab. nov.* (38 g) has the ground deep flesh colour, the dark markings much variegated with red scales; ab. **carneata**.
obscurata *ab. nov.* (38 h) is much darker; the ground colour dark grey, tinged often with rufous, or ochreous, or purple, and densely dappled with darker; the median vein and all the veins in terminal area finely pale; the median area finely edged with pale dark-margined lines; the median area itself deep purple brown or fulvous brown, rarely olive tinged; the terminal markings obscured or sub-obsolete; ab. **obscurata**.
lilacina *ab. nov.* (38 h) is an extreme form, with the ground colour pale lavender-grey slightly speckled with green, and the dark areas pale or deeper green, varied with lavender-grey, the reniform of this last colour; the costal edge red throughout; hindwing and underside of both wings much paler. Found only in Japan and Central China. The form *obscurata* with the pale veins and markings is perhaps a good species. **lilacina**.

O. plana *Leech* (39 a). Differs from *sera* in having the lower half of inner line straight and oblique inwards to near base, its upper half crenulate; the outer edge of the central area is dentate lunulate, the teeth strongly marked with black on the veins; the pale submarginal line is straighter, fulvous olive; in the typical form the whole ground colour is olive fulvous; the outer half of median area beyond median shade deeper than the inner half; the orbicular stigma round, dark, in a pale ring; the reniform large, elongated, fulvous with pale outline; the claviform slightly marked at its apex with black; hindwing brownish fuscous, with rufous ochreous fringe; by far the commoner form seems to be the ab. **semigrisea** *ab. nov.* (39 a), in which the outer half of the forewing is pale grey, tinged with rufous or darker grey and coarsely striated with fuscous; the fulvous of the central area also varies, becoming duller and dark fuscous; less common is the ab. **suffusa** *ab. nov.* (39 b), dark olive fulvous throughout, the space beyond outer line and the basal area alone paler. Recorded from various localities in W. China. **semigrisea**.
suffusa.

O. plumbinotata *Hmps.* (38 h). Forewing greyish flesh colour, striated with darker; the median area dark olive fuscous flushed with purplish, except the inner costal half, which agrees in colour with the basal area and is tinged with purplish; the grey round orbicular stigma lies on the border of this pale area; the lower third of the elongate reniform paler and plainer than the rest; the inner line, limiting the median area, is, like that of *plana*, straight and inwardly oblique; the outer line is less lunulate; the inner edge of the dark terminal area is curved from anal angle to vein 7, instead of being straight to vein 5 and then obliquely truncate; inner margin pale-streaked; hindwing olive fuscous. W. China. **plumbinotata**.

O. canimaculata *spec. nov.* (= *plumbinotata* *Hmps.* ab. 1.) (39 a). Smaller than *plumbinotata*; the ground colour pale grey (paler in the ♀) tinged with purplish grey; the median and terminal areas deep purple fuscous, almost black; the basal area dark purplish, this hue also embracing the inner costal portion of median fascia but to a less extent than in *plumbinotata*; reniform stigma much less elongated; terminal **canimaculata**.

area with inner edge straight to vein 5 from anal angle, then obliquely truncate; median vein and veins towards termen finely whitish; a patch of whitish scales on submedian fold beyond outer line; hindwing deep olive fuscous. Che-tou, W. China.

grisea. **O. grisea** *Leech* (38 h). Forewing pale lilac grey clouded with darker, somewhat violet, grey, and dappled with dark grey; subbasal line developed into a velvety black oblique band, interrupted into blotches by the veins, the ground colour immediately beyond it whiter grey; inner line very indistinct, regularly curved, not angled, as in the other species, ending on inner margin in an oblique black streak nearly touching subbasal line; median shade curved parallel to inner line and like it only plain on costa and at inner margin; the places of the stigmata are occupied by mere indefinite pale patches; terminal area olive grey with pale veins, limited inwardly by the violet grey ground colour, the edge of which curves from $\frac{2}{3}$ of costa to anal angle; above and below vein 5 are patches of black scales within the terminal dark area; hindwing dull olive fuscous; the species is still smaller than *canimaculata*, and is distinguished at once by the absence of distinct lines; — in the ab. **plenifasciata** *ab. nov.* (39 b) the space between inner and outer lines is olive fuscous, with diffuse, ill-defined outer edge. Omei-shan, W. China.

7. Genus: **Mania** *Tr.*

Differs from *Orthogonia* in the strongly crested thorax and abdomen. Larva stout, naked, with a slight hump on segment 12; the head small; hibernates, feeding up in spring; pupa in an earthen cocoon. Type *Mania maura* L.

maura. **M. maura** L. (= lemur *Meinecke*, *virgata* *Tutt*) (39 b). Forewing dull fuscous blackish, the median area usually darker; the paler ground colour being really ochreous grey, thickly dusted with fuscous; subbasal line double, forming two series of groups of black scales across basal area; inner and outer lines double, filled in with pale, both oblique basewards below vein 1; median vein and its branches pale; subcostal space with 5 black blotches above median area; orbicular stigma large, oblique, pale with dark dusting; reniform dark with pale outline, widened outwards on both sides below; submarginal line pale, preceded by a dark fuscous shade, angled outwards above and below middle; apical area above vein 6 pale grey; hindwing dull fuscous, with a straight pale band beyond middle, followed by a broad black subterminal border, outwardly edged by a pale submarginal line; in the form **striata** *Tutt* (39 b) the transverse lines as well as the median vein and veinlets are conspicuously pale. Larva pale ochreous clouded with darker; dorsal and subdorsal lines whitish, irregular, with oblique pale darker-edged streaks between; spiracles reddish above a yellow line above the feet; on the 11th. segment a yellowish white black-edged transverse stripe; feeds on numerous low growing plants. The species occurs throughout Europe; also in Armenia, Asia Minor, Palestine, and W. Turkestan.

muscivirens. **M. muscivirens** *Bthr.* (39 b). Forewing olive fuscous; the median area and part of the terminal usually much darker fuscous, the intervening space and the basal area paler; the subcostal, the median vein with its veinlets across the darker areas, the transverse lines, and the outlines of the upper stigmata olive ochreous; inner line well-curved, below median strongly oblique to inner margin near base; outer line bracket-shaped, slightly angled outwards above vein 4, followed by dark and light dashes on the veins; claviform stigma blackish, broad and short; upper stigmata with fine pale outlines; submarginal line ochreous grey, indented on each fold, preceded by a dull olive fuscous shade beyond a paler clouded space which follows the outer line; hindwing dark fuscous. Japan and Corea.

This and the following three Chinese species have more elongate, narrower forewings than the European *maura*, approaching in this respect the species of the preceding genus *Orthogonia*, likewise oriental.

venata. **M. venata** *Hmps.* (39 c). Smaller than *muscivirens*, the paler basal and postmedian areas suffused with silvery grey, which forms a pale lunulate band in postmedian area before the narrow darker cloud which precedes the submarginal line; veins slenderly yellowish; median area beyond reniform black; hindwing brownish fuscous. W. China only. Distinguished from *muscivirens* by the inner line being more lengthily outcurved below median vein before the oblique course towards base commences.

nyctichroa. **M. nyctichroa** *Hmps.* (41 d). The same size as *venata*, but with a distinct yellowish brown tint instead of silvery grey; the median and terminal areas hardly darker than the rest; inner line angled outwards on the submedian fold, then oblique inwards; outer line closely approximated to reniform stigma; the veins scarcely paler; hindwing deep fuscous. Kiukiang, Central China; W. China. This and the following species have no pale streak along the inner margin of forewing.

M. phaeochroa *Hmps.* (41 d). Forewing grey brown; the veins not pale; the inner line curved and waved obliquely outwards; the claviform large, redbrown; the upper stigmata grey, the cell brown before the orbicular and between the two stigmata; and the median area brown beyond the reniform, continued as a narrow band to inner margin; otherwise like *nyctichroa*. Wa-shan, W. China. *phaeochroa*

8. Genus: **Dipterygia** *Stph.*

Tongue well-developed; frons smooth, with a pad of scales; palpi upturned, second segment roughly scaled, the terminal smooth; antennae of ♂ ciliated; thorax with a double ridge-like crest; abdomen with dorsal crests; forewing elongate, with the costal and inner margins subparallel; the termen crenulate and slightly excised above anal angle. Larva stout and thick, with a hump on segment 11; on low plants, pupating in a slight cocoon on the ground. Type *Dipterygia scabriuscula* L.

Sect. II. Thorax and mid femora of ♂ without thick tufts of dark hair.

D. scabriuscula L. (= *pinastri* L., *tripterygia* *Esp.*) (38 f). Forewing brown black; the inner margin narrowly and the postmedian space below vein 3 whitish, with the veins and intervals marked with pale olive brown, often some pale brown suffusion also about vein 6; a fine black streak from base below cell; the lines and edges of stigmata black; inner line with 4 angles outwards, that below vein 1 long and acute; outer line oblique outwards to 5, forming a projection between 4 and 5, then bisinuate to middle of inner margin; claviform stigma long and narrow; orbicular oval, flattened, sometimes touching the large reniform; terminal area with black streaks between veins; subterminal line visible only below vein 2, the anal angle beyond it blackish; hindwing fuscous. — Larva redbrown, marbled and dotted with darker; dorsal line finely white with brown edge; lateral lines broadly pale, dark-edged above, crossed by a series of oblique brown stripes; head brown with black streaks; on *Rumex*, *Polygonum*, and various other plants. Occurs throughout North and Central Europe, and in Asia Minor and Armenia. *scabriuscula*

D. caliginosa *Walk.* (38 g). Larger, more brown black than *scabriuscula*; but the inner margin and anal space much darker brown; the outer line, which in *scabriuscula* is bisinuate with a rounded outer projection below vein 2, is also biconcave, but forms a rectangular projection between on the submedian fold; otherwise as in *scabriuscula*; hindwing with more distinct dark outer line and submarginal shade. Japan and China. *caliginosa*.

D. japonica *Leech* (38 g). Intermediate in point of size between the Western *scabriuscula* and the Eastern *caliginosa*; from both it is distinguished by the course of the outer line, which below the middle is much more oblique, forming, like *caliginosa*, an angular prominence on the submedian fold, but thence running obliquely and touching the elongated tooth of the inner line below vein 1. Yokohama, Japan: also from Ichikishiri, Yesso. *japonica*.

9. Genus: **Parastichtis** *Hbn.*

Tongue present; frons smooth, with a pad of hair; palpi obliquely upturned, second segment hairy in front, third short, smooth; antennae of ♂ pubescent, very shortly ciliated; thorax, pectus, and tibiae hairy; a double dorsal ridgelike crest on thorax, higher at each end; dorsum slightly crested, and with lateral fringes, the anal tufts large; forewing elongate, widening outwards; termen crenulate. Larva, as far as is known, all feeding on grasses, overwintering and feeding up in spring; pupa in a cocoon among the roots. Type *Parastichtis hepatica* L.

P. lithoxylea *F.* (= *sublustris* *Esp.* (part), *musicalis* *Esp.*) (39 c). Forewing whitish ochreous, faintly washed with pale brown; veins brown before termen; inner and outer lines pale, brown-edged, more or less interrupted except on costa; the inner with sharp long teeth outwards between veins, the outer marked by a double row of brown vein dots; a broad diffuse brown median shade ending on submedian fold where it is margined distinctly with brown; submarginal line acutely dentate, preceded by olive brown wedged marks, and followed by darker brown dentate marks to margin, strongest on both folds; orbicular and reniform hardly marked, separated by the brown median shade; hindwing whitish ochreous, with the veins and cell spot brown; a diffuse brownish submarginal cloud. Larva ochreous or greenish grey, with dark tubercles; head and thoracic plate black brown; at roots of grass. Occurs throughout Europe, also in Asia Minor, Armenia, and W. Siberia. *lithoxylea*.

P. sublustris *Esp.* (= *lithoxylea* *Hbn.* nec *F.*, *musicalis* *Dup.* nec *Esp.*) (39 c). Differs from *lithoxylea* *F.* in having the forewing shorter, more strongly suffused with brown, or brownish grey, especially *sublustris*.

along costa which in *lithoxylea* is whitish; stigmata much plainer; outer line more continuously lunulate-dentate, the median shade at its lower extremity extending from inner to outer line; the terminal brown shades more distinct; the brown clouding on submedian fold before submarginal line absent; hindwing with better-defined markings. Larva like that of *lithoxylea* but redder. — Less widely distributed than the preceding species or else overlooked; Britain, France, Germany, S. Scandinavia.

- standfussi*. **P. standfussi** Trti. Forewing white with a faint redbrown tinge and some black dusting, the median area, the costa beyond middle, and the terminal area suffused with blackish; a black streak below base of cell, and another above inner margin before inner line, a third on submedian fold between inner and outer lines; these are blackish, conversely edged with whitish; the inner strongly angled outwardly below costa, in cell, and above and below vein 1; the outer angled outwards at vein 6 then oblique inwards, lunulate-dentate; subterminal line pale, preceded and followed by small black dentate marks; stigmata defined by black; the orbicular narrow, oblique, white; the reniform grey and large, produced inwards along median nervure; hindwing white; the veins and termen brownish; — ab. **sicula** Trti. (39 c), from Sicily, is very pale brown, with the lines obscured, the reniform obliterated, the orbicular narrower, and no dark shades in median area; — ab. **sardoa** Trti. (39 d), from Sardinia, slightly smaller than typical examples, has the stigmata conspicuous in the blackish median area, and the lines broad and well-marked; — ab. **corsica** Trti. (39 d), from Corsica, has the ground colour glaucous, and the markings and lines less conspicuous. This species, I find, is very close to, possibly merely a form of, *ribbei* Pueng p. 169.
- perstriata*. **P. perstriata** Hmps. (39 d). Forewing redbrown varied with whitish; a black streak from base below cell, defined above by whitish; inner and outer lines black, double; the former preceded by white points on veins, strongly dentate outwards between veins, the tooth below vein 1 reaching outer line; outer line marked by double black vein dashes with a white dash between them; claviform stigma black, with an obscure dark streak from it to outer line; orbicular and reniform brown with pale outlines, the orbicular long and narrow, the reniform with only a white dot at lower extremity followed by a dark dash; submarginal line whitish, the terminal area beyond it blackish except at apex, the veins and interspaces black-streaked; hindwing brownish fuscous. Chang-yang, W. China.
- chinensis*. **P. chinensis** Leech (39 d). Forewing pale yellowish ochreous, suffused along costa and termen with purplish brown; a black streak from base below cell; inner and outer lines black; claviform stigma outlined with black; upper stigmata with fuscous centres and pale outlines, the cell dark; submarginal line pale, followed only by dark patches; the apical area pale, surrounded with darker; hindwing pale ochreous, with the veins, cellspot, outer line, and submarginal border darker. Described by Leech from a single ♂ from Chia-kou-ho, W. China.
- hepatica*. **P. hepatica** L. (= *temera* Hbn., *implexa* Hbn., *nux* Ferr.) (39 d). Forewing grey brown or pale liver coloured; inner and outer lines double, obscurely marked; a thick black streak from base below cell, and a more diffuse one obliquely below it above inner margin; claviform stigma small, with black outline; orbicular oblique with brown centre and pale ring; reniform pale, defined only on its inner edge by a brown line with a pale dot at lower end, the cell between them dark brown; submarginal line pale, indented on each fold, preceded by black blotches on costa and on the folds and followed by dark marks on the latter only; hindwing brownish fuscous, paler towards base, with dark cell spot; — very frequently the whole forewing is suffused with reddish brown, throwing up the paler transverse markings; this is the form **characteria** Hbn. (39 d); — an extreme development of this, with the basal area above the black streak remaining prominently pale is the ab. **epomidion** Haw. (39 d); — **alopecuroides** Spul., from the Bukowina, denotes a form in which the whole forewing is redbrown, as in the form of *rurea* F. called **discrepans** Esp.; — **discrepans** Stgr., from the Ussuri, is described as being much darker, the forewings coloured as in *gemina* Hbn. — Larva grey brown to redbrown, paler at sides and on venter; dorsal line fine, yellowish; subdorsal also yellow and slender; lateral line grey; spiracles black; head and thoracic plate brown, the latter with 3 white lines; feeding on grasses. Occurs in Britain and throughout Northern and Central Europe; in the Altai Mts., W. Siberia, and in Amurland.
- sodalis*. **P. sodalis** Btlr. (= *obliquiorbis* Moore) (39 e). Forewing ochreous washed with rufous, the costal and terminal areas, and the central field above submedian fold dark redbrown; veins towards termen redbrown; lines brown, double, not distinct; inner line curved between the veins and acutely toothed outwards below vein 1; a brown streak from base below cell, and another on inner margin; claviform brown, outlined with black; orbicular rufous with dark outline, narrow and oblique; reniform with inner half dark brown, outer half ochreous, undefined; the cell dark redbrown; submarginal line rufous, with brown shading before it, the terminal area black brown; hindwing greyish ochreous with cellspot, outer line, and veins darker; a broad fuscous marginal border. Japan and China; also found in N. India.
- rurea*. **P. rurea** F. (= *luculenta* Esp.) (39 e). Forewing pale lilac grey, often washed with pale brownish; the veins paler; costal area tinged with purplish grey; inner margin with white, and with a strong black

streak near base; inner and outer lines double, brownish, the outer followed by a double row of dark brown vein dots with a white dot between; claviform stigma brown, with darker outline; orbicular generally elongate and narrow, sometimes shortened and rounder, with centre brown as in reniform and pale outline, the outer half of the reniform paler than the inner, and the lower lobe dark; cell and median shade brown, the latter not reaching below cell; marginal area beyond submarginal line dark redbrown, emitting large teeth inwards on the two folds; hindwing fuscous, pale grey towards base; — ab. *argentea* Tutt is a form from Scotland in which the ground colour of forewings is shining silvery whitish, with traces of faint brownish costal streaks; the terminal area and basal streaks pale brown; all other markings obsolete, except a trace of reniform stigma; hindwing pale grey; — *ochrea* Tutt (39 e) and *intermedia* Tutt (39 e) seem to represent merely the type form when washed with pale ochreous, or with rufous ochreous respectively, this last being the commonest form in Britain; — *flavorufa* Tutt is a rare form, from the North of England and Scotland only, with ground colour dull yellow red, with the ordinary markings obsolete, except the stigmata which are distinct and outlined with yellow; some short yellow costal dashes, a yellow patch at base of costa, and some yellow scales on the dark veins; — the form *putris* Hbn. (= *borealis* Curt.) (39 e) has the whole of forewing suffused with dull grey brown, the median area between inner and outer lines darker brown from costa to inner margin; the white scales of inner margin plainer; some examples are more uniformly dark and with obscured markings, while others are paler brown and show the markings clearly; — *combusta* Haw. (? = *subrurea* Petersen) (39 e) is a dark fuscous form of this, in which the basal area and both lines are mixed with white scales, the outer edge of the reniform being also whitish; — ab. *alopecurus* Esp. (= *combusta* Hbn., *aquila* Donz.) (39 f) is redbrown with the veins dark, the costa and inner margin and sometimes the veins dusted with whitish, and the stigmata edged with yellow; the two folds redder than the rest; in some cases this red tint predominates and makes the whole wing red; in others the blackish shades overpower the red, these last being *nigro-rubida* Tutt (39 f); — ab. *subrurea* Petersen is a form with the forewing darkened with grey brown, with clear markings, and the reniform not picked out with yellow — and may be the same as *combusta* Haw.; *extincta* Stgr. (39 f), from Issykkul and Kuku Nor, has the forewing pale uniform lilac grey; the terminal area and the cell dull redbrown; the lines very indistinctly expressed; the stigmata pale grey, the outer edge of the reniform whitish; the dark form corresponding to this, — as *alopecurus* does to typical *rurea*, — ab. *uniformis* *ab. nov.* (39 f) is wholly dull dark liver colour, with no markings except the pale inner and outer lines and the whitish outer edge of the reniform stigma; the hindwing, as in *extincta*, smooth pale grey. Larva rosy grey or red-brown, mottled with darker; dorsal line white with black edges; lateral line broad, ochreous yellow, with an elongated black mark above it on each segment; head and thoracic plate black brown; on grasses. — Throughout Europe, except Spain; in Armenia, Siberia, Turkestan, Tibet, Amurland; recorded also from Japan and China.

P. funerea Hein. (39 f). Forewing blackish red-brown, the redder tints confined to the two folds and the submarginal line; the inner and outer lines very obscure; a thick black streak above inner margin near base; stigmata somewhat paler than ground colour, edged with black; outer edge of reniform dotted with white and with a longer yellowish or white mark at its middle, often preceded by some white scaling; from the reniform to outer line two thick black streaks run, with sometimes a third above them; these two streaks are characteristic; submarginal line reddish, preceded by black teeth, the terminal area blacker; hindwing dark fuscous, with rufous tinged paler fringe; — the form from Japan and China — which may be distinguished as subsp. *oriens* *subsp. nov.* (39 f), — is larger, not so dark, so that the transverse lines and markings are more visible; the costal area and the veins dusted with white scales, and always without the two black streaks beyond the reniform stigma, which characterise the type; — a second form, from Japan only, — subsp. *brunneata* *subsp. nov.* (39 g), — is of the same size as the type, but liver-brown in colour, with only the terminal area black except the apex, which is paler, less sprinkled with white, and also without the black dashes beyond the reniform; all the forms alike have the orbicular stigma of the narrow, elongate shape that characterises the group. — Larva almost indistinguishable from that of *rurea*. The species occurs in fens and bogs in Holland and N. W. Germany; the subspecies, which may be distinct species, in Japan and China; Staudinger adds Corea and Ussuri.

P. veterina Led. (39 g). Forewing ochreous dusted with rufous and fuscous; the two lines blackish, double, the inner preceded by black teeth on the veins, the outer with a double row beyond it; claviform stigma ill-defined; the upper two large, rufous, separated by a blackish median shade; subterminal line pale, the terminal area beyond it brown except at apex; hindwing ochreous fuscous, darker in terminal half, with a pale outer line and short subterminal band; — ab. *haelsseni* Graes. (= *mandschurica* Stgr.) *haelsseni*. from Amurland, is larger and darker, with more developed markings. The type from Altai Mts., W. Siberia.

P. monoglypha Hufn. (= *polyodon* L. nec Cl., *radicea* Hbn.) (39 g). Forewing varying from whitish ochreous, through pale and dark grey to brownish grey, dark brown and black; a black streak from base below cell, another above inner margin near base, and a third, more strongly marked, along submedian

- fold between the claviform stigma and outer line; inner and outer lines pale, with dark edges; claviform small, dark-edged; upper stigmata large, of the ground colour or paler, with pale rings and dark outlines; the orbicular varying in shape, generally oblique and elongate, sometimes shortened, and more rarely rounded; submarginal line pale, zigzag, preceded by black wedged-shaped marks, the terminal area, except at apex, darker; inner margin usually marked with white scales, developed beyond outer line into a more or less prominent pale patch reaching submedian fold; hindwing dirty greyish, with darker cell spot and veins, with a broad fuscous marginal border preceded by a dark outer line; — ab. *pallida* Fuchs (39 g) is wholly whitish ochreous, with all the black streaks plain, the stigmata black edged; the central area and the terminal washed with brownish grey; hindwing whitish with an ochreous grey faintly marked border;
- intacta*. — in *intacta* Petersen (39 g) the usual pale patch beyond outer line on inner margin is absent, the whole wing being suffused with grey or grey brown; — ab. *obscura* Th. Mieg. (? = *obscura* Tutt) (39 g) represents a suffused brown or grey brown form; — *infuscata* Buch. White (= *uniformata* Weym.) (39 h) is a Northern form with the markings more or less obscured and hidden by blackish suffusion, of which
- brunnea*. *brunnea* Tutt (39 h) is a brown black offshoot; the extreme form of this, when all markings are lost in an intense black suffusion, is *aethiops* Tutt (39 h); in all these dark-suffused forms the hindwing is much darker, especially in the terminal half. — Larva dull whitish grey or dark grey; dorsal line pale; lateral line broadly pale; tubercles large and black; head and thoracic plate brown black; at roots of grass. Occurs throughout Europe, and Western Asia, in Turkestan, Siberia, and Mongolia.
- polyglypha*. **P. polyglypha** Stgr. Smaller than *monoglypha*; forewing fuscous and grey without any admixture of redbrown or ochreous, and agreeing with the ab. *intacta* Petersen in the absence of the pale patch on inner margin beyond outer line; the orbicular stigma smaller, more rounded; the hindwing paler. Recorded from Palestine by Staudinger.
- submarginata*. **P. submarginata** Leech (39 h). Forewing redbrown suffused with purplish fuscous; an obscure black streak from base below cell; lines blackish, double, the inner waved and oblique, the outer filled in with whitish, the teeth marked by black and white points on veins; subterminal line also whitish, preceded by black tooth-shaped marks; claviform stigma small, black-edged, emitting a black streak to postmedian line; orbicular oblique, elongate, black-edged and with some black scales in centre; reniform internally black-edged, with some white scales in centre and white points on outer edge; hindwing cupreous brown, darker terminally. Described by Leech from a single ♂ from Omei-shan, W. China.
- boopis*. **P. boopis** Hmps. (39 h). Like *sodalis* Btlr., but more rufous; the dark brown areas the same and also the lines and stigmata, except the reniform, which in its outer half is whitish grey, instead of being ochreous and undefined. Recorded from Wa-shan, W. China; originally described from N. India.
- purpurina*. **P. purpurina** Hmps. (39 i). Forewing purplish red; the lines indistinct, the outer dentate, with series of black and white points beyond it on veins; claviform stigma small, outlined in red; orbicular very narrow, oblique and elongate, also outlined with red; reniform fuscous, with white dusting and red outline, somewhat indented along median vein; subterminal line faint, dentate, the veins before termen fuscous; hindwing dull brown, the fringe rufous. This species also was originally described from a single ♀, from Yatong, Tibet.
- lateritia*. **P. lateritia** Hufn. (= *molochina* Hbn.) (39 i). Forewing dull purplish redbrown, darker towards the costa; costal area and veins sprinkled with white scales; inner and outer lines double, lunulate-dentate, the teeth marked dark and light on the veins; claviform stigma absent; orbicular and reniform dark redbrown with incomplete white annuli, the orbicular generally obscure and without white outline; submarginal line indistinct; the terminal area, except at apex, rather darker; hindwing fuscous, greyer towards base, with the cellspot and veins dark; — ab. *borealis* Strand, from Lapland, is still darker brown; — ab. *derufata* *expallescens* *ab. nov.* (39 i) is pale purplish red, without the dark redbrown tinge; — the form *expallescens* Stgr. (39 i), from Turkestan and Tibet, is pale reddish ochreous, flushed with brown or grey brown, the terminal area always dark brown; — ab. *festiva* *ab. nov.* (40 a), from Transcaucasia, rather smaller than *expallescens*, is pale brickred, somewhat roughly scaled; lastly, ab. *sordida* *ab. nov.* (40 a), a decidedly smaller form, is dirty brownish fuscous, with the inner and outer lines well-marked and approximated on inner margin; of this a fairly long series, all ♂♂, is in the Tring Museum, from Pescocostanzo, Italy. Larva dull dark grey; the head brown; the thoracic and anal plates black; at roots of grass. Not found in Britain, or Spain and Portugal; otherwise occurring throughout Europe; in Armenia, W. and E. Turkestan, Mongolia, Amurland, Japan, and Kashmir; also common in North America.
- fervida*. **P. fervida** Hmps. (= *violacea* Stgr.) (40 a). Forewing dark redbrown mixed with grey; inner and outer lines dark, thick, but indistinct; subterminal line pale olive brown, with dark brown clouds on each side; claviform stigma hardly visible; orbicular and reniform with dark centres and pale annuli edged with black, the reniform with three white dots at lower end, one on inner side, and two on outer; hindwing greyish redbrown. Kuku Nor, Tibet.

P. sordida *Bkh.* (= *contigua* *Haw.* nec *Vill.*, *infesta* *Tr.*, *aliena* *Dup.* nec *Hbn.*) (39 h). Forewing *sordida*. grey speckled with darker, and more or less tinged with brown; the veins dark; inner and outer lines double, dark filled in with pale ground colour, conversely lunulate-dentate; the inner line sometimes forming a sharp outward angle below vein 1, meeting the median line, sometimes rounded and remote from it; claviform brown, darker-edged, variable in size, often quite small; orbicular and reniform pale with dark centres, the latter with white dotted annulus and often followed by a pale patch; marginal area dark grey beyond the pale submarginal line, which is preceded by brownish patches at costa and on both folds; hindwing dirty whitish, with darker cellspot, veins, and outer line, the terminal area diffusely fuscous, with the submarginal line showing paler along termen; in typical *sordida* the brown tints are confined to the two folds: — in **anceps** *Hbn.* (40 a) these brown tints pervade more or less the whole forewing; — **ochracea** *Tutt* (40 a) has the ground colour paler and the suffusion more rufous brown; — **renardii** *Bsd.* is a very pale form with the markings subobsolete; while **engelhartii** *Duurloo* represents a pale form from E. Jutland with indistinct markings; — ab. **mediana** *ab. nov.* (40 a) appears very distinct; the brown grey ground colour is without dark speckling; the inner and outer lines are single, black and distinct, the outer with clear black teeth on the veins; the median shade, generally inconspicuous, is thick and black, distinctly angled outwards on subcostal and veins 1 and 2; the space between it and outer line deeper brown; the markings of the hindwing clearer; the ♂ specimen here described is from Germany without precise locality. Larva pale brown; dorsal and subdorsal lines faintly darker; on each segment laterally an oblique black streak; head and both plates black-brown; feeding up on grasses in spring. Found throughout Europe; also in Armenia, Asia Minor, Persia, and E. Siberia.

P. oblonga *Haw.* (40 b). Forewing blackish fuscous; the space between outer and submarginal lines *oblonga*. paler, brownish grey, the upper stigmata filled in with white or ochreous; the median area and terminal area on each side of submarginal line blacker; a deep black streak from base below cell and a thick black space along submedian fold between claviform stigma and outer line; hindwing dull ochreous grey with dark veins and cellspot; the terminal half fuscous and the fringe whitish; — **lunulina** *Haw.* (40 b) is blacker, *lunulina*. with both stigmata dark, the reniform with a few pale dots on outer side; — **fribolus** *Bsd.* (40 b) is uniformly black with all markings obscured; the only pale markings being the whitish dots on outer edge of the reniform and the praeapical costal dots; — ab. **variegata** *Stgr.*, from Armenia and Turania, has the *variegata*. thorax variegated with white; the forewing with whitish suffusion beyond reniform and at apex; the black markings strong; the lines defined by whitish, and the stigmata with white annuli; this must be very nearly the same as *oblonga* *Haw.*, which Staudinger has ignored; the grey brown form with the markings fairly plain is **abjecta** *Hbn.* (= *nigricans* *View.* nec *L.*) (40 b), of which the extreme form, **unicolor** *Tutt* (40 b), with the markings obsolete, and the whole wing grey brown, is the usual form in the East of Britain. Larva pinkish ochreous; tubercles pale redbrown; head and thoracic plate redbrown: feeding on various species of *Poa*, especially on river banks and fenny places. Occurs in North and Central Europe, Britain, France, Germany, Switzerland, Italy, Austria, Hungary, Sweden, and Russia; also in Asia Minor and Armenia, W. and E. Turkestan, W. and E. Siberia.

P. jankowskii *Oberth.* (40 c). Forewing pale ochreous, almost wholly suffused with brownish fuscous, *jankowskii*. the basal area below median vein, the area between outer and submarginal lines, especially on inner margin, the upper stigmata, and the lines remaining paler but tinged with brownish grey; the median and terminal areas darker fuscous, also a costal patch before submarginal line; the pale lines with dark edges; the two stigmata with grey brown centres and whitish annuli; claviform small and black; submarginal line pale, dull, indented on each fold; hindwing dark fuscous with a paler outer line. Recorded from E. Siberia and Corea.

P. illyria *Frr.* (= *scortea* *H. Sch.* part) (40 c). Forewing dark fuscous sprinkled with grey scales, *illyria*. and with a dull redbrown tinge along both folds; the veins blackish, with pale dots; median area darker, especially in lower half; also the basal area below a black line from base; inner and outer lines black, conversely edged with grey; claviform stigma brown with black edge; orbicular and reniform with dark grey-speckled centres and pale annuli with black outlines; terminal area dark grey; submarginal line pale grey with dark shading before it; hindwing grey, darker towards termen, with dark veins and cellspot. — Larva, according to Habich, short and thick, luteous yellow with a pale lateral stripe; on grasses. The remark „found in spring under *Veronica*“ applies merely to the larva's shelter, not its food plant. Occurs in Finland, Scandinavia, Russia, in Germany, Austria, Hungary, Croatia, and in the Alps of Switzerland and N. Italy.

P. leucodon *Ev.* (= *bidens* *Ev.*) (40 c). Forewing pale olive grey brown suffused in places with *leucodon*. darker grey brown; the lines and stigmata whitish; veins towards termen finely dark; basal and costal areas much mixed with whitish scales; a whitish smudge below median on submedian fold, following a short dark streak from base; a white hookshaped mark at base of cell; lines narrow, white; the inner oblique and excurved between veins, retracted towards base below vein 1 and more broadly white; outer

line dentate, bent on vein 5, crossed by the dark veins, and bent outwards on inner margin below vein 1, and followed by a diffuse white patch; subterminal line white, preceded by blackish wedge-shaped marks in middle of wing, angled outwards to termen on veins 3, 4, above 6 crossed by an oblique whitish apical patch; black terminal lunules; fringe olive grey intersected by fine white rays; claviform stigma small, olive grey, edged with black, followed by a whitish cloud; orbicular oblique, elongate, white, with faint grey line at centre; reniform olive grey; the lower half fuscous, ringed with white; hindwing olive brown, darker along the termen; cellspot, outer line, and veins darker; fringe white. An Eastern species, found only in S. E. Russia, in Europe; in Asia from Kurdistan, W. Turkestan, W. and E. Siberia, and Mongolia.

- conciata*. **P. conciliata** *Btlr.* (= *gemina* *Leech* nec *Hbn.*). Forewing pale grey or grey-brown, often with a slight olive tint, and along the two folds tinged with rufous; a blackish basal streak below cell; median area darker except beyond reniform: inner and outer lines dark, conversely whitish-edged, often joined by a dark shade or black streak along submedian fold from below the claviform stigma, which is rufous with black outline; the outer line with black and white teeth on the veins; orbicular and reniform pale, with grey centres and sometimes dark outlines; outer area dark and obscure with submarginal line grey across it, or with the space between outer and submarginal lines paler; a black streak between veins 4 and 5 before submarginal line, and one on each side of vein 4 beyond it; hindwing dull greyish fuscous, with a paler outer line; — the type form has the thorax varied with white scales, and the forewing with whitish patches on inner margin on each side of the median area, as in *jankowskii*; — the more usual form, *fusca* ab. **fuscata** *ab. nov.* (40 c), is more uniformly suffused with rufous fuscous. Recorded only from Japan.
- obscura*. **P. obscura** *Haw.* (= *gemina* *Hbn.*, *anceps* *Dup.*) (40 c). Forewing reddish brown mixed with grey, especially along costa and inner margin; inner and outer lines dark, conversely edged with pale, and lunulate-dentate; submarginal line pale grey, preceded by a brown shade, the terminal area dark fuscous; claviform obscure, dark edged; orbicular and reniform grey with whitish annuli; hindwing dirty whitish grey with dark veins and cellspot, the termen diffusely dark fuscous; — in the ab. **submissa** *Tr.* (40 d) the forewing has a short black streak from base below cell, and another on inner margin near base, often with dark cloud above its end; a black streak along submedian fold between inner and outer lines, below which the inner marginal area is paler; the dark suffusion on the rest of wing somewhat stronger; in ab. *remissa* **remissa** *Hbn.* (= *supermissa* *Spul.*) (40 d) the difference between the ground colour and the dark shading is still more marked, the ground being pale grey, often reddish tinted, and the markings blackish fuscous; some black wedge shaped marks before submarginal line; the upper stigmata whitish. Larva grey brown; the tubercles blackish; dorsal line whitish, subdorsal lines pale; spiracular line broader, pale grey, edged above with dark; spiracles black; head and thoracic plate black brown; on grasses. Generally distributed in North and Central Europe, but not occurring in the extreme South; also in Armenia, the Altai Mts., W. Siberia and in Amurland.
- unanimis*. **P. unanimis** *Hbn.* (= *scortea* *H. Sch.* part) (40 c). Forewing brownish-fuscous, or, like *obscura* *Haw.*, redbrown, but without so much of the grey tinge; a black streak from base below cell, and another above inner margin near base; (these though well marked in its aberrations *submissa* and *remissa* are not visible in typical *obscura*); often a blackish streak on submedian fold between the two lines; reniform stigma externally edged with white; the terminal area not so dark, more dusted with grey; the submarginal line not *acutely* angled below middle; — the form with black streak on submedian fold, sometimes with paler basal and submarginal areas, as in *remissa* *Hbn.*, is the ab. **secalina** *Haw.* (40 c); — ab. **rufithorax** *ab. nov.* (40 c), agreeing in both respects with *secalina*, has besides the whole head and thorax including the patagia bright rufous; the only example, a ♂, of this form is from Wiesbaden; — two other forms deserve notice; — ab. **fasciata** *ab. nov.* (40 d) has the median area filled up with dark fuscous, the pale upper stigmata and the inner and outer lines more conspicuous; the head and thorax blackish: — ab. *semiochrea* **semiochrea** *ab. nov.* (40 d), has the postmedian area between outer and submarginal lines and the lower part of the median area pale ochreous, and might easily be mistaken for an example of *secalis* *L.* ab. *oculea* *Guen.* Larva much like that of *obscura*, feeding on grasses, especially *Phalaris arundinacea*. The species is co-extensive in range with *obscura*.
- pabulatricula*. **P. pabulatricula** *Brahm* (= *connexa* *Bkh.*, *elota* *Hbn.*) (40 d). Forewing chalk grey, partially tinged with pale olive brown, especially in median area and on inner margin before inner line; a thick black streak from base below cell, and a second on submedian fold uniting inner and outer lines; the space below this last streak also often fuscous or black, as well as a spot on costa reaching between the two stigmata, of which the orbicular is oval, oblique, with brown centre and black edge, and the reniform large, ochreous-tinged and externally diffuse; inner and outer lines double, black, filled in with white, the inner oblique outwards, approaching the outer on the submedian fold; submarginal line grey, waved, and toothed between 2 and 4; some black dashes beyond it below costa; fringe dark grey pencilled with white; hindwing grey, browner towards termen, with a dark cellspot; when fresh the thoracic tufts are rufous, those of the dorsum black; — ab. **semibrunnea** *Petersen* from Russia has the forewing from base to outer

line suffused with brownish; the form *conjuncta* Spul. appears to be one in which the pale basal and outer areas are united along costa above the dark median area. Larva yellowish brown; dorsal line yellow strongly margined with black; lateral lines dark grey brown clouded and margined above and below with black; spiracles black; venter yellowish grey; head brown with two black curved marks; on grasses. Occurs in Sweden, Finland, North Britain, Germany, Austria, Russia and the Ural Mts. *conjuncta.*

P. ribbei Pueng. (40 d). Forewing larger and greyer than in *pabulatricula*; the whole median area darker, brownish fuscous, except the two stigmata, and with a black bar on submedian fold between the two lines; a black streak from base below cell; the inner and outer lines more sharply angulate and dentate, conversely edged with whitish; veins towards termen dark; submarginal line pale, interrupted, preceded by black wedged-shaped marks, of which those on each side of vein 4 are most conspicuous; terminal area with two dark triangular clouds, one beyond each fold; hindwing whitish, with the termen grey; the veins and cellspot brownish. Recorded only from Andalusia. *ribbei.*

P. arabs Oberth. (40 d). Forewing greyer than the two preceding, suffused with brown; a sinuous black streak from base below cell; and a black streak on inner margin before inner line; lines black conversely edged with whitish; the inner strongly dentate outwards between the veins, the angle in submedian fold joined to outer line by a black dash; claviform obsolete; orbicular, small, elongate, pale with black outline; reniform with the lower part only defined; submarginal line whitish, dentate, preceded by small dark teeth, and followed by brown marks in the interspaces; hindwing white, the veins and terminal area brownish-tinged. Recorded from Algeria only. *arabs.*

P. basilinea F. (= *nebulosa* View.) (40 e). Forewing dull lilac grey, flushed with fawn colour, especially in median area; a black, semibifid streak from base below cell; lines brownish, double, indistinct; the median shade dark grey or fawn colour, diffuse and prominent; orbicular stigma pale, black-edged; reniform large with grey centre, blackish in lower lobe, with pale annulus and black outline; claviform small, with dark outline; submarginal line dull, with darker shades in places on each side; hindwing greyish fuscous, paler towards base; — in *basistriga* Stgr. (= *cinifacta* Graes. nec Grote) (40 e) the ground colour is bluish grey except the median area, and the black basal streak is stronger; this form is recorded from W. Turkestan, E. Siberia, Japan, and China, also from Norway; a small series from Pescocostanzo, Italy seems referable here; — ab. *grisescens* Stgr. from Tibet and Turkestan is altogether paler and greyer; — ab. *unicolor* Tutt (40 e) is a melanistic form from the North of England, in which the ground is reddish brown with a purplish tinge, the stigmata and lines more or less obscured; hindwing much darker; — *pallida* Tutt and *cinerascens* Tutt (40 e) are both grey forms without any rufous admixture, the former being pale ochreous grey, and the latter dull ashy grey, the one from Ireland, the other from North England; this latter form probably occurs, however, in other localities, and is distinct from Staudinger's Central Asiatic form *grisescens*, for which Spuler quotes Finland and Esthland with a ? as localities. Larva grey brown with black tubercles; dorsal line broad, whitish; subdorsal finer; spiracular line broadly whitish, edged above with dark; feeding when quite young in autumn in the grains of corn and after hibernation in the fresh lower leaves and on grasses. Generally distributed throughout Europe, and Central Asia to China and Japan. *basilinea.*
basistriga.
grisescens.
unicolor.
pallida.
cinerascens.

P. commixta Btlr. (= *tychoona* Leech) (40 e). Forewing black brown with a purplish reflection; in costal half, especially along the cell and at base of wing above the black basal streak, tawny fulvous; inner and outer lines dark, conversely edged with pale; claviform stigma small, black-edged, emitting a black streak to outer line; orbicular round or oval, with rufous centre and pale annulus; reniform tawny, pale-edged, and followed by a tawny patch; submarginal line pale fulvous, preceded by black wedged-shaped marks; hindwing fuscous, with dark marginal border, cellspot, and outer line. Superficially much like *Rh. signum* F. The type of *tychoona* Leech is a dwarf ♂. Recorded from Japan only. *commixta.*

P. intermixta Leech (40 e). Forewing reddish ochreous with much black suffusion; inner and outer lines black edged with reddish ochreous, united along submedian fold by a black streak; orbicular and reniform stigmata of the ground colour, with dark grey centres, the annuli edged with black; the median space between the two folds remains of the clear ground colour; the paler area between outer and submarginal lines interrupted by 3 triangular blackish blotches, one at costa, one below middle, the third on inner margin; fringe blackish; hindwing dull fuscous grey, darker along termen, with a large dark lunular cellspot. Japan. *intermixta.*

P. aureopuncta Hmps. (40 e). Forewing deep fuscous brown, suffused with purplish grey, the median area only along costa and inner margin; inner and outer lines black, conversely edged with yellowish white, and swollen into black blotches at costa; submarginal line finely pale, preceded by a diffuse black brown band; orbicular stigma round, purplish grey edged with black and white scales; reniform large, with reddish yellow centre defined by yellowish white and black; hindwing dark brown with yellow fringe. Tsu-shima, Japan. *aureopuncta.*

scolopacina. **P. scolopacina** *Esp.* (40 f). Forewing pale ochreous, usually washed with pale brown; a black-brown streak on inner margin before inner line; inner and outer lines fine and double, conversely lunulate-dentate on the veins; a dark brown or pale brown median shade, enlarged, like the inner line, on the costa into a cloud; orbicular stigma pale, brown-edged; reniform with brown lunular centre and white annulus, constricted at middle; terminal area brown, traversed close to termen by the paler subterminal line which forms a pale spot at apex; fringe mottled brown and ochreous; hindwing ochreous washed with grey or fuscous; — in ab. **abbreviata** *Haw.* (40 f) the ground colour is pale ochreous without the brownish suffusion; in **hammoniensis** *Sauber* (40 f) the costal and terminal dark areas are intensified, and the whole wing is suffused with greyish fuscous; in the Japanese form, however, ab. **subbrunnea** *ab. nov.* (40 f), the whole wing is washed with pale brown; the oblique bar near base of inner margin is either brown or obsolete: the dark blotches on costa and the brown terminal area are pale brown; all the lines are obscured, the only clear marking being the whitish reniform; hindwing pale grey or brownish grey, with dark cellspot and outer line; in all the forms the ♂ is regularly slightly darker than the ♀. — Larva greenish-grey; dorsal and subdorsal lines pale; spiracular line yellowish grey edged above with dark; head yellowish with two brown streaks: on grasses, especially *Briza*, and *Luzula*. Throughout North and Central Europe, in W. and E. Siberia, and in Japan.

ophiogramma. **P. ophiogramma** *Esp.* (= *biloba* *Haw.*) (40 f). Forewing pale ochreous suffused with olive grey along inner margin and in terminal area with pale brownish; the inner and outer lines brown, conversely lunulate-dentate; the upper half of median area occupied by a redbrown or black brown blotch bilobed below, the lower lobe being formed by the dark brown claviform stigma; the upper stigmata somewhat paler and with pale annuli; the patch extends narrowly along costa to base and has its lower edge often lined with white scales; submarginal line pale, generally enlarged into an apical spot, preceded by a rufous brown shade and followed by two grey brown patches on the two folds, that on submedian being generally produced inwards to outer line; hindwing pale grey with dark cellspot and veins; — ab. **moerens** *Stgr.* has the whole forewing suffused with leaden grey, the brown areas fuscous. Larva pinkish ochreous with a pale lateral line; the tubercles black; head yellow brown; thoracic and anal plates black brown; on various grasses, especially *Glyceria spectabilis*. Occurs in marshy places throughout North and Central Europe, in Siberia and Turkestan.

askoldis. **P. askoldis** *Oberth.* (= *nivalis* *Btlr.*) (40 f). Thorax chalk white; sometimes also the abdomen; forewing chalk white; markings redbrown; viz. the costal streak, the upper half of median area to submedian fold, the base above median vein and 2 dark spots at termen on the folds; claviform stigma black, with a black streak from it above to outer line, continued to termen; orbicular elliptical, with white centre ringed with brown and then with rufous orange; reniform white, black-edged internally; submarginal line white with brownish grey shades on each side; hindwing of ♂ whitish ochreous, of ♀ fuscous. E. Siberia, Japan, W. China.

fasciculata. **P. fasciculata** *Leech* (40 f). Forewing brownish fuscous; a patch of pale yellow scales below middle before inner line; inner and outer lines black, pale-edged; claviform stigma outlined in black; orbicular and reniform ochreous, black-edged, with grey centres; the reniform externally with a white spot; space between outer and subterminal lines pale to apex; terminal area dark; subterminal line indistinct, preceded by some slight dark shading; hindwing greyish fuscous, with darker outer line. Described from 3 ♂♂ from Moupin, W. China.

repetita. **P. repetita** *Btlr.* (40 g). Forewing dull ochreous whitish; basal and median areas suffused with pale rufous; the cell and submedian interspace darker, the latter with a brown black streak between the inner and outer lines, which are rather obscure and approach each other on inner margin; stigmata pale, with brownish centres and dark edges; terminal area dark; submarginal line faint, preceded by rufous teeth and a dark cloud on costa; hindwing pale grey, with darker cellspot and outer line; the ab. **conjuncta** *Leech* (♂) (= *intermedia* *Leech* (♀)) is paler, without the brown black streak on submedian fold; in both forms the black marginal lunules of forewing are stronger in the ♀♀ than in the ♂♂. 2 ♀♀ including the type of *repetita* from Yokohama, Japan, whence also the ♀ type of *intermedia* *Leech*; 2 ♂♂ from Omei-shan, W. China including the type of *conjuncta* *Leech*, the other being a typical *repetita*.

cuneata. **P. cuneata** *Leech* (40 g). Forewing brownish fuscous; the median area darker, more fuscous, followed by a pale rufous fascia; inner and outer lines black, double, distinct, conversely lunulate-dentate, the tips of the teeth white-dotted; claviform and orbicular stigmata small, rufous, black-edged; reniform paler, with white annulus; submarginal line dull, preceded by black wedged shaped marks, of which that between veins 4 and 5 is large and plainest; in the ab. **semirufa** *ab. nov.* (= ab. 1. *Hmps.*) the basal and outer areas of forewing below middle and the inner median area are rufous ochreous; the hindwing blacker; the reniform stigma rufous. Larger than the type, and possibly a distinct species. Yokohama, Japan.

brunnea. **P. brunnea** *Leech* (40 g). Forewing bright ochraceous; median area, except on submedian interspace, and the terminal area blackish; all 3 stigmata blackish with black edges; the reniform with some white

dots externally; inner and outer lines double, black, filled in with the ground colour; outer line dentate, the teeth strongly marked black and white; submarginal line obscure, preceded by a darker shade and a cloud on costa; hindwing dirty whitish tinged with rufous; cellspot, veins, outer line, and submarginal shade dark grey. Only the type specimen, a ♀ from Pu-tsu-fong, W. China, is known.

P. fasciata *Leech* (40 g). Forewing bright redbrown; the antemedian and postmedian areas bluish *fasciata*. white, except towards costa; claviform black; orbicular round, with dark centre and outline; the reniform with some bluish white mixed with the dark centre; the inner and outer dentate lines and the median shade black and distinct; submarginal line very indistinct, but forming a bluish white apical patch; hindwing pale fuscous, with dark cellspot and outer line. W. China; Yatong, Tibet; also from N. India. The species is superficially much like *P. strucei Ragusa* from Sicily.

P. secalis *L.* (= *lamda* *View.*, *lancea* *Esp.*, *vilis* *Hbn.*). Forewing varying in ground colour from *secalis*. bluish white, cream white, through pale and dark grey, sometimes ochreous or brownish-tinged, to grey brown, redbrown, or purplish brown; the median area and terminal area darker, fuscous brown or blackish brown, generally with a broad black brown streak from below the claviform stigma along submedian fold to outer line; a black dash from base below cell, and a black streak above inner margin near base; inner and outer lines double, dark, conversely lunulate-dentate; submarginal line pale with a narrow dark shading preceding it; claviform stigma small, black-edged; orbicular oblique, oval, of the ground colour, but often tinged with rufous, with paler annulus and black outline, the reniform with a brown lunule in its inner side, filled in sometimes with ground colour, or with luteous, or white; veins often dark towards termen; hindwing fuscous; the form with the ground colour pale is ab. **I-niger** *Haw.* (40 g); in this the markings *niger*. are plainer than in those examples with the ground colour almost as dark as the median band = ab. **didyma** *Esp.* (= *secalina* *Hbn.*) (40 g); — in ab. **oculea** *Guen.* (? = *oculea* *L.*) (40 g), the ground colour is *didyma*. *oculea*. pale ochreous or greyish ochreous, with the costal area as far as submarginal line black brown, this colour filling the cell and in median area reaching to submedian fold; the terminal area except at apex is also black brown; the reniform stigma varies as before, being sometimes of the ochreous ground colour, more rarely white; the streak near base above inner margin is brown black instead of black and sometimes obsolete; the black streak along submedian fold between the lines is never present; — in **furca** *Haw.* the *furca*. ground colour is suffused with rufous and the contrast between the dark and light shades is less striking; **rava** *Haw.* (40 h) has the ground colour rufous ochreous or brown with the dark brown of the costal area *rava*. filling up the median area to inner margin, and is thus intermediate between *secalis* *L.* and *oculea* *Guen.*; — **grisea** *Tutt* (40 h) is an almost unicolorous grey form with hardly any clear markings, passing into **reticulata** *Tutt* (? = *uniformis* *Spul.*) (40 h), which is a dull brown grey or fuscous grey form with the cross lines and stigmata more or less distinct, the reniform sometimes white, but more often of the ground colour; this is a common form in Britain; this passes again into the deep brown ab. **nictitans** *Esp.* *nictitans*. (40 h) and the black form, with more or less obscured markings, ab. **leucostigma** *Esp.*, (= *lugens* *Haw.*, *leucostigma*. *nigra* *Tutt*, *albistigma* *Tutt*) (40 h); in these the reniform stigma is either yellowish or bright white, or, as often in British specimens, dark with the outer edge bearing 2 or 3 white dots only; in the very darkest forms the submarginal line is represented by fine pale dashes between the veins; two new forms, possibly specifically distinct, must be named; ab. **pulverosa** *ab. nov.* (40 h), somewhat like ab. **reticulata** *Tutt*, *pulverosa*. *reticulata*. but darker, suffused with brown and clouded, especially along costa, with blackish fuscous, in places thickly irrorated with whitish scales; veins strongly dusted with dark and pale scales; inner and outer lines distinct, filled up with ochreous; subterminal line brownish ochreous preceded by a deep brown cloud and followed by dull blackish terminal blotches on both folds; claviform and orbicular dull, brown, with black edges; reniform large, the inner half dark with a dark edged central brown lunule, the external margin yellow ochreous, except at lower end which is white; hindwing dark fuscous; head and thorax black brown; described from a ♂ from Pescocostanzo, Italy, (Neumann); the second, ab. **lilacina** *ab. nov.* (40 h), *lilacina*. is from Silvaplana, in the Engadine, Switzerland; this has a dull lilac grey ground colour in basal and postmedian areas, with the median area and the terminal more diffusely dull rufous brown; the inner and outer lines and the reniform stigma filled up with lilac grey; the subterminal pale preceded by brownish shading; hindwing olive brownish; head and thorax violet grey; pectus and legs paler but strongly tinged with violet; anal tufts fulvous. Larva greenish, with a double reddish dorsal line and yellow spiracular line; spiracles black; head pale brown; on grasses. Throughout Europe, in Asia Minor and Armenia, Turkestan, Kashmir, W. China, and Japan.

P. moderata *Ev.* (40 h). Forewing olive drab, suffused with dark fuscous in the basal and median *moderata*. areas and also in the terminal except at apex; the costa and inner margin and the veins dusted with pale grey; inner and outer lines double, blackish, conversely dentate on the veins; a black streak along submedian fold between inner and outer lines, and a slighter one on inner margin near base; claviform small, black-edged; orbicular broader and larger than in *secalis*, with pale annulus and black outline; reniform with outer edge narrowly paler, never white; interval between outer and submarginal line uniformly olive

drab, marked only by the long teeth of outer line; submarginal line rarely darker shaded internally; hindwing greyish fuscous. Ural Mts., Russia, W. and E. Turkestan, Kashmir. Quite distinct from *secalis* L.

struvei. **P. struvei** Ragusa (40 h). Forewing redbrown in ♂, black brown mixed with fulvous in the ♀; the basal and outer areas covered with bluish white scales, except along costa; reniform stigma with a large white spot in outer side, more bluish white in ♂; thorax in ♂ wholly rufous, in ♀ only the thoracic tufts, the shoulders and patagia being black brown. Sicily, Austria, the Engadine, Switzerland, and the higher Alps.

10. Genus: **Oligia** Hbn.

Tongue present; frons smooth; palpi upturned, the second segment moderately scaled, the third short, smooth; antennae of ♂ ciliated, with short fascicles; thorax with crests before and behind; dorsum slightly crested at base; forewing with apex rounded, the termen smooth. Larva in stems of Gramineaceae hibernating quite small and feeding up in spring; pupating in a slight cocoon. Type *O. strigilis* Cl.

The genus is restricted to species of small size, but it must be admitted that there is no strong line of demarcation between them and the smaller species of the preceding genus.

strigilis. **O. strigilis** Cl. (= *meretricula* Bkh., *invisa* Walk.). Forewing brownish grey, reddish grey, reddish brown, or blackish: the space between outer and submarginal lines often white or grey, or luteous, or rufous or concolorous with ground colour; the 3 stigmata ringed with black, either paler than the ground or lost in the dark suffusion; inner and outer lines blackish, conversely edged with paler and dentate-lunulate, the pale edging of outer line generally more conspicuous, whitish, below the middle; terminal area dark, forming two blotches one on each fold; a dark costal blotch before submarginal line; a slight black dash from base below cell, and another above inner margin near base; hindwing dark or light fuscous; the type form has the outer band whitish and the ground colour reddish grey or reddish brown; — **praeduncula** Hbn. (40 i) has the ground colour brownish and the outer area grey; — **latruncula** Hbn. (40 i) has the pale outer band grey or luteous; of this the extreme form is **aerata** Esp. (40 i), with a more or less rufous tint, showing especially in the outer pale band; in these forms the stigmata are usually paler than the ground and a black streak on submedian fold is generally present between inner and outer lines. when the blackish suffusion covers the basal and median areas except the lower half of inner line on inner margin and obscures the stigmata, the white outer band being left intact, we get ab. **fasciata** Tutt (40 i); a rarer form of this, ab. **suffumata** ab. nov. (40 i), suffused with smoky blackish, has the white areas still further reduced; — in **aethiops** Haw. (40 i) the white band is quite overrun by fuscous, with only a thin white outer line on inner margin, or the whole wing is deep black; — **virgata** Tutt (40 i) has the median area fulvous brown, the outer band whitish or lilac grey, with the praesubmarginal shade rufous; — the unicolorous form, in which the outer area is grey mixed with brown, and the median area brown, with the outer line finely pale, is the ab. **intermedia** Hormuz. (40 i); — while a still darker, almost unicolorous form, without any pale scales, dull purplish fuscous in tint with the median area russet, is **unicolor** Tutt (40 i); a dull grey unicolorous form, with the lines, the outlines of stigmata, and the teeth of outer line finely black, taken in the neighbourhood of Tring, Herts., may be named ab. **terrea** ab. nov. (40 k); all these forms are liable to run more or less into each other. — Larva dirty white or yellowish, redder on dorsum, with the lines all paler; head and plate dull brown; feeding in stems of grasses. — Found throughout Europe; also in Armenia, Asia Minor, Kurdistan, Persia, and Turkestan.

fasciuncula. **O. fasciuncula** Haw. (= *rubeuncula* Donz., *erraticula* Rmbr. nec Hbn.) (40 k). Forewing bright rufous, the median and terminal areas deeper; the inner and outer lines white, especially the outer on inner margin; stigmata slightly paler; hindwing blackish fuscous, the fringe whitish; — ab. **cana** Stgr. is much paler, especially the basal and outer areas, the coloration more olive drab, without any rufous tint; — **pallida** Tutt is an extreme form of this, with the median area hoary as well as the basal and outer areas; — **suffusa** Tutt, from Armagh, Ireland, is greyish black, with all markings faint, somewhat resembling **aethiops** Haw.; a Scotch form, ab. **brunneata** (= ab. 1. *Hmps.*) is browner, especially the lower half of median area. — Larva dull flesh-colour; the lines pale greyish ochreous; head and thoracic plate pale brown; on *Aira caespitosa* and other grasses, feeding in the stems. Recorded only from Western Europe, Britain, Denmark, Holland, N. France, and Spain. This much restricted area of distribution affords a strong reason for not considering this species a form of *strigilis*.

literosa. **O. literosa** Haw. (= *erraticula* Hbn., *suffuruncula* Tr.) (40 k). Forewing violet grey, with a partial rosy brown flush; the costa, cell, and median area dark fuscous, the costa often remaining pale; inner and outer lines dark, conversely edged with pale, the inner strongly outcurved below middle, closely approximated to the erect lower half of outer line; a black bar from line to line along submedian fold; claviform stigma obsolete, or minute; orbicular grey, with pale annulus and black outline; reniform large, its inner

edge only black margined, the margin straight and forming nearly a straight line with the lower half of outer line; submarginal line pale grey, the shade before it redbrown, the terminal area dark grey; hindwing greyish fuscous; in the ab. **constricta** *ab. nov.* (40 k), principally confined to the ♂♂, the median area *constricta*. between the two lines is narrowed and much darker, especially in the two folds, and the red flush is less developed; — the form **subarcta** *Stgr.* (40 k), from Sicily, Palestine, and W. Siberia, has longer wings and *subarcta*. no red tints whatever except the praesubmarginal shade; this form will, I feel sure, be proved distinct; on the other hand the darker grey and fuscous tints may be reduced and the whole forewing suffused with rosy brown, the whole thorax also showing rufous, ab. **subrosea** (= ab. *A. Guen.*) (40 k); this is a *subrosea*. common form in England; — **onychina** *H.-Sch.* (40 k) shows a still further reduction of the dark tints, *onychina*. the whole forewing being creamy grey, the usual darker median area and the shade before submarginal line showing in certain lights pale golden brownish; the hindwing pale grey; this form occurs in Heligoland, Norderney, and other islands, the coloration being assimilated to the sandy coasts. Larva either yellowish with two broad reddish subdorsal lines, or greenish yellow with grey subdorsal and lateral lines; head and thoracic plate black brown. The larva of the coast form, according to Aurivillius, is whitish with the dorsum reddish and small brown head, feeding in the stem of a stiff coast grass; according to Grenzenburg it feeds first in the roots and afterwards in the stems of *Elymus arenarius*. This form therefore may be specifically distinct. On the chalk districts of England, away from the coast, I have bred the ordinary red form from larvae feeding in *Carex glauca* only.

O. bicoloria *Vill.* (= *humeralis Haw.*) (40 l). Forewing with basal half of wing dark, outer half *bicoloria*. pale; the colour of the basal half varies from purplish black, through brown black to brownish red, reddish grey, and finally but rarely greyish white; the outer half varies from rufous grey or luteous grey to chalk white; the limiting line is formed by the lower half of the outer line and the dark inner edge of the reniform stigma, which generally stands out white beyond the darker half; the extreme base of wing is often paler; the terminal area is narrowly dark grey, sometimes even blackish; hindwing pale grey; the typical *bicoloria Vill.* has the outer area whitish or grey with a rufous tinge; — in **semicretacea** *Alph.*, from *semicretacea*. the Urals, Transylvania, and Central Asia, the outer area, in its extreme form, is chalk white and the dark portions black shaded with brown; — in **furuncula** *Hbn.* (40 l) the outer half is reddish brown *furuncula*. approaching the colour of the basal half; — while in **rufuncula** *Haw.* (= *erraticula Ferr. nec Hbn.*) (40 l) *rufuncula*. the forewing is nearly unicolorous reddish grey; — **terminalis** *Haw.* (40 l) is dull brown, with obscure *terminalis*. markings, the terminal area prominently dark; — **vinetuncula** *Hbn.* (41 a) is reddish grey, but with a narrow *vinetuncula*. erect black band taking the place of the usual line of demarcation; ab. **unicolor** *ab. nov.* (41 a) differs from it in *unicolor*. being unicolorous fawn brown with a slightly darker band instead of the black band; — **albimacula** *Spul.* *albimacula*. has the reniform white or whitish as in *bicoloria Vill.*, but on a reddish brown ground colour; — in the form **pulmonariae** *Dup.* the ground colour is ochreous, the basal half being more reddish or yellow; the *pulmonariae*. two shades of colour are less distinctly separated, and the stigmata are edged with paler; — **pallidior** *Stgr.* (40 l), from Central Asia, is said to be paler (than the typical *bicoloria*) with the basal half reddish, *pallidior*. the outer half whitish, the hindwings being dirty whitish; — examples in which the ground colour is quite pale are ab. **pallida** *Tutt.* with inner half pale grey and outer half white, the hindwings also whitish with *pallida*. greyish termen, and ab. **albicans** *Tutt.* from the chalk district of Kent, with forewing quite white with *albicans*. slight grey shading in centre of wing, the stigmata and terminal area grey; a form quite distinct from all of those mentioned, with the forewing pale or dark grey, covered with transverse strigulations, with the lines and stigmata generally distinct, the reniform whitish, and no trace of separate coloration is *reticulata*. *reticulata* *Tutt* (40 l); similar *brunneo-reticulata*. specimens, with the ground colour ochreous or brown, are the ab. **brunneo-reticulata** *Tutt* (40 l); *insulicola*. *insulicola* *Stgr.* (= *furuncula H. Sch. nec Hbn.*) is grey, strigulated with black and white; this occurs in Denmark and Heligoland; — ab. **longistriata** *ab. nov.* (40 l) is a remarkable development in which a straight black streak runs along *longistriata*. the submedian fold from base to termen; the ground colour is pale grey, suffused with rufous brown except at base of costa and beyond the pale grey reniform stigma, the terminal area being paler rufous brown; hindwing grey. The single example, a ♂, is from Bilbao, Spain. — Larva yellowish flesh colour; dorsal line yellowish; subdorsal paler: the dorsum flushed with reddish; head and thoracic plate brown; in the stems of grasses. The species is generally distributed through Europe, preferring sandy districts; also in Armenia and Asia Minor, W. and E. Siberia, W. and E. Turkestan, and Tibet.

O. arcta *Led.* (= *fasciata Btlr.*, *parietum Oberth.*) (41 a). Like *literosa* ab. *subarcta* *Stgr.* but larger, *arcta*. with the basal area blacker, except a diffuse pale grey oval space below middle, bounded by inner line; in it the orbicular stigma is conspicuously paler, its centre brown in a pale grey ring, oval, oblique; the pale reniform is lost in the pale colour of the outer half, its inner black edge forming with the lower half of outer line the straight margin of the dark area; the outer area is irregularly clouded with darker, the submarginal line slightly paler with a dark shade preceding it; hindwing greyish fuscous. Occurs in the Altai Mts., W. Siberia, in Amurland, Japan. and Corea.

O. arctides *Stgr.* (= *arcta Oberth. non Led.*) (41 a). Like *arcta* but a third smaller. Occurs in the *arctides*. same localities, also in N. China.

- vulnerata*. **O. vulnerata** *Btlr.* (= *christophi Stgr.*, *doerriesi Stgr.*) (41 a). Forewing leaden grey, with a slight brownish tinge, the basal half, except at base of inner margin, suffused with black brown; lines black partially edged with brown; the inner curved outwards, the outer excurved above, then running in and vertical below forming a straight line with the inner edge of reniform stigma; stigmata indistinct, ringed with brown and then with black; some red scaling beyond outer line on submedian fold; hindwing smoky fuscous, with dark cellspot; the base whitish. Still smaller than *arctides*. Occurs in Amurland, Japan, Corea, and China.
- fraudulenta*. **O. fraudulenta** *Stgr.* (41 a). Forewing smooth leaden grey, freckled with darker, faintly tinged with red; the inner and outer lines black, fine, conversely pale-edged; the inner angled on submedian fold, the outer outcurved above middle and sinuous inwards below, both without crenulation or dentation; a black streak along submedian fold from line to line, below which the median area is dark brown; median shade vertical, distinctly red; submarginal line very faint; vein 2 black at termen; stigmata very obscure, colorous, with black outlines; hindwing fuscous. A small species recorded from Amurland; also from Japan.
- leuconephra*. **O. leuconephra** *Hmps.* (42 a). Forewing blackish with a coppery reflection; the lines black; the inner and outer double; the inner much excurved below middle; claviform and orbicular stigmata absent; the reniform a white lunule; subterminal line pale, indistinct, but with a dark shade preceding it; hindwing glossy, fuscous. Amurland; described from a single ♀. A very small species, which seems out of place here; its appearance suggests relationship with *Mesotrosta signalis Tr.* The figure in *Cat. Lep. Phal.* VII, Pl. 118, fig. 2 shows a coppery apical spot, which is not mentioned in the description.
- hasiana*. **O. hasiana** *Hmps.* (= *obliquifascia Hmps.*, = *repetita Swinh. nec Btlr.*) (41 a). Forewing pale ochreous grey with a faint brownish tinge; inner and outer lines black, double; the inner oblique to submedian fold, then waved, preceded by a curved diffuse fuscous band; outer line excurved above, then dentate, and incurved below the middle; a black streak between them on submedian fold from below claviform stigma, which is pointed, and black edged; orbicular and reniform defined by black, their centres brown; a brown patch between their upper parts; submarginal line pale, with a dark shade and dots behind it; marginal lunules black; hindwing pale ochreous, tinged with brown towards termen. Described originally as an Indian moth, this species is recorded also from Ta-chien-lu, W. China.
- captiuncula*. **O. captiuncula** *Tr.* (= *unica Frr.*) (41 b). Forewing fulvous, olive-tinged; the median and terminal areas either simply deeper fulvous or darkened with blackish scales; the lines white, thicker in ♀ than ♂, sometimes diffusely expanded on inner margin; orbicular and reniform sometimes orange-tawny, or grey brown and obscure, generally with pale rings; hindwing dark fuscous; — in *expolita Dbl.* (41 b) the usual North British form, the forewing is uniform greyish brown; this is also recorded from Armenia; — in *tincta Kane*, from Ireland, (which Staudinger wrongly sinks to *captiuncula*), the basal area is grey, the median deep pink, and the terminal pale glossy pink. Larva (of *expolita*) ochreous tinged with reddish, more purplish on the dorsum of middle segments; head reddish brown; thoracic plate paler; feeding in the stem and roots of *Carex glauca*. Found in Britain, France, Switzerland, Germany, Austria, Sweden, Finland, Russia, — the Baltic Provinces and the Urals, — Armenia, Altai Mts., W. Siberia, and Amurland.
- haworthii*. **O. haworthii** *Curt.* (= *tripuncta Curt.*) (41 b). Forewing brown tinged with reddish; the lines dark, indistinct; the outer followed by a pale oblique band reaching vein 6; the submarginal line, close to margin, dentate, whitish, preceded by a dark shade containing 3 or 4 black wedged marks; orbicular stigma small, annular, rufous, sometimes obsolete; reniform ochreous with rufous centre, in some cases all white; claviform short, black; median vein and bases of veins 3, 4, and generally vein 1 white or whitish; hindwing dull brownish, darker along the termen; cellspot and outer line dark; this British form is smaller and less brightly marked than the continental form, *erupta Germ.* (= *morio Ev.*) (41 b), which is velvety brown black, dusted in places with pale scales, and with all the pale markings stronger, especially the stigmata; without reddish tinge, or at least not prominently reddish; — the ab. *hibernica Stph.* (= *lancea Stph.*, *haworthii Grasl. part.*) (41 b), from Ireland, is redder, with the pale markings less defined. — Larva pinkish ochreous to purplish brown; dorsal and subdorsal lines pale; the tubercles black; head and thoracic plate pale reddish brown; feeding in the root crowns and in the stems of *Eriophorum*. A North European species, found in Britain, France, Germany, Scandinavia, and Russia, both in Livonia and the Urals.

11. Genus: **Eremobia** *Stph.*

Tongue present; frons smooth; palpi upturned, the second segment rough-haired below, the third quite short; antennae of ♂ with tuberculate fascicles of cilia; thorax thickly clothed with hair; metathorax slightly tufted; dorsum with tufts of hair and laterally fringed; pectus and femora hairy. Larva on grasses in spring and early summer, later preferring the seeds. Type *Eremobia ochroleuca Esp.* The imago is found by day at rest on the flowers of thistles etc.

E. ochroleuca *Esp.* (41 b). Forewing white, suffused with pale olive brown; lines broadly white, the *ochroleuca*. inner and outer generally coalescing on submedian fold, the outer line denticulate externally; median area often darker brown, somewhat blackish tinged, especially in the ♂; orbicular stigma pale olive, the reniform white with an ochreous centre; submarginal line whitish, indented on each fold and there preceded by some dark brown scaling; a row of dark marginal lunules; fringe ochreous with two outer rows of dark lunules; hindwing ochreous dusted with luteous grey; a dark cell spot and outer line followed by a pale space before the broad fuscous marginal border; fringe white. — Larva pale green; lines whitish; lateral line broadly white, its lower edge blackish; spiracles black; head pale brown; the tubercles blackish; feeds on the leaves of various grasses, later devouring the seeds. Occurs locally throughout Europe and in Armenia.

E. deckerti *Hmps.* Forewing sapgreen dusted with black; the lower half of median area suffused *deckerti*. with redbrown and white scales; inner and outer lines double, black, filled in with white; subterminal line whitish, dentate, preceded by blackish shading, the veins beyond it blackish; claviform blackish at end; orbicular and reniform white, tinged with redbrown and laterally black-edged; hindwing as in *ochroleuca*. Recorded only from the Altai Mts., W. Siberia.

12. Genus: **Gerbathodes** *gen. nov.*

Tongue present; frons smooth, somewhat swollen above; palpi upturned, smoothly scaled, the third segment short; antennae of ♂ simple, filiform; thorax and abdomen without crests; forewing narrow, elongate; costa slightly curved; termen obliquely curved, not crenulate. Type *G. angusta* *Btlr.*

The genus is formed for 3 Eastern Asian species, one of which, *paupera*, was placed by Staudinger in *Craniophora* *Snell.*

G. angusta *Btlr.* (41 b). Forewing pale grey, almost entirely covered by blackish fuscous suffusion, *angusta*. the pale scales remaining along the costal area and sometimes beyond the subterminal line; inner line black, irregularly waved and angled; outer line black, irregularly lunulate dentate, strongly excurved beyond cell; submarginal line strongly dentate, pale, preceded by a blackish line; orbicular and reniform stigmata rather quadrate, with broad white annuli and black centres; below the orbicular a similar but smaller round white, dark-centred spot; hindwing brownish fuscous. Japan; in ab. *obscurata* (= ab. 1. *Hmps.*) the three stigmata are without white rings.

G. paupera *Stgr.* (= *connexa* *Leech*) (41 b). Differs from *angusta* *Btlr.* in not being so densely *paupera*. suffused with fuscous, the white scaling more prominent in medio-costal area; the dark areas with slight brown admixture; the submarginal line less concise. Staudinger's type from Amurland; Leech's from Chowpin-sa, W. China.

G. ypsilon *Btlr.* (42 b). Forewing grey with black brown irroration; inner and outer lines black, *ypsilon*. the former oblique and strongly waved, the latter dentate-lunulate; subterminal line white, defined by a brown shade before it; a broad oblique diffused brown median shade met below angle of cell by another oblique shade from costa before apex; claviform and orbicular stigmata obsolete; reniform with pale annulus defined above by black and becoming pure white below, constricted at middle, with a black streak before it in lower part of cell and beyond it above vein 4 to submarginal line; hindwing pale reddish brown, the fringe whitish. Japan.

13. Genus: **Atrachea** *gen. nov.*

Tongue developed; frons smooth; palpi upturned, the second segment broadly and roughly haired, the third short; antennae of ♂ subserrate, pubescent, with short bristles; thorax and head roughly haired, without distinct crests; pectus and femora woolly; forewing broad; the costa curved; apex blunt. Type *A. nitens* *Btlr.*

A. nitens *Btlr.* (41 c). Forewing dull fuscous, sometimes slightly tinged with reddish brown, especi- *nitens*. ally along cell, and in the basal area, along costa, and beyond the outer and submarginal lines, varied with pale green scales, which sometimes are whitish and more or less obsolete; the largest of these green patches are in the submedian interspace, one before inner, the other beyond outer line; claviform stigma small, black, sometimes united by a blackish streak with the black lunule in outer line; upper stigmata pale-ringed with dark centres; submarginal line wavy, pale and interrupted, preceded by blackish lunules; hindwing dark brownish fuscous, deeper along termen, with dark cellspot and outer line; — in ab. ***muscosa*** *muscosa*. *Btlr.* (41 c) the green scaling and patches predominate; the more sombre type form being the rarer. — A Japanese species only. — The antennae of the ♂ bear a pair of bristles from each segment, while the dorsal tufts are less conspicuous.

- vulgaris.* **A. vulgaris** *Btlr.* (41 c). Forewing grey tinged with fuscous brown; a dark brown blotch at base of costa reaching submedian fold; another on costa before submarginal line reaching to vein 4; inner and outer lines blackish, double, well marked on costa and inner margin, interrupted and obscure between; claviform and orbicular stigmata with slight brown outlines; the reniform with whitish annulus; an oblique pale streak from apex to vein 4; submarginal line indistinct, pale, inbent on each fold, with a dark suffused patch beyond it between 4 and 6; hindwing fuscous, darker along termen; — the Chinese form, *distincta*, which may be distinguished as **distincta** *subsp. nov.* has the ground colour of forewing greyer, the brown patches darker, and the lines plainer. Recorded only from Japan, and West and Central China.
- sordida.* **A. sordida** *Btlr.* (41 c). Forewing deep brownish fuscous, sprinkled in costal half with grey scales; the inner and outer lines thick and black, conversely edged with paler; a diffuse dark blotch on inner margin before inner line; orbicular and reniform stigmata grey with black outlines, the median shade showing dark between them; submarginal line slightly paler, preceded by a darker band; hindwing fuscous; — in the form **pseudodyops** *Btlr.* (41 c), the basal and outer areas are suffused with rufous brown; the lines and stigmata are all paler and clearer; — in **variegata** *Oberth.* (41 c), the whole median area is suffused with blue grey; the submarginal line is yellowish grey, crossed by 2 black streaks beyond cell, which are also to be seen in *pseudodyops*. Amurland, Japan, and Corea.

14. Genus: **Crymodes** *Guen.*

Differs from *Eremobia* in having the antennae of the ♂ finely ciliated; the dorsum without tufts of hair; abdomen of ♂ long, with enlarged anal tuft. Larva on grasses. Type *Crymodes groenlandica* *Dup.* An arctic and alpine genus.

- platinea.* **C. platinea** *Tr.* (41 d). Forewing pale grey, dusted and shaded with darker grey; inner and outer lines black, the first dentate inwards on veins, excurved between, the outer externally lunulate dentate; submarginal line indistinct, with slight grey clouding before it, the terminal area hardly darker; stigmata pale but very inconspicuous; hindwing pale grey, darker towards termen. Larva resembling that of *monoglypha* *Hufn.* feeding on grasses. Occurs on the mountains of France, Germany, Austria, Hungary, Switzerland, and N. Italy.
- ferrea.* **C. ferrea** *Pueng.* (41 d). Differs from *platinea* in having the coloration of *Dasypolia templi*; inner and outer lines double, dark; a distinct median shade; submarginal line indistinct; claviform stigma minute; the upper ones obscure; hindwing luteous grey, with darker terminal border. The Simplon pass, Switzerland and Bormio, N. Italy.
- montana.* **C. montana** *H.-Sch.* (42 a). Forewing yellowish white with fuscous irroration; inner and outer lines double; claviform stigma absent; orbicular round, defined like the reniform with fuscous; subterminal line indistinct; hindwing whitish, the termen suffused with fuscous; ab. **rufescens** *ab. nov.* (= ab. 1. *Hmps.*) has the ground colour reddish ochreous irrorated with redbrown, the markings of forewing redbrown; hindwing ochreous white, terminally suffused with brown. Armenia, Asia Minor, W. Turkestan.
- mutica.* **C. mutica** *Christ.* (41 d). Forewing whitish ochreous, thickly dusted with fuscous and brown, and partly suffused with yellow, especially along submedian fold; inner and outer lines black, conversely edged with yellowish; claviform stigma small, outlined with black; orbicular round, yellow, with black ring, and sometimes a black point at centre; reniform yellow, black edged inwardly; subterminal line yellow, waved, and partially interrupted; hindwing reddish brown, the fringe yellowish. Armenia and W. Turkestan. The species is very close to the next following.
- bischoffii.* **C. bischoffii** *H.-Sch.* (42 a). Forewing greyish ochreous, dusted with fuscous, especially on the inner and outer areas and the outer half of median area; inner and outer lines black, partially double; orbicular and reniform pale, the former round, the latter with a black lunule on inner edge; subterminal line defined by dark suffusion on its inner side; hindwing fuscous, paler at base, with obscure outer line and pale fringe; — in ab. **caesia** *ab. nov.* (= ab. 1. *Hmps.*) the head, thorax, and forewing are strongly suffused with dark blue grey; the abdomen and hindwing fuscous. Asia Minor; Palestine; ? S. E. Turkey.
- zeta.* **C. zeta** *Tr.* (41 e). Forewing dull grey green overlaid with hoary grey scales; inner and outer lines black, conversely edged with hoary grey and lunulate-dentate; the outer line sinuate, not indented below middle; stigmata grey edged with black, the two upper separated by the well marked blackish median shade; submarginal line pale, often broken up, indented on the folds, preceded by black wedged shaped marks; hindwing fuscous, paler towards base; the whole forewing has a mealy appearance, and in paler examples the markings are often much obscured; — ab. **pernix** *Hbn.-G.* (= *clandestina* *Bsd.*) (41 e), is the darkest form, with the markings plainest; — **curoi** *Calb.* (41 e), from Italy, is chalk grey, glossy, more like

very pale examples of *platinea*, with the lines and outlines of stigmata finely blackish grey, the median shade and submarginal line slightly marked in grey, the orbicular absent, and the reniform smaller; the head, thorax, and abdomen are as pale as the forewings and all without grey dusting; the hindwing pale dirty grey with dark cellspot and veins, and black marginal lunules; — ab. **zetina** *Stgr.*, from the Thian-Shan Mts., is described as smaller; the forewings greenish grey, with the markings distinct; a form with the whole forewing uniform grey without markings except the pale reniform, as far as subterminal line, which is conspicuously pale preceded by a dark shade, and with the terminal area beyond quite pale, from Silvaplana, in the Engadine, Switzerland, may be distinguished as ab. **marginata** *ab. nov.* (41 e); — in **transversata** *ab. nov.* (41 e) the forewing shows the median shade crossing it as a strong blackish band; — in **rivalis** *Guen.* (? *Friv.*) (41 e), the forewing is much varied with yellow scales, the locality given being Mountains near the Sea of Marmora. Found in the Pyrenees in France, on the Alps of Switzerland and N. Italy, the Mts. of Germany, Austria, and Bulgaria; in Armenia; the Altai Mts., W. Siberia, the Thian-Shan Mts., E. Turkestan.

*zetina.**marginata.
transversata.
rivalis.*

C. dumetorum *Hbn.-G.* (42 a) (= *rhadama* *Mill.*). Forewing glossy fuscous, thickly dusted with grey; inner and outer lines black, conversely pale edged; claviform black-edged; orbicular and reniform pale-ringed and outlined with black; submarginal line obscurely pale, interrupted into spots; hindwing glossy fuscous brown; — the ab. **bleonnensis** *Schultz* is paler, the forewing more mixed with ochreous white. Recorded only from Digne in the Basses Alpes, France; perhaps a local race of *zeta*.

*dumetorum.**bleonnensis.*

C. furva *Hbn.* (= *gemmosa* *H.-Sch.*) (41 f). Forewing varying from brownish to blackish fuscous, more or less dusted with grey or whitish scales, especially along costa and inner margin and along the veins; lines conversely edged with pale; claviform stigma black-edged, or filled in with black; orbicular grey, with pale ring and black outline, often obscure; reniform always whiter, especially on outer edge; submarginal line whitish, waved, always preceded by distinct black wedge-shaped marks; the brown fringe finely cut by pale dashes; hindwing smoky grey, the terminal half smoky fuscous; veins and cellspot darker; the typical *furva* *Hbn.* is brownish fuscous; ab. **ochracea** *Tutt* refers to the paler, more yellow-dusted form, described by Guenée; the blackish fuscous forms, still with paler dusting, are ab. **freyeri** *Frr.* (41 f) and **infernalis** *Ev.*, the latter being the darker; while **sylicola** *Ev.* is a nearly black form, with only the submarginal line and the edges of stigmata showing whitish, with slight white dusting. — Larva pale or dark reddish ochreous, darker on dorsum; the tubercles blackish; spiracles black; head and thoracic plate brown black; on various grasses. — Found generally throughout Europe, except Spain and Portugal, in mountainous districts; in Armenia, Persia, Turkestan, and Siberia.

*furva.**ochracea.
freyeri.
infernalis.
sylicola.*

C. maillardi *Hbn.-G.* (41 f). As large as *zeta*, from which it differs in being dusted with white instead of grey green scales; the ground colour is darker, deep redbrown, with the two folds showing browner; the reniform stigma always plainer and whiter externally; hindwing dull fuscous; — ab. **schildei** *Stgr.*, from Finland, has the forewings more pronouncedly reddish. — Occurs on the Alps of Switzerland, on the Pyrenees, the Mts. of S. Hungary, in Norway and the Shetlands.

*maillardi.**schildei.*

C. exulis *Lef.* = *oleracea* *Mohr.* nec *L.*, *gelata* *Lef.*, *groenlandica* *Dup.*, *difflua* *Hbn.-G.*, *marmorata* *Zett.*, *borea* *Bsd.*, *cervina* *Germ.*, *poli* *Guen.*) (41 g). Forewing olive brownish, darker along the two folds; the veins sometimes slightly streaked with paler; inner and outer lines black, conversely pale-edged, the outer neatly lunulate-dentate; submarginal line pale grey, waved, preceded by black markings; claviform stigma black-edged; orbicular and reniform grey or olive brown, with pale annuli defined by black; hindwing dull whitish with dark cellspot and outer line; the terminal band dull fuscous; **gelida** *Guen.*, is duller, greyish brown, without any black lines or markings and the veins not paler; while **assimilis** *Dbl.*, from Scotland, is much darker, deep black brown glossed with purplish. — Larva shining, dull whitish, without lines except slight traces in front; spiracles and tubercles black; feeds in grasses, small through the winter, feeding up in spring. In Scotland, the Shetland Islands, the Faroe Islands, and Iceland, also in Greenland and Labrador. Always smaller than *maillardi*.

*exulis.**gelida.
assimilis.*

T. rubrivena *Tr.* (= *feisthamelii* *Bsd.*) (41 g). Forewing blackish fuscous dusted with white scales; the two folds sometimes prominently rufous; inner and outer lines black, conversely lunulate-dentate, edged with rufous grey; claviform stigma small, rufous with black outline; orbicular rounded, pale, often rufous; reniform large, conspicuously pale ochreous, with a brown lunule on its inner side; submarginal line wavy, white, preceded by blackish lunules; fringe blackish, dotted with pale spots at base; hindwing dull whitish grey, with dark veins and cellspot, becoming diffusely fuscous in terminal half; the ab. **hercyniae** *Stgr.*, from the Schwarzwald and Harz Mts., is intensely black, with the transverse lines and edges of stigmata broadened and yellowish. The species occurs on the Mountains of Finland and Scandinavia, Silesia, Bohemia, the Carpathians, and the Swiss Alps.

*rubrivena.**hercyniae.*

15. Genus: **Sidemia** Stgr.

Tongue well-developed; frons smooth; palpi upturned, the second segment hairy in front, the third, usually, quite short; thorax with hairy vestiture; the prothorax and metathorax slightly crested; abdomen without crests; forewing with termen crenulate. Type *Sidemia speciosa* Brem.

Sect. I. Antennae of ♂ bipectinate, the apex serrate.

spilogramma. **S. spilogramma** Rmb. (= christophi Alph.) (41 g). Forewing purplish fuscous, somewhat blacker in median area; inner marginal fringe white with black scales protruding over it; inner and outer lines black, obscure; the median shade thick and black; claviform stigma obscure, with some ochreous and dark scales; orbicular and reniform blackish, with distinct yellowish white annuli; submarginal line very slight, indicated by a blacker shade preceding it; hindwing with basal $\frac{2}{3}$ whitish, the veins fuscous; the terminal border dark fuscous, broad at costa narrowing off to anal angle; fringe whitish. Sarepta, S. Russia; Siberia; Amurland.

inutilis. **S. inutilis** Alph. (42 a). Forewing whitish with brown irroration and suffusion; the area from end of cell to termen at apex and vein 2 fuscous; the median nervure and its nervules and the submedian vein white to beyond outer line; inner and outer lines double, filled in with whitish; claviform stigma narrow and elongate, whitish, with fuscous lateral edges and central line; orbicular wedge-shaped, whitish with fuscous outline; reniform with fuscous centre and outline, the annulus whitish; submarginal line obscure, with dark marks preceding it; hindwing white, the costal and apical areas fuscous; a row of terminal dark points from apex to vein 2. Corea. I doubt if this species is distinct from *depravata* Btlr., which varies much in size.

depravata. **S. depravata** Btlr. (41 g, h). Forewing pale grey suffused with dark grey and often with a brownish tinge; the costal area sometimes remaining paler; median vein and veinlets and the submedian paler; inner and outer lines black, conversely lunulate-dentate; the inner prominently projecting on submedian fold; the outer preceded by black diffuse markings between the veins, that on submedian fold enlarged; submarginal line pale and waved, also preceded by black markings; a black spot in cell before orbicular stigma which is often flattened and elongate; the reniform large, with dark centre and outline; sometimes a black dash below median vein between basal and inner lines; hindwing whitish, gradually becoming smoky fuscous to termen; varies considerably in size, the ♂♂ generally rather larger than the ♀♀; typical examples are pale grey and show the markings clearly; in ab. **suffusa** ab. nov. (41 h) these are all more or less obscured by a dull dark grey suffusion. Japan, Corea, China.

Sect. III. Antennae of ♂ with sessile fascicles of long cilia; palpi with third segment longer.

contecta. **S. contecta** Graes. ♂. Forewing ochreous white, tinged with rufous brown; inner and outer lines black, well-marked; the former outcurved and obsolescent towards inner margin; the latter oblique outwards to vein 6, then oblique inwards; median shade diffusely darker; orbicular stigma whitish, lunular; reniform brown in centre, the annulus white and outline black; subterminal line whitish, diffusely widened, with darker shading on both sides; hindwing whitish, becoming fuscous towards termen, the veins darker; fringe white; in the ♀ the abdomen and both wings are strongly tinged with brown. Issyk-kul and Alexander Mts., W. Turkestan.

zollikoferi. **S. zollikoferi** Frr. (41 h). Forewing dingy greyish ochreous, dusted with dark grey, especially in the ♂; lines hardly visible; the outer indicated by slight dark and pale dashes on veins; the submarginal paler with grey edges, the terminal area faintly darker beyond it; orbicular and reniform with faint pale annuli and grey scaling; hindwing dull whitish, tinged with brownish grey along termen; — ab. **internigrata** ab. nov. (= ab. 1. *Hmps.*) (41 h), shows the lines and markings clearly, being suffused with blackish between the subcostal vein and submedian fold to outer line and more densely before and beyond submarginal line, the veins all being of the pale ground colour; the wedged-shaped marks before submarginal line, except between veins 6 and 7, black; stigmata paler and plainer; a slight trace of a dark-edged claviform; hindwing whiter, with dark fuscous terminal border and black terminal line. Larva green, feeding on low growing mountain plants. A species of sporadic occurrence; Britain, N. Germany, Hungary, Switzerland, Russia, W. and E. Turkestan; the aberration only from the Ural Mts.

standfussi. **S. standfussi** Wisk. (41 i). Differs from *zollikoferi* in being smaller, fuscous-grey; the inner and outer lines and the upper stigmata pale; hindwing whitish, the terminal area fuscous preceded by a curved dark outer line. Found in Switzerland, in the Tyrol, in S. Bavaria, Upper and Lower Austria, and in the Mts. of Roumania.

Sect. IV. Antennae of ♂ subserrate, the serrations with short tufts of cilia and a longer bristle.

speciosa. **S. speciosa** Brem. (= bremeri Ersch., snelleni Stgr.) (41 h). Forewing pale lilacine grey, suffused, between subcostal vein and submedian, with deep olive brown, darkest on the two folds; basal area of

the pale ground, angled outwards in base of cell and inwards on submedian fold; lines brown, double, filled in with lilacine grey and in the median area diffusely edged with the same; the inner angled outwards on the subcostal and inwards on the median, then oblique outwards; the outer excurved beyond cell, then oblique; orbicular and reniform stigmata lilac grey, with darker centres; submarginal line fine, lilac-grey, indented on each fold, preceded by dark suffusion; the terminal area dusted with violet grey; hindwing with basal half luteous, outer dark fuscous beyond a darker outer line. Amurland, E. Siberia, Japan.

S. subornata *Stgr.* (41 h). Forewing pale grey flushed with rufous; the costal area to submarginal line and the median to below cell suffused with dark purplish fulvous; inner and outer lines blackish, conversely lunulate dentate and white-edged at costa; submarginal line pale grey, indistinct, with a faint brown shade internally; claviform stigma small, brown; orbicular and reniform with white annuli and rufous brown centres; hindwing brownish grey, with veins, cellspot, and outer line darker. Taken in the Altai Mts., W. Siberia, the Thian-Schan Mts., E. Turkestan, and in Mongolia.

Sect. V. Antennae of ♂ merely pubescent.

S. fissipuncta *Haw.* (= *ypsilon Schiff.*, *nun-atrum Scriba nec Schiff.*) (41 i). Forewing grey, dusted with blackish, and with more or less reddish brown suffusion; a dark streak from base below cell; inner and outer lines pale, very obscure; submarginal line pale, distinct, generally preceded by dark marks; stigmata of the ground colour, the cell dark fuscous; claviform long, pointed, often followed by two black streaks to outer line; orbicular irregular in shape, often elongate below and touching reniform; hindwing fuscous, often paler towards base; the rarer grey form, with very sparse rufous suffusion represents the type; the commoner rufous-suffused examples are **corticea** *Esp.* (41 i); ab. **nigrescens** *Tutt* (= *fissipuncta Haw.* var. *B.*) is a rare form with blackish forewings; **variegata** *Tutt* is purplish blackish; the costa marked with a series of short black streaks; orbicular and upper part of reniform pale, likewise the claviform; veins pale, the intervals of the dark ground colour, giving a striated appearance; all the lines pale: — ab. **conjuncta** *ab. nov.* (41 i) is purplish fuscous, the veins and stigmatal annuli whitish, the upper stigmata strongly conjoined; — in **orenburghensis** *Bartel* (41 i) the ground colour is whitish grey, the darker shades rufous grey, especially the cell; the orbicular stigma large, whitish grey, prolonged below to touch the reniform, which is dark with a pale ring; the space beyond it rufous grey with the veins pale across it; below the median vein the claviform stigma and the area within the median shade are also pale grey; hindwing with basal half paler, showing a dark cellspot and outer line. Larva grey brown, often reddish-tinged; dorsal and subdorsal lines pale, the dorsal swollen into blotches at the segmental incisions; spiracular stripe broad, reddish-grey, sharply defined; spiracles white, in black rings; feeds on *Salix alba*, and *Poplars*, (also ? on birch) living when young in the fresh shoots spun-together, when larger, hiding by day in the chinks of the bark of the trunks. Throughout Europe, except Spain and Portugal; Armenia, Asia Minor, Persia, W. and E. Siberia.

S. plebeja *Stgr.* (42 b). Queried by Staudinger in the Catalogue as a var. of *fissipuncta*; its description agrees very closely with the ab. *orenburghensis* *Bart.* of that species, but the forewing is browner, more uniform in tint; the ♀ is said to have the outer and terminal areas suffused with blackish, leaving grey lunules along termen; the anal tuft blackish. Only found in W. Turkestan.

S. judaica *Stgr.* (41 d). Forewing reddish ochraceous; a black streak below base of cell; inner and outer lines black, conversely lunulate-dentate; median shade distinct, starting from an oblique black costal bar; submarginal line ill-defined itself, but preceded by a deep rufous shade, the terminal area always paler; hindwing and fringe nearly pure white in ♂, irrorated with fuscous and with a dark lunulate outer line in ♀. Palestine.

16. Genus: **Phoebophilus** *Stgr.*

Tongue developed; frons smooth; palpi upturned, the second segment rough haired in front, the third short, porrect; antennae of ♂ bipectinate or fasciculate; thorax densely clothed with hair; the prothorax and metathorax crested; dorsum smooth; forewings long, the lines pale on a dark ground colour. Type *Phoebophilus amoenus* *Stgr.*

Sect. I. Antennae of ♂ bipectinate.

P. amoenus *Stgr.* (41 k). Forewing olive grey-brown; the lines and stigmata white; the inner and outer lines conversely brown-edged; the inner inwardly toothed, and lunulate outwardly, the lunule on submedian fold large and pointed; the outer much indented on submedian fold; submarginal line white, toothed outwardly on veins 3 and 4, insinuate below; claviform stigma white, conical; orbicular oval, oblique, with

narrow olive centre; reniform with broader brown centre; two white blotches in basal area, above and below median vein; fringe olive chequered with white; hindwing whitish, overlaid with olive grey, with large dark discal lunule, dark outer line and submarginal band. W. and E. Turkestan.

Sect. II. Antennae of ♂ with fasciculate cilia.

decipiens.

P. decipiens *Alph.* (= *sajanus* *B.-Haas*) (42 b). Forewing olive brown; a tuft of white-tipped scales at base, and two white streaks reaching inner line; inner and outer lines wavy, dentate, conversely edged with white; claviform stigma white-ringed, long and acute; orbicular and reniform with white annuli; submarginal line white, wavy, indented on both folds; fringe brown mottled with white; hindwing olive brown; the fringe pale. E. Turkestan, Mongolia, E. Siberia.

17. Genus: **Heterographa** *Stgr.*

Tongue well developed; frons smooth; palpi smooth and short; antennae of ♂ filiform; thorax and abdomen smoothly scaled, without crests; forewing with termen even; of dull and sombre colouring with dark broken markings of unusual pattern, whence Staudinger's suggested name. Type *H. zelleri* *Christ.*

zelleri.

H. zelleri *Christ.* (= *mira* *Stgr.*) (41 k). Forewing whitish, thickly grey-speckled; costa marked with blackish spots at the beginning of the lines and shades, which are all briefly interrupted along subcostal area; inner and outer lines double, fine and black, filled in with pale; cell dark fuscous; the stigmata pale, with darker centres; claviform short, pale pointed, with a black shade beyond it; area between outer and submarginal lines dark fuscous, deeply indented beyond the folds by the pale terminal area, the edge of which is the submarginal line; marginal lunules black; hindwing dark fuscous, paler towards base, with dark cellspot and dark pale-edged outer line. Recorded from Persia, W. Turkestan, and E. Turkestan.

puengeleri.

H. puengeleri *Bartel* (41 k). Differs from *zelleri* in being more uniformly darker grey; a black streak from base below cell, cut by the white subbasal line; inner line double, black, filled in with white instead of grey; the outer line black, delicately filled in with white; orbicular and reniform stigmata grey with white annuli and black outlines, both indistinctly projecting below median vein; the claviform black and narrow; space between outer and submarginal lines dark fuscous, crossed by black lines both on the veins and between them; submarginal line distinctly white, simply incurved beyond each fold; the narrow terminal area grey; hindwing white, with fuscous cellspot and lunulate dentate outer line, beyond which the terminal border is dark grey; fringe white. Palestine.

18. Genus: **Heteromma** *gen. nov.*

Differs from *Heterographa* *Stgr.* in having the lamellate antennae of the ♂ subserrate beneath, with minute fascicles of short cilia; the forewing is narrower; the scheme of markings almost identical with that of *Polia proxima*, which, however, has the eyes hairy. Type *Heteromma alpigena* *Bsd.*

alpigena.

H. alpigena *Bsd.* ♀ (= *meissonieri* *Guen.* ♂) (41 k). Forewing dark grey, somewhat deeper in median area and with a reddish tinge; a black streak with white above it from base below cell; inner and outer lines black, double, filled in with grey; claviform dark grey, edged with black; orbicular a long flattened oval, white-ringed, with fuscous in centre; reniform stout, extending below median vein, with fuscous centre and white annulus; the cell between them dark fuscous; submarginal line obscure, with some terminal black streaks beyond it; fringe grey, with a bright white line at base; hindwing white, with grey cellspot and veins, a blackish marginal line, and indistinct submarginal. S. E. France, Algeria.

19. Genus: **Heraema** *Stgr.*

Tongue present; frons smooth; palpi obliquely porrect, second segment hairy below, third short and broad; antennae of ♂ ciliated; thorax hairy with very slight crests; abdomen smooth; tibiae hairy; wings short and broad; veins 6, 7 of hindwing stalked. Type *Heraema mandschurica* *Graes.*

mandschurica.

H. mandschurica *Graes.* (41 k). Forewing pale brickred or greyish pink; the median and terminal areas brown; inner and outer lines slightly darker brown, the former waved and vertical, the latter lunulate dentate; the brown median area is interrupted by a diffuse oblique band of ground colour from costa beyond inner line to outer line on submedian fold, and sometimes also on inner margin; submarginal line represented by the edge of the dark terminal area, slightly marked with pale scales at costa, where it is preceded by a brown costal blotch; orbicular and reniform stigmata hardly visible; fringe brown; hindwing grey pink, suffused with brown, especially terminally, and with a dark brown outer line. Amurland.

20. Genus: **Ecbolemia** *Hmps.*

Tongue absent; palpi obliquely upturned, hairy in front, third segment short; frons with corneous roughened prominence; antennae of ♂ ciliated; thorax hairy, with slight crests; dorsum smooth; wings elongate, narrow; hindwing with veins 6, 7 stalked. Type *Ecbolemia misella* *Pueng.*

E. misella *Püng.* Forewing ochreous overlaid with fuscous; inner and outer lines dark, the former *misella*. waved, vertical; the latter lunulate-dentate, both marked by black spots at costa; claviform minute, brownish; orbicular and reniform small, pale edged with brown, the former round, the latter subquadrate, separated by a dark brown space; submarginal line lunulate-dentate, preceded and defined by a darker shade; hindwing white, the veins brownish; a dark outer line; the terminal area, in ♀, suffused with brown. Kuldja, E. Turkestan.

21. Genus: **Margelana** *Stgr.*

Tongue minute; frons smooth, tufted with hair, like the vertex; palpi shortly porrect, the second segment hairy below, the third short; thorax hairy, with slight crests; dorsum smooth; antennae of ♂ bipectinate, the pectinations stiff and straight, wide apart; forewing with costa sinuate, termen oblique, especially below, nearly as long as inner margin; cell in both wings long. Type *Margelana versicolor* *Stgr.*

M. versicolor *Stgr.* (41 k). Forewing yellow ochreous; the cell and submedian interspace sometimes *versicolor*. browner; veins, lines, and stigmata white; inner line strongly angled outwards on submedian fold; outer line parallel and near to termen; the two conversely edged with a brown shade; orbicular stigma round, white; reniform an inwardly oblique white bar on discocellular, edged with brown outwardly; submarginal line faint; hindwing grey in ♀, much paler in ♂, with a dark pale-bordered outer shade; fringe white. Found only in W. Turkestan.

22. Genus: **Eremopola** *gen. nov.*

Differs from *Margelana* in having the antennae of ♂ either fully bipectinate, or with fasciculate cilia; the scheme of marking quite different; the outer line outcurved beyond cell, not remote and parallel to termen. Type *Eremopola lenis* *Stgr.*

Sect. I. Antennae of ♂ fully bipectinate.

E. lenis *Stgr.* Forewing whitish suffused with brownish grey, dusted with darker; inner and outer *lenis*. lines brown, very indistinct, the latter lunulate-dentate; claviform long, white, diffuse; orbicular and reniform white, the former round with central dark dot, the latter with brown central lunule; a dark brown grey cloud from vein 3 to 5 between cell and submarginal line; the outer space above and below it whiter; submarginal line irregular, whitish, almost broken up into spots; fringe mottled olive grey and white; hindwing and fringe white; cellspot dark; marginal line black. Palestine.

E. discrepans *Stgr.* (41 l). Forewing brownish grey; all 3 stigmata brownish grey with black edges; *discrepans*. inner and outer lines black, the outer acutely dentate; veins blackish; submarginal line pale; a dark blotch in submedian fold from claviform stigma to outer line; hindwing whitish, grey-tinged, with a black marginal line. Palestine.

Sect. II. Antennae of ♂ subserrate, with fascicles of cilia.

E. veteriosa *Pueng.* Forewing grey dusted and suffused in parts with fuscous; the veins beyond *veteriosa*. cell dark; a short black streak below base of cell, with blackish suffusion below it; inner and outer lines blackish, conversely whitish-edged; claviform stigma minute; the cell blackish; orbicular and reniform with brown centres and whitish annuli; submarginal line whitish, dentate, preceded by a dark shade; hindwing white, the terminal area faintly brownish. Askabad, W. Turkestan.

23. Genus: **Centropodia** *Hmps.*

Tongue well-developed; frons smooth; palpi upturned, the second segment hairy, the third short, porrect; antennae of ♂ with fascicles of cilia; vertex tufted with hairs; thorax hairy with slight crests; abdomen without crests; fore tibiae with one or more claws on outer side. Type *Centropodia scripturosa* *Ev.*

Sect. I. Foretibia with seven claws on outer side.

C. scripturosa *Ev.* (41 k). Forewing whitish, suffused with dull grey and irrorated with black; *scripturosa*. streaks of reddish-ochreous along inner margin and both folds; inner and outer lines blackish, zigzag;

orbicular stigma oblique, elliptical, with brown centre and whitish annulus; reniform with dark centre, especially in lower half, and white annulus; claviform quite small; veins towards termen dark; submarginal line whitish, indented on both folds, preceded by distinct black spots; fringe grey, cut by white beyond veins; hindwing white washed with grey, the veins fuscous, widening at termen; fringe white. Turkestan.

Sect. II. Foretibia with one claw on outer side.

inquinata. **C. inquinata** *Mab.* Like *scripturosa*, but the orbicular stigma is elongated, wedge-shaped; the reniform subquadrate, whitish; submarginal line whitish, with fuscous on each side; hindwing white, suffused terminally with fuscous. Gabes, Tunis.

whitei. **C. whitei** *Rbl.* Forewing redbrown with a purplish grey suffusion and some dark dusting; inner line double, waved, oblique; outer double at costa, indistinctly dentate, and forming black dashes on veins, bent on vein 4; subterminal line preceded by a dark costal patch, angled outwards at vein 7, then consisting of pale and dark dentate markings; terminal line fine and waved; claviform stigma small, brown-edged; orbicular and reniform large, their pale annuli outlined with black, the former oblique and elliptical, the latter with lower end produced; a diffuse curved dark median shade; hindwing grey brown; fringe whitish at tips. Described from a single ♀ from the Canaries.

24. Genus: **Pseudamathes** *Hmps.*

Tongue aborted, minute; frons with a rounded prominence, roughened in front, with corneous triangular plate below it; palpi shortly porrect; antennae of ♀ minutely serrate and ciliated; thorax hairy, with slight crests; foretarsi with 3 long clawlike spines on each side of first 2 segments. Type *Ps. volloni* *Lucas*.

volloni. **Ps. volloni** *Lucas.* Forewing rufous ochreous irrorated with darker; inner and outer lines fuscous, dentate, obscure; upper stigmata paler; submarginal line pale, obscure; hindwing white tinged with rufous. Tunis.

25. Genus: **Pseudopseustis** *Hmps.*

Tongue aborted, minute; frons smooth; palpi obliquely upturned, short, second segment haired in front; thorax hairy, with slight crests; first segment of foretarsus with 4 long clawlike spines on outer side only. Type *P. tellieri* *Lucas*.

Sect. I. Antennae of ♂ with pedicellate fascicles of cilia.

tellieri. **P. tellieri** *Lucas.* Forewing yellow; lines faint, brown; outer and submarginal fairly distinct; a dark spot between stigmata which are pale; the reniform with a brown lunule; hindwing with dark outer line. Tunis.

Sect. II. Antennae of ♂ minutely serrate.

jordana. **P. jordana** *Stgr.* (41 l). Forewing yellow ochreous with a grey tinge; inner and outer lines brown, indistinct, partly interrupted; reniform stigma a brownish spot on discocellular; median shade marked by a dark spot on costa; fringe concolorous; hindwing paler with faint grey cellspot and outer line. Palestine.

26. Genus: **Pseudohadena** *Alph.*

Tongue well-developed; frons smooth; palpi shortly porrect, the second segment hairy below; antennae of ♂ ciliated; foretarsi with curved claw-like spines on outer side of first segment; vertex tufted; thorax hairy with slight crests; abdomen without crests. Type *Pseudohadena armata* *Alph.*

laciniosa. **P. laciniosa** *Christ.* (41 l). Forewing whitish grey; the median area, except along costa and inner margin, suffused with pale olive brown; inner line forming 3 prominent projections outwards, one narrow, elongated, in cell, one on submedian fold, the third below vein 1; the basal area within it whitish grey, with a black dash from base below cell edged above with pale olive brown; outer line black, but much interrupted, lunulate dentate, only distinct at inner margin; all 3 stigmata with broad white annuli; the claviform long, with ochreous black-edged centre; orbicular oblique touching the lunulate reniform, both also with ochreous black-edged centres, edged with black; a dark triangle between them; submarginal line much broken up, preceded by black wedged-shaped marks lying on a pale olive brown shade, one on each side of veins 3 and 6; hindwing pale grey-brown, with a dark outer line. Turkestan and Mongolia.

sergia. **P. sergia** *Pueng.* (41 l). Forewing uniform drab grey with a slight flesh coloured tint; the veins finely blackish; a black streak below base of cell confluent with the elongate claviform which is defined by

black: inner and outer lines slightly marked; orbicular and reniform black edged, the former oblique and connected below with the reniform; submarginal line indistinct, preceded above middle by an oblique series of short black marks above veins 6, 5, and 4; hindwing rather paler, tinged with fuscous along termen; the veins dark. W. Turkestan and Mongolia.

P. presbytis *Hmps.* (43 a). Forewing ochreous white tinged with brownish and with some dark *presbytis*. dusting; a black streak from base below cell; a black costal dot near base; inner and outer lines marked by black spots on costa, then indistinct; the inner oblique and waved; the outer oblique to vein 6, inbent beyond cell, oblique and sinuous below vein 4; subterminal line formed of an oblique series of short black streaks from below apex to vein 5, then by faint dentate fuscous marks; terminal line fine and waved; claviform stigma with slight black outline, connected below with the basal black streak; orbicular oblique, elliptical, reniform with lower half dark, both with pale black-edged annuli; fringe brown with a cream white line at base; hindwing white; veins and terminal area brownish; fringe pure white. Chamil Hanis, E. Turkestan.

P. idumaea *Pueng.* (41 l). Forewing dull ochreous suffused with brown and dusted with blackish; *idumaea*. a black streak in submedian fold from base to inner line, which is strongly angled outwards between and inwards on the veins; outer line strongly dentate; submarginal line preceded and defined by a continuous zigzag black shade; claviform stigma small, acute, defined by black; orbicular and reniform strongly defined by black, the former oblique and often touching the reniform; hindwing luteous grey, with dark veins and terminal shade. Palestine.

P. schlumbergeri *Pueng.* (41 l). Forewing ashy grey, dusted with fuscous; the veins black; a black *schlumbergeri*. streak from base along submedian fold continued by the long, narrow, black-edged claviform stigma; inner and outer lines and the praesubmarginal shade blackish and distinct, the last two dentate; orbicular and reniform grey with black edges, the former oblique; hindwing grey suffused with fuscous, darkest along termen, and with a dark outer line. From W. and E. Turkestan.

P. chenopodiphaga *Rmbr.* (43 a). Forewing sandy grey, speckled with dark grey or fuscous; inner *chenopodiphaga*. and outer lines double, partly filled in with greyish white, conversely dentate-lunulate, marked with black on costa, and ending in white spots on inner margin; the veins speckled black and grey; stigmata of the ground colour outlined with black; the claviform long, pointed; the orbicular an irregular flattened oval; reniform broad, open above, and reaching below median vein; submarginal line pale, indistinct, preceded by wedged-shaped black marks, one on each side of veins 3 and 6; hindwing greyish white, becoming more fuscous along termen; the veins, cellspot, and slight outer line darker; fringe white dotted with grey; the ab. **erubescens** *Stgr.*, from Biskra, Algeria, has a rufous tinge over the head, thorax, and forewing. Larva *erubescens*. grey green, sometimes yellowish, covered with dark dots; dorsal and subdorsal lines and some oblique lateral stripes darker; feeding on *Chenopodium fruticosum*, *Atriplex portulacoides* and other coast plants. A mediterranean species found in Spain, S. France, Italy, Corsica, Algeria, in Armenia, Syria, W. and E. Turkestan.

P. siri *Ersch.* (43 a). Larger than *chenopodiphaga*, pale grey without the sandy tinge and the dark *siri*. irroration; inner and outer lines double, filled in with pale grey and more distinct across wing; the cell and a median shade darker, somewhat brownish; all 3 stigmata with more distinct grey annuli; the claviform shorter and rounded at end; a black streak from base below cell; submarginal line preceded by a dark dentate shade but without black wedge shaped marks; hindwing with basal half paler; a large dark cellspot; the veins and outer line dark; terminal area with a broader, better-defined fuscous border; fringe wholly white. W. and E. Turkestan, Mongolia.

P. commoda *Stgr.* (43 a). Forewing uniform pale grey, with very fine dark dusting; inner and *commoda*. outer lines black, the inner waved, slightly oblique, the outer irregularly lunulate-dentate; both sometimes hardly visible, except at costa; a brownish median shade; stigmata of the pale ground colour, with partial black edging; submarginal line indicated only by a faint row of darker wedged-shaped marks, those below veins 5, 6, and 7 black and more conspicuous; hindwing whitish grey, with dark cellspot and outer line, beyond which the terminal area is fuscous; fringe white; — the form **manifesta** *Christ.* from Armenia is *manifesta*. darker grey. Armenia, W. and E. Turkestan, and Mongolia.

P. pugnax *Alph.* (42 k). Forewing pale ochreous brown: the costal area to outer line, the basal *pugnax*. area, and the outer area except at costa whitish; a slight black streak below base of cell; inner and outer lines double, filled in with white; submarginal line whitish, defined on inner side by small dentate brown marks; the stigmata outlined with black, the two upper large and with whitish annuli; hindwing white, the veins and terminal area tinged with brown; underside glossy white. Songaria, W. Siberia.

P. minuta *Pueng.* (43 a). Forewing whitish ochreous varied with fuscous; the inner and outer lines *minuta*. black, conversely pale-edged and dentate-lunulate; upper stigmata whitish ochreous, black-edged, separated

by the diffuse dark median shade; submarginal line pale, preceded by a blackish lunulate-dentate shade, which is darker on the folds; hindwing luteous grey with dark cellspot, outer line, and broad terminal border; fringe whitish. One of the smaller species, found in W. and E. Turkestan.

crassipuncta.

P. crassipuncta *Pueng.* (43 b). Forewing pale luteous grey, with black irroration; inner and outer lines blackish, the former ill-defined; claviform stigma large, incompletely defined by black; orbicular and reniform of the ground colour, with black outlines; submarginal line dentate-lunulate, defined mainly by the darker terminal area; hindwing dull whitish; the veins brown; terminal area towards apex broadly brown; a large black triangular cellspot, followed by a dark waved outer line. Aksu, Mongolia.

rosconitens.

P. roseonitens *Oberth.* (43 b). Forewing reddish ochreous, irrorated with brown; inner and outer lines much as in *chenopodiphaga*; the orbicular and reniform stigmata defined by blackish at sides only; subterminal line indistinct, ochreous preceded by fuscous suffusion, incurved on both folds; hindwing ochreous white with a faint brownish subterminal shade. Recorded only from Biskra, Algeria.

immunda.

P. immunda *Ev.* (43 a). Forewing fuscous, dusted and suffused with blackish; inner and outer lines black, conversely edged with pale grey, the outer strongly dentate; claviform stigma small, blackish; orbicular round, pale grey with black outline; reniform large, with dark centre and pale annulus, somewhat marked with white; the median shade forming a dark spot between them; subterminal line ochreous, preceded and defined by a dark, sometimes blackish, more or less continuous, dentate shade; hindwing fuscous, rather paler towards base; fringe whitish; the ♀ is paler, with a more brownish tinge. Found in the Ural Mts., Russia, in the Altai Mts., W. Siberia, and in W. Turkestan.

halimi.

P. halimi *Mill.* (43 b). Forewing pale grey brown, as in the ♀ of *immunda*, and with similar markings; but the lines are not accompanied by any pale edging, and the wing is without dark irroration; the orbicular and reniform stigmata are of the ground colour, the latter without any pale annulus; the dark praesubmarginal shade is much less prominent and is darker on the folds; hindwings with the base paler, showing cellspot and outer line. Larva pale bluish green, dorsal and subdorsal lines fine, dark green; spiracular stripe yellowish white, marked with red on middle segments; spiracles very small, ringed with black; another form is yellowish red with the dorsal and subdorsal lines darker red and the ground between yellowish; feeding on *Atriplex halimus*. S. E. France.

immunis.

P. immunis *Stgr.* (43 b). Differs from the preceding species in being reddish grey finely dusted with darker; the median shade and a shade between subbasal and inner lines diffusely darker; the outer line with the teeth pale-dotted on the veins; the two stigmata of the pale ground colour; the outer half of median area darker; submarginal line pale, interrupted into spots, each preceded by dark blotches; fringe with a bright pale line at base followed by a thick dark one; hindwing fuscous grey, becoming almost blackish towards termen. W. and E. Turkestan.

pexa.

P. pexa *Stgr.* (41 l). Forewing more yellowish in ground colour, with olive-fuscous suffusion; the inner and outer lines nearer together; the median shade approximated to the inner rather than to the outer line; the submarginal line much yellower, the preceding dark shade more regularly dentate; the stigmata paler, slightly yellowish; hindwing dark fuscous, with a dark outer line running to anal angle. W. and E. Turkestan.

arvicola.

P. arvicola *Christ.* (43 b). Forewing pale ochreous with a pale flesh coloured tinge; the shadings blue grey; the lines, a thick shade before inner line, the outer half of median area, and the terminal area all blue grey; stigmata of the ground colour, with grey centres; subterminal line broken up into spots preceded by a blackish dentate line, more strongly marked below costa; fringe pale, with a dark grey line near base; hindwing ochreous suffused with pale grey, darker towards termen; veins and outer line dark. W. and E. Turkestan.

coluteae.

P. coluteae *Bienert* (43 b). Forewing uniform pale luteous grey; inner and outer lines finely black; median shade thick and diffuse; outer half of median area darker, stigmata pale with slight dark outline; submarginal line preceded by a fine black lunulate-dentate line; hindwing dull greyish fuscous, paler towards base and inner margin, with dark veins and outer line. Persia and Turkestan.

indigna.

P. indigna *Christ.* (42 b). Forewing unicolorous dull luteous grey; the veins darker; a dark praesubmarginal shade; inner and outer lines just decipherable; stigmata pale with dark spot between them; hindwing fuscous with paler base; fringe whitish. A small species, recorded only from Askabad, W. Turkestan.

contumax.

P. contumax *Pueng.* (43 c). Forewing pale redbrown, slightly irrorated with darker; inner line represented by two small points on costa and one below cell; outer line indicated by some brown scales; subterminal line obscure, defined on inner side by small brown spots; hindwing pale reddish brown, darker at termen; fringe yellowish white. W. Gobi Desert, Mongolia.

P. armata *Alph.* (42 k). Forewing whitish ochreous suffused with yellowish brown; inner and outer *armata*. lines brown, marked conversely by whitish; claviform stigma small, faintly edged with brown; orbicular and reniform small, whitish, slightly defined by brown, the former elliptical; subterminal line whitish, defined on inner side by a slight dark cloud; hindwing grey, terminally fuscous; fringe whitish. Turkestan, and W. China.

27. Genus: **Luperina** *Bsd.*

Tongue present; frons smooth; palpi obliquely upturned, the second segment hairy below, the third short, porrect; thorax hairy, with slight crests; abdomen without crests; tibiae hairy; antennae of ♂ thickened and flattened, beneath with clavate serrations terminating in sessile fascicles of cilia. Larva stout, without markings; the head large and round; thoracic and anal segments with horny plates; feeding at roots of grass; the imago emerges in autumn. Type *Luperina dumerilii* *Dup.*

L. testacea *Hbn.* (= *lunatostrigata* *Haw.*) (43 c). Forewing light to dark fuscous, often with a *testacea*. faint ochreous or brownish tinge; the veins darker; inner and outer lines double, filled in with pale, but varying in intensity; claviform stigma of the ground colour with black line; orbicular and reniform paler with darker centres; submarginal line pale, obscure, often shown only by the dark terminal area beyond it; hindwing whitish with dark veins and black marginal line; of the forms without any ochreous or rufous tinge, ab. **obsoleta** *Tutt* is pale grey without definite dark markings; — ab. **cinerea** *Tutt* (= var. *obsoleta*. *B. Guen.*) (43 c) has the grey darker, more fuscous; — ab. **nigrescens** *Tutt* (43 c) has the ground colour *cinerea*. *nigrescens*. blackish of varying degrees of intensity; the inner and outer lines are sometimes connected by a black streak; — in ab. **unca** *Haw.* (43 c), the streak is thin and the two lines well separated; — ab. **x-notata** *Haw.* (43 c) has the streak thick and the lines closely approximated. Larva dirty whitish, without lines; head and plates brown; feeding at roots of grasses. Widely distributed in Europe, occurring almost *unca*. *x-notata*. every where, except Spain and Portugal; also in Asia Minor and Armenia.

L. guenéi *Dbl.* Forewing ochreous white suffused with rufous and slightly dusted with darker; *guénéi*. the postmedian area paler except towards costa; lines blackish conversely edged with whitish, the inner oblique and dentate to submedian fold, then angled inwards on vein 1; the outer angled outwards on vein 6, incurved and dentate-lunulate below; subterminal line pale, defined by dark marks on each side; a row of black terminal lunules; fringe cut with white beyond the veins; orbicular stigma small, narrowed above, reniform somewhat produced inwards on median vein, both with white annuli defined by dark; hindwing pure white; a terminal series of dark striae from apex to vein 2 and a faint shade at vein 1; — ab. **baxteri** *South* is a much greyer form, without any rufous tinge on head, thorax, or forewing. Occurs along *baxteri*. the coast in N. Wales and Lancashire in Britain, and in Central France.

L. nickerlii *Frr.* (43 d). Like *testacea*, but olive grey, without any rufous tinge; inner and outer *nickerlii*. lines conversely edged with whitish; a blackish shade before inner line from median vein to inner margin, interrupted at vein 1; claviform stigma broadly blackish; orbicular a minute white spot; reniform subquadrate, with fuscous centre and broad white annulus, the area beyond it blackish, submarginal line whiter, preceded, except between veins 6 and 7, by a blackish shade; a row of neat black marginal lunules; fringe dark grey pencilled with light grey; hindwing pure white, with dark marginal lunules and white fringe; the veins dark. Bohemia and S. France.

L. dumerilii *Dup.* (= *amentata* *Germ.*) (43 d). Forewing whitish ochreous, generally with a pinkish *dumerilii*. or rufous tinge; the median and terminal areas, a costal patch before submarginal line, and generally the basal area olive brown; inner and outer lines double, dark filled in with ochreous; median vein and veinlets whitish; claviform stigma minute, brown edged, or absent; orbicular and reniform filled in with whitish, with pale brown centres; space between outer and submarginal lines of the pale ground colour, or slightly tinged with olive brown; submarginal line indicated by the dark terminal area, generally also preceded by a pale brown line; fringe chequered, brown and pale; hindwing white, tinged with grey in dark ♀♀; — ab. **sancta** *Stgr.* (43 d) from Palestine and Sicily, is smaller, darker, with the upper stigmata *sancta*. snow white; the hindwing with a dark cellspot on the underside; a ♀ from Ficuzza, Sicily certainly belongs here; — ab. **diversa** *Stgr.* (43 d), from Asia Minor and Armenia, is paler, somewhat larger, with the *diversa*. markings more diffuse; — ab. **uniformis** *ab. nov.* (= ab. *A. Guen.*, *desyllesi* *Stgr. nec Bsd.*) (43 d) is wholly *uniformis*. brownish fuscous: the lines hardly visible except at costa; all 3 stigmata edged with black; the two upper with pale annuli; hindwing white, with a dark cellspot on the underside, as in *sancta* *Guen.*; — Guenée's example was from Lyons; the one described above, a ♂, from Ficuzza, Sicily. Occurs in Britain (South coast), France, Italy, Sicily, Dalmatia; in Armenia, Asia Minor, Syria, Palestine and Mesopotamia.

L. desyllesi *Bsd.* Intermediate between *testacea* and *cespitis*; hardly as large as *dumerilii*. Forewing *desyllesi*. brownish grey; inner and outer lines fine, blackish, well apart below, externally edged by a fine yellowish

line; claviform absent; upper stigmata yellowish white with brown grey centres; subterminal line yellowish white, narrow, but continuous and touching both margins; terminal area hardly darker than the ground colour; hindwing white, with a grey marginal line; underside of both wings whitish with a wavy grey line near the outer margin. Antennae of the ♂ strongly crenulate. The above is Guenée's description made from 2 examples from Boisduval's Collection, from the North Coast of France. It may be an aberration of *dumerilii*.

- rubella*. **L. rubella** Dup. (43 e). Forewing pale ochreous, washed with rufous; the lines, the central shade, the praesubmarginal shade, and the fringe rufous; inner and outer lines diffuse, the latter strongly dentate; stigmata pale, the reniform with dark centre; separated by the broad rufous median shade; hindwing whitish with a faint rufous tint; — **dayensis** Oberth., from Algeria and ? Pontus, is paler, greyer; — **rhusia** Pueng., from Tura, is larger and darker; the forewing grey brown and rufous mixed. This may be a distinct species. — Larva dark yellowish grey, greenish in front, redder behind; lines hardly expressed except the pale broad lateral lines; at roots of grass. A South European species; found in S. E. France, Switzerland, Dalmatia, Istria, Croatia; in Asia Minor and W. Turkestan.
- dayensis*, *rhusia*.
- ferrago*. **L. ferrago** Ev. (= *caltheago* Bsd.) (43 e). Forewing flesh-coloured ochreous, the terminal area, the median shade, and often the outer half of median area deeper; inner and outer lines ferruginous, conversely lunulate dentate; upper stigmata of the ground colour with darker edging, the reniform with a pale annulus and a spot of dark fuscous in lower lobe; submarginal line pale, indicated by the darker area beyond it and preceded on costa by a diffuse cloud; hindwing pale yellow ochreous, sometimes flushed with rufous. Occurs in the Ural Mts. in S. Russia; in Armenia, Syria, Asia Minor; in W. and E. Turkestan, and in *obsolata*, W. Siberia; — a distinct form, ab. **obsolata** ab. nov. (43 e), from Naryn Kol. Turkestan, is duller flesh colour, without ochraceous tinge, and with scarcely any visible markings.
- radicosa*. **L. radicosa** Graes. (43 e). Forewing rufous ochreous with a dull grey suffusion; the terminal area, the median area to below cell, and a praeapical costal cloud dull brownish fulvous; lines as in *ferrago*; claviform marked by a deep brown streak; orbicular indistinct, dull fulvous with paler annulus; reniform brown at centre, with rufous annulus internally, and externally above, whitish below; hindwing dull ochreous suffused with fuscous, darker along termen; cellspot and veins darker. Recorded only from Pokrofska, Amurland; a pair from Uralsk, (sent by M. Bartel as? sp. nov.) appear to be referable here; these are of the same size as *ferrago*, and smaller and duller than *hedeni*; head and thorax dark brown, not bright rufous.
- hedeni*. **L. hedeni** Graes. (43 f). Larger than *radicosa*, dull greyish brick red, with the dark tints as in that species; stigmata and lines the same; hindwing darker, showing also a dark outer line; head and shoulders bright rufous. Also from Amurland.
- terrigo*. **L. terrigo** Alph. (43 f). Forewing greyish rufous; the terminal area and a diffuse median shade darker; inner and outer lines fine but obscure; no claviform; orbicular and reniform paler, but very indistinct, except the blackish spot in lower end of the latter; hindwing dull rufous grey, paler towards base. Recorded from Siberia, the Sajan Mts., and Kamschatgar; also from the Sassamyr Mts., Ketmen Tjube. Closely allied to *ferrago*, but the hindwing grey instead of yellowish.
- subaquila*. **L. subaquila** Graes. (43 f). Nearest to *radicosa*, but the ground colour dull olive ochreous; the basal and terminal areas olive brown; the lines and stigmata much as in *dumerilii*, but the orbicular is rufous tinged; the claviform marked by a dark brown streak above, as in *hedeni* and *radicosa*; hindwing dull greyish ochreous, with the veins, cellspot, outer line, and submarginal shade darker. Recorded from Raddefka, Amurland; also from the Apfelgebirge, Transbaikalia.
- vicaria*. **L. vicaria** Pueng. (43 f). Forewing dark grey; the cell and submedian interspace darker; veins broadly pale; claviform dark grey edged with black, continued as a black streak to outer line; orbicular and reniform white outlined with black; submarginal line pale preceded by dark wedge-shaped marks between the veins; a row of black marginal lunules, cut, like the fringe, by the pale veins; hindwing fuscous, darker at termen, with cellspot and veins dark; fringe whitish. The ♀ has the white markings more developed. W. Turkestan.
- acharis*. **L. acharis** Pueng. Forewing ochreous white with slight brownish irroration: lines very indistinct, double, marked with blackish at costa and faintly waved across wing; the subterminal line interrupted into whitish spots inwardly defined by brown; a row of dark lunules at termen; stigmata faint, whitish; the orbicular round, with slight brown outline; the reniform subquadrate, its inner edge fuscous; hindwing whitish with pale brown suffusion; a row of dark terminal lunules from apex to vein 2; fringe white. Recorded from Aksu, Mongolia.

28. Genus: **Lasiplexia** *Hmps.*

Tongue present; frons smooth, with a large tuft of hair; vertex also tufted; palpi stout, upturned, the second segment hairy, the third short and smooth; thorax clothed only with hair, with slight crests only; abdomen without crests; forewing elongate; the apex prominent; termen oblique, crenulate; antennae of ♂ with tuberculate or sessile fascicles of cilia. Type *Lasiplexia cuprina* Moore.

Sect. II. Antennae of ♂ with sessile fascicles of cilia.

L. chalybeata *Walk.* (= *suffusa* Moore) (43 f). Forewing dark brown with purplish tinge and *chalybeata*, slightly sprinkled with pale scales; inner and outer lines double, blackish, filled in with pale, the outer lunulate-dentate; reniform stigma with a dull yellow spot externally, sometimes with a white dot below; subterminal line pale and wavy; hindwing brownish; in the ab. **albistigma** (= ab. 1. *Hmps.*) (43 f) the spot *albistigma*, on outer edge of reniform is pure white with a white dot both above and below. An Indian species, extending to Yatong, Tibet.

29. Genus: **Pareuplexia** *gen. nov.*

Differs from *Lasiplexia*, to which it is closely allied, in having more slender palpi, the second segment longer and not so stout, the terminal varying in length, slightly porrect, smooth.

Type *Pareuplexia chalybeata* Moore.

Sect. I. Terminal segment of palpi long.

P. chalybeata Moore (= *spectabilis* *Pouj.*) (42 b). Forewing brown, suffused with darker, thickly *chalybeata*, sprinkled with blue scales, especially on the veins; inner and outer lines deep brown, edged conversely with silvery blue, the outer strongly dentate externally on the veins, and followed by a narrow paler space; claviform stigma large, velvety black; orbicular dark, edged with rufous and blue scales, oblique, elliptical; reniform with dark blue-speckled centre and rufous annulus, broader externally; subterminal line blue grey on a deep brown band; terminal area purplish grey; terminal lunules black; hindwing brownish fuscous with darker subterminal band edged by a bluish grey line. An Indian species occurring also in W. China.

Sect. II. Terminal segment of palpi much shorter.

P. pallidimargo *spec. nov.* (42 b). Like *chalybeata* of which it has been considered a form; the marginal area broadly blue grey or bluish white; distinguished by the shorter terminal segment of palpi. Whether this species, certainly Indian, also occurs in W. China, like the last, is uncertain; it is introduced here as a probable denizen. *pallidimargo.*

30. Genus: **Trachea** *Tr.*

Tongue present; frons smooth, tufted with hair; palpi upturned, the 2nd segment broadly scaled, the third short; thorax clothed with scales; vertex with a ridge of scales; prothorax and metathorax with divided crests; abdomen with dorsal crests; antennae with sessile fascicles of cilia; forewing broad, the termen crenulate; scaling purplish grey and green mixed; the stigmata and lines well-developed. Larva stout, slightly humped on vein 11, feeding on low plants in autumn, hibernating as pupa in the ground without cocoon. Type *Trachea atriplicis* L.

T. atriplicis L. (43 g). Forewing greyish purple irrorated with fuscous; the basal area and the shade *atriplicis*, preceding submarginal line, especially in the lower half, and the upper stigmata bright pale green; median area below subcostal vein deep dark green; a large white, generally pinkish-tinged blotch with bifid extremity runs along vein 2 to outer line; submarginal line greenish white, angled sharply inwards on submedian fold and bluntly beyond the cell, accompanied by dark and light green clouds; hindwing fuscous grey, the outer half dark fuscous, with traces of dark cellspot and outer line; — ab. **similis** *Stgr.*, recorded *similis*, from Ussuri, and also Central Germany, has the green tints altered into olive, and the pale blotch yellow; ab. **diffusa** *Spul.* has all the markings faint and washed out; (this is usually the case with bred examples); *diffusa*, the Japanese form — ab. **gnoma** *Btlr.* (43 g) is larger, deeper purple, the green shadings less developed, *gnoma*, the white blotch larger and more conspicuous. — Larva purplish brown, sometimes with a green tinge; dorsal and subdorsal lines blackish, with faint oblique lateral stripes; spiracular lines pinkish white, darker above; spiracles white, dark-ringed; on dock, and other low plants. Generally distributed throughout Europe, and occurring in Asia Minor, Armenia, Turkestan, Siberia, and Japan.

T. auriplena *Walk.* (= *atriplicis* *Koll. nec L.*) (43 g). Differs from the form *gnoma* *Btlr.* in being *auriplena*, much more overrun with green tints, the purple grey shading only remaining clear along the lines, and filling up the space between outer and subterminal lines like a band; the stigmata green with black outlines;

the orbicular round and the reniform large with yellowish green rings; beyond the claviform above the submedian fold is a large diamond shaped white blotch, often continued across the bases of veins 2 and 3 and through cell beyond the orbicular as another white blotch; the submarginal line, yellowish green, is more tremulous than in *atriplicis*; hindwing dull white with broad blackish marginal border, the inner margin also narrowly blackish; cellspot and veins dark; — ab. **lucia** *Btlr.* (43 g, h), has the outer line followed by a thick dentate line, and the subterminal preceded opposite cell by whitish scaling, and the basal area of hindwing more or less tinged with fuscous. The species, originally described from Ceylon, occurs all through India, and extends to Kashmir, China, Corea, and Japan; in the last 3 localities, the form *lucia* *Btlr.* is predominant and the typical form rare; whereas in India the form *lucia* does not occur.

melanospila. **T. melanospila** *Koll.* (= *kosakka* *Oberth.*) (43 h). Differs from *auriplena* *Walk.* in having the large white blotch beyond the claviform stigma reduced to a small whitish, sometimes greenish yellow, triangular mark, not continued upwards across the cell; the orbicular stigma is large, with round dark centre and pale green ring; the hindwing has the pale basal portion more extensive, not so clearly separated from the marginal border, which is not so dark. Found in Kashmir, Amurland, W. and Central China, also in N. India.

microspila. **T. microspila** *Hmps.* (43 h). Differs from *melanospila* in being paler, the purplish ground colour being thickly dusted with blue grey or whitish grey; the yellow green areas reduced, the upper stigmata both smaller; the claviform is followed by only a small white spot; the outer line is acutely dentate on the veins outwardly, and equally so inwardly between them, instead of forming shallow lunules; hindwing with basal area pure white, the marginal border dark fuscous. This species also occurs in W. China, as well as in N. India.

tokiensis. **T. tokiensis** *Btlr.* (43 h, i). Forewing purple grey varied with pale and dark scales; a diffuse blotch at base of costa reaching to submedian fold, the two stigmata, and the course of the submarginal line yellow green; the centre of orbicular and lower half of the reniform filled up with blackish; the claviform black-outlined and partially greenish, without any white markings beyond it; hindwing dull greyish white with veins and cellspot fuscous; marginal border smoky blackish beyond a thick outer line. Recorded only from Japan.

stoliczkae. **T. stoliczkae** *Fldr.* (43 i). Forewing dull greyish lilac, varied with olive green, this tint being thickest in basal area, in the median area below subcostal vein, and along the submarginal line; inner and outer lines black, conversely lunulate-dentate, and approaching each other in submedian interval; upper stigmata lilac grey washed with pale green and with black outlines; terminal area beyond submarginal line generally darker, the line, which is irregularly waved and dentate, being also preceded by darker clouds below middle; hindwing purplish fuscous, rather paler towards base; in the ab. **intensiva** *ab. nov.* (43 k) both the lilac grey ground colour and the green suffusion are much brighter and deeper. Taken in the Scinde and Goorais Vallies, Kashmir; also occurring in N. India.

31. Genus: **Euplexia** *Stph.*

Tongue present; frons smooth; palpi upturned, the second segment long, hairy, the third short, porrect; thorax densely scaled, with strong erect crests; vertex with a ridge of scales; the abdomen strongly crested on dorsum and laterally tufted; forewing triangular with prominent apex; the termen slightly crenulate. Larva smooth, velvety; on various low plants, feeding up in spring and early summer; pupating in the ground. Type *Euplexia lucipara* *L.*

Sect. III. Antennae of ♂ with short sessile fascicles of cilia.

lucipara. **E. lucipara** *L.* (43 i). Forewing rufous ochreous tinged with purplish and mixed with olive brown; median area, a triangular blotch on inner margin near base, and a narrow praesubmarginal cloud deep olive; costa to beyond middle, the terminal area, and the orbicular stigma leaden purple; lines indistinct, the outer and inner approximating on inner margin; claviform stigma olive, dark-edged; orbicular roundish, oblique, with paler ring; reniform conspicuously whitish, containing a double brown lunule; submarginal line pale, waved; veins towards termen dotted dark and pale; hindwing ochreous with dark cell mark and veins, darker in terminal half where there is visible a dark pale-edged outer and submarginal line. Larva velvety green with darker green oblique subdorsal stripes; tubercles pale; spiracular line yellowish white; 11th segment slightly swollen, with a pair of white dots; head green; on numerous low plants. Occurs throughout Europe, in Algeria, in Western Asia, Siberia, China, and Japan, extending into N. America. Japanese examples are somewhat larger, the ground colour darker, more suffused with purplish.

E. albovittata Moore (43 i). Forewing white; costal area dull leaden grey; basal area rufous grey, *albovittata*. black at extreme base, with two brown black blotches externally above and below vein 1; cell and space below it above vein 1 velvety brown black, emitting a blunt projection inwards above vein 1, below vein 1 rufous brown; orbicular stigma leaden purple, with fine white lateral edging; reniform large and white, with 2 or 3 grey specks; outer line marked by very obscure double grey dots, the reniform followed by a narrow grey or brownish wisp from costa to vein 4; marginal area leaden purple to vein 4; the anal angle white; hindwing dark fuscous, with white blotches on and above vein 2 beyond the outer and submarginal lines; head and thorax fuscous. The ♂ has the head and thorax, and anal half of abdomen black; the costal streak blackish. Found in W. China; originally described from Sikkim.

E. illustrata Graes. (43 i). Very close to *albovittata* Moore, from which it differs in the terminal *illustrata*. black suffusion of forewing being traversed by a clear pale subterminal line, the black before this line being deeper; — in the ab. **obfuscata** ab. nov. (43 k) the usual white outer half of the wing is suffused with *obfuscata*. dull brownish grey. Occurs in Amurland, Japan, Corea, and W. China, but at present not recorded from India; whereas *albovittata* is essentially an Indian form, but found also in W. China.

E. bella Btlr. (= *graeseri* Stgr.) (43 k). Forewing bluish-white; costa and median area black; some *bella*. black markings edged externally with brown on each side of median vein before the inner line; orbicular and reniform large, white, the former conjoined to a costal patch above it and to a large irregular blotch below it reaching to inner margin; the white, black-edged outer line thin and curved, followed by a brown shade and by a black triangle on costa; a black subterminal blotch at middle and another in submedian interval; fringe alternately black and white; hindwing blackish brown, with a white submarginal spot on vein 2. Recorded from Japan and E. Siberia. Smaller by one-third than *albovittata*.

E. albidisca Moore (= *nivescens* Btlr.) (44 b). Forewing dark or yellowish olive green, with all the *albidisca*. lines finely white or bluish white and delicately waved; median area between subcostal vein and vein 1 and the terminal area interruptedly deep olive; orbicular stigma deep olive finely edged with white; reniform a large diffuse chalk white blotch edged with bluish green, extending across the bases of veins 2, 3, and 4 which are bluish white, and ending in an inverted white triangle that reaches the submedian fold; submarginal line swollen and whitish towards apex, finer and acutely dentate and yellowish green below middle; marginal lunules dark green tipped with white; fringe olive green, the outer half pale yellowish mottled with dark olive crescents; hindwing brownish fuscous, the fringe yellowish green. An Indian species, but occurring also in various localities in W. China.

E. laetevirens Oberth. (43 k). Forewing deep olive brown, with patches of golden green in the *laetevirens*. intervals, the veins themselves white-streaked; inner line white, nearly straight from costa to above inner margin, then bent inwards, emitting a white streak basewards on submedian fold and nearly met by an angle of the white subbasal line; claviform a white lunule; orbicular a small round white spot; reniform white, with two dark dots in upper half, its lower edge excised; outer line lunulate dentate, followed by whitish; subterminal line interrupted, formed of white striae with indistinct black spots preceding them; hindwing fuscous, paler at base, with dark outer line and whitish cilia. E. Siberia and Japan.

E. picturata Leech (44 a). Forewing yellow ochreous tinged with grey; basal area edged by a *picturata*. curved rufous band with white on each side and black at costa; inner and outer lines faintly black; claviform marked by a dark dot at its end; orbicular pale with the centre rufous, oblique and oval; reniform white, its inner edge reddish; a dark blotch at middle of costa and another between stigmata; submarginal line whitish, externally shaded with rufous, followed at costa by a dark triangle; terminal area rufous, with blackish streaks on veins 2 and 5; hindwing greyish ochreous, with darker cellspot, outer line, and submarginal shade. Recorded only from W. China. A small species with a facies of its own.

E. semifascia Walk. (43 k). Forewing reddish brown, the median area blackish, the outer area *semifascia*. paler; inner and outer lines blackish, approximated on inner margin; orbicular stigma brownish with black outline, confluent with a spot below cell; reniform ochreous white, black-edged, its centre brown; subterminal line indistinct, pale with dark shading before it; hindwing wholly brownish; — ab. **cuprea** Moore is *cuprea*. darker, the forewing being suffused with purplish fuscous, the antemedian and postmedian areas tinged with purplish pink. This species, which comes close to *E. lucipara* L., is mainly Indian, but occurs at Yatong, Tibet.

E. aurigera Walk. (= *megastigma* Walk.) (44 a). Forewing a mixture of olive green and brown *aurigera*. varied in parts with blackish; the median area darker, except above subcostal vein and below vein 1; the terminal area blackish, except for a pale green patch between veins 2 and 4; veins dark dusted with bluish white scales; a thick black streak near base of inner margin; claviform hidden in a dark suffusion, followed by a pale green lunulate streak below vein 2 from its base; orbicular and reniform olive green conjoined below by an olive green streak; inner line oblique and waved, pale, the edges blackish; outer

line filled in with violet grey, lunulate dentate; submarginal line green, inangled on each fold; hindwing with basal half dull whitish, outer half fuscous black beyond an abbreviated outer line, both becoming obsolete towards anal angle. An Indian species, occurring also at Yatong, Tibet.

32. Genus: **Trigonophora** *Hbn.*

Tongue present; frons smooth, with a thick tuft of hairs; palpi upturned, the second segment long and thickly haired, the third short; antennae of ♂ with quite short sessile fascicles of cilia; thorax hairy; tegulae produced to a central ridge; prothorax with single, metathorax with double crest; basal segments of dorsum crested; the abdomen well-clothed with hair and with lateral tufts; forewing with termen more or less deeply crenulate, and more or less strongly excised below middle. At rest the imago holds its wings deeply folded against its body, the typical species thereby resembling a dry faded leaf. — Larva on all low plants; double brooded except in the extreme North; pupation subterranean. Type *Trigonophora meticulosa* L.

meticulosa. **T. meticulosa** L. (= *pallida* Tutt) (44 a). Forewing whitish ochreous, the base and costal area to $\frac{2}{3}$ pinkish; a triangular space on inner margin before the inner line, the terminal area beyond submarginal line, and a costal shade beyond outer line olive greenish; central area dark green, pinkish towards costa, triangular in shape, the blunt apex resting on inner margin; the 3 stigmata more or less rosy green, the two upper with pale lateral edges; outer line double and angled outwards on vein 5; submarginal line preceded by a blackish green lunule between veins 6 and 7; fringe rufous green, blackish along the excision below vein 4; hindwing pale ochreous, with the discal spot, veins, and often the whole inner half tinged with greenish fuscous; dark outer and double submarginal lines, the latter often forming a grey band below vein 4; — in ab. **suffusa** *ab. nov.* (= var. A. *Guen.*) (44 a) the whole forewing is tinged with reddish, partially obscuring the usual olive green tints; this form seems rare, but is probably not a local one; Tutt mentions 3 specimens from Deal and I have seen two European examples, without exact locality; also the examples from Terceira, the Azores, belong to this form, but there appears no ground whatever for supposing that this red-suffused form is the typical form of Linné and Haworth; — ab. **roseo-brunnea**. **roseo-brunnea** *ab. nov.* (44 a), from the Azores, S. Jorge, occurring along with ab. *suffusa*, has the central triangle rich redbrown tinged with fulvous, the whole wing reddish tinged, and the green shades all strongly mixed with reddish, the metathorax and dorsal tufts also being deep fulvous instead of green. — Of general distribution throughout Europe; found also in the Azores, in Algeria, and in Asia Minor, Armenia, and Syria. — Larva dull green or pinkish-brown, thickly dotted with pale; dorsal line whitish, interrupted; lateral lines narrowly whitish; segments 4—11 with oblique darker lateral stripes; polyphagous on low plants.

fuscomarginata. **T. fuscomarginata** *Leech* (44 b). Forewing ochreous suffused with reddish brown, darker along the costa; a dark redbrown triangular patch along inner margin from base to outer line reaching to lower angle of cell; terminal area dark purplish brown below vein 6, containing a blacker shade before submarginal line; the apex above vein 6 pale ochreous; upper stigmata large, with pinkish grey annuli defined by brown; outer line angled outwards on vein 5; hindwing brownish ochreous; a dark cellspot, outer line, and subterminal and terminal band. Described by Leech from a single ♂ from Pu-tsu-fong, W. China.

33. Genus: **Chutapha** *Moore.*

Differs from *Trigonophora* in having the termen of forewing dentate but not excised below middle; and in the tegulae not being produced in front to form a central ridge; the structure of the antennae is variable. — Larva, as far as known, agreeing with *Trigonophora*. Type *Chutapha costalis* *Moore.*

Sect. I. Antennae of ♂ bipectinate, the branches short, the apical third ciliated.

interrupta. **C. interrupta** *Warr.* (44 b). Forewing rufous ochreous; a brownish black wedge-shaped mark near base of inner margin; the cell and space below between the lines as far as submedian fold deep redbrown; below this on vein 1 an oval redbrown ring; upper stigmata large, reddish ochreous, the orbicular rounded below cell and confluent along median vein with the reniform which contains a redbrown lunule; outer line double; the ochreous subterminal line lunulate-dentate, preceded by a dark shade; hindwing yellowish ochreous, tinged with rufous fuscous, especially along termen; a dark cell mark, outer line, and submarginal shade preceding the pale submarginal line. S. Jorge, the Azores.

wollastoni. **C. wollastoni** *B.-Baker* (= *periculosa* *Stgr. nec Guen.*). Forewing bright rufous, dusted with black, especially in costal region; the outer area paler; inner line double, oblique and sinuous, filled in with pale, but obscure, preceded by a faint waved line, which is less oblique; outer line also double, indistinct

towards costa, excurved on veins 4, 5, then inwardly oblique, followed by three indistinct obliquely waved lines; subterminal line pale, denticulate, with rufous shades on each side; upper stigmata large, conversely oblique, and confluent below, with pale annuli; hindwing pale rufous, suffused, except along costa, with dark brown; a dark outer line beyond cellspot, and a pale rufous subterminal line. In the ♀ the forewing, except in the costal half of outer area, is suffused with purplish-grey especially the terminal area, so that the lines are obscured. — ab. *derufata* ab. nov. (= ab. 1. *Hmps.*) has the thorax and forewing grey instead of rufous, with brown irroration, the cell and median area below it dark chocolate brown. Madeira. *derufata.*

Sect. II. Antennae of ♂ subserrate, with short sessile fascicles of cilia.

C. beatrix *Bltr.* (= *pallens* *Oberth.*) (44 a). Forewing ruddy ochreous with a slight olive tint; the outer area, especially beyond cell, paler; a triangular olive green patch on inner margin before inner line, which is pale and oblique; the median area dark olive green, except along costa; the outer line double, the arms far apart, both toothed on vein 5, the inner arm distinct in upper half, the outer in lower; submarginal line wavy, rufous ochreous, preceded and followed, except at apex above vein 6, by olive green shades; upper stigmata pinkish green with paler annuli, confluent above median vein; the reniform externally and below edged with black scales which are continued obliquely to join a black streak running from apex of the inner green triangle to middle of median area along the submedian fold, marking the lower edge and extremity of the claviform; hindwing yellowish ochreous with greenish fuscous dusting; a similar cellspot, outer line, and terminal band, traversed by the waved pale submarginal line. Japan and Amurland; Oberthur's *pallens* from Askold Island. — A single ♀ from St. Olga Harbour, S. Ussuri, ab. *caesia* ab. nov. (44 b), has no rufous suffusion at all, only a slight pink tinge in the stigmata and in basal area; all the olive green shading strongly mixed with slate-colour, especially along costa and termen. *beatrix.* *caesia.*

C. subpurpurea *Leech* (44 b). Forewing olive brown along costa and in cell; the rest of wing irrorated with violet scales; the veins finely black; a small, deep fulvous, triangular patch on inner margin near base; inner and outer lines treble, the two inner filled in with violet, sinuous, and confluent above inner margin, enclosing below median vein a fulvous claviform stigma and a deep chocolate brown band from below it to below reniform; upper stigmata large with violet annuli and olive centres, the reniform interrupted in middle by a rich fulvous shade which extends, but more faintly, between veins 4 and 6 as far as submarginal line, which, below vein 7, is preceded by a rich brown and followed by a deep purple shade; the dark purple terminal area dusted, especially at apex, with blue scales; hindwing dull rufous ochreous, the veins, especially vein 2, darker and more rufous; a slight outer line, and thick submarginal shade before the rufous subterminal line, beyond which the terminal band is purple and grey; palpi and pectus fiery fulvous tinged with purple; tibiae deep chocolate brown; tarsi cream-coloured. Described originally from a ♂ from Ta-chien-lu, W. China; the species occurs also in the Punjab and Sikkim; the above description was made from a Sikkim ♀. In this species the tegulae are not ridged in front. *subpurpurea.*

Sect. III. Antennae of ♂ ciliated only.

C. olivacea *Leech* (44 b). Forewing golden olive-green; the costal area pale grey with brown irroration to outer line; the cell and median area below to submedian fold tinged with dark brown; inner and outer lines waved, conversely edged with a grey band; orbicular and reniform stigmata olive at centre with pale pink annuli, the former curved to join a pale semicircular spot below the median, to which the latter is angled inwards along that vein; submarginal line pale and waved, the terminal area beyond it brownish grey; hindwing yellowish ochreous, with darker outer line and terminal border containing the pale subterminal line. Described by Leech from a single ♂ from Pu-tsu-fong, W. China. *olivacea.*

34. Genus: **Habryntis** *Led.*

Differs from *Chutapha* in the antennae being lamellate, hardly pubescent; the tegulae are produced into a slight ridge in front; the dorsal crests are formed of hairs only, instead of hairs mixed with scales. — Larva as in *Trigonophora*, feeding on Ferns and hibernating. Type *Habryntis scita* *Hbn.*

H. scita *Hbn.* (44 c). Forewing whitish ochreous washed with pale green; median area deep green; a deep green triangular patch on inner margin between base and inner line, externally diffuse; costa and outer margin pale green; median vein across median area and the base of veins 3, 4 ochreous; upper stigmata large, confluent below, conversely oblique; the orbicular of the pale ground-colour, the reniform dark green, inwardly edged with ochreous, outwardly with thick black scales; outer line double, greenish, both arms angled on vein 5; submarginal line pale, preceded by a green shade, which below vein 7 contains a black green spot; hindwing ochreous tinged with greenish, with a dull green terminal border containing a pale subterminal line; — ab. *olivacea* *Spul.* and ab. *flavescens* *Spul.* are forms in which the ordinary dull green coloration becomes olive brown and yellowish green respectively, the latter being a *olivacea.* *flavescens.*

rare form. — Larva green, dotted with dark; dorsal line paler; lateral lines dull, with the white dark-ringed spiracles on their upper edge; a darker green series of X-shaped markings between the lines; feeding on Ferns and various low plants. A central European species, not occurring in Britain or Scandinavia, nor along the Mediterranean coast line; also found in Armenia and Asia Minor.

35. Genus: **Conservula** Grote.

Differs from the preceding genera in the tegulae not being ridged, the prothorax having no crest, and the double crest of the metathorax being replaced by a single more diffuse crest; the termen of forewing evenly curved or straight, hardly crenulate. Type *Conservula anodonta* Guen. from N. America.

sinensis. **C. sinensis** Hmps. (= indica Leech part, nec Moore) (44 c). Forewing pinkish ochreous discoloured with olive brown; veins towards termen blackish; a diffusely triangular olive brown patch on inner margin before inner line; median area triangular filled in with dark olive brown except above subcostal vein; inner and outer lines broadly pale with dark edges, running straight and conversely oblique, their inner edges confluent below vein 1; submarginal line pale, straight, preceded by an olive brown shade, which is broader and diffuse towards inner margin; upper stigmata large and pale, confluent below with each other and a small triangular mark between the bases of veins 2 and 3; hindwing ochreous tinged with brownish; the veins and inner margin brown. — Recorded from various localities in W. China.

indica. **C. indica** Moore (44 c). Differs from *sinensis* in the inner line being more vertical, not confluent with outer line; the two stigmata broadly confluent below cell, forming a large U-shaped mark. An Indian species, recorded also from Chang-yang, W. China.

36. Genus: **Cobalos** Smith.

Tongue well-developed; frons smooth; palpi obliquely upturned, the second segment hairy in front, the third long and porrect; antennae of ♂ broadly bipectinate; metathorax only with a diffuse crest; dorsum without crests except on basal segment. Type *Cobalos angelicus* Smith from N. America.

dubiosa. **C. dubiosa** Beth. Baker (44 c). Forewing reddish to purplish brown, dusted with darker; median area, except along costa, blackish brown; inner and outer lines both triple, waved, filled in with paler; submarginal line pale between two dark brown shades, with two small black teeth on its inner edge below costa; upper stigmata large, generally pale with dark centres, confluent below along median vein and with a rounded spot below median; hindwing fuscous brown with an obscure outer line. Madeira.

37. Genus: **Oroplexia** Hmps.

Tongue developed; frons smooth; palpi upturned, the second segment long and hairy in front, the third short; antennae of ♂ thick and flattened, with subserrate edges, thickly but shortly ciliated; thorax and pectus rough-haired; thorax and abdomen without crests. Type *Oroplexia decorata* Moore.

decorata. **O. decorata** Moore (44 c). Forewing brown with silvery bluish irroration, thickest on the veins and in terminal area; a rufous streak along subcostal vein and a bright red one along inner margin; inner and outer lines wavy, conversely edged with red; the inner with a dark patch preceding it on inner margin; claviform stigma invisible; upper stigmata with rufous centres and grey annuli, the reniform acutely angled inwards on median vein; submarginal line pale preceded by a dentate black shade and followed by a row of black marginal teeth; hindwing dull yellowish white, the terminal half reddish brown; a dark cell spot, outer and submarginal lines. An Indian species, also occurring at Yatong, Tibet.

retrahens. **O. retrahens** Walk. (44 c). Forewing fuscous, more or less suffused with blackish and tinged with reddish; a pale streak along inner margin, with a black diffused blotch above it near base; inner and outer lines double, black, filled in with whitish, their inner arms confluent above inner margin; the former oblique, the outer widely outcurved above, not dentate; submarginal line grey, interrupted at veins, preceded and followed by black marks; claviform stigma large and black; orbicular reddish fuscous with faint pale outline; reniform with whitish outline and central line; the cell black brown; apex of wing with whitish scales; hindwing fuscous, paler towards base, with a distinct dark outer line angled above vein 5. Occurs in the Goorais Valley, Kashmir; also in N. India.

luteifrons. **O. luteifrons** Walk. (44 d). Resembles the preceding species, but smaller and darker; the inner margin with a luteous white streak; inner line more broadly white, not oblique, but curving basewards

below, not reaching above subcostal vein; outer line distinctly crenulate, followed by a pale fulvous-edged space; veins towards termen whitish; all the pale tints tinged with fulvous yellow instead of reddish as in *retrahens*. Like the last, an Indian species, extending into Kashmir.

O. tripartita *Leech* (44 d). Forewing grey brown, darker in median area; inner and outer lines thick, *tripartita*. black, double, filled in with whitish; submarginal line continuous, whitish, preceded by a dark shade and with dark suffusion beyond it above vein 5; all three stigmata with thick blackish outlines, the reniform with some white externally; hindwing dull luteous, the terminal area, especially towards apex, fuscous, beyond a thick dark outer line. Described by *Leech* from ♀♀ only, from Pu-tsu-fong, W. China.

38. Genus: **Eriopus** *Tr.*

Tongue well-developed; palpi upturned, the second segment fringed in front with long hair ending in a point, the third smooth, porrect; frons smooth; antennae variable; thorax clothed with hair and scales, with spreading crests on prothorax and metathorax, and a double crest between on mesothorax; legs with thick wisps of hair; dorsum with basal tufts; forewing with apex prominent; termen crenulate, angled at vein 4 and concave above; a tooth of hairlike scales projecting from inner margin before anal angle. — Larva (of the 3 species known) on ferns; the genus therefore and many of the species widely spread. Type *Eriopus juvenina* *Cram.*

According to the different structural modifications in the antennae, and the varying development of the tufts of hair on the legs of the ♂♂, the genus is divided into many sections, to some of which sub-generic names have been applied. The following table embraces 12 of the 14 *palaeartic* species.

Sect. II. Antennae of ♂ with shaft thickened towards base and with a clawlike or simply protuberant projection on upper side.

C. The projection at $\frac{1}{3}$ from base, followed by short scale teeth; the tibiae and 1st segment of mid and hind tarsi fringed with long hair.

a. The projection long, clawlike. *phaeogona* *Hmps.*

c. The projection short, humped (*Agabra* *Walk.*). *aethiops* *Btlr.*

D. The projection at $\frac{1}{3}$, without scale-teeth.

b. The projection slight.

a¹ The projection followed by long bristles; fore and hind tibiae and 1st segment of their tarsi fringed with long hair; midtibiae, the inner spur, and nearly the whole of the tarsi with very large hair-tufts. *juvenina* *Cram.*

b¹ The projection followed by ciliations; the tibiae, 1st segment of tarsi, and inner spur of mid tibiae fringed with long hair. *rivularis* *Walk.*, and *albolineola* *Graes.*

Sect. IV. Shaft of antennae of ♂ hardly thickened at base, downcurved at middle, with no protuberance.

A. The curve at middle with scale-teeth and long bristles; a tuft of 4 erect hairs on upper side at its extremity; the tibiae, the spurs, and 1st segment of the tarsi long haired. *argyrosticta* *Btlr.* and *maillardi* *Guen.* (*Rhopetrotrichia* *Btlr.*).

B. Shaft of antennae thickened and finely serrate at middle; the tibiae, the first segment of tarsi, and the spurs of mid tibiae fringed with long hairs. *albomacula* *Leech.*

D. The curve at middle of antennal shaft simple.

a. Mid and hind tibiae and 1st segment of their tarsi fringed with very long hair. *duplicans* *Walk.* (*Hyperdasys* *Btlr.*).

Sect. V. Antennae of ♂ sinuous at middle but not thickened nor ridged with scales.

A. Foretibiae and 1st segment of their tarsi with large tufts of hair; mid tibiae with very large tufts, the inner spurs long haired; 1st segment of tarsi with very large tufts of hair both above and below, the terminal segments with the tufts above only; hind femora with fringe of long black hair, the hind tibiae and 1st segment of tarsi long haired. *repleta* *Walk.*

Sect. VI. Antennae of ♂ simple, ciliated.

A. Forewing with termen distinctly angled at vein 4.

d. Mid and hind tibiae and 1st segment of tarsi moderately fringed with hair above. *venata* *Leech.*

B. Termen of forewing hardly angled at 4.

- a. Mid tibiae of ♂ fringed on both sides with long hair; 1st and 3rd segments of tarsi fringed above only, and in ♀ only the 1st segment; hind tibiae moderately fringed above. *latreillei* Dup. (*Methorasa* Moore).

Of *clava* Leech only the ♀ is known; *miracula* Herz is of doubtful position.

phacogona.

E. phaeogona Hmps. (44 d). Forewing ochreous white, overlaid with fuscous suffusion; the veins towards termen finely pale; inner and outer lines double, filled in with pale; the inner angled outwards, and the outer inwards on subcostal vein; orbicular and reniform ochreous with dark linear centres, conversely oblique and nearly confluent on median vein; a blackish costal patch between them; submarginal line broad and distinct in costal half, where it is preceded by dark suffusion, angled inwards to outer line above vein 5 and there followed by a triangular blackish patch, and again broadly angled outwards to termen at vein 4; extreme termen black, preceded by a white line; hindwing fuscous. W. China.

aethiops.

E. aethiops Btlr. (44 d). Forewing grey suffused with dark fuscous; the veins pale; inner and outer lines double, black filled in with white, conversely edged with yellowish white; submarginal line zigzag below costa and angled outwards to termen at vein 4, below indistinct; a row of dark terminal lunules inwardly edged by a fine white line; orbicular stigma brown with fine white ring, oblique; reniform brown with oblique white lateral margins, a yellowish lunulate line at centre, and a white oblique striga beyond lower angle of cell; hindwing fuscous. Japan and Corea; Goorais Valley, Kashmir; also in India.

juventina.

E. juvenina Cram. (= *purpureofasciata* Piller, *lagopus* Esp., *pteridis* F., *formosissimalis* Hbn.) (44 d). Forewing olive brown, shaded in parts with black; the veins pale, towards termen rosy and cream coloured; inner and outer lines double, finely black, filled in with rosy and followed by rosy bands, that beyond outer line broad; both lines commence on costa as white oblique strigae before the subcostal angulation; stigmata olive brown tinged with rosy, their annuli white, more prominent in the reniform, and forming a sort of hook at lower extremity externally; sometimes a rosy streak on submedian fold beyond the very obscure claviform; subterminal line yellowish white, forming oblique streaks above veins 6 and 7, followed by a pale apical patch, angled inwards above 5 and acutely outwards at 4, thence obscure; a lunulate yellowish white line before termen; the terminal area rosy; fringe chequered, ochreous and dark olive brown; hindwing ochreous suffused with pale fuscous, with broad dark terminal border, an outer line, and cell spot; the Japanese form **obscura** Btlr. (44 d) is duller, all the rosy tints being greatly reduced in extent and brilliancy. Occurs throughout Central and Southern Europe; in China, Japan, and Corea. — Larva green, with whitish or yellowish oblique lunular subdorsal markings, lateral line yellowish white; all the yellowish markings sometimes edged with pink; head reddish; on *Pteris aquilina*.

obscura.

rivularis.

E. rivularis Walk. (44 d). Forewing blackish on a greyish ochreous ground; the veins whitish; lines double, blackish, filled in with white; orbicular stigma oblique, V-shaped, black with white edges; reniform with a black followed by a yellow linear mark in centre, the edges white, a white spot beyond lower angle of cell; between the stigmata a black patch extending to costa; submarginal line white preceded by black in the interspaces, with the usual angulations, but more or less obscure; a white line before termen, angled outwards to termen at 4, then waved; hindwing dark brown, the fringe whitish. Recorded from Japan; occurring in India and through Malaysia to Australia. The Japanese examples are much redder.

albolineola.

E. albolineola Graes. (44 e). Forewing greyish black intermixed with yellowish grey and tinged in parts with reddish; the veins pale; inner line black defined by white internally and whitish externally, outcurved below the subcostal angle; outer line black, outwardly margined with white and followed by a grey band; orbicular stigma a white bar, forked above or V-shaped; reniform ochreous white, internally edged by a pure white and black line, with a white spot at lower extremity externally; subterminal line white, angled outwards at 7, 6, and to termen at 4, 3, angled inwards on the folds; a row of black striae along termen, inwardly edged with white; hindwing dark brown with a grey tinge towards base. Amurland and Japan.

argyrosticta.

E. argyrosticta Btlr. (= *venus* Stgr., *argentata* Graes.) (44 e). Forewing ferruginous mixed with yellow in basal area; median area dark redbrown with a paler streak on inner margin; terminal area brownred; lines filled in with rosy; near costa before inner line a large fulvous spot edged with white, and on submedian fold an oblique silvery white mark; stigmata with ferruginous centres; the orbicular small, round; the reniform large, broadly edged with silvery white except on outer side which is diffuse; submarginal line white, with the usual angles; the line immediately before termen rosy white; hindwing fuscous. Amurland; Japan; Corea.

maillardi.

E. maillardi Guen. (= *recurvata* Moore) (44 e). Forewing olive-brown, darker towards apex and in the median costal triangle; veins all finely whitish; lines double, blackish, filled in with white, with pinkish white suffusion on each side, especially beyond outer line; inner line angled on median vein; outer

line sinuous; orbicular stigma a white V; reniform internally edged by an oblique white line, followed by a dark linear mark on discocellular, the outer edge formed of two thick pinkish white bars; submarginal line finely white, with the usual angulations, followed by pale patches at apex and submedian fold; an interrupted silvery white line before termen; hindwing fuscous. Widely spread through India, the islands and Africa; recorded from Hongkong, China; also occurring in Japan.

E. albomacula *Leech* (42 l). Forewing grey suffused with black brown; the veins whitish; inner line *albomacula*. black, inwardly edged with white, outwardly with yellowish; outer line double, black, filled in with white; subterminal line with the usual angulations, becoming obsolete below middle; orbicular stigma oblique, very narrow, black edged with white; reniform white, produced at lower outer end to a hook, its centre brown with a black line before it; hindwing fuscous, pale at base. W. China.

E. miracula *Herz*. Forewing grey brown; all the lines and markings white edged; inner line marked *miracula*. by black streaks, inwardly oblique; outer line strongly excurved above, starting from a bluish white costal spot; subterminal white, dentate, the teeth filled up with black wedged marks; a white terminal line interrupted by the veins; orbicular stigma small; reniform forming a long outwardly oblique brown rectangle, white-edged, not dentate at extremities; hindwing dark grey, with traces of a curved line. Corea. Described by Herz from a single ♂, which he says is close to *juventina* *Cram.*, but he describes the antennae as filiform and ciliated.

E. duplicans *Walk.* (44 e). Forewing pinkish ochreous suffused with black; the veins ochreous; inner *duplicans*. and outer lines double, black, filled in with ochreous and outwardly margined with ochreous; the submarginal line white, forming oblique short streaks about veins 7 and 6, angled inwards to outer line at 5 and obscurely outwards to termen at 4, then obsolescent, defined by black marks beyond it; a fine waved white line close before margin; orbicular stigma V-shaped, dark with white edges; reniform white, oblique and narrow, the centre yellowish edged inwardly by a black line; hindwing dark brown; fringe chequered, ochreous and brown. China, Corea, and Japan, and occurring throughout India; ab. *rubrivena* *rubrivena*. *ab. nov.* from Japan has all the veins orange red, the ground colour itself also redder.

E. repleta *Walk.* (44 e). Forewing olive brownish, dusted with black and some pale scales; a large *repleta*. black costal triangle between the stigmata and another between outer and subterminal line; the veins finely pale; inner line black edged on both sides with pinkish white; outer line double, black, filled in with white, with a whitish line before it and a pale band with grey line on it beyond it, flexuous only, not excurved; submarginal line broad, forming oblique streaks above 7 and 6, inangled to outer line above 5 and strongly to termen at 4, preceded below middle by a fulvous patch, the apex also fulvous; a fine silvery white lunulate line before termen; orbicular stigma an oblique oval, blackish with pale ring; reniform long, oblique, its edges broadly pale, its centre yellowish; claviform stigma cloudy, black-edged, touching an angulated mark of black scales; hindwing pale ochreous, suffused with brownish grey; a dark cellspot and outer line. E. Siberia, Japan, Corea, China; also an Indian insect.

E. venata *Leech* (44 e). Forewing pinkish grey, with much blackish irroration and suffusion; the *venata*. veins of median area pink; inner and outer lines double, black filled in with white, the inner with a pink line on outer side, the outer line with the inner arm dentate; claviform stigma defined above by an oblique pink streak; orbicular oblique, oval, black at centre with a white annulus; reniform with a curved pink lunule at centre inwardly black-edged, margined by an oblique white bar on each side and a striga beyond lower angle of cell; subterminal line with the usual angulations, but not strongly expressed; a row of white partially connected lunules before termen; the fringe mottled; hindwing dark brown. Central and West China; also occurs in India.

E. latreillei *Dup.* (= *quieta* *Tr. nec Hbn.*, *roseitelum* *Walk.*) (44 f). Forewing whitish, suffused *latreillei*. with pale and dark grey, and in parts with blackish fuscous; inner and outer lines black edged with white; a prominent white spot before inner line on submedian fold; stigmata dark grey, with interrupted pale outlines; the reniform with a white dot beyond lower outer angle; submarginal line powdery white, interrupted by the olive or pinkish veins, and preceded by a pink wedged mark on vein 6; a lunulate white line close before termen; fringe olive yellow, chequered with white; hindwing fuscous, paler towards base in the ♂. A Central and South European species, found also in Algeria, Madeira, and the Canaries, and in Asia Minor, Armenia, and Syria. — Larva redbrown, with a black dorsal triangle broadly edged with yellow on each segment; lateral lines yellow, with a black spot on each segment; on *Ceterach officinarum* and other ferns.

E. clava *Leech* (44 f). Forewing olive brown, mixed with purplish and blackish; slight black streaks *clava*. at base of each fold; inner and outer lines black, conversely edged with purplish; claviform outlined with black; orbicular round, with a purplish annulus; reniform pink with black lines inside, with a black line

from upper end to outer line and purple and black dots at the lower end; subterminal line white and dentate to vein 6, then obscure, the black streaks in the interspaces beyond it ending in small terminal lunules; hindwing purplish redbrown; fringe white chequered with brown. Described from a ♀ only, from Omei-shan, W. China.

39. Genus: **Telesilla** H. Sch.

Tongue well-developed; frons smooth; palpi upturned, the second segment rough-scaled in front, the terminal short, pointed; antennae of ♂ thick, lamellate, finely pubescent; thorax and abdomen with slight crests, that on third dorsal segment more conspicuous; wings broad, the termen smooth. Larva on Umbelliferae, resting by day extended on the stems; hibernating in the pupa state, in the ground. Type *Telesilla amethystina* Hbn.

amethystina.

T. amethystina Hbn. (44 f). Forewing olive green suffused with rosy pink; the olive tints predominant in basal half of wing and along termen; basal and inner lines dark olive, edged with rosy pink, the former outwardly, the latter inwardly; outer line dark olive, dentate lunulate, almost lost in the rosy suffusion; stigmata rosy pink inclined with olive, the claviform and orbicular with white annuli, all 3 connected by a wedged-shaped pink mark below median, often suffused with olive; cell and space below it deep dark olive; submarginal line pinkish, indented on each fold; fringe olive and pink; hindwing pale grey, suffused with fuscous olive. Occurs in Central Europe, France, Germany, Austria, Hungary, N. Italy, Switzerland, the Balkan States and S. Russia; also in Amurland, Japan, Corea, and China; — the East Asiatic

austera.

form, — subsp. **austera** subsp. nov. (44 f), — differs from the European in being much more sombre, the olive shading being stronger and greyer, and the rosy tints duller. — Larva green; dorsal line yellowish edged with deep green; subdorsal lines white; spiracular line broad, yellowish, sometimes tinged with red; spiracles black; feeding on the lower leaves of wild carrot and parsley.

40. Genus: **Callogonia** Hmps.

Differs from *Telesilla*, in the frons bearing a tuft of hair and in the abdomen being quite smooth, without crests. The inner and outer lines of forewing are conversely oblique and confluent above inner margin. Type *Callogonia virgo* Tr.

virgo.

C. virgo Tr. (= *spencei* Bsd.) (44 f). Forewing pale violaceous grey tinged and dusted with olive brown; the cell before and beyond orbicular stigma deep olive-brown diffused to costa; the inner and outer lines white edged with brown, conversely oblique and confluent at inner margin; upper stigmata also conversely oblique, generally confluent on median vein, white with narrow grey brown centres; submarginal line obscurely white, interrupted at vein 6 and angled; fringe pale grey and brown with a pink tinge; hindwing pale grey brown with traces of cellspot and outer line. In Europe found only in Hungary and the Ural Mts. in Russia; in Eastern Asia, in Amurland, Japan, and Corea.

41. Genus: **Plusilla** Stgr.

Distinguished from *Callogonia* and *Telesilla* by the tongue being aborted and minute; the absence of crests on both thorax and dorsum; the palpi also are more slender, the second segment smooth. Type *Plusilla rosalia* Stgr.

rosalia.

P. rosalia Stgr. (44 f). Forewing rufous olive with a pink tinge; inner line oblique, sinuous; outer line pale yellow with black edges below vein 6, indented below vein 3; its upper part obscured by rufous suffusion; between them a sinuous and oblique median black line with pale yellow before it and rufous beyond; no stigmata; hindwing yellowish white, tinged with pink along termen; some brown scaling below and beyond cell. E. Siberia and China.

42. Genus: **Virgo** Stgr.

Tongue slight; frons smooth, but rough-haired; palpi obliquely upturned, the second segment clothed with long sparse hairs, the third pointed; antennae of ♂ strongly serrate, each serration with a short fascicle of cilia and a long curved bristle; thorax and pectus roughly haired; the prothorax with erect crest; dorsum with a basal crest only; anal segment with a ring of stiff short hairs; wings with evenly rounded termen. Type *Virgo datanidia* Btlr.

V. datanidia *Btlr.* (= *amœna* *Stgr.*) (44 f). Forewing pinkish grey, suffused with fulvous olive in *datanidia*. places; all 3 lines, subbasal, inner, and outer, inwardly oblique, and parallel, broadly pinkish white, outwardly edged with reddish brown; the first two straight, the outer outcurved below costa, then somewhat flexuous; reniform stigma oblique, olive brown with a pale annulus, the lower half darker; submarginal line obscurely pinkish, wavy, between olive shadings; fringe dull pink, beyond a dark olive terminal line; hindwing whitish grey, tinged with olive fuscous, with a dark curved submarginal line. E. Siberia, and Japan.

43. Genus: **Harrisimemna** *Grote.*

Tongue developed; frons smooth; palpi obliquely upturned, the second segment hairy in front, the third short; metathorax with large crest; dorsum crested, the crest on segment 4 larger. Type *Harrisimemna trisignata* *Walk.* from N. America.

Sect. II. Antennae of ♂ ciliated.

H. marmorata *Hmps.* (44 g). Forewing white, with the lines and markings black; three round *marmorata*. chocolate brown spots, one at costa before inner line, another, larger, beyond outer line, and a smaller one at anal angle beyond outer line; some irregular black markings at base and in median area; inner and outer lines broadly white edged with black; inner line vertical; outer line strongly angled outwards in middle below the large chocolate patch, incurved below middle, and irregularly lunulate-dentate; some submarginal black marks beyond the large chocolate blotch; fringe marbled white and black; veins before termen shortly black; hindwing blackish fuscous. The ♀ is larger, with the upper and lower portions of median area of forewing filled up with black. Japan.

44. Genus: **Aucha** *Walk.*

Tongue developed; frons smooth; palpi upcurved, the second segment long, and smoothly scaled, the third moderate, erect; antennae of ♂ shortly ciliated; metathorax with a short thick crest; abdomen without crests; tibiae smooth. Type *Aucha velans* *Walk.* from India.

A. variegata *Oberth.* (44 g). Forewing white; the costal half with two olive brown, black-dusted *variegata*. blotches, the first large between subbasal and inner line, the second beyond inner line; inner and outer lines black, conversely white-edged; claviform stigma small, black-edged; orbicular and reniform with black edges, their centres very variable, often obscured by a dark shade; submarginal line formed of white lunules externally black-marked and ending in a white apical blotch, preceded by a blackish shade; the fascia between outer and submarginal line olive brown or fulvous; the terminal area dark olive fuscous; fringe olive, slightly mottled with fulvous at base; hindwing dull fulvous yellow, with the base and central line diffusely, the costal and terminal borders broadly and concisely fuscous — or black-brown; the fringe yellow. The insect varies much in the amount of dark and light suffusion; — ab. **albimedia** *ab. nov.* has the *albimedia*. whole median area white, except the 3 dark stigmata. Amurland and Japan.

A. flavomaculata *Oberth.* (44 g). Forewing pale wholly suffused with olive-fuscous, which obscures *flavo-* all the markings, leaving yellowish white spots along costa at the commencement of the 3 lines and a *maculata*. large whitish spot on submedian fold below and beyond the claviform stigma; sometimes the lines are faintly traceable by paler scales; hindwing black, with two dull yellow blotches beyond central line which is dark; fringe yellow. Amurland and Japan. All the examples of this species hitherto examined are ♂♂, all those of *variegata* are ♀♀; and it can hardly be doubted that they are sexes of the same species.

45. Genus: **Polyphaenis** *Bsd.*

Tongue well-developed; frons smooth, but rough-scaled; palpi obliquely porrect, the second segment thick, and roughly scaled, the third short; thorax clothed with broad scales; the prothorax and metathorax with stout crests; the dorsum crested. Larva, hatched in autumn, hibernates and feeds up in spring, pupating in the ground. Type *Polyphaenis sericata* *Esp.*

Sect. I. Antennae of ♂ bipectinate, the branches long.

P. xanthochloris *Bsd.* (= *alliacea* *Germ.*) (44 g). Forewing mottled light and dark grey, slightly *xantho-* tinged with olive, and with blackish dusting; inner and outer lines black, wavy, conversely edged with *chloris*. pale grey; submarginal pale grey, preceded by strong black wedge-shaped marks between the veins; all three stigmata with black edges, the claviform and orbicular small, pale grey, the reniform large and

white, with slight grey centre; sometimes a yellowish tint is seen along the two folds, forming a yellow patch beyond reniform stigma; fringe grey, beyond a row of black terminal lunules; hindwing pale yellow, with black terminal border, broad at apex; fringe pale grey. A Southern insect, found only in Spain and Sicily.

Sect. II. Antennae of ♂ with pedicellate fascicles of cilia.

sericata. **P. sericata** *Esp.* (= *sericina Esp.*, *prospicua Hbn.*, *nebulifera Guen.*) (44 g). Forewing olive green, speckled and suffused with darker green, sometimes intermixed with bluish white; veins towards termen black and grey; inner and outer lines double, black, waved, filled up with pale green or bluish grey; the outer line strongly dentate outwardly, and followed on submedian fold by a thick black streak to termen; submarginal line obscure, preceded by a slight dark shade and followed by black dashes to termen between the veins; the 3 stigmata large, of the ground colour, black-edged, or nearly obsolete; hindwing fulvous yellow, the veins darker; a thick rufous bar on discocellular; terminal border black, becoming rufous brown along costa, preceded by a distinct lunulate-dentate outer line; — **viridata** *Ragusa* (44 g), from Sicily, is paler, more blue-green, with both lines strongly filled in with bluish white; in ab. **mediolucens** *Fuchs* (44 g) the median area, especially towards costa, is paler green, without the dark green irroration. — Found throughout Central and Southern Europe, also in Armenia, Syria, and Asia Minor. Larva whitish or yellowish grey; dorsal line paler, edged with black, with pale dots on each side. On various shrubs, such as *Lonicera*, *Ligustrum*, *Cornus* etc.

Sect. III. Antennae of ♂ with tuberculate fascicles of cilia.

propinqua. **P. propinqua** *Stgr.* (44 h). Smaller and darker than *sericata*, the forewing much suffused with fuscous, the submarginal line showing paler, the costal portion of median shade conspicuously black; hindwing without outer line; the inner edge of the dark terminal border containing a sinus on submedian fold. Taurus Mts., Akbes, Syria.

albibasis. **P. albibasis** *spec. nov.* (44 h). Forewing olive green as in *sericata*, but of the same size as *propinqua*; the lines filled in with white; the marginal lunules much deeper and blacker; distinguished at once by an irregular whitish blotch from costa to vein 1 between the subbasal and inner lines; the dark terminal border of hindwing thinned off before anal angle. Sierra de Alfacar, Andalusia, Spain.

By reason of the structure of the antennae of the ♂ these last 2 species must be separated from *sericata*.

subsericata. **P. subsericata** *H.-Schäff.* (42 l). Forewing grey suffused with olive brown, and densely dusted with black; median area paler in basal half; inner and outer lines black and double, filled in with grey; subterminal grey, dentate, preceded by a dark shade; orbicular stigma small, round, black-edged, the centre olive; reniform greyish white; hindwing brown with black terminal border, and with no discocellular bar. Rhodes, Cyprus, Asia Minor.

46. Genus: **Triphaenopsis** *Btlr.*

Distinguished from *Polyphaenis* by the antennae of the ♂ which are simply pubescent or extremely shortly ciliated; the hindwing has the black terminal border much broader, and the inner margin also broadly blackish. Type *Triphaenopsis lucilla* *Btlr.*

Sect. I. Terminal segment of palpi long and porrect.

pulcherrima. **P. pulcherrima** *Moore* (= *largetaui Oberth.*, *opulenta Btlr.*) (44 h). Forewing black brown and olive green, mixed with some reddish; inner and outer lines black, conversely edged with pale green; submarginal line pale green, indistinct, preceded by a blackish green shade containing black wedge-shaped marks; an oblique diffuse median dark shade from costa to reniform; claviform stigma rufous with black edge, sometimes lost in a blackish suffusion between the two lines; orbicular and reniform olive green with black edges, the outer half of the reniform generally suffused with ochreous or green; hindwing orange with a black border which is twice as wide above vein 5; the inner margin also broadly and diffusely black, not quite reaching outer border; fringe yellow, black between veins 2 and 4, and again slightly towards anal angle; in the ab. **coecata** *ab. nov.* (= ab. 1. *Hmps.*) (44 h) the reniform is not filled up with pale, and the whole wing is more or less suffused with purplish green; in ab. **maculata** *ab. nov.* (= ab. 2. *Hmps.*) the reniform is followed by an ochreous patch, while another similar patch stands on inner margin beyond outer line; a conspicuously distinct form — ab. **nigriplaga** *ab. nov.* (44 h) has the median space between inner and outer lines quite pale green from costa to submedian fold, the lower half being occupied by a velvety black blotch with rounded upper edge; a smaller black blotch occupies the basal area from costa to submedian fold. An Indian species, which is recorded also from W. China and Amurland.

Sect. II. Palpi with the third segment short.

T. oberthuri *Stgr.* (= *pulcherrima* *Oberth.* nec *Moore*). (44 h). Much resembling *pulcherrima*, but *oberthuri*. wholly olive green shaded with darker green; the outer line filled in with white towards inner margin; the reniform filled with rufous; in the hindwing the yellow is more ample, and a ray of yellow runs up below vein 1 nearly to base; ab. **albimacula** *ab. nov.* (= ab. 1. *Hmps.*) (44 h) has the reniform chalk white, some- *albimacula*. times also a white point in the orbicular stigma, and some white beyond lower end of outer line. Occurs in Amurland, Corea and W. China.

T. subpulchra *Alph.* (42 l). Forewing reddish brown, greyer towards base; inner and outer lines *subpulchra*. double, filled in with grey; submarginal indistinct; orbicular stigma round, black-edged; reniform white, outlined in black, somewhat constricted at middle; hindwing orange; the base black brown, emitting streaks along the veins to beyond lower angle of cell and along vein 1; a broad terminal band, containing orange lunules on termen, its inner edge slightly angled inwards on submedian fold. Corea.

T. lucilla *Btlr.* (44 i). Forewing greyish olive, with dark blackish or redbrown suffusion along inner *lucilla*. margin and lower half of termen; the inner and outer lines double, black, with dull green between them; a patch of white scales before inner line on submedian fold; the submarginal green, wavy, broken into spots; claviform stigma hardly defined; orbicular of the ground colour, with black outline; reniform chalk white; hindwing black, with a central broad curved yellow band from costa to vein 2, its inner edge running in below the cell; a shallow yellow patch on termen across submedian interval; fringe yellow with black spots between veins 4 and 2; — in ab. **modesta** *ab. nov.* (44 i) the reniform is, like the orbicular, of *modesta*. the ground colour, with whitish grey spots on its outer edge; — in ab. **literata** *ab. nov.* (44 i), the whole basal *literata*. half of wing is suffused with velvety blackish, the outer half remaining olive green and grey, dusted with bluish white scales; the reniform stigma is dark grey with the straight inner edge and 4 outer spots, of which the middle one is large and round, snow white. — Japan. A very variable species, of which I believe the next species, *cinerescens* *Btlr.* will prove merely a form.

T. cinerescens *Btlr.* (44 i). Forewing brownish- or reddish-grey, with dark dusting; inner and outer *cinerescens*. lines black, double at costa, the outer strongly dentate; submarginal line faint, preceded by fuscous shading; claviform and orbicular outlined in dark; the reniform fuscous internally with the centre and outer edge white and extending to costa; hindwing reddish fuscous, with a broad curved dull yellow band from costa to vein 2 beyond the cell, its inner edge angled inwards below the cell. In the ♀ the outer half of wing is more or less suffused with whitish grey. — Japan.

T. postflava *Leech* (44 i). Forewing ochreous, almost entirely suffused with brown and dusted with *postflava*. black; the median area rather darker; lines double, black, filled in with grey, the inner obscure, with a dark patch before it on inner margin; claviform stigma large, dark with black outline; orbicular and reniform pale, black-edged; the former with dark centre, the latter with its lower half dark; the cell blackish; submarginal line pale, wavy, with a dark preceding shade; hindwing fuscous brown with a broad curved pale yellow band from costa beyond middle to vein 3; fringe yellow. Japan and Corea.

47. Genus: **Thalpophila** *Hbn.*

Differs from *Polyphaenis* in the thorax being clothed with hair as well as scales; in the dorsum being smooth, without crests; the antennae of ♂ serrate and fasciculate. Larva with longitudinal darker lines, hibernating and feeding up in spring; on various grasses. — Type *Thalpophila matura* *Hufn.*

T. matura *Hufn.* (= *cytherea* *F.*, *connexa* *Hbn.*) (44 i). Forewing grey-brown with darker dusting *matura*. and suffusion; veins towards termen pale grey; a slight rufous tinge longitudinally along both folds, more conspicuous at the outer edge of reniform stigma; inner and outer lines black, conversely pale-edged; the submarginal obscurely pale, indented on each fold, and preceded by a dark shade; the three stigmata black-edged, their centres more or less tinged with rufous, the orbicular and reniform with an obscure pale ring; hindwing straw yellow with a broad fuscous terminal border, broadening at apex; in the form **texta** *Esp.* (44 k) the forewing is darker and duller, with the paler markings all obscured. Generally *texta*. distributed in Europe; also in Armenia and Asia Minor. — Larva grey brown; dorsal line dark with pale centre; on each side a series of pale and dark longitudinal lines, the subdorsal and lateral edged with darker; feeding on grasses.

T. vitalba *Frr.* (= *vitalba* *Tr.*) (44 k). Forewing pale olive fuscous; the veins conspicuously white; *vitalba*. the costa generally paler; inner line broadly white, obsolete above middle, angled outwards, broadly above and acutely below, vein 1, both angles filled in with black; outer line white, inwardly edged with black; submarginal line pale, interrupted, preceded and followed by series of black dashes in the intervals; claviform stigma black edged, traversed by the whitish submedian fold, and nearly reaching outer line; orbi-

cular and reniform flattened, olive fuscous, with pale rings, often confluent; hindwing white, with a yellowish flush in the ♀; a faint grey marginal border; — the form *amathusia* Rmb. (44 k), from Spain, is much darker, all the white markings attenuated, the hindwing with a broad well-defined dark fuscous border. S. W. France, Sicily, Algeria, and Spain.

48. Genus: **Iambia** Walk.

Tongue present; frons smooth; palpi upturned, short; antennae of ♂ ciliated; the metathorax and base of dorsum with slight crests; forewing with termen faintly excised below vein 3. Type *Iambia inferalis* Walk. from S. Africa.

transversa.

I. transversa Moore (48 a). Forewing greyish brown with white and black dusting; inner and outer lines double, black, filled up with paler; the inner waved, with a black spot at costa and a mark before it on inner margin; the outer whitish towards costa, preceded by black spots; subterminal indistinct, pale, preceded by a row of black dentate marks, and on each side of vein 5 by a large lunule; orbicular and reniform with slight pale annuli; the orbicular round, the reniform with a straight inner edge; the cell dark; hindwing brown. This widely spread species, occurring in S. Africa, India, and Borneo, has been recorded also from Yokohama, Japan, and Ichang, Central China.

49. Genus: **Bryoleuca** Hmps.

Tongue aborted, minute; palpi upturned, the second segment fringed with hair, the third smooth, slender; antennae of ♂ serrate-fasciculate; thorax clothed with scales, both it and abdomen without crests; hindwing with veins 3, 4 and 6, 7 shortly stalked. Type *Bryoleuca trilinea* Beth.-Baker.

trilinea.

B. trilinea Beth.-Baker (48 b). Forewing cream white, flushed with pale brown except in basal area and beyond cell; lines indistinct, represented by slight broken striae; the two stigmata equally faint, with fine outlines, the reniform lunular; terminal line dark; hindwing white, faintly brown-tinged along termen. Egypt.

50. Genus: **Araea** Hmps.

Tongue fully developed; palpi slender, upcurved, slightly rough-haired in front, the terminal segment short; frons smooth; antennae of ♂ minutely ciliated; head and thorax loosely and roughly scaled; the thorax slightly crested; ♀ with long exerted ovipositor; forewing narrow, the termen curved not crenulate; veins 6, 7 of hindwing stalked. Type *A. attenuata* Hmps.

attenuata.

A. attenuata Hmps. (48 b). Forewing brownish grey with some black irroration; the lines black, thick, and well marked, conversely edged with whitish; the inner vertical, slightly waved; the outer excurved above, oblique inwards and lunulate-dentate below middle; subterminal whitish, diffuse, indented on each fold, with some black dashes beyond it at middle; a black streak from base below cell; claviform stigma narrow, acuminate; the upper stigmata well marked, brownish grey outlined with black; hindwing whitish, suffused with grey brown. Kashmir, Scinde and Goorais Vallies.

51. Genus: **Chytonix** Grote.

Tongue developed; frons smooth; palpi upturned, the second segment reaching to vertex of head, fringed with hair in front, the third short; antennae of ♂ ciliated; thorax rough scaled; the crest on metathorax very large; tibiae long-haired, the spurs long; abdomen with dorsal crests, those on segments 3 and 4 large. Type *C. palliatricula* Guen., from N. America.

Sect. II. Termen of forewing without excision below apex.

fodinae.

C. fodinae Oberth. (= *subfasciata* Bltr.) (44 k). Forewing brownish grey, tinged here and there with rufous, the inner margin greyer; inner half of median area suffused with black and with a deep black streak above vein 1; inner and outer lines double, blackish, filled in with white; the inner angled outwards on median vein; the outer outcurved in upper half and represented by doubled dark dashes on veins, incurved below, the inner arm only visible as a curved black line; subterminal line whitish, ill-defined; orbicular and reniform stigmata grey, laterally defined by black, the orbicular oblong and oblique, the reniform constricted at middle; median shade indicated by a black costal striga; hindwing brownish grey. From Ussuri and Askold Island, E. Siberia; Butler's *subfasciata* from Japan.

C. segregata *Btlr.* (= *placens* *Stgr.*). (48 b) Forewing brown, crossed before the middle by a broad pale-edged darker band, angulated and undulating on its inner edge, but with the outer nearly straight except for a shallow sinus below vein 2; a subquadrate brown costal spot before apex, edged with white, continued as an indistinct irregular band to midwing, and enclosing a longitudinal black dash; terminal dots black; fringe grey, darker in lower half; hindwing paler, the costal area whitish. Japan, Corea, W. and C. China, E. Siberia. *segregata.*

C. nigribasalis *Hmps.* (44 k). Forewing greyish white with brown irroration and suffusion; the basal area and inner area as far as outer line dark brown, with a diffuse blackish streak above vein 1; lines blackish; the inner oblique to submedian fold, then incurved and again sharply angled outwards above inner margin; the outer excurved to vein 4, thence oblique, preceded in submedian fold by a small white spot and emitting a black streak outwards to termen below vein 4; submarginal line pale and obscure; orbicular large, oblique, elliptical, whitish outlined by dark brown; reniform with a ring of small white dots, defined by brown, and constricted at middle; hindwing brownish grey, with dark cellspot and curved outer line. Described from a single ♂ from Wa-ssu-kou, W. China. *nigribasalis.*

52. Genus: **Stilbina** *Stgr.*

Tongue aborted; frons with long bilobed corneous prominence, with a shorter corneous plate below it excised in front, a tuft of hair above it; palpi short, porrect, third segment minute; antennae of ♂ bipectinate, the branches long; prothorax slightly crested; abdomen without crests; tibiae smooth, the spurs long; forewing with blunt apex, and evenly rounded termen; in hindwing veins 6, 7 are short-stalked, and vein 8 anastomoses with cell to $\frac{1}{3}$. Type *Stilbina hypaenides* *Stgr.*

S. hypaenides *Stgr.* (48 b) Forewing whitish washed with pale ferruginous; the median nervure and base of median nervules white; a slight brown streak white-lined below at base of submedian fold; inner, outer, and submarginal lines black, but only clear at costa, becoming obsolete below middle; orbicular and reniform stigmata black; hindwing luteous white, the termen suffused with pale rufous. In the ♀ the ferruginous tints give place to brown; all the lines are traceable across wing; the black streak at base is stronger and the median nervure and branches not white; the stigmata are surrounded by white black-edged annuli. Syria and Palestine. *hypaenides.*

53. Genus: **Hypeuthina** *Led.*

Tongue absent; frons prominently rounded, with a corneous plate at middle whose outer edge is curved, and a large corneous plate below it; palpi short, porrect; antennae of ♀ bipectinate, the branches quite short; thorax and abdomen without crests; tibiae smooth, the spurs long; in hindwing vein 8 anastomoses with cell to middle; veins 6, 7 are scarcely stalked. Type *Hypeuthina fulgurita* *Led.*

H. fulgurita *Led.* (48 b) Forewing ochreous with slight rufous suffusion; the veins dark; a strong black streak from base along submedian fold white-lined above; a more slender black streak in cell from before middle to end, also white-lined above; slight black streaks above and below vein 5; dentate white marks from outer area to termen on each side of veins 6, 4, 3, and a white streak below 3 to below angle of cell, all with diffuse black marks mixed among them; the white streaks intersect the black terminal line and the cilia; hindwing luteous whitish, the outer half pale brownish; ♀ much whiter, with scarcely any brown suffusion; all the black lines and markings fainter; in both sexes the lines and stigmata are all absent. Syria. *fulgurita.*

H. numida *Oberth.* (42 c). Forewing grey brown; outer area dark brown except towards costa and termen, inner and outer lines brown, double, diffused; the inner angled outwards on submedian fold, the outer incurved below vein 4; subterminal line defined only by the difference between the outer and terminal areas; orbicular and reniform brown with grey annuli, the former round, the latter constricted at middle; hindwing grey tinged with brown. Algeria and Tunis. *numida.*

54. Genus: **Pseudoligia** *Stgr.*

Tongue aborted, small; frons smooth; the palpi shortly porrect; antennae of ♂ ciliated; vertex of head tufted; prothorax and metathorax faintly crested; abdomen without crests; fore tibiae with long curved claw at extremity on inner side; forewing long and narrow, the termen obliquely curved; in hindwing vein 8 anastomoses with cell at base. Type *Pseudoligia similivaria* *Mén.*

similiaria. **Ps. similiaria** Mén. (= *argillacea* Christ.) (42 c). Forewing grey white suffused with reddish fuscous thickly dusted with dark: the veins dark, on terminal area whitish; inner line represented only by an oblique dark stria from costa; outer by an obscurely expressed oblique dark band from costa before apex to inner margin, dentate externally, where it is followed by an oblique band of whitish suffusion; subterminal line faint, pale, preceded by slight dentate black marks; a terminal series of black striae inwardly edged by whitish marks; no stigmata; hindwing white with dark veins; a diffuse grey cell-spot; area beyond cell-irradiated with brown and with a faint subterminal band. W. Turkestan, the Tedschen Oasis, and Bokhara.

55. Genus: **Scotocampa** Stgr.

Tongue aborted, minute; frons with a vertical ridge; palpi porrect, quite short; antennae of ♂ serrate fasciculate; prothorax and metathorax slightly crested; abdomen without crests; foretarsi with curved claw-like spines on first segment, Type *Scotocampa indigesta* Stgr.

indigesta. **S. indigesta** Stgr. (48 c) Forewing fuscous, the veins finely streaked with white; a black streak below base of cell: inner and outer lines hardly traceable; subterminal white, dentate, only clear below middle, crossed by black streaks in the interspaces; claviform a long white streak edged with black and emitting a black streak to subterminal line; upper stigmata absent; fringe fuscous pencilled with white; hindwing whitish; the terminal area with obscure grey streaks in the interspaces; a black cellspot; fringe white. W. and E. Turkestan.

56. Genus: **Matopo** Dist.

Tongue present; frons with large rounded prominence, with corneous plate below it; palpi obliquely upturned, the second segment well-scaled, the third short; thorax and abdomen with slight crests. Type *Matopo typica* Dist. This is in the main a genus of tropical African species.

Sect. II. Antennae of ♂ shortly serrate, of ♀ ciliated.

selecta. **M. selecta** Walk. (= *lobifera* Moore). (48 c) Forewing ochreous white, suffused with redbrown; median area below cell dark grey; veins of terminal area dark, white-lined; inner line interrupted and obscure; outer line strongly excurved above and as strongly incurved below, with patches of dark suffusion before it; joined to an oblique brown shade from termen below apex; stigmata ochreous, the claviform elongate with black outline; orbicular flattened; reniform with black lateral edges and linear centre; a pale subcostal streak; series of short black subterminal and terminal streaks in the interspaces; hindwing white; veins dark towards termen, which is tinged with brown at apex and below vein 2; in the ♀ brown, paler towards base, with the fringe white. An Indian insect which is also recorded from Egypt.

57. Genus: **Delta** Saalm.

Tongue present; palpi obliquely porrect, the second segment fringed with hair below, the third short; frons smooth, with ridges of scales; antennae of ♂ ciliated; tegulae forming a dorsal ridge; thorax with a ridge-like crest; abdomen with short basal crests. Type *Delta stolifera* Saalm. from Madagascar.

intermedia. **D. intermedia** Brem. (= *sikkimensis* Moore) (42 c). Forewing ochreous suffused with red-brown; the cell, an oblique streak from apex to cell, and a streak along vein 2 ochreous white; a black streak in submedian fold from base to middle, and one above inner margin from near base; a slight brown streak in middle of cell; reniform stigma alone present, ochreous white with a rufous centre and pale bar on it, ill-defined above, narrow and extending well below cell, preceded by a rufous wedge-shaped mark in cell, and ending in a red-brown patch with dark streaks on the veins; the subterminal line shown across it by dentate white marks with black centres and by black wedge shaped marks at vein 6; hindwing ochreous, tinged with brown in ♀, with brown suffusion along termen. Originally described from Amurland; occurring also in Japan, China, and Corea, and in Kashmir; throughout India and in S. Africa.

gnorima. **D. gnorima** Püng. (42 c). Forewing pale brownish-grey; the cell, the submedian interval, and the space beyond cell bright redbrown; joined by an oblique dark brown streak from termen below apex; veins finely black; a black streak from base below cell; lines only visible as sharp oblique streaks from costa; claviform stigma narrow, whitish, with black outline; orbicular white, narrow, oblique and elongate, with brown linear centre, like the claviform; reniform a very narrow lunule, with brown centre ringed with white; two black sagittate marks on termen on veins 3 and 4; hindwing brownish grey, paler towards base. Described from a single ♂ from Askabad, W. Turkestan.

D. detersina *Stgr.* (42 c). Forewing grey with a slight brown tinge; the end of cell and area beyond *detersina*. and below it reddish brown; the veins black; a strong black streak from base below cell, confluent with the claviform stigma, which is small, narrow, black-edged; orbicular white, black-edged, oblique and long, confluent below with reniform, and joined by two black streaks to it; the reniform white, outlined with black in lower part, the upper end produced; lines ill-defined, and marked chiefly as oblique streaks from the costa; a black streak obliquely from termen below apex and an oblique series of streaks on a brown shade from above 6 to below 5; two black terminal streaks on brown dentate marks at veins 2 and 3; a black streak on submedian fold extending to within outer line; hindwing whitish; the veins dark; the terminal area broadly brown. W. and E. Turkestan.

D. peterseni *Christ.* (42 c, d). Forewing ashy grey, dusted with brown; a black streak with brown *peterseni*. below it from base below cell; inner line ill-defined, angled sharply outwards above and below vein 1; outer line much approximated to termen, double, denticulate; submarginal line angled outwards to termen at veins 7, 4, and 3, retracted to outer line on each fold; the terminal area beyond it brown except at apex and tornus; stigmata defined by brown; the orbicular and reniform small, the former oblique, elliptical; hindwing white; the veins and termen brownish. N. Persia, W. and E. Turkestan; W. Siberia.

58. Genus: **Lithomoia** *Hbn.*

Tongue present; frons smooth, with ridges of hair at top and between antennae; palpi obliquely upturned, rather short, the second segment long-haired in front; the third quite short; antennae of ♂ bipectinate, the branches short and club-shaped, the apex ciliated; thorax densely clothed with hair; the prothorax and metathorax crested; dorsum strongly crested; veins 6 and 7 of hindwing shortly stalked. Type *Lithomoia rectilinea* *Esp.*

L. rectilinea *Esp.* (42 d). Forewing brown, the basal and terminal areas mixed with white towards *rectilinea*. costa; the median space darker and reddish below middle; a thick black streak from base below cell, below which the basal area is darker; inner and outer lines black conversely edged with white, the inner angled on submedian fold, the outer with a white patch before it on the same fold; a black bar between the two lines along it; upper stigmata large, mixed with white, and black-edged; the orbicular flattened; subterminal line whitish with black teeth below middle, above middle marked by black subterminal dashes between the veins; hindwing brownish, paler towards base. Mainly a northern species; found in Britain, France, Germany, Austria, Hungary, Russia, Switzerland and N. Italy; also in the Altai Mts., W. Siberia and in Amurland. — Larva mottled pale and dark brown, tinged with purple along the sides; dorsal line pale, with dark edges, somewhat interrupted; subdorsal series of oblique pale stripes, dark-edged behind; spiracular line pale; segment 11 with two ochreous dots; head dark brown; on various shrubs, — *Salix*, *Rubus*, etc.

59. Genus: **Pulcheria** *Alph.*

Tongue present; frons smooth; palpi obliquely upturned, the second segment scaled in front, the third porrect, short; antennae of ♂ bipectinate, the branches moderate, the apex simple; prothorax with a strong triangular crest; tibiae long-haired; forewing with termen crenulate. Type *Pulcheria catomelas* *Alph.*

P. catomelas *Alph.* (42 d). Forewing greyish ochreous dusted with darker; the veins finely black; *catomelas*. inner line blackish, double, denticulate, oblique outwards to cell, then inwards to inner margin; outer line obscure, double, shortly oblique to vein 6, then denticulate; an oblique black shade from below apex to vein 5, and dark streaks in the interspaces from 4 to inner margin; orbicular stigma oblique, elliptical, its centre fuscous with slight whitish annulus; reniform edged with dark and with a dark central line, preceded by a diffuse median shade; hindwing black, the basal third paler; fringe whitish. Kashgar, Turkestan.

60. Genus: **Anthra** *Stgr.*

Tongue developed; frons oblique, produced to a transverse ridge above; palpi upcurved, slender; the second segment well scaled, long; the terminal long; antennae of ♂ pubescent, with rough scales between them, and a small tuft at base of each; prothorax with double crest, forming a dorsal ridge; metathorax with slight crest; abdomen strongly crested; forewing with termen very oblique below middle, the tornus rounded off. Type *Anthra grata* *Btlr.*

A. grata *Btlr.* (= *pretiosa* *Stgr.*) (42 d). Forewing pale olive brown; the base of subcostal vein and *grata*. vein 1, the two stigmata, and the costa above reniform pale pinkish grey; the centres of stigmata marked

with olive brown, the costal space between them dark brown; only the outer line represented, purple brown, finely lunulate-dentate, followed by slight pinkish suffusion towards inner margin, below vein 1 continued to near base as two thick purple-brown lines with pinkish white between them; a black marginal line preceded by a bright white line, and this again by a deep olive brown shading broader at anal angle and marked with white on vein 1 and below it; fringe brown with a broad dark middle line; hindwing whitish washed with olive brown; a darker cellspot, outer line, and terminal shade ending in a pale pinkish band with olive spots. Amurland, China, Corea, Japan.

61. Genus: **Rhabinopteryx** *Christ.*

Tongue present; frons prominently rounded, with corneous plate below it; palpi obliquely upturned, third segment small; antennae of ♂ lamellate, with a tuft of hair at base; vestiture squamous; thorax and abdomen without crests, slender; forewing long and narrow; the termen in both wings non-crenulate; hindwing with veins 6, 7 shortly stalked. Type *Rhabinopteryx turanica* *Ersch.*

turanica. **R. turanica** *Ersch.* (42 d). Forewing whitish overlaid with pale grey brown; a white streak in basal half of both folds, the fold itself black; lines indistinct, represented by double series of black dots; a row of black and white spots representing subterminal and terminal lines; reniform stigma only present, white with a dark curved centre; fringe white, interlined and chequered with blackish; hindwing white, the terminal line and the veins dark. Found in several localities in W. and E. Turkestan.

subtilis. **R. subtilis** *Mab.* (42 d, e). Closely resembling *turanica*, but without the reniform stigma, its place being taken by a whitish streak in outer half of cell; the hindwing tinged with fuscous. Biskra, Algeria.

62. Genus: **Epimecia** *Guen.*

Differs from *Rhabinopteryx* in the antennae having no tuft of hair at base; the palpi more porrect, the second segment well-haired below; in the hindwing veins 6, 7 are shortly stalked; vein 8 anastomoses with the cell to middle. Type *Epimecia ustula* *Frr.*

ustula. **E. ustula** *Frr.* (= *lurida* *Tr.*, *ustulata* *Hbn.-G.*) (42 e). Forewing dull greyish brown, the veins marked with black scales; a white streak in basal half of cell, and an oblique pale streak from apex through upper part of cell; no distinct stigmata, their places being taken by white marks on median vein; lines represented by rows of black dots; the subterminal by a row of slight dark spots ending in a pale suffusion on submedian fold; hindwing white, the veins brownish. Occurs only in South Europe, Spain, France, Dalmatia, the Tyrol, Hungary, Bulgaria and S. Russia. — Larva green, with yellowish white dorsal and subdorsal lines; feeding on *Scabiosa leucantha*, pupating in a thick parchmentlike cocoon.

63. Genus: **Fergana** *Stgr.*

Agrees with *Epimecia* in the neuration of the hindwing, the costal vein anastomosing with the cell for half its length; but the antennae of the ♂ are ciliated; the palpi are shorter and the frons smoothly scaled, like the tibiae. Type *Fergana oreophila* *Stgr.*

oreophila. **F. oreophila** *Stgr.* (42 e). Forewing pale ochreous grey, suffused with grey brown, except in the costal area beyond middle; inner and outer lines whitish; the first oblique outwards to submedian fold, there sharply bent and oblique inwards; the second bent strongly outwards below costa, then obliquely waved and straight inwards; submarginal line whitish, dentate; a row of black terminal dashes edged with white; stigmata with pale annuli; the orbicular narrow and oblique, the reniform strongly angled inwards; hindwing whitish tinged with brown, except along inner area. Occurs only in W. Turkestan.

64. Genus: **Stilbia** *Stph.*

Agrees structurally with *Fergana*; differs only in the denser, smoother scaling of the forewing; the apex of which is much less produced and the termen more vertical; the larva feeds on grasses. Type *Stilbia anomala* *Haw.*

anomala. **S. anomala** *Haw.* (= *hybridata* *Hbn.*, *stagnicola* *Tr.*, *anomalata* *Stph.*, *insularis* *Fuchs*) (42 e). Forewing grey, shining; the costa suffused with dark fuscous; inner and outer lines double, blackish,

filled in with whitish, irregularly dentate; subterminal pale with suffusedly darker edges; orbicular and reniform stigmata with pale annuli externally dark margined, separated by a diffuse dark shade, the former oblique and narrow; hindwing white tinged with brown along termen; in the ♀ the forewing is more uniformly blackish fuscous; — the form *philopalis* Grasl., from S. E. France, is smaller, paler, *philopalis.* with the markings showing up more prominently; — *andalusica* Stgr., a Spanish form, is also smaller than *andalusica.* the typical, but with less distinct lines and markings; — in *syriaca* Stgr., from Asia Minor, the wings are *syriaca.* broader, the hindwing as well being much darker; *calberlae* Failla-Ted., from Sicily, is certainly a good *calberlae.* aberration: the ♂♂ are blacker in forewing than the darkest ♀ of the typical form, with the hindwing brightly white. A somewhat local species, found in England, Ireland, France, Germany, Spain, Sicily, and in Syria. — Larva green to pale brown; dorsal and subdorsal lines yellowish white, with dark margins; spiracular whitish, with the upper edge grey; on grasses.

S. faillae Püng. (= *anomala* Failla-Ted. nec Haw., sicula Stgr.) (42 e). Forewing glossy grey, *faillae.* suffused with fuscous; the lines as in *anomala*, but less distinct; the two stigmata defined by black and white at the sides only, the orbicular somewhat triangular in shape, with a well-defined black patch between them; hindwing glossy grey, suffused with fuscous. Sicily. In this species both wings are broader and shorter than in *anomala*.

65. Genus: **Praestilbia** Stgr.

Differs from *Stilbia*, in the shorter, broader forewings and in the serrate antennae of the ♂; in the hindwing veins 3, 4 are stalked instead of veins 6, 7. Type *Praestilbia armeniaca* Stgr.

P. armeniaca Stgr. (48 c) Forewing whitish washed with pale reddish; inner line interrupted, whitish, *armeniaca.* preceded on costa by a black wedge-shaped mark, edged outwardly in submedian interval by a black bar indicating the claviform stigma; outer line approximated to termen, double, blackish, excurved above middle and more oblique below with an elongate brown shade beyond it from costa to vein 5; no subterminal line, but a row of small black lunules along termen; the two stigmata large and pale, the orbicular with a quadrate black spot before it, the reniform with some dark scales beyond it, a V-shaped black mark between them; hindwing whitish, with a brown tinge along termen. This species, described from Asia Minor, occurs also in Greece and Hungary.

66. Genus: **Hypostilbia** Hmps.

Agrees with *Stilbia* and the allied genera in the anastomosis of the costal vein of hindwing with the cell, but differs in both 3, 4 and 6, 7 being stalked; also the prothorax, and not the metathorax, is shortly crested; the palpi are much longer, upcurved in front of face; the antennae of ♂ ciliated. Type *Hypostilbia megastigma* Püng.

H. megastigma Püng. (48 c) Forewing pale ochreous densely irrorated with fuscous; the veins darker; *megastigma.* inner and outer lines marked only by dark points on the veins; the subterminal absent; a row of terminal black and white spots; orbicular and reniform stigmata fuscous, defined by white points; hindwing ochreous white, with slight grey cell mark, and a terminal row of dark striae from apex to submedian fold. From Lob-nor, E. Turkestan; the ♂ only is known.

H. correpta Püng. (42 f). Forewing glossy dark leaden grey; inner, median, and outer lines all *correpta.* indistinct, diffuse, and curved, the outer somewhat dentate; subterminal and terminal lines consisting of rows of dark and light spots; reniform stigma alone visible as a faint pale lunule; hindwing uniform pale brownish, with fine dark terminal line. Described from a ♂ only from E. Turkestan.

67. Genus: **Amphidrina** Stgr.

Tongue present; frons smooth; palpi obliquely upturned, short; both prothorax and metathorax slightly crested; the dorsum without crests; the neuration normal. Type *Amphidrina agrotina* Stgr.

Sect. II. Antennae of ♂ ciliated.

A. amurensis Stgr. (42 f). Forewing greyish white, with dense black irroration and a faint reddish *amurensis.* tinge; an obscure black streak from base below cell: inner and outer lines rather obscure, double, waved; subterminal pale, preceded by a fuscous shade except at middle and by slight black streaks below veins 7, 5, and 2, angled inwards on both folds; stigmata all defined by black; the claviform large; the orbicular oval and oblique; the reniform with large lobe basewards on and below median vein; hindwing whitish, with brown suffusion, especially along termen. Recorded from Mongolia and E. Siberia.

- agrotina.* **A. agrotina** *Stgr.* (48 c) Forewing ochreous whitish, with redbrown dusting and suffusion, except the terminal area beyond subterminal line; inner and outer lines indistinct; the former oblique and wavy, marked by slight dark spots below costa and cell, the latter denticulate; the subterminal defined only by the darker tint before it; claviform stigma obsolete; orbicular a faint blackish dot; the reniform diffusely blackish; fringe yellowish white, with small dark dots along base; hindwing pure white: — in the form *jordana.* **jordana** *Stgr.*, from Palestine, the reniform is all but obsolete, while the inner and outer lines are strongly expressed, black, starting from conspicuous costal spots. Confined to Western Asia; Armenia, Asia Minor, and Palestine.

68. Genus: **Prodenia** *Guen.*

Tongue well-developed; frons smooth; palpi obliquely upturned, the second segment short, broadly scaled, the third small; antennae of ♂ ciliated; the thorax smooth, clothed with scales; the metathorax only with a divided crest; basal half of dorsum crested; forewing long and narrow, the apex bluntly produced; the termen oblique. Larva stout, with the 5th. and 12th. segments swollen. A genus of stoutly built species, with strong powers of flight, widely distributed throughout the tropical regions, less common in temperate parts. Type *Prodenia androgea* *Cram.* from S. America.

- litura.* **P. litura** *F.* (= *histrionica* *F.*, *elata* *F.*, *littoralis* *Bsd.*, *retina* *Frr.*, *tasmanica* *Guen.*, *ciligera* *Guen.*, *testaceoides* *Guen.*, *subterminalis* *Walk.*, *glaucastriga* *Walk.*, *declinata* *Walk.*, *albisparsa* *Walk.*) (42 i). Forewing ochreous washed with brown, the space below the cell and the terminal area rufous-tinged; median vein and bases of veins 2, 3, 4 white; inner and outer lines double, filled in with white, the inner preceded by some silvery grey suffusion, before which a white line runs obliquely from subcostal vein to vein 1; the outer met by an oblique diffuse violaceous grey streak from apex, stronger in the ♂ than in the ♀; subterminal line white, followed by another fine white line before termen, outwardly black-edged; claviform stigma elongate, black-edged; orbicular narrow and oblique, white, laterally black-edged and with rufous centre, a whitish bar on its outer edge; reniform with its upper extremity produced to a long acute point; hindwing white; the apex brownish. In the palaearctic region this species is found in Madeira and the Canaries, in Egypt, in Crete, Syria, and Turkey, and in Central China and Japan. — Larva pale violet brown; a subdorsal series of black lunules above narrow yellow spots; and a lateral series of purplish black spots containing a white dot at centre; sublateral line white; on Lantana.

69. Genus: **Spodoptera** *Guen.*

Differs from *Prodenia* in the abdomen having a dorsal crest at base only; the species are of smaller size and weaker build, with the foretibiae broadly fringed with hair on outer side. Type *Spodoptera mauritia* *Bsd.*

Sect. I. Antennae of ♂ with pedicellate fascicles of cilia, the two series of unequal length.

- pecten.* **S. pecten** *Guen.* (= *erica* *Btlr.*, *uniformis* *Swinh.*, *pectinata* *Hmps.*) (42 f). Forewing pale luteous grey, tinged in parts with reddish brown; inner and outer lines double, black, the outer lunulate followed by a pale line; submarginal line pale, preceded by a dark shade containing black wedge-shaped marks; orbicular stigma oval, with dark centre and annulus; reniform more or less filled up with brown; hindwing white, with the apex grey and some dark marginal marks from apex to vein 2. The ♀ is more uniformly greyish ochreous with the lines and markings hardly darker. The species, which is common in Borneo, the Malay peninsula, the Kei Islands, etc. and rarer in India and Burma, occurs also in Formosa and the Loochoo Islands and is recorded from Gensan, Corea. Larva on „Bukoot“.

Sect. II. Antennae of ♂ with sessile fascicles of cilia.

- abyssinia.* **S. abyssinia** *Guen.* (= *cilium* *Guen.*, *orbicularis* *Walk.*, *praeterita* *Walk.*, *insignata* *Walk.*, *procedens* *Walk.*, *infixa* *Walk.*, *obliterans* *Walk.*, *insulsa* *Walk.*, *imperviata* *Walk.*, *retrahens* *Walk.*) (42 f). Forewing luteous more or less suffused with grey, the suffusion more uniform in the ♀; the inner and outer lines black, conversely paler-edged, the outer lunulate; submarginal line usually obscure, pale and wavy, with a dark shade before it containing at its middle blackish wedge-shaped marks, which are often obscure; orbicular stigma roundish, pale with a dark outline, more distinct in the grey ♀♀; reniform of the ground colour with the centre slightly darker or sometimes in the ♂ blackish; hindwing white, faintly brownish along termen. Occurs in Egypt, Algeria, and Morocco in N. Africa, and in Syria, Asia Minor, and Palestine in W. Asia; a common African, Indian, and island species; it may be separated from *pecten* *Guen.*, in the ♂ by the different antennae, and in the ♀ by the uniform grey, instead of ochreous, tint and the *latebrosa.* pale round orbicular stigma; — the form **latebrosa** *Led.* from Syria is much darker grey in both sexes;

the black lines edged with whitish grey scales, the orbicular more oval, and the hindwings more plainly darker along costa and termen. Larva ochreous with pale dots edged with brownish; dorsal line orange; a subdorsal series of orange marks, defined by irregular black lunules above; lateral line interruptedly orange; the spiracles black; head and thoracic plate redbrown.

Sect. III. Antennae of ♂ ciliated; foretibiae with large tufts of hair on outer side.

S. mauritia Bsd. (= *aeronyctoides* Guen., *nubes* Guen., *filum* Guen., *infecta* Walk., *insignata* Walk., *mauritia*, *triturrata* Walk., *transducta* Walk., *permunda* Walk., *gratiosa* Walk., *squalida* Walk., *venustula* Walk., *bisignata* Walk., *aliena* Walk., *submarginalis* Walk., *bisignata* Walk., (bis) *obliqua* Walk.) (42 f, g). Forewing pale grey with a faint rufous tinge, and more or less entirely suffused with reddish brown; inner and outer lines obscure, blackish and double, paler towards inner margin; submarginal line whitish, irregularly wavy-dentate, starting from a grey apical spot, preceded by a dark blotch between veins 3 and 5; orbicular stigma an oblique oval, pale with brown centre and blackish outline, separated from the reniform by, and sometimes merged in, a pale streak running obliquely from costa to lower end of cell; the reniform filled up with black in a white annulus; a series of black marginal spots, often surrounded by grey scales; hindwing white, the veins terminally, and the costal and inner margins brown; terminal line thick and black. In the ♀ the forewing is more uniform in coloration, dull dark grey, with no trace of the pale oblique streak across the cell, the reniform stigma and the dark blotch on veins 3 to 5 alone showing dark; ab. **effeminata** ab. nov. is a rare form of the ♂ which mimics the coloration of the ♀, being uniformly dark brown without the pale oblique streak. This wide-spread species, occurring throughout Africa, India, and the islands to New Guinea and Australia is recorded from Shanghai, Central China. Larva dark brown marbled with whitish; dorsal line white-edged; subdorsal and lateral lines white; head redbrown; the ventral surface greenish: feeding on cereals; said to be injurious to rice in the Punjab.

70. Genus: **Laphygma** Guen.

Differs from *Spodoptera* in the tibiae being only slightly hairy; the antennae of the ♂ are ciliated, sometimes with minute serrations. Larva as in the previous genus, on cereals and low growing plants, sometimes harmful to the crops. Type *Laphygma exigua* Hbn.

L. apertura Walk. (= *synstictis* Hmps.) (48c) Forewing ochreous grey suffused with dark brown and dusted with black; the inner and outer lines double, filled in with ochreous, conversely lunulate-dentate; submarginal line formed of ochreous striae internally edged by small dentate black marks; a row of black spots along termen preceded by ochreous striae; claviform stigma blackish; orbicular and reniform ochreous outlined with black, with pale brown centres; the orbicular narrow and oblique, its lower extremity produced and confluent with reniform, which is large, conversely oblique, and produced above; a short streak of ochreous scales at the base of vein 2; hindwing pure white, with some dark points on upper part of termen; abdomen whitish, with the basal crest blackish. This South Indian insect is recorded from Ichang, Central China. Larva jet-black, the segmental incisions creamy white, the prothorax with 3 yellow spots; dorsal line formed of disconnected pale yellow spots; subdorsal line of pale yellow markings; spiracular pale yellow; ventral surface glaucous green dotted with white; anus edged with orange; head with numerous black hairs, black with an orange spot; feeding on *Drosera*, especially the stems, and pupating in the ground.

L. exigua Hbn. (= *fulgens* Hbn.-G., *junceti* Zell., *cycloides* Guen., *caradrinoides* Walk., *sebghana* Aust., *venosa* Btlr.) (48 a) Forewing greyish ochreous, washed with dull yellow and sprinkled with black scales; inner and outer lines double, indistinct, filled in with pale yellowish; a dark waved median shade visible before lower half of outer line; cell dark brown; orbicular stigma pale or bright yellow, round; reniform with a curved brown lunule in centre; submarginal line pale grey; the darker shade preceding it with dark streaks between the veins; terminal spots black; hindwing semihyaline white, with the veins dark brown; all three margins shaded with fuscous; — **pygmaea** Rmb. is only a small, probably dwarfed, form, with the markings ill-developed. Widely spread through Africa, India, and Australia; in Europe mainly confined to the South; S. Russia, France, Switzerland, Spain, Italy, Sicily, and Dalmatia, but also found occasionally in Britain and Holland; Egypt, Algeria, Morocco, Madeira, the Canaries; Cyprus, Asia Minor, Syria; Japan and Central China. Larva pinkish brown, dotted with black; spiracular line pale ochreous, with dark upper edge; on low-growing plants, sometimes destructive.

71. Genus: **Athetis** Hbn.

Tongue developed; frons smooth; palpi upturned, the second segment well-scaled and reaching vertex, the third short; antennae of ♂ typically ciliated; vestiture hairy; the prothorax only with slight

crest. — Larva usually on low-growing herbage and grasses. A large genus of small-sized species, often very much alike and difficult to separate. Type *Athetis furvula* Hbn.

Sect. IV. Antennae of ♂ ciliated.

- delecta.* **A. delecta** Moore (42 g). Forewing greyish white with slight dark dusting; the terminal area more fuscous; inner and outer lines finely black, the former obliquely waved, the latter strongly dentate, the teeth forming a row of points on the veins; subterminal line conspicuously white; a terminal row of black and white dots; orbicular and reniform black, broken up by white scales to form spots, the orbicular into 3, the reniform into 7, 3 on inner side, and 4 on outer; hindwing white, the veins and termen fuscous; a slight cell-dot. An Indian species, recorded also from Central China.
- conspicua.* **A. conspicua** Leech. (48a) Forewing dark grey brown with a rufous tinge; inner and outer lines black, the former somewhat dentate inwards on the veins, the latter deeply lunulate-dentate, the tips of the teeth forming a series of dots; submarginal line pale, evenly curved, preceded by a reddish-brown shade; a grey marginal festoon enclosing darker spots; orbicular and reniform stigmata deep black, ringed with white and black; hindwing brownish fuscous. Received from several localities in W. China.
- atriluna.* **A. atriluna** Guen. (= *indicata* Walk., *infusca* Rmb. nec *Const.*, *mediterraneae* Beth.-Baker, *distincta* Stgr.) (42 g) Forewing pale yellowish grey, with 3 black spots on costa; the usual lines rarely traceable; reniform stigma alone plain, as a narrow black-brown lunule with pale edging; hindwing pure white with the termen greyish. Essentially an African species where it is widely spread; the type of *mediterraneae* from Egypt; *infusca* Rmbr., if rightly referred here, is from Spain, and *distincta* Stgr. from Palestine.
- placata.* **A. placata** Leech (42 g). Forewing dull grey brown, diffusely darkened along the costal and terminal areas with blackish; inner and outer lines dark, the former filled up with paler brown, the latter strongly lunulate-dentate, the teeth forming a row of dots; subterminal line nearly straight, pale with a dark brown shade preceding it; a whitish grey terminal festoon containing small black lunules; median shade diffuse, conspicuous; stigmata pale brown with thick dark outlines, the orbicular round; hindwing brownish fuscous, paler at base. Described by Leech from a single ♂ from Chia-kou-ho, W. China. Somewhat allied to, but much larger than *conspicua* Leech from W. China.
- divisa.* **A. divisa** Moore (42 g). Forewing ruddy brown with a grey tinge and dusted with darker; the lines luteous white; the inner and outer conversely dark-edged; submarginal almost straight, preceded by a thick brown shade; terminal black spots small; orbicular and reniform stigmata large, darker than the ground colour, with luteous annuli; the median shade distinct; hindwing pale brownish grey. Narkundah, Kashmir. The insect is common in N. India.
- furvula.* **A. furvula** Hbn. (= *dasychira* Hbn., *lenta* Tr.) (42 g, h). Forewing pale or dark grey, darker towards termen; a rufous flush along both folds and before the submarginal line; inner and outer lines dark, fine, slightly pale-edged; the median shade distinct; submarginal line luteous white, with a darker shade before it; a pale marginal festoon with grey lunules; orbicular a black dot in a pale ring; reniform a dark obscure lunule; hindwing pale, brownish grey; **lentina** Stgr. (42 h) is smaller and darker; I have seen specimens, answering this description in point of size, only from Uralsk; all the examples seen from Japan, and from the neighbourhood of Issyk-Kul, are quite as large as typical specimens, more uniformly dull fuscous, with more strongly marked reniform stigma and dusker hindwings, which may be separated as ab.
- tristior.* **tristior** ab. nov. (42 h). Larva clay coloured, dotted with dark; a pale lateral line on the front segments; on each segment behind 4 oblique lateral yellow streaks, edged with black; head small and dark; feeding on various low plants.
- alsines.* **A. alsines** Brahm. (42 h). Forewing greyish ochreous, sometimes uniformly washed with brownish; the lines and stigmata dark grey, the latter with pale annuli; submarginal line luteous preceded by a dark grey shade; hindwing dirty pale grey in ♂, darker in ♀, and darker in both sexes in the brown suffused forms; — the form **sericea** Speyer, from Holland and Germany, is described as having narrower silky grey forewings; — in **levis** Stgr. (42 h), from W. Turkestan and Asia Minor, the yellower ochreous tint is predominant and the dark markings are conspicuous but in some pale examples from Segovia, Spain, —
- ochrea.* ab. **ochrea** ab. nov. (42 i) — the dark markings tend to become effaced, the head, thorax, and forewings being pale yellow ochreous; — **amurensis** Stgr. indicates small dark examples from Ussuri, Amurland. Occurs in Britain and apparently throughout Europe, except in Scandinavia; also in Western Asia, W. Turkestan, and W. and E. Siberia. The larva, which like the other species, lives on all low growing plants indiscriminately, is clay coloured, darker dorsally; the dorsal line itself fine and white with dark edges; the subdorsal also fine and pale; laterally a pale dark edged serrate line containing the spiracles.
- blanda.* **A. blanda** Schiff. (= *taraxaci* Hbn., *guttilinea* Walk.) (42 h). Forewing fawn-tinged grey, with a fuscous suffusion, with the ground colour sometimes paler, more luteous ochreous, especially in examples

from W. Turkestan; costal edge pale; inner and outer lines obscurely marked; the median and prae-submarginal shades distinct; stigmata fuscous grey, with pale annuli; hindwing whitish, grey-tinged towards termen; the veins and cell mark darker; altogether darker grey in the ♀. Occurs throughout Northern and Central Europe and in Central Asia. These Asiatic examples — from Issyk-Kul; the defile of Little Kisil-su, Tianshan; Kappak, Alexander Mts.; and Ketmen-tjube, Sussamy Mts.; — must be separated certainly as an ab. **centralasiae** ab. nov. (42 i), though very possibly a distinct species; the ground colour of the forewing is paler, tinged with pinkish brown along the two folds, and the dark markings stand out more conspicuously: the costal edge is pale; the hindwing, even in the ♀, is whiter, showing a distinct cell spot. Described from a series of more than a dozen ♂♂ but only one ♀, from the above mentioned localities; the type ♂ from Kappak, the ♀ from Ketmen-tjube. — Larva ochreous with red or brown suffusion and dotted with dark; dorsal line yellowish edged with small black marks; subdorsal lines pale, dark-edged below; head pale marked with darker: on sundry low plants.

A. ambigua Schiff. (= *plantaginis* Hbn.) (42 i). Differs from *blanda* in being much paler grey, with a very slight rufous or ochreous tinge in some examples, the costal edge white; inner and outer lines finely dark and wavy-dentate; the stigmata and the two shades only a little darker than the ground colour; hindwing pure white; — **uniformis** Swinh. from Beluchistan (= *hilaris* Stgr. from Syria and W. Turkestan) has a more ochreous yellow tinge. Widely spread in Europe, occurring also in Algeria, in Asia Minor, Armenia, Syria, and W. Turkestan. — Larva brownish, finely marbled with blackish; the lines finely pale; lateral line black with oblique black streaks above it; on numerous low plants.

A. superstes Tr. (= *blanda* Hbn. nec Schiff.) (42 k). Forewing pale rufous grey densely dusted with dark atoms; inner and outer lines blackish, the inner obliquely waved and dentate inwards, the outer strongly dentate, the teeth forming a row of points on the veins; submarginal pale, with brown shading before it; orbicular and reniform large, brownish, with pale rings; hindwing dull whitish, the veins and terminal area brownish. Confined to Central and Southern Europe, Germany, Austria, Hungary, Spain, Italy, Switzerland, Russia; also in Asia Minor and Armenia. Larva grey, dorsal line dark; lateral stripes pale, with oblique streaks between them; on low growing plants.

A. respersa Schiff. (42 k). Forewing greyish white finely dusted with dark; inner and outer lines black, the latter strongly lunulate-dentate, the teeth forming a row of dots on the veins, both marked on costa by black spots; orbicular a brown spot; the reniform a small dark lunule; subterminal line slightly marked; terminal black points; hindwing whitish suffused with brown. 3 ♂♂, 2 ♀♀ in the Tring Museum, without locality label, but certainly of European origin — ab. **robusta** ab. nov. (42 k) — differ in being slightly larger, darker, more purplish grey in colour, with the median shade well marked, and the hindwings darker. With much the same distribution as the last species; occurring in France, Germany, Austria, Hungary, Switzerland, N. Italy, the Balkans, Livonia; also in Armenia and Asia Minor. Larva dark brown with pale dorsal stripe; subdorsal lines white; the sides blackish with whitish spots on each segment; on low plants and grasses.

A. pulmonaris Esp. (*fuscago* Esp., *pulmonariae* Hbn.) (42 k). Forewing dull deep yellow with grey brown suffusion; inner and outer lines obscurely double, filled in with paler, conversely lunulate-dentate; subterminal line pale yellow, preceded by a brown shade forming a patch at costa; a brown terminal line; orbicular stigma round, with a slight pale ring defined by brown; the reniform with whitish annulus to lower half; hindwing yellowish suffused with brown; fringe pale. Restricted to Central and South Europe, France, Germany, Austria, Hungary, Greece, and Italy. The larva is dull green; the dorsal line whitish; the head yellowish brown; on *Pulmonaria*.

A. flava Oberth. (45 a). Forewing reddish yellow slightly mixed with fuscous; inner and outer lines double, the arms wide apart, with black costal spots; the orbicular and reniform small, reddish brown, with some white dots round them; subterminal line obscurely paler, preceded by darker suffusion; hindwing whitish, the veins and termen pale brown. A somewhat narrow-winged Mediterranean species, occurring in Algeria and Palestine; also in the Canaries and on the Persian Gulf.

A. fusca Leech (45 a). Forewing fuscous; inner and outer lines slightly marked, dark, conversely edged with pale grey, minutely waved and dentate; no orbicular; the reniform a slight fuscous lunule with pale points on both sides above and below; subterminal line waved, with slight dark suffusion before it; terminal line finely dark; hindwing pale brown. W. China, Nitou and Ta-chien-lu; the ♀ only is known.

A. morosa Led. (45 a). Forewing ochreous, whitish tinged with sandy grey; inner and outer lines double, with a black spot on costa; the inner obliquely waved, the outer blackish and dentate, the teeth forming a second line, followed by fuscous suffusion which reaches to the waved whitish submarginal line; a row of black marginal lunules; only the reniform present, a dark lunule with a white dot on inner

side and two on outer: a distinct median shade; hindwing white, brownish-tinged, especially along veins and termen: the fringe pure white. Described originally from the Altai Mts. in W. Siberia; occurring as well in Mongolia and Amurland.

rebeli. **A. rebeli** *Stgr.* (= *flavirena Rebel nec Guen.*) (45 a). Forewing dark grey with fuscous suffusion, wholly fuscous in ♀; inner and outer lines obscurely marked and interrupted, both, like the median shade, starting from black costal spots; orbicular stigma black, small and round; reniform a somewhat diffuse blackish lunule with whitish points round it; subterminal line whitish preceded by a fuscous shade; the terminal area darker, with black striae; hindwing fuscous grey. Found only in the Canaries.

rougemonti. **A. rougemonti** *Spul.* (45 a). Forewing smooth, grey, with fine dusting, the two folds slightly tinged with rufous; inner and outer lines indistinct, starting from black costal spots; submarginal line composed of pale spots, each edged internally with rufous; orbicular stigma grey at centre edged with rufous in a white ring; reniform a grey lunule, similarly edged, surrounded by white dots; hindwing pure white. Digne, Basses Alpes, S. France; Zermatt, Switzerland. Larva ochreous grey, with brown intrbling; dorsal line finely pale; subdorsal pale with dark lower edge; spiracular slight, dark; the spiracles black; head brown; on probably various low plants.

jurassica. **A. jurassica** *Rigg.* (45 a). ♂ Forewing white or whitish, often tinged with grey and dusted with fuscous; inner and outer lines fine, blackish, from black costal spots, the inner oblique and irregular; submarginal line pale, with dentate rufous marks before it; terminal points black; orbicular stigma a dark point; reniform brown with pale points round it; hindwing whitish, the termen diffusely grey; the veins dark; ♀ always dirty fuscous with indistinct markings; the hindwing fuscous. Switzerland; Italy, Pescocostanza and Valle San Franco, Gran Sasso. July 1906 (O. Neuman); Digne, Basses Alpes. The Italian examples are larger than those from Digne.

selini. **A. selini** *Bsd.* (45 a). ♂ Forewing pale grey with olive grey (♂) or blackish (♀) dusting; inner and outer lines both indistinct, with black spots on costa, the former oblique and sinuous, the latter dentate; subterminal line pale, continuous, and wavy, with a rufous shade before it; reniform stigma only present, a brown lunule, plainer in the ♂, with two whitish points on inner edge and three on outer, with small yellowish mark at middle of outer side, all indistinct in the ♀; hindwing whitish in ♂, greyish white in ♀; the terminal area and veins towards termen darker. Mainly a South European species, found in Spain, S. France, Italy, Sicily, Corsica, Dalmatia, Greece, Switzerland, Hungary, Germany and Russia, Livonia and Sarepta; also in Asia Minor and Syria.

flavirena. **A. flavirena** *Guen.* (45 b). Forewing dark ashy grey; the lines with blackish costal spots; the inner oblique and wavy, the outer dentate; orbicular stigma a small round fuscous spot, sometimes with whitish scales around it; reniform fuscous, with white dots round it and a small yellow spot at middle of outer side; submarginal line pale, obscure, often interrupted; a row of small black lunules along termen; hindwing dull hyaline whitish, suffused with fuscous in ♀; the veins and termen narrowly dark grey; — *minor* *Kalchb.* (45 b), from Central and Southern Italy, is smaller; ? the summer brood; — *noctivaga* *Bell.* (= *infusca Const.* (45 b) is darker, the whole forewing suffused with fuscous, and the hindwing in both sexes white; — a greyer form ab. *subdita* ab. *nov.* occurs in Valais, Switzerland. Found only in South Europe, Spain, Central Italy, Sicily, S. France, the Tyrol; also in Asia Minor and Palestine.

wullschlegeli. **A. wullschlegeli** *Püng.* (45 b). Forewing brown mixed with grey; inner and outer lines blackish, conversely edged with grey, starting from black costal spots; orbicular stigma a small round black spot; reniform blackish defined by some whitish scales, with faint whitish point below on inner side and two on outer; subterminal line pale, with a fuscous shade preceding it; hindwing white in the ♂ with the costal and terminal areas only fuscous, wholly fuscous in ♀. Recorded only from Zermatt, Switzerland.

selinioides. **A. selinioides** *Bell.* (45 b). ♂ Forewing greyish white suffused with fuscous, except on costal area; inner and outer lines blackish, wavy and dentate; the median shade diffuse and conspicuous; orbicular stigma a small dark dot; reniform a dark lunule, with white dot on inner side below and two on outer side; subterminal line denticulate, with a brown shade before it; hindwing white with a brown tinge, the termen wholly suffused with brown; ♀ darker, somewhat purplish grey; the reniform stigma obscure; the hindwing wholly dark. Corsica and N. Italy, (Maritime Alps).

menetriesi. **A. menetriesi** *Kretschm.* (= *montana Brem., petraea Tengstr.*) (48 a) Forewing pale grey, with some black dusting; inner and outer lines partially obsolete and interrupted, with small black spots at costa; subterminal line represented by a series of whitish striae, internally defined by small dentate black marks; orbicular stigma a small black spot; reniform a narrow dark lunule; traces of a bent median shade with black spot on costa; hindwing white, dusted with brown along termen; a black cell spot and row of

terminal striae from apex to vein 2. A Northern species taken in Sweden, Finland, and Livonia in Europe, and in Asia in West Turkestan, W. and E. Siberia, and Mongolia.

A. himalayica Koll. (= *arenacea* Moore) (45 b, c). Forewing pale luteous grey; inner and outer lines obscurely marked, starting from black costal spots, like the median shade, which is well-developed; subterminal line pale, preceded by small rufous marks; the terminal area fuscous; orbicular stigma a brown point; reniform a narrow lunule, with its lower lobe fuscous, its inner edge with two, and its outer with three whitish dots, and with a rufous point beyond its middle; hindwing white, with a reddish brown tinge, especially along veins and terminal area; fringe white. Occurring in W. China, Kashmir, and Yatong, Tibet, as well as in N. India. *himalayica*.

A. chinensis Leech (45 c). Forewing larger and greyer than in *himalayica*; the orbicular stigma altogether absent; the reniform edged with redbrown, with a white dot on outer side at top and below with a white dot on inner side and two on outer; subterminal line wavy, grey, with fuscous suffusion on both sides; a grey terminal festoon containing dark lunules; hindwing whitish, brownish on veins and towards termen; fringe white. W. China only. *chinensis*.

A. clavipalpis Scop. (= *quadripunctata* F., *cubicularis* Schiff., *grisea* Rott., *segetum* Esp. nec L., *claripalpis*, *pulverosa* Walk., *milleri* Schulz) (45 c). Forewing pale to dark grey with darker dusting and sometimes tinged with ochreous; the terminal area generally fuscous; the lines starting from black costal spots; the inner and outer double, blackish, the inner minutely waved, the outer dentate; subterminal line pale, waved, preceded by a grey shade with dentate rufous marks in it; stigmata small, fuscous, the orbicular rounded, the reniform a narrow lunule, with two white dots on its inner edge and three on outer; hindwing white, the veins and termen dark grey; — in *laciniosa* Donz. the subterminal line consists of a row of yellowish spots each extended to termen; — the form *leucoptera* Thnbg. (45 c), from Scandinavia, Finland, and the Ural Mts., has fuscous suffusion over the head, thorax, and forewing, the hindwing remaining white. Common throughout Europe, Western, and Central Asia, Egypt, Algeria, and Madeira. Larva fuscous with a green tinge; the lines paler, with dark edges: on low plants generally. *laciniosa*, *leucoptera*.

A. perspicua spec. nov. (45 c). Forewing greyish luteous slightly dark-speckled; the praesubmarginal shade and sometimes the terminal area beyond blackish fuscous; the lines black and distinct, starting from black costal spots; the inner somewhat oblique; the outer lunulate-dentate, bent outwards below costa, then vertical and slightly indented beyond cell, below 4 incurved, reaching inner margin close beyond the finer median line, which is bent in cell and there touches the reniform stigma, which is grey strongly outlined in black; the orbicular a slight black ring; submarginal line waved, preceded by a blackish shade which is sometimes, as in the type ♀, formed of contiguous and regular wedged-shaped marks, or, as in the type ♂, diffusely and irregularly fuscous; a row of black terminal lunules; the terminal area grey in the type ♀, fuscous in the type ♂; hindwing pure white, but the terminal line dark with a slight grey discoloration before it and the veins grey towards termen; fringe pure white; underside of forewing shining luteous grey, with grey cellspot, outer line, and broad blackish marginal border; of hindwing white; head and thorax pale grey, dorsum whiter; pectus, venter, and legs white; forelegs grey, the tarsi black with the joints white. Described from a ♂ and 2 ♀♀ from Kisil Arvat, Turcomania. *perspicua*.

A. turbulenta spec. nov. (45 c, d). Forewing dull luteous grey with a blurred appearance; all the markings indistinct; the lines themselves obscure, but marked on costa by distinct black spots; inner and outer lines placed as in the preceding species, *perspicua*; median line hardly visible; stigmata faint, dimly edged; terminal area fuscous grey, through which the waved subterminal line is slightly paler, preceded by a darker shade; hindwing whitish, with the extreme termen and veins at extremity grey-brown; underside like that of *perspicua*, but the forewing much paler; head, thorax, abdomen above and beneath, and legs as in *perspicua*. Described from a pair taken at the beginning of August at Kisil Zart, Turcomania. Larger and duller than *perspicua*, but possibly a form of that species, as *congesta* Led. is supposed to be a form of *albina* Ev.; but neither can reasonably be considered a form of *clavipalpis* Scop. *turbulenta*.

A. grisea Ev. (= *cinerascens* Tengstr.) (45 d). Forewing grey dusted with fuscous and tinged with brown especially along termen; inner and outer lines obscure, with black spots on costa, like the median shade; submarginal line formed of yellowish white spots internally edged with slight rufous marks; the orbicular a small round whitish annulus; the reniform fuscous in lower half, with two whitish dots on inner side and three on outer, as in *clavipalpis*; hindwing white, the apical area and termen to vein 2 brownish. Scandinavia, Finland, the Urals. Resembles *clavipalpis* ab. *leucoptera* Thnbg. with which it agrees exactly in distribution. *grisea*.

A. hispanica Mab. (48 a) Forewing pale grey with black irroration, the termen slightly fuscous; inner and outer lines black, with black spots at costa; the inner oblique and denticulate; subterminal line pale *hispanica*.

with some rufous shading before it; a small round fuscous spot represents the orbicular, and a fuscous lunule the reniform; a fine grey terminal festoon enclosing blackish lunules; hindwing white; the cellspot, the veins and terminal area fuscous. Spain; also recorded from the Hautes Alpes, S. France.

ingrata. **A. ingrata** *Stgr.* (48 c). Forewing greyish white with brown irroration, fuscous-tinged along termen; the black inner and outer lines and the median shade all with black spots on costa; the orbicular stigma a dark spot; the reniform a narrow dark lunule, with white scales on its edges; subterminal line formed of slight white marks internally with fuscous edging; some black terminal points; hindwing white, the termen fuscous from apex to vein 2. Syria and Palestine.

albina. **A. albina** *Ev.* (= *cubicularis* *H. Schöff. nec Schiff.*) (45 d). Forewing pale greyish luteous, darker along termen, except at apex; the lines indistinct, interrupted, starting from black costal spots; subterminal whitish with rufous shading internally; the termen beyond iron grey, with dark, pale-edged terminal dots; orbicular absent; reniform greyish fuscous, with two white dots on inner edge and three on outer; hind-

congesta. wing and fringe pure white; — the ab. **congesta** *Led.* (45 d) has the forewing greyer, irrorated with black, analogous to *leucoptera* the dark form of *clavipalpis*. Mainly an Asiatic species, found in Asia Minor, Persia, W. Turkestan, W. Siberia, and Tibet; in Europe it occurs only in S. Russia and the Urals.— Larva ochreous, marbled with brown; the lines indistinctly paler; the spiracles black.

terrea. **A. terrea** *Frr.* (45 d, e). Forewing pale brownish grey, darker in ♀, slightly dusted with blackish, the termen fuscous; inner and outer lines indistinctly double, with black spots at costa; subterminal line also obscure, pale, defined internally between veins 7 and 3 by small black dentate marks, less conspicuous in the ♀; orbicular stigma small, round, black-edged; reniform narrow, with black edge, a white dot on its inner edge below, one on the outer edge above and two below; hindwing white, the termen dark from apex to vein 2, with diffuse inner edge. The species varies somewhat in depth of coloration; — the form **dubiosa** *Stgr.* has no black dentate marks before the submarginal line; — **ustirena** *Bsd.*,

dubiosa. from S. France, is paler in the forewing, the ground colour being ochreous and the markings less developed; — while in a form from Uralsk, — ab. **pergrisea** *ab. nov.* (45 e) the forewing is dark fuscous grey, the markings obscure, the hindwing more strongly blackish at termen. A South European species, found in S. France, Switzerland, Dalmatia, Germany, Austria, Hungary, and S. Russia; also in Asia Minor, Persia, W. Turkestan, Mongolia, and Amurland. — The larva is pale grey marbled with brown; the dorsal line and segmental incisions whitish; spiracles black; head dark brown; feeding on numerous low plants.

fuscicornis. **A. fuscicornis** *Rmb.* (= *kadenii* *Frr.*) (45 e). Forewing luteous with a slight brownish tinge; the inner and outer lines indistinct, marked by black vein dots, and black costal spots; subterminal line interrupted, formed by whitish striae with rufous dentate marks internally; the termen with black striae; the orbicular a rufous dot; the reniform a rufous lunule with whitish dots round it; hindwing pure white

proxima. in ♂, with some blackish striae along termen, dirty whitish in ♀; — **proxima** *Rmb.* is a paler form with the ground colour of forewing whitish grey; — while **variabilis** *Bell.*, from Corsica only, is likewise paler, but with pinkish yellow irroration. Found throughout Southern Europe, in Spain, S. France, Italy, Corsica, Sicily, Dalmatia, Turkey, and S. Russia; in Asia Minor; Kashmir, Japan, and Corea. Larva greyish brown, with whitish dorsal and dark subdorsal and lateral lines; the head and thoracic plate dark brown; on various low plants.

germainii. **A. germainii** *Dup.* (45 e). Forewing fuscous brown; the markings indistinct; the inner and outer lines from dark costal spots; the subterminal line obscure, but with a deeper shade preceding it; orbicular stigma a diffuse dark spot; reniform a dark lunule, with two white dots on inner edge and three on outer, and at middle of outer side a slight yellowish lunule; the praeapical costal spots yellowish; hindwing brownish. A small species found in Spain and S. France, Sicily, and Algeria.

obtus. **A. obtusa** *Hmps.* (45 e). Forewing ochreous overlaid with reddish brown and fuscous; the inner and outer lines blackish, the inner curved and denticulate, the outer oblique to vein 7, then dentate and incurved; orbicular stigma a black point; reniform cloudy, fuscous, constricted at middle, where there is a slight yellowish spot, with indistinct white dots above and below it; subterminal line marked by a dark shade preceding it; hindwing brownish grey, darker at costa. An Indian species, of wide distribution, occurring in Borneo and Queensland; recorded also from Hongkong.

sincera. **A. sincera** *Swinh.* (45 e). Forewing dull greyish ochreous varied with paler; all the markings cloudy; the subterminal line defined by fuscous internally; orbicular stigma a dark dot; the reniform fuscous, with some white dots round it; hindwing pale ochreous. A North Indian insect, to which specimens from the Goorais Valley, Kashmir appear referable.

pertinax. **A. pertinax** *Stgr.* (= *vicina* *Rom. nec Stgr.*, *morosa* *Alph. nec Led.*). (48 b). Forewing greyish ochreous, suffused with brown terminally; inner and outer lines blackish, indistinctly double, with black spots at

costa; subterminal line ochreous, wavy, indented on both folds; orbicular stigma a brown dot; reniform a brown lunule, with the centre grey; a median shade from a black costal spot; hindwing pure white, the termen brownish from apex to vein 2; — the form *inumbrata* Stgr., from the Taurus Mts., is more *inumbrata*. ochreous, the terminal area of both wings broadly suffused with fuscous; — *melanura* Alph., from Armenia, has the forewing whitish, and the terminal area broadly black; — in *expansa* Alph., from Turkestan, *expansa*. the dark suffusion is scantier and the markings in consequence more distinct. Restricted to Western Asia, occurring in Armenia, Syria, and Asia Minor, in West and East Turkestan.

A. vicina Stgr. (? = *belucha* Swinh.) (45 f). Forewing yellowish white with some brown irroration *vicina*. and the terminal area wholly fuscous brown; inner and outer lines much interrupted, marked by black dots and costal spots; the subterminal line equally obscure but pale; a small round brown spot represents the orbicular stigma; the reniform a small black-edged lunule; median shade distinct from a dark spot on costa; hindwing white with the veins towards termen and the termen itself brownish; in the ♀ the terminal suffusion of forewing is confined to the space before submarginal line; — examples from Syria and Asia Minor, ab. *syriaca* Stgr., are darker, the whole of the hindwing being fuscous; — in *fergana* Stgr., *syriaca*. *fergana*. on the other hand, from Armenia and W. Turkestan, the dark suffusion is less extensive, and the markings more distinct. In Europe this species is found only in Spain and S. Russia; in Asia it occurs in Armenia, Syria, Persia, and Asia Minor, and in W. and E. Turkestan.

A. paupera Christ. (45 f). Forewing glossy greyish white, with brownish suffusion deepening out- *paupera*. wardly; the lines and markings all indistinct and undefined; the two stigmata fuscous, the orbicular round, the reniform elliptical; hindwing brownish white, the fringe white. From Armenia and Turkestan. Somewhat resembling the next species, *morpheus*.

A. morpheus Hüfn. (= *pulla* Beckw., *sepia* Hbn.) (45 f). Forewing dull dark fuscous with a greyish *morpheus*. tinge; inner and outer lines obscure, double, the arms far apart; subterminal line grey, with dark suffusion on inner side; orbicular and reniform cloudy fuscous, the latter with a slight fulvous stain on its outer edge at middle; hindwing dull whitish; the cellspot, the veins towards termen, and a slight subterminal line grey. Throughout Europe, except Spain and Scandinavia; Armenia, Turkestan, Amurland, Corea. Larva greyish brown or dark brown; dorsal line paler, with dark irregular edges; a subdorsal row of blackish sagittate markings; spiracular line darker; head brown with dark speckling; on low plants and shrubs.

A. funesta Stgr. (= *lugubris* Graes., *squalida* Leech) (45 f). Forewing dull fuscous brown mixed with *funesta*. some grey; inner and outer lines blackish, conversely edged with grey; subterminal grey with slight fuscous shade before it; orbicular a small rather oblique elliptical black spot edged with grey; reniform a small black lunule externally grey-edged; hindwing fuscous. Amurland and Japan.

A. gluteosa Tr. (= *uliginosa* Bsd., *grisescens* Pobj.) (45 f, g). Forewing dark brown, smooth; inner *gluteosa*. and outer lines black; the former wavy, oblique, approximated to base; the outer lunulate-dentate, the teeth forming points on the veins; the subterminal line pale, defined on inner side by dark; orbicular stigma a dark dot; reniform small, with dark outline; hindwing dull whitish washed with brown, especially along termen. Found in Belgium, Germany, Austria, Hungary, Switzerland, and S. Russia; Armenia, W. and E. Turkestan, Mongolia, Tibet, Amurland, Corea, W. China. Larva grey; dorsal and subdorsal lines pale but indistinct, with oblique dark streaks between them; on low herbage.

A. aspersa Rmbr. (= ? *anceps* H. Sch.) (45 g). Forewing whitish grey washed with pale brown, *aspersa*. and dusted with darker; inner and outer lines indistinct, from black costal spots, the inner obliquely sinuous, the outer double and dentate; the subterminal a series of white points defined inwardly by fuscous; orbicular a brown point; reniform a narrow lunule, brown-edged, with whitish scales on inner and outer sides; hindwing white, the termen greyish brown; fringe white. Occurs only in Southern Europe, S. France, Switzerland, Italy, Sicily, Austria, and Hungary, Armenia, Syria, Asia Minor.

A. maurella Stgr. (45 g). Forewing dark brown with a cupreous gloss and dusted with grey; inner *maurella*. and outer lines blackish; only the reniform stigma present as an ill-defined blackish spot; submarginal line faintly paler; hindwing pale brownish. Amurland.

A. gilva Donz. (45 g). Forewing whitish with dark grey irroration; inner and outer lines dark, *gilva*. with black costal spots, and conversely pale-edged; subterminal whitish, faint; orbicular small and round, with hardly traceable outline; reniform an indistinct fuscous lunule; hindwing whitish; the veins, costa,

area, and termen tinged with pale brown. A local species, occurring in the Alps of France and the Tyrol, in the Engadine, Switzerland, and in Spain.

fixseni. **A. fixseni** *Christ.* (48 d). Forewing pale yellow; inner and outer lines redbrown, starting from small black costal spots; reniform stigma only present, small, defined by black, with a dark point at centre; submarginal line with dark suffusion on inner side, more prominent at costa where there is a pale point on it; a row of black dots along termen; hindwing yellowish white, the terminal area reddish brown; the fringe white; in the ♀ the inner and outer lines are stronger; the reniform is a dark lunule, beyond a diffuse reddish median shade starting from a black spot on costa. Armenia, Palestine, W. Turkestan.

casaria. **A. casaria** *Stgr.* Forewing yellowish white; the lines and markings subobsolete; the inner lines quite absent; the outer very indistinct, rufous; subterminal line marked by diffused brown scales; a terminal row of black points; orbicular and reniform stigmata represented by a small round rufous spot and a slight rufous lunule respectively; hindwing pure white. Palestine.

melanurina. **A. melanurina** *Stgr.* (45 g). Forewing ochreous white; the costal edge at base fuscous; inner and outer lines both indistinct; the inner minutely waved, with a black spot at costa; the outer irregularly waved, also from a black costal spot; terminal area blackish, with a fine white line at base of fringe; hindwing white, the terminal area fuscous except at apex and tornus; fringe fuscous with white basal line. Palestine.

72. Genus: **Prometopus** *Guen.*

Tongue developed; palpi obliquely porrect, the third segment horizontal; frons with short truncate conical prominence, with raised rim and corneous plate below it; antennae of ♂ lamellate and pubescent; thorax with slight crests; abdomen without crests; forewing narrow, the apex rectangular, the termen slightly insinuate below it and excurved below middle; forewing without areole, veins 7, 8, 9, 10 being stalked; 6 from below upper angle; in the hindwing both 3, 4 and 6, 7 are shortly stalked. Type *Prometopus inassueta* *Guen.* from Australia.

flavicollis. **P. flavicollis** *Leech.* (48 d). Forewing olive yellow dusted and suffused with black brown, the inner area below submedian fold reddish brown; a thin black streak from base below cell; inner and outer lines double, filled in with yellowish, fading out before inner margin; subterminal line oblique and whitish towards costa, then becoming indistinct, with black suffusion on each side, obsolescent towards inner margin; a blackish line along termen with white scaling before it; the reniform stigma alone present as a white patch extending to costa, defined on the sides by black above, excised at middle, and with a dark mark on lower edge; hindwing brownish grey. Japan.

73. Genus: **Acosmetia** *Stph.*

Build slender; the wings weak; tongue developed; palpi shortly upcurved, smoothly scaled; frons with a slight rounded prominence; antennae of ♂ with short ciliations; thorax and abdomen without crests; wings broad, the termen evenly curved. Larva of the type species feeding on low plants. Type *Acosmetia caliginosa* *Hbn.*

caliginosa. **A. caliginosa** *Hbn.* (= *litorea* *Frr.*, *stagnicolor* *Dup.*, *tristis* *Teich.*) (45 g, h). Forewing brownish grey frosted with paler dusting; the inner and outer lines dark, the inner outwardly curved; the outer waved and dentate, indented above and below middle, the teeth forming a second line beyond the first; stigmata pale, very obscure; a pale waved submarginal line inwardly shaded with brown; hindwing silky grey, darker towards termen; — the form **aquatilis** *Guen.*, from Asia, is paler, the forewing yellowish grey. A very local species, found in Britain, France, Germany, Austria, Hungary, Switzerland, N. Italy, the Balkans and Russia, Spain and Scandinavia; in Asia recorded from the Ural Mts., Ala Tau, W. Turkestan and the Altai Mts., W. Siberia. Larva sap green with the segmental incisions yellow; the lines white, slender; feeding on low plants, in autumn, the imago emerging in June.

arida. **A. arida** *de Joann.* (48 d). Forewing ochreous with redbrown irroration; inner and outer lines black, the inner excurved, the outer oblique to vein 6, then inwardly oblique; the median area irrorated with black scales, especially in cell and with traces of a median shade; submarginal line very obscure, ochreous; fringe white; hindwing and fringe pure white. Mokattam, Egypt. Much smaller than the type species.

74. Genus: **Petilampa** *Auriv.*

Tongue small, aborted; palpi porrect, the second segment hairy below, the third smooth and slender; frons smooth; antennae of ♂ shortly ciliated; thorax and abdomen without crests; the ♂ of slender build with ample wings; the ♀ stouter with the wings much smaller. Larva, as far as known, in the lower parts of stems of grasses, hibernating small and feeding up in spring. Type *Petilampa minima* Haw.

P. minima Haw. (= *arcuosa* Haw., *duponchelii* Bsd., *airae* Frr. (45 h). Forewing pale ochreous, *minima*. slightly dusted with darker, and washed with pale ochraceous; the median area in ♀ usually a little deeper-coloured, especially in lower half; inner and outer lines fine, obscure, conversely lunulate-dentate, the teeth produced along the veins, sometimes paler-edged, generally marked only by vein-dashes; sub-terminal line faint, preceded by a diffuse dark shade, forming a patch at costa; hindwing ochreous, suffused with grey, thickly towards termen, with traces of a dark outer line; some specimens are more strongly suffused with ochraceous or rufous; these constitute the aberration **lutescens** Haw. (45 h). The *lutescens*. species, as far as is known, has only a restricted range, being found only in Britain, Denmark, France, Germany, Austria, and Switzerland. Larva ochreous, sometimes pinkish, with darker transverse bars at the segments; dorsal and subdorsal lines paler; head brown; thoracic plate paler brown; feeds in the base of the stems of *Aira caespitosa*.

P. palustris Hbn. (= *lutea* Frr., *luteola* Frr., *exilis* Ev.) (45 h). ♂ Forewing dull grey brown, somewhat sparsely scaled; inner and outer lines slightly darker, indistinct; orbicular stigma an elongate dark point; reniform a narrow dark lunule; submarginal line faint, preceded by a dark shade, stronger at costa; hindwing paler fuscous; the smaller ♀ has the wings much darker, brownish fuscous, — the form **aboleta** Guen., from Norway and Lapland, is decidedly paler, the forewing more ochreous with less distinct markings; the hindwing whiter; — **melanochroa** Stgr. from Amurland is much darker fuscous in both sexes; — **sajana** Hmps. is a greyer form. Occurs throughout Europe except in the extreme south; also in Armenia, Mongolia, E. Siberia, Amurland, and Kamschatka. Larva brownish; dorsal line whitish; head black: said to feed on Plantago, but more probably like *minima* in stems of a grass. *aboleta*. *melanochroa*. *sajana*.

75. Genus: **Dysmilichia** *Speiser.*

Tongue well-developed; palpi short, obliquely porrect, the second segment hairy; frons with truncate conical prominence with raised rim and a corneous plate below it; antennae of ♂ typically ciliated; thorax and abdomen without crests; Type *Dysmilichia gemella* Leech.

Sect. II. Antennae of ♂ ciliated.

D. gemella Leech (45 h). Forewing rufous brown on a yellow ground; subbasal line indicated by three obliquely placed yellow dots; inner line accompanied by a yellow striga from costa and four obliquely placed white spots to inner margin; outer line outcurved above and incurved below middle, traversing a double series of elongated white spots with dark edges; submarginal line dark, accompanied by a whitish striga from costa and another from inner margin; orbicular stigma pure white, round, with black ring; reniform white irrorated with brown and with a brown central line, outlined with black; hindwing yellowish white washed with brown; the terminal area darker, especially towards apex. From E. Siberia, Japan, and Corea. *gemella*.

Sect. III. Antennae of ♂ simply lamellate.

D. bicyclica Stgr. Forewing dull brown sprinkled with white scales, most thickly at base and along costa; inner and outer lines thick, dark brown, conversely edged with whitish; the inner vertically waved; the outer oblique outwards to vein 6, then dentate-lunulate and incurved below middle; orbicular and reniform stigmata brown with white annuli, the former round, the latter 8-shaped; submarginal line waved, indistinct, except at costa and inner margin, where its course is marked by white scales; hindwing pale brown. Only from Ili and Kuldja, E. Turkestan. *bicyclica*.

76. Genus: **Proxenus** *H.-Sch.*

Tongue present; frons smooth; palpi obliquely porrect, the second segment moderately scaled, the third short; antennae of ♂ ciliated; thorax and abdomen both without crests; mid and hind tibiae

of ♂ with fringes of hairs on outer side; abdomen with lateral fringes of hairs on the basal segments; forewing long and narrow; the termen smooth and evenly curved. Type *Proxenus hospes* Frr.

hospes. **P. hospes** Frr. (= *uliginosa* H.-Sch. nec Bsd., *lepigone* Roesel nec Moeschl.) (48 d). Forewing glossy ochreous washed with rufous, the veins grey dotted with dark; lines obscure; the inner waved, toothed with black points inwards on the veins; outer line dentate lunulate with black and grey points on the veins; orbicular a blackish point; reniform a small dark lunule, from which an ochreous streak runs to termen above vein 5; terminal spots black; hindwing whitish with the apical area brownish; the tufts of hair on tibiae and abdomen yellow. Occurs in South Europe only; Spain, S. France, Italy, Sicily, Dalmatia. Larva greyish yellow, whitish beneath; dorsal line whitish; subdorsal and spiracular lines redbrown; spiracles yellow ringed with black; head brown; on plantain and low growing herbage.

dissimilis. **P. dissimilis** Hmps. (45 i). Forewing glossy brown with grey and dark brown speckling; inner and outer lines double, indistinct; the outer followed by dark streaks on the veins to submarginal line, which is grey with a dark shade preceding it; a terminal row of black points alternating with white; orbicular stigma a dark point; reniform a small lunule defined by brown; hindwing white, the termen from apex to vein 2 tinged with brown; the tufts of hair on tibiae and abdomen whitish. Occurs in Japan, as well as in India, Borneo, and the Philippines.

77. Genus: **Radinogoes** Btlr.

Differs from *Proxenus* in the palpi being stouter and upturned in front of face; the tibiae and abdomen without tufts of different-coloured hair; veins 3, 4 and 6, 7 of hindwing short-stalked.

Type *Radinogoes tennis* Btlr. from Australia.

distracta. **R. distracta** Ev. (45 i). Forewing whitish densely irrorated with brown; inner and outer lines brown, the inner oblique and waved, toothed inwards on the veins; the outer dentate, with dark points on the veins defined externally by whitish; subterminal whitish with brown suffusion before it; orbicular stigma round, brown ringed with white; reniform brown, defined by whitish dots, constricted at middle; a terminal row of black and white spots; hindwing ochreous white; a dark cellspot and series of terminal marks. Described from the Ural Mts. in Russia; also found in Mongolia and Amurland.

lepigone. **R. lepigone** Moeschl. (45 i). Forewing grey brown overlaid with rufous and fuscous, the veins slightly streaked with darker; traces only of dark inner and outer lines; orbicular stigma a black point; reniform a diffuse dark spot, with white point on its outer edge; hindwing white flushed with grey. Found only in Hungary and at Sarepta in S. Russia.

cinerea. **R. cinerea** Alph. (48 d). Forewing pale brownish grey with whitish irroration; outer line dark, externally followed by whitish, and by dark streaks on the veins; subterminal line sinuous and faint; a terminal series of dark dots; the inner lines and stigmata rarely visible; hindwing white with the veins and termen fuscous. Known only from W. and E. Turkestan. Perhaps a form of *tristis*.

tristis. **R. tristis** Brem. (45 i). Forewing ochreous white, suffused and dusted with brown, except the costal area which is whiter; no subbasal line and but faint traces of the inner; the orbicular stigma a small elongate black spot in cell, the reniform represented by small black lunules on inner and outer sides; outer line obscure, dentate below middle; no subterminal; terminal points faint; hindwing white with brown veins; a fine dark terminal line; **lugens** Stgr. is a darker form. Amurland, E. Siberia, and Kashmir.

78. Genus: **Haemassia** Hmps.

Tongue aborted, minute; frons with large rounded protuberance; palpi porrect, long, the second segment slightly scaled, the third small; antennae bipectinate in both sexes, the branches shorter in the ♀; thorax with slight crests in front and behind; abdomen without crests. Larva on flowers of low plants in spring. Type *Haemassia renalis* Hbn.

renalis. **H. renalis** Hbn. (= *renigera* Dup., *renifera* Frr.) (45 i). Forewing ochreous tinged with blood-red, the median area darker; inner and outer lines blood-red, conversely edged with white, the inner waved and nearly vertical; the outer nearer to inner line than usual, not strongly excurved; reniform stigma

alone represented, a narrow silvery white lunule edged with deep red; subterminal line reddish, nearly straight, but very obscure; fringe deep red with dark dividing line; hindwing ochreous tinged with blood-red; a fine terminal line deep red. In Europe only in the south of France; Asia Minor, Syria, W. Turkestan. Larva yellow green, spotted with red; on flowers of *Lactuca sativa* and *Chondrilla juncea*.

79. Genus: **Galgula** *Guen.*

Tongue developed; frons smooth, with a tuft of hair above; palpi upturned, the second segment long and curved, fringed with scales in front, the third porrect; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests except a slight one at base of abdomen; forewing with apex produced, subacute. Type *Galgula partita* *Guen.* from North and Central America. An American genus, of which one species, the type, has crossed the Atlantic and established itself in the Azores, the Canaries, and Madeira, and possibly Spain.

G. partita *Guen.* (= *hepara* *Guen.* ♀, *subpartita* *Guen.*, *ferruginea* *Walk.*, *externa* *Walk.*, *vesca* *Morr.*, *partita* *sorex* *Moeschl.*, *bias* *Druce*, *hippotamada* *Druce*, *mandane* *Druce.* (50 a). Forewing rufous grey; the veins pale; inner line obscure, whitish, with dark points on it at costa and on subcostal vein, angled outwards in submedian fold, then oblique; outer line whitish, inwardly defined by red-brown, bent outwards below costa, then oblique, indented on vein 2; followed by a series of black points on the veins; subterminal line whitish, indistinct, preceded by some redbrown shading; orbicular and reniform stigmata defined at sides by whitish; the former elliptical, the latter preceded by a dark patch from costa to the cellfold; hindwing whitish, suffused with brown in terminal half; in the ♀ the head, thorax, and forewings are dark redbrown, the markings of the wing rendered indistinct; hindwing dark brown; the form **baueri** *Stgr.*, queried from Andalusia, is paler, the forewing being yellowish grey, without any brown and rufous tint.

80. Genus: **Balsia** *Walk.*

Tongue developed; frons smooth with a tuft of scales above, and a ridge of scales between the antennae; palpi porrect, long, the second segment hairy above and below, the third short; antennae of ♂ bipectinate; the thorax and basal segment of abdomen with slight crests. Larva of the single species feeding on apple, and forming a tube to pupate in out of a leaf drawn together by silk. Type *Balsia malana* *Fitch* from N. America. Another American genus, of which the type has established itself in the Palaearctic region, in this case in the East of Asia.

B. malana *Fitch* (= *obliquifera* *Walk.*, *leodura* *Stgr.*). (48 d). Forewing blue grey tinged with brown except *malana*. along costa, the veins towards termen slenderly black; inner and outer lines finely black, acutely angled on the veins; orbicular stigma a black point on a faint whitish mark; reniform an obliquely curved black line on discocellular, touching an oblique wedge shaped black streak from costa with a whitish striga on it; submarginal line pale, but very indistinct; hindwing brownish grey. Occurs in Amurland and Japan, as well as in Canada and N. America. Larva pale green, dotted with white, and with 5 white lines; on apple, forming a tube of a leaf, and hence mistakenly described, in the first instance, as a *Tortrix*.

81. Genus: **Psilomonodes** *gen. nov.*

Tongue well-developed; palpi upturned, slender, rather long, the terminal segment generally well-developed; frons smooth; antennae of ♂ typically ciliated; thorax and abdomen with very slight crests. Underside of both wings without rough hair. A genus of small sized insects, mainly American, referred by Hampson to Guenée's genus *Monodes* in which one or both wings are clothed on the underside with rough scales. Type *Psilomonodes agrotina* *Guen.*

Sect. III. Antennae of ♂ ciliated only.

P. albiviata *Hmps.* (45 i). Forewing pale ochreous, the costal area browner; a broad oblique *albiviata*. yellowish streak from apex to end of cell, below which the terminal area is brown, traversed by the subterminal line consisting of small white lunules preceded by dentate black marks; inner and outer lines hardly traceable, the outer only in its lower half; orbicular stigma pale with white annulus defined by brown, emitting a curved white streak from its lower extremity below end of cell; the cell beyond it brown and the reniform absent; a short black streak from base below cell; hindwing whitish, with fine dark terminal line. A single ♂ from Changyang, W. China.

venustula. **P. venustula** *Hbn.* (= *hybnerana F.*) (45 i). Forewing white, the basal half tinged with dull pink; inner and outer lines double, grey, waved, their inner and outer arms respectively thicker and duller, those enclosing the median area darker and thinner below middle, each preceded by an irregular brownish shade; a broad oblique white streak from apex, interrupting a brown praesubmarginal shade, which is again interrupted above inner margin; submarginal line undefined except at middle where it is preceded by a brown shade containing 2 or 3 black marks the terminal area beyond it and the fringe uninterruptedly brown; claviform stigma grey edged with white; orbicular absent, its place taken by a black semicircular blotch on median vein from which black scales run down through the brown shade; reniform obscurely marked, pale grey inwardly, with some black scales externally touching outer line; hindwing whitish, tinged with brownish grey towards termen; a grey cellspot and outer line. A local species, occurring in heathy places in woods; Britain, France, Spain, Switzerland, Germany, Austria, Hungary, Roumelia, S. Russia; and in Asia in Armenia, Transcaucasia, Persia, West and East Siberia. — Larva purplish brown; the dorsal line indistinctly paler; 4th segment with a pale spot at sides; head brown; said to feed on flowers of *Potentilla reptans*: difficult to breed in captivity.

82. Genus: **Condica** *Walk.*

Tongue present; frons smooth; palpi upturned, stout, the second segment rough haired below, the third smooth; thorax and base of dorsum with slight crests; the vertex and frons tufted with hair; the abdomen of ♂ with lateral tufts of hair; pectus and femora hairy; antennae of ♂ slightly pubescent; neuration normal. Type *C. eupentia Cram.* from America.

siderifera. **C. siderifera** *Moore* (45 k). Forewing purplish brown or purplish fuscous; the lines black and double, both strongly waved and conversely lunulate-dentate; submarginal line interrupted into spots, preceded by black wedge-shaped marks and followed by slighter ones; claviform stigma large, subquadrate, filled up with brown black; upper stigmata of the ground colour, the reniform on its outer side marked with a large conspicuous snow white spot with a smaller dot above and two below; hindwing dark fuscous brown. A North Indian species, occurring throughout W. China.

connivens. **C. connivens** *Feld.* (= *quadrisigna Moore, placida Moore*) (45 k). Forewing pale grey with a slight lilac or olive tinge; the lines as in *siderifera*, but indistinct; claviform stigma small, brownish edged with black, the inner line, where it touches, black; upper stigmata obscure, separated by a dark quadrate space; fringe grey; hindwing grey, browner towards termen and paler towards base, darker in the ♀; the fringe white. Also an Indian species, and found in S. Africa, but recorded from Kashmir. Smaller and much paler than *siderifera*.

confundens. **C. confundens** *Walk.* (= *macrostigma Snell.*) (45 k). Forewing varying from fuscous brown to grey, the ♂ generally greyer than the ♀; intermediate between *connivens*, which is paler grey, and *siderifera*, which is much darker; the lines and markings similar; claviform stigma large and black, especially in the ♂, the outer edge of the dark blotch between the upper stigmata in a line with its own outer edge; reniform stigma with a bluish white spot accompanied by dots, as in *siderifera*, but never so prominent; sometimes only the white dots present, or all obsolete; hindwing of ♀ brown, of the ♂ grey, whitish towards base. Another Indian insect, recorded from Kiukiang, Central China. Its various forms seem restricted to Indo-oriental localities.

83. Genus: **Prospalta** *Walk.*

Differs from *Condica Walk.* in its less robust structure, the thorax and abdomen being narrower, and in the broader forewings; the dorsum is without lateral tufts, and the pectus and femora less hairy; as to markings, the forewing is dark with pale lines and stigmata, formed, in the more typical species, of conspicuous white dots, and is always without the large black claviform stigma of *Condica*. Type *P. leucospila Walk.* from India.

siderca. **P. siderca** *Leech* (45 l). Forewing deep olive-brown, the lines darker but obscure, all marked by round white dots; 6 or 7 close to base represent the subbasal line; claviform stigma a large white dark-edged spot on submedian fold; orbicular a central white dot with 4 others arranged quadrately round it, the outer two with a smaller dot between them; reniform large, formed of 2 curved rows of large white spots, with two between them sometimes united to form a lunule; the white spots of the inner and outer

lines uniform in size, those of the inner line small, and obscure, 5 in number; those of the outer larger, and more distinct, 12 in number; spots of the submarginal line distinct, those on the folds larger; a marginal series of white dots between the veins, and of larger spots at their ends at base of fringe; hindwing fuscous with darker cellspot and outer line, and some white scales at termen on submedian fold. From various localities in W. China.

P. contigua *Leech* (45 l). Distinguished from *siderea* by the orbicular stigma being one large round *contigua*. white spot instead of a group of 6 small ones; on the other hand the claviform stigma, which in *siderea* is represented by the largest spot of all, is a small white spot; the spots at the base of wing are reduced in number. Also from W. China. The metathoracic tuft is wholly white, instead of being dotted with white as in *siderea*.

P. cyclica *Hmps.* (45 l). Smaller than the two preceding species; the ground colour more mixed *cyclica*. with paler brown; the orbicular stigma a round white ring with dark centre; the spots on costa at ends of inner and outer lines swollen; the submarginal line wavy and whitish, preceded by a deeper shade of brown, and not represented by spots at all; the metathoracic tuft whitish. Yokohama, Japan.

P. parva *Leech.* (45 l). Forewing redbrown, irrorated with whitish ochreous; the base of inner margin *parva*. yellowish; inner line marked by a white spot on costa and a yellow one on inner margin and slight points on the veins between; outer line followed by yellowish lunules, the teeth white-dotted on the veins; submarginal line a row of small white spots, those on vein 5 and the submedian fold larger in size; orbicular stigma dark, with one white dot on inner side and two on outer; reniform a yellow spot surrounded by white dots; hindwing greyish, darker along termen, with dark cellspot and outer line; in ♀ more uniformly dark. Changyang, W. China.

P. atricuprea *Hmps.* (45 l). Forewing glossy black brown irrorated with white scales; inner and outer *atricuprea*. lines black, the former wavy and oblique, with white scales before it, the latter dentate, with a white striga at costa; submarginal line indistinct, dark, with a white costal striga; orbicular and reniform defined by black, the former round, the latter with a distinct white lunule on outer edge, somewhat bent inwards on median vein; hindwing greyish fuscous, with dark cellspot and outer line; some whitish along termen across submedian interval. Yatong, Tibet.

P. galaxia *Btlr.* (18 k). Like *atricuprea*, but brownish fuscous dusted with pale; the lines and *galaxia*. markings blackish; inner and outer lines conversely lunulate-dentate, the teeth marked with white dots; orbicular stigma of the ground colour with black outline; reniform narrow, white, with some black dots and a lunule inside; subterminal line whitish, wavy, with 3 deeper and whiter indentations, one below costa, the others on each fold, the area before it darker; marginal line of black lunules; hindwing as in *atricuprea*. Occurs in the Goooris Valley, Kashmir, but originally described from the Punjab, N. W. India.

P. dolorosa *Walk.* (= *taprobanae* *Feld.*, *albomaculata* *Semper* nec *Moore*) (18 k). Forewing fus- *dolorosa*. cous; the lines and markings dark, accompanied by ochreous scales; inner and outer lines conversely lunulate-dentate, the inner preceded by ochreous markings, the outer followed by ochreous lunules and black and white dots on veins; submarginal line formed of ochreous white spots preceded by black teeth; hindwing brownish grey, the veins and terminal border dark fuscous. — Larva brown, feeding on *Conyza balsamifera*. — Recorded from Kiukiang, Central China; originally described from Ceylon; it is a widely spread tropical species.

P. capensis *Guen.* (= *apameoides* *Guen.* part) *conducta* *Walk.*, *serva* *Walk.*, *pauperata* *Walk.*, *capensis*. *prodata* *Walk.*, *inexacta* *Walk.*, *canorufa* *Walk.*, *illecta* *Walk.*, *leonina* *Walk.*, *spargens* *Walk.*, *funesta* *Walk.*, *centralis* *Moore* nec *Walk.*, *meleagris* *Saaln.*) (18 k). Forewing fuscous on a rufous ground, dusted with grey along costa, below and beyond lower angle of cell, and along termen; the veins dark; inner and outer lines conversely lunulate-dentate, the teeth marked by black and white points, the lunules yellow; subterminal line whitish, dentate, preceded by small tooth shaped black spots; claviform stigma small, outlined in black; orbicular small, constricted in middle, the centre brown and ring pale; reniform with centre yellowish in upper half, white in lower, this lower lobe surrounded with small white dots outlined in black; hindwing dull white, the veins and termen suffused with brown, or wholly brown in ♀. — Larva smooth, pale green, the anal segment humped; a series of purplish brown dorsal and lateral blotches dappled with white; a sublateral series of white dots; pupa greenish, with the segmental incisions reddish; said to feed on species of *Acanthus*. This widely spread insect occurs throughout Africa, India, and Malaysia, a fact which is perhaps partly accountable for its persistent synonymy; in the palaeartic region it is recorded from China and Tibet (Yatong).

griseata. **P. griseata** *Leech*. Forewing greyish fuscous, with some whitish dusting, which is strongest towards base and along costa and termen; inner and outer lines indistinct, black, conversely dentate-lunulate and defined by whitish; orbicular stigma round, with incomplete whitish ring; reniform with small white lunule in centre, and a white annulus constricted in middle; subterminal line diffusely white, in bent on the two folds; hindwing fuscous brown. West and Central China.

fuliginosa. **P. fuliginosa** *Leech*. (18 k). Forewing dark blackish brown; the markings obscured; inner and outer lines black, conversely lunulate-dentate; orbicular stigma small, round, with dark centre and outline and a pale ring; reniform constricted at middle, with some white scales in centre and white points on annulus; subterminal line wavy, indistinct; hindwing fuscous brown. Described by *Leech* from a single ♀ from Nagasaki, Japan.

84. Genus: **Scioptila** *gen. nov.*

Distinguished from *Condica* by the ♂ having a small fovea in the end of cell of forewing; the forewings broad with dull markings. Type *Scioptila eriopoda* *H. Schäff.*

eriopoda. **S. eriopoda** *H. Schäff.* (= sareptae *Guen.*) (47 a). Forewing glossy fuscous, with a reddish reflection, dusted with blackish and a few paler scales; inner and outer lines black, fine, marked darker on costa and conversely edged with paler; the inner oblique and slightly wavy, the outer nearer inner than usual, less widely outcurved round the cell, followed by white points on veins; median area darker; reniform stigma diffusely dark with a wavy pale outer edge which lying exactly beneath the origin of outer line appears to form a line with it, submarginal line very indistinct except towards costa where it is preceded by a much darker shade; hindwing bronzy fuscous. A rare and local species, found in Bulgaria in S. E. Europe, in Cyprus, Asia Minor and Syria.

85. Genus: **Perigea** *Guen.*

Tongue present; frons smooth; palpi upturned, smoothly scaled; the second segment fringed with scales below; antennae of ♂ with short fascicles of cilia; thorax smoothly scaled; metathorax and basal segments of dorsum shortly tufted; termen of forewing strongly crenulate dentate towards tornus. Larva smooth, with a hump on segment 11; feeding on low plants. The genus is essentially tropical.

spicea. **P. spicea** *Guen.* (47 a). Forewing ochreous tinged in parts with rufous brown, the costal area remaining paler; inner and outer lines very indistinct, the inner curved and marked with brown at costa, the outer followed by black and white vein points; inner margin between the lines with white scales; orbicular and reniform stigmata pale ochreous, the former round with dark dot at centre, the latter 8-shaped, with a dark 8 inside, formed of dots; a rufous curved shade from apex broadening downwards to anal angle and touching with its inner edge the reniform stigma, at which point there is a black spot; the shade is blackened at anal angle, the black running out into the fringe; hindwing ochreous tinged with brown, the terminal area darker from apex to submedian fold in ♂, the whole wing brownish in ♀; in **pyrochroma** *Walk.* (47 a) the head, thorax, and forewing are much redder; — **firina** *Swinh.* (47 a), has the forewing suffused with dark redbrown instead of rufous. Larva pink, dorsal area covered with small white spots; dorsal and subdorsal lines white; spiracular stripe broad, pale yellow; head greenish. Originally described from Java, this Indian species is recorded also from Ship-y-Shan, Central China.

potiomera. **P. potiomera** *Hmps.* (47 a). Forewing ochreous, tinged in places with rufous; the subcostal area through cell to apex pale, becoming white at apex; a large whitish patch on inner margin, not quite reaching base or tornus, limited above by the median vein and vein 2; terminal area beyond outer line redder, limited above by an oblique streak from below apex; inner line obscure; stigmata as in *spicea*; also the black patch below lower angle of cell; outer line wavy and dentate, bent out to inner margin beyond the white patch; submarginal line wavy, interrupted; a patch of black scaling at anal angle running out into the red fringe; hindwing pale brown, darker towards termen; fringe rufous brown. Recorded from Ichang, Central China; originally described from Assam, N. India, and occurring in Hainan.

86. Genus: **Hadjina** *Stgr.*

Tongue well-developed; frons smooth; palpi obliquely upturned, the second segment loosely scaled, the third short and smooth; thorax and abdomen slightly crested, the latter only on basal segment; forewing broad, the apex blunt, the termen evenly curved. A genus mostly of dull coloration, in appearance resembling *Perigea*, with which it seems connected. Type *Hadjina lutosa* *Stgr.*

Sect. I. Antennae of ♂ lamellate only.

H. radiata *Leech*. Forewing ochreous suffused with rufous brown, the suffusion darker in and below *radiata*. cell and along terminal area; costal area dusted with pale grey; the veins slightly blackish; inner and outer lines darker, double, filled in with paler, the inner waved, the outer lunulate-dentate, the teeth forming black and white points on the veins; subterminal line pale, more or less interrupted into spots, with dark suffusion on both sides; a series of black marginal lunules; claviform stigma narrow, its extremity black; orbicular and reniform with pale annuli edged with black, and their centres blackish; hindwing brown darker towards termen: a grey cellspot. Described from ♂♂ only, from Pu-tsu-fong, W. China.

Sect. II. Antennae of ♂ ciliated.

H. biguttula *Motschl.* (47 a). Forewing dull fuscous brown with slight darker irroration; inner and outer *biguttula*. lines very indistinct, the inner waved and filled in with whitish, the outer defined by whitish scales at extremities; submarginal line also obscure, preceded by a darker shading and with a pale spot beyond it at costa; orbicular stigma a white point, reniform a white lunule, both brownish-edged; hindwing brownish grey, darker towards termen. Japan and Corea.

H. illustrata *Stgr.* (= *albopicta* *Graes.*) (47 b). Forewing pale rufous, the cell and costal area deep *illustrata*. cupreous brown sprinkled with white scales, the terminal area cupreous brown and blackish; veins darker; terminal interspaces with redbrown streaks, that above vein 3 reaching cell; inner line undefined, whitish, obliquely waved; outer line marked by white vein-dots; subterminal absent; orbicular stigma small, round, pale with a white ring; reniform white, defined below by a black and white annulus which is interrupted above; hindwing brownish white, the veins and termen darker. Amurland only.

H. chinensis *Wlgnrn.* (= *mandarina* *Stgr.*, *sareptae* *Graes.* nec *Guen.*, *pulverea* *Leech*) (47 b). Fore- *chinensis*. wing redbrown dusted with grey; the veins finely dark; inner and outer lines double, dark filled in with whitish; the inner waved, the outer with a conspicuous white striga at costa, dentate below, the teeth forming black white-tipped dashes on the veins; subterminal line white, with a deeper suffusion before it; orbicular and reniform stigmata undefined, with diffuse pale annuli; marginal black dashes between the veins with white dots at their ends; hindwing pale brown; the fringe pale. Amurland, Corea, China, Kashmir, and in N. India.

H. wichti *Hirschke* (47 b). Forewing dark olive-brown, irrorated with black; inner and outer lines *wichti*. black, conversely white-edged; the submarginal line white, preceded by a dark shade with dentate outer edge; stigmata brown, with white annuli; the orbicular small, round; the reniform large; fringe with a series of white points at base; hindwing fuscous brown, much darker at termen. Recorded only from Spain.

H. lutosa *Stgr.* Forewing rufous ochreous, with dense brown irroration; inner line pale, waved, *lutosa*. toothed inwards on the veins; outer lunulate-dentate, outwardly edged with yellowish; subterminal line also yellowish, preceded by some brown suffusion; a terminal series of small brown lunules; stigmata defined by brown; the orbicular yellowish with dark point at middle, round; reniform obscure, with brown centre, preceded by a diffuse brown median shade; hindwing reddish brown, paler towards base, with cellspot and traces of outer line. From Mardin, Syria, and Taurus Mts., Asia Minor; examples from the latter locality being described as greyer, more suffused with fuscous.

H. beata *Stgr.* (47 b). Forewing rufous ochreous dusted with darker rufous; lines hardly visible, *beata*. faintly paler; the outer with some dark points on veins; subterminal line paler, with a darker, dentate-edged shade before it; stigmata faintly defined by whitish; the orbicular small, round; the reniform constricted at middle, and with a dark spot in lower end; hindwing pale rufous whitish. A small species, from W. and E. Turkestan only.

H. viscosa *Frr.* (= *implexa* *Tr.*) (47 b). Forewing dull greyish redbrown; the lines and edges of *viscosa*. the stigmata marked indistinctly by a few pale scales; hindwing reddish brown, darker in the ♀. Recorded from Spain, Sicily, and the Canary Islands, and from Syria.

H. palaestinensis *Stgr.* (47 b). Forewing dull grey brown; with darker suffusion in parts; inner line *pala-* *stinensis*. dark, double, obliquely waved; outer line double, filled in with whitish, almost straight, not incurved below middle; submarginal line obscure, defined by the deeper shade preceding it; orbicular and reniform very faint, the latter a pale diffused lunule, lying on a dark median shade; hindwing whitish, the veins dark; the terminal border broadly fuscous; the fringe pale; in the ♀ the whole hindwing is brownish. Palestine.

H. ferruginea *Hmps.* (47 b). Forewing ochreous washed with bright rufous and dusted with dark *ferruginea*. grey; inner and outer lines blackish, thick, accompanied by paler; the inner obliquely waved, toothed inwards on veins; the outer denticulate, irregularly oblique outwards to vein 4, then oblique inwards; orbicular and reniform slightly edged with fuscous, the former round; submarginal line hardly visible; a row of dark spots before termen; hindwing yellowish ochreous, somewhat brownish-tinged; cellspot and outer line dark grey; a terminal row of black dashes. Described from a ♀ from Tsu-shima, Japan.

H. pyroxantha *Hmps.* (47 c). Forewing yellow, thickly irrorated with orange-red; the veins brown; *pyroxantha*. a suffusion along costa and all the lines brown; the inner waved and oblique; the outer lunulate-dentate,

outcurved above and incurved below middle, outwardly edged with yellow; subterminal line indicated by a brown angulated shade preceding it; the terminal line brown; orbicular stigma small, round, yellow in a red ring; reniform a narrow oblique white lunule, with brown edges; subbasal and median shades and the fringe orange-red; hindwing yellowish white, the fringe yellow. Yatong, Tibet. The ♂ only is known.

pallida.

H. pallida Leech (47 c). Forewing greyish white, flushed with violaceous, rather glossy; inner and outer lines pale, double, but indistinctly edged; the inner preceded at costa by a brown suffusion, below which is a black streak from base below cell; the outer followed by a dark fascia the outer edge of which defines the submarginal line; a terminal row of black lunules inwardly defined by whitish; orbicular stigma large, oblique, a white bar with black edges; reniform pale, nearly vertical, with grey centre, inwardly strongly defined by brown; median shade blackish brown, strongly diffused basewards; hindwing whitish, washed with pale brownish to subterminal shade, which, like the cellspot, is darker.

Pu-tsu-fong, W. China. Described from ♂♂ only. Judging from appearance only, the species does not accord well with the other members of the genus.

87. Genus: **Xylomoia** Stgr.

Tongue developed; frons with a slightly roughened prominence; palpi short, porrect or oblique upwards, roughly scaled; antennae of ♂ ciliated; thorax clothed with hair and slightly crested; forewing narrow, the termen slightly crenulate, more oblique towards tornus; neuration normal, but veins 6, 7 of hindwing are short stalked. Type *X. graminea* Graes.

graminea.

X. graminea Graes. (= *separata* Stgr.) (47 c). Forewing pale ochreous; the inner margin below submedian fold and terminal half of wing below vein 6 redbrown; the veins in terminal half dark between fine pale lines; a dark streak from base below cell; inner and outer lines faint, filled in with whitish, the inner from inner margin to submedian fold, the outer to vein 5; small black terminal lunules; orbicular a small brown dot in upper part of cell; reniform consisting of two dots; fringe mottled brown and white; hindwing white with faint brown tinge, a dark cellspot and outer line. Recorded only from Ussuri, E Siberia.

88. Genus: **Catamecia** Stgr.

Tongue well-developed; frons with truncate conical prominence, with raised rim and a corneous plate below it; palpi obliquely upturned, slender, the second segment well scaled below, the third short; antennae of ♂ ciliated; slight crests on prothorax and metathorax, and on basal segment of abdomen. Type *Catamecia jordana* Stgr.

deceptrix.

C. deceptrix Stgr. (47 d). Forewing grey brown, fuscous-tinged in basal and terminal areas; a black streak below base of cell; the veins finely black; inner and outer lines blackish, double, the former outwardly curved between the veins, the latter strongly lunulate-dentate; submarginal line obsolete, but indicated by a slightly darker shade preceding it; a row of black marginal lunules, emitting wedge-shaped marks in the intervals; stigmata distinct, of the ground-colour, with darker centres and brownish outlines; hindwing luteous white. Syria.

minima.

C. minima Swinh. (= *bacheri* Stgr.) (47 d). Forewing brownish ochreous, dusted with dark scales; the terminal area paler; inner line blackish, with the black claviform attached to it; outer and submarginal lines indistinctly lunulate-dentate, the latter obsolete above vein 5; cell blackish; orbicular stigma a white dot; reniform whitish, subquadrate; marginal spots black; hindwing whitish, with dark marginal line. Swinhoe's type from N. India; *bacheri* Stgr. from Palestine.

jordana.

C. jordana Stgr. Forewing whitish ochreous with much brown irroration; the terminal area whiter except at middle, where the subterminal waved line alone is visible, being edged on both sides by darker; the other lines obsolete; a pale streak along submedian fold from base containing the narrow black-edged claviform stigma; orbicular small, white, elongate, with black linear centre and black edge; reniform oblique inwards, white with dark linear centre and black outline; hindwing brownish white, white at base; — ab. **mauretunica** Stgr., from Algeria, is darker, the forewing uniformly dusted with fuscous, obscuring the pale streak along submedian fold and the claviform stigma; the inner and outer lines partially visible in some cases, obsolete towards costa, and conversely edged with paler. The type from Palestine.

contrita.

C. contrita Christ. (= *contrix* Christ.) (47 a). Forewing pale ochreous irrorated with brown; inner and outer lines dark; the inner obscure, obliquely waved; the outer strongly bent outwards below costa, then dentate, and very oblique below vein 4; subterminal line waved, pale, but indistinct; stigmata obscurely edged with fuscous; the orbicular small, round; the reniform large and subquadrate; hindwing pale brownish ochreous, darker along termen. — W. and E. Turkestan.

89. Genus: **Namangana** Stgr.

Tongue present; frons smooth; palpi obliquely upturned, the second segment scaled in front, the third shortly porrect; antennae of ♂ ciliated; slight crests on prothorax and metathorax, and basal segment of abdomen. Type *Namangana cretacea* Stgr.

N. cashmirensis Moore (47 c). Forewing ochreous with a pinkish grey tinge; the costal area except at extreme base and the basal half of cell dull leaden grey; inner line double, dark brown, toothed inwards on veins and curved between them, below vein 1 strongly oblique to near base of inner margin; outer line double, denticulate, hardly outcurved, closely approximated to inner line across submedian interspace; between them a nearly straight thick blackish median shade; orbicular stigma round, with dark centre and whitish annulus with dark outline; the reniform similar but lunular; submarginal line represented by elongate black V-shaped marks above veins 5, 4, 3, and slighter ones below 3 and 2; a terminal black patch above vein 5 and a semicircular one at tornus; hindwing ochreous, the veins and terminal half brownish; in the ♀ wholly brown; the forewing also browner. Kashmir, also in N. and S. India, and Ceylon. *cashmirensis.*

N. cretacea Stgr. (47 d). Forewing ochreous white tinged with pale brown and with darker dusting; inner and outer lines blackish, the former vertically waved, the latter excurved and dentate-lunulate; subterminal close to termen, whitish, with dark shade on each side; claviform stigma narrow and pointed at end, filled up or margined with black; orbicular and reniform ochreous white, black edged, the former elongate, the latter bent inwards on median nervure and with brownish centre; fringe mottled brown and ochreous; hindwing luteous white; the veins and terminal border brownish; the fringe white. W. Turkestan. *cretacea.*

N. accurata Christ. (47 d). Forewing ochreous white, suffused with red-brown; inner and outer lines blackish, double; the former waved and dentate inwards on veins, its outer arm thick and diffuse; the latter filled in with white, denticulate; subterminal line whitish, slightly defined by brown internally, dentate outwards on veins 7, 6, 4, 3; marginal lunules small and black; claviform stigma minute, brownish; orbicular and reniform small, ochreous white, with brown centres and margins; fringe mottled, brown and whitish; hindwing whitish, the veins and terminal border brownish; in the ♀ wholly brownish. Recorded from Armenia and W. Turkestan. *accurata.*

90. Genus: **Gortyna** Tr.

Tongue well-developed; frons smooth, rounded, roughly scaled; palpi upturned, the second segment long, densely haired, the third short; antennae of ♂, typically, pubescent; metathorax and dorsum crested; pectus and femora woolly. Larva feeding in the roots and stems of marsh plants, living small through winter and feeding up in spring, the imago emerging in late summer; pupa in an earthen cocoon. Type *Gortyna leucostigma* Hbn.

Sect. I. Antennae of ♂ bipectinate.

G. japonica Leech (= *succincta* Graes.) (46 a). Forewing dark purplish fuscous, the median area darkest; inner and outer lines dark, indistinct, conversely pale-edged, the outer lunulate-dentate, excurved beyond cell; stigmata indistinct; the orbicular paler, reddish-brown; the reniform dark with the outer edge interruptedly whitish; submarginal line pale grey, indistinct; hindwing fuscous. Amurland and Japan. *japonica.*

G. dolia Püng. (46 a). Forewing ashy grey washed with brownish; a short dark basal streak; median area between subcostal vein and submedian fold blackish; upper stigmata grey with pale outlines, the orbicular large, oblique, the reniform outwardly undefined; inner line oblique, bent on submedian fold; outer excurved round cell, then incurved, both pale; subterminal line obscure, preceded by two black marks; hindwing dirty ashgrey, with dark outer line and submarginal shade. Togus-torau and the Alexander Mts. *dolia.*

Sect. III. Antennae of ♂ pubescent only.

G. leucostigma Hbn. (= *khasiana* Moore) (46 a). Forewing dull dark brown, faintly reddish-tinged; the veins powdered with grey scales; the terminal area beyond subterminal line black-brown, except at apex; median area between subcostal vein and vein 1 somewhat darker than the rest of wing; inner and outer lines indistinctly double: the inner outwardly oblique, the outer bent on vein 5; claviform stigma hardly visible; orbicular stigma oblique, elliptical, of the ground-colour, with paler annulus; the reniform white or dull yellow, containing a double dark lunule with pale centre; the outer edge of this dark inner lunule is sometimes obsolete, in which case the stigma appears more solidly yellowish or white; the space between outer and subterminal lines is always slightly, often visibly, paler than the ground-colour; hindwing fuscous grey; — in the ab. *lunina* Haw. (= *intermedia* Tutt) (46 a) the outer fascia is conspicuously paler, becoming pale brown or pinkish ochreous, the median vein and veins 3, 4 at their base are white, and both stigmata are more strongly marked; ab. *albipuncta* Tutt (46 a) is comparatively a rare form, with nearly the whole reniform stigma snow-white; — *fibrosa* Hbn. (fig. 385) represents a bright reddish-fulvous form, which may exist, but which no one appears to have seen; — *laevis* Btlr. (46 a) the Ja- *laevis.*

panese form, is, as usual, larger than the European, and the outer line appears rather more strongly ex-curved beyond cell and incurved below. Occurs throughout North and Central Europe, in S. E. Russia, Armenia, W. Siberia, and Turkestan, Japan, Corea, and Amurland, frequenting marshy places. Larva blackish-brown; the dorsal and subdorsal lines somewhat paler; thoracic and anal plates blackish; head brown; feeds in the roots and stems of large water-plants, such as *Iris pseudacorus*, and *Cladium mariscus*.

91. Genus: *Apamea* Tr.

Tongue present; frons smooth; antennae of ♂ ciliated; palpi upturned, the second segment thickly haired, the third short; tegulae produced to a slight dorsal ridge; prothorax and metathorax slightly crested; abdomen with basal crests only and lateral tufts. Larva, like that of *Gortyna*, feeding in roots and stems of Gramineaceae. Type *Apamea nictitans* Bkh.

- butleri*. **A. butleri** *Leech* (46 a). Forewing dark brown, the veins powdered with white; inner and outer lines double, blackish, filled up with dark; subterminal line pale, wavy; orbicular and reniform stigmata with black outlines; the outer edge of the reniform lined with white; marginal line black; fringe with a pale line at base; hindwing greyish fuscous, with dark cellspot and termen. Described from a single ♀ from Omei-shan, W. China.
- nictitans*. **A. nictitans** *L.* (= *chrysographa* *Schiff.*, *myopa* *F.*, *cinerago* *F.*) (46 b). Forewing pale or dark ferruginous brown; the veins brown; inner and outer lines double, brown, wide apart; the inner curved outwards between, and toothed inwards on, the veins; the outer with the inner arm thin, lunulate-dentate, the outer thick, continuous and parallel; a thick dark median shade running between the stigmata; sub-marginal line indistinct, wavy, angled on vein 7, above which it is preceded by a dark costal patch; orbicular stigma rounded, orange, with a brown ring; reniform white, with the veins across it brown and containing on the discocellular a brown-outlined lunule, of which the centre is yellowish; the claviform of the ground colour with brown outline; hindwing fuscous grey, paler towards base; the fringe rufous-tinged; — in the rare form **auricula** *Don.* the reniform stigma is pale golden yellow; — the form **erythro-stigma** *Haw.* has the reniform deep orange instead of white: — **obscura** *Tutt* (46 b) is a dark violaceous brown form, with darker hindwings, which appears to be commoner in Britain than elsewhere, and like *lucens*. the type has the reniform both white and orange red; the form **lucens** *Err.* resembles *nictitans*, but is larger, and with the ground colour, as a rule, pale and the reniform white; **fucosa** *Err.* is also this larger form, but with the reniform orange-red: — **pallescens** *Stgr.* (46 b), from Turkestan, Issyk-kul, and the Alexander Mts., is a much paler form, also with the reniform both white and orange: — besides the above *albicosta*. there are to be mentioned two abnormal forms: ab. **albicosta** *Tutt.* an example with the costa of forewing *conjuncta*. white: and ab. **conjuncta** *Spul.*, a ♀ example, with the reniform stigma enormously swollen and connected with the orbicular. The species is widely spread through North and Central Europe, and occurs in Japan and Corea, but these specimens all belong to the larger form *lucens*. Larva dirty yellowish brown, with pale lines and dark tubercles, and a lateral row of black marks; head, thoracic, and anal plates yellow brown; feeding in roots and stems of grasses, especially *Aira caespitosa*, in May and June.
- paludis*. **A. paludis** *Tutt* (46 b). Differs from *nictitans* *L.* in the apex of forewing being less produced, the outer margin thereby appearing less oblique; in ground colour it would appear to vary from light to dark forms as much as *nictitans* itself, but all that I have seen have been dark; it may at once be separated by the narrowness of the reniform stigma, the inner edge of which is darkened and hardly distinguishable from the brown ground colour; the reniform occurs of both colours, white and orange, but the narrowness is more noticeable in the former case; in the ab. **grisea** *Tutt* the ground colour is greyer with a greenish tinge, and the reniform is surrounded by a dark cloud. Occurs in Britain, England and Ireland; in Turkestan, Issyk-kul and Kuku-Nor; and in Japan, China, and Corea, the examples from these last localities being larger and paler; the specimens from Issyk-kul and neighbourhood are very dark, while from the same locality come the pale forms of *nictitans* called *pallescens* *Stgr.*
- ochreola*. **A. ochreola** *Stgr.* (= *renalis* *Alph.*) (46 b). Forewing greyish pink, the markings darker pink; inner and outer lines double, the arms wide apart, conversely lunulate-dentate, the outer half of median area beyond median shade suffused with darker; orbicular stigma small, round, dark-edged; reniform with the outer half white beyond a dark line of scales on the discocellular, the inner part dark pink, obscured by the darker cloud; subterminal line hardly visible; marginal line red; hindwing yellowish luteous with the veins pink. Saisan; Ala Tau; Fergana.
- distincta*. **A. distincta** *spec. nov.* (46 c). Forewing fawn colour, flushed with fulvous; the lines and veins finely brown; inner line widely double, lunulate-dentate, the teeth pointing basewards; outer line also double, sinuous, the inner arm only lunulate-dentate; median shade brow, diffuse, bent nearly at right angles below the reniform stigma; submarginal line hardly marked except by the darkerterminal area beyond it; terminal line dark brown; fringe purplish fuscous, with a clear pale basal line; the 3 stigmata pale dull yellow edged with brown; the claviform minute; the orbicular round; the reniform large, containing a

brown lunule in outline; hindwing pale greyish fulvous, deeper along the terminal border, preceded by an indistinct dark waved outer line; head, thorax, and abdomen greyish fulvous, the abdomen paler; under side of both wings nearly uniform pale fulvous. Described from a single ♂ in the Tring Museum, from Central Asia. As large as the larger forms of *A. nictitans*.

92. Genus: **Xanthoecia** Hmps.

Like the following genus *Hydroecia* Guen., but the frons instead of being smooth is armed with a projecting spike. Larva feeding in the stems of various low growing plants in spring, pupating in situ. Type *Xanthoecia flavago* Schiff.

X. flavago Schiff. (= *ochracea* Hbn., *ochraceago* Haw., *flavo-auratum* Tutt) (46 c). Forewing yellow, thickly dusted with bright ferruginous, the space between subbasal and inner lines and that between outer and submarginal lines, filled up with dull liver-brown; the lines and veins finely red-brown; all 3 stigmata pale yellow with darker centres and brown outlines, the reniform containing an outlined lunule; submarginal line yellowish ending in a yellow apical blotch; hindwing dirty luteous, with veins and cellspot, the outer line and a submarginal cloud grey; — in ab. **suffusa** ab. nov. (46 c) the forewing is wholly suffused with ferruginous; — **cinarea** Goosens from Algeria is pale yellow or reddish grey, with a dark patch between the stigmata, which are almost obsolete; the terminal area of ground colour or violet brown without any pale apical patch; hindwing without markings, whitish grey. The insect occurs of two sizes; the small examples, generally taken late in autumn, with a pale straw ground colour, are probably the result of retarded development, through they may possibly indicate a short lived second brood. Occurs throughout North and Central Europe, in Italy, and throughout Russia; also in Armenia, Syria and W. Siberia. Larva dirty white or yellowish, the dorsum dark red, with 3 faintly paler longitudinal lines; tubercles, and also the spiracles, black; head and plates dark brown; feeding in stems of numerous plants, — such as *Aretium*, *Verbascum*, *Senecio*, *Artemisium*, *Cirsium*, *Eupatorium* etc.

93. Genus: **Hydroecia** Guen.

Tongue present: frons rounded, smooth; palpi obliquely upturned, the second segment long, rough-haired below, the third small, porrect; prothorax with a strong erect crest; abdomen large and long, very stout in the ♀, the anal segment subquadrate in the ♂, the lateral tufts of hair well developed. Larva elongate, with the tubercles largely developed, feeding in the stems of various plants, pupating in situ, and emerging from a hole previously prepared. The imago emerges in autumn and the egg overwinters. Type *Hydroecia micacea* Esp.

Sect. I. Antennae of ♂ bipectinate.

H. osseola Stgr. (= *burkhana* Alph.) (46 c). Forewing yellow suffused and dusted with rufous; inner line faintly double; outer line dark, bent on vein 6, outwardly edged with paler; median shade parallel to outer line; orbicular and reniform stigmata obscure, outlined with rufous; submarginal line whitish between rufous shades; hindwing yellowish white. Tarbagatai Mts.; Amdo, Tibet.

H. hucheradi Mab. (46 d). Forewing ochreous white, washed and dusted with brown; inner line faint, double, curved; outer line fine, dark, outwardly defined by whitish, excurved below costa, then oblique; subterminal line indicated by a dark shade preceding it; marginal line fine, dark; cilia dark at tips; orbicular stigma absent; reniform an oblique fuscous bar, constricted at middle; hindwing white, faintly ochreous-tinged. Royau, Charente Inferieure, W. France.

Sect. III. Antennae of ♂ strongly serrate and fasciculate.

H. cervago Ev. (46 c). Forewing reddish ochreous, paler in basal and terminal areas, the median area dark chocolate brown with a purplish tinge, becoming darker, almost blackish, along the course of the lines, which are placed much as in *micacea*; the basal area in the ♂ yellowish, in the ♀ bright rufous; the outer line also in the ♂ is edged with yellow; stigmata not so large as in *petasitis*, yellow with rufous speckling, the reniform with the discocellular red; terminal area pinkish grey with a dark cloud defining the subterminal line; hindwing whitish, with reddish-grey dusting; the veins, outer line, and subterminal shade reddish. Found only in the Urals, Armenia, and Turania.

H. puengeleri Turati (46 c). Like *H. xanthenes* Germ. but the forewing is paler yellow, much less suffused with grey; it is still more like *H. moesiaca* H. Schöff. from Bulgaria and Armenia; but *puengeleri* is said to have strongly serrate antennae, while *moesiaca* should have them minutely serrate and fasciculate, and *xanthenes* simply ciliate; but for this, I should consider all three forms of one species. Recorded from Sicily only; *xanthenes* from Sicily and Spain.

Sect. IV. Antennae of ♂ minutely serrate and fasciculate.

H. songariae Alph. Forewing yellow tinged with brown or reddish, the median area deeper; inner and outer lines brown, the former excurved, sinuous, the latter excurved above; subterminal line pale

yellow, defined on each side by brown; median shade brown, angulate, accompanied by yellow spaces; orbicular and reniform stigmata large, yellow, with brown outlines; the orbicular diamond-shaped; hindwing pale yellow, with indistinct outer sinuous shade. Ili, Tibet.

- petasitis.* **H. petasitis** *Dbl.* (46 d). Forewing dull purplish grey, shaded with olive brown; the median shade, the outer half of median area, the terminal area except at apex, and a costal patch before submarginal line, all of this latter colour; lines as in *micacea*, but the outer line more curved, sometimes visibly bent on vein 5; submarginal line generally preceded by a narrow dark cloud; the stigmata large, pale grey, with dark outlines; hindwing dull dark grey with a darker outer line and submarginal cloud; continental specimens, = *vindelicia* *Frr.*, are larger and better marked than the dull British *petasitis*. Found in Britain, Germany, Austria, Hungary, the Bukowina, and Roumelia; also in the Altai Mts., W. Siberia. Larva dirty bone-colour, with the dark dorsal vessel showing through; the tubercles black; spiracles white in black rings; head, thoracic, and anal plates brown: feeding in the stems and roots of *Petasitis officinalis*.
- vindelicia.* **H. amurensis** *Stgr.* (46 d). Like *petasitis*, but larger, and more glossy, *petasitis* having a more powdery appearance; the lines and markings more obscure. Amurland and Japan.
- micacea.* **H. micacea** *Esp.* (= *cypriaca* *Hbn.*) (46 d). Forewing pale greyish ochreous, or dark grey, or brownish grey with strong rufous tinge: the median area darker, suffused with olive brownish, except along costa and inner margin, especially between median shade and outer line, the paler ground colour showing only in the terminal third; inner and outer lines brown; the inner excurved below middle, the outer oblique inwards, curved only below costa, generally followed by a paler, sometimes whitish line; upper stigmata large, of the ground colour, with fine brown outline; a dark median shade; submarginal line very variable, sometimes preceded by a dark shade, sometimes also followed by the same, in other cases hardly visible, sharply angled on vein 7, above which it is preceded by a dark costal patch; veins towards termen dark; hindwing luteous, generally grey-tinged, with a dark outer line and submarginal cloud; the typical form is brownish grey tinged with rosy: — the paler, more ochreous, forms, with very little red in them are ab. **grisea** *Tutt* (46 d); — the dark olive grey, also without the red flush, are ab. **brunnea** *Tutt* (46 e); a ♀ without locality, but certainly continental and probably French, ab. **intacta** *ab. nov.* (46 e), has the forewing wholly suffused with rosy brown, the median area only a little deeper in colour; the hindwing pure yellowish ochreous without marking of any kind; the underside rufous yellow, deeper rufous along costa and termen of both wings, without trace of cellspot and outer line, which are both distinct in all the other forms. Occurs through North and Central Europe, extending to S. France, N. Italy, and S. Russia, also in Siberia, Amurland, and Japan, those from the last locality belonging to the larger form. Larva reddish flesh colour; dorsal line deeper; sides more yellowish, the lateral line above the feet dotted with black; tubercles and spiracles black; thoracic and anal plates yellowish; head shining redbrown; in roots and stems of marsh growing plants, such as *Rumex aquaticus*, *Equisetum arvense*.
- grisea.*
brunnea.
intacta.
- moesiaca.* **H. moesiaca** *H. Schöff.* (46 e). Of the same size and shape as *xanthenes*, but the ground colour is yellower, less suffused with grey. Recorded from Bulgaria and Armenia.
- Sect. V. Antennae of ♂ lamellate, with short thick curved teeth.
- leucographa.* **H. leucographa** *Bkh.* (= *lunata* *Frr.*, *illunata* *Guen.*) (46 e). Forewing dull yellow, thickly sprinkled with olive rufous, and more or less entirely suffused with olive brown; the outer half of the median space, especially towards inner margin, remaining yellowish in the ♀; the suffusion being deeper and sometimes purplish grey in the ♂; inner and outer lines double, brown; the inner vertical, excurved only below vein 1; the outer with the inner arm dentate-lunulate, the outer thicker and parallel; median shade thick, irregularly crenulate, plainer below middle; all 3 stigmata white; the claviform short and traversed by the outer arm of inner line; orbicular round, with dark scales at centre and brown ring; reniform with the veins across it dark brown and a brown narrow lunule on the discocellular; submarginal line yellowish, lunulate-dentate, preceded by a darker shade, ending in a yellow patch at costa; hindwing dirty luteous, with the veins dark, and in well-marked examples with dark cellspot, outer line, and submarginal shade.
- borelii.* A large and local species, occurring only in Germany, Saxony, Galicia, and Hungary. — The ab. **borelii** *Pierr.* is a small yellow form, taken in the neighbourhood of Paris. The dark-suffused examples, with greyer, strongly marked hindwings may be distinguished as ab. **umbrosa** *ab. nov.* (46 f); the unsuffused yellower specimens as ab. **flavidior** *ab. nov.* (46 f). Larva pale, shining, yellowish in front, from the second segment onwards with a violet brown band on each segment; tubercles and spiracles black; head and thoracic plate orange brown; living in the stems of *Peucedanum officinale* and *longifolium*.
- umbrosa.*
flavidior.
- Sect. VI. Antennae of ♂ with tuberculate fascicles of cilia.
- perlucida.* **H. perlucida** *spec. nov.* (46 f). Forewing pale greyish yellow; the veins, lines, and shading brown; space before inner line partially filled with brown; the inner line waved, vertical; outer line double, oblique from the subcostal bend, the inner arm dentate-lunulate, the outer continuous; followed by a grey brown band, with denticulate outer edge, defining the pale submarginal line, beyond which the terminal area is greyish; a brown median shade bent in middle; claviform stigma of ground colour, with brown outline; the orbicular and reniform yellowish edged with brown, the reniform with a dark lunule on the dis-

coecular; terminal line and fringe brown; hindwing whitish with a dark marginal line and the veins brownish. Described from a single ♂, somewhat damaged, from Herkulesbad, September 1907 (Aszner).

Sect. VII. Antennae of ♂ with short sessile fascicles of cilia

H. xanthenes *Germ.* (46 f). Smaller than *leucographa*, the apex of forewing more conspicuous; the yellow ground colour almost obliterated by fuscous suffusion, which forms a darker band before the inner and beyond the outer line, and a square patch between the stigmata; the 3 stigmata dull yellowish, not white, their centres darkened with brownish, the reniform with a narrow brown lunule; the outer line with the two arms close together, nearly coalescent; submarginal line obscure, ending in a paler apical patch; hindwing darker grey than in *leucographa*, with very faint markings. South France, Spain, and Sicily. Larva resembling that of *flavago*, feeding in the stems of artichoke (*Cynara scolymus* and *cardunculus*). *xanthenes.*

H. fortis *Btlr.* (46 g). Forewing paler yellow dusted with paler ferruginous than *flavago*; the dark bands greyer brown; the whole terminal area, except the yellow apical patch, more uniformly brown; a distinct pale spot at base of submedian interval; the hindwing dark grey-brown. This species from Japan and Amurland has the frons simply rounded, without any projection. *fortis.*

H. basali-punctata *Graes.* (= *intermixta Swinh.*) (46 g). Smaller on the average than *fortis*, the ground colour deep yellow, the dusting orange red; the inner and outer lines finely black, single not double; the median line strongly and uniformly excurved in middle; the fascia before inner line interrupted below middle, the two dark shades meeting on inner margin; stigmata thickly filled with orange red, and only showing yellow along the brown outlines; the spot at base of submedian fold snow white; hindwing still darker than in *fortis*. Amurland only, Sidemi, Chabarofka, Ussuri district. *basali-punctata.*

94. Genus: **Brachyxanthia** *Btlr.*

Tongue present; palpi obliquely upturned, the second segment longhaired in front, the third, porrect, distinct; frons smooth, with a thick tuft of hair; antennae of ♂ serrate-fasciculate; tegulae produced to form a slight dorsal ridge; prothorax with a sharp triangular crest; metathorax slightly crested; abdomen without crests; tibiae long-haired; forewing with costa sinuate; apex produced and acute; termen gibbous in middle, crenulate. Type *Brachyxanthia zelotypa* *Led.*

B. zelotypa *Led.* (46 g). Forewing yellowish straw colour, irrorated with ferruginous; the veins dark brown; inner line red, bluntly angled on submedian fold; median shade thick, dark brown, acutely angled on median vein, where it is met by an oblique brown shade from apex; outer line fine, excurved above, then sinuous; submarginal strongly zigzag; stigmata large, pale, with brown outlines and slight rufous centres; hindwing fuscous, the costa and extreme termen straw colour; — **peculiaris** *Btlr.*, from Japan, has the space between median shade and submarginal line clouded with dark grey; the type of this is a ♂; the only two light specimens seen are ♀♀; the distinction may therefore prove to be merely sexual. Altai Mts., W. Siberia; Ussuri, Amurland; Japan. *zelotypa.* *peculiaris.*

95. Genus: **Pyrrhia** *Hbn.*

Tongue well-developed; frons smooth, bearing a thick tuft of hair; palpi upturned, the second segment densely rough-haired beneath, the third minute; dorsum crested; fore tibia with a strong spine beneath, concealed by a tuft of hair; antennae of ♂ subserrate, with short fascicles of cilia; forewing with apex prominent, termen slightly sinuous, the inner margin lobed at base. Insects of bright coloration emerging in early summer, often swarming on flower heads. Larva slender, marked with longitudinal lines and stripes, feeding up in autumn on the flowers and seeds of their food plants, pupating in the ground before winter. Type *Pyrrhia purpurina* *Esp.*

P. umbra *Hüfn.* (= *umbrago Esp.*, *conspicua Bkh.*, *marginago Haw.*, *tibetana Moore*, *vexilliger Christ.*, *aconiti Holtz*) (46 g). Forewing deep olive yellow, faintly dark-dusted, from base to outer line, beyond which the terminal area is purplish grey, paling towards termen; the lines bright brown; the inner angled inwards on the veins and outwards between them: the outer stronger, oblique and slightly sinuous from the subcostal bend, generally followed by a purplish grey shade; median shade bent on median vein; submarginal line lunulate-dentate, dark brown, the area beyond it often golden brown; orbicular and reniform of the ground colour, with brown outlines and brownish centres; the claviform outlined only; hindwing straw-yellow; with broad black terminal border, dark cellspot, and pale fringe: — ab. **marginata** *F.* (46 g) is a paler yellow form, with the termen of both wings paler, and the dark centre of the reniform stigma prominent; a rare aberration, in which the base of forewing is darkened, is called **rutilago** *Hbn.* *marginata.* *rutilago.* Common throughout North and Central Europe, Asia Minor, Persia, Central and Eastern Asia, China and Japan. — Larva green to reddish brown, mottled with yellowish, and dotted with black; dorsal line dark, white-edged; subdorsal lines fine, yellowish white; lateral lines white or yellow; head pale brown; feeds on flowers and seeds of *Ononis spinosa* — and is often cannibal.

P. purpurina *Esp.* (= *marginata Don.* nec *F.*, *rutilago Hbn.*, *purpurites Tr.*, *purpurago Hbn.*) (46 g). Differs from *umbra* in being pale greenish ochreous without yellow or orange tint; the lines bright red and *purpurina.*

the terminal suffusion deep rosy; this suffusion instead of being concisely bordered by the outer line, as in *umbra*, encroaches diffusely on the paler area within it: veins and outlines of stigmata rosy; hindwing olive luteous washed with fuscous; the cell-spot, the veins, and a broad terminal border darker fuscous; the fringe rosy. Recorded only from Hungary and E. Roumelia and the Altai Mts., W. Siberia. Larva pale or dark apple green or brownish red; dorsal line dark edged by two white lines; subdorsal lines pale; tubercles black; head and thoracic plate greyish brown; feeds on the flowers and seeds of *Dictamnus albus*.

victorina. **P. victorina** *Sodof.* (46 g, h). Forewing sulphur yellow; the veins and lines deep rosy purple; a rosy sinuous median shade passing over the discocellular; an outer and a submarginal line, the latter not reaching costa; a fine dark purple terminal line; fringe sulphur yellow; hindwing suffused with blackish fuscous, with darker veins and submarginal band, wholly blackish in ♀; the fringe white; occurring in S. E. Europe only, Servia, Bulgaria, S. Russia, the Caucasus, Armenia, Asia Minor, and N. Kurdistan; the form described as **prazanoffzkyi** *Guen.* (46 h) from Amasia is much paler in both wings, with all the rosy tints much reduced: the underside pale instead of purplish fuscous. — Larva dull green or violet red; dorsal line very faint; subdorsal pale, slender, interrupted at the segmental incisions; lateral lines broader, the reddish spiracles placed on their upper margin; tubercles black; head black brown; thoracic plate yellowish; feeding on *Dictamnus* and *Salvia*.

treitschkei. **P. treitschkei** *Friv.* (= *taurica* *H. Schöff.*) (46 h). Forewing pale sulphur yellow; basal area flushed with rosy; inner line oblique outwards and inwards from each margin near base, angled or bent in cell, olive brown, the upper half rosy red; outer line bent outwards beyond cell, the space between it and the median shade olive brown, towards costa rich rosy purple; this is separated by a space of pure yellow from the rosy pink terminal area; the median vein is dark in basal half of wing; hindwing olive fuscous, the fringe rosy pink. In S. E. Europe, Bulgaria; ? the Crimea; in Pontus, Taurus and N. Kurdistan. Larva greenish or reddish grey, rough, covered with fine short hairs; dark brown dorsal triangles on the hind border of each segment, the apex pointing forwards; smaller on the front segments which have also some lateral marks; head pale redbrown; feeding on a species of *Melissa*.

hedemanni. **P. ? hedemanni** *Stgr.* (= *erubescens* *Graes.*). Forewing violet red, becoming ochreous towards costa and termen; basal area pale yellowish grey, projecting a sharp angle externally into the violet, nearly reaching lower angle of cell; hindwing dull pale grey, with a faint cellspot, a broad dark terminal border, and reddish fringe; traces of a dark median line. E. Siberia.

96. Genus: **Ipimorpha** *Hbn.*

Tongue present; frons smooth; palpi upcurved in front of face, the third segment upright; antennae in ♂ shortly ciliated; prothorax with a sharp dorsal ridge; forewing with outcurved termen, especially marked in the type species. Larva in spring between united leaves of trees, pupating also in a slight web among leaves and rubbish. Type *Ipimorpha retusa* *L.*

Sect. I. Termen of forewing excised below apex.

retusa. **I. retusa** *L.* (= *vetula* *Hbn.*) (46 h). Forewing olive brown dusted with whitish; inner and outer lines fine, nearly straight, parallel to each other, slightly oblique inwards, and paler edged; subterminal irregular, pale, with a darker shade beyond it; stigmata darker, edged with paler; the reniform on a darker median shade; hindwing fuscous, fringe whitish. Found in North and Central Europe, in Britain, and in the Altai Mts., in W. Siberia and Japan; — the form **gracilis** *Haw.* (= *curvata* *Bldr.*) is a redder form. Larva pale green; dorsal line broadly, the two subdorsal slenderly, white; the spiracular line white, waved; head green or dark brown; living between united leaves of poplar and willow, where it also pupates in a slight shelter.

Sect. II. Termen of forewing not excised.

subtusa. **I. subtusa** *F.* (46 h). Forewing olive grey-brown; inner and outer lines outwards directed, the inner straight, the outer slightly curved, pale yellow; the costal edge also yellow; the median shade obscure; the submarginal line faint, with a dark shade before it; the stigmata with pale margins; hindwing dark grey with the fringe pale; the ab. **pallida** *Tutt* is a colourless pale grey form without any rufous or fuscous admixture. In Britain and throughout Central Europe, and in W. Siberia. Larva pale yellowish green; dorsal line broadly, subdorsal narrowly yellowish; spiracular line pale yellow; head yellow marked with black; between united leaves of Aspen and Poplar.

contusa. **I. contusa** *Err.* (46 h). Forewing fuscous brown with a rufous tinge, finely dusted with darker; lines paler; the inner waved, oblique; the outer vertical, faintly excurved; submarginal sinuous, pale, obscure; a broad blackish diffuse median shade, bent in middle; orbicular stigma small, round, pinkish; reniform constricted in middle, filled up with black and paler edged; hindwing fuscous, darker along termen. A local species, found only in N. E. Germany and Saxony in Europe; in Dauria and Amurland, Larva pale green, whiter on the dorsum; dorsal line dark with white margins and 4 white tubercles on each segment; lateral line white, with the white, black-edged spiracles upon it; living between united leaves of *Populus tremula*, where it also pupates in a whitish cocoon.

97. Genus: **Meristis** Hbn.

Tongue developed; frons smooth, rounded; palpi upcurved in front of face, short and smoothly scaled, the third segment short and blunt; antennae of ♂ with pedicellate fascicles of cilia; thorax and abdomen without crests; forewing broad with rectangular apex. Larva subterranean in habit, feeding on low plants. Type *Meristis trigrammica* Hufn.

M. trigrammica Hufn. (= *trilinea* Schiff., *quercus* F.) (46 i). Forewing whitish ochreous finely dusted with olive brown, sometimes with a slight ochraceous or pinkish tinge, and with a darker shade just before termen; crossed by 3 brown lines, of which the inner is somewhat oblique outwards, and the outer inwards; the median generally a little thicker, sometimes followed by a distinct dark shade; hindwing pale to dark grey, varying according to the forewing; — in the form **evidens** Thnbg. (46 i) the forewing is rufous ochreous or yellow ochreous, the hindwing darker; — **bilinea** Hbn. (46 i) a rare form, has the space between inner and median lines dark, the rest of the wing being reddish grey; — in **perrufa** ab. nor. (46 i) the whole wing is rufous, with the median shade absent or obscure; — **obscura** Tutt (= *bilinea* Haw. nec Hbn.) (46 i) is dull olive fuscous with the median shade hardly visible, the hindwing also dark fuscous; while **pallidalinea** Tutt (= *bilinea* Tr. nec Hbn.) has the inner line obsolete, the other two pale; — **semi-fuscans** Haw. (46 i) has the ground colour of the type, whitish ochreous, as far as the median line, the outer half being dark, the median line followed externally by a dark shade and the termen preceded by a similar shade; the ab. **fringsii** Schultz has only one transverse line; — lastly, **erubescens** Trti, from Sicily, is a dark brown form with the median line present. Common in North and Central Europe, also in S. France, Italy, Dalmatia and S. Russia, and in Asia Minor and Armenia. Larva dark grey or reddish brown; dorsal line pale marked with black at the segmental incisions; subdorsal lines interrupted, pale, often with oblique dark marks above them; spiracular line pale, dark-edged above; head brown; feeds on plantain from autumn to spring, hiding in the ground.

98. Genus: **Dadica** Moore.

Tongue present; frons smooth; palpi obliquely upturned, the terminal segment distinct; thorax and abdomen stout, without crests; scaling smooth; antennae of ♂ ciliated; anal claspers of ♂, when expanded, large and hairy; underside of hindwing of ♂ clothed in parts with beds of rough scales and hair. Type *D. lineosa* Moore.

D. lineosa Moore. (46 i, k). Forewing fuscous; lines blackish, distinct; inner line curved at costa, then nearly vertical, slightly indented on submedian fold; outer line curved, sometimes a little bent on vein 6; median shade diffuse, oblique to lower end of cell, then vertical; orbicular stigma a black dot; reniform a snow white spot with a faint white dot above it; submarginal line waved, indistinct; outer line sometimes with short teeth marked on the veins; hindwing fuscous. Described as an Indian species, but occurring also in Japan.

99. Genus: **Strepselydna** gen. nov.

Differs from *Dadica* Moore in the hindwing of the ♂ having no beds of rough hair and scales on the underside; the termen of both wings is indented in middle, and the costa of forewing slightly shouldered at base; the abdomen of ♂ is laterally tufted; palpi more smoothly scaled, upcurved in front of face. Type *S. truncipennis* Hmps.

S. truncipennis Hmps. (46 k). Forewing fuscous: inner line nearly vertical, blackish; outer line shortly bent outwards at costa and again above inner margin, vertical between, with dark teeth marked on the veins; reniform stigma dull yellow, with a white dot above it and two below; hindwing dirty whitish, fuscous towards termen; the cellspot and veins dark. Japan.

100. Genus: **Elydna** Walk.

Like *Dadica* Moore, but distinguished by the simple scaling of the underside of the hindwings of the ♂, agreeing herein with *Strepselydna*, but the wings are of normal shape. Type *E. transversa* Walk.

E. albisignata Oberth. (= *albosignata* Oberth.) (46 k). Forewing dark brownish fuscous, dusted with dark; inner line curved, and indented on submedian fold; outer line somewhat variable, curved or bent, with dark dashes on the veins beyond it; veins towards termen and the median vein dark; reniform a white spot on a dark one; median shade diffuse, sinuate; hindwing whitish overspread with fuscous; in ab. **coeca** Oberth. (46 k) the white spot of reniform is absent; this appears to be the commoner form. Amurland and Japan.

101. Genus: **Radinacra** Btlr.

Like *Elydna*, but distinguished by the longer terminal segment of palpi. Type *R. cinerascens* Motschl.

cinerascens.

R. cinerascens Motschl. (= *palpalis* Btlr.) (46 k). Forewing pale brownish fuscous, dusted with dark; inner line slight, dentate inwards on veins, lunate outwards; outer line oblique outwards below costa, then curved, dentate lunulate, the teeth showing clear on veins; orbicular stigma a black dot; reniform large, of the ground colour, with paler dots on outer edge; median shade dark; some dark terminal dots; submarginal line indistinct; hindwing greyish fuscous. Amurland and Japan. The position of this species is doubtful; the terminal segment of palpi is longer, and the markings, especially the reniform stigma, of quite a different character.

102. Genus: **Calymnia** Hbn.

Tongue present; frons smooth; palpi upcurved, the second segment thickly scaled, the terminal long and pointed, erect; head, thorax, and abdomen smoothly scaled, without crests, the anal segment of ♀ pointed; antennae of ♂ shortly ciliated; forewing crossed by two lines approximating on inner margin, starting from white costal streaks or blotches. Larva cylindrical, feeding between united leaves of trees and shrubs in spring, and spinning a slight cocoon among leaves or rubbish. Type *C. trapezina* Hbn.

affinis.

C. affinis L. (47 d). Forewing fulvous or redbrown, more or less shaded with grey; inner and outer lines dark, conversely edged with paler, marked on costa generally by streaks of white scales; stigmata paler redbrown, undefined, the orbicular round, the reniform 8-shaped, with dark centres; submarginal line pale, waved, preceded by a deeper brown cloud, followed on costa by white scales, beyond which at the apex are two black spots; a row of small black marginal spots; hindwing blackish, black on terminal half; the fringe yellowish; instead of the red tints, examples occur of a greenish grey or pale brown colour = ab. **suffusa** Tutt (47 d), and ab. **ochrea** Tutt (47 d); a less common aberration occurring on the continent, but not confined to ♀♀ as Spuler states; — ab. **nigrimaculata** ab. nov. (47 d) is marked by patches of black scales in the basal area along cell and vein 1, before and below the orbicular stigma, beyond the reniform in the angle of outer line, and more slightly before the termen. In S. Sweden, Russia, Britain, and throughout Central and Southern Europe; also in Morocco, Armenia, Turania, Amurland, and Japan; the Japanese examples are much larger than European = **magna** Stgr. (47 d); the white costal streaks are always less strongly developed, and are often altogether absent, the insect being more or less uniformly red brown = ab. **unicolor** Stgr. (47 e). Larva pale green, with 5 white lines; the tubercles and the spiracles black; feeds in May between united elm leaves.

suffusa.
ochrea.
nigrimaculata.

magna.

unicolor.

diffinis.

C. diffinis L. (47 e). Forewing rich redbrown on a pinkish grey ground; distinguished from the other species by the lines starting from broad white costal blotches, not narrow streaks; the hindwing paler, more olive brown, than in *affinis*; — ab. **confinis** H. Schöff. (47 e) has the pinkish ground colour predominant, the shading pale golden brown, the hindwing sometimes yellowish with dark outline and submarginal shade; on the contrary the ab. **affinis** Hbn. (47 e) has the deep purple tints intensified and darker, the insect being slightly smaller. In middle and South Europe, Spain, Italy, the Ural Mts., also in Asia Minor, Syria, and Turkey. Larva like that of *affinis*, and living between united leaves of elm.

confinis.

affinis.

pyralina.

C. pyralina View. (47 e). Forewing dull or bright redbrown on a pinker ground; generally darkened with olive fuscous; first line blackish, oblique, not white-edged, angled outwards between and inwards on the veins; outer line preceded by a darker median shade, and edged with white, the white becoming diffused on costa and joined to the white streak before the submarginal line; stigmata very obscure, sometimes with dark centres on a paler ground; submarginal line preceded by a darker red shade; hindwing pale grey in the ♂, darker in the ♀; the brighter coloured forms are ab. **corusca** Esp. (47 e). Agrees in distribution with *affinis*, being found through Central and Southern Europe, in Asia Minor and Armenia, in Amurland and Japan; in England it is much more local. Larva pale green with white lines; spiracular line yellowish, black edged above; head yellow green; on *Prunus* and *Pyrus*, between united leaves, spinning a slight silken web in which to pupate.

corusca.

trapezina.

C. trapezina L. (47 f). Forewing varying from pale ochreous to rufous, in some cases deep red; often much dusted with darker, sometimes of an uniform smooth ground colour, without any darkening; the inner and outer lines dark, conversely pale-edged, with generally a distinct dark median shade between them, bent at middle; submarginal line waved, pale, usually preceded by a darker shade, especially at costa; orbicular and reniform rather paler, the reniform elongate, with a dark grey blotch in its lower half; a row of marginal black dots; hindwing pale ochreous with grey suffusion to dark grey, this generally in the grey-dusted specimens; the termen itself and fringe paler, ochreous or rufous, according to the tint of forewing; — the more intensely red forms constitute the ab. **rufa** Tutt (47 f); — the ochreous yellow forms being ab. **ochrea** Tutt (47 f); — ab. **carnea** ab. nov. (47 f) is equally pale but with all the shadings, especially the thick median shade, delicate flesh colour; the very pale ochreous forms are ab. **pallida** Tutt (47 f), but the transverse lines are never, as far as I know, actually obsolete; these pale forms, when

rufa.
ochrea.
carnea.
pallida.

dusted with greenish grey, constitute the ab. *grisea* Tutt (47 f); in all cases the ♂♂ seem more liable to *grisea*. the dark dusting than ♀♀; in specimens from Herculesbad, Transylvania, this dark dusting, both in the pale ochreous, yellow ochreous, and reddish forms attains its maximum, = ab. *conspersa* ab. nov. (47 g); *conspersa*. some of the dark ♂♂ approaching the ab. *badiofasciata* Teich (47 g) (= *obscura* Auriv.), in which, however, *badio-* the median area is dark fuscous, while the basal and terminal areas are pale ochreous; *nigra* Tutt is an *fasciata.* accidental extreme form of this, in which the whole wing is dark. Occurs throughout Europe, and in *nigra.* Armenia and Asia Minor. The Amur and Japan forms are referable rather to *exigua* Btlr. (= *saturata* Stgr.). Larva yellowish green, with a white darker-edged dorsal line and narrow white subdorsal lines; spiracular line pale, dark-edged above; feeds in spring on oak, sallow, sloe, and various other trees and shrubs, spinning a slight cocoon among leaves or moss for pupation; it is noted for its cannibalistic propensities.

C. restituta Walk. (47 g). Forewing dull fulvous brown, paler along inner margin, the central area *restituta.* towards costa mixed with yellowish; in the ♂ rather darker, more suffused with fuscous; inner and outer lines dark brown, the outer nearer termen than usual; the median shade strongly bent outwards above, then parallel to outer line and meeting inner line above inner margin; orbicular stigma yellow, with fulvous red centre; reniform filled up with fulvous and with a dark spot in lower half; lines all ending in snow white costal spots; a small one before subbasal line; a large blotch before inner line, followed by a smaller one below orbicular; an outwardly oblique comma-shaped mark beyond outer line, and a slight one, followed by two black spots, before submarginal; hindwing blackish, paler towards base, with the fringe yellowish. Originally described by Walker from India; the ab. *picta* Stgr. (= *dieckmanni* Graes.), *picta.* from Amurland and Japan, is darker, especially on the underside, the hindwings black.

C. camptostigma Mén. (47 g). Forewing dull grey brown in the ♀, darker, more fuscous, *campto-* brown in the ♂; dark ♀♀ are rare; inner and outer lines brown, conversely white-edged; the inner straight *stigma.* and oblique, the outer bluntly curved above, preceded by a thick median shade; reniform stigma only visible, its lower end dark; a dark chocolate brown patch on costa before submarginal line, which is cloudy whitish; hindwing yellowish fuscous, blacker towards termen, with the extreme termen and fringe yellowish; *distincta* Btlr. (47 h) is a greyer form, with the forewing in ♂ bright brown in basal and median *distincta.* areas; the fringe of hindwing brighter yellow. Amurland, China, Japan. Larva dark greenish grey to redbrown; dorsum with 3 yellow lines starting from the thoracic plate; a broad pale yellow lateral stripe, interrupted on each segment by a black tooth-shaped mark reaching the feet; beaten in abundance from oak trees in spring.

C. subtilis Stgr. (47 h). Forewing pale yellowish straw colour, slightly suffused with deeper; in the *subtilis.* ♂ the ground colour is whiter; inner and outer lines and median shade faint in ♀, plainer, darker brown, in ♂, disposed as in *trapezina*; outlines of stigmata hardly visible in ♀, brown and distinct in ♂, in which the space on each side of vein 4 at base is marked with a short brown streak; a brown costal blotch before submarginal line; hindwing pure white. Fergana, Turania, Afghanistan.

C. flavifimbria Hmps. (= *affinis* Hmps. nec L.) (47 h). Forewing greyish ochreous, tinged with *flavifimbria.* yellowish olive; the lines indistinct; inner nearly vertical; median and outer roundly excurved and denticulate, conversely white-edged; subterminal line preceded by olive brown suffusion and followed by ochreous white scaling; stigmata very indistinct; large black terminal spots; hindwing dirty ochreous; a broad blackish terminal border; fringe yellow. Described from the Goorais Valley, Kashmir; occurring also in the Punjab.

C. achatina Btlr. (47 h). Forewing brown dusted and tinged with black; inner and outer lines *achatina.* whitish; the inner waved, the outer oblique to vein 6, then denticulate, subterminal pale, thrice excurved; all three become whiter at costa; orbicular stigma round, pale brown in a white ring; reniform blackish, crossed by an angled median shade; terminal spots large and black; hindwing dull yellowish, more or less suffused with fuscous; the termen broadly blackish; the species varies in opposite directions: — ab. *intensa* *intensa.* *ab. nov.* (= ab. 1. Hmps.) is much darker, all the black shadings being intensified; on the other hand we have ab. *illustrata* *ab. nov.* (= ab. 2. Hmps.) with the forewing pale greyish ochreous, with the white lines *illustrata.* distinct. Recorded from Yokohama, Japan, and Yesso; the darker examples from the latter locality.

C. moderata Stgr. (= *grandifica* Graes.) (47 h). Forewing pale olive ochreous, dusted with grey; *moderata.* the lines and markings as in *trapezina*; the submarginal line preceded and followed by grey clouds; hindwing yellowish ochreous, with a dark outer line forming a sinus below middle, followed by a broad dark grey band; fringe yellow. Amurland.

C. exigua Btlr. (= *saturata* Stgr.) (47 i). Forewing greyish rufous, dusted with darker; lines as in *exigua.* *trapezina*; hindwing dark fuscous with a rufous fringe; the costal area in ♀ yellower. Occurs in Amurland and Japan. Apparently a stable form.

C. bifasciata Stgr. (47 i). Forewing olive grey brown; the basal and terminal areas greyer; inner *bifasciata.* and outer lines grey, thick, conversely oblique, approximating on inner margin; stigmata grey, very obscure; submarginal line dentate, defined by dark and light shades; fringe dark; hindwing dirty yellowish, with large grey cellspot and broad border, narrowed to apex; in the ♂ more or less suffused with fuscous;

- pryeri*. fringe paler; the Japanese form **pryeri** *Leech* is paler, with the outer line of forewing straighter; the type form was from Amurland.
- spurcopyga*. **C. spurcopyga** *Alph.* Forewing pale ashy grey, washed with brown in places; markings as in *camplostigma* except that the outer line, which is finely black, bordered externally with white, forms an outward angle on vein 1; median shade thick; the two stigmata small, ill-defined. Described from 3 ♀♀ only from Urga, Mongolia. Distinguished from the other species by the anal segment of abdomen being covered with grey hairs.
- pembertonii*. **C. pembertonii** *Holl.* Forewing vinous brown, the basal area darkest; inner line whitish, edged externally with dark brown, oblique, and straight to middle of inner margin; outer line white, edged internally with dark brown, followed above inner margin by dark vinous brown, which shades off into a large subtriangular blotch of rich maroon extending from costa to midwing, containing the comma-shaped streak of pure white which follows the outer line on costa; a small dark brown spot just before apex; hindwing dark testaceous; fringe redder and lighter. Japan.
- penicillata*. **C. penicillata** *Graes.* In shape and markings near *diffinis*, but distinguished from it and all other known species by two long brownish yellow tufts of hair, which rise from the sides of the first abdominal segment; forewing dark violet grey; inner line oblique, straight to middle of inner margin; outer line as in *diffinis*; both are double, one arm fine, pale reddish grey, the other blackish; the outer line followed on costa by a white comma placed in the middle of a dark brown blotch reaching middle of wing, from which a median shade rises; before the apex a small, and under it a larger, longer, black spot; hindwing uniform dark grey. Described by Graeser from a single ♂ from Raddefka, Amurland.
- cara*. **C. cara** *Btlr.* (47 i). Forewing silky, sandy brown washed with pink; inner line oblique, pink, outwardly edged by a dark brown line; outer line pink, oblique outwards from costa and there edged by white, from vein 6 nearly straight to inner margin, its inner edge black; a large chocolate triangular patch, its outer edge rounded, on costal half of wing from cell to centre of disc, traversed by outer line; an oval black spot before apex, with a black dot above and another below it; hindwing grey with a bronzy reflection; fringe testaceous at base, white externally, washed at apex with pink. Tokio, Japan. These last 3 may well be local forms of one and the same species.
- jankowskii*. **C. (?) jankowskii** *Oberth.* (47 i). Forewing cream colour; the median space from base to termen thickly dusted with shining grey, leaving the inner margin, apex, and costa pale; the two stigmata reddish yellow; costa marked with 7 black spots, from 3 of which fine curved lines cross to inner margin; hindwing yellow, with black submarginal border and brown dusting. Taken at Sidemi, Amurland.

103. Genus: **Pinacoplus** *Hmps.*

Tongue present; palpi porrect, quite short; frons with a long shovel-shaped plate in front with a horny plate below it; antennae of ♀ ciliated; thorax and abdomen without crests; foretibia with a long curved claw from inner side; in the hindwing veins 6, 7 are short-stalked. Type *P. didymogramma* *Ersch.*

didymo-
gramma.

P. didymogramma *Ersch.* (47 i). Forewing pale ochreous; inner and outer lines double, conversely lunulate-dentate, the inner arm of the first and the outer of the second paler, more olive, brown, the others being deep chocolate brown; the teeth of the inner arm of inner line are produced basewards along the veins, and these of the outer arm of the outer line terminally; the inner line on submedian fold is interrupted by a yellow tooth shaped mark; fringe yellow, mottled with brown, darker at tips; hindwing ochreous, with a faint pale brown outer line and shade beyond it. Recorded only from Turania and Fergana.

104. Genus: **Metopoplus** *Alph.*

Tongue aborted, minute; palpi short, porrect; frons with a rounded corneous process from middle, with raised rim and a corneous plate below it; antennae of ♂ ciliated; thorax and abdomen without crests; foretibia with a long claw on inner side; in hindwing veins 6, 7 are not stalked. Type *M. excelsa* *Christ.*

fixseni.

M. fixseni *Christ.* (47 i). Forewing pale ochreous; inner and outer lines black brown, the inner out-curved, the outer sinuous; the first preceded, the second followed by a diffuse grey shade beyond slighter lines, the outer of which is dentate; veins grey; fringe ochreous; a curved brownish grey median shade; hindwing ochreous with obscure outer line and terminal border. W. Turkestan.

excelsa.

M. excelsa *Christ.* (47 k). Forewing yellow varied with brown and white scales; inner and outer lines dark brown; the inner slightly sinuous, interrupted just below cell by a pure white triangular brown edged spot; outer line excurved below costa and at middle, somewhat sinuous below; median shade reddish brown, diffuse; a diffuse redbrown band beyond outer line is expanded towards termen above and below middle; stigmata absent; fringe chequered yellow and brown. Armenia and Persia.

105. Genus: **Mycteroplus** *H. Schöff.*

Tongue aborted, small; palpi porrect, short; frons as in *Metopoplus*; antennae lamellate; first segment of foretarsus with 4 curved claws on outer side; thorax slightly crested; abdomen with crest on

basal segment only. Larva cylindrical, with 16 feet: the first segment broader than the head: pupates in the ground. Type *Mycteroplus puniceago* Bsd.

M. puniceago Bsd. (47 k). Forewing pale ochreous flushed with reddish in outer half of wing: *puniceago*. lines double, faint; the outer arm of inner line marked by a redbrown spot on submedian fold, the outer line crenulate, its inner arm marked by a dark dot above vein 5; median shade angled outwards on median vein followed by a redbrown shade; submarginal line waved, pale; ab. **viridicolor** Krul. has the *viridicolor*. forewing greenish and the hindwing whitish green, hindwing white. S. Russia, S. E. Roumania; Armenia, Turania. Larva dull reddish yellow, mottled with red; dorsal lines obscure; lateral lines strong, red, pale yellow below; head yellow; feeds on the unripe seeds of *Atriplex nitens* and *Chenopodium polyspermum* in early summer, emerging in autumn.

106. Genus: **Dicycla** Guen.

Tongue developed; frons smooth; palpi upcurved, the terminal segment long, porrect; antennae of ♂ with tuberculate fascicles of cilia; thorax and abdomen without crests; abdomen of ♀ with last segment long and pointed, with exerted ovipositor. Larva feeding up in spring between spun together leaves, pupating in a cocoon between leaves, and emerging in late summer. Type *Dicycla oo* L.

D. oo L. (47 k). Forewing pale yellow, slightly dusted with ferruginous; veins and lines and out- *oo*. lines of stigmata ferruginous; fringe mottled with the same colour; hindwing yellowish white, washed with grey and darker before termen; in the form **ferruginago** Hbn. the base and the space between outer and *ferruginago*. submarginal lines are dark; in the ab. **renago** Haw. (47 k) there is a ferruginous fascia before inner line and *renago*. between median shade and submarginal line, united along inner margin; **sulphurea** Stgr. is wholly sulphur *sulphurea*. yellow; the ferruginous scales are sometimes replaced by grey = ab. **griseago** Schultz. Throughout Central *griseago*. and Southern Europe, in Asia Minor and Persia. Larva black-brown, dotted with white; lines white; the dorsal irregularly blotched; the subdorsal slender; the spiracular broad: between united oak-leaves.

107. Genus: **Enargia** Hbn.

Tongue present; frons smooth; palpi upcurved, the terminal segment erect; abdomen long, in the ♀ with the anal segment elongate and exerted ovipositor; wings ampler than in *calymnia*, with similar markings. Larva feeding up in spring between united leaves of various trees and shrubs, pupating in a web among leaves. Type *Enargia paleacea* Esp.

Sect. I. Antennae of ♂ bipectinate.

E. ulicis Stgr. (47 k). Forewing reddish ochreous or ochraceous green; the inner and outer lines *ulicis*. whitish; the two stigmata darker with pale outlines, the orbicular very small; tips of the fringe blackish; sometimes a faint submarginal line is present, broken up into pale spots; hindwing in ♂ whitish, in ♀ blackish, with a rosy tinge. Granada, Spain. Larva on *Ulex australis* in spring: the imago emerges in autumn.

E. borjomensis Rom. (47 l). Forewing greyish fulvous; inner and outer lines redbrown, the former *borjomensis*. outcurved, the latter sinuous; submarginal line pale, indicated by the dark preceding shade; reniform stigma subquadrate, blackish; hindwing pale luteous grey, darker along termen. Described from a single ♀ from Borjom.

E. regina Stgr. (48 a). Forewing pale greyish red in ♂, deep brick red in ♀; inner and outer lines con- *regina*. versely oblique, pale, the median space between them a little darker; orbicular stigma small, brown, pale-edged, sometimes obsolete; reniform large, dark brown, pale-edged; a small dark spot at base of cell; submarginal line variable, waved, accompanied by small dark spots; hindwing pale reddish-grey in ♂, fuscous in ♀; the fringe reddish. Occurs in Asia Minor, Pontus and Taurus; in Algeria, and Cyprus. The examples from Cyprus, — ab. **deleta** ab. nov., — differ from the type form in having no orbicular stigma *deleta*. or spot at base of cell, but the Algerian specimens agree with the type.

Sect. II. ♂ with the antennae ciliated.

E. staudingeri Alph. (18 k). Forewing pale luteous, dusted with grey; the veins towards termen whitish; *staudingeri*. lines brownish grey; the inner cloudy, ill marked; the outer excurved round cell; the two conversely oblique below; subterminal obscure, indicated by a dark shade before it; stigmata very faint; hindwing paler, with faint grey cellspot and outer line, beyond which the terminal area is darker. E. and W. Turkestan.

E. paleacea Esp. (= *fulvago* Hbn.) (47 l). Forewing pale yellowish ochreous, dusted with rufous; *paleacea*. the ♀ deeper yellow than the ♂; inner and outer lines fine, reddish-brown; median shade reddish brown, more diffuse, angulated; subterminal line hardly marked; orbicular and reniform stigmata outlined with reddish-brown, the lower lobe of reniform filled up with grey; a series of dark terminal spots; hindwing whitish yellow; ab. **angulago** Haw. is deep orange instead of pale yellow; **teichi** Krul. (= *fusca* Schultz) *angulago*. *teichi*. (47 l) occurring in Germany and W. Russia has the space between inner and outer lines or between median and submarginal suffused with reddish grey or brown. Occurs in Britain, in North and Central Europe, and in W. Siberia. Larva pale green dotted with white, the segmental incisions yellow; dorsal and sub-

dorsal lines white; spiracular line double, white; spiracles white with purple rings; head pale yellow brown; feeds on birch and alder.

- abluta*. **E. abluta** Hbn. (471). Forewing glossy pale ochreous, faintly grey dusted; inner and outer lines pale olive brown, conversely edged with pale ochreous; an obscurely darker bent median shade; stigmata hardly traceable, the lower lobe of the reniform marked with fuscous; hindwing white suffused with pale greyish rufous, with traces of a dark outer line and submarginal shade; — in **glaucula** Guen. (471) the whole forewing is suffused with olive grey, the two lines and the outlines of the stigmata standing out clear and pale; — the form **arenaria** Bartel, from the S. Ural district, is said to be smaller, with yellowish, or yellowish-brown forewing and very pale yellowish hindwing; — **imbuta** Bsd. (49 a) is yellow instead of being pale ochreous as in the type of *abluta*; — ab. **fasciata** ab. nov. (49 a) is also yellowish, slightly grey-tinged, but with the space between median and outer lines darker grey, forming a curved band, the two stigmata standing out pale yellow, large and subconfluent; **rufula** Stgr. (49 a) corresponds to *glaucula* Guen., the ground colour being pale brickred instead of olive grey. The type form from Austria, Hungary, and Uralsk; *glaucula* from Hungary only; all the others from Sarepta and the Ural Mts.; it is doubtful if *arenaria* is distinct from *abluta*. Larva green, with narrow darker dorsal and subdorsal lines; spiracles black; thoracic and anal plates yellow; the head browner; feeding on poplars, especially on *Populus nigra*.

108. Genus: **Phragmitiphila** Hmps.

Tongue aborted, small; frons with a subquadrate corneous plate in middle; palpi porrect, short, rough haired below, the third segment short and smooth; thorax with very slight crests; antennae of ♂ variable; forewing with apex rounded, the termen obliquely curved; veins 6, 7 of hindwing stalked. Larva elongate, feeding in the stems and hearts of *Arundo*, *Carex*, *Typha*, etc., through the summer, pupating in situ; the imago emerging in autumn. Type *P. nexa* Hbn.

Sect. I. Antennae of ♂ with tuberculate fascicles of cilia.

- nexa*. **P. nexa** Hbn. (49 a). Forewing olive brown with a rufous tinge, especially along the two folds; inner and outer lines pale; the inner oblique outwards and bent on submedian fold; the outer, near termen, slightly sinuous, and followed by a line of black vein-dashes; no submarginal line; the termen paler, pinkish grey; the marginal line black; the fringe reddish; stigmata white; the orbicular small, a flattened oval; the reniform large, lunulate, with a grey linear centre, its upper end pointed externally, its lower produced at right angles inwards along median vein to below orbicular; hindwing fuscous, paler in basal half, with traces of a dark line beyond middle; fringe reddish. Occurs only in Sweden, North France, North Germany, and Saxony. Larva dirty white, with two faint reddish subdorsal lines and black tubercles; spiracles black; head and plates yellow, with brown markings; feeds in stems of *Glyceria* and *Carex riparia*, close above the root, from autumn to the following summer, then ascends and changes to pupa in a slightly spun cocoon.

Sect. II. Antennae of ♂ serrate, with sessile fascicles of cilia.

- typhae*. **P. typhae** Thunbg. (= *arundinis* F.) (49 a). Forewing greyish ochreous in the ♀, more brownish in the ♂, sprinkled with darker, but always paler along the course of the two folds; the veins all pale; the two stigmata interrupted by the pale streak in cell; the reniform plainer, its lower end produced basewards along median vein and marked by lines of brown scales; the inner and outer lines marked by series of black spots on veins; the submarginal line preceded by black dashes between the veins; a row of black marginal lunules; hindwing greyish luteous, with dark cellspot and cloudy submarginal border; the ab. **fraterna** Tr. (49 b) has the forewing dark brown in both sexes; ab. **nervosa** Esp., represents an insect intermediate between *fraterna* and the type form. In North and Central Europe, including Britain, Spain, N. Italy, Central and S. Russia; also at Ili and Issyk-kul, Tibet. Larva dirty white or flesh colour, with three pale lines along the dorsum; spiracles black; head and plates black brown; feeding in the stems and fleshy lower parts of the leaves of *Typha latifolia*; pupating in situ, with the head upwards.

Sect. III. Antennae of ♂ subserrate, ciliated.

- turpis*. **P. turpis** Btlr. (49 b). Forewing dirty pinkish ochreous dusted with grey; a diffuse grey shade from base below median vein; the intervals between the veins often dark in the ♂; stigmata of the ground colour, very indefinite, sometimes with a black mark between them; outer line represented by spots on veins; submarginal sometimes by an oblique row of dark blotches in the intervals; ♀ always much paler than the ♂; hindwing paler. Japan.

109. Genus: **Rhizedra** gen. nov.

Tongue present; frons smooth, tufted with hair; palpi porrect; thorax and abdomen stout, without crests; antennae of ♂ with strong sessile fascicles of cilia; forewing elongate with prominent apex and oblique termen. Larva living deep down in the roots of reed through the summer (whence one of the names of the type species), the imago appearing in late autumn. Type *R. lutosa* Hbn.

R. lutosa Hbn. (= *pilicornis* Haw., *vectis* Curt., *bathyerga* Frr.) (49 b). Forewing dull white, *lutosa*. finely dusted with blackish in the intervals, sometimes slightly rufous-tinged; outer line represented by a row of blackish dots, often obsolete; hindwing whitish washed with grey; sometimes with an outer series of dark spots; — the ab. **crassicornis** Haw. (49 b) has the black dusting intensified on both wings, forming, in some instances, dark horizontal streaks in the forewing; the rows of spots in both wings strongly expressed; — ab. **rufescens** Tutt (= *canuae* Stph. nec Ochs.) (49 c) is the red form corresponding to *lutosa* *rufescens*. Hbn., sometimes with, at others without, the rows of spots; for the more dusted red form, corresponding to ab. *crassicornis* Haw., Tutt has used the name **rufescens-suffusa** (49 c). In North and Central Europe, including Britain; E. Siberia; Japan. Larva bone-colour with a pinkish tinge; head light brown; feeding underground in the roots of the reed. The form occurring in Japan must be separated as a subspecies **griseata** *subsp. nov.* (49 c): in the ♂♂ of this (I have not seen a ♀) the hindwings are dark grey beyond middle with the fringe pale; the forewings also are greyer ochreous with the pale veins more distinctly defined by dark sealing. 2 ♂♂ in Tring Museum from Ichikishiri, Yezo, August 1890, (Dr. Fritze). *griseata*.

R. pallidipennis *spec. nov.* (49 c). Forewing whitish with a faint ochreous tint; the dark dusting minute and sparse; dots forming the outer line quite small, and only present occasionally in the ♂♂; hindwing and fringe pure white; underside whitish; some dark scales on each side of the middle of discocellular of forewing, forming a sort of ocellus; dark terminal dots between veins in forewing; head, thorax, abdomen above and below and legs all whitish, without grey dusting. Besides its general paler coloration the species differs from *lutosa* by its still narrower forewings and more oblique termen, which merges into the inner margin without any prominent elbow, such as is generally to be observed in *lutosa*. 4 ♀♀ and 2 ♂♂ in Tring Museum from Issyk-kul, July 1902 (Kutsenko) and 1 ♂ from Kaschkassu, Tian-shan, of the same date. *pallidipennis*.

110. Genus: **Arenostola** Hmps.

Tongue well-developed; frons smooth, with rough hairs; palpi porrect, the terminal segment depressed; antennae of ♂ shortly ciliated; thorax and abdomen without crests; wings usually short and broad, with few markings. Larva in the lower part of stems of grass and carex. Type *Arenostola phragmitidis* Hbn.

A. elymi Tr. (49 d). Forewing bone colour, tinged with pale brownish between the veins; the veins a little darker; outer line indicated by a double row of dark spots; hindwing luteous white; ab. **saturation** *Stgr.* is deeper brown. A coast species found in the east of England, in Denmark and N. Germany. Larva bone colour, sometimes with a yellow or reddish tinge; head reddish brown; on *Elymus arenarius*. *elymi*. *saturation*.

A. procera *Stgr.* (49 d). Forewing pale rufous ochreous, thickly irrorated with brown; the veins dotted with brown; an outer row of dark vein points; hindwing whitish. W. and E. Turkestan, Mongolia, and Kashmir. *procera*.

A. brevilinea Fenn (49 d). Forewing dull grey-brown densely black-dusted; the veins terminally paler; inner and outer lines represented by a series of dark vein dots; a black streak from base below cell; hindwing fuscous, darker towards termen; an outer row of dark dots; the ab. **sinelinea** Farn (49 d) is more uniform in coloration, without the black streak from base. Hitherto recorded only from the fens of Norfolk, England. Larva pale ochreous, with brown freckling; dorsal, subdorsal, and spiracular lines orange edged with yellow; head pale brown; feeding on Phragmites; living within the stems and when young feeding there; afterwards emerging from the stems by night and feeding on the leaves. *brevilinea*. *sinelinea*.

A. phragmitidis Hbn. (= *semicana* Esp., *verecunda* Ev., *moravitzii* Mén.) (49 d). Forewing very smooth, pale ochreous, becoming pale brownish red towards termen; the fringe dark at tips; hindwing pale greyish ochreous; — the ab. **rufescens** Tutt (49 d) is flushed throughout with deep flesh colour; ab. **pallida** Tutt (49 e), the usual British form, is smooth pale ochreous throughout; ab. **olivescens** *ab. nov.* (49 e), is smooth olive grey, the hindwing dark grey. Found in North and Central Europe, in Western Asia, and Turkestan. Larva bone-colour; subdorsal line somewhat interrupted, broad, purplish-fuscous; lateral lines similar, but narrower; head black; thoracic plate brown; living like *brevilinea* in the stems of reed. *phragmitidis*. *rufescens*. *pallida*. *olivescens*.

A. impudica *Stgr.* (49 e). Extremely near *brevilinea* Fenn, but paler grey, more uniform in coloration; a dark cloud at lower end of cell; the inner and outer lines shown by vein-spots; in ab. **basistriga** *ab. nov.* there is a short black streak from base below cell, as in *brevilinea* typical. Amurland and E. Turkestan. *impudica*. *basistriga*.

A. mollicella Püng. (49 e). Forewing dull grey brown, sprinkled with lighter grey along costa and veins; outlines of stigmata denoted by some white scales; terminal line broken up into small dark yellow-tipped spots; fringe grey brown; hindwing white. Described by Püngeler from a single ♂ from Kuku Nor, Tibet. Nearest *procera* *Stgr.*, but smaller and more delicate in build. *mollicella*.

A. sohn-retheli Püng. (49 e). Forewing dull whitish, dusted with greyish-brown; veins, especially towards termen, lighter; hindwing pale grey. Much resembles *morrisii*, but distinguished by the smoother sealing, the greyish brown dusting divided into streaks by the pale veins. Italy. *sohn-retheli*.

- deserticola*. **A. deserticola** Stgr. (49 e). Forewing uniform sand colour, not darkened towards termen as in *phragmitidis*: underside blackish grey, with the margins pale; hindwing greyer, with a faint dark cellspot, outer line, and submarginal shade. Biskra, Algeria.
- modesta*. **A. modesta** Stgr. (49 e). Extremely close to the preceding (*deserticola*) and perhaps a local form of it. Forewing of the same sandy colour, but thickly strewn with blackish atoms: hindwing dark grey, with the fringe paler, yellowish: costal area yellowish. Palestine.
- mabillei*. **A. mabillei** Lucas (49 e). Forewing fulvous, unevenly dusted with black atoms: outer line very distinct, brown, dentate, incurved below middle; a fuscous streak from base to termen along middle of wing between veins 4 and 6; hindwing grey, with a faint darker outer line, before which the wing is partly fuscous. Described from 3 examples from Algeria. Quite a small species.
- fluxa*. **A. fluxa** Hbn. (= *junci* Bsd., *helmanni* Guen. nec Ev., *extrema* H. Schöff. nec Hbn., *saturata* Stgr., *expressata* Krul.) (49 f). Forewing rufous, dusted with grey whitish; the rufous tint clearer along the two folds: the costa and veins dotted grey and ochreous; orbicular and reniform of the ground colour with pale outlines, the orbicular round or elliptical, the lower lobe of reniform dark; outer line indicated by a curved row of dark pale-tipped spots on veins; hindwing pale greyish luteous; the form **hellmanni** Ev., by which name the insect has hitherto been known, is sandy ochreous, dusted with darker, with very little or no red tinge; ab. **pulverosa** ab. nov. (49 f), has the grey dusting very strong, the dots of outer line obsolete, and the veins dark. Recorded from S. Sweden, Finland, Holland, Britain, N. Germany, Bohemia, Austria, the Ural Mts., and Issyk-kul, Turkestan. Larva bone colour, dorsally tinged with red, whiter below: the spiracles black; head glossy, yellowish brown; thoracic and anal plates paler; feeding low down in the stems of *Calamagrostis epigeios* in marshy districts: pupating in a slight cocoon in the ground.
- pygmina*. **A. pygmina** Haw. (= *fluxa* Dup. nec Hbn., *extrema* H. Schöff. part nec Hbn., *hellmanni* H. Schöff. fig. 339 nec Ev.) (49 f). Forewing rosy red, or bright brick red without markings; hindwing pale grey; abdomen whitish with rosy anal segment: the ♂ of this form is dull pink, with the costa and all the veins broadly dark grey and sometimes a trace of the dark outer line of dots; hindwing darker grey; in neither sex is there any tint of yellow or fulvous: the form **fulva** Hbn. (49 f) is fulvous rufous with the veins and outer line of spots dark, especially the median vein; — ab. **ochracea** Tutt (49 f) is yellow ochreous, without red tints, the outer line of dots marked, and often the median vein and the other veins towards termen; ab. **punicca** Tutt (49 f) appears to be a paler and greyer, less fulvous, form of *fulva*; while **pallida** Stph. (49 f, g) is pale ochreous or bone colour with the costa and veins dark grey and generally a dark shade running below the median vein; this form occurs of two sizes: the larger form may possibly represent the ab. **neurica** Stph. (non Hbn.); ab. **transversa** Stgr. is distinguished by having the inner and outer lines complete and fully marked across the forewing, which is dark grey; ab. **fasciata** ab. nov. (= ab. 1. *Hmps.*) from Algeria also has the lines entire and dentate, with the median fascia strong, but the ground colour pale ochreous instead of grey. Spread throughout North and Central Europe and occurring in Armenia. Larva dirty white, showing sometimes two or three dull flesh-coloured lines; dotted and in parts streaked with darker; sometimes dark flesh colour with yellowish dorsal line and reddish grey brown lateral lines: feeds in lower part of the stem of *Carex paludosus* (and ? *Poa aquatica*), pupating in situ.
- extrema*. **A. extrema** Hbn. (= *concolor* Guen.) (49 g). Forewing bone white slightly dusted with grey, with no markings except the outer, much curved, row of dark vein-spots and some black terminal spots; hindwing pale grey; in shape of forewing agreeing with *fluxa* Tr.: the imago emerges in the latter half of June, whereas *fluxa* and *pygmina* appear only in August and September respectively. Found in Britain, Germany, Austria, Hungary, S. Ural Mts. and in Turkestan; Larva probably in roots or lower part of stems of *Molinia coerulea*.
- morrisii*. **A. morrisii** Dale (= *bondii* Knaggs) (49 g). Larger than the preceding species, chalk white, with faint grey dusting towards termen in the ♂♂: a curved series of black vein spots represents the outer line: no marginal spots; hindwing dark grey, paler in ♀; the fringe white; the abdomen is longer and thinner, the pectus and palpi smoother, less woolly, than in *extrema*. Found only on the South coasts of England and Greece. Larva in the roots of *Arrhenatherum elatius*.

111. Genus: **Archanara** Walk.

Tongue present; frons densely tufted, the tuft concealing a quadrangular horny projection: antennae of ♂ ciliated; palpi porrect, the second segment long, rough-haired; prothorax slightly crested; abdomen long, without crests; stout in the ♀, ending quadrately in the ♂; larva elongate, feeding within the stems of marsh-growing Gramineaceae, and pupating in situ, usually with the head upwards. Type *Archanara polita* Walk. from China.

- geminipuncta*. **A. geminipuncta** Haw. (= *guttaus* Hbn., *paludicola* Hbn. f. 637, *arundinis* Sepp.) (49 g). Forewing reddish fuscous, with a broad paler space along the inner margin; the reniform stigma with two white spots; hindwing fuscous; the ground colour is very variable; — in ab. **pallida** Tutt it is reddish-or greyish-

ochreous; in **rufa** *Tutt* uniform reddish brown; and in **nigricans** *Stgr.* (= *fusca* *Tutt*) (49 g) sooty-black; *rufa*.
 from another point of view, the reniform stigma may contain, only one, — the lower, — white spot, or *nigricans*.
 neither; ab. **unipuncta** *Tutt* (49 h) and ab. **obsoleta** *Tutt* (49 g) respectively; ab. **paludicola** *Hbn.* f. 624, *unipuncta*.
 if the figure is not exaggerated, represents a dark reddish brown specimen, with the median and costal *obsoleta*.
 veins white; a small black orbicular stigma and large black reniform with a white lunule on its inner *paludicola*.
 edge; and all the veins white before termen; the hindwing grey, with paler base and a dark cellspot.
 Occurs in Britain, S. Sweden, the Baltic provinces of Russia, throughout Central Europe to N. Italy
 and Spain. Larva pinkish ochreous; the spiracular line paler; head dark brown; feeds in stems of *Phragmites*.

A. resoluta *Hmps.* (49 h). Forewing greyish suffused with redbrown and dusted with dark fuscous; *resoluta*.
 a brownish shade below median vein and between vein 4 and submedian fold; costal edge dark brown; inner
 line obscure, oblique, brown, dentate inwards on veins, preceded in cell by a brown point; a whitish
 streak on outer half of median vein, its extremities slightly bent upwards, with a short dark streak between
 them; outer line blackish, oblique to vein 7, then dentate and inwardly oblique; subterminal line
 formed by a row of small dark marks, angled at 7, then oblique; a marginal row of black dots; hindwing
 whitish suffused with brownish. Japan.

A. dissoluta *Tr.* (= *neurica* *Hbn.* ff. 659—661, nec 381, *hessii* *Bsd.*) (49 h). As often happens, *dissoluta*.
 the insect first described by this name is a comparatively rare dark-reddish suffused form of the much
 commoner and paler *arundineta* *Schmidt*, to which it bears much the same relation as *fraterna* *Tr.* does
 to its type form *typhae* *Thnbg.* This form, which was formerly taken in S. W. Germany, and at Whittle
 sea and Yaxley Meres in the fen country of Britain, has been lately rediscovered in Kent; — **arundineta** *arundineta*.
Schmidt (= *neurica* *Dup.* nec *Hbn.*) (49 h) the more general form, at least in Britain, has the forewing
 greyish ochreous dusted with fuscous, the two folds with a slight reddish tinge, separated by a black
 streak from base below cell, which runs as a more diffuse shade sometimes to termen; veins often dark
 grey or blackish; outer line represented by black vein-dashes; the upper stigmata interrupted in middle
 by the reddish tint of the cell; their upper portions marked by black dots; the lower lobe of reniform
 filled with black and edged with white scales, sometimes complete throughout; a series of black marginal
 lunules; hindwing dirty grey; the ♀ is paler, narrower-winged, without any red tinge, dusted with grey
 instead of fuscous, without the strong black median streak; the two folds olive fawn colour; the black in
 lower lobe of reniform strong and edged with white; the hindwing paler, showing more clearly a dark
 outer line and terminal shade; the underside of both wings with a distinct dark cellspot. Found in
 Britain, Holland, Denmark, Germany, S. Russia; in N. Persia and Turania. Larva dirty white, often with
 a reddish tint, sometimes also pale green; the tubercles dark; spiracles white in black rings; head dark
 brown; thoracic and anal plates pale brown; pupates in lower end of the reed stem.

A. neurica *Hbn.* (= *edelsteni* *Tutt*) (49 h). Forewing brownish fawn colour, hardly dusted with *neurica*.
 darker; no distinct dark streak along middle; edges of stigmata marked by pairs of black dots above and
 below, interrupted in cell; the upper half of each broader than the lower; (in *arundineta* this is not
 the case;) median vein marked with black and white scales; lower lobe of reniform not black, but
 some black scales above median vein on each side of it; inner and outer lines complete, the latter strongly
 lunulate-dentate; a row of black marginal lunules; hindwing brownish grey, with dark outer line and
 terminal border; tips of shoulders white; underside without cellspots or other markings. Occurs in Britain,
 S. Sweden, Germany, Austria and Transylvania. Larva dull bluish green, with 3 faint pale grey dorsal
 lines and fine black tubercles; spiracles black; head black-brown; thoracic plate yellowish brown with
 darker edge and dots; living, like the previous species, in reed stems.

A. polita *Walk.* (= *nonagriella* *Walk.*) (49 h). Forewing reddish or fulvous brown, densely sprinkled with *polita*.
 black, the two folds clearer, without speckling; lower ends of stigmata shown by black dots; inner and outer
 lines marked by black vein-spots; a marginal row of black dots; hindwing paler brown. China and Japan.

A. phragmiticola *Stgr.* (49 i). Forewing dark brownish grey, with a white streak and dark points *phrag-*
 on outer half of median vein and just beyond; darker than *arundineta*, the same colour as *dissoluta*; no *miticola*.
 trace of reniform stigma; veins before termen whitish; hindwing dull fuscous. S. Ussuri district, Amurland.

A. sparganii *Esp.* (49 i). Forewing light yellowish ochreous flushed with rufous, especially in the ♂; *sparganii*.
 veins paler, and sprinkled with dark fuscous, especially the median vein; lines represented by series of
 black spots, the outer only distinct and complete; reniform stigma marked by two or more blackish dots
 at its lower end; a series of black terminal dots; hindwing pale dull yellowish, more or less suffused with
 fuscous, except towards inner and outer margins. Britain, S. Sweden, Central Europe, N. Italy, Russia.
 The species is variable both in colour and clearness of markings; thus ab. **obsoleta** *Tutt* (49 i) is an *obsoleta*.
 ochreous form dusted with grey and without any reddish or yellowish admixture; ab. **rufescens** *Tutt* (49 i) *rufescens*.
 has the forewing more or less strongly reddish and the hindwing suffused with fuscous to outer line;
 while ab. **bipunctata** *Tutt* (49 i) has a black dash above median vein, representing the base of an otherwise *bipunctata*.
 unmarked orbicular stigma, as the black crescent with its pale centre at end of cell represents the reni-
 form; this form is independent, of colour. Larva slender, pale yellow green; subdorsal and lateral lines
 darker; head and thoracic plate pale brown; feeding in stems of *Typha*, *Sparganium*, and *Iris*.

- aerata*. **A. aerata** *Bltr.* (= *sparganii* ab. *strigosa* *Stgr.*) (49 k). Resembles *sparganii* in colour, but somewhat smaller in size and with a distinct black streak along middle of forewing. Amurland and Japan.
- algae*. **A. algae** *Esp.* (= *arundinis* *Hbn.* nec *F.*, *cannae* *Ochs.*, *rusa* *Ev.*) (49 k). Forewing yellowish rufous, the rufous tint predominating in the ♂, the yellowish in the ♀; veins more or less tinged with grey; a dark smudge at lower angle of cell; an outer row of dark vein-dots; hindwing grey with a dark paler-edged outer line; a rare form, ab. **liturata** ab. *nov.* (49 k) has both lines complete and dentate throughout, the median vein thickly black; — in the Norfolk Fens a very dark form occurs, — ab. *fumata*.
- fumata*. **fumata** ab. *nov.* (49 k), with the wings, especially in the ♂, dark brown or black brown. A local species, found in Britain, North and Central Europe, N. Italy, Central and South Russia. Larva greenish dotted with black; head brown; thoracic plate pale green; feeding within stems of *Typha latifolia*.
- insoluta*. **A. insoluta** *spec. nov.* (49 k). Forewing pale or dark reddish brown, this ground colour, which is broadly visible along both folds, being elsewhere more or less covered by blackish grey scaling, speckled with whitish or pale grey along the veins; outer line marked by a row of coarse black dashes on veins; median vein and vein 1 more particularly whitish-scaled; orbicular stigma round and black, often obscured; reniform with the outline scarcely visible, marked by two white dots above the median vein; traces of a line of dark spots in submarginal area between the veins; termen itself darker, with a row of distinct black spots; hindwing dull olive fuscous, the veins towards termen showing pale grey. 3 ♀♀ from Oasis Tedschen, Transcaaspia. Like a large coarse *dissoluta*.
- cervina*. **A. cervina** *spec. nov.* (49 k). Forewing pale fawn colour, finely speckled with grey atoms; inner and outer lines marked by dark vein dots, the outer ones only distinct; a pale ochreous flesh coloured streak along each fold; that in cell-fold beginning at middle of cell and reaching to subterminal line; that in submedian interval broad and running from base to termen; an indistinct subterminal brown shade just beyond outer row of dots, externally marked by brown spots in the intervals; minute black terminal dots; fringe fawn colour; reniform stigma indistinctly paler, interrupted by the pale streak; hindwing dull luteous whitish, slightly fawn coloured in terminal third; underside greyish fawn; head, thorax, and abdomen fawn coloured, the legs and face brownish tinged. 1 ♂ from Ketmen Tjube, Sussamyr Mts., Turkestan, June, July, 1906.

112. Genus: **Coenobia** *Stph.*

Tongue present; frons tufted with rough hair, concealing a projecting, triangular horny plate; palpi porrect or upturned, second segment hairy and long; antennae of ♂ ciliated; prothorax with crest; dorsum without crests; tibiae smoothly scaled; forewings of ♀ narrower than those of ♂. Larva in base of stems of *Juncus lamprocarpus*. Type *Coenobia rufa* *Haw.*

- rufa*. **C. rufa** *Haw.* (= *despecta* *Tr.*). Forewing uniform rufous, with an obscure dark streak from base along middle of wing; a row of outer dots on veins, sometimes hardly visible; hindwing pale, greyer towards termen; in the ab. **lineola** *Stph.* (48 e) the forewing is reddish grey; the veins dotted pale and dark grey; the inner and outer lines shown by rows of dots; in **pallescens** *Tutt* (48 e) the red tinge is wholly absent, the forewing being whitish ochreous. Common in damp swampy places overgrown with rushes; often flying in the afternoon sunshine; the ♀♀ are rarely taken, resting concealed in the lower parts of the rush clumps. Occurs in Britain, Denmark, Germany, Saxony, Austria, and France. — Larva whitish, dorsally reddish; a dark lateral line, and minute dark dots on each segment; head and plates shining brown.
- stigmatica*. **C. stigmatica** *Ev.* (= *lagunica* *Graes.*) (48 e). Larger than *rufa*; forewing pale brownish yellow, without transverse lines; a black streak from base on submedian fold, diffuse below; a black longitudinal streak in the lower half of cell, beginning before middle and running broader and more obscure to near termen, diffuse below like the basal streak; reniform stigma represented by a long white point in this streak at the base of veins 3 and 4; the terminal area is darker grey brown, the veins still darker; hindwing pale yellowish grey, with dark terminal line and pale fringe. Described originally from the Ural Mts.; occurs also in the Kentei and Uliassutai Mts.; in Amurland, and Siberia.

113. Genus: **Nonagria** *Tr.*

Tongue present; frons smooth; palpi upcurved, second segment long, thickly scaled; antennae of ♂ ciliated; prothorax crested; abdomen slender, elongate, smooth; tibiae smooth; forewing elongate, narrow, the costa curved; contains only one species, which is of weak and delicate structure. Larva long and thin, living and hibernating in the stems of *Phragmites*, feeding on the leaves. Type *Nonagria maritima* *Tausch.*

- maritima*. **N. maritima** *Tausch* (= *sericea* *Curt.*, *anella* *Stph.*) (48 e). Forewing silky grey; the veins pale grey, the intervals darker, stigmata pale, hardly perceptible; outer line alone represented by a curved row of black vein-dots; hindwing pure white, with traces of an outer row of dark dots; — ab. **ulvae** *Hbn.* (48 e) has the forewing along the centre rufous ochreous, the costa dark grey with the veins pale; the stigmata lined with white; outer line of dots followed by a dark shade and a row of minute dots before termen;
- bipunctata*. hindwing ochreous white, with a grey cellspot and outer row of dots; — in ab. **bipunctata** *Haw.* (= *nigromaculata* *Schmidl*) (48 e) the two stigmata are deep black, with a small black spot at base of cell; in

wismariensis Schmidt a broad black stripe runs longitudinally through the middle of wing from base to termen; — in *nigrocostata* Stgr. a broad black stripe runs along the costa; — *nigristriata* Stgr. is more like the typical grey form, but with many black streaks running parallel to the veins. Found in Britain, Scandinavia, Holland, Germany, Austria, Hungary and Russia. Larva ochreous with fine dark and light longitudinal lines; head and thoracic plate brown; said to feed with avidity on other larvae and insects which creep into the reed-hollows. *wismariensis*, *nigrocostata*, *nigristriata*.

N. nigrosignata Graes. Forewing dark brownish grey, dusted with numerous pale and dark scales; inner and outer lines represented only by rows of dark vein-dots; orbicular stigma a black longitudinal streak; the reniform represented by two black points, the larger nearer base; a small pale point beyond the outer black one; terminal points black; hindwing pale grey, semitransparent; the veins and terminal line dark; the fringe pale. Described by Graeser from a single ♂ from Wladiwostok, Amurland. *nigrosignata*.

114. Genus: **Oria** Hbn.

Tongue weak; frons smooth, with a rough tuft of hair; palpi slender, obliquely porrect, the second segment hairy, the terminal pointed; head, thorax, and pectus with woolly hairs; thorax and abdomen without crests; forewing elongate, the costa somewhat shouldered at base and inflexed before apex. Larva in stems of grasses, feeding from autumn to spring. Type *Oria musculosa* Hbn.

Sect. I. Antennae of ♂ ciliated.

O. musculosa Hbn. (= *nervosa* Stph., *flava* Frr., *frumentalis* Lindem., *flavescens* Hmps.) (48 f). *musculosa*. Forewing whitish ochreous suffused with yellowish, the pale ground colour showing as streaks along the folds and an oblique streak from apex to end of cell, where the reniform is marked by a pale blotch with a grey spot at its lower end; veins towards termen grey-tinged; hindwing whitish, washed with grey, the veins darker; *laeta* Alph. is a small, pale, yellowish form from Central Asia. Occurs in Central and Southern Europe; in Morocco and the Canaries; and in Asia Minor, Armenia, Syria, and Persia; has been occasionally captured on the South coast of England. Larva pale greenish, with four dark lines at even distances apart, forming spots on the anal segment; head redbrown; thoracic plate yellow; spiracles black; living from autumn to spring in the stems of Calamagrostis Epigeios and Rye. *laeta*.

Sect. II. Antennae of ♂ with tuberculate fascicles of cilia.

O. myodea Rmb. (48 f). Like *musculosa* but distinguished by the grey longitudinal streaks in the discoidal field, in the interval beyond cell, and along inner margin. Found only in Spain and Portugal. *myodea*.

115. Genus: **Argyropila** H. Schöff.

Tongue present; frons smooth; palpi short, obliquely porrect, not reaching in front of face; head, thorax, and pectus woolly; antennae very minutely serrate and ciliated; forewing elongate. Type *Argyropila succinea* Esp.

A. succinea Esp. (= *maculata* Er.) (48 f). Forewing pale olive brown, sometimes grey-tinged: a streak at base of cell, another on submedian fold in the place of the claviform stigma, the orbicular and reniform, — the former small, oblique, the latter obliquely lunular with a dark spot at lower end, — an oblique outer line from apex to inner margin, generally interrupted above and below middle, indented on each fold, and the veins at termen running out through the fringe, all shining white; hindwing olive grey; the fringe white; the ab. *olivacea* B.-Haas has the dark shades of forewing deep olive green, the hindwing entirely olive green. Ural Mts., Armenia, Tura, Ili and Issyk-kul, Turkestan. *succinea*, *olivacea*.

A. ? formosa Graes. Forewing broad; the apex produced, but blunt; the termen sinuous, gibbous beyond veins 3 and 4, incurved below apex, and oblique to anal angle; hindwing also large, gibbous at middle of termen. The usual cross lines absent from forewing, which is longitudinally streaked with rosy red, olive brown, greenish, and black; costa and inner margin and a streak below median vein rosy, becoming brownish or yellowish as they approach termen; cell at base deep black, splitting into two black lines along the upper and lower margins, the cell between them olive brown; vein 1 at base and base of inner margin also black-scaled; orbicular and reniform stigmata pure white, outlined with black, the space between them black; the orbicular a short dash; the reniform a large lunule with pointed ends, obliquely placed, with the ends curved outwards, and a small black fleck in the hollow between them; on the origin of veins 3 and 4 a round white point in a black ring; terminal area gay; an oblique black streak from apex to reniform; veins 3, 4, 6, 7 on red streaks radiating from beyond reniform, and containing between them towards termen sharp black streaks; fringe black, mottled with yellow brown beyond the veins; hindwing dark grey, paler towards base, with slight cell spot; fringe mottled from apex to vein 2, thence to anal angle and also on inner margin dark grey. Described by Graeser from a single ♂ bred from an unknown larva in August at Nicolajefsk, Amurland. *formosa*.

116. Genus: **Sesamia** Guen.

Tongue weak and short; frons smooth; palpi porrect, loosely rough-haired below; antennae rather short; thorax and abdomen without crests; forewing narrow and elongate. Larva in the stems of cereals, pupating in situ with the head downwards. Type *Sesamia vutera* Stoll.

Sect. I. Antennae of ♂ with pedicellate fascicles of cilia.

vuteria. **S. vuteria** Stoll (= *nonagrioides* Lef., *hesperica* Rmb., *incerta* Walk., *sacchari* Woll., *madagascariensis* Saalm.) (48 f). Forewing pinkish ochreous tinged with yellow, finely dusted with dark, becoming slightly brown just before termen, which is marked by a deep purple-black line, beyond which the pinkish grey fringe shows brightly white; a curved series of black vein spots, somewhat near outer margin, represents the outer line; in the interval between veins 5 and 6 this series is preceded by a larger black spot, and another like it lies above submedian fold below the middle of cell; hindwing pure white. The species occurs in Spain, S. France, and Italy; in Morocco, Egypt, the Madeiras and the Canary Islands. Larva reddish above, dull yellow beneath; a dark dorsal vessel shows through the skin; spiracles red tinged with black; head brown; thoracic and anal plates shining red; feeds in the stems of maize, several larvae often in one stem; the pupa state lasts for only a fortnight, and there are 2 or 3 broods during the season, which probably accounts for the different size of the imagines.

Sect. II. Antennae of ♂ with tuberculate fascicles of cilia.

inferens. **S. inferens** Walk. (= *proscripta* Walk., *albiciliata* Snell., *tranquilaris* Btlr., *gracilis* Btlr., *innocens* Btlr.) (48 f). Exceedingly like the preceding species, but the fringe of the forewing is silvery white. Widely spread through India and the islands, and occurring in China and Japan.

Sect. III. Antennae of ♂ subserrate, ciliated.

cretica. **S. cretica** Led. (= *hesperica* Frr. nec Rmb., *cyrnaea* Mab., *fraterna* Moore). (48 g). Forewing uniform yellowish ochreous, sometimes with slight grey dusting; an outer row of vein-dots is often visible in African examples, while in Syrian specimens a row of faint marginal dots is to be seen; sometimes there is a slight grey shade along median vein and in the terminal intervals; this is the ab. **striata** Stgr. Occurs in Crete, Italy, Dalmatia, Corsica; Syria, Tura, and Fergana. Larva reddish yellow dorsally, grey beneath; dorsal line dark, interrupted, forming triangular marks on anal segments; spiracles black; head and plates yellowish; in stems of maize.

gracilis. **S. gracilis** Rbl. (48 g). Forewing yellowish white irrorated with brown, the median nervure streaked with brown; the veins terminally pale; fringe white; hindwing and fringe pure white. Sta. Cruz, the Canaries.

117. Genus: **Epipsammia** Stgr.

Tongue well developed; frons flatly rounded; palpi very short, long-haired beneath on both segments; antennae of ♂ filiform, pubescent; thorax smooth; abdomen slender, with the anal claspers strongly developed in the ♂, as in *A. morrisii* Dale. Type *Epipsammia deserticola* Stgr.

deserticola. **E. deserticola** Stgr. Forewing pale yellow; marked only by a faintly expressed middle band, and that chiefly on inner margin, the inner and outer lines that contain it rarely visible; the termen before fringe rather darker; hindwing wholly white. Taken settled on the sand of the steppes at Naruen, near the Volga. A small and little marked insect.

118. Genus: **Doerriesa** Stgr.

Tongue minute, aborted; frons smooth; palpi upturned, the second segment long, towards its apex fringed with scales both above and below, the third small; thorax clothed with scales, and like the abdomen without crests; forewing with apex subacute, termen oblique, nearly straight; antennae of ♀ (the only sex known) ciliated. Type *Doerriesa striata* Stgr.

striata. **D. striata** Stgr. Forewing cream colour, streaked and suffused with bright brick-red and dusted with grey, the two folds remaining pale; veins and costal edge narrowly pale; a dark marginal shade before the white fringe; hindwing white tinged with luteous. Recorded only from Ussuri, Amurland.

119. Genus: **Coenagria** Stgr.

Resembles *Coenobia* Stph., but the abdomen is much shorter and the frons is smooth without any projecting process; tongue slender and short; palpi short and thin; the antennae (♀) filiform. Type *C. nana* Stgr.

nana. **C. nana** Stgr. Forewing dirty reddish grey, with the veins, especially towards termen, darker, the median vein in particular being prominent; the line of outer dots is obsolete; hindwing whitish, becoming somewhat darker towards termen. Described by Staudinger from a single ♀ from E. Siberia.

120. Genus: **Calamia** Hbn.

Tongue well-developed; frons smooth, slightly protuberant; palpi porrect, the second segment hairy, the third short; thorax and pectus woolly; thorax and abdomen without crests; antennae of ♂ serrate, with sessile fascicles of cilia; a small tuft of hair from base; forewing elongate; the termen more oblique above anal angle; the inner margin lobed at base. Larva on low growing plants; the egg laid in autumn overwintering; pupation in a slight cocoon. Type *Calamia virens* L.

The genus has no connexion with the internal feeders on the reed.

virens. **C. virens** L. (48 g). Forewing pale green, without markings except a white reniform stigma, which is sometimes edged externally with rust colour; fringe white with the base green; hindwing of the ♀

whitish green, of the ♂ more or less suffused with grey except along costa, showing a pale curved outer band; fringe white; — in ab. *immaculata* Stgr. (48 g) the whole forewing is uniformly green, with no trace of a white reniform, and the hindwings of the ♂ are not fuscous; — ab. *thalassina* ab. nov. (48 g) has the forewing glossy dark sea-green, with the outer half of fringe greenish; the hindwing green flushed with darker green and the veins green; head and thorax sea green like the forewings; the abdomen white as in typical *virens*: the description is made from 1 ♂ and 2 ♀♀ in the Tring Museum, unfortunately without locality label, but probably of German origin; 1 ♀ has a diffuse whitish smear on the discocellular, the others are immaculate; the ab. *rufata* ab. nov. (= ab. 2. *Hmps.*) (48 g) has the reniform filled up with rufous fuscous or with the white discocellular edged with rufous, and the whole hindwing brownish grey with the fringe white. Occurs throughout Central Europe except Britain, S. Sweden, S. W. Russia, S. E. France, Spain, and S. Italy; the form *immaculata* in Hungary, S. Russia, Armenia, Asia Minor, Altai Mts., Persia, Issyk-kul, and the Tarbagatai Mts. Larva dark greenish brown; dorsal line fine and conspicuously pale; tubercles black; head redbrown, the thoracic and anal plates black; feeds up in spring on numerous low plants, *Alsine*, *Plantago*, etc., and pupates in a slight cocoon.

121. Genus: *Sphragifera* Stgr.

Tongue well developed; frons smooth; palpi upcurved in front of face, the second segment long, slender, reaching vertex of head, the third distinct, pointed; antennae of ♂ filiform, simple; thorax and abdomen stout, smoothly scaled, without crests; forewing marked with a brown subapical blotch and with traces of lines. Type *Sphragifera sigillata* Mén.

S. sigillata Mén. (48 h). Forewing white speckled with grey-brown, most thickly along inner margin; inner and outer lines grey brown, obscure; the inner oblique and waved, the outer visible only above inner margin where it is angled outwards on vein 1; above it is a narrow white reniform stigma with dark brown outline, often obsolete; beyond it a large roundish chocolate brown blotch, reaching from costa to vein 3, bluntly pointed outwards on vein 6; the area below and beyond it often diffusely grey brown; a grey brown submarginal curved streak from vein 5 to inner margin, preceded by an indistinct pale submarginal line, and followed by a grey festooned line from costa to anal angle, close before the dark marginal line; fringe grey brown, whiter at apex; hindwing white, dusted with grey, which forms a suffused band along termen; cellspot grey. Amurland and Japan.

S. biplaga Walk. (= *subapicalis* Walk., *biplagiata* Walk.) (48 h). Smaller than *sigillata*; the subapical blotch smaller, nearer apex, its inner edge straighter, paler brown; instead of the grey lines of *sigillata*, an oblique bright brown band from costa before middle merging below median vein in a diffuse fuscous or brown grey blotch lying below the brown subapical blotch; a white lunulate reniform with dark brown outline, followed by some dark brown scaling, through which sometimes can be traced an outer line; a blackish festooned line just before termen, containing black spots below veins 2, 3, and 4; fringe pale grey; hindwing white, with a cloudy grey terminal border, especially in the ♀. China and Corea.

S. rejecta F. (= *bimacula* Walk.) (48 h). Forewing white; costa with 3 brown spots indicating the origin of inner, median, and outer lines; the second prolonged into a short streak; the outer line brown-grey, entire, excurved above and dentate-lunulate, the teeth forming dark brown points on veins; submarginal line starting from a large black brown blotch, somewhat gamma-shaped, the tail curving outwards above vein 6, and continued as a vertical grey brown shade to anal angle; a row of blackish dashes between the veins close before termen; fringe white; hindwing white, with black marginal spots. China; also found in N. India.

122. Genus: *Chasminodes* Hmps.

Tongue present; frons smooth; palpi upturned, smoothly scaled; antennae of ♂ ciliated; scaling smooth and glossy; thorax without crests; forewing broad, the apex squared, the termen slightly curved; forewing without areole; 7, 8, 9 stalked; 10, 11 from cell. Type *C. albonitens* Hmps.

Distinguished from *Chasmina* Walk. by the absence of the areole.

C. albonitens Brem. (48 h). Forewing and hindwing pure shining white; a slight dark spot at lower end of cell, and faint dark dots along termen; the third segment of palpi black at tips. Amurland, Japan, Corea. Larva between united leaves of lime in spring.

C. cilia Stgr. (48 h). Forewing white, with a small black spot at lower end of cell; beyond it a brown outcurved outer line; a row of black dots along termen and four on costa before apex; hindwing white. Amurland.

C. nervosa Btlr. (48 h). Forewing bluish white, with the veins and termen blackish; hindwing similar. A small species from Japan.

C. atrata Btlr. (= *borussica* Stgr.) (48 h). Forewing and hindwing deep black, with the extreme base of both wings white; the abdomen white. Amurland and Japan.

C. nigrilinea Leech (48 h). Larger than *cilia* Stgr., without cellspot; the outer line grey and thick, incurved on submedian fold; the black terminal spots stopping at apex; fringe white tipped with rufous grey; hindwing with an outer line, beyond which the apical half of terminal area is grey; a dark marginal line; fringe white with a grey patch at apex. Japan. Described from a single ♀.

123. Genus: **Euterpia** *Guen.*

Tongue well-developed; frons slightly protuberant and roughened; vertex and frons both roughhaired; palpi upturned, short; the second segment rough haired, the terminal short; antennae of ♂ shortly ciliated, in both sexes with a short lateral bristle from each segment; thorax, pectus, femora, and tibiae densely woolly; thorax and abdomen without crests; abdomen of ♀ conical, with exserted ovipositor. Larva on seeds of Cariophyllaceae in July, pupating in a close cocoon in the ground and emerging the next summer. Type *Euterpia laudeti* Bsd.

laudeti. **E. laudeti** Bsd. (= *cretacea* Ev.) (48 i). Forewing chalk white; inner line velvety black, formed of lunules between the veins, inwardly edged with whitish; the subbasal line similar, but outwardly white-edged, the space between them violet; outer line excurved above, distinctly lunulate-dentate, black edged outwardly with white, preceded by a violet band, interrupted at middle and followed by a second, with dentate outer edge, which is blackened at costa and on inner margin, beyond which the subterminal line is sometimes marked by some black spots following it; termen and fringe white; orbicular stigma a black annulus; reniform black-edged, filled up with leaden purple and white scales; hindwing white with dark grey cellspot and submarginal band of varying clearness, rarely nearly absent: — ab. *roseomarginata* Calb. has the whole forewing dusted with rosy. Found in Switzerland, Bulgaria, Macedonia, S. E. Russia; in Armenia, Syria, Pontus, and Turania. Larva yellowish white; head pale brown with 2 dark dots above; the plates pale brown, dotted with black; tubercles and all the feet black; feeding on seeds of *Silene otites* and *volgensis* and *Gypsophila paniculata*.

124. Genus: **Synthymia** *Hbn.*

Tongue present; frons strongly produced into a tridentate projection extending beyond the palpi, which are shortly porrect and hairy, the third segment small and drooping; vertex and frons thickly haired; antennae of ♂ simple, filiform, somewhat thicker than in ♀; ovipositor of ♀ exserted; thorax and abdomen without crests. Larva with 16 feet; narrow in front, the head small. The imago frequents dry mountain tracts in spring. Type *S. fixa* F.

fixa. **S. fixa** F. (= *monogramma* Hbn.) (48 i). Forewing ash grey in the ♂, darker, slightly greenish grey in the ♀, the outer half of wing suffused with brownish, the whole speckled with black; orbicular stigma oval, grey in a whitish ring, placed vertically at the edge of the grey basal space; reniform also vertical, an elongate figure of 8, white with dark grey centres; space between them crossed by a deep brown band, sometimes velvety brown in cell, the median vein showing white across it; inner and outer lines brownish, ill defined; the inner waved, nearly vertical, the outer sinuous edged by grey and on the costa whitish; subterminal line thick, whitish; fringe dark-mottled; hindwing orange, deeper in ♀ than in ♂; the base diffusely dark; terminal border olive brown, broad at apex, with traces of a submarginal line on inner margin; in the ♂ more fuscous tinged, with traces of outer and submarginal lines; in the ab. *griseofusa* ab. *nov.* (= ab. 2. *Hmps.*) the whole of the hindwing is fuscous. A South European insect, found in S. France, Spain, Portugal, the Riviera, Italy, Sicily, Malta, and Algeria. Larva dark green, the dorsum lighter; dorsal and subdorsal lines pale yellow, edged with dark green; lateral stripe white, broad, with dark upper edge; head small, yellowish; thoracic plate black; anal plate brown; feeding on *Psoralea bituminosa*.

exsiccata. **S. exsiccata** Warr. (48 i). Forewing white flushed with rufous ochreous; inner line obscure, rufous, thickened on submedian fold; outer line pale, sinuous, excurved above and incurved below middle, below vein 2 preceded by a rufous shade; subterminal line whitish, also with a faint rufous shade on its inner side; terminal points rufous; orbicular and reniform stigmata small, whitish, undefined; hindwing almost pure white. Merawi, Soudan.

125. Genus: **Megalodes** *Guen.*

Distinguished by the frontal corneous prominence being produced into a trilobed process, and a less conspicuous toothed ledge below above the tongue; the thorax, pectus, and abdomen laterally furry. Type *Megalodes eximia* Frr.

The genus *Metalopha* Stgr. is certainly identical with *Megalodes* and must sink.

Sect. I. Antennae of ♂ lamellate, serrate beneath.

eximia. **M. eximia** Frr. (48 i). Forewing dull pale grey green powdered with whitish; crossed by four white lines, oblique and parallel in the lower half of wing, the inner simply curved, the outer strongly excurved round cell, the green immediately before the lines deeper; the marginal line more slender; veins white produced as fine white pencils across the green fringe; upper stigmata greenish with pale rings; hindwing greenish grey, with pale outer and submarginal lines; the fringe white. — Asia Minor, Armenia, North West Persia, Syria; taken at rest on flowers of Mallow. — Larva yellowish grey or green, flecked with red round the small whitish yellow tubercles and the black-edged spiracles; head small, pale brown, like the thoracic and anal plates; feeding in the flowerbuds of the large broad-leaved mallow.

gloriosa. **M. gloriosa** Stgr. (48 i). Forewing with the extreme base, the central area, the marginal area, and fringe purple amethyst, the intervening bands deep olive green; central area with the inner and outer lines paler, the whole space dusted with paler scales, with the median shade deep purple; marginal area not mottled with paler; veins slightly and finely pale; fringe mottled with olive grey; stigmata very obscure,

the orbicular round, the reniform narrow; hindwing olive fuscous, deeper towards termen; the fringe amethyst. Asia Minor, Syria, Palestine, Mesopotamia.

M. liturata *Christ.* (= plusina *Stgr.*) (48 k). Forewing dull olive green, dusted with blackish, the lines *liturata*. dull ochreous, broad, placed as in *gloriosa*, the submarginal parallel to the outer and equally plain; stigmata large, the orbicular round, the reniform oblong, dull green with broad ochreous outlines; a crenulate narrow pale line before the marginal lunules; fringe ochreous; hindwing dull pale greenish fuscous, with a faint purplish sheen; a darker submarginal band; the base paler. — Syria, Persia, Mesopotamia, W. Turkestan, Kashmir.

M. kashmirensis *Hmps.* (48 k). Very near *liturata*, but rather smaller and paler; in particular, the head and thorax are pale whitish ochreous. Kashmir. *kashmirensis.*

126. Genus: **Azenia** *Grote.*

Tongue aborted, minute; frons with rounded prominence, having a large trilobate corneous plate at middle and a corneous plate below it with straight outer edge; palpi obliquely upturned, slender, smooth; thorax and abdomen smoothly scaled, without crests; tibiae smooth; antennae of ♂ typically lamellate. Type *A. implora* *Grote* from N. America.

Sect. I. Antennae of ♂ bipectinate.

A. watersi *Roths. N. C.* Forewing pale ochreous, suffused with brown, which forms a darker band *watersi*. before the inner and beyond the outer line; inner line obliquely curved, indistinct; outer line white, slightly defined on inner side by white, excurved from costa to vein 3, then incurved; terminal line finely brown; hindwing yellowish white. Egypt.

127. Genus: **Paraegle** *Hmps.*

Tongue present; frons with long pointed corneous process connected by a keellike joint with the plate below it, which is produced to 3 points in front and 2 lateral points below; palpi obliquely porrect, the second segment rough-haired; antennae of ♂ ciliated; thorax and abdomen without crests; tibiae smooth; foretibia with a small claw at extremity on inner and outer side; in hindwing veins 3, 4 and 6, 7 are stalked. Type *P. ochracea* *Ersch.*

P. ochracea *Ersch.* (48 k). Forewing yellowish ochreous; faint traces of a curved brownish inner *ochracea*. line; outer line brown, varying in width, from costa before apex, below costa slightly curved, oblique to middle of inner margin; traces also of a submarginal band; the extreme termen fulvous; fringe brown grey; hindwing of ♂ yellowish, of ♀ brownish, paler towards base, with a curved outer line; the form **sub-ochracea** *Stgr.* from Mardin, Mesopotamia, is smaller, with more effaced markings; the hindwings paler. Found in Turcomania, Samarcand, and Fergana.

128. Genus: **Metaegle** *Hmps.*

Differs from *Paraegle* in having the frons with a large pointed process covered with hair, with simply a trilobate plate below it; the fore tibia with a single minute claw on inner side only at extremity; hindwing with veins 3, 4 and 6, 7 from angles of cell. Type *M. pallida* *Stgr.*

M. pallida *Stgr.* (48 k). Forewing pale whitish ochreous, yellower towards termen; a faint oblique brownish *pallida*. outer line from a brown spot before apex; extreme termen and basal half of fringe brown; hindwing paler. Mesopotamia.

129. Genus: **Aegle** *Hbn.*

Tongue present; frons produced into a flattened bifid horny process above the palpi; palpi porrect, the terminal segment distinct; scaling smooth; thorax and abdomen without crests. Larva with 16 feet, slender, smooth, living on Delphinium in autumn, pupating in a firm cocoon; the imago emerges the following summer; the pupa, of the only species known, has the tongue-sheath projecting. Type *Ae. koekeritziana* *Hbn.*

AE. vespertalis *Hbn.* (= *vespertina* *Tr.*, *vespertinalis* *Rmb.*, *matutinalis* *Rmb.*) (48 k). Forewing *vespertalis*. pale ochreous, with the 3 lines, inner, median, and outer ochraceous, thick and diffuse; the median widened in cell and containing a dark brown point in place of reniform, the outer excurved round cell; submarginal line rather darker, with dentate dark brown outer edge and a blotch at costa: a dark brown terminal line; fringe brownish grey: the ♂ is slightly paler than the ♀; hindwing flushed with ochraceous in ♀, in ♂ pale ochreous, with curved outer lines; in ab. **transversa** *ab. nov.* (= ab. 1. *Hmps.*) (48 k) the median and outer lines are deep *transversa*. brown and distinct, and the hindwing grey. A mediterranean species occurring in Spain, Portugal, Sicily, Greece, Carinthia, Roumania; in Algeria; and in Asia Minor, Armenia, Syria, and Taurus. Larva dull rosy on the dorsum, with fine pale yellow subdorsal lines, conspicuous at the segmental incisions, and with broad yellow spiracular lines edged on each side with dark brown; head small, yellowish brown; ? on Delphinium.

AE. subflava *Ersch.* (48 k). Forewing in ♂ pale olive densely speckled with grey, the lines generally *subflava*. hardly marked except by difference of tint, rarely chocolate brown and distinct; the inner sharply angled on median vein but plain only below middle, the basal area within it diffusely whitish; outer line from before apex, where it is curved, obliquely sinuous to middle of inner margin, joining a triangular costal patch at apex, from which a submarginal band runs to anal angle, the terminal area being white; the costa, the median vein, and the reniform stigma are also white; marginal line brown; fringe white flecked

with olive; hindwing dark grey, the fringe white: in the ♀♀, as a rule, the white areas are larger. Turco-
mania, Samarcand, Issyk-kul, Tibet.

agatha. **AE. agatha** *Stgr.* (48 l). Forewing pale dull yellow; the lines as in *subflava*, somewhat indefinite; the submarginal line much less prominent; a small dark cell spot; hindwing reddish brown, darker towards termen; fringe of both wings strongly chequered. Recorded only from Greece.

koekeritziana. **AE. koekeritziana** *Hbn.* (= *flavida* *Ochs.*, *flava* *Hbn.*) (48 l). Forewing whitish or pale ochreous, glossy, with a black dot at end of cell; fringe with basal half redbrown, the outer white; hindwing dark fuscous; the fringe as in forewing; the ab. **subfumata** *Stgr.* has no dot visible at end of cell of forewing, and the hindwing is paler, more yellowish brown. Occurs in Austria, Hungary, Carinthia, Croatia, the Balkans, and S. Russia; also in Bithynia, Armenia, and Pontus; the aberration in Dalmatia and the Taurus Mts. Larva yellow green; the dorsal and spiracular lines broadly grey; an orange stripe above the feet; spiracles black; head small, light brown; thoracic plate black; anal plate grey; feeding on Delphinium.

gratiosa. **AE. gratiosa** *Stgr.* Forewing dull whitish yellow, faintly flushed with pale brown in the basal and terminal areas; outer line incomplete, brown, parallel and close to the termen; this line is only plain at costa and is absorbed in a brown shade from termen to end of cell; terminal line sharply brown; fringe mottled brown and yellow; hindwing pure white with dark terminal line; underside of forewing with a dark horizontal streak through cell to termen. Described by Staudinger from a single ♂ from Mardin, Mesopotamia.

nubila. **AE. nubila** *Stgr.* (48 k). Forewing cream-colour speckled with grey brown; basal area limited by a curved line of brown scales; inner line parallel to it, outer line rather more outcurved beyond cell; median shade marked thick on costa, obsolete in cell, then attached to outer line which is double, the outer arm followed by a brown and yellow mottled fascia; fringe brown, grey-mottled, the outer half chequered; hindwing pale fuscous grey, the fringe whitish. Mesopotamia.

130. Genus: **Opsyra** *Hmps.*

Tongue present; frons smooth, flat; palpi obliquely porrect, the second segment roughly haired, the third blunt; antennae of ♂ lamellate, pubescent; thorax clothed with spatulate hairs; abdomen elongate, with slight crest on basal segment; wings bronzy, with lustrous scales.

Type *Opsyra chalcöla* *Hmps.*

chalcöla. **O. chalcöla** *Hmps.* (48 l). Forewing richbrown along costa, bronzy olive ochreous towards inner and outer margins: all the lines, especially on costa, shown up by lustrous blue scales; median area olive brown; the inner line curved, preceded by lustrous scales, the outer excurved above and incurved below, edged by shining yellow; reniform stigma large, round, with a pale golden sheen in outer half; submarginal line lustrous, only plain above anal angle; a bluish white line close before termen; an orange and yellow costal spot near base; inner margin and outer line with coarse black scales in places; hindwing olive fuscous, with a pale outer line; inner margin pale bronzy, with two short lines of black scales. An Indian species, also occurring in China.

131. Genus: **Protosendyra** *Hmps.*

Tongue present; frons strongly protuberant, produced in middle to a blunt point; palpi porrect, weak, the second segment hairy, the third small, pointed, depressed; vestiture hairy; abdomen elongate with a metallic boss on basal segment; femora and tibiae long-haired; antennae of ♂ lamellate and pubescent; forewing with depressed and rounded apex; the species are of weak build, somewhat resembling some Larentiad moths; in the hindwings the radial rises from the centre of discocellular. Type *P. picta* *Hmps.*

picta. **P. picta** *Hmps.* (48 l). Forewing dark fawn colour, washed in places with reddish and sprinkled, especially along costal and terminal areas, with white scales; inner and outer lines darker, double; the inner wavy and vertical, the outer sinuous, and somewhat obscure; a diffuse dark lunule at end of cell, the space beyond it without white scaling, but with the veins white; obliquely below apex on vein 5 is a short reddish longitudinal streak, and on costa before apex a reddish patch; hindwing brownish fawn colour, with a large blurred dark cell spot and grey curved outer line; at anal angle is a grey patch containing some fulvous orange and dark scales. Described from N. India, but recorded also from Chekiang and Chang-yang, China.

secunda. **P. secunda** *Leech* (48 l). Forewing more elongate, with the apex more produced than in *picta* *Hmps.*; pale fawn colour, dusted with whitish scales; basal area in part, the median area, and a narrow space along termen washed with pale fulvous; inner and outer lines fulvous, conversely edged with a broad pale space; the inner nearly vertical, the outer excurved above, then lunulate-dentate, the outer arm finely white and sinuous; reniform stigma a rather cloudy fulvous lunule; subterminal line wavy, pale; veins beyond cell across the pale space white; hindwing pale yellowish white with dark cellspot and traces of outer and subterminal lines, clearest on inner margin; some yellow and blackish scales at anal angle. Ta-chien-lu and Chang-yang, China.

flava. **P. flava** *Leech* (48 l). Differs from *secunda* in the outer line of forewing being single instead of double; the hindwing yellowish buff; the underside yellowish, with the costa of both wings deep yellow. Described by Leech from a single ♂ from Ichang, China.

Subfamily Melicleptriinae.

The species of the next subfamily, the *Melicleptriinae*, are distinguished from the *Euxoinae* by the fore tibiae bearing curved claws (obsolete in *Adisura*), and being in most cases without spines, with which, however, the mid and hind tibiae, as in typical *Euxoinae*, are beset. The eyes are large, without hairs or lashes; the frons bears, usually, a rounded prominence, often with a chitinous ridge beneath; in one genus it is simply smooth, and one in the prominence is truncate: the sealing is usually smooth, rarely developing into slight thoracic or abdominal tufts. The colouring is gayer and the markings more varied, as most, if not all, the species fly by day in the hot sunshine, frequenting flowers for the purpose of extracting the honey. The larvae also are brighter in tone, feeding exposed on the flowers and seeds of their food plants. Pupation takes place in a slight cocoon on or in the ground.

In the warmer climates, of which most of the species are natives, there are at least two broods in the year; in more northern latitudes the species are single-brooded; in the palaeartic region the subfamily is not an extensive one.

1. Genus: **Heliocheilus** Grote.

Frons rounded; eyes large; antennae of ♂ shortly ciliated; sealing smooth, not forming tufts; all the tibiae spined, the foretibiae with the spines along the sides only, their apex with a pair of fine claws; in the forewing of the ♂ the costal edge is swollen at middle into a kind of gland; below it, between vein 11 and the depressed subcostal, is an oval patch of unscaled membrane, which appears ribbed, and in the cell a narrower and more elongated patch; the last four subcostal nervules are distorted into a sinuous course. Type *Heliocheilus paradoxus* Grote from N. America.

Only one species is known from Palaeartic localities.

H. fervens *Bull.* (= *foveolatus* *Stgr.*) (50 i). ♂ Forewing redbrown, with a dark curved shade beyond middle; hindwing black with ochreous outer band from costa to vein 1; ♀ paler, with the stigmata and lines traceable; hindwing with a pale spot beyond cell; — Amurland, W. China, and Japan. — in a form which occurs in W. China, — ab. **macularis** *ab. nov.* but which is very likely specifically distinct, the hindwing shows pale patches both in and below the cell, and a pale bilobed mark below middle of termen. *fervens.* *macularis.*

2. Genus: **Chloridea** Westw.

Like *Heliocheilus* *Grote*, but the forewing of the ♂ is normal in structure, and without hyaline patches. Type *Chloridea virescens* *F.* from N. and S. America.

C. dipsacea *L.* (50 i). Forewing olive ochreous or olive brown: inner and outer lines fine, dentate, obscure; orbicular stigma annular with a dark centre: reniform large, blackish, with a broad median shade below it; a dark band preceding submarginal line; hindwing with base and inner margin diffusely blackish; a large black cell blotch and broad marginal border with pale bilobed patch between veins 2 and 4; fringe pale. — Occurs throughout Europe and in the Canary Islands; in Syria, Kashmir, Turkestan, Amurland, China, and Japan. — The form **adaucta** *Btlr.* (50 i) from Japan, Corea, and E. Siberia is larger and more fulvous; the underside of both wings yellow, with outer margin towards apex fulvous, and all the black markings enlarged and intensified; in the ab. **albida** *Fuchs* (50 i) the ground colour of both wings is white; the specimens from the Goorais Valley, Kashmir and those from Uralsk are all of this form; — ab. **canariensis** *ab. nov.* (50 i), from the Canaries, resembling *adaucta* *Bull.* in tint, but of normal size, with shorter and broader wings, and therefore not to be referred to *maritima* *Grasl.*, is characterised by having the underside of hindwing wholly dull fulvous; these wings are deep yellow above, and the large black discal spot touches the broad black border. — Larva green to purple, with yellowish white dorsal and subdorsal streaks; lateral line broad and pale; head yellowish green or brownish, with darker spots; — on the flowers of various plants, especially *Ononis* and *Linaria*. *dipsacea.* *adaucta.* *albida.* *canariensis.*

C. ononis *Schiff.* (= *septentrionalis* *H. Edw.*) (50 k). Forewing olive-tinged ochreous; basal area, a broad median, and narrower praesubmarginal band olive fuscous; submarginal line nearly straight, pale ochreous; reniform stigma large, dark fuscous, edged externally by a vertical black line; inner and outer lines obscure; hindwing with large black discal blotch and broad marginal border, containing a small double pale mark between 2 and 4; fringe ochreous; — a smaller, darker form, — ab. **intensiva** *ab. nov.* (50 k) has the black markings much developed both above and below; in the hindwing the black border coalesces with the discal blotch, reducing the pale band to 2 spots, and the pale patch in the border is quite small. — Throughout southern Europe; in Armenia, Central Asia, Siberia, Amurland, and China. — Larva dark green, with yellowish dorsal and subdorsal lines, or reddish brown with the lines black and *ononis.* *intensiva.*

yellow; a broad pale lateral line enclosing the spiracles, which are black with white rings on reddish patches; — on flowers of flax, *Ononis*, etc.

peltigera. **C. peltigera** Schiff. (= *alpea* Cram., *florentina* Esp., *charmione* Stoll, *barbara* F., *straminea* Don.) (50 k). Forewing greyish ochreous, flushed with pale brown, except the narrow marginal area; lines brown, indistinct; orbicular stigma a dark dot; reniform grey with dark brown edge and centre, joined to a brown mark on middle of costa; a brown band between outer and submarginal lines; a black dot below vein 2 before margin; hindwing with broad brown-black marginal border containing a pale blotch between 2 and 4; cellspot dark; fringe white. — Central and South Europe, Morocco, the Canaries, Asia Minor, Syria, Persia; an occasional immigrant only to northern localities. — Larva reddish grey or ochreous, dotted with white; dorsal and subdorsal lines dark; spiracular line white; on flowers of various plants.

obsoleta. **C. obsoleta** F. (= *armigera* Hbn., *pulverosa* Walk., *conferta* Walk., *uniformis* Wlgrn., *punctigera* Wlgrn., *umbrosus* Grote, *insularis* Walk.) (50 k). Forewing greyish ochreous, sometimes flushed with rufous; lines and markings indistinct; the dark grey reniform stigma and a grey band beyond outer line generally plainer; the orbicular stigma annular with a dark centre; hindwing ochreous with a broad blackish margin, the discocellular and veins dark. — Larva brownish-red; dorsal line fine, greyish green, with some interrupted grey green subdorsal marks; spiracles black in a yellowish lateral stripe with the centre reddish; the red tints sometimes are replaced by green; on flowers of various plants. — Central and South Europe, Madeira, the Canaries, Syria, Kashmir, Afghanistan, China and Japan; only an occasional visitor in northern latitudes, but widely spread and common in warmer climates, where its larva is often injurious to cultivated plants; — the fuscous shaded examples are the form **fusca** Ckll. (50 k); in this the lines, the veins, and the shading are all brownish fuscous, only the terminal area remaining pale, and the stigmata ochreous; another form, which appears commoner in N. Africa and other warm localities, may be separated as *ab. rufa* *ab. nov.* (50 l); this is uniformly dull flesh colour, with the lines and stigmata hardly visible; it is quite distinct from the *ab. rubescens* Walk. from Australia; in which the hindwings are orange yellow. The synonyms quoted above, excepting Hübner's, all refer to extra palaeartic forms.

nubigera. **C. nubigera** H. Sch. (= *perigeoides* Moore) (50 l). Forewing greyish ochreous; reniform stigma dark grey, attached to the grey costal median spot; orbicular annular with grey centre; outer line lunulate-dentate, the teeth whitish, separated by a brown shade from the subterminal line; hindwing pearly white with broad blackish outer border, containing a double whitish blotch between veins 2 and 4; veins and cell spot dark; fringe white. — Taken in Algeria and the Canaries; in Spain and S. Russia; Asia Minor, Syria, Armenia, Afghanistan, and Turkestan. — Larva redbrown, dorsal line darker, subdorsal band alternately black and white; a diffused brown sublateral band.

assulta. **C. assulta** Guen. (= *temperata* Walk., *separata* Walk., *succinea* Moore) (50 l). Forewing yellowish ochreous, the lines and markings grey and fairly distinct, especially the reniform stigma and the dark fuscous band between outer and subterminal lines, but this band is often absent; orbicular stigma annular, with a dark centre; hindwing with an irregular and diffuse blackish border, becoming paler along margin. — Japan, China, and Corea; an immigrant from the warmer countries of Southern Asia. — Larva pale grey green, darker on dorsum; lateral stripe broadly yellow; 4 prominent small black spots on the side of each segment; head reddish; — on *Physalis peruviana* and probably many other plants.

maritima. **C. maritima** Grasl. (= *spergulariae* Led.). Like *dipsacea* L., but the apex of forewing more produced, the median shade more oblique, and the outer fascia straighter; the terminal segment of palpi blackish, without scaling; — in the *ab. ferruginea* Spul. the forewing is suffused with fulvous and the hindwing with deeper yellow. Occurs only in S. W. France, probably one of the local forms of *dipsacea*. — Larva either grey green with fine dark dorsal line and broad dark lateral lines above the yellowish white spiracles; or reddish grey with two fine dark dorsal lines close together; or bluish grey green with black-brown lateral line; — on flowers of *Spergularia* on the sea coast.

dejeani. **C. dejeani** Oberth. (50 l). Forewing pale olive-brown, darker along inner and outer margins; the two stigmata obscure black patches, the reniform with a black point above it on costa; a dark band before the waved but indistinct subterminal line; hindwing dull white, with base and inner margin smoky black; the discal lunule and marginal border black, the latter with a pale patch on termen, often obsolete, especially in the ♂. This species, found only in W. China, is allied to *ononis* Schiff.

olivaria. **C. olivaria** Graes. Forewing olive grey, the lines clear; base of wing light, the median area dark; only the reniform stigma present, and that obscure; a slightly darker band between outer and submarginal lines; hindwing yellowish white with the veins dark; a large blackish cellblotch; a broad black marginal border narrowing at each end. — Near *C. dipsacea* L. — Described by Graeser from a single ♂ from the Ussuri district, Amurland.

C. nanna *Hmps.* Forewing pale ochreous, sometimes rufous-tinged; the basal area suffused *nanna*. with grey and with fuscous speckling; inner line indistinct, oblique to vein 1, then bent inwards; outer line brown, excurved to vein 4, then incurved, the interval between it and subterminal line fuscous or rufous; some dark points along termen; reniform stigma diffusely blackish, with grey lunule at centre; an externally diffuse median band fuscous or rufous, angled outwards on median vein and incurved above and below; hindwing ochreous white; basal area blackish, but with a pale streak below median vein; a large black discoidal lunule; a broad black terminal border, its inner edge curved inwards between veins 4 and 1, and with an ochreous blotch on termen between veins 3 and 1; Khamba Jong, Tibet. Allied to *dipsacea* but smaller.

3. Genus: **Rhodocleptria** *Hmps.*

Differs from *Chloridea* *Westw.* in the fore-tibia being short and broad, not spined, its apex with a long curved claw on inner side and a short one on outer; the frons with a corneous plate below the rounded prominence; the antennae of ♂ simply lamellate. Type *R. incarnata* *Frr.*

R. incarnata *Frr.* (= *boisduvalii* *Bsd.*) (501). Forewing olive green with a yellow tinge; costal edge *incarnata*. and fringe dull pink; orbicular stigma a dark speck (rarely a flattened oval ring); reniform with dark lateral edges, sometimes filled in with dull pink, lying on a darker median shade; postmedian line marked by dark dots; praesubmarginal shade by a costal blotch; hindwing dull ochreous, with smoky base, dark veins, and broad fuscous border; fringe pink. Algeria, Spain, Hungary, Turkey, S. Russia; Armenia, Asia Minor, Syria, and Central Asia. — Larva pale yellow, the tubercles black; dorsal line dark; subdorsal orange patches on each segment, and faint subdorsal and lateral lines.

R. feildi *Ersch.* (501). Forewing pale olive green; basal area limited by a twice curved line, out- *feildi*. wardly toothed on median vein, followed by a deep olive shade, which pales off again towards margin; inner and outer lines finely darker; hindwing olive ochreous; a dark cellspot and marginal border; fringe of forewing dark, of hindwing pale. W. Turkestan.

4. Genus: **Chariclea** *Curt.*

Differs from *Rhodocleptria* *Hmps.* in having the thorax slightly crested; the mid. and hind tibiae more sparsely spined. Type *C. delphinii* *L.*

C. delphinii *L.* (501). ♂ Forewing purplish pink, paler along outer margin and fringe, deepest in *delphinii*. basal area and beyond middle; basal area edged by a pale and pink trilobed line; orbicular stigma ochreous, obscure; reniform large, irregular, edged with brownish purple, attached to the median shade, which with the double postmedian line and space beyond forms an irregular darker band; hindwing dirty ochreous, with fuscous veins and border, the extreme margin pink; ♀ darker, with a grey suffusion over both wings. France, Germany, Switzerland, Italy, and Greece in S. Europe; Sweden and Russia, formerly in Britain; Armenia, and Asia Minor; — the form **darollesi** *Oberth.* (50.) found in Algeria, Armenia, and *darollesi*. W. Turkestan is much paler. — Larva violet grey; dorsal line black edged with yellow; sublateral bands broadly yellow; thoracic plate black, anal plate yellow; the whole body studded with black tubercles; feeds on flowers and seeds of *Delphinium*.

5. Genus: **Aedophron** *Led.*

Differs from the preceding genus in having the foretibia of normal breadth, its apex with a long curved claw on outer side and none on the inner, but in its stead a second on the outer side from the apex of the first tarsal segment; head, thorax, and abdomen rough haired, but without crests. Type *AE. rhodites* *Ev.*

AE. rhodites *Ev.* (= *aurorina* *H. Sch.*) (50 m). Forewing cream colour (sometimes yellowish), suffused *rhodites*. with bright pink; the cell, short marginal patches between the veins, and longer streaks on each side of vein 5 and below veins 1 and 2 remaining pale; veins deeper, sometimes fuscous; hindwing rosy, with costal area broadly fuscous, especially in ♀; fringe white. — An eastern species, occurring in Russia, Asia Minor, Armenia, and Persia. — Larva stout, dull brownish grey, dusted with darker; feeding on flowers and seeds of *Phlomis*, preferring withered and dry plants, pupating rather deep in the ground.

AE. phlebophora *Led.* (50 m). Forewing sulphur yellow; hindwing white, with the termen yellowish; *phlebophora*. in wasted specimens the veins show brownish. — Armenia, Syria, Asia Minor, Persia. — Larva greenish;

markings redbrown, forming segmental bands, well-defined below, toothed and with a pale point at the spiracles; dorsal line distinct; sublateral lines brownish; feeds on *Phlomis*.

venosa. **AE. venosa** *Christ.* (51 a). Forewing pale ochreous yellow; the veins finely brownish; an oblique dark bar on discocellular; hindwing yellowish white, the veins brownish. Armenia and W. Turkestan.

6. Genus: **Turacina** *Püng.*

Tongue slender; palpi slender, short, obliquely upturned; frons with a large disc-shaped prominence with raised rim and roughened centre; antennæ of ♂ ciliated; head, thorax, and abdomen, smooth-scaled, without crests; fore tibiae with 3 strong claws, one at extremity, and two close together well before extremity; mid tibiae strongly spined; hind tibiae with one spine near extremity; forewing long and narrow; the apex produced upwards and the termen obliquely curved. — Type *T. ceratopyga* *Püng.*

ceratopyga. **T. ceratopyga** *Püng.* Forewing pale grey; subbasal and inner lines marked by slight costal spots, the latter also by one on inner margin; outer line not dentate, widely outcurved above, and incurved below middle; subterminal line indicated by a shade preceding it; terminal line distinct; upper stigmata blue grey; the orbicular very small, the reniform large; claviform small, with black outline; hindwing ashy grey, with the dark markings of the underside showing through. Recorded from Merv, W. Turkestan.

7. Genus: **Melicleptria** *Hbn.*

Differs from *Chloridea* *Westw.* in the foretibiae being short and broad, without lateral spines, their apex with one long claw on outer side and slight short claw on inner; the frontal projection with a corneous plate below it. Like those of *Chloridea* the larvae have the habit of feeding on the flowers and seeds of their food plants. Type *M. scutosa* *Schiff.*

scutosa. **M. scutosa** *Schiff.* (= *nuchalis* *Grote*) (50 m). Forewing dull whitish, the marginal areas speckled olive-brown; stigmata all large and conspicuous, brown with black outlines; a brown band between the dark outer and white subterminal lines; hindwing white, the veins brown; a broad dark marginal border, with two pale spots between 2 and 4, preceded by a sinuous outer line; a large black discoidal lunule. Found in central and southern Europe, rare in Britain; in Algiers, Armenia, Kashmir, China, and Corea. — Larva dark green, the sides and venter yellow; lines yellow, the subdorsal freckled with black; head yellow with black spots; feeding on flowers and seeds of *Artemisia* (?More rarely on *Chenopodium*).

scutatus. **M. scutatus** *Stgr.* (50 m). Forewing white, the base and bands on each side of subterminal line fuscous; inner and outer lines double, strongly curved; orbicular stigma obscure, annular with a dark centre; reniform large, fuscous, in a pale dark-edged ring beneath a brown costal patch; hindwing white, the base, discoidal lunule, and marginal border fuscous, the last with a pale patch between veins 2 and 4; fringe white. — Uliassatai. Mongolia.

The species differs from *scutosa*, the type of the genus, in the fore-tibia having an additional claw at apex on each side.

8. Genus: **Timora** *Walk.*

Agrees with *Melicleptria* structurally; the fore tibia short and broad, its apex with one long curved claw on inner and a short one on outer side; the mid and hind tibiae spined; but the species are of more slender build, with the abdomen smoothly scaled; the forewing is longer and narrower, without the usual transverse lines and stigmata, ochreous or yellow in colour, with longitudinal streaks. Type *T. senegalensis* *Walk.* from Africa.

A genus of small insects, chiefly African and Indian.

decorata. **T. decorata** *Moore* (51 a). Forewing pale straw colour, with pink streaks from base along each fold; inner line marked only by white vein-points; an oblique pink band from apex to vein 1, marked by white vein-points; fringe pink; hindwing strawcolour, sometimes with traces of an outer pink band. — Kashmir; occurs also in India and Burma.

artaxoides. **T. artaxoides** *Moore* (51 a). Forewing uniform ochreous, at times tinged with pale brown; hindwing more or less fuscous-tinged; fringe bright ochreous. — An Indian insect, but occurring also in Kashmir.

striata. **T. striata** *Stgr.* (= *albida* *Hmps.*) (51 a). Forewing pale yellowish brown, whitish along costa; two pure white streaks, one along the cell fold from middle of cell to termen, the other along submedian fold; short subterminal white streaks between the veins; hindwing white, the veins and termen yellowish-brown. Algeria.

9. Genus: **Adisura** Moore.

Frons rounded; fore tibiae without spines or fringe of hairs; also without claws, which appear to have become obsolete; in all other points belonging to this subfamily; mid and hind tibiae spined; head, thorax, and abdomen smoothly scaled; palpi obliquely porrect, smoothly scaled, the terminal segment short; antennae of ♂ ciliated; forewing broad, with the apex prominent, and termen nearly straight; markings very slight; the lines indicated only by vein dots. Type *A. atkinsoni* Moore.

A. atkinsoni Moore (51 a). Forewing ochreous grey, with slight pink tinge, which is more obvious *atkinsoni*. towards costa; inner and outer lines marked by dark points on the veins; orbicular and reniform stigmata indicated by ill-defined dark marks; hindwing yellower, with an ill-defined smoky grey submarginal shade. — Occurs throughout China; described by Moore from N. W. India.

10. Genus: **Hebdomochondra** Stgr.

Like *Timora* Walk., but the palpi are shorter; the fore tibia has a short spine only, instead of a claw, on outer side; in the forewing vein 6 is stalked with 7, 8, and the stalk of 9, 10 anastomoses with that of 7, 8 to form the areole; in the hindwing veins 6, 7 are stalked; dorsum with a horny swelling on the 7th segment, whence the name of the genus. Type *H. syrticola* Stgr.

H. syrticola Stgr. (51 a). Forewing uniform pale ochreous; hindwing white. From S. E. Russia and *syrticola*. Turkestan.

11. Genus: **Erythrophaia** Stgr.

Frons smoothly rounded, not projecting; fore tibia with one long curved claw on inner side and 6 claws on outer, which decrease in length towards base; mid and hindtibiae spined; thorax and abdomen smoothly scaled; forewing uniform in coloration, with two pale cross lines and no stigmata. Type *E. eudoxia* Stgr.

E. suavis Stgr. Forewing greyish flesh colour, sprinkled with whitish; the lines pale; the *suavis*. inner straight and oblique, the outer excurved above; hindwing and abdomen paler; underside of both wings with a dark median shade. Ili and Fergana, Turkestan.

E. eudoxia Stgr. (51 a). Forewing with the ground colour deep rufous, without any grey dusting; *eudoxia*. the inner line curved, not straight, sometimes faintly paler-edged; hindwing and abdomen deep rufous; underside of both wings with reddish cellspot as well as outer line. Kashgar.

12. Genus: **Cladocerotis** Hmps.

Differs from all the other genera of the subfamily in the following points; the tongue is small and aborted; the palpi are clothed beneath with longer hair; the frontal prominence is truncate; the antennae of the ♂ are strongly bipectinate to apex; the foretibiae, besides the long curved claw on inner side and short one on outer, are laterally spined, as in *Chloridea* Westw.; mid and hind tibiae spined. Type *C. optabilis* Bsd.

The position of the genus here appears somewhat anomalous; and believe it would be better placed at the head of the *Euxoinae*, in front of the genus *Euxoa*, from which, indeed, it is separated only by the presence of claws on the fore tibiae.

C. optabilis Bsd. (50 m). Forewing ochreous tinged with olive brown, the costa and inner margin *optabilis*. remaining pale; the veins pale-lined on each side; stigmata pale; the claviform very long and narrow; orbicular oval; reniform angled inwards along median vein; submarginal line pale, outwardly dentate, the marginal area beyond it darker; fringe whitish; hindwing of ♂ ochreous white with dark veins, of ♀ brownish. — A mediterranean species, occurring in France, Spain, Sicily, and Algeria; appearing in autumn. Larva luteous; dorsal line, which is clear only on first two segments, and the interrupted subdorsal lines, brown; thoracic and anal plates brown; spiracles black; feeds on low plants, especially *Pterotheca nemaucensis*, hiding by day in the ground, and hibernates.

Subfamily Heliethidinae.

The following subfamily is characterised by the small, generally narrowed, and, except in one genus, non-hairy eyes; the insects composing it are, as a rule, of small size and remarkable generally for their hairy clothing. They are here arranged in divisions corresponding in the main to the preceding subfamilies. The first, containing at present only one (central Asiatic) genus, is anomalous, combining as it does the characteristic differences of two subfamilies, viz. the spinose tibiae of the *Euxoinea* and the hairy eyes of the *Hadeninae*; the second, inheriting but one characteristic of *Anartomorpha*, is separated by the spinose tibiae only; the third, developing the other, by the hairy eyes; the ciliated eyes of the fourth betray its relationship to certain genera of the subfamily *Cucullianae*; the fifth, corresponding to the *Melicleptriinae* is distinguished by the claw-bearing fore tibiae; and the last by the absence of all and each of these structural characteristics, as in the largest of the subfamilies, the *Amphipyriinae*. Of the insects now first co-arranged as a separate subfamily the majority, consistently with their hairy clothing, inhabit Alpine and Arctic localities, and may plausibly be regarded as scattered remnants of archaic types, the conditions of whose existence synchronised with the more rigorous climate and scantier light of an earlier cosmic period. *Panolis flammea*, though no longer so restricted in distribution, still feeds on one of the primaeval Coniferae.

Division I. Fore tibiae without claws: mid and hind tibiae spined; eyes hairy.

1. Genus: **Anartomorpha** Alph.

Tongue well-developed; palpi obliquely porrect, slender, long haired, the terminal segment long; antennae of ♂ with tuberculate fascicles of cilia or simply ciliated: head, thorax and pectus hairy; frons with a tuft of hairs: mid and hindtibiae spined; eyes hairy. Type *A. potanini* Alph.

A genus of small insects at present known only from Central Asia.

Sect. I. Antennae of ♂ with tuberculate fascicles of cilia.

picteti. **A. picteti** Stgr. (50 a). Forewing pale dusty grey with a slight brownish tinge; the inner margin blackish; claviform stigma velvety black attached to the dark vertical inner line; outer half of median area blackish, containing the black reniform; orbicular absent; marginal area darker; the pale submarginal line preceded by black shading; hindwing white with broad black terminal border; the inner margin smoky blackish; veins and cellspot black; fringe white. Turkestan.

pretiosa. **A. pretiosa** Alph. (48 d). Forewing grey dusted with olive; the basal, costal, and inner areas dark olive brown: stigmata black brown, defined by whitish; area beyond outer line dark brown; subterminal band pale, broadening towards costa; hindwing white; base and inner margin fuscous; a dark cellspot joined to a dark streak from base along submedian fold; a broad black terminal border; fringe white. Tibet.

Sect. II. Antennae of ♂ simply ciliated.

ladakensis. **A. ladakensis** Feld. (48 d) Forewing dark fuscous mixed with black; inner line waved, blackish; the orbicular stigma, a spot below cell, and one on inner margin beyond it black; reniform large and black; outer line oblique, slightly curved and minutely waved; subterminal line waved, mainly punctiform; hindwing yellowish; base and inner margin smoky fuscous. Ladak, and Lob Nor, Tibet; Kashmir.

triphaenopsis. **A. triphaenopsis** Oberth. (= *flavescens* Hmps.) (50 a). Forewing black brown, suffused with grey; inner and outer lines double, filled in with grey; the inner oblique to submedian fold, then vertical; the outer angled at vein 5; subterminal line whitish, defined internally by black, indented on each fold; claviform stigma black-edged; orbicular and reniform brown at centre, slightly whitish-ringed and outlined with black, the reniform angled inwards along median vein to touch orbicular; on vein 2 below cell a faint whitish dentate mark; hindwing ochreous white suffused with fuscous in basal half, the terminal half fuscous, broader at costa; some black and white scales on termen; fringe pure white. Recorded by Oberthür from Ta-Chien-Lu, W. China; Hampson's *flavescens* from Tonglo, Sikkim.

potanini. **A. potanini** Alph. Forewing fuscous from base to outer line which is angled on vein 5; submarginal line grey, acutely angled to margin between veins 2 and 4, preceded by black sagittate marks; claviform stigma fuscous and very distinct; upper stigmata grey; fringe white; hindwing as in *picteti*. Mongolia; described from a single ♀.

diodonta. **A. diodonta** Püng. Smaller than *potanini*, but resembling it; forewing light ashy grey with a brownish flush, the median area darker; a black spot near base below the median; lines double, filled in with

pale grey, the outer angled on vein 5; claviform stigma dark; the upper ones pale grey; a conspicuous whitish, externally bifid blotch at base of vein 2; submarginal line as in *potanini*; hindwing also the same. — Lob Nor. — Described from 2 ♂♂. Possibly the other sex of *potanini*.

Division II. Fore tibiae without claws; mid and hind tibiae, in some cases the fore tibiae also, spined; eyes smooth.

2. Genus: **Schöyenia** *Auriv.*

Tongue present; frons smooth; palpi short, longhaired beneath; antennae of ♂ with tuberculate fascicles of cilia; head and thorax roughhaired; all the tibiae spined. Type *Schöyenia unifasciata* Mén.

S. unifasciata Mén. (= *arctica* *Auriv.*). Forewing grey mixed with blackish, with more or less yellow *unifasciata*. dusting; median area black, the inner and outer lines minutely dentate; claviform stigma obsolete; orbicular and reniform small, grey; subterminal line and some streaks at base of wing dark; hindwing whitish, washed and dusted with fuscous; fringe white. Nova Zembla. Distinguished by the very narrow wings, and the large anal claspers of the ♂.

S. quieta *Hbn.* (= *schoenherri* *Zett.*, *constricta* *Walk.*, *rigida* *Walk.*) (50 a). Forewing grey, densely *quieta*. dusted with blackish, the folds tinged with olive; inner and outer lines conversely whitish-edged; upper stigmata white and small, the cell black; submarginal line preceded by black blotches at costa, beyond cell, and above anal angle; hindwing whitish suffused with dark fuscous; an indistinct outer pale band; the ♀ has the median area darker, with a black dash along submedian fold; in the ab. *nigricans* *Auriv.*, the whole wing is suffused with black. Norway, Finland, Lapland; also in Arctic America.

S. ottonis *Alph.* (48 d). Forewing whitish grey, speckled with dark brown, partly washed with olive *ottonis*. brown; median area reddish brown; claviform stigma small, black-edged; orbicular and reniform whitish with black outlines, the former triangular, the latter connected by a black mark with outer line; submarginal line denticulate, preceded by black sagittate marks; hindwing dark fuscous, the fringe white; a curved dark outer line; thorax red brown like median area. Mongolia, — Urga and Uliassatai.

3. Genus: **Orosagrotis** *Hmps.*

Differs from *Schöyenia* in the frons bearing a truncate conical prominence instead of being smooth; antennae of ♂ minutely serrate and fasciculate; head, thorax, and pectus hairy; all the tibiae spined. Type *Orosagrotis montana* *Morr.* from N. America.

O. amphora *Hmps.* (50 a). Forewing pale brownish grey, speckled with darker; claviform stigma *amphora*. black-edged; orbicular and reniform brown, ringed first with white then with brown, the former pointed externally and touching reniform; the cell dark brown; subterminal line denticulate preceded by black teeth; hindwing fuscous brown, with dark terminal line. Kashmir.

O. cāshmirensis *Hmps.* (50 a). Forewing blackish brown, with a paler subcostal streak; claviform *cāshmir-* stigma black; upper stigmata small, brown with pale rings, the cell blackish; a pale band beyond outer *ensis*. line with the veins dark across it; submarginal line also pale, preceded by black teeth; hindwing paler brown. Kashmir. Like the last species, known only from the single ♂ type.

4. Genus: **Grumia** *Alph.*

Tongue present; frons smooth; palpi porrect, long-haired below; antennae of ♂ bipectinate, the branches short; head and thorax rough-haired; all the tibiae spined, the fore tibiae without claws; the small eyes overhung by long cilia; abdomen of ♀ with long exerted ovipositor. Type *G. flora* *Alph.*

G. flora *Alph.* (50 a). Forewing deep green, the costa, inner margin, and fringe whitish grey; hindwing *flora*. dull black; the fringe whitish; head and thorax green; dorsum black, powdered with white; under side of forewing black, with white fringe, bright rosy towards apex; hindwing white with the inner margin broadly black. Kuku Nor, and Amdo, Tibet.

5. Genus: **Oxytrypia** *Stgr.*

Tongue developed; palpi quite short, long-haired below; frons smooth; antennae of ♂ bipectinate to apex with short branches; mid and hind tibiae spined; fore tibiae without spines or claws. Type *O. orbiculosa* *Esp.*

orbiculosa. **O. orbiculosa** *Esp.* (50 a). Forewing olive brown, tinged in parts with purplish or leaden grey; the lines edged with whitish tinged with flesh colour; orbicular and reniform large; the former purple black ringed with pale; the latter snow white, with a purple black crescent on its inner side; submarginal line zigzag, the apical area powdery white; fringe whitish; hindwing white with broad black terminal border, emitting black-scaled streaks along inner margin and vein 3 and the median to base; fringe white; abdomen black ringed with white. In Europe only found in Hungary; also in Turkestan in Central Asia.

Division III. Fore tibiae without claws; tibiae without spines; eyes hairy.

6. Genus: **Anarta** *Tr.*

Tongue developed; frons slightly rounded, with a small ridge beneath; palpi upturned, long-haired, terminal segment pointed; antennae of ♂ with tuberculate fascicles of cilia or pubescent merely; thorax pectus, legs and abdomen densely haired, the last with lateral fringes of hair. Type *Anarta myrtilli* *L.* A genus of small species, occurring in the polar regions or on the summits of mountains, flying in the sunlight.

Sect. I. Antennae of ♂ flattened, the segments laterally tuberculate, with short fascicles of cilia.

staudingeri. **A. staudingeri** *Auriv.* (50 b). Forewing blackish brown with some white dusting, sometimes flushed with olive yellow along both folds; median area darker; lines blackish, conversely edged with white scales; the yellowish white submarginal line preceded by black shading; claviform stigma slight, black; the two upper white with black outlines; fringe mottled; hindwing whitish, the base and inner margin grey; the veins, cellspot; and outer line dark; a blackish terminal band; fringe white. Found only on the mountains of Norway and Lapland in Europe; the form **moeschleri** *Stgr.*, at present known from Labrador only, is greyer.

richardsoni. **A. richardsoni** *Curt.* (= *algida* *Lef.*, *septentrionis* *Walk.*, *lanuginosa* *Smith* (50 b). Forewing pale grey, suffused with olive brown, most deeply in median area; lines black, the inner angulated, the outer lunulate-dentate, conversely pale-edged; submarginal line defined by a row of large black wedge-shaped spots preceding it; stigmata pale grey, outlined with black; the claviform followed by a pale patch; the orbicular with a dark dot, the reniform with a dark crescent, at centre; fringe mottled black and grey; hindwing dull white, the base and sometimes the inner margin smoky fuscous; cellspot, veins, and outer line dark; a broad blackish terminal border; fringe white. Described originally from the Canadian shores of the Arctic Ocean; subsp. **dovreensis** *Stgr.* from the Dovrefeld Mts. in Norway and from Lapland has the *asiatica* grey markings more or less overrun with the fuscous suffusion, the hindwing smoky grey; subsp. **asiatica** *Stgr.* from E. Siberia is a nearly uniform fuscous or grey brown form with the pale grey tints absent.

rangnovi. **A. rangnovi** *Püng.* Said to resemble *Polia glauca*, but smaller, and broader-winged; inner line black outcurved in middle; outer line faint; subterminal obscure, preceded by small black dentate markings; claviform stigma dark; orbicular very obscure; reniform long and narrow, marked with white externally only; hindwing clear white, with broad deep black terminal border, greyish costa, and dark cellspot; the fringe white. Taken flying by day in the district of Luleå, Lappmark, Norway.

Sect. II. Antennae of ♂ lamellate, pubescent.

myrtilli. **A. myrtilli** *L.* (50 b). Forewing dull dark fuscous purple, with the lines slightly paler; the stigmata obscure; a subtriangular whitish blotch on base of vein 2; hindwing orange with broad black terminal border; the costa and inner margin narrowly black and the base of wing often smoky blackish; this, the type form, occurring in Sweden, the north of England and Scotland, and other northern localities is very different from the usual bright red form, which is the ab. **rufescens** *Tutt.* (50 b); in this the forewing is a mixture of bright red, and olive brown or olive yellow; the transverse lines being more or less strongly whitish, the stigmata red brown with pale rings, and the white spot on vein 2 distinct; ab. **peralbata** *ab. nov.* (50 b) is an extreme form of this, in which the white lines are strongly developed, and the central area is milk-white from costa to inner margin, including the white blotch on vein 2; in the hindwing the yellow is ampler, the black of the costal and inner margins and the basal suffusion being reduced; — ab. **albivena** *Haw.*, described from East Anglian specimens, has the forewing suffused with olive brown, the hindwing remaining normal; while in **alpina** *Ractzer* (50 c), not only is the forewing olive brown, but the hindwing shows only a dull yellowish median band crossed by black veins; — and again in **olivacea** *Fuchs* the yellow of the hindwing is suffused with olive brown, while the coloration of the forewing remains of the normal bright red; in ab. **nigrescens** *ab. nov.* (= ab. I. *Hmps.*) occurring at Hyères, S. France, the usual red suffusion is almost entirely replaced by black; — lastly, in subsp. **citrina** *subsp. nov.* (50 c), from Cintra, Portugal, the whole forewing is suffused with blackish, leaving only the white blotch on vein 2 conspicuous, and the orange of the hindwing, both above and below, is pale lemon yellow; as the insect is decidedly larger than average typical *myrtilli*, it may prove a distinct species; at present I have seen only one ♂ taken

in the spring of 1909 by Mr N. C. Rothschild, and now in the Tring Museum. A heath-frequenting species, found in Scandinavia, Britain, France, Germany, Switzerland, Spain, Portugal, Italy, and Russia. Larva velvety green, with 3 rows of long yellowish white streaks down the back, forming the dorsal and subdorsal lines, and a row of oblique white streaks edged with dark green on each side; feeding on heath in autumn and emerging the following year; in warm climates there is a summer brood as well.

A. cordigera *Thnbg.* (= *albirena* *Hbn.*, *luteola* *Gr. & Rob.*) (50 c) Forewing blackish, dusted with pale grey scales especially in basal and marginal areas, the median being darker, or even black; inner and outer lines deep black; reniform stigma large and white with a grey lunule in it; orbicular small, grey and obscure; hindwing yellow with a broad black marginal border, the costal margin grey; ab. **variegata** *Tutt* is a rare form, in which the dark median area is traversed by a grey band between the stigmata, the space between outer and submarginal line filled in with black to form a fascia, and another following the basal line; — in **suffusa** *Tutt* (50 c) the whole wing is black except the pale marginal area and the white reniform; — **aethiops** *Hofm.* has the entire wing black except the stigma; — while **carbonaria** *Christ.* from Siberia resembles *aethiops* above, but the underside of forewing is yellow with the marginal areas dark. — Found on the mountains of North and Central Europe; also in Spain; and in Siberia and Amurland. — Larva purplish-red; dorsal line pale yellow, with dark oblique streaks beyond segment 4, meeting on the dorsum; subdorsal lines obscurely paler; spiracular line yellow with a black upper edge; spiracles yellow, each accompanied by a yellow blotch; sometimes the larva is wholly blackish, with the markings all obscured: — feeding on *Vaccinium uliginosum*, *Arctostaphylos uva-ursi* and probably other mountain plants.

A. melanopa *Thnbg.* (= *alpicola* *Quens.*, *nigrolunata* *Pack.*) (50 c). Forewing pale or dark grey with blacker markings, when fresh with a bluish grey powdering; the 3 stigmata black or black edged; outer line alone well-defined, lunulate-dentate; submarginal line preceded by blackish marks, which on costa and beyond cell coalesce and form blotches; fringe mottled black and white; hindwing white, with broad black terminal border; a large black cellspot; base and inner margin smoky fuscous; ab. **wiströmi** *Lampa* from Sweden and the Shetland islands, has the forewings darker, more mixed with brownish or yellow, the underside with a broad black border like that of hindwing; — in **rupestralis** *Hbn.* (= *tristis* *Hbn.*, *rupestris* *Hbn.*) (50 c) the white of the hindwing is obscured by dark smoky fuscous; this form is restricted to the Alps and the mountains of central Italy; **vidua** *Hbn.* (50 c) is intermediate, the hindwing having a greyish white patch only beyond the reniform. It may be noted that in typical *melanopa* the underside of both wings is white, but becomes clouded and darkened in proportion to the darkening of the upperside. — Mountains of Norway, Sweden, Finland, Lapland, Scotland, the Shetlands, and the higher Alps. — Larva rosy purple; dorsal line ochreous edged with dark, and marked with red spots; subdorsal line yellowish, black edged, with row of black marks above and below it; the spiracular line pale yellow marked with red; feeding on *Vaccinium*. Other writers give the larva as green or bluish green, or yellowish grey, feeding on *Betula nana*, or polyphagous: so that the difference in coloration may be attributable to difference of food.

A. mausi *Püng.* (50 d). Forewing pale olive grey, dusted with fuscous; crossed by olive brown inner, median, outer, and submarginal lines; reniform stigma a small blackish lunule; fringe white; hindwing yellowish white, suffused with fuscous along inner margin; a dark discal lunule; a black terminal border. Altyn Tag Mts., E. Turkestan.

A. zemblica *Hmps.* (50 d). Forewing very narrow; fuscous brown tinged with grey, thinly scaled; lines very obscure; the inner waved, touching a small black spot representing the claviform stigma; the outer excurved above and incurved below middle; a few dark marks before the course of subterminal line; black spots along termen; orbicular stigma a black point, reniform a small lunule; fringe chequered black and white; hindwing fuscous; the fringe white; on the underside with a large white patch dusted with dark scales from near base of costa to near apex, reaching across wing as far as vein 2; a black cell lunule. Described from a single ♀ from Schubert Bay, Nova Zembla.

7. Genus: **Panolis** *Hbn.*

Tongue well developed; frons smooth; palpi short, porrect, long-haired; antennae of ♂ with tuberculate fascicles of cilia; head and thorax rough-haired, without crests; abdomen with lateral tufts of hair and a small tuft on basal segment of dorsum; forewing roughly and coarsely scaled. Larva smooth, brightly coloured; feeding exposed on *Pinus*; pupa in the ground; the imago emerges in early spring, the larva having fed up in the previous summer. Type *P. flammea* *Schiff.*

P. flammea *Schiff.* (= *piniperda* *Loschge*, *telifera* *Payk.*, *spretta* *F.*, *pini* *Vill.*, *ochroleuca* *Hbn.*) (50 d). Forewing orange rufous with some ochreous admixture; the veins dotted grey and white; the inner and outer lines deeper rufous, conversely edged with white, and dentate lunulate; submarginal line pale, prece-

ded by a dentate rufous shade; the terminal area often paler; stigmata large, irregular; the claviform with some pale and brown scales at its extremity; orbicular and reniform pale rufous with deeper centres, the orbicular flattened, its lower edge often produced along median vein as a streak and connected with reniform, which is large with the upper end angularly produced outwards; fringe mottled rufous and white; hindwing fuscous, often with a reddish tinge; the ab. *griseovariegata* Goeze (= *grisea* Tutt) (50 d) has the rufous tints obscured by glaucous grey and fuscous. Occurs throughout Europe and in Japan. Larva bright green with the lines broadly white edged with deep green; spiracular line edged below with yellow; feeds on the needles of *Pinus sylvestris*.

Division IV. Tibiae without claws or spines; eyes ciliated.

8. Genus: **Omia** Hbn.

Tongue present; frons bearing a large rounded prominence with raised rim and corneous plate below it; palpi porrect, long, hairy below; antennae of ♂ nearly simple or with clavate teeth; thorax, abdomen, and tibiae clothed with long rough hair; forewing with costa insinuate beyond middle; the apex produced; termen obliquely curved, not crenulate. Insects of small size and alpine habit. Type *O. cymbalariae* Hbn.

Sect. I. Antennae of ♂ with short thick clavate teeth.

cyclopea. **O. cyclopea** Grasl. (50 d). Forewing brownish fuscous; inner and outer lines black, edged on both sides with whitish, approximated on submedian fold where each is dentate towards the other; subterminal whitish, interrupted, preceded by a darker shade with the veins black; orbicular stigma absent; reniform large, deep black, ringed with pale; fringe mottled black and white; hindwing black, the fringe white slightly dark-chequered. A mediterranean species, found in S. E. France, Piedmont, Corsica, S. Spain, and Algeria.

Sect. II. Antennae of ♂ almost simple.

cymbalariae. **O. cymbalariae** Hbn. (50 d). Forewing brownish fuscous, with an oblique postmedian fascia, slightly bent, of pale grey; veins black and thick towards termen; a diffuse black patch at end of cell; inner line represented by black sagittae in the intervals; fringe conspicuously black and white; hindwing black, with white fringe slightly chequered with black. Occurs on the Alps and Pyrenees, the mountains of Spain and central Italy, and in Hungary and Bosnia.

oberthürrii. **O. oberthürrii** Allard (50 d). Forewing olive fuscous on a white ground, the basal area, the costal streak, and subterminal space blackish; the veins black; the white ground colour shows as a streak in lower half of cell, as a diffuse oblique fascia beyond cell, as a short, sometimes double, oblique streak from apex, and as an edging of the veins at termen, especially between veins 3 and 4, and is ampler in the ♀ than in the ♂; orbicular stigma a black dot; reniform a black lunule, sometimes broken into 2 spots; inner line shown by black wedge-shaped marks between veins; fringe mottled black and white; hindwing deep velvety black with a large oval white space across end of cell. Lambessa, Algeria.

9. Genus: **Sympistis** Hbn.

Tongue well developed; frons smooth; palpi obliquely porrect, short, the second segment fringed with long hair, the third pointed; antennae of ♂ simple; head, thorax, pectus, and legs roughly haired; forewing triangular, the termen evenly curved; veins 7, 8 stalked; 9, 10 stalked; 9 anastomosing with 8. Insects of dull coloration, with blackish grey forewings, resembling the duller species of *Anarta*; found only in Alpine and Arctic localities. Type *S. melaleuca* Thnbg.

melaleuca. **S. melaleuca** Thnbg. (= *leucoptera* Esp., *moesta* Hbn., *bicycla* Pack.) (50 e). Forewing black, thickly mixed with long slaty grey scales; the lines thick, black; subbasal line distinct, angled on median vein; inner line dentate inwards on the veins, lunulate outwards between them; outer line quadrately bent outwards above middle, lunulate dentate below; all 3 stigmata slaty grey; a black dash from claviform to outer line, and often the cell filled up with black; submarginal line pale preceded by interrupted black marks; terminal spots black; fringe chequered, dark and light grey; hindwing pure white, the base smoky blackish in the ♂; terminal border black, broad at apex, narrowing to a point at anal angle; cellspot grey. Occurs in Scandinavia, Finland, Lapland, N. Russia, and N. E. Siberia, Larva dark chocolate brown, shading at the sides into pale violet grey, which in some cases takes the form of a band; dorsal line yellow, emitting oblique yellow subdorsal streaks; on *Empetrum nigrum*.

S. lapponica *Thnbg.* (= *amissa* *Lef.* ♂) (50 c). Forewing brown black, thickly sprinkled with long whitish scales, especially along the folds and in terminal area; lines thick and black, somewhat interrupted and indistinct; stigmata whitish; the claviform with a black mark to outer line; the cell black before, between, and beyond the stigmata; subterminal line interrupted, pale preceded by black markings; fringe chequered black and white; hindwing brownish fuscous, the fringe white; underside of both wings black with a white outer band and fringe; in the ab. **tenebricosa** *Moeschl.* the forewing is darker, being without white sealing. Scandinavia, Lapland, Nova Zembla. Larva greyish or cinnamon-brown; a dorsal row of black spots; a pale lateral line and row of oblique lateral streaks; feeding on *Vaccinium* and *Birch*.

S. zetterstedtii *Stgr.* (= *amissa* *Lef.* ♀) (50 c). Forewing more uniformly blackish grey than *lapponica*, less dusted with white scales; the markings similar, but more obscure; the inner and outer lines conversely slightly grey-tinged; fringe chequered black and white; hindwing smoky black, the costa beyond middle narrowly white; the fringe white; underside of both wings dull smoky blue grey, the marginal borders black; subsp. **sibirica** *Stgr.*, from Changhai, Mongolia, is larger; the underside of forewing black with the subterminal line whitish; of hindwing black with white fringe; this may well prove a distinct species; ab. **koithoffi** *Auriv.*, from Greenland, is also larger, the forewing greyer, with median area darker; ab. **labradoris** *Stgr.* (50 e) from Labrador shows a broad white outer patch in hindwing from costa to vein 2. In Europe this species occurs in Scandinavia, Finland, and Lapland; and in the form *sibirica* in Mongolia.

S. nigrita *Bsd.* (= *vidua* *Frr.*) (50 e). Forewing dark slaty grey, almost wholly overlaid with smoky black; the terminal area beyond the wavy black subterminal line, some costal patches, and one at end of cell alone remaining grey; lines and stigmata almost wholly obscured; the outer line at costa marked on each side with pale grey; fringe white chequered with grey; hindwing uniform smoky black, the fringe white; underside of forewing with grey costal patch before the black border; of hindwing wholly black, with costal and subcostal veins showing whitish towards termen. Occurs in the Alps of Switzerland and the Tyrol.

S. funesta *Payk.* (= *funebri* *Hbn.*, *nigrita* *Dup. nec Bsd.*) (50 e). Forewing dark grey speckled with paler; the inner and outer lines black, somewhat near together; the inner outcurved in midwing, the outer outcurved above and insinuate in submedian fold, then again bent outwards; the median area between them, especially below middle, blackish; subterminal line indicated by a blackish shade preceding it; fringe grey; hindwing blackish, fringe white. Occurs in Scandinavia, Lapland, N. E. Siberia, and in the Engadine, Switzerland.

S.? lamuta *Herz* Forewing black; outer line scarcely visible; reniform stigma conspicuously white; the orbicular filled in with grey; hindwing clear white, with broad black terminal border; cellspot round; fringe white, that of the abdominal margin blackish. Recorded from Siberia only, and said to much resemble *melalcauca*.

10. Genus: **Hypsophila** *Stgr.*

Tongue developed; frons smooth; palpi obliquely porrect, fringed with very long hair in front; antennae of ♂ with fine slender fascicles of cilia; head, thorax, pectus, and legs clothed with woolly hair; veins 6, 7 of hindwing shortly stalked. Type *H. jugorum* *Ersch.*

H. tamerlana *Stgr.* (50 e). Forewing greenish grey dusted with brown, the median area slightly reddish brown; inner line oblique to submedian fold, where it is angled outwards; outer line oblique to vein 6, excurved to 4, then incurved; stigmata small and indistinct; subterminal line defined by a broad blackish bar preceding it from costa and a diffuse black shade below vein 4; hindwing white, the inner margin tinged with fuscous; a terminal black band, broad at costa, its inner edge incurved below vein 3, well separated from the narrow discoidal lunule; fringe white. Recorded from W. and E. Turkestan.

H. jugorum *Ersch.* (50 f). Forewing pale grey with a luteous tinge; the lines and shading pale olive brownish; inner line obliquely waved outwards; outer oblique to vein 6, there sharply angled and sinuous inwards, lunulate dentate; stigmata with dark centres and broad pale annuli, the orbicular rounded, the reniform quadrate; subterminal line shown by a fuscous suffusion before it; hindwing whitish, the basal and inner marginal areas smoky grey; an oblong blackish cellspot; the terminal area broadly black; the fringe white; in the ab. **haberhaueri** *Stgr.* the inner and outer lines are well-defined, brownish, approximated below middle to form a brown band; ab. **pamira** *Stgr.*, from the Pamirs, is more uniformly redbrown, with the lines more approximated; the hindwing with the oblong cellpatch lying in a small white patch; in the ab. **lunulata** *ab. nov.* (= ab. 4 *Hmps.*) (50 e) the cellspot of hindwing is a curved black lunule with the white area round it wider. Occurs in W. and E. Turkestan and in Kashmir.

H. grumi *Alph.* (50 f). Forewing grey brown with darker brown irroration; the outer half of median area dark brown; inner line indistinct, oblique, waved and interrupted, forming small black marks on

costa and in cell: outer line from two black costal spots, indistinctly double and dentate; subterminal line composed of pale lunules inwardly defined by dark diffused, dentate marks; claviform stigma marked by pale scales at its extremity; orbicular and reniform with faint pale annuli edged with brown, the cell dark between and beyond them; hindwing black brown, the basal and inner marginal areas greenish grey; fringe white. Amdo and Kuku Nor, Tibet.

11. Genus: **Cteipolia** Stgr.

Tongue aborted, minute; frons smooth; palpi shortly porrect, very hairy, the third segment hidden; antennae of ♂ with tuberculate fascicles of cilia, the cilia few but very long; head, thorax, and abdomen clothed with long rough hair; forewing elongate, the termen obliquely curved; veins 6, 7 of hindwing long-stalked. Type *Ct. sacelli* Stgr.

Sect. I. Cell of hindwing short; veins 3, 4, stalked.

sacelli. **Ct. sacelli** Stgr. (50 f). Forewing pale brownish grey dusted with darker; the veins dark; lines dark and concise, conversely lunulate dentate, starting from costal spots and closely approximated below middle; subterminal line preceded by a broad diffuse brownish-red shade; orbicular stigma black, fluke-shaped, connected along fold with a black basal streak; reniform a black vertical bar; a row of thick black nearly contiguous terminal spots; fringe concolorous; hindwing brownish grey, darker along termen, with a dark cellspot. Occurs in W. and E. Turkestan.

Sect. II. Cell of hindwing long; veins 3, 4 not stalked.

acrophila. **Ct. acrophila** Hmps. Smaller than *sacelli*; forewing grey with fuscous suffusion and irroration; the lines blackish; the inner outcurved above and below median vein; the outer edged externally with grey, excurved beyond cell, then lunulate dentate and incurved, and again bent outwards in submedian fold; præsubmarginal shade dark fuscous; orbicular and reniform stigmata small whitish spots, diffusely black-edged, and almost or quite conjoined; a row of black terminal points; hindwing semihyaline grey suffused with fuscous. Taken at Kardong and Hunza, Kashmir.

Division V. Fore tibiae clawed; the tibiae spined; eyes smooth.

12. Genus: **Heliothis** Tr.

Tongue present; frons prominently rounded with a corneous plate below; antennae of ♂ pubescent; head, thorax, and pectus rough-haired; mid and hind tibiae spined; fore tibiae short and broad, spined at the sides, with one long claw on inner side and a short claw (or 3 claws) on outer side; in the forewing the cell is more than half as long as wing, in the hindwing much shorter, veins 3, 4 and 6, 7 on long stalks; forewing long and narrow with prominent apex. Type *Heliothis cardui* Esp.

A genus of small, brightly coloured insects, flying in the sunshine by day. Larva with 16 feet, not hairy; feeding on flowers and seeds of low growing plants in autumn.

cardui. **H. cardui** Esp. (50 f). Forewing blackish overlaid with rufous scales; median area yellowish, except at costa, crossed by dark veins and containing the subquadrate reniform stigma; marginal area also yellow, crossed by dark veins; the fringe rufous; hindwing black with a narrow whitish median band not touching inner margin; the fringe white. — Occurs in the south of Europe, from Spain to Russia; also in Asia Minor and Armenia; the ab. **purpurata** Stgr. from Asia Minor has the darker areas of forewing flushed with purple red, the yellow bands tinged with olive, and the veins hardly marked; the white band of hindwing broader and plainer. — Larva stout, brown, dotted with pale yellow, with two rows of white spots along the dorsum; venter yellow; head pale brown with black spots; feeding in autumn on flowers of *Pieris hieracioides*.

cognata. **H. cognata** Frr. (50 f). Differs from *cardui* in having the pale buff median area defined by pale lines, between which the costal and inner marginal areas are filled in with fuscous; the pale marginal area narrower; the white median band of hindwing much broader. — Occurs only in the easternmost portion of south Europe, Austria, Hungary, and S. Russia; also in Asia Minor. — Larva brown grey; dorsal and subdorsal lines yellowish; spiracular broad and white; spiracles black; head yellow; feeds on *Prenanthes purpurea* and *Chondrilla juncea*.

chanzyi. **H. chanzyi** Oberth. (50 f). Forewing of ♂, like head and thorax, vinous red; a broad oblique pale ochreous median band, with its outer edge bent on submedian fold; terminal area pinkish white with darker veins: in the ♀ the red tints are replaced by green, and the inner edge of median band is angled outwards to lower end of cell; hindwing black with obscure ochreous median band; the fringe ochreous. Algeria.

H. purpurascens *Tausch* (= *pulchra* *Er.*) (50 f). Forewing purple red overlaid with black hairlike scales; an oblique median band yellowish white enclosing the rufous grey reniform stigma and crossed by dark veins, its centre with grey scaling on costa and inner margin; marginal area olive; hindwing bronzy black with white fringe; two yellowish white spots in place of a median band; underside straw white; forewing with a large basal blotch, not reaching inner margin, the reniform, and terminal border not reaching apex black; hindwing with the whole base black and the border to vein 3 only. Sarepta and the Ural Mts. in S. E. Russia, Asia Minor, and Kuku Nor, Tibet. — Larva reddish yellow above with a fine dark dorsal line, paler at the sides, pale grey below; tubercles black; head yellow brown; in flowers of *Cephalaria tartarica*; subsp. **subrosea** *subsp. nov.* (50 f) has the upperside of forewing bright purple without dark scaling; a pale yellow streak in base of cell, and the median band broader, yellower and clearer; on the underside the base of cell of forewing is yellow and the apex of forewing and apical half of hindwing are bright rosy; the fringe of forewing also rosy. Thorax purple, the vertex and shoulders purple tinged. A single ♂ from Tibet.

H. imperialis *Stgr.* (50 g). Like *purpurascens* but the median band grey green, angled outwards below costa, then constricted, with a small white spot in the cell on its inner edge; the rest like *purpurascens*; underside like that of its subsp. *subrosea*, but with no rosy tints. — In N. Caucasus and Armenia. — Larva like that of *purpurascens*; but larger, pale grey brown above, yellowish beneath, living on flowers of *Cephalaria procera*.

13. Genus: **Pyrocleptria** *Hmps.*

Differs from *Heliothis* in the forewing being short and broad; the cell of hindwing not shortened; veins 3, 4 and 6, 7 not stalked; frons with rounded prominence.

P. cora *Er.* (= *coreta* *Guen.*) (50 g). Forewing olive brown, suffused with darker brown, sometimes speckled; inner line strongly outcurved, outer line sinuous, both double, pale olive grey, like the veins; median shade, a shade before inner line, and one beyond outer line deep brown; fringe brown; hindwing bright yellow with broad black terminal border; the fringe yellowish; cellspot, the base of wing, and inner margin blackish. — Restricted to the Eastern parts of S. Europe, Hungary, S. Russia, the Ural Mts.; also in W. and E. Siberia, Mongolia, and Amurland. In the form **odenwalli** *Herz.*, from Transbaikalia, the forewing is dark brown; the hindwing with very broad black areas, leaving the yellow band narrow.

P. copiosa *Leech* (50 g). Very much like *cora*, but the median area paler with blackish suffusion; the reniform plainer and blackish; a yellowish spot at base of costa; hindwing deeper orange with the markings blacker; the cellspot large and isolated. Houkow, W. China.

Division VI. Tibiae without claws or spines; eyes simple.

14. Genus: **Xanthothrix** *H. Edw.*

Tongue well developed; palpi short, obliquely porrect, the second segment long-haired below; frons with large prominence with raised rim, containing a central corneous process hollowed out in front, with a corneous plate below it; antennae of ♂ simple, lamellate; thorax and abdomen rough haired, without crests; fore tibia with a curved claw at extremity on inner side. Type *X. ranunculi* *H. Edw.* from N. America. The claw of fore tibia is reminiscent of the preceding division.

X. callicore *Stgr.* (50 g). Forewing grey brown dusted with fuscous and overlaid with long whitish hairlike scales; inner and outer lines black, double, vertically waved; submarginal line pale, waved parallel to outer line, the terminal area on each side of it darker fuscous like the basal; a dark, blackedged lunule at end of cell placed on an obscure median shade; fringe mottled, black and white; hindwing deep yellow with black cellspot and broad black terminal border, the inner edge of which is indented; base of wing clouded with black scales; the inner margin narrowly black; fringe yellow. Asia Minor, Pontus, Lydia, Taurus.

15. Genus: **Apaustis** *Hbn.*

Tongue fully developed; frons with a large rounded corneous prominence with raised rim and a truncate process in middle, with corneous plate below it; palpi porrect, short, hairy below; antennae of ♂ ciliated; thorax and abdomen rough-haired, without crests; fore tarsi with all the segments very much shortened and the unguis large; forewing without areole; veins 7 and 11 from cell; 8, 9, 10 stalked. Type *A. rupicola* *Schiff.*

A. rupicola *Schiff.* (= *heliophila* *Hbn.*, *palliat* *F.*, *pallium* *Bkh.*) (50 g). Forewing bronzy brown grey; the inner, median, and outer lines all somewhat darker, waved and curved parallel to each other, and slightly marked by pale grey scales; submarginal line pale, especially at costa, preceded by a broad waved dark shade; a black lunule on discocellular; fringe white, its basal half black-spotted; hindwing smoky blackish fuscous; fringe as in forewing; the head and shoulders are deep yellow. Austria, Hungary, Bulgaria, S. E. Russia; Pontus, N. W. Kurdistan, Ala-tau Mts.

A. theophila *Stgr.* (50 g). Forewing dark to the margin; the fringe yellowish white in the apical half and dark below the middle. Greece, Lydia.

16. Genus: **Panemeria** Hbn.

Tongue present; frons smooth; palpi porrect, short, rough-scaled below; antennae of ♂ filiform, pubescent; head and thorax rough-haired, without crests; dorsum without crests; forewings triangular, with hairlike scales. The imago flies freely in sunlight. Larva with 16 legs; feeding in flowers and seed capsules of *Cerastium*; pupation subterranean. Type *Panemeria tenebrata* Scop.

tenebrata. **P. tenebrata** Scop. (= *arbuti* F., *heliaca* Schiff., *domestica* Kuhn, *policula* Lang, *fasciola* Esp.) (50 g). Forewing dark fuscous, varied with redbrown and with a sprinkling of pale grey scales; inner and outer lines indistinctly darker; a dentate, cloudy dark fuscous median shade; a darker shade precedes and defines the subterminal line; hindwing blackish, with a deep yellow outer fascia not reaching inner margin; in the ab. *obscura* Spul. (50 g) the black borders of the hindwing are wider and the white band smaller. Larva light green; dorsal line deep green; subdorsal lines whitish, edged with darker; spiracular line more yellowish, edged with dark green above; head pale green; on *Cerastium arvense*, on the flowers and seeds. Occurs throughout Europe except in the extreme North and in southern Spain.

jocosa. **P. jocosa** Zell. (= *arbutoides* Bell.) (50 g). Differs from *tenebrata* in having the hindwing deep orange with only the basal third black instead of the basal half, and the marginal dark border much narrower; the orange of the central area reaches the costa broadly, and is separated from the inner margin by only a narrow black area. Restricted to Sicily and the Balkan Mts.

17. Genus: **Janthinea** Guen.

Tongue present; frons produced below into a flat tridentate projection, the frons and vertex both rough-haired; palpi long, porrect, rough-haired, the terminal as well as the second segment; pectus and legs hairy; fore tarsi with the segments short and the unguis large; thorax and abdomen stout, the abdomen shaggy at sides; antennae quite simple; forewing without areole; veins 8, 9, 10 stalked. Type *J. frivaldszkyi* Dup.

frivaldszkyi. **J. frivaldszkyi** Dup. (50 h). Forewing deep violet mixed with darker, fuscous, scales; an oblique white median band; pointed towards costa and not incurved, the violet deeper on each side of it; fringe grey brown, violet at base; hindwing with base and a broad terminal border black; fringe white, except at anal angle; — in the ab. *viola* Frr. (50 h [2]) the white bands, especially that in hindwing, are wider; the band of forewing pale yellow and incurved to costa; on the other hand in ab. *restricta* ab. nov. (50 h) the bands remain narrow as in the type, but that of forewing is shaped as in *viola*, incurved to costa, and dull greenish yellow; in the hindwing the white band is sometimes dusted heavily with dark scales. The species occurs only in Syria, Asia Minor, Bithynia, and Armenia.

divalis. **J. divalis** Stgr. (50 h). Like *frivaldszkyi* in the forewing, but the hindwing is bright orange with a black marginal border narrowing to the anal angle; fringe of hindwing pale violet. S. W. Kurdistan.

18. Genus: **Stenoecia** gen. nov.

Tongue present; frons as in *Janthinea* Guen. with which it agrees also in the palpi; antennae (♀) simple, thick, annulate; forewing elongate, three times as long as broad; the costa distinctly sinuate; the apex bent upwards and subfalcate; termen very oblique and slightly sinuous, as long as inner margin; the anal angle well marked; abdomen of ♀ conical, with long exerted ovipositor; hindwing broad; veins 3, 4, and 6, 7, shortly stalked; the cell broad. Type *S. dos* Frr.

dos. **S. dos** Frr. (50 h). Forewing purplish fuscous, somewhat paler in the cell; hindwing black, with an internal white patch from vein 6 to 1, the upper part beyond cell being twice as broad as the lower. Lydia, Pontus, Asia Minor.

19. Genus: **Micriantha** Hmps.

Resembles *Apautis* Hbn., but the palpi are upturned instead of porrect; the forewing is narrower, with the costa somewhat insinuate beyond middle; the foretibia with shortened segments and lengthened unguis; veins 8, 9, 10 of forewing stalked; no areole. Type *Micriantha decorata* Friv.

decorata. **M. decorata** Friv. (= *violacea* H. Sch.) (50 h). Forewing deep violet sprinkled with black scales; crossed by antemedian and postmedian dull olive yellow bands; fringe purplish black in basal half, the tips white; hindwing orange yellow; the extreme base black; a purplish black terminal border, the inner edge of which bears a sinus; fringe as in forewing. Found only in Bithynia, Lydia, Taurus, and Pontus.

20. Genus: **Stemmaphora** Stgr.

Like *Janthinea*, but the fore tarsi are normally developed, and the forewings possess an areole, 7, 8 and 9, 10 being stalked and 8 anastomosing with 9. Type *S. viola* Stgr.

S. viola *Stgr.* (50 h [7]). Forewing rufous suffused with purplish white and dusted with black scales; *viola*. an oblique diffused rufous band from middle of costa to near tornus, inwardly angled below cell to near base, preceded by an olive yellow streak in cell, and its outer edge indented by an olive yellow patch in submedian interval; an oblique rufous fascia from apex to vein 5, with olive yellow beyond it; terminal line rufous; fringe with white tips; hindwing dark bronzy brown, greyer towards base; a diffused crimson patch below end of cell; an obscure dark cellspot; fringe white, crimson at base; underside of forewing white suffused with crimson, of hindwing crimson, both with dark cellspots and diffused black terminal patches not reaching apex. W. Turkestan.

21. Genus: **Omorphina** *Alph.*

Tongue well developed; frons smooth, shining; palpi upturned, second segment long and roughly haired beneath, the third fairly long, acute; antennae of ♂ lamellate, rough, pubescent only; head, thorax and abdomen rough-haired; femora and tibiae fringed with hair; the legs long; forewing triangular, the apex prominent, the termen well curved, hardly oblique. Type *O. aurantiaca* *Alph.*

O. aurantiaca *Alph.* (50 h). Forewing fulvous brown, in basal half suffused with darker, more olive *aurantiaca*. brown, rendering the markings less distinct: inner line thick, oblique outwards and vertical below middle; outer line finely brown, irregularly sinuous, indented on both folds; submarginal line thick, dark, nearly straight from apex to before anal angle; orbicular and reniform stigmata cloudy, the latter larger and paler externally; traces of a dark median shade below middle; fringe brown; hindwing bright orange; the base and inner margin with black scales; a narrow and concise deep black terminal border; fringe orange with the base dark; underside of both wings bright orange with black borders; the forewing with large black cellspot. From Kuku Nor and Amdo, Tibet.

22. Genus: **Mesotrosta** *Led.*

Tongue well-developed; frons with rounded prominence; palpi obliquely porrect upwards, the second segment thickly scaled, the third short; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests. Type *Mesotrosta signalis* *Tr.*

M. signalis *Tr.* (50 h). Forewing brown with dense grey irroration, the veins and folds streaked *signalis*. with red; inner line indistinct, obsolete above middle, below with a grey line before it; outer line also obscure, slightly whitish on outer side; subterminal line equally indistinct, with a small yellow spot on costa; orbicular stigma small and round, yellow ringed with red; reniform pure white, outlined with brown, narrow above and expanding below; hindwing brownish grey; a fine dark terminal line; fringe of both wings tipped with white. Austria, Hungary, the Ural Mts. in Russia. — Larva flesh coloured above with the segmental incisions yellow; the sides yellow; the ventral surface whitish; a dark dorsal line; the warts brown; head brown; the thoracic plate yellowish.

Subfamily **Erastrinae**.

In the previous subfamilies vein 5 of the hindwing of the imago is subobsolete, a false not a true vein (whence Guenée's term *Trifidae*), and the larva has 5 pairs of prolegs; in those which follow (Guenée's *Quadrijidae*) vein 5 of the hindwing is as well developed as the other veins, while in the larvae one or both of the two first pairs of prolegs is aborted or absent. The insects composing the present subfamily, the Erastrinae, have all, as far as present knowledge goes, larvae in which the prolegs are deficient, and nearly all have the radial of hindwing strongly developed, the exceptions being found in a few American genera which still retain the weaker vein of the *Trifidae*. They are all small insects, — some quite small and of tender structure, — often gaily coloured and flying by day; more numerous in tropical climates and comparatively few in the Palaearctic region; of the 1200 and odd insects referred here by Hampson scarcely one-seventh occur in it. They agree with the *Amphipyryinae* in having the tibiae without spines and the eyes naked, without cilia; the larvae feed usually on low plants and grasses, a few on lichens and coccidae, pupating in a spun cocoon above ground.

1. Genus: **Micraeschus** *Btlr.*

Tongue aborted, small; frons smooth; palpi obliquely porrect, smooth and slender, the terminal segment small; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; tibiae smooth, the spurs long; forewing with apex prominent, the termen bent or gibbous below vein 4; veins 8, 9, 10 stalked; hindwing with termen rounded; veins 3, 4 stalked. Type *Micraeschus elataria* *Walk.*

Insects of small size and delicate structure, somewhat sparsely scaled.

M. lutefascialis *Leech* (= *solitaria* *Stgr.*). (51 a). Forewing brownish grey with slight pale irroration; *lutefascialis*. inner line marked only by a slight dark costal striga; outer line fine, black, excurved above and incurved

below middle, dentate lunulate, sometimes reduced to points on veins only; subterminal line pale, very faint; terminal line black; a dark cell dot; hindwing largely suffused with brown red; the outer line followed by a sinuous pale yellow band; cellspot dark. Satsuma and Yokohama, Japan; Ussuri, E. Siberia.

2. Genus: *Penisa* gen. nov.

Differs from *Micraeschus* in having the termen of both wings evenly curved. Larva feeds on minute lichens, under fragments of which, attached to its body in the form of tufts, it conceals itself, pupating in a lichen-covered round cocoon suspended by a thread of silk. Type *Penisa oblataria* Walk.

albolinearia. **P. albolinearia** Leech (51 b). Forewing brownish grey, with slight pale and dark irroration; inner and outer line marked by black scales, conversely edged with a diffuse white band; subterminal line faint, whitish; a terminal row of black lunules; a diffuse blackish cellspot; hindwing paler. Moupin, Chang-Yang, W. China.

leucosticta. **P. leucosticta** Hmps. (51 n). Forewing pale rufous with slight pale irroration; inner and outer lines marked by white costal spots and spots on inner margin, the outer only marked across wing; hindwing with the outer line similar. Yokohama, Japan.

3. Genus: *Polyorycta* gen. nov.

A development of *Porphyrinia* from which it is separated by the forewing of the ♂ having 4 long grooves beyond the cell between costa and vein 5; the palpi straight, obliquely porrect, and well-developed. Type *P. dimidiialis* F.

dimidiialis. **P. dimidiialis** F. (= *secta* Guen., *hemirhoda* Walk., *roseifascia* Walk., *haemorrhoida* Moore, *adulans* Feld., *basilissa* Meyr.) (51 b). Forewing with the basal area yellow, limited by an oblique white line minutely angled close below costa at $\frac{2}{3}$; outer line pale, straight or faintly curved and towards costa bent and crenulate to the angle of median line, the included space bright deep rosy, wider on inner margin; space between outer and submarginal lines, except at costa, olive brown, beyond submarginal again rosy; fringe rosy tipped with white; hindwing luteous whitish, suffused with ruddy grey along inner and outer margins. This tropical species, occurring in India and through the islands to New Guinea and Australia, is also found in Japan and China.

4. Genus: *Leptosia* Guen.

Tongue present; frons smoothly rounded; palpi upturned, stout, thickly and closely scaled, the second segment long, the third distinct; antennae of ♂ finely but distinctly ciliated; thorax and abdomen smooth, without crests; wings finely scaled, crossed by parallel waved lines, rising from oblique costal spots; hindwing with the markings effaced along costal area and on submedian fold. Larva of the only species known feeding on seeds in autumn and pupating in a slight cocoon on the ground. Type *L. velox* Hbn.

velox. **L. velox** Hbn. (= *caliginata* Tr., *mendaculalis* Tr., *anomala* Rmb.) (51 b). Forewing bone colour, slightly tinged with yellowish grey; costa marked with 4 small concise black triangular spots, from which the subbasal, inner, median, and outer lines rise and cross the wing, wavy, parallel, dark, more or less interrupted; submarginal pale, dentate, with grey shading on each side, that on the inner side tinged with rufous; orbicular stigma a dark dot; reniform large, indistinct, traversed by the median line; hindwing with only the submarginal line and its shades marked, and same wavy grey bands along the abdominal margin. Mainly a mediterranean species, occurring in the South of Spain and France, in Italy, Istria, the Balkan peninsula, Morocco, Cyprus, Bithynia, Lydia, Taurus, Syria, and Armenia.

velocior. **L. velocior** Stgr. (51 b). Considerably larger than *velox*, more uniformly suffused with grey; the costal spots brown, like the lines, not black, the lines better marked and more continuous; hindwing with the transverse shading more developed. Recorded only from Sicily in Europe, and from Syria and Taurus in Asia Minor.

dardouini. **L. dardouini** Bsd. (= *mendacula* Frr., *velox* Tr. nec Hbn.) (51 b). The same size as *velox*, but dark slaty grey with the lines and shadings blackish grey or brownish grey, placed as in that species but thicker and clearer, edged outwardly with paler, the median line strongly bent outwards beyond the reniform, the praesubmarginal shade broad; the submarginal line sinuous not dentate; the hindwing equally dark, with the markings complete except in costal region. Larva dull yellow or green, with a broad red brown transverse spot on the dorsum of each segment, cut by a yellow dorsal line, and containing on each side several yellow dots; head and thoracic plate dark brown; feeds on seed capsules of *Anthericum ramosum* in autumn, pupating in a slight cocoon among rubbish. Found in Portugal, S. France, Piedmont, Italy, Austria, Hungary, Bosnia; also in Bithynia and S. Taurus.

miasma. **L. miasma** Hmps. (52 a). Forewing purplish grey with fuscous suffusion; inner line somewhat diffuse, wavy, preceded by a dark shade; outer line double filled in with whitish, outcurved above and incurved below middle; subterminal grey between two dark shades; median line distinct, excurved round cell, then oblique; a dark spot in cell below a dark costal spot; two blackish discoidal bars connected at middle; hindwing grey suffused with fuscous, with the commencement of dark lines marked on inner margin. An example is recorded by Hampson from Kinkiang, Central China; beyond this it is only known from S. India.

L. melabela *Hmps.* (51 b). Forewing greyish white, densely sprinkled with red-brown; the lines red-brown, all starting from triangular brown costal spots; the inner inwardly oblique and wavy; the median and outer excurved above middle, incurved below, the outer edged with white and partly punctiform; the white subterminal emits short streaks to termen on veins 7—3; a whitish line at base of fringe; hindwing with base and costal area whitish, the rest redbrown; median line brown, diffuse: outer punctiform, edged with whitish; subterminal white, dentate. Quetta, Beluchistan. *melabela*.

L. griseimargo *Warr.* (51 b). Resembles *dardouini* *Bsd.*, but smaller; the forewing pale sandy rufous, except the narrow terminal area beyond subterminal line, which is grey, well defined by the crenulate subterminal line; the lines slightly deeper rufous, the costal spots rufous; the inner marginal area beyond middle is tinged with grey; hindwing quite pale grey, especially the unmarked areas in costal half of wing and along submedian fold; underside wholly pale grey; head, thorax, and abdomen pale rufous, the middle segments of dorsum darker. Algeria. Described from a single ♀. *griseimargo*.

5. Genus: **Glaphyra** *Guen.*

Differs from *Leptosia* in the much coarser scaling of the wings, which are without defined lines and costal spots, being crossed by parallel dark and pale bands; the hindwings with the markings continuous, not effaced on submedian fold and along costa. Larva feeding between spun together leaves and shoots, with certainly two generations. Type *G. lacernaria* *Hbn.*

G. lacernaria *Hbn.* (= *glarea* *Tr.*, *cretula* *Guen.* nec *Frr.*) (51 b). Forewing pale sulphur yellow, densely dusted with minute grey atoms, crossed by subbasal, inner, median, and outer broad wavy shades of olive brown or olive grey, broken up into short blotches by the pale veins; the pale submarginal line with broad shades of the same colour on both sides of it, the inner interrupted beyond cell; stigmata of the same colour as the lines; hindwing with 4 dark bands; fringes of both wings pale sulphur; — in ab. **phlomidis** *Guen.* (51 b) the grey dusting is so thick as to obliterate the pale sulphur ground colour; — on the other hand ab. **cretula** *Frr.* (= *glarea* *Guen.* nec *Tr.*, *glareosa* *Dup.*) (51 b) is pale sulphur without grey dusting, the transverse bands continuous but indistinct, not cut up by pale veins; the hindwing in the ♂ whitish, with few markings; the insects of the summer brood belong to this form; they are smaller and paler throughout. Larva shining grey brown, with fine dark scarcely marked dorsal and subdorsal lines; tubercles black; head blackish; thoracic plate dark brown, cut by a pale line; feeds in July and again in autumn on a species of *Phlomis*, making galleries among the leaves. Another S. European species, found along the mediterranean shores of Spain, France, Italy, Dalmatia, and Greece; also in Lydia, Pontus, Armenia, Mesopotamia and Palestine. *lacernaria*, *phlomidis*, *cretula*.

6. Genus: **Eublemma** *Hbn.*

Tongue developed; frons smooth; palpi obliquely porrect, the second segment stout, smoothly scaled, the third short, pointed; antennae of ♂ finely and lengthily ciliated; thorax and abdomen smooth, without crests; hindwing with veins 3, 4 stalked, the cell about $\frac{1}{3}$ of wing; wings broad, triangular, the ♂ always larger and paler than the ♀; crossed by four, irregularly waved, dark, pale-edged lines; abdomen stout in the ♀, elongate in ♂. Larva of the only species known feeding in shoots of low plants in spring and autumn, pupating in a cocoon on the ground or attached to the stems of the foodplant. Type *E. suava* *Hbn.*

E. arcuinna *Hbn.* (= *inamoena* *Hbn.*) (51 c) ♂. Forewing dull mouse grey; a vertical wavy dark inner line, often obsolete; median line thick, fuscous, inwardly diffuse, outwardly edged with pale, oblique from costa to median, then vertical; outer line fine, obscure, irregularly crenulate; submarginal line marked by the broad dark praesubmarginal shade before it, sometimes followed by a narrow dark shade; terminal line black, swollen at the vein-ends; fringe grey; hindwing darker, with blackish curved inner shade, and irregularly waved outer and submarginal shades, all three edged externally with pale; ♀ much darker; the lines edged with whitish the submarginal line of forewing starting from a distinct white costal spot. Larva (undescribed) lives according to LEDERER in the hearts of the young shoots of *Onosma echioides* in spring. Occurs in Portugal, Italy, Dalmatia, Austria, Hungary, and S.E. Germany; further in Bithynia and Pontus in Asia Minor; and in N. China and Corea; — the form **argillacea** *Tausch* (= *inamoena* *Frr.* non *Hbn.*) (51 c) is altogether paler, the forewing with a slight ochreous tinge, the hindwing whitish; the inner line of forewing well marked, with three outward angulations or projections; the median line much more excurved below middle and also indented on each fold; fringes paler; ♀ smaller and darker than ♂. Occurs in the West of Central Asia, Tarbagatai, Ala Tau, Ili, Issykkul, Ferghana; also in S. Russia and Greece. — The form **ingrata** *H. Sch.* (51 c), from Crete, Asia Minor, Armenia, Persia, Ili, Issykkul, and Ferghana, is also paler, but dull dirty grey, with the markings undefined; — a third form **blandula** *Rmb.* (= *pergrata* *Rmb.* ♀, *ingrata* *Guen.*, *suava* *Stgr.* nec *Hbn.*) has the wings pale blurred ochreous grey, the markings indistinct, the terminal line and fringes dark grey; this is found in S. Spain, Morocco, Greece, Bithynia, and Pontus; and under a slightly different form in the Altai Mts. and Issykkul district. *arcuinna*, *argillacea*, *ingrata*, *blandula*.

- suava*. **E. suava** *Hbn.* (*suavis Spul.*) (51 c) ♂. Differs from the allied species in being suffused with brown, darker before the slightly bent median line which is edged with white; the inner and outer lines obscure; the latter edged with paler like the submarginal line, which is preceded by a dark shade and indented on both folds; hindwing dark fuscous, with thick dark inner, median, and submarginal bands, the first followed by a dull whitish band, the last by white blotches on the folds; ♀ black, the forewing with a brown tinge; the lines mainly obscured; the median followed by a pure white line; fringe black with a white spot at apex; hindwing with a curved white line before middle and a white blotch beyond submarginal line above middle; frons grey. Found in Spain, S. France, Italy, Carinthia, Croatia, Hungary, and the Balkan peninsula.
- jucunda*. **E. jucunda** *Hbn.* (= *sepulchralis Tr.* ♀) (51 c). Smaller than *suava*, the forewing tinged, not suffused, with brown, the median line almost straight, the outer and submarginal both marked with white on costa; a terminal series of blackish spots; hindwing with the lines and shading blackish, the inner white band and the two submarginal blotches more prominent; ♀ usually much smaller and wholly black; frons in both sexes whitish. This species is restricted to the Southwest of Europe, occurring only in Spain, S. France, and Italy.
- kuelekana*. **E. kuelekana** *Stgr.* (51 d). Forewing in ♂ varying from ochreous yellow or ochreous red through ochreous grey to grey; in ♀ redbrown; median shade in ♂ with a slightly paler edge, both it and outer line very faint; in ♀ with a white median band, and costal spot beyond; the median line, except for one slight curve, straighter than in *arcuinna*; submarginal line pale, preceded by a slight dark band; hindwing of ♂ without marks, of ♀ with white inner band; underside of both wings ochreous, without trace of lines or bands, by which characteristic it is distinguished from *suava* and the other species. Taurus and Pontus. In this species veins 3, 4 of hindwing are not stalked, the cell being half as long as wing.
- keysertingi*. **E. (?) keysertingi** *Bien.* Forewing brownish grey; basal area bright brown, sharply defined, bluntly triangular, narrowly outlined with whitish; median and outer areas brownish grey; the two stigmata confluent into a large rather pale rounded blotch limited by the sinuous outer line, which is obscure and formed of dark spots; hindwing dirty brownish grey, darker terminally; fringe whitish. Persia.
- syrtensis*. **E. syrtensis** *Hmps.* (51 n). Forewing ochreous white flushed with rufous and dusted with brownish scales; inner line sinuous, faint, marked by black points on costa, in cell, and on submedian fold; median line brown, obliquely excurved from costa just beyond inner line, indented beyond cell, and angled outwards at its lower end, then oblique and incurved on submedian fold, edged externally by a white line; outer line similar and parallel; subterminal line sinuous, white preceded by fuscous suffusion; fringe white tipped with brown; hindwing whitish tinged with brown; two diffuse black brown median lines, bent outwards below cell; a diffused white subterminal band, defined by fuscous and black, incurved below costa and outcurved at anal angle; a black terminal line forming a diffused patch at apex. Hammam-es-Salahin, Algeria.

7. Genus: **Calymma** *Hbn.*

Tongue present, but weak; frons smooth; palpi with second segment long and thickly scaled, the third short and blunt; antennae of ♂ with long ciliations; head and thorax clothed with broad scales. Larva feeds on Coccidae on fruit trees, making a shield of the empty scales, and pupating in a cocoon on the stems. Type *C. communimacula Schiff.*

- communimacula*. **C. communimacula** *Schiff.* (51 d). Forewing uniform pale flesh colour; costa marked with dark and light spots; a pale submarginal line parallel to termen, the area beyond it somewhat deeper; on middle of inner margin a chocolate brown pale-edged bullet-shaped blotch; fringe olive grey brown; hindwing whitish tinged with pale fleshcolour in outer half. Larva pale greyish yellow, without markings; head small, heart-shaped, shining black brown; spiracles small and red; forelegs black; the others reddish, rudimentary. Found in Italy, Dalmatia, Greece, Austria and Hungary; in Pontus, Taurus, Armenia, Mesopotamia.

8. Genus: **Coccidiphaga** *Spul.*

Tongue aborted; frons smooth; palpi long and slender; the third segment short; antennae of ♂ with long ciliations; thorax coarsely scaled; veins 3, 4 rising close together from lower angle of cell in forewing, stalked in hindwing; costal shortly anastomosing with subcostal in hindwing; forewings marked with wavy lines and a large reniform stigma. Larva with only ten feet, the abdominal feet represented by a ring of hooks; feeding on Coccidae on various trees, the scales of which it fashions into a case in which it also pupates. Type *C. scitula Rmb.*

- scitula*. **C. scitula** *Rmb.* (= *exasperata Led.*, *exasperalis Led.*, *gibbosa Snell.*, *cretacea Hmps.*) (51 d). Forewing white; the shading leaden grey; inner line oblique outwards and curved, dark grey; outer line outcurved above middle, incurved below and then vertical, dark grey, broadly edged outwardly with white; the line itself is sometimes obsolete; space between them sometimes blotched, sometimes filled up with leaden grey; sub-

marginal line white, angled outwards on vein 6 and dentate to termen below middle. marked externally between the veins by black flecks; apex and termen below it brown or grey brown; space between outer and submarginal lines leaden grey; reniform grey, with black outline and pale centre; terminal line brown; fringe grey with dark tips beyond a pale line; hindwing white, with grey terminal half, traversed by a whitish submarginal line; the ab. *futilis* Swinh., described originally from India, has the forewing brownish grey in colour. Larva *futilis*. pale green or rosy; head and fore feet shining black; on various trees, feeding exclusively on the eggs of hard-scaled Coccidae. A widely spread species, found in S. Spain, S. France, Dalmatia, Corsica, Sicily, Algeria, Egypt, Cyprus, Syria; occurring even in India and W. Africa. The perfect insect has a somewhat tortriciform appearance.

9. Genus: **Thalomicra** Spul.

Tongue aborted; second segment of palpi long; costa of hindwing anastomosing for some distance with subcostal; forewing with vein 10 free, from cell, as 11. Type *T. debilis* Chr.

T. debilis Chr. (52 a). Forewing white; inner line straight, yellowish brown, diffusely shaded base-wards; some dark specks in terminal area; hindwing white; the ab. *deleta* Stgr. from Biskra, Algeria, is wholly white, with the inner band narrow and subobsolete. The type is recorded from Turcomania, Armenia, and N. Caucasus.

10. Genus: **Porphyrinia** Hbn.

Tongue present; frons smooth; palpi upcurved, the second segment somewhat rough-scaled in front, the third short, pointed; antennae of ♂ shortly ciliated; thorax and abdomen smoothly scaled, without crests; forewings elongate, costa straight, apex subacute, termen obliquely curved, the fringe deep; scaling fine and glossy, the markings usually oblique; hindwings unicolorous, without markings. The imagines are small, often gaily coloured, taking short flights in the sunshine; many species, if not all, double-brooded, and not common outside the warmer climates of the south. Larva in spun-together shoots of various low plants, pupating in cocoon among rubbish above ground. Type *P. ostrina* Hbn.

P. ostrina Hbn. (= *purpurata* Led.) (51 d). Forewing cream white, slightly tinged with pale brown in basal half and in terminal area; median shade diffuse, slightly outcurved, followed immediately by a black dot representing the reniform stigma; just beyond it on the costa an oblique purplish bar to vein 6 represents the outer line; submarginal line whitish, sharply indented on each fold and outcurved between, the interval between the two lines filled with purple except at costa beyond median line; the interspaces between the veins often streaked with deeper purple; a purple spot at apex with a blackish speck in it below; a purplish streak from base below cell; terminal line brown inwardly edged with white; fringe white, brownish in middle; hindwing brownish grey, darker along termen; terminal line dark; fringe white; in examples from Algeria and Morocco, besides the purplish tint between the two lines, the whole forewing, except partially along costa, is suffused with olive grey-brown, = ab. *suffusa* ab. nov. (51 d); — in *aestivalis* Guen. (51 d), probably the early summer brood, the purplish tint is restricted to the shade immediately before the submarginal line; the hindwings are paler, in the ♂ almost white, and the examples are smaller in expanse; — in *carthami* H. Sch. (= *numida* Luc.) (51 d), supposed to be the later summer brood, the creamy ground is faintly tinged with pale brown along the median line and on each side of the submarginal, which is sometimes accompanied externally by a few isolated black scales; apical patch grey brown; hindwing creamy, tinged with brown before termen; the fringe white. — Larva greyish yellow, with pale yellow dorsal line, prominent at the segmental incisions, and similar subdorsal and spiracular lines; head brown; feeding on *Helichrysum* and *Carlina*. Found throughout S. Europe and sporadically in S. England and S.W. Germany; in the Canaries and Madeira, in Morocco, Algeria, and Egypt; in the islands of Rhodes and Cyprus; in Asia Minor, Syria, Armenia, Turcomania, Ferghana, Issykkul, Uliassutai.

P. porphyrina Frr. (51 d). Differs from *ostrina* in being chalk white, without any purple or violet tinge; the basal streak and the median band dark brown; the outer line on costa indicated by a short brown cloud only; a brown cloud before submarginal line and brown apical streak; hindwing whitish, tinged with grey brown along termen. S. E. Russia, Uralsk; Altai Mts.; Tarbagatai Mts.

P. parva Hbn. (= *minuta* Dup., *chalybaea* Swinh., *nymphodora* Meyr.) (51 d). Forewing pale ochreous, tinged with yellowish; the median shade preceded by brown suffusion, inwardly diffuse, outwardly concise, sinuous, projecting on each fold and edged with white; outer line brown, somewhat quadrately projecting between 6 and 4, edged with pale, and followed by a brown cloud running into apex: a black dot on discocellular; submarginal line pale, hardly marked, containing a black speck below apex; hindwing brownish grey, whiter towards base; — the ab. *rubefacta* Mab. (51 e), from Corsica and Sicily, shows the basal and terminal areas of forewing dark brown tinged with rosy; the brown median shade and its pale edging very prominent; the hindwing dark; — in typical specimens the space between median and outer lines remains pale ochreous or brownish; in several examples, especially ♀♀, from Morocco, Spain, and Syria this space is finely dusted

griseata. with pearl grey, = ab. *griseata* ab. nov. (51 e). A widely spread species, occurring throughout S. Europe; in Morocco, Algeria, and Egypt; in Carniola, Carinthia, Galicia, Rumelia, Bithynia, Taurus, Syria, Pontus, Armenia, Persia, Turcomania, and in India. The larva of ab. *rubefacta* is said to feed in the flowers and seed heads of *Inula montana* and *viscosa* and *Centaurea calcitrapa* in October and November; probably a second brood.

noctualis. **P. noctualis** Hbn. (= *paula* Hbn.) (51 e). Forewing white dusted with olive grey; the lines and shading olive; inner line marked only by a small costal spot; median shade oblique inwards and straight, followed by a diffuse grey cloud, below the middle generally becoming dull orange and edged with dark lines; outer line dark grey, angled outwards on veins 6 and 4, preceded by a white line; outer area olive grey, traversed by a faint pale submarginal line; a darker spot at apex; fringe white and olive grey; hindwing grey, paler at base; the fringe white; the forms with clear white undusted thorax and base of forewings are separated as ab. *albobasalis* Spul. Larva pale green; the dorsal and subdorsal lines white; tubercles black, fine; spiracles white ringed with deep yellow; head blackish; thoracic plate brownish yellow, with two black dots in front; feeds in May and June on *Helichrysum arenarium*, eating into the stems, and pupating on the ground between the roots. Widely distributed in Europe, occurring as far north as Sweden, Esthland, and Denmark and southwards to the Mediterranean and S. Russia; also in Armenia, Taurus, Kurdistan, Mardin, and Ussuri.

wagneri. **P. wagneri** H. Sch. (51 e). Forewing yellowish white, tinged in outer half with lilac grey; median line oblique, incurved to costa, preceded by an inwardly diffuse fulvous or olive brown shade and externally white-edged; the pale band beyond it often filled to above middle with powdery lilac grey scaling, which in middle encroaches on and interrupts the outer line; this line is only distinct above inner margin where it is followed by a short fulvous band; terminal area lilac grey, the submarginal line obscure, marked externally with black dots; a dark, fulvous-mixed apical streak; a row of dark terminal spots; fringe white lined with olive grey; hindwing pale grey, darker towards termen, darker in ♀ than in ♂; ab. *ochreola* Stgr., (possibly the summer brood) (51 e), has the forewing more unicolorous, owing to the greater development of the grey scaling. Occurs in Asia Minor, Pontus, Taurus; in Syria, and Armenia.

candidana. **P. candidana** F. (= *minuta* Hbn., *perlana* Hbn.-G., *parva* Dup. nec Hbn.) (51 e). Forewing white, the shadings chestnut brown; viz.; an oblique uniformly broad median band and the terminal area beyond outer line, which is invaded below middle by a white tooth-shaped projection from the pale interval; terminal area beyond the obscure submarginal line greyer and paler; a white costal patch before apex; fringe grey; hindwing grey, paler at base; — ab. *impura* Stgr. (= *candidana* Led. p. 232 nec F., *cantabrica* Rössl.) (51 e) has the *skafiota* pale spaces filled with grey and the brown tints duller; the ab. *skafiota* H. Sch. (51 e) (queried as the summer brood) is smaller and paler, the markings yellow brown or ochraceous, the median band less concise and obsolete before costa, the hindwing wholly white. Larva pale yellow with grey dorsal and subdorsal lines; head shining black; thoracic plate red, bisected by a pale line; on *Helichrysum*. Found in Spain and S. France; also in Armenia and Ferghana; *impura* from W. France and Bilbao; *skafiota* from Crete, Armenia, Mardin. In the Tring Museum are examples of the last from Andalusia and Digne, Basses Alpes; in the last locality all three forms were taken together in the latter half of June, 1908, by the Hon. W. ROTHSCHILD and Dr. K. JORDAN.

rectifascia. **P. rectifascia** de Joann. Differs from *candidana* by the absence of the oblique median band between inner and median lines; the inner line is slightly angled outwards below costa, then vertical. Britany, N. France. *Candidana* is a southern insect.

viridula. **P. viridula** Guen. (= *minuta* Frr. nec Hbn., *dalmatina* H. Sch., *elychrysi* H. Sch. f. 250) (51 e). Differs from *candidana* in the ground colour being duller, greenish white; the oblique median band and outer area pale olive grey green instead of brown; the base of both folds slightly streaked with grey; hindwing of ♀ dark grey, of ♂ whitish, greyer towards termen. In Carinthia, Croatia, Dalmatia, Greece, and ? Italy; also in Armenia and Bithynia.

elychrysi. **P. elychrysi** Rmb. (51 e). Differs from *viridula* in the shadings being dark olive green; the median band twice as broad, and swollen at each end; the basal area with a large rounded patch from costa to submedian fold; the pale band beyond middle pointed at costa; the fringe greenish, the outer half pale chequered with dark; hindwing grey. Corsica, Sardinia, and, slightly modified, in Central Italy. Larva brownish green with the dorsal line darker, having a whitish band on each side and darker shading beyond; feeds in April and May and again in July in spun together flowers of *Helichrysum angustifolium*.

permixta. **P. permixta** Stgr. Forewing dirty greenish grey, in places with an admixture of brown; a concise white line beyond middle, angled externally on vein 6, inwardly brownish-tinged and outwardly followed by a dark shading; submarginal line faint, forming 3 blunt teeth externally, and containing below costa two black spots superimposed; hindwing grey, with traces of line on inner margin. Described from a single ♂ from Chellala, Algeria; recorded also from Capri, Italy.

hansa. **P. hansa** H. Sch. (52 a). Forewing pale straw colour; the median line (nearly straight), the outer line,

and the praesubmarginal shade, which is continued across the hindwing, deeper tinted; an oblique ferruginous streak from apex; a minute black dot in cell and two superimposed on discocellular; hindwing paler. Armenia, Caucasus, and Persia. Larva grey green; the tubercles with silvery white hairs; feeding on *Echinops*, fastening its cocoon for pupation to the stems.

P. pannonica *Frr.* (= *kindermannii* *H. Sch.*, *lenis* *H. Sch. nec Ev.*) (51 e). Forewing deep dull yellow *pannonica*. in basal half, violet grey powdered with white in the outer; the extreme termen and fringe rosy brown; costa dusted with grey, sometimes white; two small black dots in cell, one near base, and two superimposed on discocellular, often obscured; median, outer, and submarginal lines marked by grey scales, but often obscured; the median incurved to costa, the outer excurved above and approaching median on inner margin; the submarginal straight and oblique, often interrupted by a redbrown apical streak; hindwing grey, darker in ♀; the space between median and outer lines often darker, more fuscous; the ab. *lenis* *Ev.* (51 e) is paler yellow and the *lenis*. dark markings faint or nearly absent, the hindwings pale luteous. The darker type form occurs in Hungary, the Altai Mts., and Armenia, and Pontus; the aberration in S. E. Russia, Taurus, and Mesopotamia. Intermediate forms occur in Taurus and Persia, with the hindwing pale grey; one of these, from the Freyer Collection, now in the Tring Museum, is labelled *pannonica*. Larva dull bone colour, darker, more greyish at the segmental incisions; dorsal line pale, faint; tubercles small, black; spiracles redbrown; head round, brown; thoracic and anal plates brown with black tubercles; feeds in May and June on *Gnaphalium arenarium* in a case formed of morsels of the foodplant and attached to the stems or leaves.

P. amasina *Ev.* (= *paradisea* *Btlr.*) (51 f). Forewing olive ochreous to beyond middle, where it is limit- *amasina*. ed by the pale, sometimes white-dotted median line, which forms a more or less conspicuous outward projection in cell and then runs obliquely inwards with a small sinus on submedian fold; submarginal line waved, also marked by white dots; the space between the lines bright deep rosy, containing a costal patch of olive ground colour; fringe bright rosy; hindwing olive fuscous, paler, more ochreous, in ♂, where a dark median shade shews more plainly. Found in S. Russia, the Kirghiz steppes, S. Ferghana, Bokhara, the Ussuri district, Corea, and Japan.

P. rosea *Hbn.* (= *rosina* *Hbn.*) (51 f). Forewing with basal half deep olive, towards base more or less *rosea*. suffused with rosy, the olive deeper before the median line which is cream colour, bluntly projecting in cell, then oblique inwards with a slighter projection on submedian interspace and an inward tooth on vein 2; outer half rosy, the lines deeper: outer line angled on vein 7, followed by an oblique rosy band, sometimes nearly wholly olive, starting from an olive apical mark and interrupted at vein 7 by the paler submarginal line; terminal line rosy; fringe with basal half rosy (or olive), outer half olive grey; hindwing olive brown, the fringe white; in some cases the rosy tinge is absent; this is the form *schernhammeri* *Rühl.* Larva flesh colour dusted *schernhammeri*. with dark; dorsal and subdorsal lines reddish white; spiracular lines broader above the black spiracles which are placed on a yellow ground; venter and feet dull yellow; head and thoracic plate brown; feeds in May beneath a slight web on *Jurinea mollis*, pupating in a greyish white oval cocoon. In Europe found only in the South East, Lower Austria, Dalmatia, S. Russia; also in the North of Asia Minor, Bithynia, Lydia, Taurus, Armenia and (?) W. Siberia.

E. respersa *Hbn.* (= *amoena* *Hbn.*) (51 f). Forewing cream white dusted with brownish grey, which is *respersa*. deepest before the median and submarginal lines; inner line always indistinct, close to a small black dot in cell; median line thrice bulged outwards, above and below middle, and below vein 1, sharply indented on median vein and bluntly on vein 1; preceded by a brown grey shade diffused inwardly; outer line dark grey, bent outwards between 6 and 2, slightly pale-edged, often more or less obsolete; submarginal line whitish, sinuous, indented on each fold, preceded and followed at costa by a brown grey shade, sometimes edged externally by scattered black scales; reniform stigma represented by a black dot which in quite perfect specimens is double and slightly ringed with white; fringe white with the tips grey and a broad grey band of contiguous patches; hindwing whitish grey in ♂, darker grey in ♀, with traces of an inner and two outer dark bands; the summer brood — *grata* *grata*. *Tr.* (51 f) is whiter, less dusted with grey, and generally somewhat smaller; in a single ♂ of this form, without definite locality, but probably from the FREYER Collection, ab. *obliquata* *ab. nov.* (51 f), the median, outer, *obliquata*. and subterminal lines, as well as the termen itself, are much more oblique than in typical specimens, and the terminal area is whiter, more or less absorbing the submarginal line; while in the hindwing the two dark outer bands are farther from termen and followed by a more distinct pale band; the ab. *bythinica* *B.-Baker*, *bythinica*. described from a single ♂, has the forewing dusted with violet-red. Larva stout, dirty grey, thickly dotted with blackish; the dorsal and subdorsal lines paler; tubercles black; spiracles also black; head and thoracic plate dull black; feeds in May and June, and again in autumn on *Onopordum acanthium*, pupating in a slight cocoon attached to the stems. Occurs in South Europe, in Austria and Hungary; in Bithynia, Lydia, Taurus, Armenia, Persia, and Turcomania.

E. siticulosa *Led.* (51 f). Forewing chalk-white; the markings much as in *respersa*, the brownish tint *siticulosa*. more or less mixed with blue grey; basal area limited by a dull irregularly waved line, not by a concisely curved

line; towards termen also not so clearly white but shaded with grey; a black dot in cell and one at end; a thick median line; submarginal line white, wavy, between darker shades; fringe mottled grey and white; hindwing *albina*. white, with traces of a dark line above anal angle. Mardin and Damascus, Syria. The form *albina* *Stgr.*, queried by him as either a summer brood or a possibly distinct species, from Palestine, is whiter, with the dark markings reduced.

leucota. **P. leucota** *Hmps.* (51 n). Forewing white, terminally suffused with brownish ochreous; costa at base sprinkled with brown; an oblique diffuse brownish ochreous median band containing a black spot on discal fold, its outer edge incurved below middle; subterminal line indistinct, whitish, containing black points on its outer edge below costa and on both folds; a rufous patch at apex; hindwing white, the terminal area slightly brownish. Described from a ♀ from Bander Abbas, on the Persian Gulf.

purpurina. **P. purpurina** *Schiff.* (51 f). Forewing with basal half pale greenish ochreous, deeper green before the median line which projects angularly in cell, then runs obliquely inwards, followed immediately by the deep rosy tint of the outer half of wing; in this the outer line, which projects somewhat squarely beyond cell, the praesubmarginal shade, and the veins beyond middle are deeper rosy; submarginal line whitish, outwardly lunulate, indented on each fold; a rosy streak from apex, and rosy terminal line; fringe rosy interlined with pale; hindwing olive brown, paler in the ♂; fringe whitish; — *secunda* *Stgr.* (51 f) (probably the summer brood) is much paler, the purplish tints fainter; the hindwing yellowish white, flushed with olive grey along termen. Larva dull blackish green; lines pale yellowish, strongest at the segmental incisions; head and thoracic plate black brown; feeding in spring and autumn on *Cirsium arvense*, pupating in a double greyish brown cocoon. Found in S. E. Europe; in Algeria; in Pontus, Taurus, Armenia, Ferghana, and Samarcand.

cochylioides. **P. cochylioides** *Guen.* (= *rosita* *Guen.*, *phoenissa* *Led.*, *derogata* *Walk.*) (51 f). Forewing in basal half ochreous yellow, tinged with olive along costa and before an oblique median line, beyond which to the submarginal line the ground colour is rosy, with sometimes an outwardly angled deeper rosy outer line; submarginal oblique from close to apex, white, deeply indented and lunulate outwards, with a few scattered black scales on its outer edge, and forming between veins 1 and 3 two larger white spots black-edged outwardly; terminal area olive; the terminal line darker; fringe olive with a pale line at base; hindwing whitish tinged wholly or terminally with grey in ♀, narrowly in ♂. Guenée's *cochylioides* was described from specimens from Ile Bourbon and Ile de France; his *rosita* from Australia; *phoenissa* *Led.* from Syria; *derogata* *Walk.* from Ceylon; all apparently are one and the same species; in the ab. *calida* *Rbl.* (51 g) from the Canaries, as also in the majority of Australian ♂♂, the rosy tinge of forewing is almost or altogether obsolete

anachoresis. **P. anachoresis** *Wagnr.* (= *accedens* *Fldr.*, *divisa* *Moore*, *leonata* *Btlr.*) (51 g). Forewing with the whole basal half cream white washed with bright yellow, sharply limited by a slightly oblique fine black line inwardly edged with white; submarginal line white, edged externally with black scales; the space between the lines deep rosy, towards submarginal line olive brown; an outer line, angled below costa, is sometimes visible; terminal area and line deep rosy; fringe brown with minute strigulations in ♂; hindwing yellowish, tinged towards termen with rosy brownish. This African and Indian species, which occurs throughout the Malay islands as far as Australia, is found also in China.

ragusana. **P. ragusana** *Frr.* (*cinerina* *Ghil.*, *psilogramma* *Led.*, *quinquelinealis* *Moore*, *polygramma* *Hmps.* nec *Dup.*) (51 g). Forewing white tinged with rosy grey, the costa and base remaining white; lines slightly darker grey outwardly pale-edged; inner line sharply angled on subcostal and again bluntly on submedian fold, inwardly oblique below the angles; median line projecting beaklike outwards on vein 7 and outer line more bluntly just beyond it; submarginal white edged outwardly with dark; apex white with a chestnut brown blotch containing two black dots; terminal line reddish, fringe white; hindwing white, tinged with grey and with traces of lines; terminal line dark and distinct; the ♀ is larger and paler with only slight rosy tinge; the fringe simply grey; in the ♂ the grey fringe is strigulated with dark. *Ragusana* *Frr.* was described from Dalmatia; *psilogramma* *Led.* from Syria; and *quinquelinerlis* *Moore* from India; the species is recorded also from N. China, S. Africa, and Australia. *Virginea* *Guen.* and *dividens* *Lucas* are forms not occurring in the Palaearctic region.

polygramma. **P. polygramma** *Dup.* (= *argillacea* *Ev.*, *nuda* *Chr.*) (51 g). Forewing slaty grey; the costal edge whitish, before apex brown; inner line dark grey, interrupted; median line white, angled outwards in cell, straight above and below, inwardly darker-edged; outer line oblique outwards from costa, edged inwardly with dark, then waved and lunate; submarginal line faint, marked outwardly by a row of black dots, that below costa largest; fringe grey with pale basal line; a black dot in cell, and blackish spot at its end, in the angle of median line; hindwing paler grey, the lines visible only near inner margin; *pudorina* *Stgr.* (the summer brood), *violetta*. is paler, with a rosy tinge instead of grey; the ab. *violetta* *Stgr.* has the median line less strongly angulated and may be distinct. Found all along the south coast of Europe and in Algeria; in Asia Minor, Syria, Armenia, Mesopotamia, Turcomania and Ferghana; the ab. *violetta* from N. Syria.

P. epigramma *Stgr.* Very near to *polygramma* *Dup.*, but a little larger; the grey more mixed with *epigramma*. yellow or brownish; first pale line, that beyond middle, broader, with broader internal olive brown edging, diffused inwardly; the spot on discocellular larger and more diffuse; outer line rounded to costa, but faint, beyond a row of irregularly toothed marks, paler externally and often subobsolete, especially in the ♂; apical streak olive brown; hindwing light grey with a broad abbreviated whitish fascia on inner margin. Issykkul.

P. gratiosa *Ev.* Forewing pale greyish clay yellow; on the discocellular a large diffuse blackish spot; *gratiosa*. just beyond it a sinuous whitish line, sharply defined and entire, preceded by clay-yellow, followed by a leaden grey band edged by a row of black dots; another fainter before termen; hindwing with pale antemedian and a postmedian line of blackish points. Recorded from the Kirghiz steppes and the Thian Shan Mts.

P. parallela *Frr.* (= *concinna* *H. Sch.* fig. 256 nec *Bsd.*) (51 g). Forewing white, dusted with olive *parallela*. grey; the lines all bluntly angled on or below subcostal vein, then inwardly oblique and parallel; inner line, as usual, indistinct; median preceded by a diffuse olive grey shade, containing in the angle two small black dots on the discocellular; outer line fine, dark grey, the space between it and median forming a white band, externally grey-dusted; submarginal line white, broad, outwardly edged with black specks, sharply angled on vein 6, its oblique costal portion curved; a dark grey apical spot with a small black dot on its lower edge; fringe white with the centre grey; hindwing whitish, greyer towards termen, with a faint pale submarginal band, clearest at anal angle; ab. **densata** *ab. nov.* (= var. *A. Guen.*) (51 g) is larger and darker olive grey, *densata*. with all the markings better developed; the median shade more broadly bent, rather than angled, in cell; the hindwing in both sexes much darker. From the analogy of *respersa*, it might be supposed that this larger darker form represented the ordinary spring brood, and the typical *parallela* a smaller, paler, summer brood. Guinée's pair were from the same locality as his *parallela*, the Ural Mts.; Spuler refers his larger (and greener) specimens to Pontus; of the 3 examples in the Tring Museum, one, from the Felder Collection, is without locality, the other two from Syria, the ♀ from the Amanus Mts., the ♂ from Marash. Other localities for the species are Taurus, Armenia, Kurdistan and ? Persia.

P. pusilla *Ev.* (= *proxima* *Fisch.*, *concinna* *Bsd.*) (51 g) Smaller and paler than the preceding species *pusilla*. *parallela*; the pale bands and dark lines and shades more concisely marked and separated, more sharply angled above middle, the dark shading smoother olive grey; a grey streak from base along each fold, the upper one with a black dot in cell; the hindwing in both sexes whiter; in the ab. **gracilis** *ab. nov.* (51 g) from Uralsk, the only distinct markings are the outer edge of the median band and the dark terminal border, both wings being whiter. Recorded from S. E. Russia, the Altai Mts. in W. Siberia, and Tarbagatai Mts.

P. fugitiva *Chr.* Forewing white, with a faint brownish outer and submarginal line; two dark spots *fugitiva*. below apex; a black dot in cell and a larger one at its end; hindwing with two inconspicuous grey bands. Distinguished from *hansa* by the slighter build, the clear white ground colour, the absence of a middle line, and the two dark apical spots. Recorded from Persia only.

P. albicans *Guen.* (= *grata* *Guen.* nec *Tr.*, *guénézi* *Spul.*). Forewing creamwhite, the lines faintly mark- *albicans*. ed with pale brown; the median and outer rounded, subparallel; the subterminal pale on a brownish suffusion, close to and parallel with the termen; a dark dot in cell, and a patch of brown scales on the discocellular; some brown marks along termen; hindwing white, greyish towards termen; the fringe white; underside of forewing blackish, of hindwing white dusted with dark; ♀ smaller than ♂. Spain.

P. faroulti *Roths* (52 k). Forewing chalkwhite, towards termen tinged with rosy grey; costal edge *faroulti*. brown; lines brown, starting from oblique costal streaks; the inner quite faint, marked only by a few scattered scales, followed by a minute black dot in cell; median and outer lines close together, quadrately bent beyond cell; a brown subquadrate spot on discocellular, its inner edge thick and darker; subterminal line whitish grey, traversing the darker grey terminal area, the veins before it paler, its outer edge marked by spots of a few black scales between veins, that above vein 7 strongest, with a dark cloud above it in the praeapical fringe; terminal line bright ferruginous; fringe white at base, lilac grey in middle, and rufous grey at tips; hindwing white washed with pale brown, forming a dark submarginal band; the terminal area whiter before the ferruginous terminal line; the veins brown; fringe glossy white; head, thorax, and abdomen white; the palpi tinged with pale brown. Algeria.

P. candicans *Rmb.* ♂ (= *extraria* *Rmb.* ♀) (51 g). Forewing of ♀ white suffused with brownish ochreous, *candicans*. except the cell and basi-costal area; of ♂ nearly uniform fuscous grey; lines brownish, diffuse; the inner wavy; median and outer excurved above and incurved below middle, the latter edged outwardly with whitish; subterminal line white, with small blackish spots on outer edge; some dark scales in middle of cell and a black striga at its end; hindwing white suffused, except at base with pale brown; the ab. **extranea** *Rmb.* is *extranea*. a form of the ♂ with whitish ground colour as in the ♀, with brownish suffusion before subterminal line in both wings. Occurs in Spain and Algeria.

compuncta. **P. compuncta** Led. Forewing chalk white; lines brownish; the inner obscure, the median oblique and straight; the outer oblique outwards at costa and incurved below middle; terminal area ferruginous, traversed by a whitish subterminal line, which is externally marked by a row of black dots; a dark point in middle of cell and two black points at end; hindwing white, the termen tinged with ferruginous; traces of outer and subterminal lines. Recorded from Syria and Persia. The extent of rufous suffusion is variable; in ab. **rufata** ab. nov. (= ab. 1. *Hmps.*) the base to median line and the terminal area are both rufous, the black subterminal dots absent.

ephimera. **P. ephimera** *Hmps.* (51 h). Forewing creamy white, the terminal area with a faint rufous tinge; lines rufous; the inner curved and faint; the median shown only below middle; the outer excurved to vein 7, then oblique and indistinct; subterminal white, minutely dentate, with black striae on outer edge; a dark diffuse cellspot; hindwing with diffused brownish subterminal line. Described from Ili, E. Turkestan.

albida. **P. albida** Dup. (51 g, h). Forewing cream white, grey-tinged towards the termen; the median line pale reddish, nearly straight; outer line close to subterminal and parallel; a reddish streak from apex, containing a black dash below, and often continued along outer edge of subterminal line as a series of black dots; a dark dot in base of cell and another on discocellular; fringe rufous at tips; hindwing white with a grey margin. Algeria. The ab. **gratissima** *Stgr.* (51 h), from Asia Minor, Kurdistan, Syria, Mardin, Pontus, is smaller and flushed with yellow; — ab. **infuscata** *Stgr.*, from Syria only, is suffused with brownish, and has a broad white band beyond the middle and a narrow white line before termen; — ab. **transmittens** *Chr.* (51 h), described from a single ♂ from Armenia, has a broad whitish grey band externally.

This moth is comparatively rare in Collections, owing to the fact that it never or rarely flies by day; should it, however, take flight, if disturbed, it is immediately attacked and devoured by a large species of *Asilus*. During the day therefore it remains concealed under the lower leaves of a species of thistle (*Echinops*), and, if these be examined, one or two pairs of the insect will almost without exception be found on each plant. For these novel and interesting details — the result of his own personal observations in Algeria — I am indebted to Dr. SEITZ himself. He further remarks that „the moth is really quite abundant in Eastern Algeria, in the neighbourhood of Batua, where the brown form *infuscata* is equally common with the type, while *transmittens* also occurs though more rarely“; and with regard to its foodplant adds that „scarcely a plant of the particular thistle can be found that is not inhabited by the larva, which feeds in the interior of the stems“.

munda. **P. munda** *Chr.* Differs from *albida* in being very much smaller, 16 mm against 25—30 mm. STAUBINGER queries it as a small form of *albida*, with his *gratissima* from Asia Minor as an intermediate form; it is equally probable that both are distinct species; the locality for *munda* is Turcomania.

jocularis. **P. jocularis** *Christ.* (51 h). Forewing yellowish white, the termen slightly brownish; median and outer lines oblique, brownish, very indistinct; fringe pure white; hindwing pure white, with the lines as in forewing. Armenia, Persia.

caduca. **P. caduca** *Christ.* Forewing pale rosy grey, the terminal area and fringe ochraceous, with both transverse lines and the discocellular spot rosy grey; hindwing luteous grey slightly darker terminally. Described from a ♀ from Ordubad, Armenia.

viridis. **P. viridis** *Stgr.* (52 a). Forewing dull pale green, mixed with whitish; median band whitish, broad and curved, outwardly diffuse, before which the green is deeper; an oblique whitish line from apex to inner margin beyond middle; sometimes a faint dark line is traceable between the two; terminal line green; fringe with white tips; hindwing pale grey, with slightly paler band before middle. Samarcand, Ferghana.

chlorotica. **P. chlorotica** Led. (51 h). Forewing dull greyish green, as in *Megalodes eximia* *Frr.*, with the median, outer, and submarginal lines paler, obliquely sinuous and parallel; hindwing pale grey. Syria, Kurdistan, Mesopotamia, Armenia, Persia, Turcomania.

deserti. **P. deserti** *Roths.* (51 i). Forewing white, faintly rufous-tinged before the vertical rufous median line, which is excurved at middle and incurved below costa and on submedian fold; subterminal area also tinged slightly with rufous; a few black scales below apex and beyond cell; hindwing pure white. Mraier, S. Algeria.

wollastoni. **P. wollastoni** *N. C. Roths.* (51 n). Forewing yellowish white, with slight black dots in and beyond end of cell, and a few scattered black subterminal scales; hindwing pure white. Shendi, Egypt.

conistota. **P. conistota** *Hmps.* (51 i). Forewing white, tinged, except at costa, with brownish ochreous, the costal edge towards base blackish; the two folds, except at base, and the intervals beyond cell to near termen, irrorated with black; hindwing white faintly flushed with brownish; the brown suffusion is much stronger in the ♀; the interspaces all dark, except at costa, leaving the veins whitish; hindwing and abdomen strongly brown-tinged. Quetta, Beluchistan.

P. virginalis Oberth. (51 h). Forewing creamy white; the costa pure white; terminal line finely yellowish; *virginalis*. hindwing pure white; the ab. **caïd** Oberth. has in the forewing a faint blackish streak from before end of cell to *caïd*. a subterminal series of black points; also a brownish flush towards apex below costa; the fringe brownish-tinged. Sebdoû, Algeria.

P. griseola Ersch. (= *pallidula* Ev. nec *H. Sch.*, *squalida* Stgr.) (51 m). Forewing cream colour, slightly *griseola*. dusted with darker, with oblique median and outer lines incurved to costa, the space between them filled up with dull leaden grey; the terminal area darker; hindwing luteous, with slightly darker outer band. Occurs in Persia, Armenia, Turcomania, Samarcand, Ferghana, Issykkul, and Ili.

P. uniformis Stgr. (51 m). Forewing, like head and thorax, dirty greyish white, or yellowish white; in *uniformis*. the yellower ♂♂ a row of dark subterminal dots; in the ♀ a faint dark streak appears in the cell; hindwing luteous. Recorded from Persia, Armenia, Samarcand, Issykkul, and Ili. This does not seem very distinct from *illota* Chr.

P. albivestalis Hmps. (= *vestalis* Stgr. nec *Bldr.*) (51 i). Head, thorax, and wings white; forewing with *albivestalis*. a black dot at end of cell; costa of both wings on underside broadly brownish; palpi, legs, and abdomen also brownish. The Dead sea, Palestine.

P. deserta Stgr. (51 i). Forewing somewhat elongate, chalk white with more or less dark dusting; usually *deserta*. with a faint dark streak along the cell, and two or three pale brownish horizontal streaks above it towards apex; the intervals between the veins are occupied in the ♀ by dark streaks; fringe light yellow; hindwing dirty white, with white fringe. Biskra, Algeria. Nearest to *subvenata* Stgr.; the markings are often almost or quite obsolete.

P. illota (52 a) Christ. Forewing dirty luteous whitish; the costa and base of wing pale yellow; the *illota*. termen with a faint rosy tinge; a series of minute black dots before termen; a faint spot at end of cell, and oblique brownish streak from apex; hindwing greyish white. Turcomania. Allied to *griseola* Ersch. and *uniformis* Stgr.

P. leucanides Stgr. (51 i). Forewing generally uniform chalk white, with a slight yellowish or brownish *leucanides*. tinge, sometimes greyish yellow or brownish yellow, in one instance dark grey brown; some specimens shew faint dark streaks in cell and beneath; in others there is a row of black points just before termen; and again a faint interrupted outer line is visible; the darkest ♂ has the veins and termen dirty brown; hindwing mostly white, with a slight dark terminal line, or pale or dark grey, or light brownish. Kashgar. The species has the appearance of a *Leucania*, whence the name; it would appear to vary much in coloration.

P. supuncta Stgr. (51 h). Forewing whitish faintly flushed with sulphur yellow; median line brownish *supuncta*. yellow; outer line of the same colour, distinct and broad in the ♀, faint or obsolete in the ♂; followed by two brownish yellow bands separated by the pale submarginal line, also fainter in ♂ than in ♀; hindwing of ♂ dark grey with white fringe, of ♀ white with narrow dark outer band; according to STAUDINGER nearest to *compuncta* Led. and ab. *gratissima* Stgr. of *albida* Dup. Recorded from Marash and Mardin, Syria, and Konia, Asia Minor.

P. pura Hbn. (51 i). Forewing creamwhite, with a black dot in cell and another at the end; between *pura*. them a faint yellow brown median line slightly indented in cell; a rufous brown shade along termen, containing a row of dots of black scales, indicating the outer edge of a submarginal line; fringe whitish tipped with rufous; hindwing white with the terminal line rufous. S. France, N. Italy, Spain.

P. suppura Stgr. (51 i). Very close to *pura* Hbn., distinguished by the broader forewing with more *suppura*. rounded apex, by the absence of a dark terminal line and pale line at base of fringes, which are pale brown; the faint pale yellow median line, which is often absent, does not reach either costa or inner margin; hindwing also without dark terminal line. Cilicia, Taurus, Antioch, Syria, Malatia.

P. pallidula H. Sch. (51 i). Forewing white with a slight curved dark shade beyond middle; a black *pallidula*. dot in cell and another at its end; a slight brown shade before termen, not marked with black dots as in *pura*; fringe speckled grey with bright white basal line; hindwing white with dark terminal line and white fringe. Recorded from Pontus, Taurus, Mardin, and Turcomania. — the ab. **cypriaca** Stgr. from Cyprus is a darker *cypriaca*. form with luteous forewings and the hindwings darkened with the same colour; — **mardina** Stgr., from Mardin *mardina*. and N. Armenia, is only half the size of the typical *pallidula*, pale strawcolour, with the cell dots obsolete, and the rufous terminal line fine and faint.

P. lutosa Stgr. Described by STAUDINGER in the first place as a dark form of *suppura*; forewing brownish *lutosa*.

substrigula. clay colour, with the median line faint but visible; the ab. **substrigula** *Stgr.* the commoner form, has a fuscous streak in and beyond the cell, and the two black dots in cell; the rarer type form was from Beirut, Syria; the aberration from Taurus and Malatia.

straminea. **P. straminea** *Stgr.* (51 i). Forewing uniform whitish grey, overlaid with pale straw colour; fringe and extreme termen more or less deeply tinged with brownish; before this dark shade a row of dark points; a black dot in cell and a second at its end; hindwing dirty whitish. Taurus, Malatia, Mesopotamia.

himmighoffeni. **P. himmighoffeni** *Mill.* (51 i). Forewing pearly white; costa pale yellow to middle; an oblique median band and a broader one before termen pale yellow, the outer one tinged externally with brown and edged by a line of scattered coarse black scales; termen grey with numerous darker grey vertical strigae; fringe whitish; hindwing and fringe white. Spain, and S. France. Distinguished by its minute size. 10 mm.

subvenata. **P. subvenata** *Stgr.* (51 n). Forewing white, flushed with pale greyish brown between the veins, especially towards termen, the veins themselves remaining white; no dark shade along termen, only the marginal line finely darker; fringe tinged with grey; hindwing and fringe white. Described from a single ♂, of 15 mm. Expanse, from Tunis, and also recorded from Palestine.

10. Genus: **Autoba** *Walk.*

Tongue well-developed; frons smooth; palpi upturned, stout, thickly scaled, the third segment short; antennae of ♂ shortly ciliated; thorax and abdomen thickly scaled, the scales often coarse, without crests; forewing triangular, the apex prominent, the termen evenly curved; no areole, veins 8, 9, 10 being stalked and 11 from cell; the retinaculum, somewhat bar-shaped, covered by a tuft of hair; hindwing with cell $\frac{1}{2}$ of wing; veins 3, 4 and 6, 7 from angles of cell. Insects of stouter and stronger build than *Porphyrinia*; the larvae feed on various plants and form a small cocoon attached to a leaf; some few live on Coccidae. Type *A. versicolor* *Walk.*

gayneri. **A. gayneri** *N. C. Roths.* Forewing white with a fulvous flush; lines fulvous, starting from dark costal spots; inner excurved below costa, angled outwards on submedian fold; median angled outwards in cell, then oblique; outer oblique to vein 7, then excurved and denticulatae, angled inwards on vein 2; a fulvous bar oblique from apex, with some black subterminal points below it; cellspot black; hindwing with inner and outer fulvous lines. Assouan, Egypt.

beraudi. **A. beraudi** *de Joann.* (51 m). Forewing white suffused with deep pink; the costal edge white near base; lines rufous starting from black costal spots, and placed much as in *gayneri*; the median and outer edged outwardly with white; the outer followed by some rufous costal striae; subterminal line dentate, with two black points beyond it below a red apical spot with a white striga beyond it on termen; a black point at middle of cell and another at its end placed on a brownish spot; hindwing with reddish inner and outer lines externally white-edged. Alexandria, Egypt.

teilhardi. **A. teilhardi** *de Joann.* (51 m). Forewing purplish pink; costal edge white for $\frac{2}{3}$; lines red, starting as oblique black costal strigae, indistinct below middle; a subterminal series of black dots; fringe deep crimson; cellspot lilacine grey, partly defined by black; hindwing purplish pink, costal area whitish; terminal line and fringe deep crimson. Cairo, Egypt. The larva feeds on *Acacia nilotica*.

trilinea. **A. trilinea** *de Joann.* (51 n). Forewing ochreous, overlaid and dusted with purplish red; the base grey; lines redbrown; the inner double filled in with ochreous, incurved in cell, angled outwards on submedian fold; median and outer lines outwardly edged with ochreous, excurved above and incurved below middle; an oblique blackish streak from below apex, with 2 black points on it, followed by a row of subterminal black points; fringe deep red with pale basal line; hindwing whitish suffused with redbrown except along costa; fringe deep red. Described from a pair from Zi-ka-Wey, Central China.

tristalis. **A. tristalis** *Leech.* Forewing greyish brown; a dark outer line, oblique outwards from costa, angled towards apex, then oblique inwards to inner margin; a pale yellow apical streak, preceded by white costal dashes; a faintly curved dark inner line; hindwing with dark cellspot and outer line. Described from a single ♂ taken at Satsuma; also from Kiu-shiu.

11. Genus: **Holocryptis** *Lucas.*

Tongue fully developed; frons smooth; palpi upturned, slender, the third segment erect; antennae of ♂ lamellate; thorax and abdomen smooth, without crests; forewing elongate; the costa arched; termen obli-

quely curved, entire; veins 7, 8, 9 stalked; 10, 11 from cell; costa of hindwing excised beyond middle; veins 3, 4 stalked. Type *H. phasianura* Lucas.

H. ussuriensis Rbl. ♀. Head white; thorax and abdomen white tinged with grey; forewing white suffused with grey, darker towards termen; inner and outer lines white, wavy; hindwing white with grey suffusion, darker towards termen; the lines waved and white as on forewing; cellspot fuscous. E. Siberia. *ussuriensis.*

H. nymphula Rbl. Forewing white: a small black dot in middle of cell and an elongate brown streak at its end, enclosing a large white spot and resting on a diffuse brown cloud; from the white spot a brown streak runs obliquely waved to anal angle close before the fringe, forming there a strong erect blotch; from the middle of inner margin a faint rosy streak runs obliquely outwards towards the middle; hindwing with a large inwardly black-edged cellspot, lying on a rust-coloured irregularly shaped central cloud; on the costa before termen begins a black brown stripe, fainter towards middle, connected by a tooth with the central cloud; the area thus enclosed filled with pale yellow; just before termen a faint brownish streak is seen, and a double streak runs from the middle of wing to inner margin; fringe white in both wings; in hindwing with some dark scaling at apex. One example from Korb, Ussuri district. The insect is very much like *H. erubescens* Hmps. from Ceylon. *nymphula.*

12. Genus: **Perynea** Hmps.

Tongue fully developed; frons with a pointed conical prominence; palpi obliquely porrect, the second segment clothed with hair above, the third porrect, short; antennae of ♂ ciliated; thorax and abdomen smooth, without crests; forewing with the apex minutely produced; termen faintly sinuate; neuration normal. Type *P. subrosea* Btlr.

P. subrosea Btlr. Forewing cream white in ♂, violet grey in ♀, dusted with blackish; inner and outer lines double, diffuse, fuscous filled in with yellowish; the inner angled outwards in midwing, touching the large black reniform, the black dot representing the orbicular lying within the angle; outer line slightly outbent below subcostal, touching reniform on the outside; submarginal line formed by black spots between the veins; terminal dots black; the shade before them yellowish in ♂, violet grey in ♀; terminal line brown; hindwing without the inner line. Kiu-shiu and Yokohama, Japan. *subrosea.*

13. Genus: **Eugnathia** gen. nov.

Tongue developed; frons smooth; palpi upcurved in front of face, the second segment long and well-scaled, the third also long and smooth, pointed; antennae of ♂ ciliated; thorax smooth, without crests; dorsum with small crests, which are often obsolescent; wings with normal neuration; forewing usually with a broad pale costal streak concolorous with thorax and base of dorsum. Type *E. longipalpis* Walk.

E. albicostalis Leech Forewing violet grey; costa to beyond middle broadly greyish white, the edge starting from inner margin at $\frac{1}{3}$; rest of wing chocolate brown clouded with darker; inner line faint, inwardly oblique; the outer whitish; the submarginal white, dark-edged, and twice angled; fringe grey, chequered with whitish, with a brown patch at middle; hindwing with base whitish; the median area brown, containing a linear black cell mark and bordered by an angulated blackish outer line, indented at middle; submarginal line as in forewing; a row of black terminal spots, and some black spots at anal angle. Ningpo, Foochau. *albicostalis.*

14. Genus: **Oruza** Walk.

Tongue present; frons smooth; palpi upcurved in front of face, both second and third segments smooth; antennae of ♂ ciliated; thorax and dorsum smoothly scaled, without crests; neuration of wings normal; forewing with a pale broad costal streak or narrow subcostal one. Type *O. costata* Walk.

O. divisa Walk. (= *lauta* Btlr., *semirufa* Snell., *lathraea* Holl., *bicolora* Beth.-Baker) (51 k). Forewing dull red brown, the costal area very broadly cream colour, sometimes flushed with fulvous or rufous; on the costal edge the inner and outer lines are marked by slight oblique black dashes, and the praesubmarginal shade by a dark patch before apex; the lower half of outer line and the submarginal are obscurely marked, but sometimes are followed by pale scaling; a row of black and white dots before termen; hindwing with the extreme base white, the two lines clearer, the space between them often tinged with rufous; thorax and basal segment of abdomen pale like the costal streak. China and Japan. The Japanese form does not appreciably differ from the Indian.

glaucotorna. **O. glaucotorna** *Hmps.* (51 k). Forewing chocolate red, the costal area white slightly dusted with brown; inner line dark, faintly marked, sinuous, with slight whitish stripes on it in and below cell; a minute round white spot at lower angle of cell; outer line whitish, with fuscous scales on inner side, excurved below costa and at middle, incurved on the folds; a diffused whitish band from vein 4 to inner margin; subterminal whitish, angled outwards below vein 7 and at middle, then incurved and somewhat dentate, with white suffusion beyond it; a terminal row of black dots; fringe whitish, tinged with red towards tornus; hindwing chocolate red; a large white patch on tornal area irrorated with red; a black cell streak; outer line whitish, oblique from costa to vein 4, then inwardly oblique and sinuous, defining inner edge of pale patch; subterminal line represented by faint black and white points from costa to vein 3, where it is angled outwards, then incurved, dentate, with a small rufous spot beyond it, and a rufous lunule before it on inner margin; the termen and fringe as in forewing. Kiu-shiu, Japan and Gensan, Corea.

mira. **O. mira** *Btlr.* (51 k). Forewing dull chocolate brown, the costal area broadly greyish ochreous; inner and outer lines inwardly oblique, straight and parallel, white; submarginal line curved in upper half, dentate sinuous below; fringe mottled, fuscous and whitish; hindwing with a slightly curved line just beyond middle; *pallicostata*. the submarginal line and fringe as in forewing. This description applies to the Amurland form, **pallicostata** *Stgr.*; typical *mira* are suffused with fuscous. Found in Amurland, Japan, Corea, and C. China.

15. Genus: **Hyposada** *Hmps.*

Tongue well-developed; frons smooth; palpi obliquely porrect, the second segment well-scaled, the third minute; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; the tibiae with slight hair-fringe; the fore femora of ♂ with exertible tuft of long hair above; forewing elongate, the apex prominent, termen oblique and even; the markings oblique; hindwing with veins 3, 4 short-stalked. Type *H. postvittata* *Walk.*

juncturalis. **H. juncturalis** *Walk.* (51 k). Forewing pale rufous dusted with black; at each angle of cell a white dot ringed with black; outer line slightly marked, brownish, externally defined by yellowish white, excurved above middle, then very oblique to inner margin before middle; beyond it an oblique diffused pale band from apex; subterminal line pale, ill-defined, with a row of black dots on its outer edge; terminal line finely black; hindwing ochreous, suffused with rufous and dusted with black; cellspot black; an oblique pale outer band, with brown suffusion before and beyond it, and with traces of a dark line through it; subterminal line indistinct, with black dots on outer edge. Described originally from Sierra Leone; occurring also in W. China and N. India.

mesophaea. **H. mesophaea** *Hmps.* (51 k). Forewing pale reddish brown; inner line diffuse, very indistinct, obscurely waved; a slight dark point beyond it in cell; outer half of median area suffused with fuscous, limited by the indistinct outer line with a series of minute dark streaks on the veins, oblique from costa to vein 7, excurved to vein 4, then incurved; submarginal line indistinct; dots along termen black; hindwing pale reddish brown, slightly dusted with fuscous; cell-spot small; a curved median series of slight points. Japan.

16. Genus: **Sophta** *Walk.*

Tongue developed; frons conically prominent, with slight upward ridge to between antennae; palpi obliquely porrect, the second segment fringed with scales at end, the third short; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; forewing with apex bluntly produced, depressed; termen dentate below middle, excised above. Type *S. concavata* *Walk.*

nitens. **S. nitens** *Btlr.* (52 a). Forewing deep redbrown; the lines and shades blackish; inner and outer lines fine, the former curved, the latter excurved above middle, then oblique inwards; median shade broad and oblique, incurved and obsolete at costa, submarginal line lustrous grey, preceded by a dark shade; a row of black and white terminal dots; hindwing red with the costal area grey and termen more orange; the median shade of forewing becomes antemedian, followed by two black lines; **fasciola** *Leech* represents a form more tinged with yellowish. Recorded only from Japan and Central China.

17. Genus: **Corgatha** *Walk.*

Tongue well developed; frons smooth, with short tuft of hair above; palpi obliquely porrect; the second segment roughly scaled towards end, the third short; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; the spurs of tibiae long; forewing with costa straight, the apex prominent, the termen obliquely curved; neuration normal. Type *C. zonalis* *Walk.*

dictaria. **C. dictaria** *Walk.* (= *liberata* *Walk.*, *metalligera* *Btlr.*, *tana* *Swinh.*) (51 n). Forewing grey powdered

with black; lines and veins pale bone colour; inner and outer lines angled on subcostal vein then inwardly oblique, white with dark edges; submarginal line angled below middle; discocellular black with pale edge; the whole surface sprinkled with metallic scales; terminal line white; the termen itself with minute black dots; hindwing with outer line only, curved. Recorded from Japan and Central China.

C. argillacea *Btlr.* (51 k). Forewing pale snuff brown; inner and outer lines dark; the inner angled on subcostal vein; the outer roundly bent at middle; the inner at costa inwardly, the outer outwardly with an oblique white dash; basal line with a smaller white dash; four distinct white costal spots before apex; terminal dots black; terminal line white; fringe pink with two fine dark lines; cellspot dark; hindwing with the line curved nearly median. Japan and Corea. *argillacea.*

C. hebescens *Btlr.* (51 k). Forewing dull grey brown varied with rufous and in places with yellowish scales, without markings except an indistinct oblique pale subterminal line or band; hindwing similar; the fringe pinkish white. Described from a single ♀ from Yokohama, Japan. A very dull and inconspicuous insect, whose position still appears doubtful. *hebescens.*

18. Genus: **Stenoloba** *Stgr.*

Tongue developed; frons with a pointed conical prominence; palpi obliquely upcurved, the second segment moderately scaled, the third erect, short; antennae of ♂ ciliated; thorax coarsely scaled; prothorax with long flattened crest; metathorax crested; forewing elongate, the apex blunt, the termen curved. Type *S. jankowskii* *Oberth.*

S. jankowskii *Oberth.* (= *nivilinea* *Leech*) (51 l). Forewing bluish white; a costal blotch reaching nearly to apex olive brown; the inner margin grey brown; the terminal area reddish brown; an oval spot on discocellular marked by black points below, obsolescent above; outer and subterminal lines finely white, excurved; hindwing brown, whiter towards base. Found in E. Siberia and Japan. *jankowskii.*

S. confusa *Leech* (52 a). Forewing purplish grey and brown, with white markings defined by black, forming a tangle of intercoalescent bands and streaks to beyond middle; a row of blackish subterminal marks; a white spot on termen in submedian interspace; hindwing white suffused terminally with brown; an obscure wavy outer line. Japan and W. China. *confusa.*

S. manleyi *Leech* (51 l). Forewing grey brown basal area with black marks in each fold, its outer edge oblique to lower fold, then incurved; inner and outer lines double, filled in with whitish; the inner oblique and waved; the outer excurved above and denticulate, incurved below vein 4; median line also double, excurved at middle; the subterminal whitish, preceded by black dentate marks; orbicular stigma represented by some orange red scales; reniform by some black marks surrounded by red; hindwing brown with whitish fringe. Japan and Corea. *manleyi.*

S. clara *Leech* (51 l). Forewing white varied with brown and black; lines black, filled in with white; the subbasal entire, excurved below middle; inner line oblique and sinuous, the outer excurved to vein 4, then incurved; median line oblique and sinuous, angled outwards below costa and forming a black patch to beyond outer line; the subterminal whitish, preceded by some black and red scaling and a black patch on costa; the terminal area, except at apex, brown; orbicular stigma a black dot, reniform a black bar; hindwing whitish with brown suffusion. Taken in several localities in Japan. *clara.*

19. Genus: **Xantholeuca** *Hmps.*

Tongue fully developed; frons with large truncate corneous prominence with raised rim; palpi porrect, short; antennae of ♂ lamellate, pubescent; thorax scaled, without distinct crests; abdomen with slight crest on basal segment of dorsum and with subdorsal scale-fans from basal segment; forewing with produced apex, the termen obliquely curved and even; veins 8, 9 stalked, 6, 7, and 10, 11 free; the hindwing with neuration normal. Type *X. staudingeri* *Stdfs.*

X. staudingeri *Stdfs.* (52 a). Forewing silvery white; a golden yellow inner band with waved edges, the outer brown; a dentate subterminal line brown, parallel to termen; the terminal area golden yellow with some brown scales towards each end; fringe white tipped with brown in places; hindwing luteous tinged with grey brown, with an obscure diffused brownish outer band; the fringe white. Mardin, Syria. *staudingeri.*

20. Genus: **Phyllophila** *Guen.*

Tongue fully developed; frons with rounded prominence, sometimes roughened at extremity and with

a corneous plate below it; palpi obliquely porrect, short; antennae of ♂ ciliated; thorax and abdomen scaled; a small crest on basal segment of dorsum; neuration of wings normal. Larva on low plants; green with white spots and lines. Type *Ph. obliterated* Rmb.

- numerica*. **Ph. numerica** Bsd. (51 k). Forewing deep golden brown irrorated with white; inner and outer lines double, black brown, filled in with white; the former waved, oblique; the outer incurved beyond cell to reniform stigma and again below vein 4 to lower edge of reniform, then vertically waved; subbasal and subterminal lines white and denticulate; the latter inangled on both folds; a denticulate white terminal line defining black lunules; fringe black brown strongly intersected with white; orbicular and reniform stigmata black brown with white annuli; the former round, the latter constricted at middle and angled inwards on median nervure so as to become almost confluent with orbicular; hindwing whitish flushed with brownish yellow; fringe brownish yellow with the tips white. A local species, occurring in S. France, Spain, and Corsica; in Algeria, N. Africa; and in *ornatula*. N. Persia and W. Turkestan; the form found in the last three localities — subsp. **ornatula** Christ. — has the inner line of forewing more acutely angled inwards in cell and outwards on submedian fold; the outer line more acutely angled outwards below costa, and less incurved on the folds; the orbicular stigma oval, touching inner line; the *disjecta*. reniform more produced outwards at its extremities; a Spanish form — ab. **disjecta** ab. nov. (= ab. 1. *Hmps.*) — shows the orbicular stigma well separated from the reniform, which is still more constricted at middle, less angled inwards along the median vein, and not touched by the outer line. Larva yellowish green spotted with yellowish white; the lines white; feeding on Santolina.

- melacheila*. **P. melacheila** Stgr. Forewing ashy grey speckled with black, with a broad blackish terminal border; an oval black-edged stigma at end of cell; dark basal and extrabasal transverse lines; the former only reaching the median vein, forming the limit of a dark patch at base of costa; the latter diffuse, oblique outwards to near middle of inner margin; outer half brown black preceded closely by a faint line which converges with the extrabasal at inner margin; fringe somewhat mottled; hindwing light grey, somewhat darker terminally; fringe white; underside silvery grey; placed by STAUDINGER, temporarily, near *obliterated* Rmb. Asia Minor.

- obliterated*. **Ph. obliterated** Rmb. (= *wimmerii* Tr., *recta* Ev.) (51 k). Forewing white overlaid with reddish brown; inner line diffuse, whitish above middle, oblique below; outer somewhat quadrately bent outwards above and approaching inner below middle; subterminal line white, bent outwards to anal angle; fringe redbrown chequered with whitish at tips; a dark brown point represents the orbicular, and two brown spots the reniform *cretacea*. stigma; hindwing whitish overlaid with reddish brown; the Japanese form, **cretacea** Btlr. is greyer, the forewing having an oblique dark band below middle preceding the outer line. In Europe this species is found only in the South, in Italy, Corsica, the Tyrol, Hungary, the Balkans, and S. Russia; in Asia in Persia, Turkestan, Siberia, China, Corea, and Japan. Larva green, with the dorsal line dark and the lateral lines white; feeding on Artemisia.

21. Genus: **Ozarba** Walk.

Tongue present; frons smooth; palpi upcurved in front of face, the second segment thickly scaled, the third slender; antennae of ♂ ciliated; thorax and abdomen smooth; forewing with veins 8, 9, 10 stalked; vein 5 of hindwing from well above 4. A large genus of small dull-coloured insects, most numerous in tropical countries. Type *Ozarba punctigera* Walk.

- punctigera*. **O. punctigera** Walk. (51 k). Forewing purplish fuscous, beyond the inner line suffused with brighter brown; inner line erect, double, outwardly dark-shaded; in the basal area two shorter double dark lines; outer line pale with a dark fine line down its centre, sharply angled below costa, then inwardly oblique; a pale irregular waved submarginal line; reniform with its lower half surrounded by black specks; hindwing uniform fuscous. An Indo-malayan species reaching Australia, occurring in China, Japan, Yesso, Kiushiu, and Corea; also found across the Indian frontier in Kashmir.
- chinensis*. **O. chinensis** Leech Forewing pale olive brown, darker at base and pinkish-tinged beyond middle; an oblique blackish line from inner margin near base to median nervure; an oblique blackish band from before middle of inner margin to costa before apex; submarginal shade dusky, attenuated towards costa; stigmata outlined with ground colour, the reniform double; hindwing fuscous. Ship-y-shan, Central China. The ♂ has the hindtibia fringed with long hair.
- sancta*. **O. sancta** Stgr. (51 n). Forewing whitish washed with rufous ochreous and dusted with dark brown; inner and outer lines double, brown filled in with whitish, somewhat swollen at costa; the inner oblique and sinuous; the outer oblique to vein 6, indented beyond cell, curved and denticulate below middle; subterminal white preceded by fuscous shading forming a diffused patch on costal area; terminal black lunules edged with white; median shade blackish, bent at middle; orbicular stigma round, the annulus white defined by brown, followed on median vein by a small white dot; reniform narrow, oblique, the white annulus partly edged with black; hindwing golden yellow, the apical area with darker scaling; a fine waved black terminal line; fringe

in both wings chequered dark and light; in the ♀ the basal half and the termen in hindwing are dusted with fuscous, and a diffused fuscous subterminal band is visible; the underside of both wings yellow. Palestine.

O. moldavicola *H. Schöff.* (51 l). Forewing black brown flecked with paler; lines black filled in with whitish and edged with grey; inner line minutely waved, with a white point on costa beyond it; subterminal white, preceded and defined by a black shade; a terminal black line inwardly lined with white except at apex; fringe mottled black and white; reniform stigma formed of two white bars slightly bent on median vein and defined at sides by black; hindwing black brown with slight outer line showing pale from cell to inner margin; costa whitish especially towards apex; a curved white submarginal bar on submedian interval. Occurs in S. Europe and W. Asia; Italy, Dalmatia, Greece, the Balkans; Asia Minor, Syria, and Mesopotamia; the ab. *euboica* *Mill.* *euboica*. is darker, with the markings in consequence less distinct.

O. lascivalis *Led.* (51 n). Forewing black brown with a leaden grey suffusion and varied with ochreous; lines black filled in with yellow; the inner minutely dentate; the outer oblique to vein 6, indented beyond cell, and incurved below middle; subterminal line indistinctly yellow edged with black; a small yellow spot below middle of cell edged with black; reniform stigma with yellowish annulus edged with black and constricted at middle; a black median line from lower end of cell to inner margin inangled on submedian fold; fringe with white patches at apex and middle; hindwing black brown, with outer line yellow below middle. Greece, Asia Minor, Syria. A small species, described by Lederer as a *Choreutis*.

O. venata *Btlr.* (52 b). Forewing brownish grey, browner in terminal half, where the veins are streaked with whitish; inner and outer lines black filled in with white; subterminal line white, ending in anal angle; median line diffused, oblique and sinuous, with a triangular black patch between it and reniform and a quadrate patch below on submedian interspace to outer line; a black dot in middle of cell; reniform stigma oblique, bar-shaped, with a white annulus surrounded by black points; a row of black terminal lunules edged inwardly by a waved white line; hindwing pale bronzy brown; the fringe whitish. Described originally as an Indian insect from the Punjab this species is also found at Rajaori, Kashmir.

O. brunnea *Leech* (51 n). Forewing pinkish rufous dusted with brown; the lines double; the inner inwardly oblique, minutely waved, and excurved below the cell, preceded on costa by a dark triangular patch; outer line oblique to vein 6, indented beyond cell, and incurved below vein 4, followed by black streaks on veins 6, 5, 4, and a brownish patch on costa; subterminal line brown, ill-defined; the outer half of median area red-brown traversed by the dark median line; reniform stigma pale rufous, inwardly defined by an oblique curved black line, its centre brownish; hindwing grey brown; the fringe brownish white. A native of W. and C. China; found also in N. India.

O. incondita *Btlr.* (52 b). Forewing pale rufous; the costal area except at middle and the median area except at costa, fuscous brown; the base of costa and inner margin also fuscous; inner line diffused, brown, inwardly oblique and sinuous; median line sinuous, brown; outer line brown, double, filled in with whitish, oblique to vein 6, indented beyond cell, where it is followed by a blackish patch, and incurved below vein 4; subterminal line indistinct, whitish, preceded by some brownish scaling; a series of dark terminal striae, that on submedian fold larger and conspicuous; hindwing grey brown with paler fringe. Described as an Indian insect; but also found, like the preceding species, in W. and C. China.

22. Genus: **Amyna** *Guen.*

Tongue well developed; the frons smooth; palpi upturned, the second segment broadly scaled in front, the third smooth, erect; antennae of ♂ ciliated; thorax and abdomen smoothly scaled; forewing with costa straight, apex produced, termen obliquely curved; hindwing ample, with the tornal area dilated. Type *A. punctum* *F.*

A. punctum *F.* (= *selenampha* *Guen.*, *trivenefica* *Wlgrn.*, *urba* *Wlgrn.*, *natalensis* *Wlgrn.*) (51 l). *punctum*. Forewing dull fuscous, sometimes with a browner or a reddish tinge; inner and outer lines black, conversely dentate lunulate, the inner erect, the outer excurved above middle; subterminal faint, with fuscous before it; orbicular stigma round, slightly ringed with pale; reniform with the lower lobe filled in with white, constricted in middle, brown-edged; hindwing uniform fuscous; fringe whitish; in the ♀ the markings of the forewing are more distinct, the lines being defined by grey and the subterminal by black; in the form *annulata* *F.* (= *latipennis* *Wlgrn.*, *subtracta* *Walk.*, *latipennis* *Walk.*, *spoliata* *Walk.*) (51 l) the reniform is not filled in with white, but simply ringed; in *paradoxa* *Saalm.*, originally described from Madagascar, the stigmata are separated by a blackish patch in cell. This species, common in S. Africa, India, and the Islands, occurs at Yatong, Tibet, and in China. The larva is dorsally blackish with indistinct interrupted pale lines; laterally brownish ochreous with a white black-centred ocellate spot on each segment, sometimes set in reddish patches; a brownish sublateral stripe; ventral surface yellowish, ochreous, or greenish, with whitish lines and a double maculate black

lateral stripe; sometimes with greenish dorsal and subspiracular stripes; head and anal segment ochreous with black spots; feeding on *Croton tiglium* and *aromaticum*, sometimes becoming a pest.

23. Genus: **Ilattia** Walk.

Differs from *Amyna* in the presence of a fovea in the cell of forewing of the ♂ before the inner line, masked on the underside by a fan of scales on subcostal vein, the median vein only being slightly curved downwards below it. Type *I. octo* Guen.

octo. **I. octo** Guen. (= *perfundens* Walk., *cephusalis* Walk., *colon* Guen., *vexabilis* Wlgrn., *bavia* Feld., *orbica* Morr., *undulifera* Btlr., *tecta* Grote) (51 m). Forewing grey brown with a reddish tinge; inner and outer lines dark, obscure, conversely edged with whitish; an indistinct median shade; subterminal line whitish, preceded by a dark band, indented on submedian fold; a row of terminal dark points marked internally with white; reniform stigma 8-shaped, incompletely white-ringed; hindwing grey-brown; the fringe grey-tipped; in the *axis.* form **axis** Guen. (= *stricta* Walk., *flavigutta* Walk., *inornata* Walk., *obstructa* Walk., *stigmatula* Snell., *albigutta* Walk., *monotretalis* Mab., *supplex* Swinh.) (511) the lower lobe of the reniform stigma is filled in with white; *leucospila.* in **leucospila** Walk. the forewing is bright rufous. A cosmopolitan tropical insect occurring in E. Siberia, Corea, China, and Kashmir.

stellata. **I. stellata** Btlr. (52 b). Forewing redbrown; inner line dark, indistinct, marked on costa by a white striga, inwardly angled on vein 1; outer line dark, edged externally by a few white scales, lunulate dentate, the teeth forming whitish points on veins; subterminal line indistinct, dark, with a whitish bar from costa; reniform stigma with round white spot at lower angle of cell and a slight whitish annulus above it; hindwing grey brown with a dark outer line faintly whitish-edged. From Japan only, where it seems to take the place of *octo*.

24. Genus: **Berresa** Walk.

Differs from *Ilattia* in the fovea of forewing being placed in the middle of cell with a rounded depression at its centre; the subcostal vein curved upwards above it and the median downwards below it, above an elongated groove lying on submedian fold; forewing short and broad, the costa shouldered at base and the apex blunt. Type *B. natalis* Walk.

natalis. **B. natalis** Walk. (= *palpalis* Walk., *abyssa* Snell., *turpis* Hmps. nec Walk., *meeki* Beth.-Baker) (51 m). Forewing dull grey brown; inner and outer lines dark, obscurely double at costa, the outer dentate lunulate, forming a series of dark points on veins; the subterminal indistinct, generally preceded by a dark shade; reniform constricted at middle with an annulus of white points with black dots round them; hindwing grey brown, sometimes with traces of a dark outer line. Rajaori, Kashmir; a common insect through India and the islands to Australia.

25. Genus: **Maliattha** Walk.

Differs from *Lithacodia* Hbn. in having veins 3, 4 of hindwing stalked. Type *Maliattha separata* Walk. from Borneo.

vialis. **M. vialis** Moore (51 m). Forewing with basal and costal areas ochreous white, faintly brownish-tinged; the outer area from apex to middle of inner margin purplish fuscous, crossed by an irregularly waved whitish outer line, which on inner margin becomes pure white; a dark crenulate subterminal line; hindwing pale fuscous; the ♀ has the outer area pinkish fuscous; the outer line forming two conspicuous lunules above inner margin; hindwing dark fuscous, with the termen and fringe ochreous. Described originally from India, but occurring also in Northern and Western China; the examples from Japan are referable, according to LEECH, rather to *bella.* the pinkish brown form **bella** Stgr. (51 m) from Amurland.

signifera. **M. signifera** Walk. (= *subfixa* Walk.) (51 m). Forewing in basal half whitish dusted with brown scales, and with a brown subbasal speck, in outer half brown with whitish patches on costa and inner margin, traversed by the outer line, which is excurved round end of cell; the reniform stigma white, with two black specks on it and a black spot beyond it; submarginal line whitish, waved, but indistinct, with some black streaks before it; hindwing greyish white. China and Japan; a tropical species extending from India to Australia.

lativitta. **M. lativitta** Moore (= *basalis* Moore) (52 b). Forewing white with pale brown dusting in basal area; rest of wing and costa golden brown; inner line dark, inwardly oblique; outer line double, filled in with white below costa, oblique to vein 6, in bent from 5 to cell, then single, white-edged, running out obliquely to tornus;

subterminal whitish followed by dark spots below vein 5; reniform stigma small, white, with two black dots on it; hindwing brownish, paler at base. Described originally from India; the type of *basalis* from Shanghai, C. China.

M. arefacta *Btlr.* (51 m). Forewing cream white; basal area, especially on costa, dusted with grey *arefacta*. specks; an inverted funnel-shaped olive-brown central fascia edged by the inner and median lines; the inner oblique inwards, black, with a clear pale line inside it; the median more vertical to below middle, then out-curved, black, with pale outer edge; outer line oblique outwards from costa through a white space, angled at 6 and incurved, its lower course lost in a mixture of black and white scales; reniform stigma edged with pale, containing two black spots; terminal area brown, with pale submarginal line, sometimes preceded by black sealing forming lines; hindwing fuscous grey; the blackish dusting of forewing is very variable, being sometimes entirely absent. China and Japan.

M. melaleuca *Hmps.* (52 b). Forewing black with a white triangle on costa beyond middle; the black *melaleuca*. is tinged with fuscous and shows a purplish tinge when fresh; inner, outer, and subbasal lines blacker, wavy, but indistinct, accompanied by brown scales; the outer line black at inner margin where it is edged with white and followed by a rufous ochreous patch; stigmata indistinct, like the lines; hindwing brownish fuscous. From Ningpo, Changyang, and Chusan Island, Central China.

M. plumbitincta *Hmps.* (52 b). Forewing olive-tinged ochreous, suffused with fuscous olive and leaden *plumbitincta*. grey patches, the terminal area and patches on inner margin on each side of central fascia alone remaining pale, the lower part of central fascia and the praesubmarginal shading being darkest; inner and outer lines leaden grey, marked with white at inner margin; reniform stigma leaden grey; hindwing whitish, darker towards inner margin. Yatong, Tibet.

26. Genus: **Hyperstrotia** *Hmps.*

Differs from *Lithacodia* *Hbn.* in having no areole in the forewing; veins 7, 8, 9 being stalked and 10, 11 from cell; in the hindwing veins 3, 4 are stalked, and the costal and subcostal anastomose for half of cell. Type *H. aetheria* *Grote* from N. America.

Sect. 2. Veins 10 and 11 of forewing quite separate at origin.

H. flavipuncta *Leech* (52 b). Forewing pale purplish grey, from base to middle and again along termen *flavipuncta*. tinged with rufous; inner line black, obliquely waved, inwardly white-edged above inner margin, preceded there by a grey triangular blotch; median line black, obliquely waved, followed by white scaling from costa to cell; outer line edged externally with white, but indistinct, denticulate; subterminal line faint; an elliptical yellowish white spot in place of the usual claviform stigma; the upper stigmata absent; hindwing grey suffused and dusted with brown. Yokohama, Japan.

27. Genus: **Lithacodia** *Hbn.*

Tongue present; frons roughly scaled; palpi upcurved, strong, the second segment roughly haired beneath, the third smooth, pointed, varying in length; antennae of ♂ pubescent; thorax and abdomen roughly scaled; metathorax with undeveloped tufts; dorsum tufted, the tufts on segments 3 and 4 larger; forewing triangular, the costa and termen curved; veins 7, 8, and 9, 10 stalked, 8 and 9 anastomosing to form the areole; hindwing with vein 5 from well above 4, curved at its origin; veins 3, 4 stalked. Larvae with the first pair of abdominal prolegs aborted; feeding, those that are known, on grasses; hibernating as pupae in a spun cocoon on the ground. Type *L. bellicula* *Hbn.*

L. fasciana *L.* (= *strigilis* *Schäff.*, *fuscula* *Schiff.*, *polygramma* *Esp.*, *praeduncula* *Btlr.*) (52 b). Fore- *fasciana*. wing white, suffused with fuscous and black; inner and outer lines double, blackish; the inner filled in with grey and obscure; the outer with white, strongly excurved beyond cell; stigmata grey, with paler outlines; the orbicular round, the reniform kidney shaped; separated by black scaling, which also follows the reniform; claviform grey brown, edged with white at end, and followed by black scaling; submarginal line pale, preceded by dark shading which thins out towards inner margin; the space beyond outer line in lower half of wing more or less white; hindwing fuscous; the fringe whitish; — in the form *albilinea* *Haw.* (52 b) the dark shading before *albilinea*. submarginal line is so strongly developed to inner margin that the white space beyond outer line is reduced to a narrow line from costa to inner margin; in *albomarginata* *Spul.*, owing to the scanty development of the *albomarginata*. same shading the white reaches costa as a broad band; — in the form *guenéei* *Fallou*, from S. W. France, the wing is suffused with rufous, or, as FALLOU called it, nut-brown. Larva green when young, later yellowish with broad reddish dorsal stripe and several fine reddish lateral lines; on *Molinia coerulea*; apparently in the

south double-brooded. Occurs throughout Europe; in Asia Minor, Persia, Armenia; the Altai Mts., Amurland, Japan, China, and Corea.

stygia. **L. stygia** Btlr. (52 c). Differs from *fasciana* in being browner and having no white on inner margin beyond outer line except the waved line itself below vein 2, and a slight ochreous patch beyond it; the outer line is not nearly so oblique as in *fasciana*, especially above inner margin. The species occurs commonly in Japan, China, and Corea, along with *fasciana*.

fentoni. **L. fentoni** Btlr. (= *versicolor* Oberth.) (52 c). Forewing chocolate brown dusted with yellow; the usual inner lines and inner stigmata absent; the reniform silvery white with black edge, narrow above and swollen into a rounded spot below, with some orange suffusion beyond it; outer line white, shortly oblique and wedge-shaped at costa, then interrupted, below middle reappearing as a sinuous white line from cell to inner margin, also followed by orange suffusion; subterminal similarly interrupted, yellowish and excurved at middle and forming a white striga on costa; fringe white, with black patches at both ends and in middle; hindwing deep chocolate brown; the fringe whitish. Japan and Corea; OBERTHÜR's type of *versicolor* from Ussuri, E. Siberia.

mandarina. **L. mandarina** Leech (52 c). Much like *fentoni*, but at once distinguished by the hindwing being yellowish white irrorated and suffused in parts only with brown; in the forewing the lower part of reniform is conical rather than round in shape; diffused patches of yellow scales beyond cell and outer line; a subterminal yellow stria from costa. Recorded from Pu-tsu-fong, W. China.

rosacea. **L. rosacea** Leech (52 c). Forewing greyish olive; the centre of orbicular stigma, a patch beyond claviform, another beyond reniform, a series of wedge shaped markings before subterminal line, and the terminal lunules blackish; the round claviform, the reniform, and the filling up of the lines pale peach-blossom colour; fringe olive grey and rosy; hindwing olive fuscous; the rosy tinge is apt to fade. Oiwake, Japan.

falsa. **L. falsa** Btlr. (52 c). Forewing olive fuscous irrorated with white scales and suffused in parts with blackish, especially along cell and obliquely beyond towards apex; outer line curving upwards from inner margin without projection to middle of wing and followed by a pale whitish or ochreous patch; orbicular and reniform stigmata with white annuli, the reniform usually conspicuous; hindwing greyish fuscous, darker in ♀; — ab. **integra** ab. nov. (= ab. 1. *Hmps.*) differs in being more ochreous brown, without paler patch beyond outer line on inner margin. The species occurs in Japan and Central China.

distinguenda. **L. distinguenda** Stgr. (52 c). Resembles *stygiانا*, but smaller; the stigmata, especially the claviform, more conspicuously marked with white; in the series of terminal lunules that below vein 4 forms a short black streak. Occurs in Ussuri, E. Siberia, Japan, Corea, and C. China.

deceptoria. **L. deceptoria** Scop. (lineodes *Hufn.*, atratula *Schiff.*) (52 d). Forewing chalk white; the markings fuscous black, varied with coarse olive and grey scales; a dark patch at base of costa; a central fascia edged by the wavy black inner and outer lines, the latter projecting and dentate beyond cell, and insinuate on submedian fold; orbicular stigma round, white, with olive grey centre, touching inner line; reniform white, with olive grey black-edged lunule, touching outer line; a costal blotch before, and the terminal area throughout beyond the white submarginal line dark; fringe olive grey, with dark middle line, the outer half chequered with pale grey; hindwing fuscous, with dark cellspot and curved whitish outer line. Larva grass-green, paler on dorsum with dark middle line and a white line on each side of the back; lateral stripes yellowish white; head green, with narrow white collar; feeds on various grasses, especially Phlaeum. Found throughout Central Europe (except Holland and Britain) and in Italy; in the Altai Mts., W. Siberia, Amurland and North China.

nemorum. **L. nemorum** Oberth. (= *africana* Leech nec *Fldr.*) (52 d). Forewing brownish fuscous mixed with leaden purplish, as far as outer line; inner, median, and outer lines thick, blackish, waved, the outer interrupted above middle and finely black and wavy below; orbicular stigma round, blackish, with pale grey outline; reniform with dark lunular centre and whitish outline, followed by some leaden grey clouds before outer line; a black dash between the stigmata; submarginal line flexuous, whitish, preceded by a leaden grey shade and followed by bright rufous scales before the black marginal dashes; fringe dark iron grey; space between outer line and submarginal shade creamwhite; hindwing fuscous grey. Described from Amurland by OBERTHÜR; found also in the Ussuri district, in Japan, and Corea. Superficially the insect is like a large *Penthina pruniana*.

senex. **L. senex** Btlr. (52 d). Forewing creamwhite, with pale pinky brown clouds, before the inner line, beyond the outer, and along termen; the base narrowly black, and the costa above middle; lines black, fine; the inner waved, the outer widely excurved round cell, then incurved; a quadrate patch between stigmata conjoined to some costal marks above it black, and a quadrate blackish grey patch on inner margin; stigmata pinkish-brown at centre in white rings outlined with black; submarginal line white, preceded by a black costal blotch and some small black marks between veins 2 and 4, and above inner margin; an apical black spot; fringe white,

chequered with black at the tips and black from the base at apex and vein 4; a marginal line of black dashes; hindwing dark grey. Japan.

L. atrata *Btlr.* (= *sidemiata* *Oberth.*) (52 d). Forewing deep olive brown, suffused with blackish fuscous *atrata*. except along terminal area and the course of the inner and outer lines, especially at inner margin; lines black and wavy, indistinct, the outer often with white teeth; claviform and orbicular stigmata with black outlines; reniform with white central lunule surrounded by white dots, and with a whitish costal cloud above it; subterminal line white at costa; hindwing blackish fuscous. From Ussuri, E. Siberia and Japan.

L. confusa *Leech* (52 d). Forewing violet grey suffused with dark fuscous, the folds and praesubmarginal shade deepest; the stigmata, the filling up of the lines, and the termen grey; the outer line whitish on inner margin; hindwing dirty pale grey in costal half, darker towards inner margin. Recorded from Pu-tsu-fong, W. China.

L. brunnea *Leech* (52 d). Forewing pale brownish olive with darker suffusion along the folds and before subterminal line; lines filled in with whitish, and widening towards both margins; subterminal line whitish; stigmata with pale rings; hindwing olive fuscous. Yokohama, Japan.

L. nivata *Leech* (52 d). Forewing white suffused with olive brown and irrorated with black; a white streak on the median vein expanding into a patch above vein 2; inner line black, oblique, wavy, internally edged with white; outer line black, preceded by white lines on the veins, followed by a white band dentate below vein 6 and defining the black lunules which precede the white subterminal line; a large black apical blotch and a smaller one at middle of termen; claviform stigma white, with a slight brown centre, confluent with the white streak; orbicular and reniform whitish with olive brown centres and whitish annuli; a blackish patch on middle of costa; hindwing whitish suffused with brown. W. China.

L. squalida *Leech* (52e). Forewing pale grey brown, the costal area, except at apex, rather darker; inner line inwardly white edged, angled outwards on median vein, then oblique inwards; outer line double, filled in with whitish, obliquely sinuous to vein 6 and incurved below 4; subterminal line pale, obscure, minutely wavy; minute terminal lunules; orbicular stigma with an oblique white bar on its outer edge; reniform constricted at middle, partially edged with black; some black suffusion in cell on each side of it; hindwing pale brown; fringe whitish. Nagasaki, Japan, and Ningpo, Central China.

L. numisma *Stgr.* (= *olivacea* *Leech*) (52 d). Forewing white suffused with a mixture of olive and fuscous scales; the base and central fascia darkest; inner line curved, black; outer outcurved above and irregularly dentate-lunulate; the round claviform and orbicular stigmata and the squarer reniform with pale green centres and white outlines; the two upper separated by a blackish blotch; outer area olive green, with an indistinct pale submarginal line; hindwing dark grey, with a darker cellspot and pale fringe. Found only in Eastern Asia, Amurland, Japan, China, and Corea.

L. martjanovi *Tschstr.* Forewing dark testaceous, the costa at middle darker; the lines blackish; inner obscurely double, outer single, denticulate in upper half; subterminal line pale yellowish, irregularly wavy, connected above middle and at inner margin with the similarly coloured termen; orbicular stigma indistinct, oblique, filled in with dark; reniform white, with a fine dark median shade from it to inner margin; hindwing grey with a faint curved outer line. Described from a single ♂, of 23 mm. expanse, from Minussinsk, Siberia.

L. umbrivaga *Krul.* Compared as to shape and appearance with *numerica* *Bdv.* and *distinguenda* *Stgr.* *umbrivaga*. Occurs in Russia.

L. delicatula *Christ.* (52e). Forewing white, towards termen mixed with grey; a broad dark median fascia, edged with black, somewhat mixed with grey, its inner edge with 2, its outer with 3 blunt teeth; a white black-edged spot at middle; on costa beyond it two dark blotches, the outer apical; fringe grey; hindwing cinereous. Distinguished from *deceptoria*, which it most resembles, by the smaller size and narrower forewing and absence of the black spot before median fascia. Described from a ♂ from Ordubad, Armenia.

L. mollicula *Graes.* Wings broad, the forewing rounded at apex; brown with an admixture of blue-grey and fuscous; inner line incomplete, blackish; outer line shown by dark points and flecks; reniform stigma large, yellow edged with black, containing a black wisp in its upper half towards costa and a round black spot in lower half, placed on a narrow median shade, which is traversed by a fine grey-blue line; inner margin blue-grey to middle, towards base mixed with brown, the median space towards costa whitish; the termen browner; hindwing dark grey. Described from a single ♂ from Amurland.

28. Genus: **Micardia** *Btlr.*

Tongue present; frons smooth; palpi upturned, the second segment somewhat broadly scaled at extremity, the third short and pointed; thorax and abdomen smoothly scaled, without crests; antennae of ♂ lamellate, generally quite shortly ciliated; forewing elongate, the costa arched, apex prominent, subacute, the termen obliquely curved; neuration normal. Type *M. argentata* *Btlr.*

argentata. **M. argentata** *Btlr.* (52 e). Forewing pale olive brownish, the terminal area pale olive ochreous; a broad snow white, irregularly margined streak from base in and below cell, a streak below it and the whole median area beyond it dark olive dusted with black; reniform stigma large, grey, with paler edges; the dark median area indistinctly margined by a pale line which runs vertically from costa to reniform and then curving outwards from lower end of reniform, is acutely angled on vein 4 and incurved to inner margin; this lower curve is continued obliquely to apex, and preceded sometimes by reddish brown suffusion; in the paler terminal area is an almost obsolete curved pale subterminal line; fringe olive ochreous, the tips rather glossy; hindwing dull brownish grey, the fringe paler. Occurs in Japan and Corea.

pulchra. **M. pulchra** *Btlr.* (52 e). Forewing olive dusted with darker; the median area forming a dark olive brown patch mixed with rosy scales from costa between the stigmata; inner line whitish, only clear from costa to orbicular stigma; the outer, more broadly whitish at costa, curves obliquely outwards to vein 6, then runs sinuous inwards to inner margin, followed below the angle by a thick rosy line; orbicular and reniform stigmata large, rosy, with paler edges; between the outer line and apex a chestnut brown triangular costal patch; a whitish slightly sinuous subterminal line; terminal line fine, interrupted, formed of black scales; fringe pale olive, showing beyond middle of wing two dark lines; hindwing dark brownish grey, the fringe paler. Japan and Corea.

munda. **M. munda** *Leech* (52 e). Head, thorax, and abdomen ochreous; the tegulae and patagia purplish; forewing ochreous; the costal area at base tinged with purplish; a purplish stripe from the middle of base of wing to the apex, the lower edge of which is angled and edged with silvery scales; a silvery streak also runs along its upper edge at middle; fringe fuscous; hindwing pale straw colour. Described by LEECH from 2 ♂♂ from Putsu-fong, W. China; apparently much resembling *M. pulcherrima* *Moore* from India.

flaviplaga. **M. flaviplaga** *Warr.* (52 e). Forewing a mixture of purplish and olive, towards base and along cell diffusely varied with fulvous scales, the inner margin between the lines pale yellow tinged with fulvous; inner line oblique from inner margin near base to submedian fold; the outer from costa before apex is outcurved to vein 6, whitish with a dark line at middle, then incurved to submedian fold, fine and obscure, thence oblique parallel to inner line to inner margin, broad and snow white; a small black spot on discocellular; terminal area darker olive with a white subterminal line, brightest at costa, and towards anal angle followed by fulvous scaling; hindwing brownish fuscous; head, pectus, and prothorax pale lilac grey; patagia yellowish; dorsum dark fuscous. Japan, described from a single ♂.

29. Genus: **Eustrotia** *Hbn.*

Tongue present; frons smooth; palpi upturned, second segment thickly scaled, terminal short, blunt; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; tibiae smooth; wings short and broad; forewing smooth, with pale markings. Larva with prolegs on 7 absent, those on 8 rudimentary; feeding on *Carex* and grasses in autumn, pupating in a cocoon among rubbish, so hibernating, and emerging in the following summer. Type *E. uncula* *Cl.*

uncula. **E. uncula** *Cl.* (= *uncana* *L.*, *unca* *Schiff.*) (52 e). Forewing olive brown, darker in disc; a broad flesh-coloured streak along costa and another on inner margin; the orbicular and reniform stigmata flesh coloured, whiter-edged, confluent with the costal streak; some pale lines before termen, straight and parallel, the innermost white; hindwing paler; the dark-suffused examples are named **obscurior** *Spul.* Occurs in fens and marshes in Britain, and in most parts of Northern and Central Europe, in N. Italy, Roumania, Altai Mts., Amurland, and Japan. Larva green with the dorsal line darker; the subdorsal lines whitish; the spiracular pale yellow; head green; feeds on *Carex sylvatica*.

olivana. **E. olivana** *Schiff.* (= *bankiana* *F.*, *argentula* *Hbn.*, *olivea* *Hbn.*) (52 e). Forewing pale olive brown, sometimes sprinkled with darker brown; the markings shining white, edged with blackish; viz., a small spot at base of costa, two narrow outwardly oblique transverse fasciae, a short costal mark before apex, and a straight subterminal streak; reniform stigma indicated by a swelling in second fascia; hindwing luteous white, sprinkled with grey, deeper terminally. Staudinger describes the form **amurula** from Amurland as rather smaller than typical *olivana* and darker brown; redbrown specimens are occasionally taken in England, ab. **rufescens** *Tutt*; — in **obsoleta** *Tutt* the oblique white lines are much attenuated and the reniform stigma stands by itself; — in **obli-**

tescens *Schultz* the white bands are abbreviated, one or the other not reaching the margins; — in **confluens** *Schultz* *oblitescens*. the white bands are either connected laterally by a cross streak or are approximated to form one complete or semi-complete broad white band; these last two forms are from Silesia; I have seen nothing like this development in British specimens. A local species occurring in Britain, throughout Europe, in Armenia, Central Asia, Amurland, and Japan. Larva yellow green; dorsal line darker; subdorsal lines yellow; head green; feeds on *Carex*. *confluens*.

E. obliqua *Moore* (52 f). Forewing cupreous olive brown, except the basal area, which is pale varied *obliqua*. with brown and pink scales, limited by a line from costa oblique inwards; the dark area is traversed by an oblique white band from costa beyond middle to near anal angle; fringe brown; hindwing fuscous, with the base paler. Occurs in Kashmir, as well as in N. India and Burma.

E. tripartita *Leech* (52 e). Forewing olive-brown, suffused, except at costa, with smoky black; a broad *tripartita*. white band a little before middle of wing, constricted in submedian fold, its upper half quadrate, with a brown costal streak in middle and dark cellspot, the lower half triangular; subterminal line marked by a white bar at costa; hindwing olive fuscous. Described from a ♀ from Chow-pin-sa, W. China.

E. candidula *Schiff.* (= *pusilla* *View.*) (52 f). Forewing white; lines double, black, filled in with white; *candidula*. the inner preceded by brown patches on costa and inner margin, and followed below middle by ochreous brown; orbicular stigma shown by two obliquely placed black dots; reniform blue grey, obscurely edged by white dots and black spots, placed on a large semicircular dark costal patch; subterminal line white, marked by slight dark shades on each side, preceded by short black streaks between veins 8 and 5; some terminal black striae; fringe mottled brown and white; hindwing white washed with pale brown, darkest along termen; a faint cellspot, outer line, and subterminal shade. A species of wide distribution; in Europe found in France, Germany, Austria, Scandinavia, and Russia, — Livonia and Sarepta; in Asia in Armenia, Asia Minor, Persia, W. Turkestan, W. and E. Siberia, Mongolia, Japan, and Corea. Larva green; the dorsal and subdorsal lines black; lateral lines whitish; feeding on grasses and Sparganium.

E. magna *Leech* (52 f). Forewing pale olive brown; basal half of wing clearer white than in *M. signi-magna*. *fera*, without any black subbasal speck; the reniform stigma has no black spot beyond it; the outer line denticulate and edged with white, uniting the blotches on costa and inner margin; submarginal line obscure, with some black markings at costa and middle; hindwing grey. Described from a single ♀ from Ta-chien-lu, W. China.

E. culta *Btlr.* (52 f). Forewing dull olive in median fascia and costal half of praesubmarginal shade, *culta*. sometimes also in basal area; the costal and terminal areas and the course of the lines pale pinkish; the outer line olive, strongly dentate at middle, containing an oblique black kite-shaped blotch immediately beyond reniform stigma; fringe pinkish grey beyond a row of dark terminal lunules; hindwing olive fuscous. Yokohama, Japan.

E. costumacula *Oberth.* (52 k). Forewing pale lavender grey, freckled with brown; a small deep brown triangle *costumacula*. on costa before inner line and a larger one before outer, including at its apex the black mamilliform reniform stigma; the inner and outer lines whitish; the outer strongly excurved below costa and incurved below middle; subterminal line a row of dark spots in the intervals; hindwing dark grey; the forms from China and Japan differ considerably both from *costumacula* and from each other; in subsp. **serica** *subsp. nov.* from Ichang the outer *serica*. line is dark with pale edge, more squarely outbent above middle and not strongly incurved below; while in the examples from Yokohama, Japan, subsp. **japonica** *subsp. nov.* (52 f), the outer line is indented beyond cell *japonica*. and the costal area and both folds are white. The type of *costumacula* was from Ussuri, E. Siberia.

E. noloides *Btlr.* (52 f). Forewing white with brown irroration; a triangular brownish patch on costa *noloides*. before middle; inner line inwardly oblique, angled outwards in cell; outer line white-edged externally; the median area brown except a small patch beyond upper angle of cell; two black points on discocellular with slight white rings; subterminal line white preceded by a slight brown shade following 3 brown patches, at costa, middle, and inner margin; termen brown with a series of black spots ending in white terminal striae; hindwing white tinged with brownish. Japan.

E. tegulata *Btlr.* (52 f). Forewing pure white; costal edge black towards base; a black dot in cell near *tegulata*. base; a vertical wavy black median line, forming the inner edge of a broad black band widening below; an irregularly triangular blotch on termen from apex to tornus, the apex of which touches the median band on the submedian fold; fringe black brown; hindwing white tinged with pale brown, especially along termen. An Indian insect, recorded from Foo-chau, C. China.

30. Genus: **Eulocastra** *Btlr.*

Tongue fully developed; frons smooth; palpi upcurved, smooth, the third segment short; antennae

of ♂ filiform; thorax and abdomen smoothly scaled, without crests; neuration of wings normal. Type *E. fasciata* Btlr.

mesozona. **E. mesozona** Hmps. (= *mediana* Stgr.) (52 f). Forewing ochreous white, with the terminal area rufous; lines marked on costa by black spots; the subbasal by a triangular black one at base of costa; the others by smaller black spots, produced across wing as silvery lines; a broad dark grey median band, edged by deep black lines, sloping a little from costa to submedian fold; a black spot at end of cell; termen and fringe black; hindwing pale suffused with fuscous, deeper along termen. HAMPSON's type was from Aden; but *mediana* Stgr. comes from Palestine.

bipartita. **E. bipartita** H. Schäff. (52 g). Differs from the preceding in the median band being constricted below costa and again more strongly on submedian fold; the termen and fringe rufous. Sicily.

undulata. **E. undulata** Snell. (= *excisa* Swinh.) (52 f). Forewing purplish grey, with partial brownish suffusion; inner line purplish, sinuous, lying near the outer edge of a broad white band; outer line double, filled in with white, incurved on each fold where it is preceded by dark spots, and followed by a black line; median line also blackish, irregularly and diffusely waved; subterminal line white, dentate, also indented on the folds; a row of black terminal dots inwardly marked with white; apex with a white patch; orbicular stigma a white dot externally black-edged; reniform a narrow white bar, preceded by a black spot; fringe fuscous, white at apex; hindwing whitish with purplish grey suffusion, dark cell spot, and whitish outer band. An Indian and Island species, recorded also from the coast of Corea; in the form **excisa** Btlr. from India the outer line, like the inner, is placed on a pure white band; the apex and the apical fringes are not white; and the abdomen is yellowish with dark bands.

tapina. **E. tapina** Hmps. (51 n). Forewing white flushed with reddish brown, with scanty markings; inner line indicated by brown dots on costa and inner margin and below median vein; an obscure brownish outer line, oblique to beyond cell and inbent on submedian fold; a row of faint brown terminal striae; median line marked by a brown streak from costa at middle; hindwing white tinged with red brown. Palestine.

31. Genus: **Thalerastria** Stgr.

Differs from *Eulocastra* only in having veins 3, 4 of hindwing stalked. Type *Th. diaphora* Stgr.

diaphora. **Th. diaphora** Stgr. (= *atribasalis* Hmps.) (52 g). Forewing yellowish white faintly rufous tinged; basal area purplish black glossed with grey; a triangular black costal blotch, reaching lower angle of cell, followed by a pale flexuous outer line; terminal area purplish black, projecting at each fold; the fringe black with a grey gloss; hindwing whitish tinged with pale brown in ♂, brown or fuscous in ♀; the form **triangularis** Warr., from *laticincta*. N. India, has the ground colour deeper rufous; in **laticincta** Stgr. the terminal dark band is wider. Occurs in Armenia, Asia Minor, Syria, and Palestine; Persia and N. India; also recorded from Algeria.

32. Genus: **Naranga** Moore

Tongue aborted, quite small; frons smooth; palpi upturned, smoothly scaled; antennae of ♂ lamellate; thorax and abdomen smoothly scaled and without crests; forewing narrow and elongate; veins 7, 8, 9 stalked; no areole; yellowish with oblique red or brown bands. Type *N. diffusa* Walk.

aenescens. **N. aenescens** Moore (51 n) ♂. Forewing golden yellow; costal edge towards base red; also base of inner margin; median and outer bands oblique, blood red, the latter from apex to cell-fold only, and followed by a line indented on submedian fold and bent outwards to tornus; hindwing dark redbrown with yellow fringe; ♀ more ochreous yellow and the bands broken and irregular; a dark spot at end of cell; hindwing yellow, suffused with pale brown except at termen; both sexes exhibit variation: in the ab. **aerata** ab. nov. (= ab. 1. Hmps.) the golden tinge of the yellow in the ♂ becomes brassy and the bands are less prominent; while in **denotata** ab. nov. (= ab. 2. Hmps.) the bands in the forewing of the ♀ become subobsolete and the hindwing is wholly yellow. The species occurs throughout Japan and in Central China; also in Formosa, whence the type.

brunnea. **N. brunnea** Hmps. (= *hebescens* Leech nec Btlr.) (51 n). Forewing ochreous yellow suffused with dull rufous; a dark cell spot; a dull rufous band oblique from lower end of cell to inner margin followed by a clearer ochreous space; a diffuse dull rufous brown subterminal band, the termen itself narrowly ochreous; fringe also ochreous; hindwing reddish brown; fringe ochreous, redbrown at base; in the ♀ the veins of forewing are slightly streaked with ochreous. Japan and Central China.

33. Genus: **Metaemene** Hmps.

Tongue present; frons with a ridgelike prominence; palpi obliquely upturned, slender, the terminal

segment thrown forwards; antennae of ♂ ciliated; thorax and abdomen without crests; in the hindwing veins 3, 4 and 6, 7 are stalked. Type *M. atrigutta* Walk.

M. maculata Leech (52 g). Forewing pale rufous grey; inner line represented by a small black costal *maculata* spot and a larger one on submedian fold; outer by small black spots on costa and inner margin and two large black spots on the folds, the spots slightly edged with white; fringe marked with black at apex and at end of both folds. Satsuma, Japan.

34. Genus: **Flammona** Walk.

Tongue well developed; frons smooth; palpi obliquely upturned, stout, the second segment thickly scaled, the third short; antennae of ♂ lamellate; thorax and abdomen smoothly scaled, without crests; forewing elongate, the termen evenly curved; markings consisting of 3 or 4 oblique, parallel, shaded lines; hindwing with veins 6, 7 shortly stalked. Type *F. quadrifasciata* Walk.

F. trilineata Leech (52 g). Forewing grey, suffused with pinkish brown; lines broad, dark brown, the *trilineata* inner and median almost straight, the outer angled above the middle; submarginal line oblique, dusky; cell spot linear, blackish; hindwing pinkish fuscous. Kiukiang and Chung King, Central China.

35. Genus: **Nothosterrha** *nom. nov.**)

Tongue fully developed; frons smooth, rounded; palpi porrect, quite short; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; forewing narrow, the apex acute; costa and termen nearly straight; in the hindwing veins 3, 4 and 6, 7 are shortly stalked, and the costal and subcostal veins anastomose to near end of cell. Type *N. oranaria* Lucas.

In markings the only species mimics the Geometrid *Rhodometra* (= *Sterrha* H. Schöff.) *sacraria*. The name *Pseudosterrha* is preoccupied, having been used by me in 1888 for an Indian Geometrid Genus.

N. oranaria Lucas (52 g). ♀: Forewing ochreous more or less strongly flushed with brown; the only *oranaria* markings two white lines, submarginal and outer, partially darker edged, rising together just before apex and diverging to near end and middle of inner margin; the folds and veins, from base outwards, white lined with black; the ♂ is larger, often brownish tinged; the white lines and veins less distinct; the hindwing paler fuscous. Algeria.

36. Genus: **Gyrohypsoma** Stgr.

Tongue present; frons with a short rounded horny process, hollowed out at the end, projecting beyond the frontal tuft of hairs; palpi slender, porrect obliquely upwards, the terminal segment short; antennae filiform, simple; abdomen slender with strongly developed genitalia in ♂ and anal tufts; foretibia with small claw at extremity on inner side. Allied to *AEgle* Hbn. (= *Metoponia* Stgr.). Type *G. sterrha* Stgr.

G. sterrha Stgr. Forewing greenish yellow; a broad costal streak and the fringe dull rosy; orbicular *sterrha* stigma a small round white spot; reniform stigma represented by a darkening at end of cell, preceded by whitish scales and with a small white mark at lower angle of cell; hindwing dark grey; fringe reddish. W. and E. Turkestan.

37. Genus: **Erastria** Tr.

Tongue present; frons rounded, with a ridge at middle and corneous plate below it; palpi porrect, moderately scaled; antennae of ♂ minutely ciliated; thorax and abdomen smoothly scaled, without crests; forewing smoothly scaled, slightly glossy, with faint metallic markings; neuration normal. Larva on *Convolvulus* in autumn, pupating on the ground among leaves and rubbish. Type *E. trabealis* Scop.

E. trabealis Scop. (= *sulphuralis* L., *arabica* Hüfn., *sulphurea* Schiff., *trabeata* Scriba, *lugubris* F., *trabealis* pardalina Walk.) (52 g). Forewing pale yellow; the markings black, edged, when fresh, with lustrous scales; horizontal black streaks from base along median and submedian veins; the lines marked by black costal spots,

*) In Vol. II (Pl. 13 i) I have given a copy of (*Pseudosterrha*) *oranaria*, taken from OBERTHÜR's figure (Ét. d'Ent. 19, Pl. 6, fig. 40) and on p. 74 we remarked that the position of this form in the Arctiidae, immediately before the Lithosiidae, seemed to be erroneous. The result of examination of a specimen, which Mr. PÜNGELER was good enough to send me was the remark on p. 75 of that Volume that *oranaria* would be better placed in the Noctuidae. Nevertheless I gave a figure of the female and description in Vol. II, because all who follow STAUDINGER and REBEL's Catalogue will look for the species in this place, while its position in the Geometridae, as given by LUCAS and OBERTHÜR, was not worthy to be discussed. Dr. SEITZ.

the outer and subterminal more or less complete, sometimes interrupted; two black spots represent the stigmata; fringe yellow marked with black in middle and at each end; hindwing reddish fuscous; the fringe yellowish white. The insect varies according to the preponderance of the yellow or black scaling; as a rule, the yellow prevails in the ♀, the black in the ♂; — the ab. *nigra* Ersch. (52 g), from W. Turkestan, is almost wholly black. The species occurs throughout Europe and Central Asia to Japan and China; also in Afghanistan and Beluchistan. The imago takes short jerky flights in the sunshine close to the ground and is difficult of observation; it frequents dry and sandy localities. Larva green changing to brownish; dorsal and subdorsal lines darker, with faintly paler edges; spiracular line broadly pale yellow; feeding on *Convolvulus* in late summer.

viridisquama. **E. viridisquama** Guen. (52 h). Forewing black brown, clothed with long pale green scales in basal and median areas; the lines represented by oblique pale costal striae; the subterminal line greenish, indistinct; some green scales along termen; fringe black brown with pale patches above and below middle; reniform stigma obscurely ringed with whitish; hindwing black brown with a bronzy tinge; fringe tipped with white. A local species found only in Spain and the Pyrenees. Like *trabealis* this species also has a dark form ab. *obscura* ab. nov., in which the greenish scales are reduced to a few long yellow ones towards base of wing.

deleta. **E. deleta** Stgr. (52 g). Forewing olive ochreous; the markings faint, interrupted, brownish; lines represented by costal spots; orbicular and reniform stigmata small and round; more or less developed horizontal streaks from base below cell and above inner margin; hindwing ochreous with slight brown suffusion; — in *algira flavonitens*. Oberth. (52 h) the dark markings are black and conspicuous, especially the outer line; on the other hand in *flavonitens* Aust. (52 g) the markings tend to become obsolete, being faintly olive on a yellow ground. Biskra, Algeria.

fascialis. **E. fascialis** Hmps. (52 h). Forewing greyish rufous; a pale yellow streak along costal area, leaving the extreme edge rufous, narrowing to base and pointed before apex, swollen at end of cell, enclosing the small rufous orbicular stigma and emitting a spur below the round reniform; a shorter yellow streak on basal half of vein 1; an obscure oblique purplish grey outer band from vein 6 to inner margin; a yellow line close before termen; hindwing reddish brown; fringe brown with pale tips. Found in Kashmir, in the Scind and Goorais *deflavata*. Vallies; in the ab. *deflavata* ab. nov. the yellow is wholly absent from the forewing and thorax.

38. Genus: **Tarache** Hbn.

Tongue fully developed; frons with a rounded prominence more or less roughened at middle with a corneous plate below it; palpi porrect, the second segment fringed with scales below, the third short and smooth; antennae of ♂ simple, lamellate; thorax and abdomen smoothly scaled, without crests; forewing with normal neurotation; veins 3, 4 of hindwing sometimes from cell, sometimes stalked; the costal and subcostal veins anastomosing to near middle of cell. Larva in autumn on low plants; in warmer climates with an additional summer brood. The imago, as in *Erastria*, flies in the sunshine. The sexes often differ considerably. Type *T. caffraria* Cram.

Sect. 1. Veins 3, 4 of hindwing stalked.

ruficincta. **T. ruficincta** Hmps. (52 h). Forewing glossy yellowish white; a rufous band along termen, widest at middle, and not reaching below submedian fold; fringe rufous, paler at anal angle; hindwing pale yellow; a reddish brown band along termen, its inner edge diffuse; fringe yellowish white; in the ♀ the costal half of hindwing is dusted with brown both above and below, and a cellspot is present. Atbara, Abyssinia.

marmoralis. **T. marmoralis** F. (= *tropica* Guen., *maculosa* Walk., *bipunctata* Walk.) (52 h). Forewing yellowish white from base nearly to middle of inner margin, on costa reaching nearly to apex; the terminal area olive brown, suffused inwardly with purplish, the termen itself again yellowish white; an inner olive ochreous band, interrupted in cell and oblique below it; outer line olive ochreous towards costa, more rufous below; subterminal line yellowish white; a terminal row of black spots; fringe yellowish white with black blotch above middle, and black scales at apex and tornus; the stigmata small, grey, their centres white, the orbicular round, the reniform oval; hindwing ochreous white, the termen from apex to vein 2 tinged with red brown; the ♀ is much paler, more whitish, than the ♂; the markings without or with only slight olive tinge; hindwing with the terminal dark band broader and reaching tornus. This species, which is common in India and the islands is recorded from Upper Egypt and from China, whence WALKER's type of *maculosa*; Guenée's *tropica* was described from Java. Larva grey, with diffuse purplish bands at middle of each segment, and many irregular yellowish white spots defined by purplish brown, forming a double dorsal line and segmental bands; head rufous with black mouth; the legs black.

bicolora. **T. bicolora** Leech Forewing black overspread with olive yellow, extending on costa to near apex and on inner margin to middle; the terminal area red brown inwardly suffused with purplish; the inner edge of the dark outer area bent inwards at vein 6 to end of cell; the outer and subterminal lines marked only by the

edges of the dark area; an ochreous streak just before termen at middle; fringe dark with white patch at the tips at apex; hindwing dark brown, the fringe pale; in ab. *costiplaga* *ab. nov.* (= *bicolora* ♀ *Hmps.*) (52 h) the *costiplaga*. forewing is black brown; basal area with some olive yellow scales; an oblique dull olive yellow bar from costa at middle, and a pale yellow triangular spot on costa beyond it; a form of the ♂ occurs, — ab. *parvimaacula* *parvimaacula. ab. nov.*, — in which the forewing is paler, without so much olive yellow; with three subterminal ochreous spots below middle, and a terminal row of black points. Japan, Corea, and Central China.

Sect. II. Veins 3, 4 of hindwing from cell.

T. olivacea *Hmps.* (52 h). Forewing silvery white at base and along costa, the costal edge olive brown, *olivacea*. the apical area tinged with yellow; rest of wing olive brown with bluish white suffusion, diffusely edged above with yellow; an indistinct brownish lunule at end of cell, defined by white; outer line whitish edged with yellowish, obliquely sinuous from cell to inner margin; a row of terminal dark lunules edged inwardly by a wavy white line; hindwing olive brown; the basal area whitish in ♀. Originally described from the Nilgiri Hills, S. India, the species is recorded from Shanghai in North China.

T. secta *Guen.* (52 i). Forewing pure white; inner line double, greyish brown, vertically wavy; the *secta*. terminal area reddish grey brown, its inner edge angled at vein 7 and incurved below end of cell; outer line marked by a small brown spot on costa in the white area and a partially double lunulate black line in the dark area; subterminal line white preceded by some black marks; terminal black lunules inwardly white edged; orbicular stigma indicated by grey points on inner and outer edges; the reniform by a black point at end of cell; hindwing semihyaline white, with a terminal brown border narrowing to anal angle; the fringe white. Atbara, Abyssinia.

T. urania *Friv.* (= *eversmanni* *Kol.*) (52 h, i). Forewing cream white, faintly flushed with ochreous *uranica*. and pink; inner line brownish, double, wavy, not reaching inner margin; orbicular stigma a small black ring; the reniform oval, partly black-edged; a brown spot on costa at middle and a smaller one beyond; terminal area redbrown to pink suffused with some silvery blue, its inner edge at middle with an olive patch; obliquely excurved to vein 3, thence retracted to below end of cell, and angled outwards on vein 1, below cell defined by the black outer line, and followed in submedian interval by some bluish scales; subterminal line yellowish, denticulate in lower half; the terminal black lunules edged inwardly with yellow; hindwing white; the veins tinged and the termen suffused with brownish; the ♀ has the hindwing more uniformly redbrown. Found in Hungary and Bulgaria in S. E. Europe, and in Syria and Asia Minor. Larva violet brown; feeding on *Althaea cannabina*.

T. lucida *Hufn.* (= *solaris* *Schiff.*, *rupicola* *Bkh.*, *titania* *Frr. nec Esp.*, *triradiata* *Walk.*, *triangulum* *lucida. Costa*) (52 i). Forewing white in basal half, with a grey tinge at base; a black spot in cell beyond the grey sub-basal striga; an oblique fuscous bar from costa and slight mark above inner margin in place of inner line; orbicular stigma minute, a bluish white ring; reniform 8-shaped, finely edged with bluish white; terminal area olive brown shading to purple grey at termen; a quadrate white costal patch beyond middle, the outer line rising from it, lunulate and blackish, strongly incurved below 4, marked on submedian fold by a black and grey spot, and followed by a wavy white line from vein 3 to inner margin; subterminal line white, the veins beyond it in lower half white; hindwing white, with diffuse dark streaks from base at costa and inner margin and along median vein; a broad blackish terminal border; — in the ab. *albicollis* *F.* (52 i) the head, thorax, basal half of forewing, *albicollis*. and often the dorsum as well, are wholly white, the dark border of hindwing being narrower and regular; while *lugens* *Alph.* (52 i) has the dark tints amplified, the basal area of forewing mostly olive brown, and the hind- *lugens*. wing more or less wholly black; both of these forms, however, seem to be connected with typical *lucida* by intermediates; — ab. *irregularis* *ab. nov.* (52 i) is a form of *albicollis* in which the inner edge of the dark terminal *irregularis*. half of forewing is nearly vertical, not cut by the usual wedge shaped pale projection; the costal spot before apex is narrow and triangular; while the dark border of hindwing is wider, as in *lucida*, with the inner edge towards anal angle irregular; the specimen was taken along with typical *albicollis* at Entrevaux, Var, S. France; — in the form *insolatrix* *Hbn.* (52 i) the median fascia is narrow, interrupted above middle, and filled in with *insolatrix*. pale olive yellow instead of purple brown, the edging only remaining dark; an extreme form of this, ab. *evanes-* *evanes*. *cens* *ab. nov.* (52 i) has the fascia marked only by a fuscous costal streak and fuscous spots on inner margin and on outer edge, the white ground colour running through to fringe below middle of wing, intersected only by the greyish brown shade before submarginal line; in the hindwing the dark terminal border is still narrower and reaches only from apex to vein 5; this example is from Uralsk. The species occurs throughout S. Europe and N. Africa; in the Canaries, Madeira, Crete, Rhodes, and Cyprus; in Western Asia, Persia, Kashmir, W. Turkestan, and W. Siberia. Larva grey brown, tinged with red, on dorsum mixed with black and white; spiracular line white; feeds on *Convolvulus* and *Malva*.

T. titania *Esp.* (52 k). Forewing white flushed with olive yellow; subbasal and inner lines represented *titania*.

by double grey bars from costa; orbicular stigma a black point, reniform oblique, oval, greyish but indistinct; a pale olive yellow band from middle of costa to median vein, joining there the dark terminal area; this is olive brown varied with purple grey, its inner edge obliquely excurved from costa to vein 4, retracted to below end of cell, and incurved to inner margin; outer line indistinct, whitish, finely dentate from vein 6 to inner margin, strongly incurved below vein 4, followed in submedian interval by bluish white irroration; subterminal line faintly yellowish inwardly edged by coppery red, a row of small black terminal lunules; hindwing white with some brown suffusion at base; a sinuous brown median band, and a broad dark terminal border; the ♀ has the dark tints increased; the forewing with dark basal suffusion; hindwing with the white areas reduced in extent. Found, like *urania*, only in the South east of Europe; Hungary, Bosnia, Bulgaria, S. Russia; in Armenia and Asia Minor; and in the Altai Mts., W. Siberia. Larva yellowish white, mottled with pink; an indistinct dorsal line; the lateral lines whitish; the middle segments with deep pink lateral patches mixed with black.

luctuosa. **T. luctuosa** *Esp.* (52 k). Forewing purplish fuscous, becoming paler, more brownish, towards termen, and sometimes at extreme base; the lines black, fine; the inner oblique, thrice waved; the outer excurved above middle, incurved below; subterminal line pale, preceded by a darker shade; fringe white with a dark patch below middle; an abbreviated white band from costa to vein 3 beyond cell, sometimes tinged with flesh colour; hindwing with a white median band of varying width; in ab. **angustifascia** *ab. nov.* (52 k) this band is greatly restricted and sometimes interrupted; the examples in which the white costal blotch of forewing is tinged with flesh colour constitute the ab. **ochracea** *Tutt.* Occurs throughout Central and South Europe; in S. Sweden and Livonia: Algeria; Asia Minor; Altai Mts.; Tian shan Mts.; Issyk-kul. Larva grey, sometimes reddish grey darker at the sides; lines pale with dark edges somewhat interrupted; spiracular line dark brown, pale edge; beneath; subspiracular reddish brown; face ochreous grey with rows of small dark dots; on *Convolvulus arvensis*. The first two pairs of prolegs shorter than usual.

biskrensis. **T. biskrensis** *Oberth.* (52 k). Forewing with base white varied with grey, followed by a white space roughly presenting the form of a bird's head, of which the cell spot forms the eye, the beak projecting towards termen, the top of head resting on costa, and the base of neck on inner margin; the terminal area greyish yellow with black speckling, containing a nearly triangular white costal spot, and traversed by a white subterminal line; termen with a row of black points; fringe white mottled with yellow; head and thorax white, abdomen greyish yellow. Biskra, Algeria.

39. Genus: **Hoplotarache** *Hmps.*

Differs from *Tarache* in the frons having a truncate conical protuberance with raised rim and small process in centre; in the hindwing the costal and subcostal veins anastomose shortly at base only. Type *H. mionides* *Hmps.* from S. Africa.

Sect. 1. Veins 3, 4 of hindwing stalked.

lunana. **H. lunana** *F.* (= *olivea* *Guen.*, *nivosa* *Swinh.*) (52 k). Forewing in costal area white from near base of inner margin to near apex; the lower edge of the white area expanding and angled at lower angle of cell and more shortly angled again at vein 6; the rest of wing olive green varied with silvery purple; a grey spot in cell near base, and the costal edge at base grey; inner line olive yellow, angled outwards on median vein, where it joins the dark area; outer line olive, curved outwards above and inwards below vein 4; subterminal line denoted only by white scaling towards apex and above inner margin; some white lunules along termen; the two stigmata grey edged with white, small and round; hindwing yellowish white; the termen from apex to vein 2 tinged with brown; in the ♀ the whole hindwing is brownish. An Indian species occurring across the border in Kashmir.

karachiensis. **H. karachiensis** *Swinh.* (51 n). Forewing with the basal half and the costal area beyond white, the latter narrowing to a point at apex; the lower edge being curved downwards below the cell; costal edge and inner margin slightly brown-tinged; terminal area rufous mixed with grey; an oblique median line followed below cell by rufous suffusion; outer line interrupted, marked by a black spot towards apex on costa and by three black dots beyond cell, then incurved and obscure; subterminal marked by a few white scales; black and white terminal lunules; hindwing white, the costal area and the termen brownish; head and tegulae white; in the ♀ these are brownish; the forewing grey with a diffused whitish streak below costa; the median area in its outer half and the terminal area more rufous; traces of a sinuous inner line, with a rufous spot on median vein; the hindwing wholly brownish. Described from the extreme northwest of India, and occurring also in the Libyan desert.

sordescens. **H. sordescens** *Stgr.* (52 k). Forewing white slightly suffused with reddish brown; fringe with a faint brown line at middle; hindwing the same, but the terminal border brown, and the fringe pure white. Recorded from W. Asia; Diarbekir in Asia Minor and Mardin, Syria.

Subfamily **Euteliana**e.

The two leading characteristics of the species of this subfamily are the paired anal tufts, or single long tubular process, of the abdomen and the more simple frenulum of the ♀; this is double, consisting of one long stout bristle and one shorter and finer, which is often hidden and masked by the stronger one; but in no case examined has it proved to be single, as in the *Stictoperinae*. The eyes are large, without hairs or overhanging cilia; the tibiae are more or less hairy, without spines; in minor details of structure they exhibit similar variety to that existing in other subfamilies.

The larva have all the prolegs present; the tubercles bear single hairs; but otherwise they are smooth; as might be expected in a group of mainly tropical insects, but few of them are known; these feed exposed on various shrubs and low growing plants. Pupation takes place in a spun cocoon among leaves or debris on the surface of the ground; in some cases a succession of broods appears to occur throughout the year.

1. Genus: **Eutelia** Hbn.

Tongue present; frons smooth; vertex with tufts of hair; palpi upcurved, the second segment broad, rough-haired, the third long and smooth; antennae of ♂ with the shaft broad and flattened, with pedicellate or tuberculate fascicles of cilia in basal half and a strong tuft at base; abdomen thickly scaled, the third segment with a dorsal mat of hairs, those beyond crested; anal segment with a bifid tuft of hairs in ♂; forewing with termen bent and crenulate; when at rest the wings are partly folded, and the abdomen is raised and recurved. Larva with 16 feet, short and broad in front, narrowing behind; feeding up in summer and pupating in an earthen cocoon; the pupa short and blunt at both ends. Type *E. aduatrix* Hbn.

Sect. I. Antennae of ♂ with pedicellate fascicles of cilia.

E. geyeri Fldr. (= *guyra* Leech) (53 a). Much larger than *aduatrix*; the forewing darker, filled with *geyeri*. pale olive brown suffusion in the ♂ and with purplish fuscous in the ♀; the veins finely white; the white lines on the two folds strong; the large reniform stigma with the top and bottom marked with fulvous outlined in black, the centre white, confluent with a diffuse ochreous white (sometimes fulvous) spot in cell beyond it, lying in the angle of the median shade; the outer line from vein 4 to 1 uniformly curved, not lunulate dentate; the pale spaces towards termen olive grey instead of white; the two brown lines beyond outer line becoming on inner margin bright orange beyond the blue crescent; all the white lines and markings near base with a pearly grey sheen; in the hindwing the pale basal area is not so purely white. China and Japan; also in N. India.

Sect. II. Antennae of ♂ with tuberculate fascicles of cilia.

E. aduatrix Hbn. (53 a) Forewing white; inner line white edged with black, wavy and strongly projecting outwards in submedian interval, the basal area filled up with pale brown, crossed by a line similar to the inner; outer line oblique outwards to 6, then lunulate dentate, red above cell and between veins 2 and 4, black in cell and below 2, followed by a bluish white line edged with black, then by a pale brown space with two dark brown parallel lines edged by a white one; the bluish white line swells out on inner margin into a crescentic spot; the white submarginal line is preceded by brown scaling from costa to vein 3, then by creamy white; followed above vein 6 by a creamwhite blotch and below it by a narrow area of brown scales mixed with blue on veins 3 and 4; a row of black and white lunules before termen; median shade thick and outwardly oblique at costa, interrupted by the large white reniform stigma, then linear, oblique and waved, near and parallel to outerline, the space between them, except on costa, filled up with pale brown; a pale line along both folds, stronger in cell; hindwing with basal half whitish with dark veins; outer half fuscous traversed by a pale broad submarginal line; a row of black dashes on white scales before termen; fringe whitish, with a fulvous median line; the crenulations on veins 2 and 3 and a blotch at anal angle dark. Larva green, sometimes with a bluish or reddish tinge; dorsal and subdorsal lines pale, the latter only distinct; spiracular line yellowish; feet green: feeds in summer on *Rhus cotinus* and *Pistacia lentiscus*, emerging either in autumn or the following spring. A south European species occurring along the coast of the Mediterranean; also in Algeria and once at Tenerife; in Switzerland, the Tyrol, Carniola, Hungary, the Crimea; in Asia found in Armenia, Bithynia, Pontus, Taurus, Syria and Fergana.

E. blandatrix Bsd. (= *inextricata* Moore) (53 a). Differs from *aduatrix* in being grey brown instead of red brown, with the white markings more yellow; the apex yellow, with a sinuate white subterminal line before it; the inner margin beyond middle yellow; hindwing much as in *aduatrix*. N. China and Japan; occurring also in N. India and Ceylon.

E. adoratrix Stgr. (53 a). Forewing dull grey brown, overlaid with slaty grey; a faint pale line along each fold, sometimes distinct in the cell; the reniform subquadrate, grey, indistinct, with pale lateral margins; lines black, thick; the inner excurved and preceded by grey lines, forming a band; the outer oblique out-

wards to vein 6, then sinuous and oblique inwards, followed by obscure grey lines; submarginal line white, interrupted, broken up into 3 parts, the uppermost followed in ♀ by a white apical blotch and in ♂ by a grey one; fringe grey with a bright white basal line; a faint median linear shade is visible near the outer line; hindwing white towards base, with the apex and termen broadly dark fuscous, continuing a whitish submarginal line; the cellspot black. A local species found in Pontus, Syria, and the Crimea.

grabczewskii. **E. grabczewskii** Püng. (53a). Forewing leaden grey; a pale waved subbasal line, followed by a round red brown patch in and below cell; inner line interrupted, consisting of a black costal spot, a striga between the folds, and another from the brown patch to inner margin; outer line double, interrupted, filled in with flesh colour, and preceded by streaks of the same colour; subterminal slight, white, preceded at costa by an olive patch with white dots on it, by a black triangle in discal fold, with small dentate mark below it, and a flesh-coloured band; orbicular and reniform with white annuli, the former small, round, with red centre, the latter olive brown; a strong black median shade, angled in cell; hindwing grey suffused with olive brown; a flesh-coloured subterminal mark on vein 2, and two blackish striae above tornus. Nikko, Japan. Distinguished by the more evenly curved termen, and the much longer fascicles of the antennae of the ♂.

2. Genus: **Anuga** Guen.

Tongue present; frons smooth, with ridges of scales at middle and on top; palpi upcurved, the second segment densely scaled so as to appear subquadrate, the third triangular in the ♂ with rough scales, oval and smooth in the ♀; antennae very long, typically longer than forewing; in ♂ with short uniseriate pectinations in basal half on inner side; abdomen elongate, with expansible anal tuft in ♂, with a double tuft beneath in the ♀; pectus, femora, tibiae, and first segment of hind tarsi thickly haired; forewings elongate, narrow, the apex rounded, termen obliquely curved and crenulate; hindwing with abdominal margin convex, the anal angle truncate. Type *A. constricta* Guen.

multiplicans. **A. multiplicans** Walk. (53 a). Forewing dark purplish fuscous, the cell in the ♀ with diffuse pale grey scales; lines ill-defined, blackish; the inner vertically dentate, sometimes double; the outer excurved above, lunulate dentate, the teeth marked on veins with white points; submarginal line formed of white spots between the veins, preceded towards costa by black dashes; a marginal line of black and white dots; fringe concolorous, the tips crenulate; orbicular stigma a black dot with rufous round it; reniform rufous, with black outline, thickened basewards; hindwing with the lines marked only on abdominal margin, the white scales of submarginal line forming a continuous narrow streak. An Indian species, also recorded from Hongkong, and Fokien, Central China.

3. Genus: **Mimanuga** gen. nov.

Differs from *Anuga* in the antennae being of ordinary length, with long uniseriate pectinations in ♂, and a large tuft of scales from basal segment. Type *M. japonica* Leech.

Sect. I. Antennae of ♀ almost simple; palpi in both sexes curved forwards, with tufts of scales at base and extremity of second segment, the third broadly scaled.

japonica. **M. japonica** Leech. (53 a). Forewing greenish grey; inner marginal half of wing purplish brown; lines blackish, double, in much the same position as in *lunulata* Moore; a dark bent median shade; stigmata outlined with black, with black centres, the orbicular small and circular, the reniform larger, oval; beyond outer line a series of white dots on veins, followed by an interrupted blue black streak, externally edged with orange in lower half and by purplish brown dots in upper; a row of black dots on upper part of termen; hindwing blackish fuscous, greyer towards inner margin and base; the lines marked on inner margin only; the submarginal with an orange streak. Recorded hitherto from Japan only; but a ♀ from N W. India is in the Tring Museum.

Sect. II. Antennae of ♀ with shorter pectinations than in ♂; palpi of ♀ long, straight, and upturned, the second segment with two ridges of hair in front, the third long and narrow.

lunulata. **M. lunulata** Moore (53 b). Forewing with costal half ochreous marked with fulvous, especially towards base, the inner marginal half fuscous tinged with brown, both diffusely edged; the lines black, placed very much as in *A. constricta*, but plainer, especially in costal half; orbicular stigma a black ring with pale centre; reniform large with rufous brown centre and black outline; the submarginal line rufous; hindwing blackish fuscous, the basal area whitish; the lines distinct only in the innermarginal half; the submarginal line with a continuous ochreous streak. Described from Sikkim, N. India: one specimen is recorded by LEECH from Wassa-kow, W. China; only the ♀♀ are known at present.

Subfamily **Stictoperinae**.

Like the last this subfamily is a development of the *Noctuinae*; it is distinguished, first by the single

frenulum of the ♀, and secondly by the presence of raised scales in the cell of forewing. It is represented in the palaearctic region by only two species, the large majority being tropical insects. Most of the species are distinguished by the elongate, narrow forewings, and a large number are remarkable for their great variability.

1. Genus: **Lophoptera** Guen.

Tongue well developed; frons smooth, with a tuft of hair at top; palpi obliquely porrect, the second segment broad, the third short; antennae of ♂ filiform, simple; thorax and abdomen smooth, without crests; forewing triangular, the apex blunt; the termen evenly curved, slightly crenulate; neuration normal. Type *L. squammigera* Guen.

L. costata Moore (53 b). Forewing lilac grey with dark brown scaling; costal streak dark redbrown, *costata*, widening outwards from base to outer line, then narrowing to apex, defined below by a yellowish white streak as far as outer line; inner line double, brown, wavy, obsolete on costal half; median line brown, sinuous, also obsolete above; outer line double, excurved above, indented on cellfold, and incurved below vein 4; a double dark dentate subterminal line, inwardly defined by whitish; terminal dark striae, inwardly edged with white; fringe chequered with grey at tips; claviform stigma indicated by a small tuft of blackish scales at its extremity; the orbicular by a slight projection from the dark costal streak; reniform with its lower part incompletely defined by dark brown; hindwing black brown, the interspaces at base with semihyaline streaks, sometimes almost obsolete; fringe with the tips white. An Indian species, which is also recorded from West China. The pale streak below the dark costal area is sometimes wanting, ab. **obscurata** ab. nov. (= ab. 1. *Hmps.*) or is developed into a diffuse whitish area, ab. **exalbata** ab. nov. (= ab. 2 *Hmps.*) *obscurata*, *exalbata*.

2. Genus: **Nycteola** H.-Sch.

Tongue fully developed; frons smooth; palpi obliquely upturned, the second segment broad, closely scaled, the third quite small; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, without crests; forewing elongate, the apex prominent; termen evenly curved; neuration normal; vein 9 anastomosing with 8 to form the areole, which is small; hindwing with termen insinuate between veins 6 and 3; veins 3, 4 stalked; costal and subcostal anastomosing to middle of cell; the single frenulum of the ♀ accompanied by a tuft of hairs. Type *N. falsalis* H.-Sch.

N. falsalis H.-Sch. (= *dardoinula* Mill.) (53 c). Forewing pale grey with darker grey and blackish dusting, *falsalis*, tinged in places with brown; inner line white with black edges, angled outwards below median and inwards above vein 1, preceded by patches of black scales at costa and inner margin; outer line obscure, whitish, angled on vein 6, then obliquely waved inwards, a thick curved black median shade beyond a small blackish-edged white spot; both lines and median shade contiguous on inner margin; the space between the lines often brown; subterminal line whitish, waved, preceded by blackish dashes on a grey shade, and starting from a broad oblique white streak from apex, edged externally with brown; terminal spots black; fringe grey; hindwing grey, darker towards termen; in the ab. **abbreviata** ab. nov. (53 c) the inner and outer lines coalesce on vein 1, and the median *abbreviata*, shade is abbreviated. A mediterranean species, occurring in France, Spain, Italy, Croatia, Dalmatia, Corsica, Sardinia, Sicily; Algeria; Syria.

Subfamily **Sarrothripinae**.

This subfamily, along with the following, the *Acontianae*, is mainly distinguished by the bar-shaped retinaculum in the ♂, rising from the subcostal vein; it also agrees with the preceding *Stictoperinae* in the possession of tufts of raised scales, at the places of the orbicular and reniform stigmata and along the course of the different lines. Except in a few genera the insects composing it are of small size, generally with the forewing arched at base, and the costal and inner margins subparallel; the costal and subcostal veins of hindwing mostly anastomose for one half of cell; in other points the usual variation is found. The larvae have all the prolegs present and usually are covered with long sparse hairs; pupation takes place in a boat-shaped cocoon of spun silk, often with an angular projection in front.

1. Genus: **Sarrothripus** Curt.

Tongue present; frons smooth; vertex between antennae rough haired; palpi long, obliquely porrect, thickly scaled; antennae in ♂ shortly ciliated; thorax and abdomen smooth; fore femora and tibiae roughly scaled; forewing elongate; apex blunt; termen scarcely oblique; vein 9 anastomosing with 8 to form areole; hindwing with 5 from lower angle of cell, 3, 4 long-stalked. Larva flattened, smooth, with long hairs; living between united leaves; feeding up in summer, emerging in autumn; the imago hibernates; pupation in a boat-shaped cocoon. Type *S. revayana* Scop.

revayana. **S. revayana** Scop. (= *duplana* F., *fasciatum* Retz, *rivagana* F., *undulana* Hbn., *stoninus* Curt., *frigidana* Walk., *scriptana* Walk., *favillana* Walk., *bilineatella* Walk., *latifasciella* Walk., *metaspilella* Walk., *columbiana* H. Edw., *lintnerana* Speyer, *cinerea* Neum., *siculana* Fuchs, *asiatica* Krul., *diplographa* Hmps.) (53 c). Forewing ashy grey, dusted with darker, especially in costal half of median area; lines darker, double, but indistinct; the inner outcurved above and below middle, and angled outwards below vein 1; the outer irregularly waved and strongly indented on submedian fold; some faint dark spots indicate the submarginal line; hindwing pale

fusculana. greyish fuscous; — in the ab. **fusculana** Schmid (53 c) the ground colour is dull dark brownish fuscous, with the black lines visible and a ferruginous spot representing the reniform stigma; from the middle of base an oblique black streak runs to lower end of the inner line; the submarginal spots are visible, and a row of small

dilutana. black marginal lunules; — ab. **dilutana** Hbn. (53 c) has the ground colour dull grey or whitish grey, the median area brownish grey, more purely brown towards costa; the reniform diffuse, rufous; the pale basal area with grey spots between the veins between subbasal and inner lines; the submarginal spots darker grey and the pale

degenerana. submarginal line beyond them more clearly marked; — ab. **degenerana** Hbn. (53 c) is bright greenish white; the median area purplish grey and brown, blacker towards costa, the reniform purple red; the lines filled up with white and the cloudy spots in basal and marginal areas black; a black spot at apex; fringe whitish; intermediate

obscura. forms occur between this and *dilutana*; the ab. **obscura** ab. nov. (53c) has the whole forewing olive brown, the markings

glauca. as in *degenerana*; — ab. **glauca** Lampa (53 c) has the forewing obscurely glaucescent, with a triangular dark

ilicana. fuscous blotch; — ab. **ilicana** F. (= *punctana* Hbn.) (53 d) is pale fawn grey, sprinkled with whitish scales; the lines much finer; the cell spot, a spot on each side of the median vein before inner line, and the two lowest

ramosana. spots of the submarginal line black; — in ab. **ramosana** Hbn. (= *ramulanus* Curt.) (53 d) the ground colour is brownish grey, with fuscous shading, and a deep black streak from below base of cell to below reniform stigma, shortly branched towards inner margin beyond subbasal and inner lines; the submarginal spots darker; — ab.

russiana. **russiana** Dup. has the forewing grey green, with a large dark median blotch. Larva green with the segmental incisions yellowish, the tubercles with long white hairs; resting curled up between the leaves of the tree on which it feeds, pupating in a yellow boat-shaped cocoon. Generally distributed throughout Europe, and found in the Altai Mts., Asia Minor, Dauria, Amurland, and Japan; also throughout India and North America.

coreana. **S. coreana** Leech (53 d). Forewing silvery grey, freckled with darker grey; inner line wavy, oblique, double; outer line wavy and double, excurved beyond cell; a fuscous brown blotch extends along costa to a whitish lunule before the irregular dusky submarginal line; a dark spot at end of cell with a whitish lunule on its outer edge; hindwing fuscous grey. A single ♂ from Gensan, Corea.

musculana. **S. musculana** Ersch. (53 c). Forewing ochreous grey irrorated with fuscous; two slight oblique dark subbasal lines to submedian fold; inner line indistinctly double, oblique to median vein, then incurved, angled outwards on vein 1; outer line also double, bent outwards below costa, angled inwards on cell fold, oblique below vein 4, and inbent in submedian interspace, and outwards above inner margin; an oblique diffuse dark streak from apex to vein 7; a waved subterminal line angled outwards at vein 4; a terminal series of small

albivaria. black dots; hindwing white suffused with pale brown; — in the ab. **albivaria** ab. nov. (= ab. 1 Hmps.) the lines are more distinct, being filled in with white; the antemedian area is whiter; the median area is suffused with brown and has a triangular fuscous shade from costa. Alexander Mts., Sarawschan, W. Turkestan.

2. Genus: **Characoma** Walk.

Tongue developed; frons smooth; palpi obliquely upturned, closely scaled, the third segment long; antennae of ♂ ciliated; forewing short and broad, the costa strongly arched at base, the apex rounded, the termen curved and even; veins 9 and 10 anastomosing with 8 to form an areole; veins 3 and 4 coincident and stalked with 5; the costal of hindwing anastomosing with subcostal for half of cell. Type *C. albulalis* Walk. (53 d). A genus mainly of tropical species.

ruficirra. **C. ruficirra** Hmps. (53 d). Forewing grey; a reddish brown inner shade from costa to submedian fold, with two lines on it formed of slightly raised black scales; an indistinct slightly waved median line; a faint dark cellspot; outer line bent outwards with a downward curve from costa to vein 6, denticulate to vein 4, then strongly incurved, and again excurved to inner margin; a rufous shade on costa beyond it; subterminal line dark, indistinct, waved; a rufous shade at apex; a terminal series of black dots; fringe brownish; hindwing brownish grey, the veins and terminal area darker. Described from Yokohama, Japan, also found in N. India.

nilotica. **C. nilotica** Rghfr. (= *chamaeleon* Moeschl., *littora* Beth.-Baker, *laurea* Druce) (53 d). Forewing dark grey, with darker grey and blackish markings; subbasal line slight; inner line double, curved to submedian fold; median line fine, blackish, wavy; outer line marked by dark teeth on veins, excurved between veins 6 and 3; a slight blackish discoidal lunule and black convergent streaks on each side of vein 2 from base to outer line; subterminal line grey between two darker grey shades, the inner sometimes marked with black; — in the ab.

nigrinotata. **nigrinotata** ab. nov. (= ab. 1 Hmps.) (53 d) the inner line is marked by a thick erect black bar; — in ab. **nigri-**

nigrimaculata. **maculata** ab. nov. (= ab. 2 Hmps.) (53 d) the costal area at base bears a round black blotch; in another form,

— ab. *basibrunnea* ab. nov. (= ab. 4 *Hmps.*) the basal area and the inner margin are suffused with brown. *basibrunnea*. This is a widely distributed insect, found throughout North and Central America and the West Indies, N. Africa, and India; the types both of *nilotica* and *littora* are from Egypt. The larva is said to feed on *Tamarix articulata*.

3. Genus: **Lamprothripa** *Hmps.*

Tongue present; frons smooth, with tuft of hair at top; palpi upcurved, the second segment thickly scaled, the third short, blunt; antennae of ♂ nearly simple; thorax and abdomen smoothly scaled; foretibiae fringed on both sides with hair; forewing with costa highly arched near base, the apex blunt, the termen curved and even; neuration normal. Type *L. scotia* *Hmps.*

Sect. I. Forewing of ♂ with small hyaline fovea at upper angle of cell.

L. lactaria *Graes.* (= *korbi* *Püng.*). Forewing silvery white at base, on costa to before middle, on inner *lactaria*. margin to beyond it; the costal edge fuscous; the area beyond cell tinged with fuscous to outer line; the terminal area redbrown; a tuft of silvery scales in base of cell, followed by two oblique striae, the first inwardly, the second outwardly oblique; tufts of black and silvery scales at upper and lower angles of cell; outer line fuscous, with tufts of silvery scales on it, strongly bent outwards below costa, oblique to vein 4, inwardly oblique to vein 2, then outwardly to inner margin; subterminal line pale with some fuscous before it, terminal line rufous; hindwing white, with faint diffused brown subterminal shade, the apical area suffused with brown. Ussuri, East Siberia.

Sect. II. Forewing of ♂ without fovea at upper angle of cell.

L. hamponi *Wilem.* (53 d). Forewing brown mixed with greyish white, suffused with gold and silver, *hamponi*. the terminal area cupreous red; innermarginal area yellowish white to outer line, at base extending to cell, on median area to vein 1; traces of an interrupted oblique inner line; oblique black median striae of raised scales in cell and submedian interspace; orbicular stigma absent; the reniform round, yellowish white, slightly black edged, with fuscous centre; before it in cell some yellow suffusion; above it some white extending on costa to beyond outer line, which is minutely waved and bent at vein 4; subterminal line slight, pale, with grey dusting beyond it at apex and tornus; termen narrowly grey, with row of black striae on it; hindwing uniform greyish brown. Tsushima, Japan.

4. Genus: **Bryophilopsis** *Hmps.*

Tongue present; frons smooth; palpi upcurved, short, closely scaled; antennae of ♂ with fascicles of long cilia; the thorax and base of dorsum with slight crests; forewing with termen curved, even; the areole present; hindwing with costal and subcostal anastomosing for half of cell. Type *B. griseata* *Hmps.*

The only palaeartic species referred by HAMPSON to this genus has been already described on p. 21 and figured on Plate 4th as *Metachrostis roederi* *Standfs.*, originally described by Standfuss as a *Bryophila*. At the close of the description I added the remark "Probably not a true *Metachrostis*".

5. Genus: **Eligma** *Hbn.*

Tongue aborted, small; frons smooth, with a ridge of scales above; palpi long and slender, obliquely upturned, closely scaled, the third segment as long as the second, both dilated at extremity; antennae of ♂ typically lamellate, simple; the basal segment with a tuft of hair in front; thorax and abdomen smoothly scaled, without distinct crests; the tibiae and the fore femora fringed with hair; forewing elongate, narrow, the costa arched at base; apex blunt; termen vertical to middle, then strongly oblique, not crenulate; veins 7, 8, stalked; 9, 10 stalked, 9 anastomosing with 8 to form the areole; hindwing with costal and subcostal anastomosing for more than half of cell. Larva yellow and black; the tubercles with long hairs; pupating in a tough, downy cocoon. Type *E. narcissus* *Cram.*

A genus of large, highly coloured moths, occurring in the tropics, one species of which is found in China.

Sect. II. Antennae of ♂ simple, lamellate.

E. narcissus *Cram.* (Vol. 2, Pl. 131). Forewing with costal area olive fuscous or olive black, its lower *narcissus*. edge curved and irregular, narrowing to a point at base and apex; edged below by a white fascia, notched above at the discocellular, its lower edge diffuse and merging into the olive grey brown shade of the inner marginal area; a small oblique black costal striga before middle, followed by a black spot on costal vein; in the white fascia are 3 black dots at base, followed by 3 more, and again by another group of 3, with one below them above inner margin; a black sinuous line from below middle before end of cell, followed by a serpentine fuscous band narrowing off obliquely to apex; two inwardly oblique white lines from apex, recurved below middle to anal angle, the fuscous between them, and partially beyond, cut up into blotches by the pale veins; a series

of subterminal black spots; hindwing yellow; a black terminal band, broad at apex, extending along costa to near base and narrowing off to termen at vein 2; the band is shot with blue; the veins across it are blue, sometimes swollen at middle to form a band; — the subsp. *indica* Roths. is smaller, both wings shorter; the terminal band of hindwing narrower, the deeper yellow ground colour bluntly angled above middle, instead of being curved; the blue gloss both above and below much reduced; — subsp. *javanica* Roths. is still smaller; the terminal border of hindwing as broad as the yellow area, and limited by an evenly vertical curve; the dorsal spots of abdomen quite small; — the subsp. *philippinensis* Roths. differs in the larger size of the subterminal spots of forewing. The type from China has longer narrower wings; but this form occurs also at Darjiling, N. India; the subsp. *indica* being confined to the South.

6. Genus: **Gadirtha** Walk.

Tongue present, but small; frons smooth; palpi upturned, strong; the second segment thick, densely and closely scaled, slightly roughened in front, the third as long as the second, smoothly scaled, spatulate; antennae of ♂ with minute sessile fascicles of cilia, the shaft thickened basewards; thorax and abdomen smoothly scaled; legs hairy; the fore tibiae with broad thick pad of hair, the proximal segments of fore tarsi also hairy; forewing narrow, the apex blunt, termen well rounded oblique below vein 3, with a strong crenulation beyond submedian fold; slight raised tufts of scales along both folds. Type *G. inexacta* Walk. The single species is large and stoutly built.

inexacta. **G. inexacta** Walk. (= *bufonia* Fldr. = *tinctoides* Snell.) (53 b). Forewing pale grey, freckled and striated with darker, the costal half suffused in the ♂ with reddish brown, in the ♀ with pale lilac brownish or greenish; lines slenderly black, irregularly angled and interrupted, the inner preceded by a large fuscous costal blotch and met below median vein by a black streak from base; costa with two small dark spots in middle and 3 more towards apex, more or less conjoined to form a patch; submarginal line pale, wavy, preceded and followed towards anal angle by irregular dark patches; orbicular stigma round, grey or brown; reniform with a very fine black outline, rounded internally, externally with a sharp tooth at middle, the centre usually darker; marginal lunules dark grey; hindwing dingy fuscous, darker in the ♂♂. This widely spread insect, found throughout India, Burma, in Java, New Guinea, and N. Queensland, is recorded also from China: Chusan Ids., Hongkong, Ichang, Changyang; and in the Tring Museum is a dark grey ♂ from Japan. These Chinese and Japanese examples, like some from the Khasias, belong to the ab. **uniformis** ab. nov. (= ab. 1 *Hmps.*) (53 b), with uniform greyish forewings and fuscous brown hindwings; the Japanese specimen, moreover, is decidedly smaller than the average; — the form **impingens** Walk. (53 b) ♂♂ only, has the forewing suffused with purplish brown, and the tornal area greyish white from middle of termen to middle of inner margin; in the New Guinea form the hindwing is ochreous white, the terminal area only suffused with fuscous brown narrowing to a point at tornus; — ab. **papuensis** ab. nov. (= ab. 3 *Hmps.*). — The larva is said to be one of the most common in Southern China and to resemble that of *Demas coryli*, with the skin and tufts of hair greenish yellow; it makes its cocoon on the trunks of trees, and is as difficult to distinguish as that of *Cerula furcula*; the pupa is flat, and moves its abdomen very quickly, so that the anal segments, playing upon a row of silken strings, like those of a guitar, spun by the larva at the lower end of the cocoon, emit a noise somewhat resembling, though fainter, the chirping of Cicadae. The above facts were communicated by Dr. SEITZ who also sent the cocoon with the apparatus for inspection.

7. Genus: **Blenina** Walk.

Tongue present; frons smooth; palpi upturned, with appressed scales, the third segment long and slender, blunt; antennae of ♂ shortly ciliated; thorax and abdomen smoothly scaled; dorsum with more or less distinct tufts at base; forewing short and broad, shouldered at base; termen vertical to 4, then sharply oblique; the areole long and narrow; the retinaculum bar-shaped in the ♂; slight ridges of raised scales on inner, median, and outer lines, and on discocellular; hindwing with rounded termen; vein 5 from lower angle of cell. Type *B. donans* Walk.

Sect. IV. Palpi of ♂ normal.

senex. **B. senex** Btlr. (53 e). Forewing pale to dark blue green, varying according to the denseness of the dark grey and fuscous dusting; the ♀ always dull dark grey green; lines black, wavy; the inner line outcurved to near middle of inner margin; the outer, nearer to inner line than usual, slightly excurved round cell and dentate below middle, approaching inner line on submedian fold; a slight dark cellspot; submarginal line pale, flexuous, preceded by a dark green line, which above anal angle is marked with black, forming a black lunule on submedian fold with a black dash before it; hindwing brownish luteous or fuscous with dark outer line separated by a paler band from the broad blackish terminal border; fringe luteous grey, dotted with dark; the hindwing of the ♀ is darker than in the ♂. Two forms in the ♂♂ may be differentiated from the simple typical form; *fasciata.* — ab. **fasciata** ab. nov. (53 e) has the median area diffusely filled in with fuscous greenish extending often to the

anal angle; — in ab. *strigata* *ab. nov.* (= ab. 1 *Hmps.*) (53 e) a black bar extends along submedian fold from *strigata* base to submarginal line; the form *megei* *Oberth.* (53 e) which occurs in China, is altogether paler, without fuscous darkening, the hindwing, especially in the ♂, being pale luteous with the border blacker by contrast. Japan, Kin-shin, Corea; the form *megei* from China.

B. *quinaria* Moore (53 c, f). Forewing grey white, irrorated with dark grey and blackish and often tinged with pale green, suffused with dark green in the ♂ and blackish in the ♀, except the basal area and apical third, which remain grey; the lines dark but all indistinct; a black bar on discocellular, from which frequently a waved black line runs to the submarginal line on submedian fold; the subbasal line, inwardly oblique, is plainer, as the basal area remains paler; subterminal line black, crenulate, inbent on the folds; fringe mottled dark and light; hindwing luteous tinged with brown, with a broadish diffuse outer brown shade; terminal border black, narrowing to tornus; fringe luteous, with black dots at base. Several paler forms occur: ab. *semipallens* *ab. nov.* (= ab. 1 *Hmps.*) (53 f) has the costal and terminal areas pale, the dark suffusion being restricted mainly to the inner margin, in the ab. *aperta* *ab. nov.* (= ab. 2 *Hmps.*) (53 f), the pale ground colour is sprinkled with pale green or grey scales, without any dark suffusion; — in ab. *nigrosignata* *ab. nov.* (= ab. 3 *Hmps.*) (53 f) the forewing is marked by a thick black bar on inner margin from inner to outer line; this aberration is usually small and pale with a diffused whitish space beyond cell of forewing; but it occurs also in a larger form, suffused with lichen-green, ab. *rufitincta* *ab. nov.* (53 f), in which the patch beyond cell is irrorated with dull brick red; — lastly, the ab. *irrorata* *ab. nov.* (= *quinaria* *Hmps.* Faun. Brit. India, Moths, II, p. 379) (53 f) has the costal half of wing suffused with yellowish, while the inner and terminal areas remain whitish, with a mixed darker green and grey shade from base along inner margin to middle. The species, which occurs in Assam and Sikkim, N. India, is also recorded from Omei-shan, W. China.

8. Genus: **Risoba** Moore.

Tongue well-developed; frons smooth; palpi upturned, the second segment broad, the third narrow, blunt and elongate; antennae of ♂ almost as long as forewing, with sessile fascicles of cilia, and a tuft of scales at base; shoulders, patagia, and metathoracic tuft distinct and thickly scaled; the tibiae fringed with hair; abdomen in ♂ long, the anal tuft forked; the sexes often differing in appearance; neuration normal. The larva of the only species known bears a conical prominence on the anal segment, and feeds on *Quisqualis*. Type *R. repugnans* Walk.

R. *basalis* Moore (53 b). Forewing whitish, speckled with black and suffused with reddish brown; the costal and terminal areas both whiter at middle; a white patch from costa at base to before middle of inner margin, partly tinged with rufous, bounded by a black line; inner line blackish, oblique to submedian fold and minutely waved, then incurved to basal patch; outer line indistinctly double, biangulate below costa, oblique outwardly above vein 4, inwardly below it, dentate and filled in with white towards inner margin; an oblique reddish brown streak from apex to outer line; in the terminal area a black streak on vein 6 and on veins 1 and 7; subterminal line whitish, preceded at middle by slight black teeth; a row of black striae with white lunules in front of them just before termen; reniform stigma rounded, with the centre and outline brown; an oblique dark shade through it to inner margin; hindwing white tinged with reddish brown; the terminal border broadly fuscous; cellspot brownish; fringe whitish tinged with redbrown; in one form — ab. *viridimargo* *ab. nov.* both the costal and inner margins of forewing are coloured green. A single ♂ has been recorded from Hongkong; otherwise the species is Indian.

R. *prominens* Moore ♀ (= *vialis* Moore ♂) (53 b, c). ♂. Forewing iron brown tinged with grey, with patches of green suffusion on median and outer dark areas; a silvery white patch from base of costa to inner margin before middle with some brown and green scales on it; inner line dentate, obscure, incurved from submedian fold to basal patch; reniform stigma greenish white, with dark centre outlined with blackish, preceded by greenish suffusion; outer line sharply angled outwards below costa, then oblique inwards, minutely dentate, with an oblique white band before it; subterminal line black brown, sharply dentate and irregularly waved, obscurely margined with pale and at costa with white; the apex black brown; before termen a row of white lunules outwardly edged with black; hindwing whitish with black cellspot and terminal border; the veins and inner margin brown; ♀ with basal patch pure white; outer line obscure, preceded at costa by a violet white suffusion, but no distinct narrow band; thorax and base of abdomen usually snowwhite in ♀, redbrown and fuscous in ♂. North and West China; also found in the Loo-choo Islands; otherwise an Indian insect.

Subfamily Acontianae.

While agreeing with the last subfamily in the bar-shaped retinaculum of the ♂, the insects of the present subfamily are without raised scales on the forewing, except in one genus of somewhat doubtful position; in this, as in a few other genera, instead of the bar-shaped retinaculum, the ♂ possesses a tuft of hair below median nervure. In general the subfamily vies with the preceding in variability of structure and shape of wings. The larvae also agree with those of the *Sarothripinae*, except in one or two genera, including *Acontia*, from

which the subfamily name is taken; in these the larvae are said to be semi-loopers, with the first two pairs of prolegs aborted, and forming a cocoon under ground for pupation.

1. Genus: *Sinna* Walk.

Tongue developed; frons smooth; palpi obliquely upturned, closely scaled, the third segment nearly as long as second; antennae of ♂ ciliated; thorax and abdomen smooth, without crests; forewing ample, with blunt apex and curved even termen; the retinaculum bar-shaped in ♂. Type *S. calospila* Walk.

extrema. **S. extrema** Walk. (= *reticularis* Fldr., *ornatissima* Alph.) (53 g). Forewing orange; a white band from base of costa to before middle of inner margin, its upper edge sinuous; a subbasal white spot on costa and another beyond in and below cell; an oblique white bar from costa before middle, a spot on median nervure, and a patch on inner margin with a hook on its inner side; two discoidal spots, spots beyond upper and lower angles of cell, and a spot below lower angle; an oblique wedge shaped outer patch from costa, a point on vein 6, a curved mark between cell fold and vein 2, more or less forked below, and a conical spot on inner margin confluent with the white on termen; a large apical white patch and narrow terminal band with waved inner edge; black spots on costa before apex and below vein 7, the latter oblique; a terminal row of 5 black spots, that at apex larger and that above tornus bar-shaped; hindwing white, sometimes tinged faintly with brownish; the insect varies in intensity of coloration; — in ab. **fontoni** Btlr. (53 f) the forewing is pale yellow, the white markings amplified, the yellow reduced to narrow meandering bands, the outer markings coalescing into an unbroken band, the terminal black marks reduced; — in ab. **clara** Btlr. (53 g) the yellow is still paler with its area smaller, the terminal area almost wholly white, the black markings wholly or partially absent; — lastly, in **unicolor** *Wilem.* both thorax and forewing are entirely white. Ussuri, E. Siberia; Japan; Central and Western China.

2. Genus: *Gabala* Walk.

Tongue slight; frons smooth, with a ridge of scales above; palpi obliquely upturned, the second segment long, with a tuft of hair on upper side before end, the third equally long, with a tuft of hair near extremity; antennae of ♂ almost simple; thorax densely scaled, the metathorax with low rounded crest; the ♂ with lateral fans of large scales; forewing with costa strongly arched at base, the apex blunt, the termen even, slightly curved; veins 8, 9, 10 stalked; 11 from cell; hindwing with termen almost straight to vein 2, then excised to tornus; veins 3, 4 shortly stalked; costal and subcostal anastomosing to middle of cell; retinaculum in ♂ formed by a tuft of hair from below median nervure. Type *G. polyspilalis* Walk.

Sect. II. The abdominal fans of ♂ small, with a tuft of long hairs below them; excision of hindwing slight; no fringes of hairs on upperside.

argentata. **G. argentata** Btlr. (53 g). Forewing bright rufous; basal area with numerous silvery white spots defined by blood red, the subbasal and inner spots larger; a pale striga on discocellular; an indistinct double dark outer waved line, concave outwards from costa to vein 6, indented on discal fold, and below vein 4 incurved to lower angle of cell; a patch of pale and silvery white spots reticulated with red in apical area; 3 white subterminal dots between veins 5 and 2, preceded by a dentate line and edged with red; terminal line dark; fringe rufous and brown; hindwing white, tinged with yellow beyond cell; the termen rufous from apex to vein 2; — in ab. **suffusa** *ab. nov.* (= ab. 1 *Hmps.*) (53 g) the forewing and thorax are suffused with fuscous brown; — in ab. **rufilota** *ab. nov.* (= ab. 2 *Hmps.*) (53 g) the suffusion is rufous; the ab. **flavata** *ab. nov.* (= ab. 3 *Hmps.*) (53 g) has the thorax and forewing with the spots pale yellow, the costa towards apex and the fringe reddish yellow. Japan, Corea, Hongkong.

3. Genus: *Siglophora* Btlr.

Tongue well developed; frons smooth, with a ridge of scales at top; palpi obliquely upturned, smoothly scaled, the third segment nearly as long as second; antennae of ♂ simple, lamellate; thorax and abdomen smooth; a slight metathoracic crest; tibial spurs long; forewing with apex blunt, the termen curved and even; veins 8, 9, 10 stalked; hindwing with termen excurved at middle, truncate towards tornus; veins 3 and 4 stalked. Type *S. bella* Btlr.

Sect. I. A ridge of metallic scales between antennae.

Subsect. A. Forewing of ♂ with large glandular swelling at middle of costa on underside, with tufts of curled hair round it on upperside, distorting the neuration.

ferreilutea. **S. ferreilutea** *Hmps.* (= *ferruginea* *Leech*) (53 g). Forewing bright yellow; a bloodred dot at base and waved subbasal line; inner band with waved edges filled in with bloodred; a conical patch on inner margin at middle, with a yellow spot on it; an oblique diffused band from middle of costa to lower angle of cell, becoming confluent there with the red terminal area which is suffused with fuscous, its inner edge curved from termen below apex to inner margin, the costal area remaining yellow; outer line red, oblique and dentate to

vein 6, angled inwards on discal fold and outwards at vein 4, then strongly incurved, defined by yellow on inner side, and followed by a similar red line; subterminal line yellow defined by red, minutely dentate, angled inwards on the two folds; veins of terminal area red; hindwing with base and costal area white, the rest of wing yellow; terminal area rufous below vein 6; fringe rufous except at apex; in the ♀ the oblique dark band from middle of costa is absent; the lines in costal half are separate and dentate, the outer line sinuous below vein 4, and the line beyond it defined by yellow on the dark area. Japan; also occurs in N. India.

Sect. II. No ridge of metallic scales between antennae.

S. sanguinolenta Moore (53 g, h). Forewing with basal half and costal area to apex bright yellow, the rest of wing greyish irrorated with black, more strongly in the ♂; a crimson point at base of cell, and some crimson and white scales at base of inner margin; a crimson ring on costa before middle and double waved line, filled in with blackish, from it to inner margin; a waved crimson median line from below costa to median vein, with points before and beyond it below costa and two conjoined rings on inner marginal area; the dark terminal area with waved edges defined by crimson; the lines indicated on costal area by crimson points; two small yellow dots beyond cell followed by a waved crimson and black line between veins 6 and 3; subterminal line dentate, crimson edged inwardly with blackish, with some yellow dots on it above middle; hindwing with basal half and the costa white; terminal half brown grey; fringe purplish pink. Recorded from Omei-shan West China; originally described from N. India. *sanguinolenta*.

4. Genus: **Chionomera** Btlr.

Tongue well developed; frons smooth; palpi obliquely upturned, closely scaled, the third segment half as long as second; antennae of ♂ ciliated; thorax and abdomen smooth; forewing with prominent apex, the termen oblique, curved and even; veins 8, 9, 10 stalked; in the hindwing veins 3, 4 and 6, 7 are stalked; the costal anastomoses with the subcostal at base only; the retinaculum of ♂ bar-shaped, from subcostal vein. Type *C. superba* Moore.

C. argentea Btlr. (53 d). Forewing silvery white; the markings orange; a subbasal spot on costa; an inner band, expanding at costa, outwardly black edged; an outer slightly curved band from costa to tornus, swollen at costa into a large triangular blotch with white centre, inwardly black edged; a terminal band from apex to submedian fold, inwardly black edged; fringe yellowish except towards tornus; hindwing silvery white; in the ab. *obliterata* ab. nov. (= ab. 1 *Hmps.*) the markings of forewing are all but obliterated. Japan. *argentea*, *obliterata*.

C. chinensis Swinh. (53 d). Forewing pure white; the costal edge blackish; the markings orange; a spot at base of costa joined by a band to an inner band with sinuous edges slightly black edged; the apical area from costa beyond middle to inner margin before tornus, its sinuous inner edge defined by black; a white spot on it just below costa, and a lunulate spot before termen from below vein 3 to submedian fold, both inwardly black edged; an oblique quadrate white patch with uneven edges from below costa at apex to above vein 4, black edged except towards apex; fringe orange at base, blackish at tips; hindwing pure white. West China. *chinensis*.

5. Genus: **Tyana** Walk.

Tongue present; frons smooth; palpi obliquely upturned, slender and smooth, the third segment long; antennae of ♂ almost simple, with enlarged basal segment; thorax and abdomen smoothly scaled, without crests; forewing ample, the costa strongly arched, the apex prominent; vein 6 from below upper angle; 7, 8, 9, 10 stalked from the angle; in hindwing veins 4 and 5 are coincident, sometimes shortly stalked with 3; costal and subcostal anastomosing to middle of cell; retinaculum of ♂ a tuft of hair from below median vein. Type *T. calli-chlora* Walk.

Sect. I. Hindwing of ♂ with large fold on inner margin, holding a mass of flocculent hair.

T. falcata Walk. (= *pustulifera* Leech nec Walk., *acypera* *Hmps.* ♂ only) (53 h). Forewing yellow green the costal edge brown and white; brown dots at angles of cell, sometimes also one at origin of vein 2, and another below it on submedian fold; the termen and fringe yellow; hindwing white; — in ab. *literata* Wilem., from Formosa, the discocellular of forewing bears a sinuous brown bar. Described from Sikkim and occurring in Formosa; the ♂ type of *acypera* *Hmps.* was from Omei-shan, West China. *falcata*, *literata*.

T. monosticta *Hmps.* (= *acypera* *Hmps.* ♀ nec ♂) (53 k). Forewing yellow green; costal edge white, with yellow below it towards base; the inner margin yellow; a reddish discoidal spot, usually with white centre; fringe white with the apex pink; hindwing pure white. Described from 2 ♀♀ from Pu-tsu-fong, West China. *monosticta*.

In these two species the apex of forewing is acutely produced and the termen nearly straight.

6. Genus: **Earias** Hbn.

Tongue developed; frons smooth, with a tuft of hair projecting above; palpi porrect, moderately scaled, the third segment variable in length; antennae of ♂ shortly ciliated; thorax and abdomen smoothly scaled;

without crests; the tibiae smooth; forewing with termen evenly curved; veins 7, 8, 9 stalked, 10, 11 from cell; hindwing with veins 4, 5 coincident, stalked with 3; costal anastomosing with subcostal for nearly half of cell; retinaculum in ♂ formed by a tuft of hair on median nervure. Larva living in a chamber formed of spun together leaves; pupa in a silken boatshaped cocoon. Type *E. chlorana* L.

chlorana. **E. chlorana** L. (= *viride* Retz.) (53 h). Forewing pale green; the costa white to beyond middle, the edge towards base brownish; hindwing white; the termen and fringe faintly greenish above vein 2; in the ab. *flavimargo*. **flavimargo** de Joan., from Britany, the fringe is yellowish at base, brown in the middle, and white at the tips; *hemixantha*. — ab. **hemixantha** de Joan. has the terminal area, except at costa, suffused with orange yellow. Larva whitish mottled with grey; the lines rusty grey, darker in places; pairs of somewhat pointed tubercles on segments 3, 4, 6, and 12; head pale green with black marks; spinning together the topmost leaves of shoots of *Salix viminalis*, pupating in a boatshaped cocoon. Occurs in Britain, France, Germany, Austria, Hungary, Switzerland, Italy and Russia; in Asia Minor and Siberia.

chlorophyllana. **E. chlorophyllana** Stgr. (= *turana* Gr.) (53 h). Forewing yellowish green, the costal area yellowish white; cilia orange yellow at tips; hindwing white, the termen and fringe slightly rufous above vein 2. Found in Western Asia, Syria, Kurdistan, W. Turkestan.

syriacana. **E. syriacana** Bartel (53 h). Forewing yellow green thickly irrorated with white; the costa white; fringe green, the tips white; hindwing white; both wings on underside white tinged with green except on costa of forewing. Recorded only from Beirut, Syria.

vernana. **E. vernana** Hbn. (53 h). Forewing white with blue-green irroration, the terminal area suffused with green, the costal area whiter; a green median line, incurved in cell, and an outer line bent on vein 6, neither reaching costa; fringe green at base, white at tips; hindwing white, the termen and fringe greenish above vein 2; *obliterata*. in a form from Uralsk — ab. **obliterata** ab. nov. (53 h) the lines are not marked. Larva on white poplar. Germany, Austria, Hungary, Italy.

roseifera. **E. roseifera** Btlr. (= *erubescens* Stgr.) (53 i). Forewing green with an olive tinge, with a patch of rosy suffusion in end of cell in the ♂, filling the cell and reaching below it to submedian fold in the ♀; fringe dark brown with a dull orange line at base; hindwing pale grey in the ♂, darker grey in the ♀, the fringe white; underside of forewing rosy grey except towards apex and termen. Siberia, Japan, China.

puhicana. **E. puhicana** Stgr. (53 i). Forewing olive green; the costal edge white, becoming pink towards base; *pupillana*. the fringe redbrown with white tips; hindwing white; the ab. **pupillana** Stgr. (53 i) has a round brown discoidal spot on forewing. Siberia, China, and Japan; also found in N. India.

insulana. **E. insulana** Bsd. (= *smaragdinana* Zell., *siliquana* H.-Sch., *frondosana* Walk., *xanthophila* Walk., *simillima* Walk., *chlorion* Rmb., *gossypii* Frauenf., *tristrigosa* Btlr.) (53 i). Forewing yellowish green; the costal edge white to near apex; median, outer, and subterminal indistinct green lines, outwardly oblique above, inwardly oblique below middle; hindwing white, the termen and fringe brownish from apex to vein 2; — the ab. *anthophilana*. **anthophilana** Snell. (53 i) has the forewing ochreous with the lines purplish green and more distinct; a dark discoidal point; — in ab. **ochreimargo** ab. nov. (= ab. 2 *Hmps.*) (53 i) the costal and inner margins are ochreous mottled with purple; the fringe with purple tips; — in ab. **semifascia** ab. nov. (= ab. 3 and 4 *Hmps.*) (53 i) the space between median and outer lines below vein 6 is filled in with purplish or rufous; — ab. **dorsivitta** *Stgr.*, from Syria, has a longitudinal median grey stripe. Larva dark grey, dorsally paler; head and spiracles black; varies in intensity of colour, often wholly pale with front segments reddish; feeding on *Ceratonia siliqua* and *Gossypium herbaceum*, burrowing into the seed-pods and often causing much damage to the cotton crop. A very widely spread tropical species, occurring throughout Africa, India, and the Malay islands; in the palae-arectic region found in the Canaries, Spain, Egypt, Sicily, Cyprus, and Crete and in the form *dorsivitta* in Syria.

cupreoviridis. **E. cupreoviridis** Walk. (= *chromataria* Walk., *fulvidana* Wlgrn., *fervida* Walk., *limbana* Snell.) (53 i). Forewing bright green washed with yellow; a red brown dot at middle of cell and another larger at its end; the costal edge reddish to end of cell, and often the costal half fawn colour overlaid with crimson; termen and fringe dark purplish, the fringe tipped with white, the termen preceded by a sinuous orange yellow band, broadest at each end; hindwing white the apex tinged with brownish; — in the form **decolorata** *subsp. nov.* (53 i) from Sambawa the whole forewing has lost its green, and is light fawn colour without any markings, but with the costal edge, the termen, and fringe brownish; specimens from the Tenimber Islands agree or come close to this form. The species, which occurs throughout Africa, India, and the Malay islands, is recorded from Japan, Corea, and China.

7. Genus: **Hylophila** Hbn.

Tongue present; frons smooth; palpi obliquely upturned, the second segment slender, sparsely fringed with hair beneath, the third smooth and slender; antennae of ♂ simple; thorax and abdomen smooth, without

crests: head rough haired; forewing with costa straight, apex prominent, termen obliquely curved, even; veins 8, 9, 10 stalked; hindwing with 3, 4 stalked; the retinaculum bar-shaped from subcostal nervure; forewing green with oblique pale streaks; hindwing without markings. Larva smooth, broad in front, attenuated behind; feeding exposed on trees; pupation in a silken boat-shaped cocoon. The imago emerges in early summer, the larva is fullfed in autumn. Type *H. prasinana* L.

H. prasinana L. (= *fagana* F., *viridis-lineata* Retz, *sylvana* F., *millierei* Capr.) (53 k). Forewing yellow green; *prasinana*. costal edge pink, diffused towards apex; inner marginal area pink-suffused, except towards base; inner and outer lines oblique, darker green, conversely edged with white, the outer sometimes pink; subterminal line white, curved into apex; fringe pink with a white line at base; hindwing yellow; fringe pale pink, white at tips from apex to vein 2; abdomen white, dorsally suffused with yellow; in the ♀ the abdomen is white, tinged with brown at base; forewing with costal edge white, and inner margin yellow; hindwing white. In the British form subsp. **britannica** subsp. nov. (53 k), all the 3 lines are silvery white; the costal and inner margins in the ♂ reddish only *britannica*. at apex and tornus respectively; in the ab. **rufilinea** ab. nov. (= ab. 2 *Hmps.*) (53 k) the outer line is marked *rufilinea*. with red. Larva apple green coarsely shagreened with yellow; the subdorsal line yellow; segment 2 red-rimmed in front; on various trees. A common European insect, occurring also in West and East Siberia and Japan. The imago stridulates on the wing.

H. kraeffti Graes. (= *magnifica* Leech) (53 l). ♂. Forewing olive green, terminally paler; costal and *kraeffti*. inner marginal areas broadly pink, except at base and towards termen; a broad oblique outer band pink, followed by deep olive green; subterminal line white, running into apex; termen and fringe pink; hindwing pink, with pale interspaces; fringe white at tips; the dorsum pink; ♀ yellow green; the costa white faintly tinged with pink; hindwing white; the veins and inner margin ochreous; dorsum ochreous. Recorded from E. Siberia and W. China.

H. sylpha Bthr. (53 l). Forewing pale green varied with white; costal and inner margins ochreous tinged *sylpha*. with pink; inner and outer lines white, oblique, converging towards costa, the median area darker green along them; termen and fringe white, pink-tinged; hindwing pure white. Japan.

H. hongarica spec. nov. (53 k). Forewing pale, somewhat bluish, green in ♀, yellowish green in ♂; inner *hongarica*. margin reddish in ♂ to base, slightly in ♀ in outer half; fringe red in ♂, paler in ♀, often olive green; an outer white line parallel to termen, not emphasised by darker green; inner line very faint, often obsolete; when visible whitish, parallel, or nearly so, to outer line and not reaching costa; hindwing white in ♀, yellowish green in ♂; underside whitish green in ♀, yellow green in ♂; head and thorax green; abdomen in ♀ greenish white, in ♂ yellowish, with fulvous yellow hairs at base; palpi, legs, and antennae red. Herculesbad, Hungary. Out of more than 3 dozen ♀♀ and over a dozen ♂♂ not one shows any variation towards *prasinana*.

H. japonica spec. nov. (53 l). Resembles *hongarica*, but the inner line is plain, and both are rather *japonica*. more oblique; distinguished from *sylpha* by its shorter and broader wings. A pair from Yokohama and a ♂ from Asamayama in the Tring Museum.

H. buddhae Alph. Forewing delicate pale green, with a single oblique white line from middle of inner *buddhae*. margin parallel to termen; fringe traversed by a red line; hindwing pure white. Described from a single ♀ from the province of Sze-chuen, W. China. Although I have described the two preceding species, from Hungary and Japan respectively, as distinct, it is not impossible that both are forms of *buddhae*; the unique type of this insect may be an example with the outer line more central than usual, while the partial or entire absence of the inner line is not uncommon in the ♀♀ of *hongarica*.

8. Genus: **Hylophilina** gen. nov.

Differs from *Hylophila* in the retinaculum of ♂ being a tuft of hair from below median nervure, and in the head being smooth. The larva feeds up in spring, emerging as imago in the summer. Type *H. bicolorana* Fuessl.

H. bicolorana Fuessl. (= *prasina* Poda nec *prasinana* L., *prasinana* F., nec L., *quercana* Schiff.) (53 m). *bicolorana*. Forewing bright apple green; the costal edge yellowish white; inner margin narrowly white; inner and outer lines finely yellowish white, oblique, the outer from costa before apex; hindwing white; fringe white in both wings; in subsp. **conspersa** subsp. nov. (53 m), from Amasia, the ground colour is blue green, densely covered *conspersa*. with pale scales; the costal edge and lines white. Larva green, smooth; the 3rd segment with a yellow tipped dorsal hump; subdorsal and spiracular lines yellow; some pale yellow lateral stripes; feeding on oak. Occurs throughout Europe and in Western Asia: Armenia, Asia Minor, Syria.

africana. **H. africana** *spec. nov.* (53 m). Forewing pale bluish green on a white ground; the costal edge, lines, and fringe white; the two lines straight and parallel, broader than in *bicolorana*, conversely bordered with deeper green; inner margin at middle yellowish, with some red scales; hindwing white; underside white, the forewing towards costa slightly greenish; face pale yellowish green; lower half of face with two pink dots; antennae pink; tips of palpi pinkish; thorax and patagia blue green; abdomen and legs white. 1 ♀ in Tring Museum from Ain Draham, Tunis. Smaller and much paler than *bicolorana*; at once distinguished by the broader lines.

9. Genus: **Parhylophila** *Hmps.*

Tongue present; frons smooth; palpi obliquely upturned, smoothly scaled; antennae of ♂ ciliated; thorax and abdomen smooth, without crests; forewing with apex rectangular, termen vertical and slightly excised to vein 4, then oblique; veins 7, 8, 9 stalked; 10, 11 from cell. Type *P. celsiana* *Stgr.*

celsiana. **P. celsiana** *Stgr.* (60 a). Forewing emerald green; costal edge white tinged with brown; an elongate white blotch on inner margin at base; an outer white line excurved in midwing, edged inwardly with black below middle, expanding into a white blotch on inner margin externally dusted with black; fringe dark brown with the tips white; hindwing white suffused with brown; fringe white, with brown line near base. Amurland.

10. Genus: **Clethrophora** *Hmps.*

Tongue developed; frons smooth, with a projecting peak of scales from the vertex above it; palpi long, porrect or upturned, with appressed scales, the third segment nearly as broad as the second, but half the length; antennae filiform, simple; scaling smooth; forewing with subfalcate apex, the termen bluntly bent at middle, and slightly concave on each side; the retinaculum bar-shaped in ♂; in forewing veins 7, 8, 9, 10 are stalked, 11 free from cell; tibiae without spines. Type *C. distincta* *Leech.*

distincta. **C. distincta** *Leech.* (53 m). Forewing uniform deep green; the extreme costal edge and the fringe greyish rufous; a faintly curved pale green, sometimes obsolete, outer line from costa before apex and an angled dark green submarginal, the space between the lines being deeper green; a minute black cell-dot; hindwing deep coppery fulvous, with the fringe greenish; underside of forewing of ♀ pale fulvous with the margins narrowly pale fawn colour, of hindwing pale fawn colour, with two fulvous streaks, one on each side of the submedian fold; in the ♂ the fawn coloured areas are dull pink; head and thorax green like forewing; abdomen coppery fulvous like hindwing, in a few instances tinged with green on dorsum. Japan and Corea. The Sikkim and Java species are quite distinct.

11. Genus: **Carea** *Walk.*

Tongue present; frons smooth; palpi upturned, short, the second segment broad, the third minute; antennae of ♂ ciliated; middle tibiae with terminal spurs only; hind tibiae of ♂ shortened, with minute terminal spurs, and a tuft of long scales from extremity lying along the inner side of first segment of tarsus, which is greatly lengthened and swollen; forewing with veins 7, 8 and 9, 10 stalked, 8 and 9 anastomosing to form the areole; the termen regularly curved. Larva with the thoracic segments much swollen; a dorsal tubercle on terminal segment; pupating in a compact, oval cocoon with a conical projection from end. Type *C. varipes* *Walk.*

variegata. **C. variegata** *Leech.* Forewing pale ochreous with grey suffusion; basal third clouded with dark and limited by a curved black line; outer line obscure, oblique outwards from costa to vein 4, then abruptly bent inwards to below vein 2, and sinuous to inner margin; above vein 4 the oblique part is black except at costa, met by a ferruginous oblique streak from apex; below it the terminal area to vein 4 is clear ochreous; reniform stigma outlined with blackish, externally diffuse; terminal line blackish; fringe chequered dark and light; hindwing ochreous, basally fuscous-tinged. A pair from Western China.

varipes. **C. varipes** *Walk.* (52 m). Forewing from base to outer line olive fulvous, the olive tinge stronger in the ♂♂; terminal area pinkish, tinged with olive at apex; costa with a violaceous flush on each side of inner line, which is brown, excurved from costa towards base to middle of inner margin, often obsolete; outer line strongly marked, double, purplish black, filled in with pink or lilac, slightly concave outwards from before apex to anal angle, preceded at costa by a deep olive triangular shade; subterminal line pale, wavy, often edged with olive; a dark dot in cell and another at its end; fringe olive fulvous; hindwing dull orange red, or orange yellow, paler towards base; the fringe darker; in the form *lilacina* *ab. nov.* the forewing is washed with violaceous, deeper in the ♀ than in the ♂; another form, which may be separated as *ab. modesta* *ab. nov.* (= *ab. 3* *Hmps.*) has the head and thorax grey brown instead of brickred; the abdomen purplish grey with the extremity black; and the forewing purplish grey tinged in parts with olive. The type of *varipes* is from the Malay Peninsula; the Indian specimens all belong to the form *lilacina*. The species is recorded by Hampson from Hongkong. Larva with the thoracic segments much swollen; purplish or greenish brown; a purplish white band from the 4th to the 12th segment; head small and red; a long conical tubercle on 12th segment.

12. Genus: **Aiteta** Walk.

Tongue present; frons smooth; palpi short and stout, upturned, the terminal segment small, projected; antennae of ♂ elongate, pubescent only; forewing long and narrow, the apex blunt; vein 6 stalked with 7, 8; in hindwing veins 3, 4 are stalked; abdomen long, conical. Larva with the thoracic segments swollen, and a double tubercle on the last segment; pupating in a strong cocoon with conical projection at one end. Type *A. musculina* Walk. A. tropical genus of which a single species is recorded from Amurland.

A. curvilinea Stgr. (52 l). Forewing chocolate grey with two dark lines, the inner straight and oblique *curvilinea*, outwards, the outer excurved above and oblique inwards; hindwing grey. Said to resemble *A. truncata* Walk., especially the fuscous grey form from the Nilgiris, but in it the lines are pale. Amurland.

13. Genus: **Hepatica** Stgr.

Tongue slender; palpi porrect upwards, thrice the length of head, the second segment smooth, the third more than half as long as second; shoulders and thorax crested; abdomen slender, with slight tufts on basal segments. Type *H. anceps* Stgr.

H. anceps Stgr. (52 l). Forewing pale liver colour; in place of the inner line a diffuse oblique darker *anceps*, fascia-form mark from inner margin, which is narrowly black between it and base; outer line brown, outcurved, edged outwardly with white, which is plainest at inner margin, where it is followed by a violet grey patch; submarginal line dark at costa, marked by interrupted spots below; fringe chequered light and dark; hindwing dull light grey, darker terminally; a slight dark cell spot. S. Ussuri district, Amurland.

14. Genus: **Gelastocera** Btlr.

Tongue present; frons smooth; palpi upcurved, the second segment long, thickly scaled, the third minute, pointed, porrect; antennae of ♂ bipectinated to just beyond middle; thorax and dorsum smoothly scaled, without crests; legs smooth; forewing with apex subacute, the termen nearly vertical; neuration normal; the areole small, vein 8 anastomosing with stalk of 9, 10. Type *G. exusta* Btlr.

G. exusta Btlr. (= *rubicundula* Wilem.) (52 l). Forewing redbrown somewhat tinged with ochreous, *exusta*, the terminal half flushed with purple, the postmedian area clouded with fuscous; lines dark but indistinct; the subterminal formed of spots; a faint dark annulus at end of cell; fringe purplish red; hindwing whitish suffused with brownish; the termen and fringe, except near anal angle, purplish red. Japan.

G. ochroleucana Stgr. (52 n). Forewing ochreous tinged with rufous, in the terminal half suffused *ochroleucana*, with purplish; lines brown, indistinct; a brownish dot in middle of cell and ill-defined fuscous lunule on discocellular; subterminal line punctiform; hindwing ochreous white, terminal area brownish, with some purple above vein 2 to apex. Amurland and Corea.

15. Genus: **Churia** Moore.

Tongue well developed; frons smooth; palpi upturned, the second segment roughly scaled, the third erect, smooth, as long as second; antennae of ♂ ciliated; thorax thickly clothed with scales, and like the abdomen smooth, without crests; forewing with the apex blunt and squared, the termen evenly curved; vein 9 from 10 anastomosing with 8, forming a long areole; retinaculum of ♂ bar-shaped. Type *C. nigrisigna* Moore. A small Indian genus of dull-coloured slightly marked species, one of which occurs in Kashmir.

C. ocellata Btlr. (52 l). Forewing dull grey brown with slight dark dusting; an inner and outer dark *ocellata*, spot on costa, from each of which a faintly darker line can be traced running across wing; subterminal line faintly denoted by small black spots; a round grey spot at end of cell; fringe concolorous; hindwing pale grey, darker along termen; the fringe whitish. There are 2 ♀♀ of this species in the Tring Museum from the Gooch Valley, Kashmir; otherwise it is known only from the Punjab and Assam in N. India.

16. Genus: **Kerala** Moore.

Tongue present; frons smooth, with a tuft of hair at top; palpi upturned, closely scaled, the third segment short; antennae of ♂ ciliated, with a ridge of scales between their bases; thorax and abdomen smoothly scaled, without crests; tibiae smooth; forewing elongate; the apex rectangular; termen not crenulate, slightly excised towards tornus; small tufts of raised scales at the places of the orbicular and reniform stigmata; hindwing with veins 3, 4 stalked; 6, 7 stalked; 7, 8 anastomosing to near middle of cell; both surfaces in ♂ clothed with androconia except along margins; the retinaculum of ♂ a tuft of hair from below median vein. Type *K. punctilineata* Moore.

K. decipiens Btlr. (= *macroptera* Oberth.) (52 n). Forewing pale grey green; the cell and subcostal *decipiens*.

area beyond diffusely filled with dull greenish brown; a sinuous band of the same colour beyond outer line, running into apex; the veins and folds dotted with dark; the costa marked with larger and irregular spots; subbasal and inner dark lines both bent in submedian fold, the latter thicker and more evident; outer line fine and blackish, irregularly crenulate; the brown band beyond it succeeded by a narrower band of the pale ground colour, outwardly limited by an irregular row of black lunules, those below vein 3 merely outlined in black; termen somewhat tinged with brown, especially at anal angle; terminal line fine, blackish; fringe pale grey; a black, slightly crescentic, streak on discocellular, edged with pale scales; hindwing dull whitish, terminally greyish, especially towards apex. Nearest to *K. multipunctata* Moore from N. India, the ground colour rather paler. Occurs in Japan and W. China; also in Mongolia and Amurland, whence OBERTHÜR's type of *macroptera*.

grisea. **K. grisea** Hmps. (521, m). Forewing olive green; the costal half of wing and the area beyond outer line purplish; inner line dark, thick, oblique to submedian fold, then bent inwards; an oblique blackish streak below vein 2 at base; outer line blackish, oblique and waved to submedian fold, bent outwards above inner margin; subterminal line oblique, black, dentate, defining the outer edge of the purplish shade; terminal black spots, the tufts of scales at middle and end of cell white; hindwing with the patch of androconia in ♂ rufous and more prominent; in ♀ grey, darker along termen. Yatong, Tibet; also from the Naga Hills, Assam.

17. Genus: **Macrochthonia** Btlr.

Tongue present; frons smooth, with a tuft of hair at top; palpi obliquely porrect, smoothly scaled antennae of ♂ bipectinate, of ♀ eiliated; thorax with triangular ridgelike crest; forewing with costa curved, apex bluntly falcate; veins 7, 8 stalked; 9, 10 stalked, 9 anastomosing with 8 to form the areole; the retinaculum a tuft of hair below median vein; wings smoothly scaled, the forewing with irregularly oblique markings. Type *M. fervens* Btlr., the sole species of the genus.

fervens. **M. fervens** Btlr. (= *falcata* Graes., *pyrausta* Graes.) (521). Forewing brown or grey brown, paler, more ochreous, in the ♂; lines dark; subbasal line obliquely curved inwards to base of inner margin; inner line oblique, not reaching below median vein; median shade oblique, diffuse; outer line eurved, eoneave outwards, to 7, then obliquely eurved inwards; space between it and median shade darker; subterminal from before apex to anal angle, marked by spots, followed by an olive shade below vein 6; some dark spots along termen; fringe eoneolourous; hindwing fuscous grey in ♀, sometimes with a tinge of reddish; pale luteous or greyish white in ♂. Japan and Central China; GRAESER's types from Amurland.

18. Genus: **Microxestis** Hmps.

Tongue developed; frons smooth; palpi upcurved in front of face; the second segment well scaled, the third smooth and short; antennae of ♂ shortly eiliated; thorax and abdomen smoothly scaled, without crests; forewing with costa and termen evenly eurved, the inner margin lobed at middle and bearing a tooth of scales; vein 7 from upper angle of cell, 6 from below it; 7, 8, 9 stalked; no areole; hindwing with costal anastomosing with subeostal to middle of cell; veins 3, 4 stalked. Type *M. wutzdorffi* Püng.

wutzdorffi. **M. wutzdorffi** Püng. Forewing rufous ochreous; the markings all obscure; inner line shown by a faint pale oblique mark; outer line rufous, slender, bent outwards below costa, inangled beyond cell, and incurved below vein 4; an angled rufous median shade; a black dot at end of cell; a small whitish subapical spot with a black dot on its outer edge; hindwing white, the termen slightly rufous. Known only from Palestine; a small species.

19. Genus: **Arcyophora** Guen.

Tongue present; frons smooth; palpi upcurved, smooth and slender, the third segment short; antennae of ♂ typically subserrate, with fascicles of cilia; thorax and abdomen smoothly scaled, without crests; tibiae simple; forewing with costa straight, apex prominent, termen well curved; the inner margin lobed, and with tuft of hair scales near base and at outer angle. Type *A. longivalvis* Guen. from Africa. One species only from the Palaearctic region.

dentula. **A. dentula** Led. (= *innubila* Swinh.). Forewing pale ochreous, faintly grey tinged; the lines pale, conversely grey edged; the inner line curved, not straight; subterminal faint, macular; hindwing dull white, greyer towards termen; **angulifera** Moore is a somewhat greyer form, but not confined to the ♂♂. The type of *angulifera* from the N. W. Himalayas, of *innubila* from Mhow; LEDERER's *dentula* from Persia and Syria.

20. Genus: **Acontia** Ochs.

Tongue present; frons smooth, with a sharp tuft of hairs; palpi obliquely ascending or erect in front

of frons, finely scaled, the third segment half as long as second, bluntly cut off at apex; antennae of ♂ subserrate, pubescent; thorax and abdomen smoothly scaled; forewing ample, the termen rounded, smooth, in the ♂ with a tendency to be excised above anal angle; in forewing veins 7, 8 and 9, 10 are stalked. Larva with only 4 pairs of abdominal prolegs, elongate, uniformly slender, with a few hairs, feeding up in autumn on species of *Malva* and *Lavatera*; pupation subterranean. Type *A. malvae* *Esp.* A genus of tropical insects, in Europe found only along the coasts of the Mediterranean.

Sect. I. Forewing of ♂ with termen excised below vein 4; palpi with downcurved hair in front.

Subsect. B. Forewing of ♂ beneath with vein 1 fringed with long upcurved hair from base to middle.

A. transversa *Guen.* (= *migrator* *Walk.*, *flava* *Moore* nec *F.*, *dentalis* *Smith*) (52m). Forewing bright *transversa.* pale yellow, with sparse black dusting; a large brown somewhat diffuse terminal blotch between vein 5 and anal angle, projecting at middle into cell, and continued narrowly to apex, the fringe wholly brown; inner and median lines brown, angled in middle, the inner on the median vein, the median on vein 5, and nearly touching the outer line which is bent above middle; a black spot before apex; hindwing rather deeper yellow, especially towards termen, the fringe brownish; in the ♂ the median nervure is often brown towards base; the termen of forewing is visibly excised above anal angle in the ♂. Larva pale green; subdorsal, lateral, and subspiracular rows of white spots, the subdorsal series having a large yellow spot on each segment. This Indo-Malayan species occurs in Japan, Corea, and China.

Sect. II. Forewing of ♂ with termen evenly curved.

Subsect. A. Palpi of ♂ with downcurved hair in front.

A. malvae *Esp.* (= *stramen* *Guen.*, *imparata* *Walk.*, *impellens* *Walk.*, *inefficiens* *Walk.*) (52m). Forewing *malvae.* whitish tinged with pale yellow, with a brown flush towards termen, more especially in the ♀; lines brown, thickened on costa; inner oblique outwards, kinked in cell; median angled on vein 5, indented on submedian fold; outer and submarginal below vein 6 parallel and close together; a dark line close before termen marked with black brown spots below middle; fringe brownish; ♂ with an oblique brown reniform stigma, sometimes with pale centre, before median line; hindwing white, towards termen tinged with yellowish or brownish, especially in ♀. Larva pale yellow; dorsal and subdorsal lines fine and distinct; oblique dark orange streaks on segments 2 and 3, orange yellow spots on the hinder segments, edged with black; lateral line black, interrupted and marked with orange; head brown marked with black; feet orange. (Another form is described as green with white lateral stripes, swollen into triangles over the fore feet: the head grey green). Feeds in autumn on *Malva moschata*, and *Lavatera olbia*. Spain, Sicily, Italy, Dalmatia, Algeria, Syria, and through India and the East to Australia. European examples are less highly coloured than Eastern specimens.

Subsect. B. Palpi of ♂ smoothly scaled.

A. graellsii *Feisth.* (= *innocens* *Walk.*, *fimbriata* *Walk.*) (52m). Forewing bright pale yellow; the *graellsii.* outer lines only indicated by brown spots below costa; a diffuse brown wisp from before end of cell to termen below apex; fringe broad, iron grey, beyond a brown terminal line, which colour often runs shortly along the veins; the whole wing is sparsely dusted with black atoms; hindwing iridescent white, the termen in the ♀, the fringe only in the ♂, tinged with brownish yellow. Larva dorsally green with reddish or reddish yellow tinge or wholly reddish yellow; dorsal line broad, yellowish white; tubercles black; interrupted black lines and oblique streaks along dorsum; reddish or green patches along sides; on species of *Lavatera*. Found on the coast of S. France and Spain, and recorded from Central China.

Subfamily *Catocalinae*.

This Subfamily belongs to the second great group included in the Family *Noctuidae*, in which vein 5 of the hindwing is strong and fully developed, closely approximated to the lower angle of cell, and forms part of Guenée's second subdivision, the *Quadrifidae*. Its positive characteristic is the possession of spines on the mid tibiae; the fore or hind tibiae also, sometimes both, are likewise spined; by this it is at once distinguished from the other large subfamily, the *Noctuinae*, in which the tibiae are without spines. The eyes are large and naked, without overhanging cilia as in the *Plusianae*; but in a few small day-flying species the eyes are small and compressed. The species are generally of large size and strongly built; as a rule they are more numerous in tropical climates; the genus *Catocala*, however, is an exception, for, while comparatively few in the tropics, they abound in the Palaearctic regions.

1. Genus: **Mormonia** Hbn.

Tongue strongly developed; frons smooth; palpi upturned, the second segment roughly scaled, the terminal short and blunt; antennae of ♂ almost simple; thorax smooth; abdomen with slight crests on proximal segments; middle tibiae strongly spinose; hind tibiae with finer spines; forewings large, triangular, the termen crenulate; coloured in imitation of the grey lichen-clad tree trunks on which the insects rest in form of a triangle, the grey forewings covering the more brightly coloured hindwings, generally with black median and terminal bands. Larvae also protectively coloured, grey or greenish with slight humps, to resemble the bark of tree trunks and shrubs; somewhat flattened in shape, with lateral series of fine fleshy filaments; pupa in a slight cocoon among leaves and rubbish, covered with a purplish bloom; feeding in spring on various trees and shrubs; the imago emerges in autumn. Type: *M. epione* from America.

* The first 6 species have the hindwings red.

- dilecta.* **M. dilecta** Hbn. (54a). Larger and more uniformly coloured than *sponsa*. Forewing brownish fuscous, shaded with darker and sprinkled with whitish scales; inner line double, black, oblique, forming a prominent tooth on submedian fold nearly touching the oval black-ringed pale spot beneath reniform; the reniform stigma with an internal lunule edged with whitish scales and preceded by a paler patch in cell, often yellowish-tinged; outer line double, black, forming two very prominent thick teeth on each side of vein 5; submarginal line pale, zigzag, edged on both sides with blackish; a row of black pale-edged dashes just before termen; hindwing crimson, with a narrow black median band outwardly angled above vein 5 and outwardly curved on submedian fold; the terminal border broadly black, its inner edge running parallel to median band; fringe chequered black and white; — the ab. **obscurata** Spul. is a rare form from S. France, in which the whole median area, as far as the pale submarginal line, is filled with brownish black, the terminal area beyond it paler; — ab. *olivescens.* **olivescens** ab. nov. (54a) is uniform dark olive grey grizzled with pale grey, without any dark or light variegation; the lines and stigmata all slightly marked; in the Algerian form, subsp. **powelli** Oberth. (54a) the red of the hindwing is a much intenser crimson than in the European *dilecta* except those from Spain and *powelli.* Sicily; the forewings, as a rule, are somewhat paler and not so strongly marked; in the ab. **dayremi** Oberth. (54a) the whole forewing, as far as the pale subterminal line, is filled up with smoky black or brownish, obscuring the markings, the terminal area remaining grey; the dark suffusion is strongest in the ♂♂; this form corresponds to the ab. *obscurata* Spul. from S. France; the median band of hindwing varies in thickness. Larva grey mixed with green, finely dotted with whitish or flesh colour; the dorsal line double, widened on each segment; the swelling on segment 9 yellowish; shaded on both sides right down to the feet with blackish; head pale brown with black streaks; feeding in spring on young oak trees. Occurs in S. Europe, Germany, Switzerland, the Tyrol, Austria, Hungary, the Bukowina, Spain, S. France, Italy, Sardinia, and Greece; also in Armenia and the Taurus Mts., and in Algeria.
- dula.* **M. dula** Brem. (54b). Forewing like *dilecta*, either with the pale tints much developed, chiefly in median area, at costa on each side of the median shade and above inner margin, as in the ab. *fasciata* of *sponsa* L., or else with the pale markings overlaid with olive fuscous and the whole wing more uniformly dark, the spot below the reniform generally dull yellowish grey instead of white; hindwing coppery red, with the base and inner margin diffusely olive fuscous; underside of forewing with the white bands broad and concise, of hindwing with the bands in costal half of wing broadly white, the base bluish grey. Restricted to the Ussuri district, Amurland and Japan. The dark examples are typical; the pale forms, most strongly *albimedia.* marked in the ♀♀, may be separated as ab. **albimedia** ab. nov. (54b).
- sponsa.* **M. sponsa** L. (54b). Somewhat smaller and paler than *dilecta*; generally with a pale fulvous tint below middle in the space between outer and submarginal lines; the lunule between veins 3 and 4 nearly always paler; the pale outline of the reniform stigma, the whitish spot preceding it, and the white spot beneath it often conspicuous; but both of these spots may be of the ground colour or yellowish, as well as white; *rejecta.* hindwing with the inner margin not darkened; the red ground colour not so deep; — the form **rejecta** Fisch.-Wald. (54b) besides being smaller in point of size, has the hindwing clouded with fuscous in basal area; the median band thickened, and the red band following it much narrower than usual; the terminal border brownish black, and the red ground dull pink; to judge from the appearance only, this might well be a distinct species; — examples in which the median space between inner and outer lines is prominently paler grey than the other *fasciata.* *desponsa.* areas are separated by SPULER as ab. **fasciata** (54b); — in ab. **desponsa** Schultz the red of hindwing is either wholly yellow or partially changed to that colour; but examples of such change in this species are much *florida.* rarer than in *nupta* and *elocata*. — in ab. **florida** Schultz, which must come very near to *fasciata* Spul., the

median area and terminal area beyond subterminal line are whitish grey, while the basal area and space between outer line and subterminal are pale brown; — ab. *grisea* *ab. nov.* (54b), (a ♀ of which is in the Tring-Museum from Uralsk, sent by M. BARTEL), is entirely dark grey grizzled with pale grey, without any brown or fulvous tints, the lines black; — subsp. *laeta* *Oberth.* (54c), from Algeria, is brighter than S. European examples, the median area at each end dusted with whitish, the subterminal line whitish, and the annulus of the reniform and the spots before and below it white. — Larva grey brown or red brown, finely dark dotted; dorsal tubercles reddish; the hump on segment 9 prominent, with an oval yellow transverse marking edged with black; the hump on segment 12 also strong, with the two hind tubercles on it developed into brown points; head grey with black streaks; feeding on oak in early summer. Generally distributed in Europe; also found in Asia Minor and Algeria.

M. mesopotamica *Kusenov* (= *hetaera* *Stgr.* part, *aspasia* *Stgr.* praeocc., *staudingeri* *Beutenm.*). Forewing olive grey brown; the lines black; the outer with two not very prominent teeth at vein 5; reniform stigma brown with grey annulus on outer side, touching a dark costal mark, followed by a second, with slight whitish spots before it on and below median vein; a small whitish spot below end of cell; subterminal line dentate, preceded by a pale grey shade; hindwing crimson; median band straight from costa to submedian fold, swollen, then angled and fine to anal angle; terminal border broad at costa, tapering to tornus, its inner edge evenly curved and dentate lunulate; fringe white. Mardin, Syria. *mesopotamica.*

M. abamita *Brem. and Grey* (= *scortum* *Christ.* (63a). Forewing rufous grey flushed with greenish; inner line represented by a broad black band from base of costa to just below inner edge of reniform stigma, with slight projecting points on its lower edge on veins 2 and 3, and one on its upper edge; a dark horizontal shade above anal angle; outer line black in upper half, running obliquely outwards, and forming two long teeth above and below vein 5, then obscurely lunulate dentate and incurved, and forming an acute black angle outwards on submedian fold; subterminal line pale, lunulate, with dark rufous edges; reniform stigma pale yellowish, with black outline ringed with white; the spot beneath it luteous grey; hindwing orange red; median band broad above, angled outwards on submedian fold, then narrow to vein 1; terminal border uniformly broad, cutting off a large yellow patch at apex and yellow lunules in the intervals along termen between veins 2 and 6, the band itself generally interrupted in submedian interval; fringe yellow. Occurs in the S. Ussuri district, Amurland. Distinguished at once by the black basal bar. *abamita.*

M. scortorum *Leech.* Larger and darker than *abamita*; the hindwing with broader black bands. Ta-tsien-lu, W. China. *scortorum.*

** The following species have yellow hindwings.

M. neonympha *Esp.* (54c). Forewing dark ashy grey speckled with darker; a brown line before inner line and a brown shade beyond outer; inner line black, inwardly dentate on veins, outwardly curved between; outer line black, obliquely curved outwards from subcostal to tooth above vein 5, then regularly dentate and deeply insinuate to below reniform; reniform with a brown dark-edged lunule at centre outlined with grey; a darker grey shade beyond and below it; a pale space with dentate outer edge represents the subterminal line; hindwing bright clear yellow, with a slightly curved median black band ending abruptly at vein 1 and constricted above and below middle, and a broad black terminal border, widely interrupted across submedian interspace, and containing a small yellow patch at apex; — specimens from Central Asia, Sanka, Tian-shan Mts., Ketmen Tjube, Sussamyr Mts., also some from Uralsk, subsp. *variegata* *subsp. nov.* (54c), are much more variegated, the ground colour being quite pale grey, showing in a broad fascia beyond inner line reaching to below middle, in a costal patch before outer line, and in the submarginal space beyond it; the base, the median shade, and the termen remaining dark grey; in the hindwing the yellow is paler; — in ab. *cohaerens* *Schultz* the black border of hindwing is not broken, but confluent with the anal blotch. Larva dark dirty green, the venter paler; a pale yellow lateral stripe, finely black-edged; sides of dorsum down to the spiracles thickly dusted with black atoms; dorsal line bluish; spiracles white, ringed with black; head very small, pale brownish yellow; feeding on *Glycyrrhiza*. In Europe found only in S. E. Russia; in Asia in Armenia, Kurdistan, Mesopotamia, Transcaspiä, the Altai Mts., the Issyk-Kul district, Ferghana, and Samarcand. *neonympha.*

M. bella *Btlr.* (54f). Forewing dull dark grey with more or less of a brown tint; dusted with pale grey along costa, beyond inner line, along outer line, and throughout subterminal line; inner and outer lines finely black; the inner dentate basewards on veins and irregularly protuberant between them; outer line twice angulated on subcostal, forming a sharp tooth outwards above, and a slighter one below vein 5, those below broader and more rounded, that on submedian fold large; submarginal line lunulate, pale grey edged with darker; reniform stigma indistinct, a dark lunule with paler grey edging; the spot below it pale grey, black-edged, triangular in shape; hindwing yellow, with a broad black median band, narrower on vein 5 and ending *bella.*

on submedian fold; the base and inner margin smoky fuscous; terminal border broadly black, its inner edge evenly sinuous: a very small yellowish space at apex; fringe white; — *serenides* *Stgr.* (54f) differs in having the forewing dark without the paler grey shadings; the hindwing with median band narrower and more concisely edged, the yellow between the two bands broader and clearer; the pale patch at apex larger. Larva (of *serenides*), according to Graeser feeding on *Pyrus*. The type form *bella* from Japan; italics *serenides* from the Ussuri district, Amurland.

2. Genus: **Catocala** *Schrank*.

Differs from *Mormonia* in the spines of hind tibiae being restricted to the space between the two pairs of spurs, not extending the whole length of the tibia. Type *C. fraxini* *L.*

* Ground colour of hindwing bluish.

fraxini. **C. fraxini** *L.* (54d). Forewing whitish ochreous, irrorated with pale or dark grey, sometimes with a yellow tinge; inner and outer lines blackish, dentate, double; median and subterminal lines blackish, dentate; reniform stigma with black centre and outline; beneath it a pale yellowish diamond-shaped spot outlined with dark; hindwing blackish, with a broad blue postmedian band. — ab. *moerens* *Fuchs* (54d) has the forewing more or less strongly suffused throughout with blackish grey, obscuring the markings; — the form *gaudens* *Stgr.* (54d) on the other hand, from Central Asia, is very pale, with most of the black scaling obsolete; — in the ab. *contigua* *Schultz* (54e) the pale spot below the reniform stigma is elongated outwards to touch the outer line, often, as well as the outer line itself, strongly yellow-tinged, especially noticeable in examples with the ground colour dark; — *angustata* *Schultz* is distinguished by the narrowness of the blue band of the hindwing; — the ab. *maculata* *Kusenov* shows a white mark at the lower angle of cell of hindwing. *SCHULTZ* also records an instance of albinism in the forewings, where the grey scales throughout have become white, and the black lines brownish yellow, the hindwings remaining unaltered. Larva brownish grey, black-speckled, with pointed prominences on segments 9 and 12; feeding on Ash and Poplar. The species occurs throughout Central Europe, in C. Italy, Scandinavia, and Britain; in Armenia, W. Siberia, Amurland, and Japan.

** Ground colour of hindwing white.

lara. **C. lara** *Brem.* (54e). Forewing whitish, suffused and thickly dusted with dark grey, the pale ground colour appearing only as an oblique band from costa to below median vein beyond inner line, and again as a diffuse band from costa to vein 2 along the course of outer line; these two lines black, conversely edged with grey: the former oblique to submedian fold, and excurved above and below vein 1; the latter acutely angled outwards above and below vein 5, then incurved and lunulate dentate; the submarginal line dark grey, near and parallel to the outer line; a black streak connects the two lines above vein 2; an indistinct blackish lunule on the discocellular; veins towards termen dark; a row of blackish submarginal lunules between the veins: hindwing black with a curved whitish outer band; the apex and fringe white; underside white; the forewing with two broad bands and the outer border black, the hindwing with a narrow curved median band and broader terminal border black; a pale form from Japan, with very little dark suffusion, may be distinguished as ab. *pallida* *ab. nov.* An Eastern species, found only in Amurland, Japan, and Corea. In both sexes the Japanese form seems to run decidedly larger than the Amurland.

*** The following species have the ground colour of hindwing red.

nupta. **C. nupta** *L.* (55a). Forewing pale grey powdered with darker grey, sometimes with dark grey banded suffusion, and in some cases yellowish-tinged; sometimes the cellspace before reniform coalescent with the spot below reniform, and a space along outer line, before it above middle and beyond it below, are all whitish: inner and outer lines double, black and grey; the outer line less oblique below middle and forming two more conspicuous angles on each side of vein 2, the lower one double, then deeply indented along vein 1 median shade generally clear and produced squarely outwards beyond the reniform, which has a thick black central lunule, a curved black inner edge, and a tridentate outer one; subterminal line pale and dark grey, the paler inner portion sometimes whitish; hindwing crimson with a central black band bent on vein 5, and a thick black terminal border, the inner edge of which is waved towards abdominal margin; — in the form *concupina.* **C. concubina** *Hbn.* (55a) the red of the hindwing is brighter and the black median band more developed, being broader throughout and continued to inner margin; the lines of forewing blacker and the pale areas generally more developed; the subsp. *nuptialis* *Stgr.*, from Tibet (Ili, Issyk-kul, Ala Tan) and the Altai Mts., has the forewing paler, more gaily marked, the submarginal line white, sharply edged with black; — the subsp. *obscurata.* **C. obscurata** *Oberth.*, from Amurland and Askold Island, is a much blacker form than the average European

examples, though specimens from several localities in Europe are also dark; — ab. **coerulescens** Cockerell, *coerulescens*. named from a single example taken in Essex, has the hindwing blue instead of red; — ab. **brunnescens** ab. *brunnescens*. *nov.* (55b). represented by 3 rather small ♂♂ captured in the neighbourhood of London, has the hindwing dark olive brown; — in the ab. **languescens** ab. *nov.* (55a) the hindwing is yellowish white with a faint pink flush; a fine example of this, but without locality label, exists in the FELDER Collection, and a similar one is recorded by Mr. TURR in British Noctuae, Vol. IV, p. 50; like other species with red hindwings *nupta* has an aberration in which that colour is supplanted by yellow, ab. **flava** Schultz, to which intermediate forms occur with the red only partially changed to yellow, or yellow only in one hindwing; — in ab. **mutilata** Schultz the black central band of hindwing is abbreviated and becomes obsolete a little below costa; — ab. **fida** Schultz differs from typical examples in having between the subterminal line and the termen a conspicuous dentated white line strongly edged with black; this example was from Silesia; — in the ab. **dilutior** Schultz the ground colour is generally paler, either brownish yellow with the dark markings slightly darker, or whitish grey with a faint yellowish intermixture; — ab. **alterata** ab. *nov.* (= ab. 6 *Hmps.*) has the black bands of hindwing altered to grey. — ab. **rubridens** ab. *nov.* (55a) shows the red ground colour of the hindwing running out along veins 2 and 1 in the shape of sharp wedge-shaped teeth, almost interrupting the black median band which is swollen between them into a large horseshoe-shaped blotch; the single example in the Tring Museum is unfortunately without locality; — a strange, probably accidental, aberration from Munich, figured as ab. **confusa** Oberth., has the whole forewing blurred dark grey, with the inner and outer lines and reniform stigma darker but diffuse on a slightly paler median area; the median band of hindwing strongly curved, its outer edge diffuse, and its lower extremity running up narrowly to inner margin towards base; the black terminal border projecting basewards as long narrow teeth along the veins with the red ground colour running up between them. Larva pale or dark grey; only distinguishable from that of *elocata* by the absence of the dark dorsal and lateral bands, which are represented by lines only; feeding on *Salix alba* and *Populus*. Occurs commonly throughout Europe, and through Northern and Central Asia to Amurland and Japan.

C. elocata Esp. (= *nurus* Hbn.) (55b). Forewing grey with a yellowish tinge, thickly irrorated with dark grey or blackish; inner and outer lines blackish, thick, conversely edged with pale grey and a second dark, less marked, line; the inner oblique, waved; the outer dentate below 6; reniform stigma large, with thick blackish lateral margins and paler centre, more or less obscured by a double median shade, which forms often a diffuse fascia across wing; the pale spot beneath it, between veins 2 and 3, very variable in intensity, sometimes pale and conspicuous, but generally obscured; a dark zigzag subterminal line and a row of blackish submarginal spots; hindwing crimson with a broad black terminal border and narrower curved median band, both quite narrow at inner margin; a slight reddish patch at apex on each side of vein 7; fringe whitish; — in the ab. **uxor** Hbn. the forewing is strongly irrorated with blue-grey and yellow; the cross lines paler, olive brownish; — the subsp. **meridionalis** Schultz, from Central Italy, differs from the ordinary European specimens in having the forewing more strongly mixed with yellow, and the basal half greyish white; — in ab. **styx** Koller (= *lais* Schultz, *lugens* Oberth.) the forewing is uniform black brown without markings, the fringe whitish and two spots on the inner margin at the ends of the lines; thorax and dorsum also dark brown; the hindwing normal; on the other hand variations in the hindwing give us ab. **marita** Hbn. (55b) with the ground colour dull yellowish red; — and ab. **flava** Spul. (55b) (= *flavicans* Schultz) with the red changed entirely to yellow; — in ab. **vaga** Spul. the median band is very broad and sometimes united by dark rays along the veins with the terminal border, whereas in **tenuivittata** Schultz (55c) the same band is much attenuated. Larva ashy grey or brownish grey, finely dotted with black, with two broad brown stripes on the sides of the back bearing yellow tubercles; on the 9th segment a narrow yellow transverse streak edged with black; the 12th segment somewhat humped, with two yellowish black-edged transverse curved marks; spiracular line broad, blackish brown, sinuous; head with two blunt points; feeding on *Salix* and *Populus*, especially *P. pyramidalis*. A Central and South European species, but not found in Belgium, Holland, or Britain; it occurs also in Asia Minor, Syria, Transcaspia, and Kurdistan.

C. locata Stgr. Differs from *elocata* in the colour of the hindwing being bright orange red, with the median band quite narrow and sinuous, not reaching the inner margin; the terminal black border either interrupted on submedian fold or narrowly black with the fold across it red. Found only in the region of Ili and Issyk-Kul, and the Sussamyr Mts. in Tibet.

C. afghana Swinh. Intermediate between *elocata* and *locata*, agreeing with *elocata* in the ground colour of hindwings, and with *locata* in the shortened, though thicker, median black band; the forewings are more suffused with dark grey and fuscous, and herein resemble those of *deducta* Ev., which, however, have no admixture of olive scales. SWINHÖE'S type was from Gwal, S. Afghanistan; his other example from Beluchistan; the species also occurs along with *locata* in Transcaspia. Merv. the Tedschen oasis, and Ketmen Tjube in the

Sussamyr Mts.; a specimen from Gennargento, Sardinia does not seem separable. This species is probably only a form of *deducta* Er.

- deducta.* **C. deducta** Er. Closely related to *elocata*, especially the darker, more strongly marked form, but not so large; the forewing grey without yellowish admixture; the markings sharper and more conspicuous; inner half of median area paler, its outer edge straight not waved; the hindwing dull red; the median band, as in *innocens*, *locata*, not attaining inner margin; three aberrations have been named; — ab. **innocens** Spul., with the ground colour of forewings and abdomen cream white. without dusting, only the lines and chief shades represented; — ab. **semividua** Spul., with the outer half of forewing strongly blackened; and ab. **ardens** Spul., with the red ground colour of hindwing brighter. The species occurs in the S. Ural district and in the Altai Mts. in W. Siberia, but is probably more widely spread.
- oberthurii.* **C. oberthurii** Aust. (= *gitana* Mab.) 55 c). Forewing tawny grey dusted with darker; lines and shadings slightly darker, edged with yellower scales; hindwing with the edges of the black bands not dentate, the median of uniform width, curved, and ending gradually before inner margin; — the ab. **transiens** Bang-Haas is darker, more suffused with brown, with the transverse markings, especially the median shade, more prominent. More neatly marked than *elocata*, which species it represents in Spain and Morocco.
- martyrum.* **C. martyrum** Oberth. Forewing dull grey brown, with the markings much as in *elocata*, but very obscurely defined: a slight diffuse brown median shade beyond reniform, touching outer line below middle of wing; the reniform stigma with dark inner edge and pale, somewhat angled, outer edge; hindwing bright red pink with a narrow black curved median band stopping short at the submedian fold, inangled and thickened into a slight blotch on vein 5; terminal border black, broad at costa, narrowing off to anal angle, its inner edge almost uniformly curved; fringe white; underside of forewing white, with a fuscous grey cloud along inner margin from base, a broad black outer band, quadrately thickened above middle, and a broad brown black terminal border; hindwing rosy pink, with the costal third white; bands as above; a slight black discal lunule; head and thorax grey brown; abdomen pale grey. This description is made from OBERTHUR's figure of (apparently) a ♀, taken at Ta-tsién-lu, W. China.
- repudiata.* **C. repudiata** Stgr. Resembles *nupta* in forewing, but more like *puerpera* in the hindwing; forewing pale ash grey, almost uniformly finely sprinkled with blackish: the markings more obscure than in *nupta*, without the brownish-tinted bands of that species; outer line with a more acute biangulation on vein 5; a faint whitish spot below the reniform stigma; hindwing paler red, as in *puerpera*, with which it also agrees best in the black markings, but the black terminal border is complete, not interrupted on submedian fold. Recorded from Turkestan: Ili, Issyk-Kul, and the Kuldja district.
- neglecta.* **C. neglecta** Stgr. (55 e). Somewhat smaller than *repudiata*, to which it is most nearly allied; with more whitish admixture and clearer markings; inner line oblique, but variable in dentation; outer forming two angles on vein 5, of which the lower is much less prominent than the upper; the spot under reniform round and whitish: area in cell before reniform whitish, dusted with dark scales; a row of black subterminal spots; hindwing dull red, as in *repudiata*; median band narrower, reaching further downwards, more pointedly curved inwards at end; the black terminal border interrupted on submedian fold. From Ili and Issyk-Kul, Turkestan.
- concupia.* **C. concupia** Walk. Differs from *elocata* in the head; thorax, and forewing being grey instead of brown; in the forewing the outer line is more irregularly dentate, emitting a deep sinus inwards to below reniform; hindwing purer crimson, without any orange tint. On the underside the white areas of the forewing are broader, and in the hindwing the white between the median and marginal bands runs down to vein 3. Originally described from N. India, but recorded by LEECH from Ta-tsién-lu and Kwei-chow, W. China.
- adultera.* **C. adultera** Mén. (55 d). Forewing blue grey, densely sprinkled with black scales; the space in cell before reniform stigma, the spot below reniform, the area preceding outer line above vein 5 and that following it below the same vein, white with an orange tinge and sprinkled with black; inner line double, waved, filled in with pale blue grey; outer line black, double, filled in with blue grey, the tooth below vein 6 larger, the spot below reniform, formed by the intrusion of the outer line, itself more reniform; a dark blue grey diffused shade across the reniform, which is large, with a curved black edge inwardly, a dark central lunule, and an exterior dentate edge followed by black scales; subterminal line whitish, lunulate, followed by bluish black lunules; a row of black lunules before termen; hindwing dark orange red with a broad black terminal border and a broad curved median band, reaching inner margin, its inside edge regularly rounded; fringe white, with black scales on both folds. Found in European Russia, in the Altai and Changhai Mts. of Siberia, and in the

Ussuri district, Amurland. There are two forms of this species, as Ménètries himself remarks; a dark form, typical, from the neighbourhood of St. Petersburg, and a paler and larger form with the markings more distinct, from Archangel, for which I propose the name *diluta ab. nov.* (55d); the same contrast is seen in the examples from other localities. *diluta.*

C. puerpera *Giorn.* (= *pellea* *Hbn.*, *amasia* *Esp.*) (55c). Forewing grey dusted with darker, often with a slight brownish undertone; inner and outer lines blackish, conversely edged with pale grey and then again with dark, the lines really being double; the inner forming three outward curves; the outer lunulate dentate, angled above vein 5, running in above vein 2 and forming a pale space below reniform; this is obscure, with a curved black inner and dentate outer edge, containing a black lunule at centre; shade beyond outer line darker at each end; subterminal line lunulate dentate, dark grey; a row of black spots before termen; hindwing dull pale reddish, with a black irregularly edged median band stopping short at vein 1, and a broad black terminal border containing a pink blotch at apex from vein 8 to 6, and partially or wholly interrupted on submedian fold; in the browner specimens small red spots appear on the termen in the interspaces between veins 2 and 5; — in the subsp. **orientalis** *Stgr.* (55c) from the Ural and Altai Mts. and other Eastern localities the forewing is darker and the whole insect smaller; the red spot at apex of hindwing not so large and the median band generally broader: — subsp. **pudica** *Moore* (= *pallida* *Alph.*) (55d), from Tibet: — Ladak, Ili, Issyk-Kul, Korla, Lobnor — is large and pale, the red of hindwing ampler; and the subsp. **rosea** *Aust.* from Morocco has the forewings rosy grey, less strongly marked than in typical continental examples; — the ab. **genetrix** *Schultz* (55d), has the black terminal band of hindwing unbroken, as often seen in the dark forms of *orientalis*; — examples from Beirut, Syria, larger than the average, have been given the name subsp. **syriaca** *Schultz*; from the form *pudica* *Moore*, which is also large, they may be distinguished by the deeper coloration of the forewing and the stronger black costal markings at the commencement of the lines; the red ground colour of the hindwing is equally ample; — subsp. **tarbagata** *Schultz*, from the Tarbagatai district, is described as being intermediate between the type form and subsp. *orientalis* *Stgr.*; subsp. **romana** *Schultz*, from the Italian Campagna, has the hindwing deep yellowish red in ground colour with the black bands more intense and concisely outlined; the forewing also more strongly mixed with yellowish and more clearly marked; in the ab. **fecunda** *Schultz* the dark transverse lines of the forewing are wanting, but the large reniform stigma and the black terminal spots are prominently conspicuous; — ab. **brunnescens** *Schultz* has the ground colour of the hindwing strongly tinged with brown, and the forewing darker, iron grey; — in ab. **senescens** *Schultz* the hindwing is almost whitish in ground colour; while in ab. **demaculata** *Schultz* the pale spot, which is present at the apex of hindwings in typical specimens, is wholly obliterated, owing to the denser scaling of the terminal band; lastly, the ab. **munda** *ab. nov.* (55d), represented by a ♀ from Uralsk in the Tring Museum, has the ground colour of forewing uniform luteous drab, without a particle of dark dusting, but with the lines and shades well marked. Larva very variable, ranging from whitish grey to black brown; dorsal line broad, dark, black-edged, often broken up into blotches; a strongly waved, black-edged, lateral band formed of several parallel lines; no hump on segment 9, and only two deep black marks on segment 12; feeds on young shoots of Poplar bushes and *Salix helix*, hiding on the ground by day. The species occurs throughout S. Europe, in Asia Minor, Syria, Armenia, Persia, Turania, Tibet, the Ural and Altai Mts., and in Morocco and Algeria. *puerpera.*
orientalis.
pudica.
rosea.
genetrix.
syriaca.
tarbagata.
romana.
fecunda.
brunnescens.
senescens.
demaculata.
munda.

In addition to the above quoted forms OBERTHÜR has proposed names for six additional aberrations, two from the South of France and four from South Oran; of the former ab. **powelli** *Oberth.*, from Entrevaux, has the forewing grey; the inner and outer lines and the reniform stigma alone dark and plainly marked; the other shadings obsolete; the hindwing very pale pinkish with the usual markings; — while in ab. **couleti** *Oberth.* the forewing is pale lavender grey blotched and dappled with cream colour, especially in, below, and beyond cell, in the space before subterminal line, and at apex; the hindwing rosy pink; this example was from Digne in the Basses Alpes; — of the African forms ab. **murina** *Oberth.* has brownish grey forewings, and ab. **roseosignata** *Oberth.* rosy grey, both with the markings strong; — ab. **argillacea** *Oberth.* with the forewings luteous ochreous, and ab. **modesta** *Oberth.* dark grey, with the hindwings paler, rosy orange, the two last both with the markings less distinct. *powelli.*
couleti.
murina.
roseosignata.
argillacea.
modesta.

C. electa *Bkh.* (= *pacta* *Esp.* nec *L.*) (55e). Forewing pale grey dusted with darker; a dark grey, often brownish tinted band beyond outer line and along termen: inner and outer lines double, conversely black and dark grey, less distinctly marked below middle; the inner dentate inwards, the outer outwards with a pair of more prominent teeth on each fold; the outer running inwards above vein 2 and forming an oblong pale blotch below reniform; this is inwardly black and curved, outwardly dentate, containing a brownish lunule, outlined, especially externally, with pale grey; submarginal line dentate, light and dark grey, joined by an oblique dark shade from below apex; median shade distinct at costa, diffuse beyond reniform; hindwing crimson, with a sinuous median band ending on vein 1 and the broad marginal border black; fringe white; — the ab. **meridionalis** *Spul.* (= *suffusa* *Gillm.*) (55f), from more southern localities, is larger, more shaded with dark grey brown, especially along inner margin; — ab. **nigra** *Spul.* is a rare form with blackish brown forewing, *electa.*
meridionalis.
nigra.

the lines whitish or yellowish, the fringe of forewing, the base, and the thorax either pale or blackish; — the ab. **lugdunensis** Mill. (= flava Spul.) has the red of hindwing changed to yellow; — ab. **excellens** Schultz shows the hindwings wholly black, the two usual black bands merely appearing deeper black; Chinese and Japanese examples. — subsp. **zalmunna** Btlr. (55 e) are larger than European, with the markings in lower half of forewing less distinct, and the lunule in the reniform stigma more conspicuously brown; the ground colour ranging from the ordinary pale silvery grey through ochreous grey to the dark grey Gensan and Amur examples, for which latter SCHULTZ proposes the name subsp. **subtristis** Schultz (55 e), similar dark aberrations to which occur occasionally even among European specimens. Larva pale or dark yellowish grey to yellowish brown, finely black-dotted; tubercles yellow; the hump on segment 9 bright yellow with black outline; that on segment 12 bifid, brownish yellow; spiracles white with dark rings; the lateral fringes of filaments whitish; feeding on Salix. Found in Central Europe (twice only in Britain), in Asia Minor, Amurland, China, Corea, and Japan.

C. promissa. **C. promissa** Esp. (= mneste Hbn.) (56 a). Smaller than *sponsa*; forewing with the ground colour white dusted with pale and dark grey; the costal edge between the lines white; the basal line and streak from base below cell black; the inner line double, black, forming a bluntly rounded projection in submedian interval, generally accompanied by a diffuse black shade forming a band; space between outer and subterminal lines filled in with dark; subterminal line pale grey, zigzag, externally black-edged; median space generally paler grey, especially on costa before reniform and before outer line; reniform with blackish centre and pale grey ring, placed in a diffuse dark median shade, the spot below it generally pale grey distinctly outlined with black; hindwing crimson with broad black terminal border and narrow sinuous median band, not reaching inner margin; the sinuosity of the band varies much, appearing to be greatest in British and Hungarian examples; instances where the band actually reaches inner margin are very rare and confined to dark-suffused ♀♀: — ab. **ochracea** Oberth., from Valais and Silesia, has the hindwing pale yellow ochreous in place of red; — ab. **rosea** Tutt has the dorsum red like the hindwings, as recorded by Guénée; in the ab. **obsoleta** Schultz (56 a) the black bands of the hindwing, instead of being concisely marked, as usual, are diffusely edged and run into the red ground colour, giving the whole wing a dark appearance. Larva bluish grey or greenish grey, with irregularly shaped black marks on the dorsum and sides, varying in intensity; tubercles fine, white; hump on segment 9 surrounded by black, white in middle; that on segment 12 bearing two strong points; head yellow with black marks; venter with a row of black spots; the lateral filamentary processes very strongly developed; feeding on oak and edible chestnut. Occurs, like *sponsa*, throughout Europe; also in Armenia, Asia Minor, and Algeria.

C. hilaris. **C. hilaris** Oberth. (= electra Bang-Haas) (56 a). Forewing chalk white dusted with fuscous and olive scales; the lines black and double, accompanied by yellowish olive scaling; the inner line with its outer arm black and thick above middle, its inner preceded by a blackish fuscous cloud; outer line black followed by a dark brown shade; the subterminal deeply zigzag, blackish filled in with white; reniform stigma a yellow central lunule edged with black, surrounded by a pale ring outlined in black, often followed by a dark cloud; the spot below it rounded triangular, with black outline; median shade black at costa, then olive brown; terminal area slightly greyer; hindwing deep crimson, with a nearly straight median black band, swollen above middle and not produced at end towards inner margin; terminal black border very broad, its inner edge sinuous to vein 2, then narrowed to tornus; fringe white, intersected by dark rays. Algeria. I consider this a quite distinct species from *promissa*.

C. conjuncta. **C. conjuncta** Esp. (= conjuga Hbn.) (56 a). Smaller and generally darker than *promissa*. Forewing with the basal area suffused with olive brown and fuscous; the inner line not projecting on submedian fold, but slightly waved or nearly straight, oblique, followed by a pale fascia across wing from costa to inner margin, beyond which the outer area is suffused with olive brown; subterminal line pale, dentate in middle, edged outwardly with black; a black marginal festooned line; reniform stigma olive brown, with a dark lunule at centre and black outline, the outer edge dentate; the spot beneath it large, fulvous grey, with black outline, generally closed but at times open to the outer area; hindwing dull pale red, with a narrow simply curved black median band, starting from a large black basal blotch on costa and ending before vein 1; terminal border broad, narrowing below vein 2; fringe blackish grey, white at apex; — the ab. **digressa** Th.-Mg. has the hindwing much paler; — in the Algerian form subsp. **vivida** subsp. nov. (56 b) the red of the hindwing is richer and deeper, as in the Algerian forms of *dilecta* Hbn., an aberration of this, — ab. **fulva** ab. nov. shows the ground colour of hindwing dull fulvous instead of crimson. Larva brownish grey, finely dark-dotted, with two faint dorsal stripes formed of brownish atoms, on which stand reddish tubercles; humps on segments 9 and 12 slight, the tubercles on the last swollen and curved backwards; feeding on oak. A south European insect, occurring in Spain, Portugal, S. France, Italy, Greece, and Croatia; in Asia Minor, Lydia, Syria, the Taurus Mts.: also in Algeria.

C. remissa Stgr. (55f). Forewing grey tinged with olive brown, sometimes with a faint purplish sheen; *remissa*. some examples thickly peppered with dark, others quite undusted; inner line oblique, dark brown or blackish, double: outer line black, strongly angulated, as in *electa*, finely pale-edged, then followed by a broad brownish olive band: this is edged externally by the pale grey, zigzag subterminal line; beyond the inner line an oblique pale space from costa before median shade, which is olive brown and diffuse, more or less obscuring the large reniform; this has an oblique black inner edge and a lunulate dentate external one; veins towards termen often black: sometimes traces of a broken black streak oblique from below apex to angle of outer line; the paler spot below reniform rufous-tinged; hindwing dull red, with a narrow black median band, thickened and angled on vein 5 and curved round below, ending before vein 1; terminal border broadly black at apex, its inner edge projecting inwards on veins 2 and 3, with a deep sinus across submedian fold, sometimes reaching fringe; the outer edge of the black border lunulate edged with red, the apex red; fringe white: — the ab. **indecorata** ab. nov. (55f), is grey without any olive brown shading; the inner line hardly marked, the basal *indecorata*. area within it darker grey; of this form there are two examples, both ♂♂, in the Tring Museum, from Merv and "Central Asia" respectively, accompanied by typical examples. Appears restricted to the Transcaspiian region, the Tedschen oasis, Merv, Tura, Kashgar.

C. juncta Stgr. (56b). Forewing very light grey, the markings resembling those of *electa*; inner line *juncta*. black, inwardly light-edged, oblique, subobsolete above inner margin: outer line black, distinct only in upper half beyond reniform stigma, outwardly light-edged, forming more stumpy angles on vein 5 than in *electa*, running up to below reniform, where it seems to end, the usual lower course being indistinct, but bearing a short narrow black-edged grey fleck, not seen in other species; reniform stigma dark, partly pale-edged, its outer margin indented at middle, preceded by a pale space in cell; submarginal line edged externally by a strongly toothed dark line, containing below costa a short black streak and diffuse shade; marginal line formed of very black, nearly contiguous streaks: hindwing dull red; median black band narrow, nearly straight, bent a little at middle and lower end; terminal border below middle twice strongly protuberant inwards, with a deep sinus between the protuberances: a large white patch at apex; fringe white. Recorded only from Ili, Turkestan.

C. timur Bang-Haas (56b). Forewing ash grey dusted with darker grey and brownish, varied with *timur*. faint olive brown before inner line, in a band beyond outer line, and round the reniform; inner line double, oblique, fuscous, filled up with paler, dentate inwards on veins, lunulate outwards between them, followed by a broad pale band from costa which includes the pale spot before reniform and the smaller open one below it; reniform obscure, with curved black inner edge, olive brown centre, and outer edge; the median shade olive brown; outer line black, oblique outwards and angled below vein 6, then oblique and lunulate dentate inwards, forming a sinus below and basewards of reniform, sharply angled outwards on submedian fold, and marked with black on vein 1: the olive brown band beyond it, often faint, is edged by the pale subterminal line, the lunules of which are edged outwardly by hastate blackish marks: a row of dark spots before termen; fringe grey; hindwing pale red, with a narrow black median band, which is angled on vein 5 and rounded on submedian fold; terminal border black, broad at apex, with a sinus on inner edge at middle and on submedian fold: fringe white, the termen marked with red at apex and between veins. Like *optima*, found in Transcaspiia and Turkestan; the two species are easily separable by the course of their outer lines, though otherwise much alike.

C. amabilis Bang-Haas (56b). Forewing larger and greyer than that of *timur*, without any brown tint: *amabilis*. the hindwing deeper red; the terminal border interrupted on submedian fold. Occurs in Transcaspiia and Turkestan.

C. optima Stgr. (56b). Forewing bluish grey, dusted with darker, without any brown or olive shading: *optima*. the inner line more regularly oblique and nearer base than in *timur* Bang-Haas; outer line dark edged with pale, forming a single tooth below vein 6, a minute tooth, much nearer base, below vein 5, then a nearly vertical curve, outwardly concave, to above vein 2, thence running sinuous inwards and upwards, and forming a broader sinus below reniform, a bluntly rounded tooth outwards below vein 2, another below vein 1, and an inward tooth on it; reniform stigma large, grey, the centre dark grey and annulus pale outlined with black; the space round about it blue grey only, never blackish; hindwing with the fringe wholly white, without red flecking. The Tedschen oasis, Transcaspiia, Ili, Turkestan.

C. contemnenda Stgr. (56c). Forewing light brownish grey powdered with darker; inner and outer *contemnenda*. lines black, stronger in ♂ than in ♀; the inner oblique, dentate inwards on the veins; the outer strongly angled outwards on each side of vein 5, then at once running inwards, forming a large open sinus below the reniform, and an outward angle on submedian fold; subterminal line wavy, pale; a brownish shade before inner line and a thicker one beyond outer; reniform stigma with a dark lunule at centre and black outline; hindwing luteous white, faintly tinged with red, more strongly on inner margin; a black median band, nearly straight, but thickened at median vein and curved inwards on submedian fold; a broad blackish terminal border; fringe

white; a slight white spot at apex. Kashgar. A small species, distinguished by the luteous white slightly red-stained hindwings.

- sultana*. **C. sultana** *B.-Huas* (= *optata* *Oberth.* nec *God.*) (56c). Forewing grey with more or less brown admixture; the markings nearly as in *optata*, from which it may always be distinguished by its larger size, broader forewings with more curved costa, and deep crimson hindwings, in which the curved median black band is always broader than in *optata*; the forewings vary a good deal according to the amount of brown admixture and the strength of the dark markings. Occurs in Algeria and Tunisia. The aberration **intermedia** *B.-Huas* (56e), referred by him to *optata*, seems to me, from the shape and coloration of the forewings, referable rather to this present species; it differs from typical *sultana* in its smaller size, in the black median band of hindwing being more bluntly abbreviated, and in the partial obsolescence of the dark markings of forewing, the outer line in particular being obscure below the middle.
- leechi*. **C. leechi** *Hmps.* Forewing pale grey irrorated with darker; inner margin and termen darker; a black streak from base below submedian fold, which remains pale, and a shorter one above it before inner line; inner line oblique, black, starting from a black costal spot, outwardly rounded in submedian interval, and strongly inangled on vein 1; median shade black, oblique at costa; reniform stigma obscure, narrow and vertical, with a dark paler ringed outline; outer line strongly zigzag, forming a long narrow inward sinus to below reniform, bluntly rounded outwards above and below vein 1, on which it is strongly inangled; veins towards termen black: subterminal line pale, very obscure; hindwing pinkish crimson; median black band curved and shouldered on vein 5; terminal border black, narrowing to tornus, its inner edge slightly incurved at vein 2; termen and fringe white, with a pink tinge beyond the black, slightly intersected between veins 6 and 2. Described from 3 ♀♀ from the Goorais Valley, Kashmir.
- optata*. **C. optata** *God.* (= *optabilis* *Hbn.*) (56e). Forewing closely resembling that of *lupina* but larger and longer: the reniform less distinct; hindwing with a uniformly broad curved black median band, ending abruptly at vein 1; the inner edge of the terminal border evenly curved, with a scarcely perceptible sinus in submedian interval; — **amanda** *Bsd.* (56e) is an aberration with the forewing darker, of a yellowish brown tint; — **selecta** *Bsd.* is larger and has the dorsum red like the hindwings, which are also of a much brighter crimson; **flava**. — another form ab. **flava** *Oberth.* from Digne. S. France has the usual red of the hindwing altered to pale yellow. Larva, like that of *lupina*, exceedingly resembling that of *electa*; pale yellowish brown or yellowish grey; the hump on segment 9 bright yellow surrounded with reddish and white at the tip; that on segment 12 anvil-shaped; tubercles on dorsum red ringed with yellow; the lines grey and obscurely marked; feeding on *Salix*. Recorded only from S. France, Spain, and Portugal.
- pacta*. **C. pacta** *L.* (= *pacta-suecica* *Esp.*) (54f). Distinguished from the preceding species by the absence of the black basal streak; forewing pale grey, dusted with dark and flushed with olive brown, except along costal and outer margins; inner line black, strongly curved, inangled on vein 1; outer line black, with less acute teeth than in *optata*, bluntly angled inwards on vein 1; submarginal line rarely plain; reniform stigma containing a brown lunule ringed with pale, edged with black internally only; below it a large grey somewhat irregularly shaped spot edged with black; hindwing exactly like that of *optata*; abdomen with dorsum in middle red like hindwings; — in the ab. **discolor** *Schultz* (54f) the hindwings and dorsum assume a dull yellowish red tint; in a ♀ from Minsk in the Tring Museum, (ab. **cretacea** ab. *nov.*) (54f) the forewing is chalk white, the lines and shading pale grey brown. Larva ashy grey or reddish grey, slightly puckered at the sides; on the back of each segment a faint M-shaped mark, often obsolete; tubercles yellow; hump on segment 9 blackish or red brown sometimes tipped with orange; that on segment 12 with two pointed black brown tubercles; spiracles white, outlined with black; the lateral filaments short and grey; feeds on sallows and willows in moorland districts. Found in S. Scandinavia, N. Germany, Russia, the Ural and Altai Mts., Central Asia, Tibet, and Amurland.
- desiderata*. **C. desiderata** *Stgr.* (56e). Close to *lupina* *H.-Sch.*, of the same size but paler, more uniform, grey in ground colour; the markings alike, but less conspicuous; the black basal streak plain; inner and outer lines partially obsolete, but the long black biangulation on vein 5 always clear; no submarginal points; hindwing paler, pinkish red; the median band narrower, externally twice bent, ending in a point like *promissa*. Recorded from Mardin, Syria and Kuldja.
- lupina*. **C. lupina** *H.-Sch.* (56e). Forewing pale ash grey dusted with darker, the terminal area tinged with pale olive brown: a thick black streak from base below cell to inner line, which is velvety black, obliquely curved, and inangled on vein 1; outer line finely black, acutely biangulate on each side of vein 5, then dentate, insinuate inwards to below the reniform, and bluntly angled outwards on submedian fold; subterminal line

obscure, acutely zigzag between the veins, which are black; reniform stigma followed by a dark grey cloud, and containing a pale yellowish lunule at centre: hindwing dull red, with a narrow nearly straight black median band, shortly angled inwards on submedian fold; terminal border black, broad at apex, evenly curved on inner edge, and with a deep sinus on submedian interval. Larva extremely like that of *electa*, pale yellowish grey, finely black-dotted, with two obscure dorsal streaks; hump on segment 9 small, yellowish; that on 12 slight and bifid; head small, grey with dark marks and two small reddish protuberances; feeding on willows and poplars, preferring those growing by strong, almost dried up, river-beds. The species is found in Istria, Armenia, Kurdistan, the Ural Mts., Altai Mts., Tarba gatai and Ala Tau Mts. Specimens from Uralsk are all smaller, uniform brownish grey, without any black and white shading; the lines fine and slight; the black streak from base above and below the submedian fold well marked; hindwing with medianband curved, thinner; terminal border nearly or quite interrupted across submedian interval. They may be distinguished for the present as subsp. **detrita** *subsp. nov.* (56e).

detrita.

**** The following species have the ground colour of hindwing orange red or yellow.

C. prolifica *Walk.* Forewing blackish fuscous, sprinkled with blue grey scales; the lines and markings as in *afghana* *Swinh.*; hindwing orange red; the median band reaching inner margin. A North Indian species, occurring also in Kashmir. Easily recognisable by its blackish forewings.

prolifica.

C. lesbia *Christ.* (63c) Forewing rufous grey, with the lines and shadings darker grey tinged with olive fuscous: the inner and outer lines wavy, conversely edged with paler grey; median shade thick and diffuse beyond reniform and above inner margin; hindwing yellowish flesh colour; the bands black; the terminal border with a large flesh coloured spot at apex and nearly interrupted across submedian interval. Transcaspia, W. Turkestan, the Jordan Valley, Palestine.

lesbia.

C. deuteronympha *Stgr.* (? *greyi* *Stgr.*) (63c). Forewing grey suffused with darker; basal area black brown; inner line obliquely curved, black, preceded by a paler line, followed by an oblique whitish grey band from costa; reniform stigma with whitish ring and dark centre, the outline blackish, outwardly toothed, and followed by short dark streaks on the veins; the spot beneath it white with black outline; outer line forming a double blunt tooth on vein 5, accompanied by a pale space from costa; subterminal line pale between dark shades; hindwing blackish, with a dull yellowish central streak from base and an outer narrow yellow band, bidentate outwardly at middle, and angled on submedian fold. Taken in the S. Ussuri district, Amurland.

deuteronympha.

C. proxeneta *Alph.* (63c) Resembles the preceding species, but smaller; the bands of hindwing narrower; outer line of forewing crenulate below the biangulation, with a larger external prominence on fold, and inangled on vein 1, followed by a dark brown band before the whitish subterminal line. Recorded from Mongolia. *C. greyi* *Stgr.* may be identical with this species, in which case *proxeneta* would sink.

proxeneta.

C. obscena *Alph.* Forewing ash grey, with a faint greenish tinge, densely dusted with dark atoms, which give the insect a furry appearance; the usual lines and markings more or less absent; the lines marked on costa by black spots, the costa itself shewing rather paler than rest of wing; the veins and lines according to the figure pale greenish: reniform stigma small, vertical, and oblong, outlined with black, inwardly pale; the usual spot below it absent; fringe concolorous with wing, with white points at base; hindwing orange; a narrow black median band, constricted on vein 5, then much widened, forming a right angle outwards, then curved round and terminating on submedian fold, where it meets a duller black streak from base; a black spot on inner margin beyond its end; terminal border broadly black, containing a large yellow apical blotch, and cut short at vein 2, followed by a black blotch at end of vein 1.

obscena.

C. nymphaeoides *H. Sch.* Forewing broader than in *nymphaea*, for a form of which it was at first mistaken: the termen less oblique; the markings fainter; colour more uniformly grey brown; the dentate subterminal line and the row of terminal points lightest; the outer line forms less acute angles outwards above and below vein 5; in the hindwing the black band is broader, being toothed basewards at costa and below middle and forming in the middle of wing and again towards inner margin a stronger and more rounded curve outwards. A native of European Russia, and Siberia; the aberration **nymphula** *Stgr.* from Amurland, described from a single example scarcely seems distinct.

*nymphaeoides.**nymphula.*

C. omphale *Btlr.* Forewing rich olive brown, the base lilac grey, with a biangulate black line at costa; inner line double, obliquely curved, black filled up with brown; the outer line strongly exangulate; the costal half of median area internally white, externally brown varied with white, the lower half lilacine grey; the median nervules, the radials, and some longitudinal streaks in the radial interspaces black; reniform stigma white, with the centre brown and the margin black, and below it a black-edged semicircular white spot, nearly joined by an oblique diffuse blackish streak from apex; submarginal line zigzag, whitish, internally limited by

omphale.

a similar blackish line; a marginal series of white, black-edged dots; hindwing purple brown, almost black, except along inner margin; a spot at lower angle of cell and a slender angulated and externally dentate outer band orange; a yellow streak at apex; fringe brown, pale-mottled, white at apex. Japan and Yesso.

agitatrix. **C. agitatrix** *Graes.* (= *mabella* *Holl.*) (56f). Forewing with apex square, the termen slightly gibbous; ground colour dull cloudy ash-grey with a brownish or bluish tint; inner and outer lines finely black, as finely edged with whitish, shaped as in *M. bella*, but the inner less waved; reniform stigma large and conspicuous, pale brown, with a whitish yellow centre and bluish white outline: the spot below it with slight pale outline, and sometimes obsolete; subterminal line formed of a row of pale spots; a row of round whitish dots before margin; fringe concolorous; hindwing yellow; the black markings as in *obsceua*. Described from 2 ♀♀ bred from larvae found feeding on *Pyrus* at Chabarofka, Amurland: *mabella* from Japan and Kiushiu.

armandi. **C. armandi** *Pouj.* (= *dauidi* *Pouj.* nec *Oberth.*). This species, described from a single ♀ from Moupin, W. China is said by LEECH to be close to *inconstans* *Btlr.*

abacta. **C. abacta** *Styr.* Forewing with colouring and markings as in *praegnax* *Walk.*; hindwing orange, with broad black terminal border, containing a yellow patch at apex, four yellow lunules between veins 2 and 6, and a shallow yellow space on submedian interval: median band narrow, obsolete towards costa, faintly curved below vein 2, then right-angled to near inner margin; underside of forewing dull yellow, with broad black terminal border, the apex and extreme termen yellowish; from middle of costa a black band obliquely widening outwards joins the terminal border between veins 1 and 3, separated beneath by a small yellow blotch, the veins remaining yellow. Described from a single ♂ from the Taurus Mts., Asia Minor.

patala. **C. patala** *Fldr.* (= *volcanica* *Btlr.*) (56d). Forewing dark olive fuscous in the basal and terminal areas, sometimes tinged with reddish brown, the median area generally paler, interrupted by the darker median shade containing the reniform stigma, which has a dark ocelloid centre ringed with pale and outlined in black; the spot below pale olive yellow, black-edged; inner line oblique, black, forming three slight outward curves; outer line black, forming two acute teeth, above and below vein 5, and a long blunt projection on submedian fold, followed by a double lunulate olive line; the submarginal line, which is broad, is pale olive yellow, edged externally by a thick zigzag line; hindwing deep yellow, with a broad, roundly incurved black median band, joined on submedian fold by a blackish streak from base; terminal band very broadly black, containing a yellow apical blotch, and on its inner edge two sinuses, the lower one nearly interrupting the black border, the pointed projection just before it touching median band; — in a dark form — ab. **fumosa** ab. *nov.* (56c) the whole forewing is suffused with smoky fuscous brown. The species occurs only in Japan. FELDER's type of *patala* is given as from the N. W. Himalayas; it is just possible that the form exists there, though no further record of its capture has been made.

doerriesi. **C. doerriesi** *Styr.* (= *honrathi* *Graes.*, *hampsoni* *Leech*) (56d). Forewing red-brown suffused with purplish grey; the space in cell immediately preceding reniform stigma and the triangular spot below the latter ochreous white dusted with brown and fuscous scales; a streak of the same tint from subcostal vein before outer line to vein 5; inner line double, thick, black; outer line forming two nearly equal teeth above and below vein 5 and a strong black inward tooth above vein 1; submarginal line zigzag, somewhat ochreous-tinged below middle, and outwardly edged with dark purplish grey; reniform stigma obscure, lying in a purplish grey median shade; thickly black-edged inwardly, more narrowly externally; hindwing deep orange; the median black band broad, meeting dark streaks from base along costa, submedian fold, and inner margin; terminal border very broad, its inner edge containing a sinus below middle and on submedian fold, on each side of the latter projecting inwards; underside with outer band of forewing throughout, of hindwing from costa to vein 5, brightly white; apical spot and fringe of hindwing white. Amurland, Ussuri district, and West China.

nymphagoga. **C. nymphagoga** *Esp.* (= *uxor* *Hbn.* part.) (56f). Forewing grey more or less wholly suffused with blackish brown, the basal area, or at least its lower half, a costal patch beyond inner line, a streak from costa before outer line, and the submarginal line itself remaining pale; inner and outer lines velvety black, distinct, sometimes doubled; the inner oblique, dentate inwards on the veins: the outer biangulate externally on vein 5, forming a deep sinus inwards, its end below the reniform pale, and an inward angle on vein 1; reniform indistinct, obscured by the brown median shade, with dark centre and outline; subterminal line waved, distinct, with darker dentate edges; hindwing yellow, with broad black terminal border, containing a small yellow spot at apex and a sinus inwardly in submedian interval: the median band narrow and straight, acutely or squarely angled on the submedian fold, the base of wing often darkened with olive fuscous; — the darkest specimens, with the forewings almost unicolorous black brown, form the ab. **anthracita** *Th.-Mg.* (57e): **tmolia** *Led.* (56f) has the forewing pale grey; the black median band of hindwing not angled but

curved: — ab. **curvifasciata** *Schultz* also has the band of hindwing curved, but the forewing normal; — ab. **albinata** *ab. nov.* (56f) has the ground colour of forewing creamy whitish: the lower part of median area, the space round the reniform stigma, and the extreme termen olive brownish; all the dark lines and markings distinct; the underside yellowish with the usual black markings dim and grey, the median band on both wings slightly blacker; — in the ab. **nubilosa** *Schultz* the whole hindwing is blackish; — the ab. **fasciata** *ab. nov.* (57f) differs from *anthracita* *Th.-Mg.* in having the median area only blackish between inner and outer lines or sometimes extending to subterminal, the basal and terminal areas being grey; — in subsp. **albimixta** *subsp. nov.* (57f) the forewing is whitish sprinkled with blackish; the ♀ brighter than the ♂, with black patch on inner margin between the lines; hindwing with the median band much attenuated; — subsp. **grisea** *subsp. nov.* (57f) is like the last, but the forewing is uniform dull grey instead of white; — subsp. **vallantini** *Oberth.* (57f), like the two last from Tunisia, has the forewing pale grey with the markings partially obsolete as in *grisea*, but in the hindwing the median band is wholly wanting; — ab. **fulvipennis** *ab. nov.* (56f), from Tunisia, is uniform brownish grey in the forewing, but the ground colour of the hindwing is dull fulvous instead of yellow; — lastly, the ab. **contorta** *ab. nov.* (56f), also from Tunisia is dull blurred grey, with the markings obscure, except the black inner line and upper half of outer line; the reniform stigma along with the area beyond it limited by the outer line is also black; the outer line itself, after describing the sinus under the reniform, not running outwards, as usual, but twisted round looplike to join the inner line; the hindwing has a nearly straight median band, stopping short at the submedian fold. Larva yellowish, thickly dotted with redbrown spots, so that the colour appears brown: lines hardly perceptible; tubercles brown, pale ringed; hump on segment 9 yellowish surrounded with black dots; the 12th segment bifid; feeding on oak trees. Occurs in South Europe; in Asia Minor, Armenia, Syria, and Kurdistan; and in Algeria; these latter forms, though agreeing in general with the European, seem more liable to develop on the one hand into the dark forms *anthracita* and *fasciata*, and on the other into the paler forms, with narrower and ultimately obsolete median band in the hindwing, represented by *albimixta*, *grisea*, and *vallantini*.

C. conversa *Esp.* (= *uxor* *Hbn.* part, *pasythea* *Hbn.*) (57g). Forewing pale grey dusted with darker grey and blackish, sometimes almost entirely suffused with dark grey; inner line oblique, black, very thick and conspicuous from costa to middle of wing and again above inner margin; outer line black and fine, forming two acute teeth above and below vein 5, a long inward sinus ending in a pale spot below the reniform, and a strongly marked black angle basewards on vein 1; submarginal line pale grey, broad, edged on both sides by dark zigzag shades; reniform stigma pale grey, with centre and outline blackish, placed on a diffuse dark median shade, which is separated from the inner line by a broad oblique pale grey fascia; hindwing yellow, the black median band squarely angled externally on veins 5 and 2, straight between, meeting a slight dark fuscous streak from base along submedian fold; terminal border broad at apex, much narrower below the sinus at middle; fringe yellow at apex beyond the yellow patch, whitish on submedian fold, chequered white and black between; — the form **agamos** *Hbn.* (57g) has the forewing often darker, especially in the basal and lower median areas, the hindwing with the yellow ground colour deeper and more restricted owing to the median band and terminal border being broader; the underside with the white bands quite narrow, the suffusion on inner area more brownish than yellow; — in the ab. **carbonaria** *Stgr.* (57g), the forewing to the submarginal line, and in some cases the terminal area also, is suffused with black brown, the reniform stigma and submarginal area remaining grey; — in ab. **seminigra** *ab. nov.* (57h), the basal area and inner marginal half to outer line are black, the outer half being grey. Larva deep black, or greyish black, or brown, with a fine pale dorsal line; the dorsal tubercles brownish yellow; sides with yellowish blotches on each segment: the hump on segment 12 with two reddish points; the usual lateral fringe of hairs obsolete; head brown with black marks or wholly black; feeding on oak bushes; the larva of the form *agamos* on *Quercus sessiliflora*. A South European species, also occurring in Algeria, and in Asia Minor, Syria, and the Taurus Mts.: the form *agamos* in S. E. Europe only and in Armenia. This form may be a good species.

C. hymenaea *Schiff.* (57g). Forewing dark iron grey, with more or less of a violet tinge; the inner line double, its inner arm forming an oblique black bar from costa to submedian fold, thence fine and sinuous; outer line finely black, angled first inwards on subcostal vein, along which it runs outwards, obliquely curved and triangulate on vein 5, then vertically waved and subobsolete, becoming black again above inner margin; it is followed by a narrow olive brown band, joined at vein 6 by a biangulate black streak from below apex; submarginal line very obscure; a row of black dots before termen; median line black, irregularly angled, the costal space before it rather lighter, that beyond it filled up with olive brown and fuscous; reniform with brown lunule in centre, paler edged, and outlined with black, often followed by a diffuse dark cloud; hindwing yellow; the black median band thickened and outbent at middle and bluntly curved inwards on submedian fold; the black terminal border interrupted on submedian interval, and bearing a yellow patch at apex; — the ab. **posthuma** *Hbn.* (57g), differs only in having the median band of hindwing acutely angled instead of

connexa. rounded on submedian fold; in the ab. **connexa** Schultz (57f) the black terminal border of hindwing is not interrupted at all, and the grey streak from base along submedian interspace, which is nearly always faintly visible in the type form, is black and produced to nearly meet the median band, as in *fulminea*. Larva ash grey, sometimes reddish brown, dotted with black; the tubercles brown, inconspicuous; on the dorsum four fine, pale grey, dark-edged, wavy longitudinal lines of variable intensity; the hump on segment 9 large, brown and blunt, sloping backwards; behind it another, much smaller, with pointed tip; the hump on segment 12 bifid, redbrown; head mottled brown; feeding on sloe. Found in Austria and S. E. Europe: the Ural Mts.; Asia Minor, Armenia, Syria, and the Ussuri district.

***** In the following species the ground colour of hindwings is yellowish white.

nivea. **C. nivea** Btlr. (55f). Forewing pale violet grey sprinkled with black, the veins speckled black and white; the costa, the reniform stigma, and patches along inner and outer lines dusted with white; a dark streak on costa before reniform, indicating median shade; inner and outer lines black, the inner dentate and excurved, the outer excurved and strongly dentate, emitting a black streak to termen above vein 5; hindwing pale whitish yellow, with a sinuate blackish median band, not touching either margin, and a broad black submarginal band. A native of Japan, Yesso, and Central China; also found in N. India, the Indian form being darker. LEECH states that it is fond of resting on the trunks of *Cryptomeria*, though its colour does not harmonize so well with them as with the young oaks around, on which apparently it never settles. A small percentage of examples shows a single spine above the terminal pair of spurs of hind tibiae, while the majority appear to be without them.

3. Genus: **Ephesia** Hbn.

Distinguished from both *Mormonia* and *Catocala* by the hindtibiae being entirely without spines. Type: *E. fulminea* Scoh.

* The first 3 species have the hindwings black with white blotches.

actaea. **E. actaea** Fldr. (57h). Forewing blackish grey, thickly speckled with whitish scales; the transverse markings dentate, thick and deep black; inner and outer lines double, the arms nearest the middle of wing deep black and finer; the median shade and submarginal line thick; reniform stigma black, diffuse; the spot below it oval, white or grey, with black outline; a row of white dots at base of fringe; hindwing deep black, the basal area more olive fuscous; a broad white postmedian band from costa to vein 2, followed by a pair of white spots; the fringe white; underside of forewing black with two white bands; of hindwing with the white band more complete and the base bluish white; — ab. **fumifera** ab. nov. (57h) has the forewings darker and more unicolorous; the white marginal spots larger. Found commonly in China and Japan.

dissimilis. **E. dissimilis** Brem. (57h). Forewing grey speckled with darker; the basal and terminal areas suffused with fuscous; inner line black, thick and oblique, slightly wavy; outer line finely black, acutely angled outwards below vein 6, then lunulate dentate; reniform stigma undefined, blackish, lying in the dark median shade; the spot below it whitish, often clearly connected with the pale outer area; subterminal line dentate; marginal spots black and white; hindwing dark olive fuscous with a thick outer band angled at vein 2 and a black border swollen towards apex, where there is an oval white blotch with white fringe, the rest of fringe being blackish; underside of both wings black and white. Amurland and Japan.

sancta. **E. sancta** Btlr. (57h). Forewing lilacine grey, irrorated with whitish in costal half; three oblique zigzag velvety black lines in basal third, the space between second and third filled in with black, forming a band from costa to submedian fold; a long oval snow white spot in cell before reniform stigma, below which is a broader white spot; median shade distinct; outer line black, zigzag, followed at middle by a large white spot, and preceded in submedian interval by an elongate velvety black patch; subterminal line white, preceded by black scaling; the veins preceding it black; apex and fringe brownish; hindwing brown at base and along inner margin, the apical half blackish; a short tapering white band from costa, as in *actaea*; a white apical spot as in *dissimilis*; a white spot on submedian fold towards termen; fringe chequered with white. Recorded only from Yesso.

** Ground colour of hindwings yellow.

helena. **E. helena** Ev. (57a). Forewing ochreous whitish, clouded with bluish grey and dusted with black the pale ground colour shewing chiefly in an oblique fascia beyond inner line and along the course of the outer line; basal area dark blue grey, shaded with blackish; inner line double, its outer arm black and thickened, angled inwards on vein 1 and outwards below it; outer line black, partially double, edged and filled in with blue grey, forming two moderate teeth above and below vein 5; subterminal line diffusely whitish, zigzag.

outwardly edged by dark grey, and met by an oblique black shade from below apex; a row of contiguous black lunules before termen: reniform stigma with inner half a blackish lunule, the outer half paler, the whole somewhat obscured by a diffuse bluish median shade; hindwing rich deep orange, with sinuous black median band constricted at vein 5 and a sinuous-edged terminal border, containing a large orange apical blotch and a shallow blotch on submedian fold. Changhai Mts., Siberia, Amurland. The perfect insect rests on rocks overgrown with moss.

E. intacta *Leech*. Forewing whitish grey dusted with darker; basal area darkest, edged by the inner arm of the oblique wavy double inner line, the outer arm of which is thickened and black from costa to submedian fold, then linear; outer line double, finer, angulated on vein 6, then dentate lunulate, with a long sinuous inward projection to middle below reniform, and a sharp angulation above inner margin; reniform stigma placed in a dark costal triangle; terminal third darker grey; subterminal line dark edged with pale grey; hindwing pale straw colour suffused in basal half with olive fuscous; a narrow curved median band, angled on the folds, and a broader, nearly terminal, border black; the apex and extreme termen pale; veins in outer half of wing blackish. Said to be allied to *ella* *Btlr.*, from which it is at once distinguished by the pale grey forewing and straw coloured hindwing and underside. Described from a single ♂ from Nagahama, Japan; in the Tring Museum are two ♀♀, simply labelled Japan. *intacta.*

E. streckeri *Stgr.* (63c). A small species somewhat intermediate between *conversa* *Esp.* and *eutychea* *Tr.* Forewing blackish grey, dusted with whitish; inner and outer lines black; the inner oblique, outwardly curved and inwardly dentate on veins: the outer angled at vein 6 outwardly and on vein 1 inwardly, vertically dentate between: reniform dark with black centre and outline; the spot below it heart-shaped, white; hindwing pale luteous yellowish: terminal border broad, enclosing a yellowish apical patch; median band bent at middle and diffused towards base. From the Ussuri district, Amurland. *streckeri.*

E. ella *Btlr.* (57a). Forewing pale bluish grey, dusted with blackish, especially in the median area, which is in some instances suffused with blackish; inner line thickly black, outwardly curved; outer line black, forming two nearly equal teeth above and below vein 5, then irregularly and vertically dentate; submarginal line diffuse, pale blue grey, preceded and followed by a dark grey shade; reniform stigma dark-centred, with pale grey outline; the spot below it pale with black edging; median shade diffuse, dark grey, sometimes developing into a large black suffusion; hindwing orange yellow; the terminal border broad with lunulate dentate inner edge; median band broad, complete, meeting a broad diffuse olive fuscous shade from base along submedian fold and inner margin. the orange areas often small and restricted; fringe chequered black and white, wholly white at apex and beyond submedian fold; — the form *nutrix* *Graes.* (57a) is darker, generally with more black suffusion in the forewing; the hindwing with the orange spaces restricted and towards base below cell discoloured with olive fuscous; the terminal border broad. The paler, and generally larger type form from Japan and China; the darker *nutrix* from Amurland, the examples from the Ussuri district having the yellow of the hindwing still more restricted and the median band broader than the rest; Japanese forms appear liable to even greater aberration; for while specimens from Oiwake are quite as dark as the darkest Ussuri forms, in some cases even with the yellow of the hindwings diffusely blurred and dull; — a single specimen from Yokohama, ab. *tenuivitta* *ab. nov.* (57a), has the median band of hindwing quite narrow and scarcely reaching inner margin, with the yellow areas consequently much ampler, and the base of wing without any fuscous suffusion below middle. *ella.* *nutrix.* *tenuivitta.*

E. hetaera *Stgr.* (63b). Resembles *praegnax* *Walk.*, but smaller and slighter in build; forewing blackish grey, thickly irrorated with pale grey: inner line more oblique, somewhat wavy, thick, not edged with light; outer line as in *praegnax*, forming a strong double angle on vein 5 and one inwards on vein 1; reniform stigma small, faint, slightly paler-edged, the cell before it paler: spot below it rhomboidal, whitish, dark-edged; subterminal line pale, edged outwardly with a series of dark wedge-shaped spots; a row of dark pale-tipped spots before termen: hindwing as in *praegnax*. S. Ussuri district, Amurland. *hetaera.*

E. puella *Leech*. Forewing grey brown; inner line black, indented; outer line black, oblique outwards to vein 6, then curved inwards to near vein 2, then inwards and upwards to below reniform stigma, thence to inner margin, making an acute angle externally on vein 1; subterminal line dark, wavy; a row of dark terminal lunules; reniform stigma indistinct: hindwing pale yellowish orange, with broad blackish terminal border, shewing a splash of yellow at apex; median black band curved and interrupted below costa; a black streak from base along submedian fold. Described from a single ♂ from Gensan, Corea. *puella.*

E. flavescens *Hmps.* Forewing yellowish grey with blackish irroration; lines black; the inner oblique and wavy; the outer irregularly dentate below vein 5, above which it is angled outwards: the reniform stigma pale and indistinct, beneath a fuscous costal patch; a line of terminal lunules edged by ochreous spots; hindwing *flavescens.*

deep yellow, with a curved black median band broadened on vein 5; terminal border black with the inner edge irregular, containing large yellow patches at apex and on submedian interval. Described from Simla in the Punjab, N. India, but since taken in Kashmir; a large species.

eminens. **E. eminens** *Stgr.* (63d). Forewing grey dusted with blackish, with a large black triangular costal blotch beyond middle; inner line forming three long curves outwards and deeply dentate on veins, dark brown inwardly edged with pale fawn colour; outer line strongly dentate, forming the limit of the dark blotch above the middle; subterminal line slightly curved, followed by a series of black blotches in the intervals: reniform stigma obsolete; hindwing deep yellow: the terminal border broad, its inner edge forming a sinus at middle, then two shallow curves to inner margin; median band broad, projecting towards sinus of border, meeting a dark streak from base on submedian fold: the yellow areas small by comparison with the black. From the Ussuri district, Amurland.

separans. **E. separans** *Leech.* Allied to *duplicata*, but the black outer line is more strongly angulated and produced below the costa, and the toothlike projection above inner margin is of greater length: below the reniform-stigma there is a conspicuous white spot, outlined in black: hindwing with the median black band curved instead of angulated, and abruptly cut short at vein 1, instead of reaching inner margin; the terminal black border shews a scalloped inner edge. Described from 2 examples from Japan, taken at Nagahama and Fushiki respectively.

dauidi. **E. dauidi** *Oberth.* Forewing grey with a brown tinge at base, along termen, and on median shade; the lines dark and fine; inner line nearly vertical, outcurved in the intervals, inwardly dentate on veins; outer line angled at vein 6, then dentate and slightly oblique inwards; reniform stigma obscure; spot beneath paler, with dark outline; subterminal line pale, slightly curved: hindwing golden yellow; median band broad above, where it runs to base, constricted and nearly interrupted at vein 5, then broadened and curved round to inner margin, meeting two black streaks from base, one along submedian fold, the other close to inner margin: terminal border broadly black, broken on submedian fold; fringe and apical patch yellow. N. China.

inconstans. **E. inconstans** *Btlr.* (56g). Forewing ash grey, variegated with pale fuscous and brown; the lines black: the inner oblique, inangled on vein 1; the outer acutely bidentate on either side of vein 5, and strongly inangled on vein 1: reniform stigma large, with dark centre, pale grey ring, and black outline; spot below it large, triangular, edged with black, ochreous grey, sometimes whitish; hindwing orange yellow; the inner margin below cell olive fuscous; median black band swollen at costa and beyond cell where it projects roundly outwards; the black terminal border with sinuous inner edge: a large yellow apical spot, small yellow spots on termen in the intervals, and a long shallow spot across submedian interval. Described from the Punjab, but found also in Kashmir.

rutha. **E. rutha** *Wilem.* Forewing pale bluish grey, with pale ochreous patches round the reniform; the lines black: inner line inwardly toothed on median and submedian veins, outwardly lunulate, preceded by a black band; outer line black, serrate, without the two more prominent teeth of *connexa*, followed by a rusty black band interrupted by an ochreous patch below middle: subterminal line pale grey, denticulate, followed by a similar black line; median line dentate, distinct: reniform stigma lunular, the centre dark, ringed with ochreous and outlined with black; hindwing yellow; a black stripe along submedian fold from base; median black band thick, elongate, curved round to meet that on submedian fold; terminal border black, broad to vein 2, with the inner edge irregularly denticulate and touching (or nearly so) the median band, quite narrow between vein 2 and tornus, before which it is upcurved to touch the band on submedian fold; apical blotch, terminal spots, and fringe yellow. Described from a ♀ from Yoshino, Yamato, Japan; distinguished from *connexa* by the more variegated median area of forewing; the less pronounced angulation of outer line, and broad band beyond it.

nymphaea. **E. nymphaea** *Esp.* (= *vestalis* *Hbn.-G.*, *conjux* *Frr.* (57 a b). Forewing whitish or pale grey, more or less entirely suffused with olive fuscous sprinkled with bluish white scales; the paler spaces restricted to costal half of median area on each side of the median shade; inner line black, thick, inwardly dentate on veins, preceded by a dark line; outer line black, obliquely curved from subcostal vein to the angle above vein 5, then lunulate dentate, and deeply inangled on vein 1, followed by a dark shade which on costa forms a black blotch; subterminal line pale, outwardly dark-edged: a black festooned terminal line: the base of the blackish fringe prominently white: reniform stigma obscured by the dark fascia following median shade; on the contrary, the black-edged spot below it always white and conspicuous, and generally the space in cell immediately preceding it: hindwing deep yellow, with a black median band, squarely bent at middle and rounded on submedian fold; a dark shade from base along this fold and another along inner margin: terminal border broadly black at apex, its inner edge straight from costa to vein 4, with a patch of yellow at apex, and interrupted, or nearly so, on submedian interspace: — in a form from Kashmir — subsp. **kashmirica** *subsp. nov.* (57 b) the whole

kashmirica.

forewing is suffused with purplish fuscous, the paler spaces becoming wholly smoky brown, and the darker areas more intense: in the hindwing the yellow is deeper and the bands inky-black; on the underside both wings are evenly banded black and yellow: — subsp. *thalamos* *Schultz* (57b), from Central Italy, somewhat *thalamos*. larger than the type form, has the pale spot under the reniform nearly twice as large as in typical examples, and is more strongly dusted with grey and more brightly varied: the hindwing paler, with the black bands narrower and more sharply broken. Larva yellow, thickly sprinkled with red brown flecks; dorsal lines only faintly expressed in places; tubercles brownish yellow, prominently keel-shaped, especially the hind pair on segment 12; no hump on segment 9 nor fringe of hairs along the sides; spiracular line blackish grey, obscurely marked; spiracles brownish yellow in black rings; head red brown flecked with yellow; feeding on *Quercus suber* and *ilex*. Occurs throughout South Europe, in Algeria, Asia Minor, and Syria.

E. jonasii *Btlr.* (57b). Forewing pearl grey with a faint luteous tinge, dusted with darker grey, fuscous, *jonasii*. and brown scales: basal area always palest; inner line outwardly oblique, thick and black, indented on each vein; outer line black, irregularly dentate, forming two nearly equal larger teeth above and below vein 5, then incurved and subobsolete, thickened again above inner margin, and indented on vein 1, the tooth retracted as a black line nearly reaching inner line; subterminal broadly whitish, denticulate, outwardly edged with black, most strikingly on the two folds: below the middle the white becomes broader and more diffuse: a row of black marginal lunules; fringe whitish; reniform stigma with olive-brown centre edged by pearl grey, interruptedly outlined externally with brownish streaks; spot below it roundish, ochreous or grey, edged with black; median shade dark grey; hindwing deep yellow; median band broad at costa, much constricted on vein 5, then again widened and nearly straight to submedian fold, where it joins a slight dark streak from base; terminal border with its inner edge right-angled on vein 5, forming a large sinus at middle and a small one on submedian fold, with a prominence on each side of the latter; a yellow blotch at apex and beyond submedian fold; fringe yellow; — ab. *fumiplaga* *ab. nov.* (57c) has the dark shading much developed, the median shade blackish, *fumiplaga*. the median area black on inner margin, and the terminal area clouded with brownish grey; in the hindwing the projection of terminal border below vein 2 reaches the median band. Recorded only from Japan.

E. praegnax *Walk.* (= *esther* *Btlr.*) (57c). Forewing with the base purplish black and the terminal area *praegnax*. blackish, dusted with bluish grey along termen and the course of subterminal line, a band beyond outer line and the outer edge of subterminal line being dark; median area ochreous white, more or less thickly powdered with fuscous and pale scales, but nearly always showing paler than the rest of the wing; inner line double, nearly vertical, outcurved between veins, filled up with whitish towards inner margin; outer line forming a long sharp angle above vein 5, and an inward angle on vein 1, also marked with white above inner margin; reniform stigma obscure, dusted with pale grey, with dark centre and lateral edges, the outer edge triangulate; space in cell before the stigma paler; the spot below it pale with dark dusting; a row of whitish black-edged terminal spots; hindwing deep yellow, the terminal border very broad, its inner edge bluntly bent in middle: median band broad above and below middle, constricted at vein 5, curved round and coalescing with a blackish streak from base of submedian fold and a narrower one on inner margin; apex and fringe, except at middle, yellow. The larva is said to feed on *Quercus mongolica*. The type of *praegnax* was from North China; *esther* *Btlr.* from Japan and Corea; the subsp. *obliterata* *Mén.* from Amurland has the *obliterata*. median area whitish, except at middle of costa.

E. butleri *Leech* (56d). Larger than *connexa* *Btlr.*, to which it is otherwise closely allied; forewing *butleri*. with inner line more sinuous but less oblique; the outer and subterminal lines more acutely dentate; hindwing with the black bands broader, the median almost touching the terminal at middle and towards inner margin: in the forewing the median area is clouded with pale grey brown in the ♂, but remains white in the ♀. This species comes from Kwei-chow and Pu-tsu-fong in West China, while *connexa* is from Japan.

E. musmi *Hmps.* (= *praegnax* *Leech*, nec *Walk.*) (63d). Forewing grey suffused with brown and fuscous; *musmi*. the inner line preceded and the median line followed above the middle by blackish suffusion; inner margin also between the lines blackish; reniform stigma lunulate, with black outline, connected at base by a long blackish mark between veins 3 and 4 with the outer line, which is dentate; subterminal line pale between dark dentate lines; hindwing golden yellow; the median band black, swollen below vein 5, angled to vein 1, where it joins a dark streak from base along submedian fold; terminal border black, with yellow patch at apex, yellow spots on termen between the veins, a long narrow patch across submedian interval, and the anal angle yellow; fringe yellow. At present known only from Gensan, Corea.

E. connexa *Btlr.* (57f). Forewing in markings resembling that of *praegnax*, but almost uniform ashy *connexa*. grey in tint: hindwing almost as in *fulminea* *Scop.*, but the loopleftike band from the base is carried down to the external border, so that it leaves only a spot of ground colour close to termen, where in *fulminea* the external border is interrupted; the outer half of the loopleftike band is also broader, and its centre of a

duller yellow than in *fulminea*. BUTTLER'S type was from Tokio, Japan; LEECH records the species from Hakodate, Yesso; among the specimens from the latter locality is an ochreous grey example with the median field filled up with black, which may be separated as ab. **fasciata** *ab. nov.*

nubila. **E. nubila** *Btlr.* (57 e). Like *connexa* *Btlr.*, but dark grey suffused with fuscous, thickly sprinkled with minute bluish grey or olive yellow atoms: the markings much obscured; as in *connexa* an aberration is met with, in which the median area is filled in with deep blackish or brownish fuscous. ab. **medionigra** (= ab. 1 and 2 *Hmps.*). As both species come from the same localities and are liable to the same form of aberration, LEECH was probably right in considering *connexa* and *nubila* to be light and dark forms of one and the same species.

triphae-
noides. **E. triphaenoides** *Oberth.* (63 g) Forewing pale sordid grey; the lines dark grey; inner line nearly vertical; outer line bluntly angled on vein 6, forming a deep indented sinus to below reniform and a strong outward angle on submedian fold; subterminal line pale between grey shades; hindwing pale yellow, with a narrow black terminal border of uniform width from apex to vein 2, and two small spots before anal angle; underside of both wings yellowish, with slight grey submarginal borders. Described from a single specimen from N. China.

disjuncta. **E. disjuncta** *Hbn.-G.* (57 e). Forewing dark grey speckled with light grey and whitish, with an undertone of brown, which appears clearly as a band beyond the outer line; inner line black, oblique, waved below, the enclosed basal area darker; outer line velvety black, acutely angled below vein 6, then crenulate, bent on submedian fold and angled inwards on vein 1; subterminal line grey edged with blackish; the veins towards margin dark; reniform stigma fuscous grey, with the veins beyond it black, preceded by a whitish space, obliquely before and touching the white, black-edged, triangular spot below; hindwing yellow, with a thick black median line sharply angled on submedian fold; the termen black-bordered, broadly towards apex; fringe in both wings with a fine pale crenulate line at base; — in ab. **separata** *Frr.* (57 e) the yellow of the hindwing is partially darkened by fuscous scaling; — in **luctuosa** *Styr.* (57 e), this is intensified, and the hindwing is wholly suffused with olive fuscous; the forewing being also much suffused with fuscous, the two white spots stand out more conspicuously: the abdomen follows the tint of the hindwings. The type form is found in Dalmatia, Bithynia, and Corcyra; also in Palestine, the Taurus Mts., and Kurdistan; *separata* in the Balkans, Lydia, the Taurus Mts., and Beirut, Syria; *luctuosa* at Akbès, Syria.

diversa. **E. diversa** *Hbn.-G.* (= *callinympha* *Dup.*) (57 e). Forewing whiter than in *disjuncta*, especially in inner half of median area, which bears a whitish wisp along vein 1 and inner margin; the double waved black inner line is preceded by a thick olive-fuscous band; the reniform stigma is pale grey with dentate outer edge, emitting black streaks on the veins, the spot below it white dusted with dark and thickly black-outlined; outer line double, acutely angled outwards below 6 and white, then sharply dentate; subterminal line grey, sharply dentate, followed by a black line; the outer half of wing shows a slight brown tinge; marginal spots black edged with grey, separated by semicircular dark grey marks at end of veins; hindwing orange, with a curved black median shade hardly reaching inner margin, a dark shade along base of submedian fold, and a black terminal border broadening to costa; fringe dark grey, pale yellow at apex; — the ab. **umbrata** *Schultz* has the forewings uniformly blackish, with the markings more or less obscured. Larva rust coloured, varied with brown; the dorsal line yellow edged with black on both sides; a black line above the feet, with yellow marks above and below it; the tubercles black with slight hairs; feeding on oak. A South European species, found in S. France, Spain, Sicily, the Tyrol, Hungary, Bithynia, and the Balkan Mts.; also in Kurdistan.

duplicata. **E. duplicata** *Btlr.* (63 g) Forewing pale ash grey, varied with greenish and pale buff; basal area darker, its outer edge irregular, partly limited by the black inner line; reniform stigma dusky, the dark outline broken up into spots; outer line double, strongly dentate; subterminal line bounded externally by a dark dentate line; a marginal series of black and white dots; hindwing orange ochreous; the black terminal border tapers gradually from costa to anal angle without interruption; median band not continued to inner margin. Japan only.

eutychea. **E. eutychea** *Tr.* (= *languida* *H.-Sch.*) (57 e). Forewing dull grey, irrorated and suffused with darker grey; inner line black, obliquely outcurved; outer line black, angled outwards above vein 5, then crenulate, inwardly angled on vein 1; submarginal line dull whitish between dark shades; sometimes an oblique dark streak from apex; reniform stigma paler grey, with blackish centre and outline; the spot below it also pale; hindwing dull pale yellow, with a broad blackish terminal border, nearly interrupted by a yellow sinus in submedian interval; median band variable, broader above middle, narrowing below, forming an acute angle on submedian fold; — the ab. **dotata** *H.-Sch.* has this angle blunt, and is intermediate between the type and the form **mariana** *Rmb.* from Spain, in which the band is evenly rounded; — ab. **degener** *ab. nov.* (57 e) is a smaller, still duller form, with the grey of the forewing, and the black and yellow of the hindwing all paler and more obscure. From S. Europe only, Dalmatia and Greece; in Asia Minor, Syria, Taurus Mts., and Pontus; the form *mariana*, as above stated, from Spain only.

dotata.
mariana.
degener.

E. mirifica *Btlr.* (56g). Forewing pale pearl grey; the inner line marked by a black costal spot, and *mirifica.* traceable across the wing by the darker edges, outcurved between subcostal vein and vein 1; the apical half of costa occupied by a cloudy brownish blotch reaching to vein 4; in this blotch the upper portion of the black outer line with its projecting teeth is clearly marked, and the pale waved subterminal line is visible throughout; the reniform stigma is marked merely as a dark blotch; hindwing clear bright yellow; the median black band narrow, sharply angled on submedian fold, and meeting on vein 1 a dark blurred streak from base; terminal border broadly black, enclosing a yellow apical blotch and abruptly stopping below vein 2, followed by an isolated oval black spot before anal angle; fringe yellow. This species is found only in Japan.

E. largetani *Oberth.* (57d in ab. erroneously largetami). Closely allied to *mirifica*, but certainly distinct; *largetani.* the ground colour of forewing is darker grey, suffused with olive brown shading in basal area before inner line, beyond the median shade and outer line, and along inner and outer margins, forming here in some cases a continuous dark blotch; the lines are all more distinct; the reniform stigma is small, obliquely placed, brown, with a straight black inner edge; in the hindwing the yellow is darker, the median band much broader, and usually more bluntly angled or rounded on submedian interval. This form occurs in Amurland and China. In consequence of the general darker coloration the apical dark blotch is much less conspicuous.

E. fulminea *Scop.* (= *paranympha* *L.*) (57d). Forewing whitish grey, ochreous grey, or lilac grey, the *fulminea.* basal area smoky olive fuscous, darker outwardly; the inner line forming a thick straight black bar from costa to submedian fold, then waved and thinner; outer line black, strongly biangulate on each side of vein 5, insinuate to below reniform, bluntly projecting externally above and below vein 1, and strongly inangled upon it, followed by a brown and then a pale shade; submarginal line hardly visible; an irregular brown cloud on termen below apex; reniform stigma narrow, with brown central lunule and grey lateral edges, externally followed by velvety black scaling, which is sometimes produced along the veins to outer line; the area beyond and below it diffusely olive brown; hindwing yellow, with a curved black median band, nearly, sometimes quite, met by a blackish streak from base along submedian fold; terminal border black, interrupted on submedian interval and bearing a yellow patch at apex; — the form **protonympha** *Bsd.* (57d), from the neighbourhood *proto-* of Paris and S. France, is paler, especially at base of forewing; the median band of hindwing narrower and *nympha.* the submedian streak from base reduced; the yellow ground colour paler; — the subsp. **xarippe** *Btlr.* (57d), *xarippe.* from Amurland and Japan, has the black markings of hindwing intensified, the terminal border hardly interrupted; the median band more strongly shouldered at vein 4; the apex whiter; the whole insect larger; — subsp. **koreana** *Stgr.* on the contrary is a small form with the inner line of forewing curved, the hindwing without *koreana.* any submedian shade. Occurs throughout Central Europe, except Holland and Britain, in N. Russia and N. Italy; the Ural and Altai Mts. in Asia; the Ussuri district, Amurland, Japan, and Corea. Larva ash grey or dark brown, with prominent brown tubercles; the hump on segment 9 developed into a long brown pointed horn: on the 5th as well as on the 12th segment the hind pair of tubercles are lengthened into prominent points; head with black ring; feeding on plum, sloe, pear, oak, and whitethorn, preferring especially the old trees and bushes.

E. columbina *Leech* (56d). Forewing pale dove-grey, suffused with bluish slate colour in basal and *columbina.* terminal areas and along inner margin; inner and outer lines black, conversely edged with whitish; the inner thickly black on costa and at inner margin, oblique and wavy; the outer bidentate above and below vein 6, then zigzag to inner margin; inangled and filled up with black on vein 1, followed at costa by a dusky shade; two dark clouds at termen on each fold; reniform stigma obscure, blackish, with a paler triangular spot below it, grey with dark outline; a dusky transverse median shade; a row of black white-tipped lunules along termen; hindwing yellow, with black median band and terminal border; the former curved below the median vein and confluent with a black longitudinal streak on submedian fold; the terminal border is broadest at apex, and contracted at submedian fold; some yellow scaling on termen at apex and below vein 2. Recorded from Omei-shan in W. China and Changyang in Central China.

E. invasa *Leech.* Forewing grey, suffused and shaded with brownish; inner and outer lines black; *invasa.* the inner oblique, slightly waved, obtusely angled on vein 1; the outer bidentate on vein 6, acutely inangled on vein 1, and deeply sinuous inwards above 2 to below reniform stigma; the stigma outlined with black, and the veins black beyond it to outer line; an interrupted black line before fringe, which is intersected towards apex by black streaks; hindwing yellow, with black markings as in *mirifica* *Btlr.*, but the median band is more curved, and the longitudinal streak broader; in the ♀ the basal area of forewing is darker, strongly contrasting with the paler median area. Like the last species an inhabitant of Central and Western China.

E. aestimabilis *Stgr.* (56e). Forewing pale fawn colour, shaded below median vein with olive fuscous; *aestimabilis.* costa with oblique black streaks, the lines all interrupted subcostally; veins throughout pale; inner line double, regularly outcurved, broken at the veins; outer line black, strongly angled outwardly near termen beneath

veins 6, 5, and 4, then incurved and forming a sinus below reniform, projecting bluntly above and below vein 1 and inangled on it, preceded by a brown shade and followed below middle by a pale space; termen olive brown between the pale veins, the apex remaining pale; black terminal lunules, filled in with yellowish; hindwing dull pale yellow, with black bands as in *hymenaea*, the median more rounded on submedian fold. Kaschgar, Tura. Quite a small and distinct looking insect.

4. Genus: **Ulotrichopus** *Wlgrn.*

Tongue well developed; frons smooth, with a tuft of hairs above; palpi short, obliquely upturned, the second segment broadly scaled, the third button-shaped, smooth; antennae of ♂ with fasciculate cilia; femora and tibiae hairy; the hind tibiae spined, dilated with a fold containing an expansible tuft of hair. Type *U. mesoleuca* *Walk.* A genus mainly of S. African species, but containing a single palaearctic insect.

stertzi. **U. stertzi** *Püng.* (63 g). Forewing greyish brown, obscurely sprinkled with darker; inner line sinuous, nearly vertical; outer line outwardly oblique from costa, beyond cell emitting two acute teeth outwardly, then inwardly oblique and dentate lunulate; renif. stigma a dark cloudy mark; apex somewhat paler; termen faintly crenulate, preceded by small double yellowish dots; fringe grey brown, yellow at base and tips; hindwing pale yellow, somewhat brownish towards inner margin; terminal border broad, black brown, enclosing a small yellowish spot on termen near inner margin and a larger one towards costa; fringe yellowish white. Described from a single ♂ from the Dead Sea, Palestine.

5. Genus: **Eccrita** *Lcl.*

Tongue developed; frons smooth, shortly tufted; palpi obliquely upturned, the second segment closely scaled, the third shorter; antennae of ♂ minutely ciliated; all the tibiae spined; prothorax with a slight crest; abdomen without crests; forewing broad, the apex blunt, rectangular; grey with faint striations; lines indistinct; reniform stigma black, of varying shapes; collar black. Larva long and slender, contorting itself when disturbed and feigning death; feeding on *Vicia* in autumn and hibernating, feeding up in spring and pupating in a slight cocoon among rubbish; the imago emerges in summer. Type *E. ludicra* *Hbn.* Distinguished from *Toxocampa* *Guen.* solely by the presence of spines on the tibiae.

ludicra. **E. ludicra** *Hbn.* (58b). Forewing pale ashy grey, thickly and coarsely striated with brownish and fuscous; inner line brownish; median shade brownish, broad and diffuse; outer line imperceptible; a fuscous shade, widest at costa, before the subterminal line; reniform stigma a U-shaped brown mark, with black inner edge; its outer with a small black dot at its upper and two larger ones at its lower end; costa shortly striated with dark fuscous; fringe dark at base and apex, with a row of black lunules before it; hindwing fuscous grey; the terminal area darker; in the ab. *cervina* *Stgr.* (58b), from the Uliassutai Mts. and Dauria, the forewing is suffused with brown; — **gracilis** *Stgr.*, from the same localities, is a smaller, more slender form. Larva pale brown; dorsal stripe broad, dark brown, edged with black, and bisected by a white line, the sides with a mixture of whitish scales, with a dark brown stripe above a broad white spiracular line; feeding on *Vicia*. Occurs in Austria, Hungary, Moravia, the Ural and Altai Mts., Dauria, Ussuri district, Ili, Issyk-Kul.

maxima. **E. maxima** *Brem.* (58b). Forewing pale violet grey, with a slight brownish tinge, striated with olive grey; the costa tinged with brown; the terminal area diffusely clouded with fuscous, the veins through it finely pale; lines olive fuscous; the inner angled outwards on subcostal vein, and slightly concave inwards; the median shade sinuous, broadening towards costa; outer line rarely visible, indicated only by the slight submarginal shade, which is dark and distinct only below costa; submarginal line pale, sinuous, indented on submedian fold, the terminal area beyond it darker; a row of black marginal spots; orbicular stigma a black dot; reniform large, black, cut up by the pale discocellular and veins 4, 5, 6 into smaller spots; hindwing brownish luteous, with a broad blackish terminal border, the extreme termen and fringe again paler. Amurland. The form **enormis** *Bllr.* (58b) from Japan and Corea is larger, with the inner line generally more outwardly oblique; ab. **brunnescens** *ab. nov.* (58c) is a dark brown suffused form, corresponding to the ab. *cervina* of *ludicra* *Hbn.*

6. Genus: **Entomogramma** *Guen.*

Tongue present; frons smooth, with tuft of hairs above; palpi upturned, the second segment broadly scaled, the third long; all the tibiae spined; thorax and abdomen without crests; wings ample; the forewing with subfulcate apex and slightly sinuous termen, of dull coloration, with straight oblique parallel lines, with a more or less distinct dark subcostal streak. Type *E. faultrix* *Guen.*

Sect. 1 (typical). Antennae of ♂ with fasciculate cilia.

E. faultrix *Guen.* (58c). Forewing fawn brown, with fine dark dusting; a thick black brown subcostal stripe, towards costa edged with fulvous and beyond middle with ochreous; the costal area paler than the rest of wing; lines on it oblique outwards, bent in the stripe; inner and outer lines below the stripe both straight and parallel, the outer edged on inner side with yellow; median line more inwardly oblique, outwardly pale edged, followed by a wavy line indented on vein 1; subterminal line lunulate dentate, the tip of the lunules marked inwardly with a dark and outwardly by a pale dot; fringe grey with a yellow basal line; cellspot black, sometimes large; hindwing with the four outer lines, but without cellspot; the forewing generally shows a paler diffuse space in midwing before outer line; the ground colour varies from dark grey or grey brown to pale fawn colour; ground colour of underside yellow, paler in the ♂. An Indo-oriental species occurring throughout India and the Malay Islands and reaching Australia; recorded from China. *faultrix.*

7. Genus: **Cocytodes** *Guen.*

Tongue present; palpi upturned close to face, the third segment short; antennae filiform, quite simple; thorax and abdomen clothed with long hair; in the ♂ a strongly ridged chitinous rasp exists on the centre of the dorsum of penultimate segment; tibiae with fringes of long hair; all the tibiae spined; the inner margin of hindwing in ♂ fringed with long hair; both sexes with the termen truncate below vein 2. Type: *C. coerulea* *Guen.*

C. coerulea *Guen.* (58c). Forewing brown suffused with black, except the costal area to outer line and the apex, and sparsely sprinkled with blue scales; lines thick and black; the inner waved and oblique, beyond two black basal blotches; outer line lunulate dentate, angled beyond lower end of cell; a pale waved submarginal line, somewhat obscure; orbicular stigma a black dot; reniform a large white lunule with a black lunule at centre; hindwing black, with a bright blue patch beyond cell before a broad black outer line which is followed by a maculate outer blue band; an elongate blue mark on margin before anal angle. Larva black, with transverse dorsal white bars each enclosing a black line; spiracles ochreous, in black rings with some red round them placed on white patches; an interrupted white line between the spiracles; a broader spiracular line with a black spot below each spiracle; a broad white ventral band; the last segment humped and black on dorsum; the extremity orange above spotted with black; the whole with long sparse white hairs. Amurland, Central and Western China, Japan. The insect occurs throughout India and the islands of the Malay archipelago. *coerulea.*

8. Genus: **Agonista** *Fldr.*

Tongue well developed; frons smooth; palpi upturned; antennae of ♂ nearly simple; all the tibiae spined; thorax and abdomen clothed with hair, without crests; wings in ♂ on upper side clothed with silky androconia except the terminal area in forewing and innermarginal area in hindwing; hindwing with inner margin prolonged; a strong fold between veins 1a and b; the cell short; wings ample and broad in the ♂, longer in the ♀; the ♂ darker than the ♀. Type: *A. endoleuca* *Guen.* A genus of Indian and Malayan moths, two of which are Chinese.

A. endoleuca *Guen.* (58a). ♂. Both wings velvety black brown, shot with purple blue; the fringes white, hindwings with innermarginal area and fringe pure white; anal half of abdomen yellow. ♀. Both wings fawn brown, with numerous transverse brown striae, often dusted with pale beyond outer line; forewing with the bands thick, darker; the inner bent at middle; the median nearly straight; the outer broad at costa, angled outwards at vein 6, then narrower; a subterminal row of dark spots, inwardly tipped with white, often obsolete; a darker edged fawn brown lunule at end of cell; hindwing with median and outer dark bands, the latter indented at costa, followed by a white line; the apex narrowly, the tornal area broadly, and the inner margin and fringe white; fringe brown and white; abdomen fawn brown. Recorded from China. *endoleuca.*

A. ciliata *Moore* (= *fuscescens* *Leech*) (58a) ♂. Forewing velvety brown, with a greenish blue lustre in certain lights; indistinct darker inner, median, and outer bands, which are scarcely visible in hindwing; fringes cream white; ♀ pale ochreous brown with darker striae, slightly greenish-tinged, partly or wholly suffused with darker, especially in basal half and in terminal area; inner band slightly waved; median lunulate dentate, protruding below middle; outer band macular, angled outwards at vein 6 and below middle; subterminal lunulate dentate, the lunules marked at their inner edge with black points tipped with white; a large, generally paler, bilobed discal blotch at end of cell finely edged with black and white; hindwing with 3 dark straight parallel bands, the outermost the darkest and edged with pale; a subterminal row of dark points; fringes hardly paler. A North Indian species, occurring at Chia-kou-ho, W. China. The forewings of the ♂ of this species are narrower, less triangular, than is usually the case in this genus. *ciliata.*

9. Genus: **Nyctipao** *Hbn.*

Tongue well developed: frons smooth; palpi upturned, moderately scaled, the terminal segment long; thorax clothed with hairs, without crests; pectus woolly; all the tibiae spined; cell of forewing $\frac{1}{3}$, of hindwing $\frac{1}{5}$; hindwing of ♂ not aborted, with neuration normal as in ♀. Type *N. crepuscularis* L.

Sect. I. Wings of ♂ with androconia.

albicinctus. **N. albicinctus** *Koll.* (= *rivularis* *Westw.*) (59a). Forewing metallic purple fuscous, the whorl-shaped stigma large, placed on a greenish patch with some brick red scales in the centre; the black head with a blue patch, two white specks, and some white scales on it; a curved ochreous white narrow subterminal band, angled above vein 3; veins towards termen and the fringe ochreous white, more strongly in ♀ than ♂; hindwing with the subterminal band angled above veins 6 and 3; the fringe and veins white. The forewing of ♂ is clothed with velvety androconia on upper side as far as outer line except at costa, and is altogether browner, less purplish than the ♀. An Indian species recorded by LEECH from Kwei-chow, Western China; sometimes, in ab. **obnubilata** *ab. nov.* (59a) of the ♂, the outer pale line is attenuated and partially obscured by brown suffusion.

pilosa. **N. pilosa** *Lecch* (58d). Forewing fuliginous brown, suffused, especially in outer half, with purple; inner, median, and outer bands darker, indistinct; a large chocolate brown ocellus outlined in black, with blue sealing on the inner edge of the black comma-shaped pupil; beyond it a fine sinuous white line, which does not reach the inner margin; hindwing with two darker bands and a sinuous white line. The forewing of ♂ on upperside is clothed below cell and discoidal stigma with rough androconia to beyond middle; the hindwing with rough androconia throughout, except a narrow space along termen. Occurs in Central and Western China.

glaucopis. **N. glaucopis** *Walk.* (= *prunosa* *Moore*) (58d). Forewing smoky olive brown, shot with purple; differs from *pilosa* in the subterminal line being almost evenly curved, and not irregularly sinuous, broad and white below subcostal vein, less distinct below vein 5; in the hindwing this line, running nearly parallel to termen, is marked with two broad white lunules between costa and vein 6, then with narrow linear ones; on underside of forewing this line consists of large white lunules throughout. A ♀ in the FELDER collection from Kashmir, probably authentic; as the species occurs in the N. W. Himalayas, as well as in Sikkim and Assam. In this species the forewing of the ♂ is without androconia, but the hindwing on upperside is clothed with rough androconia to near outer line, except at inner margin.

Sect. II. Wings of ♂ without androconia.

crepuscularis. **N. crepuscularis** L. (= *ephesperis* *Guen.* part nec *Hbn.*) (58d, 59a). ♂ Forewing dark brown; inner line sinuous, indistinct; the whorl brown with black edges, its head bilobed and accompanied by a few blue scales; beyond it a black line, angled beyond cell and oblique to near base of inner margin, with a broad white or fulvous band beyond it; outer line sinuous, black; subterminal black, irregularly lunulate, the lunules containing white marks; terminal area grey, with a large triangular costal patch before apex; hindwing with pale basal band, followed by a black line; a waved median line with long pale hair beyond it; a black lunulate subterminal line, indented between veins 3 and 6, with white patches on it; terminal area fulvous brown except at apex; ♀ greyer, with less contrast of colour than in the ♂, but the nearly straight outer line is often whitish. The above is the common form of the species occurring in India and many of the Malay Islands, also in Kashmir; the Japanese and Chinese forms, which also occur in the Loochoo islands, are darker with the outer white band more prominent; in the ♀ of ab. **laetitia** *Blth.* (59b) which is smaller, the ground colour, instead of being greyer, is fuliginous fuscous; the outer straight line is white, sometimes swollen into a narrow band with a ragged outer edge; the pale outer area of the curved median stripe is replaced by dull fawn or fuscous; the white submarginal lunules are shallower and more conspicuous; the ♂♂, though not prominently different, are also darker and duller than in the type form. In the more eastern Malay Islands two other forms of the species occur, both with dark ♀♀, one without, the other with a broad white band with ragged edges; this last is **ephesperis** *Hbn.*; GUENÉE in his description of *ephesperis*, of which he thought he had two ♀♀, confounds the two forms; his example from Japan, from which his description seems to have been made, being BUTLER's *laetitia*, while that from Amboina was the true *ephesperis*.

clavifera. **N. clavifera** *Hmps.* (= *leucotaenia* *Guen.*, part). ♀ Forewing fuscous brown; basal area with a slight purplish grey gloss; inner line dark, indistinct, oblique below cell; discoidal mark an inverted comma with bilobate head, defined by black, and its head by silvery blue scales; some white and rufous scales in inner part of centre; median line black, defined externally by white, excurved from costa round and below discal mark, then indistinct and oblique to inner margin; an oblique pure white outer band, with dentate outer edge, arising below costa and narrowing above; a wedge shaped white patch below costa before apex with

indented outer edge, followed by the interrupted waved white subterminal line, defined externally by black brown, oblique to outer band below vein 5 and strongly bent outwards between veins 4 and 3; terminal area greyer; hindwing fuscous brown; inner line indistinct, dark, excurved to submedian fold, then oblique; a pure white outer band with dentate outer edge; subterminal line with narrow oblique white bar below costa, the white defined externally by black brown, bent inwards to near outer band, waved and defined externally by grey hairs between veins 6 and 4, and from vein 3 to inner margin; underside of both wings with basal half greyish; the white outer band of forewing broken up into spots. The type, a ♀, from Hongkong; GRENEE's supposed *leucotaenia* from Manila, the Philippines.

10. Genus: **Patula** *Guen.*

Differs from *Nyctipao* in the hindwing of ♂ having the costal half aborted, forming a fold turned over on upper side containing a large patch of flocculent hair; vein 4 running to the functional apex, 6 to the fold, 7 and 8 quite short to near base of costa; vein 5 from middle of discocellular; wings ample, with crenulate termen. of sombre coloration. Type *P. macrops* L.

P. macrops L. (= *bubo* F., *hoöpis* *Guen.*) (58 e). Forewing brownish fuscous shot with purplish; inner and median lines black and waved; a large fulvous whorl-shaped stigma beyond cell, outlined with black, with a black comma-shaped pupil having blue streaks and specks on it; outer line broadly double, irregularly waved, excurved above round the stigma and incurved below it; a double subterminal line, formed of sinuous rows of black spots, the inner of which is obsolescent towards costa; hindwing with a median black line curved round cell; an outer series of lunules, with two sinuous rows of spots beyond; the ♂ has tufts of fulvous hair round claspers in the anal segment of abdomen. A widely spread eastern species, occurring in Central and Western China. *macrops.*

11. Genus: **Metopta** *Swinh.*

Tongue developed; frons smooth; palpi upturned, the third segment slender, nearly as long as the second; thorax and abdomen clothed with hair, without crests; mid and hind tibiae spined; antennae bipectinate to apex, more feebly in ♀; cell short in both wings; vein 5 from close above 4; forewing marked with a whorl shaped stigma, as in *Nyctipao*. Type *M. rectifasciata* Mén.

M. rectifasciata Mén. (= *japonica* *Wlk.* nec *Guen.*, *interlineata* *Btlr.*) (58 c, d). Forewing brownish fuscous, thickly dusted with violet grey scales between inner and median lines below middle, and in the terminal area beyond subterminal line; space between middle and outer lines and an irregular cloud beyond subterminal deep brownish fuscous; inner line dark, waved, slightly paler edged; median line oblique, only visible below the stigma; outer line oblique, parallel to median, followed by a cream white band with a central brown thread, and variable in width and intensity; space beyond before subterminal line pale brown dusted with dark brown or wholly dark brown; subterminal finely whitish, with two irregular outward projections and deep sinuses on each fold; costal streak pale violet brown; the whorl-shaped stigma pale brown edged finely with black and yellowish; the bilobed head still paler, marked with a few bluish scales; hindwing with the basal half deep brownish fuscous, limited by a straight line followed by a creamy band with diffuse radiating outer edge; subterminal line whitish, very deeply lunulate dentate, preceded and followed by deep brownish fuscous; terminal area as in forewing; fringe of both wings brown. Appears common in China and Japan; also found in Formosa. Specimens from China and Formosa, as a rule, have the white band narrower and less conspicuous than Japanese. *recti-fasciata.*

12. Genus: **Enmonodia** *Guen.*

Tongue developed; frons smooth, with a tuft of hair above; palpi upturned, the second segment broadly scaled, the third long; all the tibiae spined; thorax and abdomen smooth; wings ample; the forewing with apex prominent; the sexes different; underside of hindwing in ♂ clothed with long woolly hair, except the costal area. Type *E. pudens* *Walk.*

Sect. III: Antennae of ♂ with short fascicles of cilia.

Subsect. A. Forelegs of ♂ with erectile tuft of long hair from the femoro-tibial joint.

E. vespertilio F. (= *signata* *Walk.*, *dulcina* *Fldr.*, *pandia* *Fldr.*) (59 b). ♂ Forewing pale fawn colour *vespertilio.* along costal third, the rest of wing suffused with olive, which tint is variable both in extent and depth; in general the basal area below vein 1, the median area below middle of cell, and an oblique shade from apex

are dark olive: while the terminal area is variable; lines dark olive fuscous; inner line outcurved from costa to vein 1. and again below it. edged inwardly with pale: median line obliquely waved outwards to vein 5. there bluntly rounded and inwardly oblique to middle of inner margin, thickening downwards, and often followed by a slighter line, generally interrupted above vein 5; outer line lunulate dentate, more or less parallel to median line, outwardly edged with pale; subterminal line also lunulate dentate, parallel to termen; discocellular marked by two dark green drops, often confluent, with three dark green oval spots lying in an oblique line parallel to median between veins 3 and 5: rarely all five spots are swollen and strongly confluent, and every possible variation occurs: sometimes the three lower ones are small, ringed with paler, and again one or other or all three may become obsolete; these spots are always stronger in the ♂♂: hindwing with dark diffuse straight olive band before the middle, and outer and submarginal dentate lines edged with pale: the whole wing more or less suffused with olive; fringe of inner margin reddish; ♀ much paler, suffused with green along terminal area and with a dark green oblique streak from apex; thorax dark olive green or brown; in the ab. *suffusa* ♂ *ab. nov.* the whole of both wings is dark olive, except the costal edge of forewing: *griseata* *ab. nov.* (59 b) is a dark form of the ♀ with a pinkish tinge, the abdomen dorsally and laterally reddish: the ab. *reducta* *ab. nov.* ♂ has the wings tinged with brownish ochreous and yellow, without any dark olive fuscous suffusion: the discoidal mark of forewing reduced or obsolete. The species occurs in China, Japan, and Kashmir: it is common throughout India, in Ceylon, the Andamans, Java, and Borneo.

suffusa.
griseata.
reducta.

shiva.

E. shiva *Guen.* (= *extricans* *Walk.*, *pallida* *Moore*, *distans* *Moore*) (59 c). Smaller and neater than *E. vespertilio*; the whole forewing pinkish ochreous; only the terminal area beyond subterminal line faintly olive-tinged, obliquely limited above by the dark streak from apex: the prominent marking is the angled median line, which is produced across hindwing before the middle: the discocellular markings as variable as in *vespertilio*, but the V-formed by their confluence more narrow and acute. As far as I know, this species is Indian only; but as it may prove to be only a form of the preceding *vespertilio*, with which it is actually included by HAMPSON, I insert it here among the palaearctic species.

Subsect. B. Hind tibiae and tarsi of ♂ fringed with very long hair; abdomen beneath clothed with long woolly hair; forewing with apex subfalcate; underside of hindwing clothed with long woolly hair except at middle of costa.

pudens.

E. pudens *Walk.* (= *hypopyroides* *Walk.*, *grandaeva* *Fldr.*) (59 c). Forewing pale lilac grey in ♂, reddish fawn colour in ♀; the terminal area darker; inner line olive grey, excurved above and below median vein, with a diffuse grey cloud before it, sometimes appearing double; median line double, olive-brown, excurved and waved to vein 4, then inwardly oblique, distinct, and straight, this lower part continued obliquely upwards from vein 2 as a dark line to apex, with the terminal area below it olive brown: outer line lunulate dentate, limiting the darker suffusion of terminal area; the costa beyond it occupied by a triangular olive grey patch; subterminal line lunulate dentate, followed at anal angle by a pale erect cloud; terminal line waved, preceded by another marked by black white-tipped dots on veins; a greenish lunule on discocellular, sometimes marked by two black dots or a black crescent, generally followed by a dark horizontal smear to outer line; a large irregular black blotch beyond lower angle of cell, sometimes much swollen, bilobed or trilobed and nearly touching discal spot: hindwing with the median line straight and brown; the rest as in forewing; in the ♀ the shadings are deeper fawn colour; in the type form the blotch beyond lower angle of cell is rounded and of moderate size; — in the ab. *parvimacula* *ab. nov.* (= ab. 3 *Hmps.*) (59 c) the blotch is smaller, sometimes reduced to a black spot; in the ab. *grandimacula* *ab. nov.* (= ab. 2 *Hmps.*) (59 c) the blotch is large and swollen, often conjoined with the discal lunule; — in ab. *longimacula* *ab. nov.* (59 d) the blotch consists of two elongate oval spots, sometimes in contact with the discal lunule; — in *persimilis* *Moore* (59 d) there are no dark blotches besides the slight discal spots; — in ab. *fasciata* *ab. nov.* (60 b) both lines are followed by prominent dark fascia-form shades. An Indian species occurring in Japan.

parvi-
macula.
grandi-
macula.
longimacula.
persimilis.
fasciata.

Subsect. C. Legs of ♂ normal.

feniseca.

E. feniseca *Guen.* (59 e). Forewing pale reddish fawn colour, dusted and towards termen slightly suffused with olive grey; the lines slight; inner line vertical, forming slight lunules outwardly between, and dentate inwards on the veins, the teeth marked by dark spots; median line greenish, starting from a diffuse costal spot, excurved and waved to middle, below it oblique, nearly straight and more distinct, followed by a slight dark shade, which is continued to termen below apex, the apex above it pale, shining; outer line lunulate dentate, parallel to median; subterminal straight, also lunulate dentate, followed by a paler shade at tornus; a similar line close before termen; a faint greenish lunule at end of cell, sometimes marked at each end with black, often followed by an olive grey cloud between veins 4 and 5 to outer line; hindwing with the four outer lines only; in the ab. *geminipuncta* *ab. nov.* (= ab. 2 *Hmps.*) (59 e) there are 2 small oval black pale-ringed spots before median line, one on each side of vein 4; in ab. *grisea* *ab. nov.* (= ab. 3 *Hmps.*) the wings are grey without red brown suffusion. A native of N. W. India, occurring over the border in Kashmir, and also recorded from W. China; a ♀ from Kashmir in Tring Museum belongs to the form *geminipuncta*.

gemi-
puncta.
grisea.

13. Genus: **Speiredonia** Hbn.

Tongue present; frons smooth; palpi upturned, stout, the second segment well scaled, the third short, slender, pointed; antennae of ♂ ciliated; thorax and abdomen smoothly scaled, stout; legs long, without fringes of hairs; wings large and thick, heavily scaled; the forewing marked with a more or less clearly expressed spiral; the body beneath and underside of wings red. Type *S. retorta* L.

Sect. II. Antennae of ♂ minutely serrate and fasciculate; hindwing with a fold on innermarginal area of upper side, containing an expansible fringe of long stiff hairs.

S. retorta L. (= *spiralis* F., *chimista* Koll., *jinchuena* Btlr., *inaequalis* Btlr., *confusa* Btlr.) (59 d). ♀ *retorta*. Forewing olive ochreous clouded with brown; lines dark, curved; the inner edged inwardly with pale, followed below middle by a diffuse darker curved line indented on vein 1; median line strongly outcurved above, then inwardly oblique, followed by a dark shade below middle; outer line angled on vein 6, followed by white below middle; subterminal line lunulate dentate, double below middle; terminal line festooned, preceded by a similar one; a large hornshaped blotch in midwing before median line, filled up with dull black, thickly outlined with deep black bounded below by yellowish white and above more narrowly by steelblue; a pale ochreous oblique streak from above it towards apex; deep black lines in the intervals above veins 5 and 6 and often concise white lines above veins 7 and 8; hindwing with a broad blackish antemedian band, formed by the widened continuation of the median, the shade beyond it, and the dentate outer line of forewings, the latter followed by a white space; subterminal line pale yellowish, nearly straight, preceded by a broad and followed by a narrow dark brown shade; the two festooned lines as in forewings; underside vermilion red, with dark cellspot and three lines. ♂ Both wings smoky brown to beyond middle, then paler; the lines and the discal mark of forewing all more or less obscured; underside concolorous. This common Indian species occurs in China and Japan; the specimens are somewhat larger than the average, and exhibit two forms of aberration in the ♀, both without the paler ochreous shadings: ab. **suffumosa** Guen. (= *isabella* Guen., *cohaerens* Walk.) *suffumosa*. (60 a) is uniform reddish fawn without dusting and dark shades; the other, ab. **rubicunda** ab. nov. (60 b) is tinged with bright fulvous below the grey costal area. *rubicunda*.

S. japonica Guen. (60 a). Smaller and brighter than *retorta*; the ♂ very nearly as strongly coloured *japonica*, as the ♀, and on underside more or less tinged with reddish. China and Japan: the Chinese ♀♀ are paler and brighter than the Japanese.

S. helicina Hbn. (59 e). Like the last smaller and brighter than *retorta*; characterised by the yellowish *helicina*, subterminal line of hindwing being prominently dentate instead of straight and even. This Indian form also occurs in China and Japan.

S. martha Btlr. (= *aegrotata* Btlr.) (60 b). Forewing pure fawn colour, ranging from pale pinkish fawn *martha*, to reddish brown, or greyish fawn, often with lower half of median area dark brownish fuscous; lines darker, but rarely prominent; inner line curved, darker dotted on veins, sometimes continuous and plain from costa to middle; median line outcurved from costa to vein 2, then oblique; outer line dotted with dark on veins, followed by a paler line, oblique outwards to vein 6, then inwards; subterminal line pale, undulating, between two dark shades, often all but obsolete; a long deep green crescent on discocellular, sometimes thickened, at others quite slender, or even obsolete; three large green oval spots between bases of veins 2 to 5, sometimes swollen and confluent with one another and with the discal crescent, more often variously divided, or again pale and small and sometimes obsolete; hindwing with inner, outer, and subterminal lines all straight and parallel, the two last outwardly pale-edged; the outer marked by black dots on veins or else dentate lunulate; in the pinker examples the ground colour of hindwing is also pinkish; space between inner and outer lines often darker, and with a middle dark line in between; the palest pinkish fawn coloured examples may be separated as ab. **carnea** ab. nov. (= ab. 3 Hmps.) (60 b); in the ab. **grisescens** ab. nov. (60 c) the greyer tints *carnea*, *grisescens*, predominate to the effacement in a great degree of the fawn coloured tinge: Japanese examples are on the average more strongly marked than Chinese, the ♀♀ of which last have a sandy ochreous tinge; — in the ab. **signata** ab. nov. (= abb. 1 and 2 Hmps.) (60 c) the green discal spots are strong, the whole hindwing and *signata*, innermargin of forewing being generally dark; — in ab. **innotata** ab. nov. (60 c) the markings of both wings *innotata*, are nearly obliterated. Restricted to Japan and China.

14. Genus: **Xylophylla** Hmps.

Tongue fully developed; frons smooth with a large tuft of hair; palpi obliquely upturned, second segment broadly scaled, third very long, thickly scaled, and somewhat dilated at extremity; antennae of ♂ simple,

lamellate; all the tibiae spined; thorax and abdomen rough haired, without crests; forewing with costa strongly arched; the apex produced to a long acute point; termen well curved; inner margin strongly convex; vein 6 from the depressed end of cell, 7 and 8, 9, 10, all three stalked, from the bend; hindwing with cell quite short, the discocellular biangulate. Type *X. punctifascia* *Leech*.

punctifascia. **X. punctifascia** *Leech*. Forewing brown, with some blackish irroration in and around cell; crossed by five transverse angled olive brown lines, of which the outer and subterminal are most distinct; an oblique brown streak from apex to two velvety marks in cell; the upper one in the ♂ divided into two parts, in the ♀ entire, Y-shaped; hindwing blackish, terminally brown; an outer row of six large fulvous blotches. Omei-shan and Chia-kou-ho, West China. The insect mimics a dead leaf in its shape and the markings of forewing.

15. Genus: **Dermaleipa** *Saalm.*

Tongue well developed; frons smooth, with a small tuft of hair; palpi upturned, moderately scaled, short; antennae minutely ciliated; vertex of head tufted; mid and hind tibiae spined; thorax and abdomen hairy, without crests; forewing of ♂ with costa arched before middle, insinuate in middle; apex produced; hindwing of ♂ with tuft of long hair on upperside above middle of inner margin. Type *D. juno* *Dalm.*

juno. **D. juno** *Dalm.* (= *elegans van der Hoer.*, *multicolor Guen.*) (60 d). Forewing varying in ground colour from chestnut brown to ochreous brown and grey brown; lines fine, brown, partially pale-edged; inner line oblique outwards, outer oblique inwards, with a slight angle beneath costa; a submarginal curved line from apex to anal angle; inner margin rufous; orbicular stigma a black dot; reniform indistinctly outlined, often with a black spot in both lobes; hindwing with basal three-fourths black, its outer edge dentate, containing an ill-defined bluish median band, not reaching either margin; terminal area crimson, with a dark patch at middle of termen. An Indian species, found also in Japan, Corea, China and Amurland. The distinctness of the reniform stigma as well as of the lines varies greatly in both sexes.

16. Genus: **Artena** *Walk.*

Tongue present; frons smooth with tuft of hair at top; palpi upturned, the second segment thickly scaled, third short and smooth; antennae of ♂ shortly ciliated; mid and hind tibiae spined; thorax and abdomen smooth, without crests; forewing with costa not sinuate, the apex blunt; underside of hindwing clothed with rough pilose hair; vein 1 without stiff and close row of hairs; forewing with two outwardly oblique, more or less parallel lines; hindwing dark, usually with a slight pale bluish median band. Type *A. submira* *Walk.*

dotata. **A. dotata** *F.* (60 c). Forewing grey brown; median area paler; terminal area dark brown, with an irregular angled darker cloud; lines slender, blue grey, outwardly oblique; inner line nearly straight from $\frac{1}{5}$ of costa to beyond middle of inner margin; outer line irregularly waved and slightly curved from costa to vein 2, then oblique and straight; subterminal line straight, the brown before it deeper, the narrow terminal area beyond it lilac grey, containing a dark marginal festoon before the dark terminal line; fringe grey with a dark middle line, at anal angle paler; orbicular stigma a round dark dot; reniform consisting of two superimposed brown black-edged rings; hindwing blackish, with a curved median pale blue band from vein 6 to 2; fringe white; termen dusted with whitish. An Indian species extending to Tonkin, Hainan, Formosa, and Borneo; also found in China; ab. **obsoleta** *ab. nov.* (60 d) has the forewing uniform pale brownish fawn colour, only the dark subterminal line and the pale terminal space beyond it marked; the reniform stigma hardly visible; hindwing altogether paler; described from a ♀ from Shillong, Assam, in the Tring Museum.

17. Genus: **Minucia** *Moore.*

Tongue present; frons smooth, tufted above; palpi upturned, of moderate length, the second segment with thick appressed scales, the third porrect, blunt; thorax with a slight central ridge; abdomen smooth, without crests; antennae in ♂ ciliated; mid and hind tibiae spined. Type *M. lunaris* *Schiff.*

lunaris. **M. lunaris** *Schiff* (= *augur* *Esp.*) (60 e). Forewing pale ash grey, faintly dusted with dark, with a slight ochreous tinge, always darker in the ♀, tinged with pale red brown; inner and outer lines yellowish, the inner nearly straight, slightly bent inwards on subcostal vein and vein 1; the outer sinuous, approaching inner line on inner margin; orbicular a brown dot; reniform a brownish lunule; both lines followed by a

brownish shade, the inner below middle only, the outer throughout: subterminal line twice indented, with a large rounded projection above each indentation; terminal area darker; a row of black terminal dots; hindwing pale brownish, with a faint curved pale median line before a fuscous brown submarginal border: this species varies in coloration; the ab. **rufa** Oberth. (60e) is red brown with the markings more or less obsolete; ab **murina** Oberth. (60e) is mouse colour throughout, and **maura** Oberth. is blackish fuscous; — in ab. **olivescens** ab. nov. (60e), from Cintra, Portugal, the whole wing is tinged with greenish, and the abdomen is glossy; subsp. **inconspicua** subsp. nov. (60e) from Lambessa, N. Africa, is a smaller form, generally with slight and inconspicuous markings, dull grey in the ♂ and somewhat pink-tinged in the ♀. The species occurs throughout S. Europe, in Algeria, Syria, and Asia Minor. Larva brown; dorsal line fine, moniliform; subdorsal broad, dark, enclosing pale spots, with three fine dark lines beneath it; spiracular pale, sometimes yellowish; two lateral projections on segment 5; pairs of dorsal points on last two segments; head brown; feeding on oak.

rufa.
murina.
maura.
olivescens.
inconspicua.

M. wiskotti Püng. (63g). In markings like *lunaris*, but smaller; the reniform pale or absent instead of dark; a dark spot on costa near before outer line; in the ♀ a black point in the outermost tooth of subterminal line; ground colour of ♂ greenish grey and brown mixed, as in *lunaris*; in the ♀ more uniform clear brown; in one ♀ the two lines are broadly shaded with dark brown; sometimes, as in *lunaris*, a subterminal row of points: hindwing and underside duller and more uniform brown. Palestine.

wiskotti.

18. Genus: **Anua** Walk.

Tongue present; frons smooth, with a pointed tuft of hair above: palpi upturned, the second segment moderately scaled, the third porrect; antennae of the ♂ ciliated; thorax hairy, without crests; basal segments of abdomen with ridges of hair; forewings elongate, narrow, generally more or less yellow in coloration. Type: *A. finifascia* Walk.

Sect. II. Antennae and mid tibiae of ♂ normal; the hindwing on underside with woolly hair on basal area and ridges of hair along the veins.

A. tirhaca Cram. (60f). Forewing olive green or yellowish green, generally covered with fine transverse brown striae; inner and outer lines hairfine, often invisible, meeting at middle of inner margin, the inner straight, the outer slightly curved above, starting from a triangular brown spot on costa; orbicular stigma a brown dot; reniform an oblique brown lunule; terminal area redbrown limited by the submarginal line, which projects outwards above veins 6 and 3, and forms three lunules below costa, containing black white-edged spots; hindwing deep yellow, with a broad black bar from anal angle to vein 6, generally strong and black in the ♀, attenuated in the ♂, or, as in type, reduced to a blotch beyond cell only, rarely quite absent. Found only in the South of Europe, in Algeria and the Canaries, in Cyprus, Syria, and Asia Minor; also occurring in India, and China. In the ab. **absens** ab. nov. (= ab. 1 *Hmps.*) (61a) the blotch in hindwing of the ♂ is entirely wanting; — in **auricularis** ♂ *Hbn.* the band is more or less attenuated and obsolescent; in **vesta** ♀ *Esp.* (60f) the band is evenly broad and black with both edges dentate, but attains its greatest development in the form **separans** *Walk.* (60f); these specimens with very broad bands are ♀♀; in another form ab. **pura** ab. nov. (60f) the ground colour is absolutely pure without any transverse striae. The dark scaling of the hindwing is more feebly expressed in European specimens, and attains its greatest development in the Indian and Chinese examples.

tirhaca.

absens.
auricularis.
vesta.

separans.
pura.

A. triphaenoides *Walk.* (61a). ♂ Forewing pale greenish ochreous; terminal area darker, often purplish brown: inner and outer lines very fine, brown, not meeting on inner margin, the fringe of which is reddish; orbicular stigma a purple dot; reniform a purple lunule with deeper outline: subterminal line violet, preceded by an olive shade containing two black spots above veins 6 and 7, the lower filling the angle of the line; hindwing buff, greyish towards base, with a broad blackish terminal border, attenuated at anal angle; in the ♀, **cuprea** *Moore*, the forewing is wholly dark chocolate brown; the inner and outer lines pale; the subterminal rufous, preceded by a brown shade; the costal edge ochreous; hindwing with the paler base smoky brown: in ab. **pallescens** ♂ ab. nov. (= ab. 2 *Hmps.*) the forewing is quite pale ochreous without irroration; in ab. **terminata** ♂ ab. nov. the terminal area is conspicuously darker. An Indian species which also occurs in W. China.

triphæno-
oides.

cuprea.

pallescens.
terminata.

A. olista *Swinh.* (61a). Forewing grey brown, in the ♀ with a reddish tinge; inner and outer lines pale, preceded by grey scales at the veins: the inner outwardly oblique to vein 1, then inbent, the outer slightly curved above, marked by a black spot on costa; subterminal line pale, preceded by a series of black irregularly triangular marks between the veins, sharply angled outwards above vein 6 and bluntly above 3; orbicular stigma a black spot: reniform a brown lunule with black edges; hindwing paler brown, with the outer half dark fuscous. Recorded from China and Japan.

olista.

19. Genus: **Ophisma** *Guen.*

Tongue well developed; frons smooth, with a tuft above; palpi upturned, stout, the second segment thickly but smoothly scaled, the third short; antennae of ♂ simple, hardly pubescent; thorax and abdomen smooth, without crests; tibiae in ♂ heavily fringed with hair; the mid tibiae spined; forewing with costa slightly shouldered near base in ♂, the apex shortly produced and acute; termen more or less sinuate; hindwing with a slight bend in termen at vein 2. Type *O. gravata* *Guen.*

Sect. II: Mid tibiae not dilated, without a groove or fringe of hair; the first segment of hind tarsi simple.

gravata. **O. gravata** *Guen.* Forewing grey brown sparsely black-speckled, with a slight fulvous tint along the two folds; markings slight and obscure; a straight dark outwardly pale edged line before middle of wing; outer line sinuate, cloudy, often marked by black vein dots; a faint pale subterminal line; termen darker except at apex; a row of black submarginal dots; fringe concolorous, with the tips white; hindwing dull greyish yellow in basal half, fawn grey in terminal, containing a wide black submarginal band with straight inner edge and broadening towards apex. Occurs from India to Australia; recorded also from China.

20. Genus: **Pindara** *Moore.*

Tongue well developed; frons smooth, with some rough hair above; palpi upturned, the second segment thickly scaled, the third porrect, slender and smooth, longer in ♀ than in ♂; antennae of ♂ simple; tibiae of ♂ heavily fringed with hair; forewing elongate triangular, the costa straight, depressed at apex, the termen oblique, nearly straight; hindwing with termen bent at end of vein 2; forewing with a dark brown costo-apical patch; lines or bands rufous, the antemedian oblique outwards, the postmedian lunulate dentate; hindwing with a faint pale central band. Type *P. illibata* *F.*

illibata. **P. illibata** *F.* (= *peropaca* *Hbn.*, *laetabilis* *Guen.*) (61 c). Forewing pale olive brown with a lilac tinge when fresh; lines rufous ochreous with a darker central thread; the inner line oblique outwards to middle of inner margin, slightly kinked on subcostal and median veins; median and outer lines lunulate dentate, sinuous, and near together; subterminal similar, but generally obscure; orbicular stigma a white dot; reniform large with dark central lunule and broad pale outline; a large deep chocolate brown semioval costal blotch touching apex, edged below with whitish; extreme termen and fringe lilac grey; hindwing olive fuscous, traversed at middle from costa to above anal angle by an obscure narrow lilac grey band; termen and fringe lilac grey; *colorata.* an aberration occurs — ab. **colorata** *ab. nov.* — in which the rufous ochreous tints are more developed along the lines and form a large pale area at costa before the dark apical blotch. Widely spread, occurring from India to Australia, and recorded from China.

21. Genus: **Ophiusa** *Ochs.*

Tongue present; frons smooth, tufted at top; palpi upturned, stout, smoothly scaled, the terminal segment longer in ♀ than in ♂; thorax and abdomen smoothly scaled; tibiae in ♂ fringed with long hair; the mid tibiae spined; antennae of ♂ simply ciliated; forewing with apex prominent, the termen smooth. Larva slender, attenuated in front; the first pair of prolegs aborted; feeding on trees and shrubs; pupating in a cocoon among leaves and rubbish on the surface of the ground. Type *O. algira* *L.*

maturata. **O. maturata** *Walk.* (= *falcata* *Moore*) (61 b). Forewing grey brown tinged with violaceous, which tint is strongest before the straight median line; basal area slightly tinged with olive brown; space between median and outer lines deep olive brown; inner line almost straight, slightly oblique outwards, brown finely edged on each side with pale; outer line angled outwards at vein 6, then incurved, but bent outwards again at inner margin, finely edged with pale and then with olive; a straight dark streak from apex, preceded by olive fuscous shading, meets the angle of outer line; subterminal line deeply dentate beyond a reddish brown suffusion, the teeth marked with whitish on the veins; a line brown terminal festoon; orbicular stigma a small yellow spot; hindwing olive fuscous, with the basal area paler and the termen and fringe purplish grey. Occurs in China and Japan; also in Formosa; otherwise an Indian species extending to the Malay peninsula.

curvata. **O. curvata** *Leech* (= *algira* *ab. curvata* *Leech*) (61 b). Intermediate between *algira* and *arcuata*; nearly as large as the latter; inner line curved, but more gradually and less strongly; the median line not so gradually curved, but slightly bent on submedian fold; the outer line produced to a prominent blunt angle on vein 6,

like that in *arcuata*, but not so acute; its lower arm with only a slight protuberance between veins 3 and 4; the median pale band more or less filled up with grey brown; the terminal area pearl grey; hindwing as in *algira*; the ♂♂ are apparently rather darker than the ♀♀. China and Japan.

O. algira L. (= *abatina* *Suls.*, *triangularis* *Hbn.*) (61b). Forewing brownish fuscous, with a purplish tinge when fresh; a whitish median band narrowed in middle, edged inwardly by the erect but slightly outcurved inner line, outwardly by the similarly incurved median line; outer line acutely angled outwards on vein 6 and bluntly bent between veins 3 and 4, then sinuous to inner margin near median line; a black apical streak of two spots; the terminal area violet grey; hindwing fuscous, with a diffuse whitish median band; the terminal area grey at middle; fringe grey, below apex whitish; — the ab. **mandschuriana** *Stgr.* is more uniformly purplish or slaty grey, with the median band only slightly paler, not white. Larva yellowish grey, darker on dorsum, with fine black longitudinal lines; venter and feet pale grey; spiracles black; head yellowish grey; feeding on *Rubus*. A European species, but occurring only in the South: Switzerland, the Tyrol, Austria, the Crimea; in Algeria and the Canaries; in Asia Minor, Syria, Ferghana; Amurland, Corea, China, and Japan.

O. arcuata *Moore* (= *joviana* *Guen. nec Cram.*, *guenéei* *Snell.*) (61b). Distinguished by the inner line of forewing being sinuous; the median line limiting the pale median band very strongly concave, meeting the extremities of outer line on costa and inner margin; the outer edge of the oblique black apical streak excised. *LEECH* records a single example of this common Indian species from Gensan, Corea.

O. albivitta *Moore* (61b). Always larger than *algira*, with the median band always whiter and generally much broader; the inner line more evenly and gradually curved; the dark area between median and outer lines broader; hindwing with the white median band more prominent. Described originally from India; occurs also in Arabia, in Syria, and in Egypt; examples from these last localities, Haifa and Biskra, have the median pale band much broader.

O. analis *Guen.* (61b). Forewing olive fuscous, deepest in postmedian space between middle and outer lines; inner line straight, outwardly oblique, followed by a line white line; median line less oblique, approaching inner line on inner margin, preceded by a broad white space; area between the lines dusted with iron grey; outer line obliquely concave outwards to below 6, then wavy, parallel to termen, to below 4, then incurved to touch median line on inner margin, its costal curve edged by a pure white curve with diffuse outer edge; subterminal line hardly visible; termen greyer; fringe white; costo-apical area deep fuscous, its oblique outer edge roughly angled; hindwing olive fuscous, paler basewards; a bluish white straight median band; a fine bluish white streak from anal angle to vein 2 where it is followed by a small black, inwardly white-spotted, blotch; extreme termen bluish grey; fringe white, except at apex. Recorded from China; the insect occurs throughout India, in Burma, Ceylon, and Java.

O. arctotaenia *Guen.* (61e). Larger than *analis*, more brownish; instead of the grey tinged median band with converging sides an evenly wide white band, with only slight dusting at each end; outer line below vein 6 sinuous, not wavy; two black subapical blotches, externally pale edged, with a sinus between them; the pure white edging of outer line at costa concisely bounded externally; termen and fringe greyish white; hindwing with median band whiter; a dark subterminal cloud above anal angle; no black spot on vein 2; terminal line finely dark; termen and fringe whitish. An Indian species, extending into China and Japan.

O. stuposa *F.* (= *festinata* *Walk.*) (61c). Forewing deep olive brown in basal area and between middle and outer lines; the intermediate space whitish dusted with pale olive brown, thickest at costa and inner margin; terminal area suffused with brownish and peppered with bluish grey; inner line uniformly outcurved in middle and incurved at each margin, rarely outbent in middle and not incurved below, edged by a white line; median line irregularly sinuous; outer line angled on vein 6, then incurved, with a slight outward projection between veins 3 and 4, edged by a white line; subterminal line acutely dentate, limiting a darker shade, and ending at apex in two black white edged blotches; teeth of the line often produced as pale streaks along veins to termen; a small black cellspot; hindwing blackish fuscous, traversed by a straight diffuse whitish band; the termen greyish or whitish towards anal angle; fringe white in apical half, fuscous below; the form occurring in China — *subsp. tumefacta subsp. nov.* — has the small projection between veins 3 and 4 in the outer line swollen into a more or less prominent rounded protuberance; the Japanese specimens agree with the typical Indian form.

O. praetermissa *spec. nov.* (61c ♀; 63c ♂). Hitherto confused with the following species *crameri* *Moore*, which it much resembles, but from which it differs as follows; the broad white band of forewing contains a small black cell dot, never present in *crameri*; the dark area beyond it is not so wide, the costal arm of outer line is curved not straight, more finely and often interruptedly marked with white, the lower arm below the

angle concave outwards throughout, not sinuous; the veins before termen rarely pale; in the hindwing the white band is narrower. Occurs throughout India, also in China and Formosa; the examples from these last localities are rather smaller than the average.

- crameri*. **O. crameri** Moore. (63 a). Larger than *arctotaenia*, with a broad oblique white band, which is wider above the middle: outer line acutely angled on vein 6, then incurved and recurved outwards above inner margin, its costal arm straight and edged with white; costo-apical area deep fuscous, edged beneath by a straight oblique streak to the angle; subterminal line dentate, indistinct; terminal area and fringe fawn grey; the veins pale at termen: hindwing dark olive fuscous, traversed by a median white band; a dark subterminal cloud above anal angle followed by a roundish black spot on vein 2, with a white spot above it; termen above it grey; fringe whitish: the ab. **discalis** Moore (63 a) has the whole of the usually dark postmedian area between the white band and the outer line suffused with whitish, more or less dusted with dark scales. This species is Indian, occurring also in Ceylon and Burma, and in the Andaman Islands.
- dulcis*. **O. dulcis** Btlr. (61 c) Forewing pale grey brown dusted with bluish white, most strongly before median line; lines brown, nearly vertical; inner line straight or slightly curved, edged with paler; median line hardly sinuous, inwardly white-edged; outer line bluntly protuberant at middle, slightly outcurved at each end, faintly pale-edged; space between it and median line quite narrow, deep olive fuscous; costo-apical space brown, becoming outwardly black, its edge oblique and insinuate below vein 7; subterminal line very obscure; veins towards termen pale; hindwing pale olive fuscous, with a pale wavy subterminal line; termen and fringe pale lilac; grey. Quite a small species, easily recognized by its narrow dark postmedian area. Found only in Japan.
- obscura*. **O. obscura** Brem. and Grey (= *hedemanni* Stgr., *coreana* Leech). (61 g). Forewing purplish grey; lines nearly vertical; inner line at beyond $\frac{1}{3}$, curved, especially below middle, and incurved basewards at inner margin, preceded by darker shading; outer line sinuous, also preceded by dark shading; subterminal line preceded at costa only by a blackish blotch, and followed by a smaller one in the apex; hindwing fuscous. Also a small species, occurring in N. China and Corea.
- mimula*. **O. mimula** spec. nov. (61 d). The same size as *dulcis* Btlr., but in markings almost exactly like *arcuata* Moore; it differs, first, in the median line, which instead of being distinct and curved is diffuse and straight from just before the two extremities of the outer line, so that the dark outer area is quite narrow; the outer line is sharply angled just below vein 6 and slightly elbowed on the submedian fold; secondly, the upper black part of the subterminal line is oblique from apex to vein 7, then vertical to 6, preceded by narrow black scaling; hindwing fuscous grey, showing a median and outer line, as in *obscura*; fringe of both wings wholly fuscous. Described from a single ♂ in the Tring Museum, from Tsingtau, Shantung, China, July 1908, (L. KLAPHECK.)
- fulvotaenia*. **O. fulvotaenia** Guen. (61 d). Forewing with the basal area and postmedian area before the outer line olive fuscous; the intermediate bandlike area pinkish grey dusted with brown and fuscous; terminal area greyish fawn colour; inner line straight or slightly sinuous, edged by a whitish line; median line curved, outwardly concave; outer line concave outwards from costa, angled outwards at vein 6, then incurved nearly to touch median line, edged with pale or whitish; the angle met by a dark oblique line from apex, above which the costal area is reddish brown; subterminal line lunulate dentate, often slight, limiting a darker brown shade; veins terminally often whitish; two superimposed dark dots on discocellular; a row of minute terminal dots; hindwing blackish fuscous with a broad median orange band narrowing off to inner margin above anal angle; terminal area fawn coloured, often olive-tinged, containing at end of vein 2 a double black spot inwardly edged with yellow; the median band of forewing varies from pinkish grey to rufous brown; two or three appreciably different forms may be noticed: — in ab. **absorpta** ab. nov. (61 e) the postmedian olive fuscous area is overrun with pale olive ochreous, the median line becoming dull or altogether disappearing;
- absorpta*. — in the subsp. **contracta** subsp. nov. (61 e) the yellow of the hindwing is reduced to a narrow curved band;
- contracta*. — in subsp. **unipuncta** subsp. nov. (61 e) from Buru and Amboina, the median band of forewing is cream white, slightly dusted towards each margin only, and containing a single blackish dot on discocellular: the inner line is incurved at both extremities; the yellow band of hindwing is paler, with its inner edge curved instead of straight. The type form is found in Japan and China, as well as throughout the East.
- unipuncta*.

22. Genus: **Naxia** Guen.

Tongue present; frons smooth with a slight tuft; palpi upturned, the second segment thickly scaled, the third short; antennae of ♂ typically simple; legs of ♂ heavily haired; hindtibiae and first segment of tarsi fringed with hair; all the lines of forewing parallel, inwardly oblique; costo-apical blotch pale grey; the species all smaller than in *Pindara* Moore. Type *N. onelia* Guen.

N. umbrosa *Walk.* (= *obumbrata* *Walk.*) (61d). Forewing pale lilac grey, shaded with olive brown; *umbrosa.* inner and median lines olive brown, lunulate dentate, the teeth pointing inwards; the inner separated from subbasal by a band of pale ground colour, followed by an olive brown shade sharply and straightly limited externally at $\frac{2}{5}$ by a lilac grey area which again merges gradually into olive; outer line line, red brown, oblique outwards to 6, where it emits an outward and upward spur, pointed at vein 7, below 6 sinuous and crenulate, followed by a golden brown band running into apex: subterminal line pale lilac grey, straight and oblique inwards from costa to vein 7, then angled outwards to join the spur of outer line at 7, reappearing below middle as a waved line followed by a waved fuscous grey shade; extreme termen lilac grey, except at apex: fringe dusty grey beyond a festooned terminal line: costal blotch between outer and subterminal lines lilac grey, olive-tinged towards costa; reniform stigma represented by two dark dots, sometimes united, but not forming a distinct lunule; hindwing olive fuscous, with termen and fringe pale grey; a dark pale-edged central line ending above anal angle, and a lilac grey subterminal line from anal angle to apex, interrupted in upper half. This species, which comes very close to *N. onelia* *Walk.* from India, but rather larger, has been taken at Shanghai and Hongkong, China: it seems very common in the Island of Hainan.

23. Genus: **Grammodes** *Guen.*

Tongue present: frons smooth, with some rough hair above; palpi upturned, the second segment well scaled, the third short, porrect: antennae in ♂ almost simple; thorax and abdomen smoothly scaled, slender; tibiae of ♂ clothed with long hair, the mid tibiae spined; forewing triangular, the costa straight, curved only at apex, the termen oblique and straight. Type *G. geometrica* *F.*

G. geometrica *F.* (= *ammonia* *Cram.*, *bifasciata* *Petagn.*, *linearis* *Hbn.*, *parallelaris* *Hbn.*, *chalcipetra* *Blk.*) (61d). Forewing mouse grey in basal, costal, and terminal areas, with a faint tinge of brown; the space enclosed on inner margin deep velvety brown, crossed by two nearly parallel, inwardly oblique, narrow pale bands, the inner ochreous, the outer fulvous with its inner edge only ochreous; this last is abruptly bent inwards at right angles on inner margin, ending in a fine point before reaching inner band: from the inner edge of each a fine dark grey line curves inwards to costa; the submarginal line pale, preceded by irregular velvety brown spaces, runs obliquely from apex to vein 6, is deeply insinuate to below vein 4 and again irregularly to inner margin, the dark spaces before it more or less rounded; a marginal row of dark dots before termen: fringe grey; hindwing brownish fuscous, the termen towards anal angle grey; a diffuse straight pale band from costa before middle towards anal angle; fringe grey, white from apex to vein 5 and again below submedian fold; in the eastern form, subsp. **orientalis** *subsp. nov.* (61d), from China, India, the islands and Tonkin, the grey of the forewing has no brown admixture; both pale bands are, as a rule, broader, the outer also more flexuous, and the black spaces preceding submarginal line are sharply dentate; in the hindwing the terminal grey space is broader and extends to costa, showing a crenulated edge to the dark inner portion; Chinese examples are still further separated from Indian in having the median band often more or less fulvous like the outer, culminating in a form in which both bands are wholly fulvous. — ab. **bifulvata** *ab. nov.* *bifulvata.* (61d): the type form is found in S. Europe and N. Africa; in the ab. **abbreviata** *ab. nov.* (= ab. 1 *Hmps.*) *abbreviata.* the median white band is narrow and does not reach above the median vein; in ab. **flavifascia** *ab. nov.* (= *flavifascia.* ab. 2 *Hmps.*) the median band is yellow. Larva grey, darkened along dorsum and at sides by rows of dark and light points; the dorsal stripe paler, yellowish hindwards, edged and traversed by fine lines of dark points; subdorsal stripes orange yellow, dark-edged, swollen on segments 4—7 into large roundish spots, with a long deep black orange-ringed spot on their lower margin; on segment 12 a round black pale-edged blotch; spiracular line reddish brown, edged on both sides by a pale yellow and a black line; on bramble and other plants in spring and summer.

G. stolidia *F.* (= *cingularis* *Hbn.*, *curvilinea* *Walk.*) (61f). Forewing: basal $\frac{2}{3}$ black brown, with basal *stolidia.* patch, costal streak, and reniform stigma fuscous grey; crossed at middle by a pale ochreous band oblique from subcostal and widening downwards, its outer half yellowish; limited externally by a biconcave ochreous band, narrower below, followed below vein 6 by a broad brown band, on the outer edge of which are 3 or 4 irregular black patches, and above and beyond it on costa a black blotch, sharply angled externally on vein 6, these black marks forming the inner edge of a diffuse submarginal pale line; terminal area shaded with brown and fuscous, with a short black apical streak and a diffuse dark cloud below the middle; fringe grey with white base, altogether whitish round apex: hindwing olive fuscous, becoming blackish towards termen: a white band from costa at $\frac{1}{3}$ to anal angle, and a round white submarginal spot in submedian fold; fringe brightly white, but grey between veins 2 and 4; the form **stupidia** *H.-Sch.* (? *spec. dist.*) from Salonica, Macedonia has *stupidia.* the bands marked with yellow only at inner margin, indicated merely by two straight dark streaks: the outer band more strongly bent inwards to costa; the white band of hindwing not straight but forming two curves; in the ab. **attenuata** *ab. nov.* (= ab. 1 *Hmps.*) (61f) the white band is merely a narrow line from cell to *attenuata.*

inner margin. Larva reddish yellow, paler on dorsum and along spiracles, marked with fine black longitudinal streaks; dorsal and subdorsal stripes dark grey, the former widening beyond the 5th segment; spiracular line fine, double; dorsal tubercles large, white ringed with black: feeding in May and June, and again in August, on various plants, *Rubus*, *Quercus* etc. Found throughout S. Europe, in Egypt, Asia Minor, Armenia, Palestine, Bithynia, Taurns, Persia, Transcaucasia.

boisdeffrei.

G. boisdeffrei Oberth. (61f). Near *stolida* but a little smaller; forewing with the grey basal patch paler and more irregular: also the triangular black blotch adjoining; the yellow transverse band, regular in *stolida*, wider, dusted with grey, and slightly sinuate on both edges; the large black transverse blotch is much more depressed near costa, its external boundary narrower, greyish white, followed by a brown border paler than in *stolida*; terminal border greyer; fringe whiter; costa greyer; all markings less definite in consequence of a general grey flush: hindwing paler, less distinct. Algeria.

palaestiniensis.

G. palaestinensis Styr. (61f). Like *boisdeffrei*, but still smaller, paler and whiter; the white band broader, hardly touched with grey. Palestine only.

mygdon.

G. mygdon Cram. (= *triangulum* F., *mygdonias* Hbn.) (61f). Forewing velvety olive brown; costal and outer margins lilac grey; the costal edge ochreous in basal half, the upper and outer margins of the dark area marked by fine ochreous lines meeting at an angle on vein 6; the outer evenly curved, followed by a diffuse brown shade, which is merged above 6 in a deep brown apical streak with concise lower edge: the brown area is further traversed by a uniformly broad straight ochreous band from subcostal vein near base to the outer edge on inner margin; hindwing brownish fuscous, olive-tinged; fringe wholly fuscous: underside uniform brownish grey. A widely spread oriental species, found also in China.

24. Genus: **Chalciope** Hbn.

Tongue present; frons smooth; palpi upturned, the second segment roughly scaled, the third smooth, pointed, slightly thrown forward; antennae of ♂ (typically) pubescent; thorax and abdomen smoothly scaled, without crests; mid and hind tibiae spined; wings ample; termen even; forewing triangular, marked with a dark triangle with all three margins pale. Type *C. hyppasia* Cram. Mainly a tropical genus.

hyppasia.

C. hyppasia Cram. (= *hypatia* Oliv., *hypasia* Hbn., *deliana* Stoll, *anfractuosa* Bsd., *inacuta* Guen., *exportata* Guen., *acutata* Guen., *compar* Walk.) (61f). Forewing with a broad costal streak and the inner margin below vein 1 pale grey, dusted with darker and slightly tinged with brown, enclosing between them a deep brown black triangular space, the oblique outer edge of which is marked by a snow white line, followed by an olive brown band reaching to near apex; submarginal line pale, inbent below middle, followed by a slight dark shade, and preceded by blackish blotches above and below middle; terminal area pale grey; extreme termen fuscous; fringe dark, with a white line at base; the dark brown triangle is bisected by a pale brown, whitish-edged, band running from middle of its upper margin to anal angle; hindwing greyish fuscous, with diffuse paler outer and terminal bands. A tropical species, which occurs also in China and Japan; described from the former locality as *compar* by WALKER; the rest of the synonyms refer mainly to African forms.

25. Genus: **Pelamia** Guen.

Tongue present; frons smooth; palpi obliquely porrect, the second segment thickly scaled, the third thrown forward, slender, pointed; antennae of ♂ bipectinated to apex; thorax and abdomen smooth; tibiae smoothly scaled; the mid and hind tibiae spined; forewing elongate triangular, the apex prominent, the termen even, obliquely curved; abdomen long and slender. Type *P. phasianoides* Guen. from S. America.

Sect. I: The fore tibiae also spined.

electaria.

P. electaria Brem. (61f). Forewing dark grey with darker dusting; a black streak from base along submedian fold underlined by a narrow ochreous yellow streak, which at middle runs obliquely and broader towards apex, the black streak above it running only to vein 3, while another broader black streak limits it externally to near apex; a pale subterminal straight line, followed by a darker grey shade; terminal line blackish; fringe glossy grey, with two darker lines; a black cell dot; hindwing luteous; the inner margin below median vein dark grey; a slight pale subterminal band; the terminal line black; a dark discal mark. Amurland, Japan, Yesso, and Corea.

26. Genus: **Remigia** *Guen.*

Tongue present; frons smooth, with a tuft of hair above; palpi upturned, the second segment thickly scaled, the third slender, distinct; antennae of ♂ ciliated; thorax and abdomen smoothly scaled; mid tibiae spined; hind tibiae and tarsi of the ♂ clothed with long thick pile; wings of ♂ on underside woolly to beyond middle. Type *R. frugalis* *F.*

R. frugalis *F.* (= *translata* *Walk.*, *lycopodia* *Hbn.-Gey.*) (61 g). Forewing dull grey, the ♀♀ with more or less of a brownish yellow tinge; inner line very indistinct, outwardly oblique, bent outwards on submedian fold and below vein 1; orbicular stigma a black dot; reniform oblique, oblong, with dark grey centre and outline; outer line black, or fulvous brown, oblique from $\frac{2}{3}$ of inner margin towards apex, preceded by a pale ochreous, sometimes by a bright white line, and followed by a fuscous shade; subterminal line pale, indicated by black vein dashes; a dark smear along submedian interval, sometimes very faint, at others blackish and conspicuous; the costa usually somewhat darker; fringe pale silky grey; hindwing pale grey suffused with darker; a straight dark outer line and submarginal shade; in the ab. **nigripunctata** *ab. nov.* (61 g) the forewing of the ♂ has a round black spot before the middle of wing below vein 1, as in *virbia* *Cram.* Larva pale yellowish ochreous with darker lines; subdorsal lines double; a sublateral series of olivaceous spots; 5th and 6th segments edged behind with black; feeding on Zingiberaceae. Common throughout the Oriental and Australian regions and in W. Africa; in the palaeartic region it occurs in Amurland, China, and Japan. *frugalis.* *nigripunctata.*

27. Genus: **Cauninda** *Moore.*

Differs from *Remigia* in the hind tarsi being without hairs: the wings of ♂ on the underside silky to beyond middle. Type *C. undata* *F.*

Sect. I. Mid and hind tibiae of ♂ long haired.

C. undata *F.* (= *archesia* *Cram.*, *jugalis* *Walk.*, *mutuata* *Walk.*, *defundens* *Walk.*, *associata* *Walk.*, *undata*, *inconcisa* *Walk.*) (61 e). ♂ Forewing pale grey or ochreous grey, with darker shadings; inner line preceded by a narrow pale line and followed by a thin brown band; outwardly oblique, sometimes quite straight, at others slightly curved; a little beyond it a fine brown median line, shortly toothed outwards on median vein, and excurved above and below vein 1; outer line brown, excurved and crenulate below costa, and indented beyond cell, outwardly angled below vein 2, then running shortly basewards, then roundly upcurved, sometimes nearly touching its own course at vein 3 and quite touching reniform (which is large, subquadrate, pale with a dark discal mark), then obliquely and irregularly curved outwards to inner margin; on the costa it is followed by a diffuse brown cloud, externally darker; subterminal line lunulate dentate, the teeth dark on the veins, followed by a pale space before the dark termen; the reniform stigma is followed by diffuse brown clouding; hindwing yellowish ochreous suffused with grey in basal half; a blackish sinuous outer line, and dark subterminal band ending in a blackish blotch at apex; the ♀ is much darker, suffused with reddish brown; the hindwing deeper yellow; in the ab. **virbia** *Cram.* (61 e) there is a small round black spot above inner margin before the inner line of forewing in the ♂; in the form **bifasciata** *subsp. nov.* (= ab. 4 *Hmps.*), from the Philippines, there are narrow black brown bands beyond the inner and outer lines of forewing; subsp. **gregalis** *Guen.* is dull grey without brown or yellow tinge, and with the markings obscure and obsolescent, occurring only in certain islands: the forms *pellita* *Guen.* and *mayeri* *Bsd.* are African modifications. Larva purplish brown, speckled with black; the lateral area yellowish with red lines; a sublateral row of small black dots; head with a red and brown streak at sides; feeding on Desmodium, and changing to an efflorescent pupa. Found in China, Corea, and Japan; abundant in India and many of the Malay Islands, and in Africa. *virbia.* *bifasciata.* *gregalis.*

Sect. II. Hind tibiae of ♂ with long hairs; mid tibiae smooth.

C. dolosa *Btlr.* (= *nigrisigna* *Leech*) (63b). Forewing greyish brown; inner line blackish edged with white, preceded by a black dot above inner margin; reniform stigma whitish with grey centre and brown margin, followed in the ♂ by a dark brown blotch notched externally; outer line curved from costa and waved to vein 2, where it curves inwards and upwards to vein 3, then is recurved to vein 2 again and thence obliquely inwards to inner margin; subterminal paler, denticulate, shaded on both sides with darker; hindwing grey brown; median line and terminal border darker; this latter traversed by a pale subterminal; the ♀ is rather smaller and paler; the patch beyond reniform hardly marked; the inner line less oblique. BUTTLER'S *dolosa* from the island of Formosa; *nigrisigna* from Satsuma and Kiushiu.

inferna. **C. inferna** *Leech*. Forewing brownish grey with a violet tinge; inner line oblique, blackish, outwardly edged with dark brown, preceded by a black dot above inner margin; outer line blackish, very irregular, resembling the profile of a human face; subterminal band blackish with serrate outer edge and a cinereous suffusion beyond it; terminal band brownish with a series of dark annular marks on it; reniform stigma blackish, obscurely defined, a black spot on the costa above it; orbicular lunulate, brown with darker outline; hindwing fuscous brown; an obscure blackish median line and indications of an outer; fringes in both wings with a fine black line at base; underside of both wings fuscous brown with two diffuse darker lines. Described from the ♀, the only ♂ being worn. W. China. Allied to *annetta* *Btlr.*, but with different markings, the outer line of forewing resembling that of *E. mi*.

Sect. III. All the tibiae smoothly scaled.

propugnata. **C. propugnata** *Leech*. Forewing brownish grey tinged with violet: inner and outer bands blackish, united above inner margin; the inner outwardly oblique, with an inward spur towards a dot above inner margin; the outer inwardly oblique, angulated on both edges; a pale spot below the cell outlined with brown is connected with outer band, and emits a dark brown oblique line towards costa, touching a subquadrate dark brown spot on costa, from which rises the black subterminal line, which is outwardly edged with brownish; termen suffused with fuscous, and limited by a violet grey diffuse line; reniform stigma ill defined, its inner edge black; orbicular a black dot; fringe mottled with fuscous; hindwing brownish fuscous, an obscure dark median line; underside of forewing fuscous, the costal and terminal areas golden brown; hindwing golden brown irrorated with fuscous; cell spot and outer line blackish; traces of a dusky subterminal band. W. China.

annetta. **C. annetta** *Btlr.* (61 g). Forewing reddish grey with darker irroration; the lines and markings brown; inner line outwardly oblique from near base of costa to before middle of inner margin, preceded by a pale line and followed by a diffuse brown shade externally obscurely limited by a brown line; outer line brown, bent outwards below costa, nearly vertical from vein 8 to 6 and there followed by a deep brown costal cloud, then incurved, but forming a blunt elbow outwards on submedian fold, from which a short brown bar runs obliquely to anal angle; orbicular stigma a brown ring; reniform large, rounded oblong, with brown edge, followed by a diffuse brown cloud and preceded by an irregular double median line; below it and touching is a large round brown-edged ring; subterminal line lunulate dentate, the teeth marked dark on the veins, separated from the dark termen by a pale grey band; hindwing pale fuscous grey, paler towards termen with darker outer and subterminal lines. Found in Amurland, China, Corea, Japan, Yesso, and Kiushiu.

ancilla. **C. ancilla** *spec. nov.* (61 g). Excessively like *C. annetta* *Btlr.*, with which it has been hitherto confused; it is always smaller than that species, and the hindwings are yellowish on the upper surface, especially along termen, and more conspicuously in the ♂ than in the ♀; the markings of the forewing are, as a rule, more precise; the genitalia of the ♂, teste Dr. JORDAN, are very distinctly different. The species occurs apparently in the same localities as *annetta*, but in some places, as at Gensan, it would appear to be much more abundant than that species.

laxa. **C. laxa** *Walk.* (= *pavona* *Fldr.*) (61 g). Forewing brownish grey, minutely black speckled; inner line inwardly oblique, from before middle of costa to $\frac{1}{4}$ of inner margin, inwardly rather pale edged; outer line finely dark, inwardly oblique and slightly curved from shortly before apex to below vein 2, almost obscured in a brownish fuscous shade accompanying it to close before anal angle, while before it the ground colour is much paler; below vein 2 the line runs shortly inwards, is then upcurved to touch the lower inner end of the reniform, then outwardly oblique and straight to inner margin; space between inner and outer lines deep velvety brown, becoming paler and diffuse above middle where it extends round the large oblique reniform with dark lateral edges; a faint wavy lunulate straight subterminal line, the inward teeth marked darker on the veins, the narrow terminal space beyond it paler, but the termen itself brown; fringe brown, paler at the tips; hindwing dull greyish fuscous; the terminal border broadly darker beyond a straight paler band which follows the faint outer line. This Indian species is recorded by LEECH from Central and Western China: Mou-pin, Changyang, Ichang. Chinese examples agree with those from Sikkim in having the inner line curved; *languescens*. in specimens from Assam this line is quite straight; in the ab. **languescens** *ab. nov.* (61 h) the ground colour is pale fawn grey; the diffuse shading beyond the two lines and the reniform is quite pale brownish grey instead of dark brown; the reniform is whitish grey, with the centre and lateral edges darker; the inner line is strongly curved, while the outer is much nearer termen and almost straight, the darker terminal area narrower; hindwing equally pale; underside and abdomen pale luteous whitish. Described from a single ♂ from Sikkim, from the ELWES Collection.

C. discios *Koll.* (61 h). Forewing slaty grey, finely speckled with darker; inner line nearly vertical at *discios*. $\frac{1}{3}$, inwardly bounded by a fine pale line, outwardly by narrow blackish fuscous suffusion above median vein, which swells out below and fills up the whole space to outer line; outer line black at $\frac{2}{3}$, followed by a blackish fuscous band, slightly incurved to costa and excurved to inner margin; before the outer line the grey is paler; the line itself just below vein 2 runs for a short way basewards, is then roundly upcurved to touch reniform, is bluntly angled inwards on submedian fold, then runs obliquely, straight or curved, to inner margin; subterminal line lunulate dentate, the inward teeth marked black on veins; terminal area beyond it grey; terminal line diffusely dark; reniform stigma oblong, its lateral edges dark, externally followed by a black triangle; hindwing fuscous, the terminal border broadly darker; separated by a paler space from a dark median line; in ab. **latiorata** *ab. nov.* (61 h) the outer line is nearer termen, which is more oblique, *latiorata*, the apex being somewhat produced, so that the median area, more especially at costa, is much wider; the inner line is not straight, but either bent in cell and above inner margin, or curved; a dark orbicular is sometimes visible; the grey ground colour is paler, especially on the underside. Both forms are from N. W. India, the darker from Subathu and Kumaon, the paler from Kulu; the species almost certainly occurs in Kashmir; LEECH records it also from Kiushiu, so that it may plausibly be anticipated from Yesso and Japan.

28. Genus: **Ercheia** *Walk.*

Tongue present; frons smooth, with a slight tuft of hair above; palpi upturned, stout, the second segment thickly scaled and roughened below, the third long and smooth; antennae of ♂ almost simple; thorax and abdomen smoothly scaled, the latter sometimes with crests on basal segments, and the patagia strongly developed; hindtibiae spined as well as the midtibiae; foretibiae of ♂ hairy; the species often very variable. Type *E. cyllaria* *Cram.*

E. umbrosa *Btlr.* (61 h). Forewing woodbrown with dark brown suffusion, the ♀ deeper brown than *umbrosa*. the ♂; veins dark lined with pale woodbrown; a pale streak from base along vein 1, edged with dark, below which the inner margin is paler, especially in the ♀♀; lines black, edged with pale brown, very obscure, chiefly visible on inner margin; the outer line oblique from costa to vein 6 and generally plain, interrupted below, and reappearing as a double black mark on submedian fold, where it is preceded by a pale brown line; subterminal line ochreous, visible only from vein 2 to inner margin, emitting above vein 2 a pale streak into the terminal fringe; it is followed, in the ♂ only, by a bluish white patch on inner margin; hindwing brownish fuscous, much darker in ♀, with traces of a darker pale-edged sinuous middle line, and with a pale spot subterminally on the submedian fold; in the ab. **variegata** *ab. nov.* (= ab. 3 *Hmps.*) the central area of *variegata*. forewing of ♂ is paler and the markings consequently better defined; the ♀♀ throughout are larger and dark woodbrown, corresponding to the Indian *strigipennis* *Moore*.

E. niveostrigata *spec. nov.* (= *umbrosa* *Hmps.* ab. 2) (61 h). Like *umbrosa* ♂, but the horizontal streak on submedian fold immediately preceding the outer line is prominently snow white; the British Museum Collection possesses a ♂ only of this form, naturally referred by HAMPSON to the preceding species; but in the Tring Museum there is a ♀ of exactly the same size and coloration as the ♂; so that these can hardly be the same species as *umbrosa*, which has the ♀ so much larger and always dark brown in coloration. China only. *niveostrigata*.

29. Genus: **Sypnoides** *Hmps.*

Tongue developed; frons smooth, flat; palpi erect, upturned in front of face; second segment rough-haired, third nearly as long as second, smooth and slender; antennae of ♂ long, thick, strongly crenulate beneath, either with fasciculate cilia or bipectinate; prothorax and metathorax with large crests, dorsum crested; legs strong and long; the mid and hind tibiae spined; wings ample, with crenulate termen. Type *S. mandarina* *Leech*. Distinguished from *Sypna* *Guen.* mainly by the spined tibiae.

Sect. 1. Antennae of ♂ bipectinate, the apex ciliated.

S. mandarina *Leech*. Forewing dull grey brown with darker irroration; lines dark brown, waved, not very distinct; the inner limiting the dark purple brown basal patch; the median curved, plainer at each end; the outer excurved round cell; submarginal line double, with a brown black patch at each end, that on costa not reaching apex, that at anal angle larger and with a blotch of white scales on it; a row of dark spots before termen; hindwing with a dark patch at anal angle only on a double submarginal shade, preceded by a dark outer line with paler edging; underside of forewing with two dark bands and a broad submarginal shade; of hindwing with dark outer line and traces of a submarginal shade; cellspot of forewing pale, of hindwing pale with dark lateral edges. W. China. Closely resembles *pannosa* *Moore* from India, but the antennae of ♂ are bipectinate. *mandarina*.

30. Genus: **Anisoneura** Guen.

Tongue developed; palpi obliquely upturned, the second segment thickened, the terminal smooth and slender; antennae of ♂ with short sessile fascicles of cilia; abdominal segments with dorsal ridges of hair; the mid tibiae spined; wings with termen crenulate; cell of hindwing short; vein 5 from close above 4. Type: *A. salebrosa* Guen.

A genus of large, strongly built moths, mainly Indo-oriental, but of which one species is found in the Palaearctic region.

Sect. I (typical) has forewings with blunter, less produced apex, and veins 6, 7 of hindwing not stalked.

Sect. II. Forewing elongate, the apex produced and termen strongly oblique; veins 6, 7 of hindwing stalked, longer in ♂ than ♀.

hypocyanea.

A. hypocyanea Guen. (62a). ♂ Forewing reddish brown; the lines starting from 3 black triangular costal marks: the inner black, obscurely marked above middle, inwardly oblique and strongly dentate below; outer line oblique, strongly crenulate; submarginal line indistinct, double; a lunulate black line before the termen; hindwing crossed by 5 dark straight, partially pale-edged lines; the ♀ is paler, with costa of forewing grey to outer line. A North Indian species, of which a ♀ has been recorded from Omei-shan, W. China.

31. Genus: **Scodionyx** Stgr.

Tongue developed; frons smooth; palpi oblique, the second segment fringed with hair in front, the third moderate; antennae of ♂ bipectinated to apex with the branches long; thorax and abdomen without crests; fore tibiae short, with a strong curved claw on inner side; hind tibiae with a few spines between the spurs only; forewing broad. Type: *S. mysticus* Stgr.

mysticus.

S. mysticus Stgr. Forewing pale clay colour; the lines brownish; inner line vertical, outwardly angled above and below the median vein; outer line slightly outcurved above and oblique inwards below the middle; subterminal line obscurely double and subobsolete in middle; a row of dark spots before termen; reniform stigma large and dark with a darker centre; hindwing dull luteous whitish, without markings, the veins and a crenulate terminal line darker. Palestine.

32. Genus: **Hypoglaucitis** Stgr.

Tongue present; frons smooth, with a tuft of hairs above; palpi upturned, the second segment moderately scaled, the third porrect; antennae of ♂ ciliated; thorax and abdomen without crests; tibiae smooth; the hind tibiae spined as well as the mid tibiae. Type: *H. benenotata* Warr.

benenotata.

H. benenotata Warr. (62a). ♂ Forewing dark grey; a blackish brown broken line before middle, which runs at first obliquely outwards from costa and then vertically to inner margin, becoming most conspicuous in centre of wing; a sinuous brown line beyond middle, followed by a diffuse fuscous shade; a tortuous pale subterminal line, with a darker fuscous shade on either side, and preceded towards costa by two or three still darker patches; fringe grey with darker basal line; hindwing fuscous, terminally darker; fringe whitish; the ♀ shows scarcely any markings and might easily be mistaken for another species; another form, — ab. **lutea** *ab. nov.* (62a, b), is more or less strongly tinged with yellowish brown. The type came from Rawul Pindi in N. India, and the species occurs also at Haifa, Syria: the subsp. **moses** Stgr. (63b) described from Egypt and found also in Algeria is larger than the Syrian and Indian form, but otherwise agrees in the difference between the sexes and in the possession of a grey and luteous form.

lutea.

moses.

33. Genus: **Clytie** Hbn.

Tongue present; frons smooth, with short tuft of hair between the antennae; palpi upcurved, the second segment with appressed scales, the third porrect; antennae of ♂ ciliated; thorax and abdomen smooth; mid and hind tibiae spined; forewing long, with parallel margins and blunt apex. Larva like those of *Catocala*, resting by day outstretched on stems and branches of trees; fullfed in autumn, pupating in a slight cocoon among leaves, and emerging the following spring. Type *C. illunaris* Hbn.

C. illunaris *Hbn.* (= *gracilis* *B.-Haas.*) (62 b). Forewing grey, or dark ash grey, or, more rarely, pale bone colour; inner and outer lines blackish, very seldom clear, often interrupted, or even altogether absent; submarginal line pale, only visible in the dark grey examples, always preceded by a black irregularly zigzag line, not reaching costa but blackest below it; orbicular stigma a faint dark dot; reniform a pale figure of 8, often divided into two spots; hindwing pale grey or bone colour, with a broad diffuse grey submarginal band, always darker and better defined in the ♀; the pale bone colour forms may be separated as ab. **osseca** *ab. nov.* (= ab. 2 *Hmps.*) (62 b); in ab. **brunnea** *ab. nov.* (= ab. 1 *Hmps.*) the ground colour of forewing is brown, the markings equally obsolete; while in ab. **obscura** *ab. nov.* (= ab. 3 *Hmps.*) the forewing, except at base of inner margin, is suffused with red brown, the subterminal line alone being visible. A mediterranean species, found in Spain, S. France, and Italy. *illunaris.*
osseca.
brunnea.
obscura.

C. sancta *Stgr.* (62 b). Larger than *illunaris*; the ♂ generally paler and smoother grey, the ♀ with a more perceptible luteous tinge; the inner and outer lines blacker, more clearly defined; the subterminal line on a slightly darker shade; hindwing in ♂ dull whitish, with the submarginal band darker and broader; in the ♀ luteous yellow, the band black and well defined; the terminal area pale or dark grey; in the ab. **obsoleta** *ab. nov.* (= ab. 1, *Hmps.*) (62 b) the head, thorax, and forewings are more bone coloured, the wings with slight dark irroration, and with the markings obsolete, except subterminal line. Palestine. *sancta.*
obsoleta.

C. haifae *Habich* (62 b). Rather smaller than *sancta*, but closely related, and differing as follows: the ground colour is dark grey; between the outer and subterminal lines there is present, especially in forewing, a blackish shade; the subterminal line is gently curved from costa; the stigmata are conspicuously white; the festooned terminal line has white points at the end of veins. Haifa, Syria, and recorded by REBEL from Egypt. *haifae.*

C. syriaca *Bugn.* (= *gentilitia* *H. Sch.*) (62 c). Forewing dull luteous grey with darker irroration; inner and outer lines obscurely grey, conversely pale-edged; subterminal line pale luteous, not angulated throughout as in *illunaris*, but slightly bent at vein 4 and with a small black spot in the angle at 6, preceded by a faint rufous line: the interval between outer line and submarginal generally somewhat darker; reniform stigma grey with darker outline; hindwing dirty luteous, with a broad dark submarginal band, strongest in the ♀. The species is found in Syria, Armenia, Asia Minor, Transcaspia, Kashgar, Ferghana, and Uralsk; STAUDINGER adds Andalusia, Dalmatia, and Sicily. The hindwing is sometimes washed with pale brown, ab. **luteosparsa** *ab. nov.* (= ab. 1 *Hmps.*); — in ab. **dentemaculata** *ab. nov.* (= ab. 2 *Hmps.*) the forewing is marked with a dentate black spot before subterminal line below vein 7; — a third aberration **pulverosa** *ab. nov.* (= ab. 3, *Hmps.*) has the forewings densely irrorated with fuscous atoms. — ab. **albimargo** *ab. nov.* (62 c) has the terminal area of hindwing beyond the black border white; ab. **pallida** *ab. nov.* (62 c) has the forewing ochreous bone-colour, the reniform stigma, the outer and subterminal lines, just visible, the last without the black spot at vein 6; the hindwing with the terminal border fuscous; lastly, ab. **lapidea** *ab. nov.* (62 c) has pale greyish ochreous forewings, the outer line marked with a dark spot on each fold, the hindwing dull luteous at base, the terminal area and fringe ochreous white, and the dark border broad and inky black; both wings without a dark terminal line; the specimen, a ♀ is from the Tedschen oasis, Transcaspia, and may be a distinct species. *syriaca.*
luteosparsa.
dentemaculata.
pulverosa.
albimargo.
pallida.
lapidea.

C. sublunaris *Stgr.* (62 c). Forewing dull whitish, suffused in parts with fuscous grey and speckled with dark; inner line oblique, waved, fuscous on a pale space; outer line oblique inwards, with a slight outward bend on vein 4, on a pale space; subterminal line pale, prominently angled outwards above veins 6 and 3, preceded by a fuscous band which is black in the angles of the line; orbicular stigma a pale dark-edged dot; reniform a dark-edged lunule, the lower half pale; a dark wavy terminal line; hindwing dull whitish in ♂, fuscous luteous in ♀, with a broad dark fuscous submarginal band, broader and darker in the ♀; fringe white. Issyk-Kul. *sublunaris.*

C. delunaris *Stgr.* (62 c). Smaller than *sublunaris*, intermediate in a way between it and *illunaris*. Transcaspia. *delunaris.*

C. terrulenta *Christ.* (= *gentilis* *Stgr.*) (62 d). Forewing dark brownish grey, more or less tinged with blackish; with three paler, often quite faint, cross-lines, greyish brown lined in middle with black; the stigmata obscure: the orbicular dot-like, the reniform lunate sometimes divided into two spots, at others outlined with black and forming an oval; the inner line is oblique and denticulate, the outer twice bluntly bent; space between outer line and subterminal filled in with darker with some sagittate streaks; the terminal line fuscous, crenulate; hindwing dull grey brown, becoming darker along termen. A dull coloured and obscurely marked insect. The type of *terrulenta* was described from Transcaucasia; STAUDINGER's *gentilis* from the Dead Sea. *terrulenta.*

C. distincta *B.-Haas.* Forewing pale grey with slight black dusting; lines, where expressed, black, plain only towards inner margin; the inner line from $\frac{1}{5}$ of costa to $\frac{1}{3}$ of inner margin, marked black below middle and with a black spot on costa; outer black only below vein 2, reaching inner margin close to inner *distincta.*

line; subterminal line pale, irregularly crenulate, preceded by a pale brownish shade; a dark spot in apex; a row of black terminal points; fringe pale with yellowish line at base; reniform stigma pale with black outline; hindwing paler, with diffuse dark terminal border. Described from 2 ♀♀ from Transcaspia.

luteonigra.

C. luteonigra spec. nov. (62 d). Forewing pale grey, washed with darker and speckled with blackish; inner and outer lines black, often interrupted, conversely edged with pale ochreous; outer line indented at costa and followed by a black comma-shaped mark; subterminal pale, marked by the black praesubmarginal shade, which is blackest towards each extremity and more or less interrupted between, forming an acute angle outwards above vein 6 and a blunt, less prominent one below 4; terminal points large, white, in a whitish festooned line; hindwing luteous whitish in basal half with dark scales on the veins; outer half deep black, the fringe white, and termen narrowly blackish grey; underside whitish, thickly grey speckled; both wings with dark fuscous terminal border; head, thorax, and abdomen grey, the last more whitish. 2 ♀♀ from Seffr Kuh, Afghanistan, and 1 ♀ from West of Dinan, Amu Darya.

arenosa.

C. arenosa Rothsch. (63 a). ♂ Forewing sandy cinnamon, powdered with grey scales; inner and outer lines blackish, faintly indicated; subterminal band zigzag, black; terminal line finely lunulate; reniform stigma S-shaped; hindwing with a broad black discal band and terminal dark lunules; the ♀ has the inner and outer lines of forewing sooty black and strongly marked; the subterminal line obsolescent; the discal band on hindwing less intensely black. South Oued Mya, Northern Sahara. Slightly larger than, but very close to, *luteonigra* from Afghanistan and Turkestan.

34. Genus: **Alamis** Guen.

Tongue present; frons smooth, with a tuft of hair above; palpi upturned, the second segment well scaled, the third short and smooth; antennae of ♂ with short fasciculate cilia; metathorax and dorsum slightly crested; mid tibiae spined; pectus, venter, and tibiae of ♂ densely haired; wings with termen evenly curved and strongly crenulate; underside of forewing of ♂ with the basal half, of hindwing with the whole, clothed with silky androconia. Type: *A. umbrina* Guen.

umbrina.

A. umbrina Guen. (= *hypophaea* Guen., *continua* Walk., *plumipes* Walk.) Forewing dark red brown the inner and outer lines black and sinuous; the outer excurved beyond cell and slightly angled at veins 4 and 6, and followed by an irregular fuscous band; the basal half of wing crossed by many indistinct waved dark lines; an irregular fuscous subterminal line; hindwing with numerous fuscous waved lines and a sinuous black outer line; the ab. **albicincta** Guen. (62 d) has prominent white suffusion beyond the inner line and across the outer area; in ab. **marginata** ab. nov. (= ab. 1 *Hmps.*) the whole forewing is dark except the terminal area beyond subterminal line; — in ab. **perfusa** ab. nov. (= ab. 2 *Hmps.*) both wings are dark brown throughout; and in ab. **seminigra** ab. nov. (= ab. 3 *Hmps.*) the basal half of forewing is fuscous black. Larva green, with the dorsal area whitish; lateral line yellow with blue specks on it; the first two pairs of abdominal prolegs aborted or rudimentary. An Indian insect, which is found also in Kashmir.

albicincta.

marginata.

perfusa.

seminigra.

35. Genus: **Pericyma** H.-Sch.

Tongue present; frons smooth; palpi upturned, smooth, the second segment thick, the third slender, fairly long; antennae of ♂ ciliated with fascicles and bristles; thorax and abdomen smooth, the dorsum with slight tufts only; mid tibiae only spined; pectus, venter, and femora only slightly woolly; forewing triangular, covered with waved transverse lines; the termen crenulate; insects of grey and inconspicuous coloration, adapted to the sandy wastes which the perfect insects frequent. Type: *P. albidentaria* Frr.

albidentaria.

P. albidentaria Frr. (= *albidens* H.-Sch.) (62 d). Forewing ashgrey slightly tinged with brown; inner and outer lines finely black; the inner oblique inwards, the outer indented in cell, slightly toothed on veins 4 and 3, and forming below three nearly equal curves, followed by an ash grey band before the pale subterminal line; median area traversed by alternate pale and dark grey lines or bands; reniform stigma very obscure; a crenulate black terminal line; fringe grey with a fine white middle line; hindwing with the outer black line only; the rest as in forewing. Larva very slender, greenish yellow, with a reddish tint at extremities; dorsal line finely pale; spiracular line red and yellow, swollen on segments 8 and 9; feeds in spring on *Alhagi camelorum*. Found at Sarepta, N. Caucasia, Syria, Mesopotamia, Transcaspia, Ferghana and Kashgar; also in N. Africa; a single ♂ in the Tring Museum from Haifa, Syria is pale brownish luteous in colour, with obscure markings, the inner and outer lines and the terminal line brown, not black; the reniform stigma pale, = ab.

rufescens. **rufescens** ab. nov. (62 e); probably a distinct species.

P. squalens Led. (62 e). Differs from *albidentaria*, which it much resembles, mainly in the course of the outer line, which has more strongly projecting teeth on veins 3 and 4, and then runs more deeply inwards along vein 3, forming a quite narrow curve between veins 3 and 2, a wide one across the submedian interval, and a smaller curve below: both lines are blacker and more distinct. Recorded from Palestine and Cyprus.

36. Genus: **Cortyta** Walk.

Tongue present; frons smooth, with a tuft of hair above; palpi upturned, the second segment moderately scaled, the third porrect, of moderate length; antennae of ♂ ciliated; mid tibiae only spined; abdomen smooth, without crests. Type: *C. canescens* Walk.

Sect. I. Mid tibiae of ♂ dilated, with a groove containing a fringe of large scales.

C. fasciolata Warr. (= *eremochroa* Hmps.) (62e ♀, 63a ♂). Forewing whitish grey; basal area dark grey, limited by the black inner line, which is minutely angled outwards on subcostal and inwards on vein 1, vertical, not oblique inwards; outer line forming small curves, not angled, bent inwards below middle; median area with brownish grey bands or lines alternating with white; reniform stigma blackish, with a pale patch obliquely below it in a curve of the outer line: subterminal line pale, in the grey terminal area; hindwing whitish, with the termen grey, and the lines hardly visible; ♀ uniformly dark ashy grey, with the markings less conspicuous; the hindwing paler grey; in the ab. **bifasciata** ab. nov. (= ab. 2 Hmps.) the basal patch and the interval between outer and subterminal lines are filled in with blackish. From Shendi, and Nakheila on the Atbara River. Egypt. The type of *eremochroa* Hmps. is a grey ♀ from Aden. In the form **subs similis** subsp. nov., from Algeria, the difference between the sexes does not obtain; the ♀♀ are as large and brightly colored as the ♂♂.

C. dispar Püng. Larger than *fasciolata*, the ground colour paler, the markings more distinct. This form occurs in Palestine and E. Turkestan.

C. vetusta Walk. (62 e). Forewing dark grey; all the lines darker, obscurely double, vertical, and somewhat outcurved between the veins, and dentate inwards on them; the dark cellspot close to the median line; outer line excurved beyond cell, indented below it, and marked with black on submedian fold; subterminal irregularly sinuous; terminal line crenulate, grey, double; hindwing the same, but without inner line; the ♀ is paler, the ground colour whitish. Described originally from India, where it occurs at Mhow, Ajmere, Karachi, this species is found in Afghanistan, Syria, and Algeria; the form **rosacea** Rbl., from Socotra, and also found in Algeria, is flushed with reddish; the ab. **acrosticta** Püng. (62 e) has a black spot at apex, and being described as reddish, strictly speaking, belongs to *rosacea*, but specimens without the red tint and with the black apical spot occur, and in the white ♀♀ this black spot is more conspicuous.

Sect. II. Mid tibiae not dilated.

C. profesta Christ. Forewing powdery grey; all the lines obscurely double, slightly darker, starting from blackish costal spots; the outer line with its inner arm black, excurved round cell, indented on vein 5, and incurved from below 4 to 2, then vertical, with a short strong, black tooth outwards on submedian fold; a black line on discocellular followed generally by a pale ochreous and white space; outer arm of outer line thick, fuscous, followed by whitish scaling; subterminal line wavy, indistinct; terminal dots black; fringe crenulate, deep grey; hindwing duller, with inner and outer dark double lines. The ♂ type from Askabad, the ♀ from Samarcand. The form **sacra** Stgr. from Palestine seems to differ only in the greater clearness of the markings.

C. grisea Leech. (63a) Forewing pale grey dusted with darker; lines black, starting from dark grey costal marks; the inner wavy; the outer on a white band of varying width, marked by black spots on veins and swollen at each end; subterminal line black, serrate, outwardly edged with ochreous; terminal line double, black and very wavy; stigmata dark grey with black outlines, the reniform large, placed on a brownish grey black-edged median band: hindwing pale brownish grey; median and outer lines black, wavy, the former edged with white, the latter externally with ochreous, and followed by a diffused blackish band: in the ab. **luteola** ab. nov. (= ab. 1 Hmps.) the wings are tinged with yellow. Occurs in China and Japan.

37. Genus: **Anydrophila** John.

Tongue present; frons smooth or protuberant; palpi upturned, the second segment broadly sealed, the third of moderate length. thickly sealed; antennae of ♂ with long fasciculate cilia; metathorax crested; abdomen smooth, without crests; fore tibiae moderately fringed with hair; mid and hind tibiae tufted with hair above at middle and extremity; fore tibiae without spines; hind tibiae spined between the spurs only. Type *A. mirifica* Ersch.

imitatrix. **A. imitatrix** Christ. (62e). Forewing pale grey speckled with dark grey, in parts with grey suffusion; the veins with deeper dusting; the median vein and submedian fold sometimes paler; lines very indistinct, marked by dark spots on costa; a curved dark dentate line from below costa to lower end of cell, with dark grey suffusion inside and defined outwardly by whitish scaling; an obscure pale spot at end of cell with some dark dentate markings above it; a row of whitish dark-edged terminal lunules; fringe grey; hindwing yellow, with a large black blotch at apex, a smaller rounded one below vein 3, and a spot at anal angle; fringe white, slightly pencilled with dark grey; underside of forewing with a large black spot on discocellular and another, smaller, before apex; hindwing with subapical and lower black spots; the ground colour whitish. Recorded from the Transcaspien regions.

simiola. **A. simiola** Püng. (62f). Resembles *imitatrix*, but paler, the markings still less definite; in the hindwing the third black spot, at anal angle, is large and black; underside of forewing with no black blotch on the discocellular, and all three blotches plain in hindwing. Like the last species found in Transcaspien.

mirifica. **A. mirifica** Ersch. (62f). Forewing darker grey than the preceding species, with olive suffusion and thickly dusted; lines marked on costa by dark spots; inner line blackish, oblique outwards and wavy; median line more vertical, touching a dark lunule on discocellular, and approaching inner line below middle; outer line blackish, oblique from costa and acutely angled on vein 5, irregularly lunulate dentate below, preceded by olive grey suffusion and followed by whitish; a row of dark pale-edged lunules along termen; hindwing yellow, with spots as in *imitatrix*; underside of forewing without black spot on discocellular, but with a distinct dark grey median shade and some dark scales at anal angle. Transcaspien.

sabouraudi. **A. sabouraudi** Lucas. Near to *simiola* and *mirifica*. Forewing grey, darker in terminal area; the apex paler; near apex a broad fuscous line touching the reniform stigma; above it an acute angled line comprising the same stigma; within the vein limiting the lower part of area, a black well-marked line forming a similar acute angle; fringe mixed with white; hindwing luteous, with broad black terminal border dentate on both edges; the costal area paler; forewing beneath white, with 2 blackish blotches; the front one broad, before the white fringe; the hind one oblique, innervated, approaching fringe. Tunis.

intermixta. **A. intermixta** spec. nov. (62f). This species is intermediate between *simiola* Püng. and *mirifica* Ersch.; it agrees with the former on the upper side of both wings, and with the latter on the underside; the forewing has no large black discal spot, but only a grey band swollen below middle. Described from 2 ♀♀ in Tring Museum from Transcaspien.

38. Genus: **Cerocala** Bsd.

Tongue present; frons smooth; palpi porrect, the second segment hairy below, the third as long as second, porrect, spatulate, scaleless; antennae of ♂ bipectinate to apex; all the tibiae spined; thorax and abdomen smooth, the abdomen slender. Type *C. scapulosa* Hbn.

scapulosa. **C. scapulosa** Hbn. (62f). Forewing pale grey, thickly speckled with dark grey, especially along costa; lines black, thinly edged with white, all starting from subcostal vein; inner line well curved, preceded by an olive green patch; orbicular stigma an olive green round dot ringed with pale; reniform an olive green lunule with dark lateral edges; the cell before and beyond it sometimes pale buff; outer line black and nearly vertical from subcostal vein to vein 2, where it all but touches subterminal line, thence recurved upwards to touch the bottom of reniform, then curved downwards in a line with the inner edge of reniform to vein 1, and thence very oblique to inner margin, nearly touching subterminal, the two areas between the lines olive green; subterminal line crenulate, edged with shining white, acutely indented beyond cell, followed by a slight dark shade, which is separated by a pale oblique band from the dark grey termen; terminal line black, festooned; hindwing yellowish white, somewhat suffused with grey towards base, with a dark discal lunule, a black outer wavy diffuse band, and a black abbreviated terminal border, formed of laterally confluent black blotches along the veins, running out into the white fringe. Occurs in S.W. Spain, and in Morocco and Algeria. Larva

slender; the head small, pale brown; dorsum pale grey with very fine reddish wavy dentate interrupted dorsal and subdorsal lines; also a line above the spiracles; on the side of segments 2 to 7 a red point above the upper lateral tubercle; tubercles hardly visible; thoracic and anal plates yellowish; spiracles black; feeds upon *Helianthemum halimifolium*, hiding itself in the sand among the roots, where it also pupates; the larvae of the first brood feed from April to June, of the second in September and October.

C. insana *H.-Sch.* (= *algeriae Oberth.*, *scapulosa Lucas nec Hbn.*) (62f). Smaller than *scapulosa Hbn.*, *insana*, the median area between inner and outer lines except at inner margin pale; the costa dark with a pale subcostal streak at base; the pale area before the upper part of outer line oblong and rounded at vein 2; the subterminal line indented below costa and on submedian fold as well as beyond cell; hindwing luteous whitish, with hardly any markings; the olive green shading of forewings varies in intensity. Algeria.

C. sana *Stgr.* (= *insana Stgr. nec H.-Sch.*) (62f). Not so large as *scapulosa Hbn.*, the white edging *sana*, of the lines much more conspicuous; the whole wing more suffused with olive green; the outer line in its upper course forming a long beak-shaped mark pointed at vein 2, filled up with pale rufous strongly edged with white; the white subcostal streak in basal half of wing strong; the terminal area pale pearl grey, and the waved terminal line strongly marked; the fringe broadly pale at base; hindwing with the base and an outer broad diffuse band olive fuscous; the white terminal area with a black blotch at apex and another narrower, below middle, the fringe beyond the latter fuscous, elsewhere white. Algeria.

C. confusa *spec. nov.* (62f). Intermediate in size between *sana Stgr.* and *insana H.-Sch.*; the pale *confusa*, median spaces suffused with rufous olive; the white edging of the lines less prominent; the space limited by the upper course of the outer line not so conspicuously rostrate, filled up with rufous and not edged with white; the subterminal line preceded by black wedge shaped marks between the veins both above and below the rostrate projection; hindwing suffused throughout with olive fuscous, but darkest subterminally; the two black terminal blotches attenuated; underside less purely white than in *sana*. Described from a single ♀ from the FELDER Collection, from "Abyssinia". Type in Tring Museum.

39. Genus: **Leucanitis** *Guen.*

Tongue present; frons smooth; palpi upturned with the second and third segments moderately scaled, antennae of ♂ ciliated; mid tibiae only spined; fore tibiae with more or less developed claws at extremity on inner and outer sides. Type: *L. roda H.-Sch.*

Sect. I. Claws of foretibiae well developed.

L. sesquistria *Er.* (62f). Forewing brownish fuscous mixed with bluish grey; inner line black, obliquely *sesquistrie*, curved, preceded by a brown line, dentate on inner edge; outer line black, bluntly angled on subcostal and sharply on vein 6, then strongly indented, forming a bifid projection on veins 3 and 4, running up along vein 3 to below the reniform stigma, then straight to inner margin; reniform stigma dark brown, narrower above than below, edged internally by a straight black line, preceded by a fuscous and bluish grey costal shade; the two parts of the median area very narrow, more or less filled in with brownish or fuscous, the inner parts remaining palest; rarely wholly white, in the ab. **albimedia** *ab. nov.* (62g); submarginal line white, *albimedia*, slightly indented beyond cell, preceded by some black teeth and outwardly edged by a rufous line; terminal area bluish grey; a black marginal line; fringe white, with a grey patch beyond veins 3 and 4; hindwing pure white; the outer half black, the terminal area narrowly white, like the fringe, except at veins 3 and 4 where it is interrupted by a black blotch. A small, dark insect, found in Armenia, the Kirghiz steppes, Transcaspia, Afghanistan.

L. picta *Christ.* (62g). Forewing olive brown, varied with ochreous and whitish scales and speckled *picta*, with black; inner line double, black, filled in with olive, obliquely waved, the inner arm dentate; outer line black, finely edged inwardly with ochreous, oblique outwards and toothed on the veins, forming a bifid projection on veins 3 and 4, oblique upwards to below reniform stigma, then vertical; reniform bluntly triangular, olive outlined with black and ochreous; space between the two lines filled up sometimes with olive fuscous, sometimes with yellowish brown, or the space beyond inner line may remain ochreous; submarginal line ochreous white, followed by a thick rufous line and preceded by black teeth between the veins; marginal area pale bluish with a black spot at apex, or bluish grey, or fuscous; a waved black terminal line; hindwing white, with a broad black terminal border, connected by a streak with the black cell lunule, and with two white marginal spots; the fringe white, brown between the spots; inner margin fuscous; the typical form is

obfuscalu.
latimedia. small and has the central area most varied with ochreous; the form with wholly fuscous centre may be separated as ab. **obfuscalu** ab. nov. (= ab. t *Hmps*). (62 g); another form ab. **latimedia** ab. nov. (62 g) has the median band broad and erecto the basal patch being smaller, with its outer edge waved and nearly vertical instead of oblique. Besides the coloration of the central area the insect varies in size, the larger specimens, especially the ♀♀, being darker, with the black border of hindwing broader; these are the subsp. **radapicta** *Stgr.* (62 g) the ♂♂ of which appear to have the median fascia and reniform stigma rufous. The species is recorded from various places in Transcaspia and from the Ili and Issyk-Kul district.

kabylaria. **L. kabylaria** *Bang-Haas.* (62 g). Forewing blue grey along all three margins; the interior filled up with red brown: a short yellowish basal streak, edged with blackish beneath; the subterminal line alone expressed, reddish yellow, with slight black scaling internally; a small black spot in the apex; the two stigmata coalescent, open towards costa, dirty reddish yellow, sometimes with black edges; the outer, reniform in shape, with two white spots at end, the orbicular not usually represented in this genus; fringe blue grey and brown; hindwing at base broadly snow white, with a slight discal mark; a broad black subterminal band, running out into termen and fringe above and below middle. Recorded only from Tunis.

Sect. II. Claws of fore tibiae minute.

roda. **L. roda** *H. Sch.* (= *rada* *Bsd.*) (62 g). Forewing dark slaty fuscous: inner line thick, black, waved, preceded by a brown line and followed by ochreous and grey suffusion; outer line finer, black edged with brown, oblique outwards, bent above vein 5, forming a blunt projection on vein 2, then recurved to below reniform stigma, thence vertical to inner margin, with an indentation on submedian fold, inwardly edged throughout with paler; subterminal line ochreous grey, preceded by a blackish cloud at costa; reniform stigma rufous grey, constricted in middle; hindwing with basal area fuscous white; a black cell lunule conjoined with a broad black terminal border and followed by a white blotch; a whitish streak along submedian fold from base, bent downwards below cellspot towards anal angle; two marginal flecks and the fringe white, except at middle between the two flecks; head and thorax dull brickred. Recorded by GUENÉE from the Crimea, and said to be very rare; STAUDINGER, while querying this locality, gives Armenia, Transcaspia, Saisan, Ili, Issyk-Kul, and Korla; but confusion with the next species is possible; the ab. **schlumbergeri** *Fuchs* is larger, the forewing more uniform blue grey; in ab. **beta** *Kusnazov* the forewing is blackish with a blue grey tinge; the basal area blacker.

The species included in the two following Genera differ from all the others of the Subfamily in having the eyes small, laterally compressed; nearly, if not quite, all of these insects are day-fliers; and disport themselves in the sunshine.

40. Genus: **Leucomelas** *Hmps.*

Tongue well developed; frons smooth, with tuft of hair above; palpi upturned, moderately scaled; antennae of ♂ minutely ciliated eyes small, compressed; thorax and abdomen without crests; tibiae slightly hairy; mid tibiae only spined; wings broad and short; black with white outer band. Type *A. juvenilis* *Brem.*

juvenilis. **L. juvenilis** *Brem.* (62 h). Forewing dull black: crossed beyond middle by a broad snow white fascia running to anal angle, the inner edge hardly curved, the outer angled externally on vein 6; fringe black, white from below apex to middle and at anal angle; hindwing with the fascia starting at vein 6, narrowing to a point at end of vein 1; fringe white from apex to middle and beyond submedian fold, elsewhere black; underside powdered with bluish white towards base of both wings. Ussuri district, Amurland.

41. Genus: **Gonospileia** *Hbn.*

Tongue present; palpi obliquely upcurved, the second segment loosely and roughly haired beneath, the third slender, slightly porrect; eyes small, slightly compressed laterally; antennae of ♂ typically ciliated; thorax and abdomen smoothly scaled; mid tibiae spined; forewing broad and short; the apex blunt; termen smooth. Larva with the first two pairs of abdominal prolegs aborted; smooth, very elongate; the head large; resting with the fore segments coiled up beneath; feeding on *Trifolium* and allied plants. Pupa in a cocoon spun among moss and litter on the ground. The imago flies by day in the sunshine. Type *G. munita* *Hbn.*

Sect. I. Fore and hind tibiae spined as well as the middle ones.

Subsect. A. Antennae of ♂ bipectinate to apex.

fortalitium. **G. fortalitium** *Tausch.* (= *fortatitium* *Hbn.*) (62 h). Forewing dark grey along all three margins in the ♂, paler grey in the ♀; the interior blackish fuscous; the three veins from base whitish grey; inner line wanting;

outer line white, strongly outcurved above middle; as strongly inangled on vein 4, then outwardly oblique and straight to submedian fold close before subterminal line, running inwards along the fold, then erect upwards to touch the oblong erect reniform stigma, with the outer edge of which it forms a continuous line, incurved from the inner edge and oblique outwards to the white vein 1 just beyond the middle; reniform and space below it white in ♀, greyish white in the ♂; subterminal line straight, white, with a whitish grey cloud between it and outer line in midwing; terminal line grey in ♂, whitish in ♀; fringe grey; hindwing dark grey in ♂, paler in ♀, with the outer and subterminal lines repeated: all the white markings are stronger in the ♀ than in the ♂: in the ab. *albescens* *ab. nov.* (♀) (62h) both wings are nearly white, with the usual dark shadings quite pale grey brown. A local species found only in the Ural and Altai Mts. in Russia and W. Siberia, and in the Thian shan Mts. of Central Asia. *albescens.*

Subsect. B. Antennae of ♂ ciliated.

G. mi *Cl.* (62h). Forewing black slightly dusted with grey: lines whitish, the subbasal ending in a grey-edged black spot on inner margin; the inner obliquely curved outwards; the outer angled at vein 6, indented on 4, angled inwards below vein 2, running upwards and outwards below reniform, then downwards again parallel to its former course, and finally running in to the inner line above inner margin; orbicular stigma a round black spot with grey outline; reniform large and black, edged externally by a white bar, which often emits a narrow pale line externally from its middle; subterminal line sinuous, double, somewhat lunulate, with dark centre and pale-scaled edges, except at costa where it is single and white, preceded by oblong black spots separated by the pale veins; hindwing with the cell ochreous white, containing a black cellspot; outer and subterminal sinuous series of ochreous white spots between the veins; fringe of both wings mottled black and white, with pale line at base; underside ochreous white; — ab. *ochrea* *Tutt* (62h) has the ground colour of hindwing yellow; this is the usual form in Britain, where sometimes the forewing also is tinged with yellowish: the underside of both being yellow; ab. *illuminata* *ab. nov.* (62h, i) is a paler form of the type in which the dark areas are restricted by the amplification of the pale spaces, the underside yellowish white; in *litterata* *Cyr.* (62h) from Italy the white is pure, the underside bluish white; but the white spots of the upper side are restricted in size; in ab. *extrema* *B.-Haas* (62i) from Amurland and Central Asia, the white predominates still more over the black than in *illuminata*, the underside being also pure white; in ab. *suffusa* *ab. nov.* (62i) from Italy, the white spaces are almost crowded out and both wings are nearly black; the underside with all the veins black and the ground colour yellowish white; ab. *explanata* *Rbl.* is a clear whitish yellow form from Bohemia; in ab. *aurantiaca* *ab. nov.* (= ab. 3 *Hmps.*) from Portugal the ground colour is orange yellow. Larva yellowish; dorsal line dark, finely pale in centre; several fine wavy lines on each side; spiracular line broad, dark reddish brown, edged below with yellow or red; feeding on clover, melilot, etc. Occurs commonly throughout Europe, in Asia Minor, Armenia, Central Asia, and Amurland. *mi.*
ochrea.
illuminata.
litterata.
extrema.
suffusa.
explanata.
aurantiaca.

G. futilis *Stgr.* Forewing dull brownish black; inner line ending in two whitish grey flecks on inner margin; a triangular whitish fleck at end of cell; outer line whitish, sinuous, projecting beyond cell and again on submedian fold, insinuate between; subterminal line grey preceded by a dark fascia; fringe whitish; hindwing dull blackish with the fringe white; some white markings beneath basal half of median vein and again towards anal angle. Described from a single ♂ from the Apfelgebirge, Transbaikalia. *futilis.*

G. regia *Stgr.* (62i). Forewing dark olive brown suffused with fuscous; inner line pale, obscure, outwardly oblique; outer line white, roundly bent at vein 6, then straight, hardly reaching inner margin; submarginal line white, thick, fusing with the outer line along the veins, so that the dark band between them is cut up below vein 6 into wedge-shaped blotches; reniform stigma black in a broad white ring; hindwing deep yellow; the base of cell and of submedian fold fuscous black; a black cellspot, outer angulated continuous line, and submarginal and marginal rows of spots, those of the last continued into the yellow fringe: in the only ♂ I have seen the outer row of spots is coalescent into a continuous band: underside of both wings yellow, with the markings black. Ferghana; Khuliab Province, Afghanistan. *regia.*

Sect. II. Fore tibiae not spined; hind tibiae spined only between the spurs.

G. glyphica *L.* (62i). Forewing pale grey suffused with pale brown or uniform pale brown; the shadings dark olive brown; inner line pale, oblique and waved, followed by a brown band; outer line whitish, vertically waved, preceded by a brown band, the inner edge of which is the median line; at costa the outer line is excurved and accompanied by pale scales on each side; submarginal line obscure, followed by a darker diffuse band, forming a black blotch on costa; hindwing orange, the veins dark: base and inner margin fuscous; a blackish submarginal band, outwardly toothed at costa and middle; a dark terminal shade running up along veins. Nearly co-extensive in range with *G. mi*. The more uniformly dark brown examples constitute the ab. *suffusa* *Spul.* (62i), the usual form in Britain; — ab. *marginata* *Spul.* (62i) has the subterminal area whitish ochreous; in the ab. *obsoleta* *Strand* (62i) the dark bands of the underside are wanting; the ab. *glyphica.*
suffusa.
marginata.
obsoleta.

- tristicula*. **tristicula** *Schultz* (62i) is much darker than the type. Larva yellowish brown or reddish brown; the dorsal line darker; head yellowish brown with two dark streaks; feeds on clover.
- dentata*. **G. dentata** *Stgr.* (= *cuspeida* *Ev.* nec *Hbn.*, consors *Bthr.*) (62k). Larger than *glyphica*, the ground colour always pinkish or brownish-grey: the brown shadings broader; the pale area on costa before outer line enlarged, so that the outer edge of the brown band forms a triangle acutely angled on vein 6; before it the pale reniform stigma is better defined; a distinct black spot in cell represents the orbicular; hindwing yellow with the veins dark; the markings as in *glyphica*. Found in the Altai Mts., the Ussuri district of Amurland, and Japan.
- triquetra*. **G. triquetra** *Schiff.* (= *fascialis* *Vill.*, *fortificata* *F.*) (62k). Forewing pale lilac grey, dusted, and in parts, especially along costa and inner margin, suffused with olive grey brown; a triangular white-edged olive brown mark attached to the pale oblique inner line; outer line whitish, deeply indented on median vein, preceded by two similarly coloured triangular blotches, of which the upper one is in its turn preceded by an olive oval reniform stigma with pale outer edge; submarginal line pale, obscurely defined, preceded by a darker grey band, which becomes olive brown at costa; an olive grey terminal shade; hindwing yellow with grey inner margin; a dark grey submarginal line and terminal shade; fringe grey; the ab. **aurantiaca** *Stgr.* (62k) from Pontus, has the hindwing orange; in the ab. **fumata** *Hirschke* (62k) the markings are obscured by fuscous dusting. Larva pale reddish yellow, dotted with brown, with two dorsal lines consisting of dense black dots; spiracles yellow ringed with black on a white ground; head greyish white, with two brown bands; feeds on *Astragalus onobrychis*. In Europe confined to the South East, Austria, Hungary, the Balkans, S. Russia; Armenia, Ala Tau, Altai Mts. in W. Siberia, and E. Siberia.
- munita*. **G. munita** *Hbn.* (= *angulosa* *Ev.*) (62k). Forewing pale brick red, dusted and suffused with olive grey; a narrow deep olive triangular blotch, attached to the inner line and edged with white; a more diffuse olive brown shade preceding outer line, which is whitish, outcurved above and insinuate at middle, the darker outer half of the band forming a dark triangle sharply angled on vein 6; outer margin and veins olive; hindwing deep yellow, sometimes much speckled with fuscous, with an angled grey submarginal band and the fringe grey; the species is subject to three very distinct forms of aberration; in the first, ab. **immunita** *Mill.* (62k) the ground colour remains brickred, but the dark markings are almost obsolete; in the other two the ground colour is grey brown, merely tinged with reddish in the ab. **communita** *ab. nov.* (= ab. 2 *Hmps.*) and with the markings equally obsolete; or simply grey brown with no reddish tinge, but with the dark markings present; ab. **configurata** *ab. nov.* (= ab. 3 *Hmps.*). It is not improbable that the last two forms constitute a distinct species.

Subfamily: Phytometrinae.

As the preceding subfamily, the *Catocalinae*, is characterised especially by the spinose middle tibiae so the present one is distinguished by the ciliated eyes. Consisting of only a few genera, it forms a singularly homogeneous group. The eyes are large and round, except in two small groups of Alpine species, where they are narrowed and elliptical. In these two Alpine groups and another with the eyes large and round, the tibiae are wholly or partially spined; in all the rest, especially in the mountain species, they are densely rough haired. The forewings of the imagos are usually adorned with metallic spots or blotches; the prothorax and dorsum are strongly tufted, and, except in the genus *Abrostola*, the anal angle of forewing bears a scale tooth. The palpi are upturned and of moderate length except in the genus *Chrysoptera*, in which their exaggerated development forms a prominent feature. In *Abrostola*, instead of metallic scaling the forewing bears slight tufts of raised scales. The larvae, except in *Abrostola*, are without the first two pairs of abdominal prolegs; those of *Abrostola* being fulfilled in autumn; those of *Phytometra* and its allies hibernating small and feeding up in spring; those of *Chrysoptera* (probably) hibernating as ova. Pupation in a loose cocoon of silk attached to the underside of leaves.

1. Genus: **Caloplusia** *Smith.*

Tongue present; frons smooth; head, palpi, thorax, and pectus densely rough haired; eyes small and elliptical; tibiae rough haired; all the tibiae spined. Type: *C. hochenwarthii* *Hochenw.*

A genus of Alpine and mountain species, with yellow hindwings.

- devergens*. **C. devergens** *Hbn.* (64a). Forewing dark ashy grey, shaded with blackish grey and fuscous; the lines blackish, double, filled in with pale; the outer line excurved above median vein; median area dark

fuscous, especially below middle, containing a white gamma-shaped mark with short stout tail; stigmata well defined, dark with pale outlines; the reniform constricted in middle with a black shaded spot on each side; subterminal line lunulate dentate, preceded by a blackish shade; termen pale grey with black marginal dashes; hindwing orange, with narrow black border: the base and inner margin smoky blackish; underside of forewing yellow to the grey terminal border. Larva dark purplish grey; dorsal line white, traversed by a fine dark line; lateral lines white; tubercles black, with rather long hairs; head small, brownish grey; feeds on a variety of low plants. Found on the high Alps of Switzerland and the mountains of Central Asia.

C. hohenwarthii *Hochenw.* (= *divergens* *F.*) (64a). Forewing pale grey, without dusting, but suffused in basal and upper median areas with brownish fuscous; lines finely brown, double, filled in with pale; the inner sinuous above middle, inwardly oblique below; the outer somewhat angularly bent outwards beyond cell and indented on vein 1; orbicular stigma an oblique V, with pale outline; the reniform narrow, oblique, dark fuscous outlined with pale, preceded by black shading and followed by a black spot; median area below middle deep velvety brown, containing a long outwardly directed white mark with the base narrowly brown; a deep brownish fuscous shade before subterminal line; termen pale grey; fringe darker grey; hindwing orange, with blackish border, and inner margin smoky fuscous; underside greyish yellow with markings grey. Larva redbrown, with pale segmental incisions; dorsal line yellowish; head brown; feeds on various umbelliferous plants. Occurs in the Swiss Alps, Scandinavia, and Lapland; the mountains of Armenia, Central Asia, and Siberia. In the subsp. **alaica** *Galvagni* (64a) from the Ala Tau Mts. and other Central Asian ranges, the subcellular mark is small, shorter and stouter, and the hindwing deeper orange, with the dark border somewhat broader: in another form from Tura, subsp. **cuprina** *subsp. nov.* (64a) the forewing is suffused with coppery fulvous, and the median area and other dark areas are deep coppery red instead of purplish fuscous; both this form and *alaica* *Galv.* are somewhat larger than the average European *hohenwarthii*. *hohenwarthii.*

C. tibetana *Stgr.* (64a). Half as large again as *hohenwarthii*; forewing with the ground colour darker grey; the inner and outer lines less oblique, the outer not indented on vein 1: the silvery white mark solid, tusk-shaped, longer in proportion and more curved; the orbicular stigma rounded; the shade before subterminal line almost linear; hindwing with the terminal border narrower. From Kuku Nor, Tibet. Described by STAUDINGER as a form of *hohenwarthii*, but, as far as I am able to judge, specifically distinct; the difference in size and markings is constant. *tibetana.*

C. composita *spec. nov.* (64a). Allied to *hohenwarthii* and possibly a form of it. Forewing pale grey, with slight dark suffusion; inner and outer lines pale grey, not white; inner line below middle vertical to vein 1, then bent, oblique inwards; outer line as in *hohenwarthii*; median area below middle paler brown; the silvery marking short, and bent at middle; subterminal line lunulate dentate, as in *migrogramma*; the inner margin blackish; underside like *hohenwarthii*. Described from a single ♀ from the defile of Turgan Aksu, Thian Shan Mts., August 1905 (Katsenko). Type in the Tring Museum. *composita.*

2. Genus: **Autographa** *Hbn.*

Agrees with *Caloptusia* in the small elliptical eyes, and in the hairy vestiture; but only the hind tibiae are spined, and then only between the spurs. Type *A. parilis* *Hbn.*

Another mountain genus; the single species has whitish hindwings with broad dark border.

A. parilis *Hbn.* (= *quadriplaga* *Walk.*, (64a). Forewing ashy grey, speckled with black and shaded with brownish grey; inner and outer lines fine and pale, distinct only below middle, the space between them filled with dark velvety brown, containing a white gamma-shaped mark; reniform stigma undefined, lying in a diffuse brown median shade, beyond which the excurved part of the outer line is visible; subterminal line preceded by a broad brownish grey shade, angled outwards at vein 6 and below 4; the area beyond it paler, with a dark patch at apex; hindwing whitish, with the basal half and terminal border blackish. Found only in N. Scandinavia and Finland. A small but distinct species. *parilis.*

3. Genus: **Syngrapha** *Hbn.*

Distinguished from the two preceding genera by the large rounded eyes; the hind tibiae are spined only between the spurs. Type *S. ain* *Hochenw.*

S. ain *Hochenw.* (64b). Forewing purplish grey shaded with black; inner and outer lines double, black *ain.*

filled in with pale grey; the inner angled outwards on subcostal vein, and forming two curves below median, the outer irregularly flexuous; subterminal pale, preceded by a blackish shade, projecting above and below middle; terminal lunules black, preceded by a grey line; fringe chequered, pale grey and blackish; median area below middle blackish, deepest along its margins, containing a silvery gamma-shaped mark; stigmata edged with black and pale grey; a distinct black median shade; hindwing yellow, with broad black terminal border; inner margin and a streak along upper half of cell fuscous. Larva beautiful green, like the young needles of the Larch on which it feeds; dorsum with four yellowish white lines at even distances apart; lateral stripes dark-edged above; spiracles yellowish, in black rings. Occurs on the Alps, the mountains of Germany and N. Hungary, and throughout Central Asia from the Altai Mts. to Amurland.: a rare form — ab. **tumidisigna** *ab. nov.* (64b) has the tail end of the gamma-shaped mark swollen into a bulbous shape.

diasema. **S. diasema** *Bsd.* (64b). Forewing uniform dull purplish grey with a slight brown tinge; the lower median area broad, the inner and outer lines wide apart, filled in with brown black, containing a grey silvery-edged mark touching median vein, starting from inner line and forming a rounded loop at middle, followed by a silvery dot or dash, often obsolete: reniform stigma alone visible, obscure. with dark edges; terminal area darker-clouded, the subterminal line very indistinct; hindwing dull yellow, with broad cloudy blackish terminal border, the inner margin fuscous; fringe whitish. Larva pale green with several whitish dorsal lines, faintly marked on the front segments, and a whitish yellow lateral stripe just above the pale black-ringed spiracles; tubercles black ringed with white; head green with brown dots; feeding on *Betula nana*, *Vaccinium myrtillus*, and other mountain plants. Found in Scandinavia, Finland, and in Dauria, the Apfelgebirge, and Amurland: probably throughout N. Asia. The subsp. **borea** *Auriv.*, from Greenland, is smaller, with brighter yellow hindwings and narrower dark border; in the ab. **connexa** *ab. nov.* (= ab. 2 *Hmps.*) the subcellular mark is Y-shaped, the dot being joined to the loop by a narrow tail.

microgamma. **S. microgamma** *Hbn.* (64a). Forewing purplish grey, more uniform in tint; inner and outer lines wider apart, the inner below middle sickle-shaped, silvery; the outer faintly sinuous, followed by a black spot on submedian fold and at inner margin; reniform stigma with silvery outline and blackish lateral shades; lower median area bronzy brown; the silvery mark Y-shaped, with the arms wide apart and slender, and the tail a round drop; subterminal line lunulate dentate, indistinct, obscured by a bronzy fuscous shade; hindwing orange. with a broad black border; the base and inner margin narrowly smoky fuscous; underside of forewing with a bronzy red tinge; in the ab. **incompleta** *Reuter* the silvery marking is incomplete, only the dot being present. Larva dark violet brown with faint whitish suffusion; dorsal line blackish, interrupted at the incisions; lateral lines sulphur yellow; spiracles black; head and forefeet redbrown: feeds on *Salix repens* and *myrtilloides*. Found in Scandinavia, Finland, the Baltic provinces of Russia, and North Germany; also recorded from the Tyrolese Alps, the Balkans, and S.W. Russia.

interrogationis. **S. interrogationis** *L.* (= *aemula F. nec Schiff.*, *aurosignata Don.*, *borealis Reuter*) (64b). Forewing bright purplish grey, suffused with black in median area and towards apex; the edges of the stigmata and the lines lustrous grey; inner and outer lines black, double; the inner sinuous above middle, and forming three small curves below it; the outer regularly crenulate throughout; the subterminal line preceded by a conspicuous black dentated and indented line, with a blackish cloud towards apex; a row of pale grey lunules before the terminal marks; the subcellular silvery mark highly variable, either forming a simple loop with fine silvery edge, — ab. **orbata** *ab. nov.* (64b), — or followed by a small silvery dot, as in the type form, or by a large round spot conjoined to it, rarely separate, — ab. **flammifera** *Huene* (64b); a development of this last, — ab. **ignifera** *ab. nov.* (64c) — has the usual silvery mark pale yellow, as in some examples of *flammifera*, shaped like a tadpole, with deep fiery red scaling before the outer line, beyond the inner, and along the submedian fold; hindwing brownish luteous clouded with darker and with a broad blackish terminal border; the type, a ♂ from Livonia, is in the Tring Museum; the subsp. **transbaikalensis** *Styr.*, from Dauria and East Siberia, is more uniform bluish grey, with very little black suffusion on forewing and paler hindwings; this form is also recorded from Esthland by PETERSEN: ab. **rosea** *Tutt*, from Scotland, has a rosy ground colour in place of bluish grey; ab. **cinerea** *ab. nov.* (64c) has the ground colour dull ashy grey with scarcely any dark markings, except the subterminal line, and no purplish suffusion, the silvery mark a somewhat triangular loop; of this form the Tring Museum possesses 3 examples from Cedre, Hautes Pyrenées; in the same museum is still another grey form, much resembling *cinerea*, but with a complete silvery gamma-mark and somewhat more developed dark shades; this specimen is from Caucerets in the Pyrenées, and may be distinguished as ab. **gammifera** *ab. nov.* (64c); these last two grey forms are probably specifically distinct from *interrogationis L.* Larva pale green; dorsal line dark, with pale edges; several pale wavy subdorsal lines and a broad whitish lateral line with dark upper edge; feeding on *Vaccinium*. Occurs on the mountains of North and Central Europe, Scotland and North England, the Apennines and Pyrenées, the Carpathian and Ural Mts., in Dauria and East Siberia.

S. circumflexa L. (= *daubei* *Frr. nec Bsd.*, *graphica* *H.-Sch.*, *patelacta* *Walk.*) (64c). Forewing grey, *circumflexa*. suffused with fuscous in median and terminal areas: inner and outer lines pale, double, {with dark brown centre; the inner oblique inwards below middle, obscure above; the outer, also oblique, irregularly lunulate dentate, slightly inangled on vein 2 and the fold below it, followed by a pale grey band which broadens towards costa; subterminal line irregularly dentate and flexuous, preceded by a dark fuscous shade and black wedge shaped marks; stigmata pale grey, with first dark, then pale lustrous outlines; median vein pale; the subcellular mark broad, bent at right angles in middle, its centre pale brown, edged first with dark, then with whitish yellow; hindwing smoky brown, with broad blackish terminal border. In Europe restricted to the South East, Dalmatia, S. Russia, the Ural Mts.; also in Asia Minor, Syria, N. Persia, the Altai Mts., Ala Tau Mts., Samarland, Ili, and Issyk-Kul.

4. Genus: **Phytometra** *Har.*

Tongue present; frons smooth, with a short tuft of hair; palpi upcurved, the second segment rough scaled, the terminal shorter; antennae in ♂ typically shortly ciliated or merely pubescent, in a few (African) cases only pectinated; head rough scaled; prothorax strongly crested; abdomen with strong dorsal crests, and with more or less developed lateral tufts in the ♂, in which sex the anal tufts also are usually well developed; legs sometimes long and very brittle; tibiae without spines: tarsi in a few cases with the basal segment armed with a vertical row of very fine even spinous hairs; forewing with apex prominent, termen obliquely sinuous, the anal angle with a tooth of scales; either decorated with patches of metallic suffusion, or with the stigmata metallic. Larva without prolegs on segments 7 and 8; the head and thoracic segments small; green in colour; feeding on various low plants; hibernating small, and feeding up in spring; pupating in a loosely spun cocoon beneath the shelter of the leaves of the food plant. Type *P. festucae* L.

Sect. III. Antennae of ♂ ciliated.

P. festucae L. (64c). Forewing deep golden brown, with a golden metallic sheen at base of costa, *festucae*. on inner margin of median area, and on an oblique patch before apex; lines all oblique, dark brown; veins dark brown; at base of vein 2 a large silvery rounded blotch, with a smaller, more elongate, one beyond it; the lowest streak of the apical blotch, below vein 6, and a spot at base of costa are also silvery; hindwing bronzy fuscous, with pinkish fringe. Larva green; dorsal line dark green, edged with white; subdorsal and lateral lines white; spiracular yellowish; head green; feeds on various marsh grasses: Typha, Carex, Festuca, Glyceria, etc.; pupating in a whitish cocoon on the underside of a blade of grass, doubled over for the purpose. Throughout Europe; in W. Asia; throughout Central and Eastern Asia.

P. festata *Graes.* (= *putnami* *Stgr. nec Grote*) (64d). Rather smaller than average *festucae*; distinguished *festata*. by the decidedly paler hindwings, with a grey median line and subterminal band; the fringe pale yellow; in the ab. **conjuncta** *ab. nov.* (64d) the two golden blotches of the forewing are confluent; in another form, — *conjuncta*. ab. **major** *ab. nov.* (64c), — larger than the average *festucae*, the whole forewing is much more extensively *major*. pale golden yellow, with the hindwings pale and the golden blotches separate. Occurs in Japan, Corea, and E. Siberia, where it takes the place of *festucae*.

P. barbara *spec. nov.* (64d). Forewing yellow sprinkled with fiery orange, without any metallic gloss, *barbara*. except on the two central blotches and the apical streak; the inner of the blotches forms an equilateral triangle, its apex reaching middle of cell, its outer angle rounded; the black dot above vein 6 is strongly expressed; the whole wing without the dark suffusion of *festucae*; hindwing with a narrow pale space along termen. Described from a ♀ from Mazagan, Morocco, captured in July 1903, by RIGGENBACH, and now in Tring Museum. In size rather smaller than average *festucae*.

P. bractea *F.* (= *securis* *Vill.*) (64d). Forewing purplish fuscous with many fine dark strigulae; the *bractea*. lines finely dark but indistinct, inwardly oblique; the inner line below middle finely golden, the outer golden at inner margin only; median area below middle ferruginous brown, containing at base of vein 2 a large irregular somewhat sinuous shining golden blotch; a deeper diffuse shade from apex to middle; hindwing dull bronzy yellowish tinged with fuscous; the terminal area diffusely deep fuscous. Larva pale green; dorsal and spiracular lines white; head pale green marked with brown; feeding on various low plants, such as Hieracium, Leontodon, Plantago, Tussilago, Eupatorium, and Urtica. A local species but widely spread; occurring in Scotland, Ireland, North England, Finland, Denmark, the Baltic provinces of Russia, North Germany, the Alps, Hungary, Galicia, Rumania, the Bukowina, S. Russia, the Ural Mts.; also in Armenia, the Altai Mts., Thian Shan Mts., Amurland, and Japan. The golden blotch varies from a subquadrate, somewhat anvil-shaped mark to an elongate, sinuous, tongue-shaped one.

- excelsa.* **P. excelsa** Kretsch. (= *metabracea* Btlr.) (64d). Forewing purplish pink shaded with olive brown; the lines plain; inner and outer lines double, the inner filled in with faintly lustrous scales; the median area below middle paler brown, the metallic blotch narrower than in *bractea* and less sinuous; lower margins of orbicular and reniform stigmata finely golden; submarginal line waved, lying on an olive brown shade; hindwing as in *bractea*, but with a distinct dark outer line; the fringe paler. Found in Russia, St. Petersburg, the Ural Mts.; also in the Altai Mts., Amurland, and Japan. This species seems to stand in much the same relation to *bractea* as *iota* to *pulchrina*.
- argyrosigna.* **P. argyrosigna** Moore (64d). Forewing purplish brown; the lower half of the median area and an irregular oblique subterminal shade deeper brown; inner line faintly lustrous violet, angled on subcostal and again on median vein, then obliquely curved inwards; outer line indistinct, lunulate dentate, pale with dark brown edging, preceded on inner margin by a ferruginous patch; costa at base ferruginous; stigmata obscure; the orbicular narrow and oblique; their lower margins shortly metallic; the mark on vein 2 curved, long and narrow, bright silver; a bronzy patch at anal angle; hindwing pale bronzy fuscous, diffusely deep fuscous along termen, with traces of a paler median line; the veins slightly darker. An Indian species, but occurring in the Kashmir valley.
- chryson.* **P. chryson** Esp. (= *orichalcea* Hbn. nec V., *aerifera* Sowerby) (64e). Forewing brownish fuscous tinged with purple; lines dark brown, inconspicuous; inner line waved, oblique inwards; median line visible only at costa; a large subquadrate shining brassy blotch beyond cell between veins 7 and 3, the space between it and inner margin suffused with deep golden brown, both traversed by the fine outer line, which becomes lustrous towards inner margin; submarginal line very obscure, waved, limiting the brassy and brown patches; hindwing pale bronzy fuscous, darker towards termen. Larva green; dorsal line darker green, white-edged; some oblique whitish lateral stripes; spiracles white; feeding on Eupatorium. Occurs in Britain, France, S. Germany, the Swiss Alps, Galicia, Rumania, the Bukowina, and the Ural Mts.: in Armenia, the Altai Mts., Amurland, Corea, and Japan.
- leonina.* **P. leonina** Oberth. (= *humeralis* Btlr.) (64e). Exactly like *chryson* Esp., but without the large brassy blotch. Described by OBERTHÜR from Sidemi, Amurland, and recorded by LEECH from Yesso. In the subsp. *bieti.* **bieti** Oberth. (64e) from West China there is no velvety brown shade on inner margin of forewing.
- zosimi.* **P. zosimi** Hbn. (64e). Forewing glossy green, the costal and terminal areas narrowly brownish; a diffuse brown costal triangle containing the 3 dark-edged stigmata; a dark somewhat hook shaped mark on inner margin represents the outer lower portion of basal patch: the bright green area is limited outwardly by a widely outcurved outer line, which is preceded on inner margin by a dark triangular mark, and followed by a small dark blotch at anal angle; hindwing shining pale fuscous, with darker outer line and terminal border separated by a paler band. A local species found in Piedmont, Galicia, the Dobrutscha, and the Ural Mts.: also in the Altai Mts., W. Siberia, in Amurland, and Japan.
- chrysitis.* **P. chrysitis** L. (64f). Forewing brassy green; the basal patch and broad median fascia, widening at costa, purplish brown; subterminal line preceded by a shade showing deeper green in certain lights; the terminal area paler brown; the three stigmata with dark outlines; hindwing fuscous with the fringe pale; in *juneta.* the ab. **juneta** Tutt (64e) the median fascia is more or less widely broken in the middle, the two brassu green areas becoming confluent; — in ab. **aurea** Huene (64f) the green is deep golden, with the golden bands confluent; in ab. **disjuncta** Schultz (64f), golden with the bands not confluent, while in ab. **scintillans** Schultz (64f) the bands are dull blue green. Larva green, with many fine whitish dorsal lines; sinuous white lines along the sides and a white stripe above the feet; polyphagous on low plants. Common throughout Europe, except Spain and Greece; in Asia Minor and through Central Asia to Japan.
- nadeja.* **P. nadeja** Oberth. (64f). Smaller than *chrysitis* L., with the median band uniformly widely interrupted, the basal patch smaller, with indented edge, and the shade before subterminal line brown and broken into spots. Amurland and Japan.
- stenochrysis.* **P. stenochrysis** spec. nov. (64f). As large as or larger than *chrysitis*, but with the forewing narrower; the costal portion of median fascia with conversely oblique edges, and nearly twice as wide on costa as in *nadeja*. Several examples from Ichikishiri, Yesso, in Tring Museum.
- peponis.* **P. peponis** F. (= *agramma* Guen., *inchoata* Walk.) (64g). Forewing glossy olive grey, with dark olive fuscous patches at base of costa, in lower half of median area, and along termen, the last more bronzy; all the markings blurred and indistinct; the outer line crenulate; some irregular dark patches along the lines

and in cell; a slight pale space along termen before the fine black terminal line; hindwing fuscous, with darker cellspot, veins, outer line, and terminal border; **fumifera** *Graes.* is a duller, more clouded, form from Amurland. The type form is found in Japan and Kiushiu, as well as in India, and the islands to Australia. Larva green, with black lateral spots; conspicuous white subdorsal and lateral waved lines; the dorsum is said to be armed with short black pointed spines, stoutest on the middle segments and on the 11th; feeding on Cucurbitaceae. *fumifera.*

P. hebetata *Bthr.* (65 h). Differs from *peponis* *F.* (64 g) in being suffused with rosy pink; the outer line nearly straight; the subterminal irregularly dentate, with a coppery patch beyond it; hindwing brownish fuscous. Occurs in Japan and Corea as well as in N. India. *hebetata.*

P. orichalcea *F.* (= *chrysitina* *Martin*, *aurifera* *Hbn.*) (64 g). Forewing grey brown at base, along inner margin, and along costa to near subterminal line; the rest of the wing brassy green with brown striae; the inner line finely pale lustrous grey, inwardly waved below middle, outwardly oblique above; outer line pale brown, indistinct, oblique below costa and insinuate from above vein 5 to above vein 2, forming the edge of the brown costal area; below vein 3 the brassy area runs inwards as a wedge shaped mark along vein 2 to touch inner line: subterminal line brown, fine, lunulate dentate; the veins brownish before the narrow dark brown terminal area; fringe brown with two or three waved brown lines through it; stigmata finely edged with grey; the orbicular short and rounded; the reniform much constricted at middle; hindwing with basal area dull luteous, the costal area shining whitish, separated by a brown line from base through the dark cellspot; terminal area broadly deep fuscous, preceded by a crenulate brown outer line. Occurs in Morocco and Algeria, the Canary Islands, the Azores, Madeira, Spain, S. France; in Kashmir, throughout India and the Malay Islands; the few taken on the south coast of England were only stragglers. Larva bluish green, with a few short dorsal hairs; slender dorsal white lines, and a prominent lateral line; feeding on Coreopsis. *orichalcea.*

P. chalcytes *Esp.* (= ? *quaestionis* *F.*, *bengalensis* *Rossi*, *chalsytis* *Hbn.*) (64 g, h). Forewing earth brown, with a faint purplish gloss, shaded in parts with rich brown, and below median and along subterminal area washed with brassy yellow: inner line pale, outwardly edged with deep brown, oblique outwards to median vein, along which it is retracted basewards, then sinuous and oblique to inner margin; the basal area deep brown, the subbasal line edged with brassy; outer line running outwards parallel to costa, then double, incurved between veins 7 and 4, and strongly indented on submedian fold, the inner arm thick, deep brown and faintly crenulate; reniform stigma large, oblique, obscured by a dark median shade; at base of vein 2 an oblique silvery loop with yellow centre, followed by a silvery drop; subterminal line indistinct, more or less obscured by a dark submarginal shade, the edge of which is straight from before apex to end of vein 3; the extreme termen and fringe of the ground colour; a black spot in fringe beyond vein 4; a round brassy yellow spot at anal angle; hindwing brownish, with the veins blackish; terminal border smoky blackish; fringe pale with a black middle line, swollen beyond each vein; in the ab. **cohaerens** *Schultz* the u-shaped stigma is conjoined to the spot. Larva like that of *gamma*, pale yellow green, with broad white lateral stripes; spiracles black; tubercles white; head green edged with black; feeds on various low plants. Found in S. Europe, except Russia, in Asia Minor, and Syria. *chalcytes.* *cohaerens.*

P. eriosoma *Dblld.* (= *verticillata* *Guen.*, *integra* *Walk.*, *adjuncta* *Walk.*, *dinawa* *Beth.-Baker*) (64 h). Closely related to *chalcytes* *Esp.*, but without, or with much less of, the golden gloss of that species; the abdomen of the ♂ with the anal tufts black beneath and laterally; these black scales vary much both in quantity and plainness; they probably are rubbed off during copulation, but, in fact, they are most strongly developed in the Indian forms and least of all in New Zealand, whence *eriosoma* was described; the golden gloss is rarely of any extent except in examples from the Solomon Islands; — a much rarer form occurs, — ab. **illuminata** *ab. nov.*, in which the ground colour is pale pearly grey, especially conspicuous beyond outer line in the costal half of wing; these examples are rather larger than the average, and generally ♂♂, with the anal tufts well developed. The species, which occurs in Africa, is found throughout India, the Malay Islands, to Australia and New Zealand; it is recorded by LEECH from China and Japan. Larva green, palest on dorsum; the lines paler but indistinct; feeding on Ficus. *eriosoma.* *illuminata.*

P. agnata *Stgr.* (= *signata* *Leech* nec *F.*) (64 h). Forewing smaller than *eriosoma*, olive brown, without any golden gloss; the silvery marks smaller and finer; otherwise marked much as in *eriosoma*; the anal tuft in ♂ without the black hairs; hind tibiae of ♂ thickly fringed with ochreous hairs ending in a point, as in *P. aeneofusa* *Swinh.* Appears plentiful in Japan and Corea: also from Amurland. *agnata.*

P. purpureofusa *Hmps.* (64 h). Forewing like *nigrisigna*, but suffused with purple and larger; the lines red brown; the inner angled on subcostal vein; the outer double, also angled below costa, and not *purpureofusa.*

curved: the gamma-mark either small, with the arms separate from the tail, or large and complete; reniform stigma with its outer edge slightly indented, the black specks minute; the red patch beyond the tail of the gamma sometimes obsolete, and the golden flush on inner marginal area and towards apex slight. Recorded from Sikkim and Burma; occurs also in Yatong, Tibet.

pyropia. **P. pyropia** *Btlr.* (64h). Forewing grey brown; median area below cell and the terminal area except at anal angle golden coppery; inner and outer lines dark, nearly straight, the inner obscured above median vein; subcellular mark crochet-shaped, separate from the round spot; subterminal line irregularly wavy; hindwing brownish fuscous. An Indian species extending into Japan.

ornatissima. **P. ornatissima** *Walk.* (= *chalytis* *Koll. nec Tr., locuples* *Oberth.*) (64h). Forewing larger than *pyropia*, the metallic shadings more brassy, those near termen less diffused; subbasal line silvery towards costa; the inner angled below median nervure; the two parts of the Y-mark very large, prominent, and silvery; a golden speck on each side of the orbicular and reniform; the outer line more erect; hindwing dark fuscous. An Indian species extending into China and Japan.

dives. **P. dives** *Ev.* (64h). Forewing greyish fawn colour, shaded with olive brown in the median area; the veins finely black; basal and inner lines both acutely angled on subcostal vein, their upper half filled in with silvery scales, the inner also broadly silver below middle, and emitting a pointed streak outwards above vein 1; below the middle a solid silver V, coalescing above with the oblique silvery orbicular, and followed on vein 2 by a large silvery oval blotch; reniform ferruginous, preceded by a small and followed by a larger curved silver spot; outer line blackish, outcurved, below middle accompanied by brown lines on either side, and marked with silvery scales at inner margin; subterminal line preceded by interrupted black marks, followed by a rosy brown shade; terminal line black preceded by a slightly lustrous pale line; hindwing deep yellow, with a broad black terminal border and yellow fringe. Occurs in the Altai Mts., Urga, Amur, Tibet, Dauria, N. Amurland, Kamschatka.

aemula. **P. aemula** *Schiff.* (= *lamina* *F., chrysomelas* *Bkh.*) (64i). Forewing pinkish grey; the veins finely brown; lower half of median area velvety brown, slightly ferruginous towards outer line, containing a brilliant silvery tongue-shaped mark along vein 2; inner and outer lines brown, double, filled in with ground colour, the inner below the middle with golden scales, the outer only at inner margin; subterminal line concave from costa to vein 6, preceded by a black brown shade, below faintly brown; reniform stigma slightly glossy, oblique, with black brown outline; marginal line brown; fringe concolorous; hindwing dull pale grey, with the veins dark and terminal border fuscous. Larva green, with white wavy dorsal and subdorsal lines and white lateral lines: a fine line above the spiracles; spiracular line white and distinct; head and forelegs green; tubercles white; feeds on various low plants, as *Leontodon*, *Hieracium*, *Plantago*. Found in the Swiss Alps, Bavaria, Austria, and Styria; on the Urals and in Armenia.

deaurata. **P. deaurata** *Esp.* (= *aurea* *Hbn.*) (64i). Forewing pale golden, finely dusted with rufous, the basal and terminal areas dull, grey brown; the costa at base golden; lines brown, double; the inner angled outwards on subcostal vein and again on submedian fold, thence obliquely sinuous inwards; outer line double, oblique outwards to vein 7, there bluntly angled and incurved to vein 4, then more vertical, with a slight dent on the fold, to inner margin, the outer arm from the angle leaden black; beyond and close to it, the brown diffuse submarginal line, angled on vein 8; the veins brown; two dark dots, one on each side of vein 3, in the obscurely paler teeth of the submarginal line externally; orbicular stigma golden, oblique, brown-edged; an equally obscure ringlet below it on vein 2; reniform obscured by a diffuse brown median shade; hindwing shining pale fuscous, with dark veins, outer line, and terminal border; the ab. **semiargentea** *Alph.*, from Bokhara, differs only in having the forewings paler and the hindwings darker. Larva grass green, with 5 white lines on the thoracic segments; each segment from the 4th with a dark green white-edged lunule, and a conical prominence on the 11th; lateral stripe dark green with white edges; spiracles white; head green; on *Thalictrum flavum* and *aquilegifolium*. A southern species, inhabiting Portugal, Spain, Italy, the Southern Alps, Lower Austria, Silesia, Carinthia, Hungary, Transylvania, the Bukovina, and S. Russia; also found in Bokhara and the Altai Mts.

v-argenteum. **P. v-argenteum** *Esp.* (= *mya* *Hbn.*) (64i). Forewing deep rosy, shaded with olive brown; inner and outer lines double, olive brown marked with black; the inner acutely angled outwards on subcostal vein and vein 1, both arms edged inwardly with rosy, above and below the angles with white; the outer running outwards beneath costa, then bluntly rounded and oblique inwards, filled in with rosy and edged on both sides with rosy, and externally on inner margin with white; submarginal line lustrous silvery, the shade before it edged with black and mixed with black and olive scales; a broad pinkish white line before termen, which is dark olive; fringe pink, externally mottled with green; in the olive median area below middle stands

a wide silver V followed by a silver drop; the base of the two stigmata is marked with silver dots; hindwing bronzy fuscous, with two dark lines and broad terminal border; fringe rosy. Larva green, darker along the back, with two pale yellow dorsal lines, fine well-marked subdorsal lines, and yellow spiracular lines with dark upper edges; spiracles yellowish red; head and thoracic shield green; feeds on various species of *Thalictrum*. A local insect, found on the Alps of S. Switzerland, Piedmont, S. Tyrol, and Carinthia.

P. ornata *Brem.* (64i). Like *P. v-argenteum*, but with the ground colour whitish instead of rosy; the inner line not so acutely angled; the silver V narrower; the upper parts of the two stigmata more clearly outlined; submarginal line ill defined and not lustrous; hindwing darker and more olive fuscous. Amurland. *ornata.*

P. hamptoni *Leech.* Forewing pale violet grey, with a brassy sheen, most conspicuous in lower median area and towards termen; basal area crossed by wavy grey bands; inner line whitish, slightly angled, obscure above median; outer line double, grey, filled up with lilacine, sinuous; submarginal line sinuous, pale, edged with grey; the apex of wing blackish, the costa before it dotted with black; inner half of median area darker grey edged with blackish; reniform stigma black with paler outline; orbicular grey with whitish outline marked with black scales; a black ringed white spot below it, and a blackish spot before it; fringe olive grey, with white mottling, preceded by a row of whitish lunules and black dots; hindwing smoky grey, with dark cellspot and median line. This species was described by LEECH from a single ♂ from Pu-tsu-fong, W. China. *hamptoni.*

P. iota *L.* (= ancora *Frr.*) (64i). Forewing pale dull rosy, with olive fuscous shading; a brown spot at middle of base; inner and outer lines nearly straight, edged with brown; median area from inner margin to above middle ferruginous brown; a small V-shaped spot on vein 2 and a small round spot close beyond it pale golden; reniform stigma in part brownish edged; subterminal line suffusedly margined with olive brown, except above anal angle; hindwing fuscous brown, the terminal border darker; in the rarer form **percontationis** *Tr.* (= bartholomaeii *Mén.*) (64i) the two golden marks are coalescent; on the other hand the outer spot, and sometimes both, may be wanting as in the ab. **inscripta** *Esp.* (64k); in the form **baltica** *Speyer* (= amurica *Stgr.*) (64k), from the Baltic provinces of Russia, the ground colour is much darker, especially in the lower part of the median area; a similar dark form, but with the golden markings confluent as in *percontationis* *Tr.*, — subsp. **monogramma** *Alph.* (64k) is met with in Turkestan and the Ussuri district. Larva bright green dotted with white; dorsal line darker, white-edged; subdorsal and lateral lines white; the spiracular yellowish; head green; feeding on numerous low plants, such as *Lamium*, *Urtica*, *Senecio*, *Eupatorium*, *Lonicera*, etc., pupating in a greyish white cocoon. Occurs throughout Europe, in Armenia, and Amurland. *iota.* *percontationis.* *inscripta.* *baltica.* *monogramma.*

P. pulchrina *Hav.* (= v-aureum *Guen.*) (64k). Forewing fuscous purplish, with the dark suffusion stronger than in *iota*; inner and outer lines more or less marked with pale yellowish, edged with dark brown; the inner preceded by a brown fascia; median area below middle ferruginous brown, with an orange suffusion beneath externally; reniform stigma partly outlined with pale golden; the two golden spots as in *iota*; submarginal line suffusedly edged with olive brown, except above anal angle; hindwing as in *iota*; in the ab. **percontatrix** *Auriv.* (64i, k) the two golden spots are confluent; the form **gammoides** *Speyer*, from the Baltic provinces and North and Central Germany, is darker, with the purplish tint of forewings stronger and the metallic spots united; — **buratetica** *Stgr.* (64k) is also a darker, brownish grey form, with stronger golden tinge and conjoined spots, from the Kentei Mts. and E. Siberia; in the ab. **pallida** *ab. nov.* from the Engadine the ground colour is whitish. Larva hardly distinguishable from that of *iota* *L.*, polyphagous on low plants. The species is coextensive in range with *iota*. *pulchrina.* *percontatrix.* *gammoides.* *buratetica.* *pallida.*

P. gamma (65a). Forewing purplish grey, with darker suffusion in places; the lines pale silvery edged on both sides with dark fuscous, the outer line indented on vein 2 and submedian fold, as in *circumflexa*; the oblique orbicular and the reniform conversely oblique and constricted in middle, both edged with silvery; the median area below middle blackish, containing a silvery gamma; the subterminal dentate and indented, preceded by a darker shade; hindwing brownish grey with darker veins and a broad blackish terminal border; aberrations due to difference in ground colour are ab. **pallida** *Tutt* (65a), in which the ground colour is whitish grey, with the markings appearing darker and more sharply defined; ab. **rufescens** *Tutt* (65a), where it is yellowish red, with the gamma mark pale golden, also the lines and edges of stigmata, and the whole underside reddish; and ab. **nigricans** *Spul.*, in which the whole forewing up to the pale terminal space is violet black brown; in the ab. **purpurissa** *ab. nov.* (65a) the ground colour is deep olive brown; the inner and outer lines violet, the latter double; subterminal line lustrous violet, irregularly waved and below the middle forming a strong W-shaped mark; the gamma mark is pale golden, and the edges of the dark stigmata are, like the inner line, finely lustrous; a pale violet terminal stripe before termen; hindwing bronzy brownish, with broad dark terminal border. The example from which this description was made, *gamma.* *pallida.* *rufescens.* *nigricans.* *purpurissa.*

- now in the Tring Museum, was taken in Sussex, on the South Coast of England, and is referred to by *Turt* in *British Noctuae*, Vol. IV, p. 32; lastly, the form *gammina* *Stgr.*, from Syria and Pontus, is only half as large as typical *gamma*, with more definitely marked forewings. Larva pale green, with fine whitish or yellowish, partly double, lines: a straight yellowish lateral line above the white black-ringed spiracles; feeding on all kinds of low plants throughout the summer. Found throughout the palaeartic region, except in the extreme East of Asia, where its place is taken by the Indian species, *nigrisigna* *Walk.*
- nigrisigna.* **P. nigrisigna** *Walk.* (= ? *gamma* ab. *obscura* *Oberth.*) (65 a). Differs from *gamma* *L.* mainly in the different shape of the gamma mark, the arms of which are much more oblique, in a curve with the tail, instead of being angled with the tail; in the hindwing the dark border is not so black; moreover, the pale line before termen of forewing is whiter and narrower than in *gamma*. A North Indian insect, occurring in E. Asia and China, where it takes the place of *gamma*, as above stated.
- mandarina.* **P. mandarina** *Fr.* (= *interscalaris* *H.-Sch.*, *typinota* *Bth.*) (65 b). Forewing purplish grey, suffuse and spotted with blackish fuscous: inner line dark, pale-edged, oblique outwards to median vein along which it is retracted basewards, then obliquely incurved, edged with white, to inner margin; outer line brownish, double, bent below costa, then oblique inwards, indented on vein 2, thence vertical; subterminal line irregular, protruding between veins 7 and 5, preceded and followed by fuscous suffusion, edged by a straight whitish line before the thick black terminal line; reniform large, obliquely 8-shaped, the upper half marked with black, lying in a diffuse median shade; median area below median vein deep brown, becoming reddish ferruginous along submedian interval and before outer line; along vein 2 a white y-shaped mark, thickened and rounded at the tail; fringe dark, with a bright pale base; hindwing fuscous, with terminal border and an outer line darker. Amurland, E. Siberia, Ussuri, Kamschatka; Ural and Altai Mts.
- macrogamma.* **P. macrogamma** *Ev.* (= *sevastina* *Fr.*) (65 b). Forewing purple shaded with darker in median area; the basal and outer areas with a bronzy green sheen; the lines dark brown, double, with narrow bronzy centres; the inner interrupted in cell, oblique below it, and outcurved between submedian fold and vein 1; the outer not crenulate, indented on vein 2; subterminal line dentate and indented, preceded by a darker bronzy shade; the gamma mark large, broadly pale golden; the base of both stigmata also outlined in pale gold; a distinct dark median shade; hindwing shining brownish, with darker veins, a paler outer band, and broad smoky fuscous terminal border. In Europe found only in Lapland and Finland, and in the Ural Mts.: also in the Altai Mts., W. Siberia, Mongolia, E. Siberia, and Amurland.
- confusa.* **P. confusa** *Stph.* (= *gutta* *Guen.*, *circumflexa* *Esp.* nec *L.*) (65 b). Forewing olive grey, darker at base of costa and beyond inner line; median area below middle deep chestnut brown, becoming ferruginous just before outer line; along vein 2 the two silvery white marks, which are in allied species separate, coalesce to form a single large blotch indented on its upper edge, beneath the median also coalescing with the silvery lower half of inner line; outer line irregularly crenulate from vein 8 to inner margin more or less parallel to termen, and marked with silvery only at inner margin; subterminal line waved but indistinct, being lost in a bronzy fuscous suffusion reaching to apex, and limited by a grey line before the blackish marginal line; fringe grey; hindwing bronzy fuscous, paler towards base; in rare cases, — ab. *bigutta* *Stgr.* the silvery mark is broken up into two spots. Larva green, more rarely brownish or violet, with darker green, white edged, dorsal line; yellowish or green, white edged, subdorsal lines, straight on the thoracic segments and sinuous on the rest; lateral lines broadly white; spiracles white in black rings; tubercles black: head and forelegs black: feeds through the summer on *Achillea*, *Matricaria*, etc.; pupa greenish white, with the dorsum black. In Europe restricted mainly to the South, and occurring in W. Asia, Lydia, Syria, Bithynia, Armenia, Persia, the Altai Mts., and throughout Central Asia to E. Siberia and Amurland.
- crassisigna.* **P. crassisigna** *spec. nov.* (= *gutta* *Hmps.* part, nec *Guen.*) (65 b). Closely resembling *confusa* *Stph.*, but rather larger, and with the silvery white mark longer and more swollen; reniform stigma marked with silvery. Japan and Corea; also occurs in India.
- albostriata.* **P. albostriata** *Brem. and Grey* (= *transfixa* *Walk.* part, *oxygramma* *Hmps.* nec *Hbn.-G.*) (65 b). Forewing dull ashy grey striated with blackish, with darker suffusion in median area and on each side of subterminal line, and a faint bronzy tinge along termen; lines black, double, filled in with pale; the inner with two curves below middle, the outer oblique, lunulate dentate, strongly indented on submedian fold; subterminal line pale grey, ill-defined; a row of pale vein dots before the black terminal lunules; stigmata conversely oblique; the orbicular narrow with paler edges; the reniform leaden grey with dark outline; sub-cellular mark a long pointed streak reaching outer line, its edges silvery white and with a whitish central line; hindwing fuscous, with the veins dark and base paler. An oriental species which is met with also in China and Japan.

P. ochreata *Walk.* (= *cornucopiae* *Snell.*). Forewing grey brown, tinged with golden coppery only *ochreata*. towards apex; the subcellular mark a long fuscous and pale straight streak in a line with the orbicular stigma, running to outer line at vein 2, somewhat as in *albostrigata* *Brem. and Grey*; inner and outer lines erect as in *pyropia*, the outer sinuous. Japan, Corea, E. China; the species occurs also throughout India, in Ceylon, Formosa, and Celebes.

P. purissima *Btlr.* (= *tetragona* *Leech* nec *Walk.*) (65 c). Forewing pale ashy grey, slightly tinged *purissima*. with lilac; lines dark olive brown, conversely pale-edged; inner line oblique outwards to median vein, its lower half oblique inwards much nearer base, edged with silvery white; outer line straight and oblique from below costa to inner margin; median area below middle filled in with olive fuscous; on vein 2 a short narrow silvery streak, followed by a longer oval one; reniform stigma represented by a horizontal olive fuscous dash above the median vein, followed by a pale space; subterminal line nearly straight, with a faint indentation at middle, accompanied by olive suffusion; a purplish line before termen from apex to vein 3; hindwing brownish fuscous, with traces of two darker lines. Japan, Kinshiu, Corea, Central and Western China. This species closely resembles the Indian *tetragona* *Walk.*, but shows appreciable differences.

P. tancrei *Stgr.* (65 c). Forewing pale olive grey: the lines and shadings darker; inner and outer *tancrei*. lines double, filled in with white; the inner blackish, waved and curved below middle; the outer browner, oblique, followed by a white band broadening to costa, and beyond it a fuscous band with dark edges, broadening to inner margin, its outer edge flexuous, limited by the subterminal line; a white line from apex before the terminal line; orbicular stigma grey with pale edges; reniform fuscous with black outline; a bluntly toothshaped white blotch below median vein with silvery edges; hindwing dark fuscous, with slightly pale base showing a dark outer line; fringe whitish. Known from Tibet only.

P. bella *Christ.* (65 k). Forewing pale ochreous grey; the lines white; the inner plainest below middle, *bella*. angled outwards on submedian fold; the outer oblique, irregularly crenulate, edged with dark below middle and with white below costa; stigmata dark brown with white outlines, conversely oblique; the gamma-mark white, with a broad tail; subterminal line white, irregularly crenulate, with a strong indentation on both folds, and preceded by dark scaling; a row of dark terminal lunules preceded by white scales; fringe mottled, white and pale brown; hindwing fuscous. Turkestan.

P. jessica *Btlr.* (65 c). Forewing dark purplish grey, deepest in the lower half of the median area *jessica*. and the praesubterminal shade; stigmata dark, with pale edges, conversely oblique; median vein pale; inner line below middle only white, inwardly oblique, with a curve in middle; outer line irregularly crenulate, inwardly oblique, and indented on submedian fold; the gamma mark complete, white, concise, the tail parallel to the median vein; hindwing fuscous; the form **serena** *Btlr.* represents the deeper tinted specimens. Japan. *serena*.

P. v-minus *Oberth.* (65 c). Very much like *gamma*, but with the silvery mark characteristic of that *v-minus*. species reduced to a slender v, the tail not being represented at all. Described from a single specimen from Sidemi, Amurland.

P. accentifera *Lef.* (= *L. aureum* *Frr.*, *hieroglyphica* *Frr.*, *L. album* *Hbn.-G.*) (65 e). Forewing dull *accentifera*. pinkish grey dusted with darker, and with irregular olive brown patches; lines pale; inconspicuous; the inner oblique outwards to median vein, then waved inwards, followed by brown patches; outer line lunulate, between two brown shades, interrupted below middle by a large brown blotch; a brown blotch from apex, a triangular one below middle of termen, and some small patches along subterminal line, which bears a black white-edged tooth between veins 2 and 3; the mark below median inconspicuous, yellowish grey, laterally finely edged with silvery, oblique and parallel; hindwing brownish, with dark outer line and broad smoky fuscous border. Larva green, with white dorsal and double white subdorsal lines; spiracular white, less conspicuous in front, yellower behind; tubercles black with long hairs; feeds on *Mentha*. A South European insect, found in Spain, Portugal, Piedmont, Corsica, Sicily, Crete, and Syria.

P. rutilifrons *Walk.* (= *argenteoguttata* *Pouj.*) (65 c). Forewing olive grey with darker grey clouds; *rutilifrons*. the submedian interval in median area, and space before outer line, also the middle of terminal area shaded with deep reddish ferruginous; inner line angled outwards on subcostal vein, then oblique to median, there sharply angled outwards again, and oblique and silvery to inner margin; outer line slightly sinuous, dark edged with paler, below the middle with silvery; median area below median vein deep chesnut; on vein 2 a silvery white loop followed by a round white spot, much as in *chalcytes*, but smaller; reniform stigma an oblique figure of 8, with darker edges; subterminal line twice indented, preceded by a dark shade; the ferruginous and fuscous shade beyond it edged by a straight white line from vein 8 to 3, with a paler patch at apex and anal angle; hindwing fuscous. North China, Amurland, Japan, and Yesso.

- variabilis.* **P. variabilis** *Pill.* (= *illustris* *F.*, *cuprea* *Esp.*) (65 c, d). Forewing shining olive grey green, finely speckled with darker; basal area paler; inner line broad, double, the inner arm pinkish, the outer whitish, the centre greenish grey, generally indistinct above middle; outer line sinuous, the inner arm pinkish white, the outer broadly pink, the middle green; subterminal line single, white and crenulate; terminal line white; orbicular stigma narrow, elongate, oblique, olive green outlined with whitish; reniform large, indistinct, with pale outline, separated from orbicular by a deep olive green shade, and followed by a diffuse pinkish shade; a rounded triangular mark on vein 2, olive greenish edged with whitish; the median shade and edges of median area along the lines deep green; hindwing greenish fuscous with a paler outer band; the form **mongolica** *Stgr.*
- decolor.* from Amurland, is smaller and paler, without any pink tinge; a similar form, but not smaller, — ab. **decolor**
- sergia.* *ab. nov.* (65 d) occurs in Switzerland and other European localities; the form **sergia** *Oberth.* (65 d), on the other hand, has the pink areas amplified, the whole basal area and a broad band beyond middle being bright pink. Larva bluish green; dorsal and subdorsal lines blackish green, the lateral stripe broadly yellow, containing the black spiracles; tubercles large and black; venter grey green; forelegs and head black; feeding on *Aconitum lycoctonum* and *Thalictrum aquilegifolium*. Occurs on the Alps and Pyrenees, on the mountains of S. Germany, Austria, Transsylvania, the Bukowina, and Wallachia, in Russia at Kasan, in the Ural Mts., and on the shores of lake Ladoga and near St. Petersburg; also in Armenia; it is reported to have been taken many years ago on Salisbury Plain in England, and a single specimen was recorded in later years from Ireland.
- generosa.* **P. generosa** *Stgr.* Forewing light reddish brown, somewhat like the ground colour of *Pl. cheiranthi*; with two broad olive fasciae, one near base, the other beyond middle, this latter edged by a golden fascia; a double olive line before the orbicular stigma, attached to a subcellular mark below; reniform obscured by the upper part of the dark outer band; hindwing dark fuscous, the basal half yellowish tinged; comes nearest to *renardi* *Ev.* Described from a single somewhat damaged specimen from Haradjan near Zeitun (Taurus).
- consona.* **P. consona** *F.* (65 d). Forewing pale olive grey, darker in outer half of median area and towards anal angle; the inner half of median area suffused with chocolate brown; a quadrate blotch between subterminal and terminal lines above vein 3 deep chocolate; a blotch at anal angle before subterminal line shining ferruginous brown; lines ochreous suffused with pink, double; the inner angled on subcostal vein, and toothed outwards on median vein and vein 1; the outer sinuous; subterminal line single, sinuous; veins towards termen pale; orbicular stigma oblique, white, pointed at lower end; reniform very narrow, of the ground colour, the lower end darker; at base of vein 2 a silver loop with deep brown centre; hindwing olive ochreous with darker median line and terminal border, the latter traversed by a pale subterminal line. Larva bluish green, with inconspicuous paler dorsal and spiracular stripes; tubercles finely black, ringed with white, with fine white hairs; head green with deep black marks; feeding on *Lycopsis* and *Pulmonaria*. Restricted to S.E. Europe, Saxony, Lower Austria, Hungary, Bulgaria, and S.E. Russia; also in Armenia, Pontus, and Taurus.
- renardi.* **P. renardi** *Ev.* (65 d). Forewing pale olive green strongly flushed with pink; the median area wider than in the three preceding species, darker olive green, the space in cell between the stigmata, a faint median shade, and the edges along the lines being olive brown; lines pale, double, with a greenish centre; the inner angled acutely on subcostal and finely toothed on the median vein and vein 1; the outer flushed with pink; submarginal line pale, preceded by a greenish shade and a chestnut brown patch on inner margin; a redbrown patch at apex and on termen below middle; terminal line whitish; orbicular stigma oblique, flattened, olive green with white outline; reniform dark grey with pale outline; the loop on vein 2 olive green with silvery outline; hindwing greenish fuscous, with darker median and terminal border. E. Siberia.
- siderifera.* **P. siderifera** *Ev.* (= *beckeri* *Stgr.*) (65 d). Forewing paler than *consona* *F.*, the grey tinge yellower, the dark shading chestnut red; the lines broader, more conspicuous; the space between outer and terminal lines dark brownish olive to costa and there widened; orbicular stigma whitish, shorter, the lower end not pointed; reniform distinct, dark, with pale outline; the cell between them chestnut brown; the loop on vein 2 chestnut brown, edged with whitish, not silvery, and somewhat larger; the subquadrate terminal spot produced as a brown blotch across the pale fringe; hindwing cream colour, tinged with pale olive, darker along terminal border. Occurs at Sarepta, S. Russia, in Pontus, and the Ala Tau Mts.; the form **italica** *Stgr.* (= *calberlae* *Studfs.*) (65 e), from Gran Sasso, Central Italy and S.E. Taurus, has the scaling rougher and the pale lines more blurred; the ground colour pale olive greenish; the orbicular with slightly darker centre, the reniform filled up with dark brown, the upper half elongate; the mark on vein 2 tongue-shaped, pale edged, with dark brown centre; the hindwing somewhat darker. Larva blue green; the segmental incisions yellowish; the lines whitish but inconspicuous; head reddish marbled with brown; feeding in May on *Rindera tetraspis*, when young in the spun-together buds. Of the form *italica* the larva is deep blue green, with six white lines, broader and more conspicuous; the head black, with brown markings; the front feet shining black; the hind feed whitish green with a black ring above; feeding until July on *Cynoglossum magellense*, in a tube formed

of leaves spun together. Notwithstanding the resemblance of the imagos, it may well be that these two are distinct species, the foodplants and habits of the larvae being so different.

P. herrichi *Stgr.* (= *renardi* *Led. nec Ev.*, *uralensis* *Bell. nec Ev.*, *eversmanni* *Stgr.*, *bellieri* *Kirby*) *herrichi*. (65 e). Nearest to *siderifera* *Ev.*, having an olive brown appearance, without the rosy basal area and double rosy outer line of *renardi*; the veins not pale; the reniform kidney-shaped, whereas in *renardi* it is only a small silver fleck. Altai Mts.; Ala Tau Mts.; Ili and Issyk-Kul, Tibet; Dauria.

P. modesta *Hbn.* (65 e). Forewing olive green; basal area dusted with paler; the costa and veins pale; *modesta*. inner line double, white, filled up with greenish grey, angled on subcostal and again on median vein, then oblique inwards; outer line double, white, angled close to costa, then oblique and slightly curved inwards, the outer arm not quite parallel, also filled up with greenish grey; subterminal line from apex to anal angle; subterminal interval brown at inner margin; terminal space brown at apex and below middle; terminal line white; fringe pinkish green; a faint diffuse pale median shade before outer line; orbicular stigma oblique and narrow, white, touching inner line; reniform stigma and the mark on vein 2 brown, with fine pale outlines; the olive median area darker along the limiting lines; hindwing greenish fuscous, darker along termen; the ab. *viridis* *Stgr.*, from Asia Minor and Taurus, has the forewing greener. Larva green, thickly dotted with black, intermixed with larger whitish spots, especially along the sides; feet green; venter whitish green; tubercles black ringed with white, each bearing a single hair; spiracles white in black ring; the ordinary lines not marked; feeding on *Pulmonaria* and *Cynoglossum*. Occurs in Germany, France, Switzerland, Austria, Hungary, Galicia, the Bukowina, and the Ural Mts.; in Armenia, Dauria, Ala Tau, and the Ussuri district. *viridis*.

P. uralensis *Ev.* (= *uraliensis* *Frr.*) (65 e). Forewing glossy pale olive green, the basal and terminal areas pearl grey; inner and outer lines white; the inner angled on subcostal and median veins, and oblique inwards, the outer shortly angled beneath costa, then sinuous; the lines internally darker edged; stigmata and the droplike mark on vein 2 olive green, with fine brown outlines; subterminal line whitish, preceded by a dark line and above inner margin by an olive shade; terminal line dark; fringe olive yellow; hindwing shining pale greenish fuscous, with the veins and an outer shade darker; fringe pale. Known only from the Ural Mts. *uralensis*.

P. cashmirensis *Moore* (65 e). Forewing pale greyish ochreous, tinged with olive brownish, the last strongest in lower half of median area, in a patch on inner margin before subterminal line, and another on costa between the stigmata; lines pale and glossy; inner indistinctly double, oblique inwards and plain below median vein; outer line sinuous, edged by a dark line; stigmata very obscure, conversely oblique, the sub-cellular mark drop-shaped with pale outline; subterminal line pale, with a darker shade before it; the termen darker before the pale terminal line; hindwing olive brownish, with a paler diffuse outer line. Described from Kashmir, and also occurs in the Punjab, N. India. *cashmirensis*.

P. inconspicua *Graes* (65 f). Forewing pale ochreous tinged with olive; the median area and a shade before the lower half of subterminal line deep olive; inner and outer lines white edged with brown, both oblique inwards; the inner shortly angled basewards above median vein, the outer symmetrically sinuous; the three stigmata with dark outlines; subterminal line pale with an olive shade before it; fringe faintly pinkish; hindwing pale olive fuscous, with darker central and terminal shades; the veins brownish. Issyk-Kul district, Tibet. *inconspicua*.

P. gerda *Püng.* (65 f). Forewing pale stone grey with a few fine brown striae; the shadings olive green and brown; inner and outer lines pale edged with dark, sometimes obsolete; the inner obliquely incurved below middle, sometimes forming a quadrate projection basewards in cell; the outer symmetrically sinuous; the median area, broad on costa, filled up with olive brownish; the stigmata darker with fine pale edges; subterminal line pale, sinuous, preceded by an olive green shade throughout; terminal area with an olive patch at apex and below middle, the latter darkening the fringe; the veins towards termen darker; hindwing greenish fuscous, with dark median shade and diffuse terminal border; the fringe paler. Issyk-Kul, Tibet. The antennae of this species are acutely subserrate in both sexes. *gerda*.

P. emichi *Rgnhfr.* (63 g). Forewing olive grey, thickly sprinkled with whitish scales, especially along costa; median area olive brown, limited by white lines; the two stigmata and the mark below delicately outlined with white; terminal area pale reddish, limited by an oblique whitish line; some whitish scales along termen; the terminal line white; hindwing uniform brown; the ♀ darker than the ♂, the white lines being narrower. Armenia; Taurus Mts. *emichi*.

paulina. **P. paulina** Stgr. (65f). Forewing pale brown frosted with white, especially along costa; inner margin at base whitish; lines white, thick, inwardly oblique; the inner angled on subcostal vein, the outer followed by a faint line of whitish scales; orbicular and reniform conversely oblique, finely edged with white scales, like the mark on vein 2; terminal line whitish; fringe brown with pale tips; hindwing pale fuscous, darker terminally; a faint pale median line. Palestine.

maria. **P. maria** Stgr. (65f). Like *paulina*, but more densely powdered with white atoms; the two lines not so oblique and nearer together; the inner preceded and the outer followed by a diffuse whitish line; a faint waved whitish submarginal line; the stigmata and the mark on vein 2 rather darker brown edged with white scales; the orbicular and the mark below irregularly triangular in shape; in *paulina* the orbicular is narrow and elongate, and the mark below tongue-shaped; terminal line dark edged with pale; hindwing shining pale fuscous, darker towards termen. Palestine, and Mardin, Mesopotamia.

augusta. **P. augusta** Stgr. (65f). Closely allied to *maria*, but the forewing greyer brown, thickly powdered with whitish scales; the veins towards termen white; costa greyer; the two lines white, double, with a grey thread down their centres; stigmata and mark on vein 2 of the ground colour, with fine white edging; subterminal line faintly whitish; terminal line white; fringe whitish, with two brown lines; hindwing bronzy fuscous, paler along costa. Occurs at Antioch and in N.W. Kurdistan.

dorsiflava. **P. dorsiflava** Stndfs. (65f). Forewing pale brown, like *paulina*, with slight pale dusting; the costa whitish dotted with brown; the edges of the two stigmata and the mark below finely white; no distinct lines, but the inner marginal area from base to beyond middle blurred and pale; hindwing pale bronzy brown, paler towards costa. Found in Asia Minor and Mesopotamia.

In the following species the proximal segment of the hind tarsi in the ♂ is armed at base with a row of vertical spinous hairs.

ni. **P. ni** Hbn. (= *humilis* Walk., *significans* Walk., *extrahens* Walk.) (65g). Forewing grey suffused with olive brownish and dusted with black atoms; lines black, double, filled in with pale lustrous scales; the inner forming two small curves between median vein and vein 1, with some lustrous scales before it; the outer irregularly crenulate, nearly straight, followed by a pale grey band; subterminal line followed by lustrous scaling and preceded by black sagittate marks; a straight pale line before termen followed by a double lunulate line; fringe chequered brown and grey, with dark lunules at base beyond a white line; orbicular stigma narrow, oblique, edged with lustrous; reniform obscure, dark-edged; median area just below median vein dark brown, containing a broad gamma-shaped mark, the top of which is bell-shaped with ochreous centre, black edged, and outlined in silvery, attached to an oval silvery tail, sometimes also centred with ochreous; hindwing dull brownish, with dark veins and broad smoky blackish terminal border; the fringe white; in the ab. **comma** Schultz (65g) the stigma below middle forms a y-mark. Larva yellow green; dorsal line dark, double; subdorsal lines slender; lateral line white, with dark upper edge; spiracles reddish yellow; tubercles black; feeds on various low plants. A south European species, occurring also in Switzerland, Austria, Hungary, Carinthia, and Croatia; in the Canaries and N. Africa; in Asia Minor, Syria, Turkestan, Japan; the few examples taken in Britain were all probably migrants.

daubei. **P. daubei** Bsd. (= *ciliaris* Walk., *indicator* Walk.) (65g). Forewing pale olive brown, dappled and striated with slightly lustrous ochreous grey scales, and dusted with black atoms; the nervures greyish ochreous; inner and outer lines finely brown, the inner outwardly, the outer inwardly edged with lustrous ochreous scales, and on the reverse side with a diffuse powdery band; subterminal line followed by similar scattered powdery scales, and preceded by black dashes on veins; the two stigmata and the mark below below median finely edged by lustrous ochreous scales, their centres greyish yellow edged with dark; median area dark brown below middle; a double pale terminal line followed by dark lunules; the fringe shining ochreous grey; hindwing pale fuscous grey, with dark veins and broad brownish fuscous terminal border. Larva red brown above, brown below, with red segmental incisions and oblique blackish streaks on each segment, and strong hairs from the tubercles; feeding on *Sonchus maritimus*. On the coasts of S. France, Corsica, Sicily, Spain, and Palestine.

circumscripta. **P. circumscripta** Frr. (65g). Forewing dull brownish grey suffused with bronzy fuscous; basal area bronzy; inner line oblique and silvery below middle, obscure above; outer line oblique from the angle on vein 8 to inner margin, with a small indentation on submedian fold, dark, edged on both sides with silvery white; a bronzy fuscous triangular cloud on termen, obscuring the subterminal line, except at extremities, and edged by a bright silvery line along termen; reniform ill-defined, oblique, with bronzy fuscous scaling; on vein 2 two silvery edged spots almost or quite conjoined, placed in a bronzy fuscous patch below median vein; hindwing dull whitish with dark veins and a broad fuscous terminal border. A mediterranean species, found in Sicily, Crete, and Syria.

P. intermixta *spec. nov.* (64g). This species bears a very close resemblance to *orichalcea* *F.*, with *intermixta*. which it has been hitherto confused; but the forewing is broader, with the termen less oblique; the outer and subterminal lines more strongly expressed; the brassy wedge shaped projection not reaching inner line, and bluntly rounded at extremity; the orbicular stigma oblique, long and narrow. The species occurs in China and Japan; also, along with *orichalcea* *F.*, in India and the Malay Islands to Australia.

5. Genus: **Plusidia** *Btlr.*

Tongue well developed; frons smooth; palpi upturned, the second segment large and roughly haired below, the third shorter; forewing with bluntly rounded apex; foretibiae heavily fringed with hair externally, the others smooth; forewings without metallic markings, but with dark basal and apical blotches. Type: *P. cheiranthi* *Tausch.*

Sect. I. Palpi less strongly developed.

P. cheiranthi *Tausch* (= *eugenia* *Ev.*, *abrostoloides* *Btlr.*) (65g). Forewing pale grey brown with a pink *cheiranthi*. flush and some fine brown striae; a deep chocolate brown blotch beyond subbasal line from costa to vein 1, and a thick bar of the same colour from base of wing to inner line below vein t; inner and outer lines finely brown double, filled in with pink, below vein 1 with white; the inner bent on subcostal vein, then incurved; the outer obliquely curved outwards to vein 6, there angled and shortly incurved, then straight to inner margin, followed at costa by a dark chocolate brown hook-shaped mark and a paler brown apical blotch, separated by the pale curved subterminal line, which is interrupted below the hook and then vertically waved to inner margin, preceded by an olive cloud; a dark brown marginal line; veins and outlines of stigmata finely brown; the orbicular conjoined to a similarly shaped blotch at base of vein 2; a slight diffuse median shade; hindwing luteous fuscous, with a pale median band; a rare form, ab. **obscurata** *Spul.* (65h) has both the median *obscurata*. and outer fields darkened. Larva green, with dorsal humps on segments 4 to 11; the thoracic segments with three white dorsal lines and a white lateral line, which are enlarged on the remaining segments to oblique white streaks; spiracles white in black rings; head green; feeding on *Thalictrum* and *Aquilegia* in spring. In Europe the species occurs in N.E. Germany, Silesia, North Hungary, Galicia, St. Petersburg and the Ural Mts. in Russia; and in Asia, in Armenia, the Altai Mts., Mongolia, Amurland and Japan.

Sect. II. Palpi more strongly developed.

P. separanda *spec. nov.* Slightly larger than *cheiranthi*, more rosy pink, the dark chocolate brown, *separanda*. blotches replaced by olive brown and green; the outer line is more bluntly angled below costa, the shade beyond broader. Ichikishiri, Yesso.

6. Genus: **Chrysoptera** *Latr.*

Closely allied to *Phytometra* *Haw.*, but the palpi are much larger and longer, reaching well above head, and clothed with long rough hair. The larva also, that of *moneta* *F.* certainly, seems to differ in habit, feeding up in spring and early summer (? without hibernating) in the unopened flower shoots. Type: *C. C-aureum* *Knoch.*

C. C-aureum *Knoch* (= *concha* *F.*) (65h). Forewing grey brown with dark brown lines and shading; *C-aureum*. the apex and termen below middle, and a patch on inner margin before outer line pale golden; inner line double, dark brown, angled on subcostal and curved below middle, preceded by a brown band which below costa contains a golden dash; outer line double, dark brown, oblique outwards and angled on vein 6, then incurved; stigmata dull brown with dark outlines, the reniform emitting a dark diffuse streak into the angle of outer line; median shade dark brown; an obscure dark edged mark at base of vein 2, containing on its lower edge a golden C; submarginal line waved, obscure; hindwing pale fuscous, with dark median line and terminal border. Larva pale green; segments 5, 6, 7, 10, 11, somewhat swollen in front; on segments 4 to 10 the pale tubercles stand in two triangular dark green spots edged with pale yellow, which on segment 11 become coalescent; lateral line broadly white; feeds on *Thalictrum* and *Aquilegia*. Occurs in Finland and South Scandinavia, throughout North and Central Europe, N. Italy, Hungary, and S. Russia, the Ural Mts., Armenia, the Altai Mts., the Ussuri district, Amurland, and Japan. The form found in this last locality, — **mikadina** *Btlr.*, has the golden patches all paler, the C-mark larger, the outer line more deeply sinuate, *mikadina*. and the golden patch bounded by it on inner margin much broader; the discoidal spots narrower and more angular.

splendida. **C. splendida** *Btlr.* (= *intractata* *Stgr.*) (65h). Forewing pale brown, variously suffused with darker brown and fuscous; inner and outer lines double, irregular, lustrous grey; the inner angled on subcostal, then oblique inwards, its outer arm below median coalescent with the silvery outline of the tongue-shaped mark at base of vein 2; the orbicular stigma also with fine lustrous outline; the centres of both olive yellow; reniform dark with pale edges; inner half of median area dark brown, outer half below median vein ferruginous; outer and submarginal lines both irregularly waved, separated by a deep olive brown shade; veins dark brown; marginal line dark brown with a bright lustrous line preceding it; fringe brown and lustrous; hindwing dark fuscous. Amurland.

aurata. **C. aurata** *Stgr.* (65i). Forewing pale bronzy brassy, shot with fuscous; veins and lines brown; the inner line thick, shortly angled below costa, then obliquely curved towards base of inner margin; outer line running outwards below costa, angled on vein 7 and more bluntly on vein 4, then oblique to inner margin; submarginal line dentate lunulate, indicated by the dark brown shade preceding it; median shade fine, waved, bent at middle; orbicular stigma wanting; reniform a large curved lunule lying in a brown cloud; at base of vein 2 a brown inwardly oblique short bar; hindwing pale shining luteous, fuscous towards termen, with dark outer line and veins. STAUDINGER described the species originally from Amurland; it is recorded also from Ta-tsien-lu, W. China.

moneta. **C. moneta** *F.* (= *flavago* *Esp.*, *napelli* *Vill.*, *argyritis* *Esp.*) (65i). Forewing pale golden, diffusely tinged in median area with brown and sprinkled with black scales; the veins brown; the median shade conspicuously dark brown, thick, angled in middle; lines brown, double; the inner acutely angled on subcostal, below middle inwardly curved; outer line lunulate dentate; basal area flaked with golden scales; a pale golden apical blotch, cut and edged below by the brown submarginal line, which is rarely plain below middle; orbicular stigma large, oblique, horseshoe-shaped, with broad silvery outline and gold and brown centre, coalescing with a similar but inverted mark on vein 2; reniform hardly traceable; hindwing shining fuscous; the fringe pale; — in the form **esmeralda** *Oberth.* (= *trabea* *Smith*) (65i) the ground colour is shining whitish, with the brown suffusion and markings much reduced; an extreme form. — ab. **margarita** *ab. nov.* (65i) is cream white with a silvery sheen, without any brown suffusion, the lines more or less obsolete, but traceable, like the stigmata, in certain lights; hindwing whitish, with brown veins, and slightly discoloured towards termen. The type of this form, now in the Tring Museum, came from Pokrofska. Larva dull dark green, black spotted, living when young in the heart of the central shoots; later, with dark dorsal vessel, limited by several whitish lines and a white lateral line; on *Aconitum napellus* and *lycoctonum*. Generally distributed in Europe, and occurring in Armenia and the Ala Tau Mts., through Central and Eastern Asia to N. China and Askold Island. It is only during the last generation that this insect has reached Britain, spreading itself gradually through northwestern Europe.

sica. **C. sica** *Graes.* Nearest to *moneta* and *aurata*. Forewing more acute, termen projecting at vein 4, and faintly excised below apex; darker golden, the basal area and inner margin flecked with violet red; inner line distinct only towards inner margin and there outcurved; outer line obscure, faintly outcurved from costa to vein 5 and from 5 to 2, indented between 1 and 2, then oblique to inner margin; stigmata absent; a faint oblique pale golden streak towards anal angle; a blackish subterminal shade from near apex to vein 2, from 2 to 5 close to outer line; some black scales towards apex, and above anal angle a rather large violet red spot; hindwing brownish grey, paler basewards. From Amurland.

7. Genus: **Abrostola** *Ochs.*

Nearly allied to *Phytometra*, from which it is separated, first, by the transverse dark lines and outlines of stigmata in the forewings consisting of raised scales; and, secondly, by the structural difference in the larvae, which in this case have the normal number of abdominal prolegs. Type: *A. triplasia* *L.*

triplasia. **A. triplasia** *L.* (65k). Forewing dark leaden fuscous; basal area pinkish or brownish ochreous, with slight grey patches; inner and outer lines double, the arms conversely black and brown; stigmata and the mark on vein 2 leaden grey with concise black edges, the reniform large, followed by a paler tint; submarginal line cloudy grey, waved, preceded and followed by dark grey shades; the veins black before termen; terminal line black, crinkled; a patch of whitish scales on inner margin beyond outer line; hindwing blackish

clarissa. fuscous, paler in basal half; the fringe white; — in the ab. **clarissa** *Stgr.*, from Syria, Bithynia, and Mesopotamia the basal area is reddish yellow, the rest of the wing greyish yellow, in the median area slightly paler. Larva with segments 5, 6, and 12 somewhat humped; green or flesh colour; dorsal line whitish,

interrupted on the humped segments by dark pale-edged blotches; a lateral series of pale oblique streaks; spiracular line yellowish white; head freckled brown and ochreous; the 12th segment with two prominent points; feeding on nettle and other low plants. Occurs throughout Europe; in Algeria and Morocco; in Armenia, Siberia, and Amurland.

A. asclepiadis Schiff. (65k). Scarcely distinguishable in the imago state from *triplasia* L., but differing altogether in the larva; this is bluish white, tinged with green on the thoracic segments, dotted with black; the dorsal tubercles large; lateral stripe broadly yellow; on each segment above it a large black dot, beneath it two large black dots and several smaller ones; head greenish yellow, with black dots; feeding on *Asclepias vincetoxicum*, concealed by day on the ground beneath the root leaves. A local species found in S. Sweden, throughout Central Europe, (except Holland and England), in Portugal, Italy, Dalmatia, S.E. Russia; also in the Ussuri district and Japan; in the ab. **jagowi** Bartel from the Engadine, the basal area is not tinged with pink and is without dark markings.

A. tripartita Hufn. (= *asclepiadis* Esp. nec Schiff., *triplasia* Hbn. fig. 269) (65k). Distinguished from *triplasia* by the whitish grey basal area, the less distinct submarginal line, black-edged at apex, and by the oblique, elongate, orbicular stigma becoming confluent into a traverse blotch with the mark on vein 2; the pale spaces have something of a greenish tinge; but frequently the pale scaling is obscured by dark suffusion, = ab. **urticae** Hbn. Larva greenish or reddish; not so strongly humped as in *triplasia*; a dorsal series of darker oval marks; a subdorsal series of oblique darker streaks; lateral line white, connected on segments 5, 6, 7, by white lines with the dorsal area; segment 12 with two prominent points; feeds on nettle. Occurs throughout Europe, in the Canaries, in Armenia, Pontus, the Altai Mts., E. Siberia, and Amurland.

A. abrostolina Btlr. (= *urentis* Lecch nec Guen.). Forewing dark brownish fuscous, without any pale patches: the lines double, conversely black and grey, filled up with slightly lustrous grey, both nearly straight; the stigmata and the mark on vein 2 roundish, concisely black-edged and with dark centres; submarginal line pale grey, between two dark shades; termen pale grey before the black terminal line; a slight bronzy tint towards anal angle; hindwing blackish fuscous throughout; the fringe grey. Quite a small species, found only in Japan.

Subfamily Noctuinae.

The outstanding characteristic of this subfamily is the absence of spines on the middle tibiae, by which feature it is distinguished from the one preceding; as in that, the species included in it are very diverse, both in size and superficial appearance; the first four genera, with species having the termen of forewing angled have usually been placed in a separate subfamily, the *Gonopterinae*; but beyond the contour of wings, which however, is not restricted to this group, there is no valid justification for their separation; similarly, the group of *Focillinae*, with longer sometimes sickle-shaped palpi, is also included. The habits of the larvae, where known, and other details, will best be treated under the generic descriptions.

1. Genus: **Cosmophila** Bsd.

Tongue well developed; frons smooth, clothed, like the vertex, with rough scales; palpi upcurved in front of face, the second segment thickly clothed with scales, the third as long as second, but slender and smooth; dorsum slightly crested on basal segment; tibiae smooth; forewing with apex slightly produced, termen strongly elbowed or toothed at vein 4, concave above; hindwing slightly bent at veins 7 and 2. Type: *C. xanthydima* Bsd.

Sect. I: Antennae of ♂ with pedicellate fascicles of cilia.

C. xanthydima Bsd. (= *auragoides* Guen., *variolosa* Walk., *edentata* Walk.) (66a). Rather larger on the average than *erosa* Hbn.; the ♀ yellower, but greyer in outer half; the ♂ consistently darker, especially in outer half; the white scaling beyond costal end of outer line much less; the lower part of outer line more strongly concave inwards; hindwing of ♂ always dark fuscous. This African and generally tropical form appears to occur also in Amurland, China, and Japan, along with *erosa*; but the genitalia as well as the antennae of the ♂♂ of the two species are totally different.

Sect. II: Antennae of ♂ with tuberculate fascicles of cilia.

sabulifera. **C. sabulifera** Guen. (66a). Forewing rufous grey, generally speckled and striated with blackish, sometimes clear; the space between outer and subterminal lines filled up with coalescent black specks; inner line interrupted, marked by a double dark spot in submedian interval and another spot on inner margin beyond; stigmata indistinct, darker; the orbicular round, the reniform oblong, often with the extremities dark; veins sometimes paler; hindwing fuscous grey; fringe in both wings pale with dark spots in outer half beyond the veins; this, the type form, described by GUENÉE from an Abyssinian ♀, is not so common as the ab. **involuta** Walk. (= *basalis* Walk., *colligata* Walk., *propinqua* Btlr.) (52n, 66a), (wrongly named *erosa* on Plate 52; the pink example is the ♀, the grey the ♂), in which the colouring is like that of *mesogona* without the dark shading. The species occurs throughout Africa, India and the Malay islands to Australia; it is recorded in both forms by LEECH from Japan. Of each form an aberration occurs; in ab. **bipuncta** ab. nov. (66a) the reniform is marked by two black spots, the whole wing being generally uniform in colour, without grey striae; ab. **ruficlathrata** ab. nov. (66a) has the dark fascia of the type form intensified, reddish brown in ♂, black brown in ♀, the veins distinctly but finely delineated across it in paler; in ab. **costifuscata** ab. nov. (66b) the costal half of wing from base to outer line and the median area below middle are dark, especially in the ♀♀.

Sect. III: Antennae of ♂ subserrate, pubescent and bristled.

erosa. **C. erosa** Hbn. (= *indica* Guen.) (66a). ♀: Forewing yellow dusted with dull orange or greyish the lines fine, brown: the inner outwardly oblique and angled outwards somewhat sharply on the submedian fold, more bluntly inwards on vein 1; outer line angled on veins 4 and 3, running inwards along 3 to below reniform, then curved to meet inner line on inner margin; at the costa this line is followed by bluish white scaling; a faintly marked lunulate dentate praesubmarginal shade indicates the subterminal line; orbicular stigma oval, whitish, ringed with brown scales; reniform outlined with brown, 8-shaped, the inner edge straight or curved, and with a double dark centre; fringe brownish with whitish tips; hindwing yellowish, usually tinged with grey or fuscous; the ♂ is more thickly speckled, with the praesubmarginal shade and a band beyond the lower half of outer line fuscous-tinged; the basal and terminal areas also are darker; hindwing luteous more or less fuscous-tinged. This N. American form appears to occur throughout the tropics (under the name *indica* Guen.) along with *xanthyndima*, and both forms are found in Amurland, China, and Japan. The larva attributed to it by ABBOTT is described as apple green, with white subdorsal and spiracular lines, the space between them dotted with deeper green; head and feet green; feeding on Hibiscus. It is represented with only 3 pairs of abdominal prolegs.

mesogona. **C. mesogona** Walk. (= *fructifera* Leech) (66b). Forewing greyish fawn colour, with sometimes, especially in the ♀, a reddish, sometimes an olive tinge: covered in basal half with minute pale strigulations and speckled with dark in the outer; the veins slenderly pale; lines pale brown, conversely, but very finely, paler edged; inner line oblique basewards to middle of cell, then sloping outwards to median, thence vertical; outer line angled outwards on vein 8, sinuate inwards to 4, incurved to below reniform, thence vertical; subterminal line merely indicated by the darker shade preceding it, angled outwards on vein 4; reniform stigma marked by two black spots connected by a grey shade; a dark spot at base of submedian fold; fringe darker; hindwing dull grey, without markings; the fringe paler. A wide spread Indian and Malay species; recorded by LEECH from Japan, Corea, Central and Western China.

2. Genus: **Rusicada** Walk.

Tongue present; frons smooth, roughened with scales; palpi as in *Cosmophila*; antennae of ♂ lamellate, subserrate, with a few short bristles; forewing with the costa of ♂ lobed near base beneath, in some cases very slightly or even not at all, in others so strongly as to produce a second slighter lobe above end of cell. Larva with 4 pairs of abdominal prolegs. Type: *R. fulvida* Guen.

fulvida. **R. fulvida** Guen. (= *combinans* Walk., *inducens* Walk., *nigritarsis* Walk., *revocans* Walk., *privata* Walk., *commoda* Btlr.) (66b). Forewing ferruginous, mixed with yellow; lines purple brown, wavy; the inner outwardly oblique, projecting below median vein; the outer indented beyond cell, incurved to below reniform, thence vertical; subterminal line pale, with a grey shade before it; orbicular stigma a whitish dot ringed with dark; reniform large, kidney shaped, its inner edge straight, the centre grey; veins grey dusted; fringe brown in basal half, white with brown chequering in outer; hindwing fuscous. Larva blackish above, olive yellowish beneath; a subdorsal series of short yellow streaks with yellow spots above them; spiracles black; head and legs pale red; feeds on *Waltheria indica*. Widely distributed under various phases throughout the tropical regions and occurring both in China and Japan; in the latter it is found in two forms neither of which agrees with typical *fulvida*; in the form which is nearest to it — subsp. **subfulvida** subsp. nov. (66b) the ♀ has the terminal half of wing more or less dulled with grey, while in the ♂ all the orange yellow ground colour is

hidden by grey brown suffusion, except along submedian interval, where beyond subbasal line stands a patch of deep yellow scales preceded by a red patch, and another before outer line, followed beyond the line by a diffuse patch of red: some red and yellow scales mixed along inner margin; in the other form *griseolineata* ^{*griseo-*} ^{*lineata.*} *subsp. nov.* (66b) the orange tint is scarcely visible in the ♀, quite absent in the ♂, being overlaid with pale brown and greyish white dusting; the dark grey lines edged with whitish grey; the reniform often hardly discernible: these examples are all from Tokio; Chinese examples belong to *subfulvida*; in both forms the costal lobe in forewing of ♂ is very slightly developed.

3. Genus: **Ectogonitis** *Hmps.*

Tongue present; frons rough haired above; palpi upturned, the second segment long, thickly and closely scaled, the third long and spatulate, with appressed scales; antennae of ♂ bipectinate; thorax and abdomen smoothly scaled; forewing with subfalcate apex; the termen concave between apex and vein 3, where it is prominently toothed, thence oblique and crenulate to anal angle; hindwing with veins 3, 4 from lower angle of cell, 5 from close above angle; forewing with the lines inwardly oblique and parallel. Type: *E. ennomoide* *Hmps.*

E. pryeri *Leech.* Forewing pale brown dusted with darker; lines black, thick; inner line nearly straight, slightly oblique outwards; outer line oblique inwards, conversely pale-edged; subterminal line marked by a short dark costal streak before apex; orbicular stigma a white dot; reniform ill-defined, with dark outline; hindwing grey with traces of two dark lines. Described by LEECH from a single ♀ from Gifu, Japan, and said to be closely allied to the typical species *ennomoide* *Hmps.* from Dharmasala, Punjab; but the position of the lines is different. ^{*pryeri.*}

4. Genus: **Scoliopteryx** *Germ.*

Tongue present; head rough haired; frons with a pointed tuft of hairs; palpi upturned, second and third segments both long, the latter fine and acute; antennae in ♂ bipectinate to apex, in ♀ serrate; collar forming a conspicuous hood, crested in middle; abdomen broad and flattened, squarely cut at anus; tibiae thickened with scales; the two proximal segments of hind tarsi in ♂ hidden by scale-pads; wings ample; the forewing angled in middle of termen, concave between the angle and the acute apex. Larva elongate, with 16 feet, feeding up in summer on willow and poplar; pupating in a spun cocoon among leaves; the imago emerges in autumn and hibernates. Type: *S. libatrix* *L.*

S. libatrix *L.* (52n). Forewing grey mixed with ochreous, with fuscous striae, posteriorly with a rosy tinge: the veins terminally whitish; an irregular median suffusion reaching from base to middle, orange red more or less mixed with yellow; inner and outer lines pale with dark edges; a white spot at base on median vein; a white dot represents the orbicular stigma; reniform formed of two black dots; hindwing fuscous, paler at base; ab. **suffusa** *Tutt* is a scarce dark form without the usual rosy tinge in the terminal area of forewing; ab. **pallidior** *Spul.* includes pale whitish grey looking examples; while **pallida** *Spul.* refers to pale more yellowish specimens from Turkestan. ^{*libatrix.*} ^{*suffusa.*} ^{*pallidior.*} ^{*pallida.*}

5. Genus: **Ophideres** *Bsd.*

Tongue well-developed; frons smooth, but roughly scaled; palpi upturned, the second segment thickly and roughly scaled, the third erect, smooth, spatulate; antennae of ♂ shortly ciliated; dorsum clothed with coarse hair; tibiae without spines, clothed with long hair; forewing with costa arched, the apex prominent; termen long, obliquely curved; inner margin sinuate, broadly lobed in basal and excised in outer half. Larva with first pair of abdominal prolegs rudimentary. Type *O. fullonica* *L.*

This and the allied genera contain species of large size and stout build, with orange hindwings having broad black borders and central blotches, in many cases abundant in the tropics; three or four only are found within the palaearctic region.

O. fullonica *L.* (= *dioscoreae* *F.*, *pomona* *Cram.*) (66c). ♂ Forewing brownish grey; the lines and suffusion olive brown; inner line nearly vertical at $\frac{1}{4}$; outer from $\frac{3}{4}$ of costa inwardly curved to middle of inner margin; subterminal line pale edged with a brown cloudy marking; oblique and straight inwards from apex to vein 5, then lunulate dentate, the teeth pointing inwards between the veins; basal area, space between ^{*fullonica.*}

outer and subterminal lines, the median shade, and the leech-shaped reniform stigma brown; hindwing deep orange, with the black border and kidney-shaped blotch large and deep; fringe mottled black and white, below vein 2 orange; ♀ whitish or pale grey, striated and suffused with olive green and grey; the lines whitish; the outer with a triangular white blotch between veins 2 and 3; the reniform stigma with a bullet-shaped projection inwardly from its lower end, nearly reaching a distinct black dot representing the orbicular; the reniform olive green or blackish green. Larva purplish brown; the dorsum brown from the 7th to 12th segment, which is swollen and bears a tubercle; legs red; some scarlet patches along the spiracles, irregularly edged with white and larger hindwards, on the 10th segment forming a white bar; a yellow subdorsal mark on 5th segment; a black ocellus with yellow iris and white ring on 6th and 7th segments; two yellow patches on the 12th. Recorded from Amurland, China, and Corea.

6. Genus: **Adris** Moore.

Separated from *Ophideres* by the broadly spatulate extremity of the third segment of the palpi; the forewing has the apex highly produced, the termen very obliquely rounded. Type *A. tyrannus* Guen.

tyrannus.

A. tyrannus Guen. (66c). "Forewing shining brownish grey, slightly clouded and dusted with black and reddish; lines fine, brown, nearly straight; the longer (the outer) running from the apex to middle of inner margin, bordered with greenish; reniform stigma green, inconspicuous; hindwing orange; a curved black submarginal band and a broader bilobed black blotch below end of cell; underside of forewing with two black bands". Such is GUENÉE'S description of his ♀ type from Central India; the ♂ he calls paler and yellower. HAMPSON calls the forewing chestnut red or green, much suffused and striated with rufous (Moths India II, p. 562), and mentions a Sikkim specimen, *sikkimensis* Btlr., in which, on the underside of forewing, the outer black band is conjoined to black marginal suffusion. All the examples I have seen from India (also a few from Java and the Malay peninsula) agree with HAMPSON'S description of the upper side and of the Sikkim example on the underside. All the Chinese and Japanese examples agree with GUENÉE'S description both above and below; these are further characterised by having all the veins throughout the forewing heavily and distinctly dotted with black; this black dotting is only partial at the best in the Indian examples; at the same time, of two examples from the Khasia Hills, ♂ and ♀, in the Tring Museum, the ♀ agrees absolutely with the Chinese examples above, while below, as in the ♂, the outer band of forewing is conjoined to the black marginal suffusion.

7. Genus: **Maenas** Hbn.

Differs from *Ophideres* Bsd. in the third segment of the palpi being quite short, not spatulate; forewing with the costa very strongly arched, the apex acute, the termen oblique and nearly straight; the cilia not crenulate. Type *M. salaminia* F.

salaminia.

M. salaminia F. (66d). Forewing olive green; a creamy white stripe along costa, broad at base, its lower edge starting from $\frac{1}{5}$ of inner margin, narrowing to a blunt point at apex, thickly packed with rufous brown striae towards costa, which assume a green tint towards apex, its apical extremity edged below by an oblique blackish streak; terminal area creamy grey, inwardly edged by a slightly curved darker green line; the green area with the submedian fold finely rust coloured across it and with a few rufous striae externally; fringe creamy grey; hindwing orange; a black terminal band from costa to vein 2, broad across the apex; a black kidney-shaped blotch between veins 4 and 1; fringe whitish, wavy, from costa to vein 2, then orange. LEECH records a specimen from Kiukiang, E. China; it extends also over the Indian border into Kashmir.

8. Genus: **Miniodes** Guen.

Tongue well developed; frons smooth; palpi obliquely upturned, the second segment broad and thickly scaled, the third long, smooth, and blunt; thorax and abdomen hairy, without crests; tibiae without spines; forewing with costa strongly arched, the termen sinuous, forming a continuous curve with inner margin; hindwing with long hair at base. Type *M. discolor* Guen. from Africa; in the typical section the antennae of the ♂ have long bristles and cilia.

Sect. II. Antennae of ♂ simple.

M. dentilinea *Leech*. Forewing greyish brown, with darker suffusion in parts; the basal area *dentilinea*. towards costa with strong black reticulation; a similar patch on costa before the outer line which is black and angulated; some ill defined lines between the basal reticulation and outer line; in the cell are two silvery white cellspots; a wavy black subterminal line, excurved opposite the cell, where it is met by a black streak from the apex; hindwing bluish black streaked with brown along termen, the hairs at base greyish brown; a thick, evenly dentate orange red outer line. Central and Western China.

9. Genus: **Hulodes** *Guen.*

Tongue present; palpi upturned, the second segment thickly haired, the third quite small in the ♂, longer in the ♀; antennae of ♂ simple, filiform; thorax and abdomen coarsely scaled; all the tibiae in the ♂ long-haired, also the tarsi of hind legs, and the first segment only of those of midlegs; wings ample; forewing depressed at apex, the termen crenulate; in hindwing with a sinus beyond cell; the cell of hindwing short; vein 5 from just above 4. Larva with first pair of abdominal prolegs rudimentary; with a pair of acute dorsal tubercles on anal segment; feeding on Acanthads. Type: *H. caranea* *Cram.*

H. caranea *Cram.* (66 d). ♂. Forewing fuscous olive, suffused with purplish as far as the subterminal *caranea*. line, which is curved from apex to anal angle; the terminal area brownish ochreous, with a row of dark specks before margin; inner and outer lines waved, darker but obscure; reniform stigma an ochreous lunule with brown centre; hindwing with the pale terminal area broader; ♀ pale ochreous brown, with dark brown suffusion before the double oblique line; in some cases, — ab. **mediomaculata** *ab. nov.* (66 d) there is a black *medio-* spot on middle of inner margin of forewing. Larva olive green, speckled with brown, paler ventrally; dorsal *maculata*. and lateral bands of black streaks; some greenish white blotches on back and sides; spiracles black; tubercles reddish; feeding on Acanthus. Recorded from several localities in Central and Western China; it is common throughout India, Ceylon, and Burma, and in many of the Malay islands, and occurs in Formosa.

10. Genus: **Ericeia** *Walk.*

Tongue developed; palpi upturned, the second segment thickened with scales, nearly reaching vertex, the third of moderate length, slender; antennae of ♂ minutely ciliated; thorax smoothly scaled; mid tibiae of ♂ with a fold containing large masses of floeculent hair; hindlegs of ♂ heavily tufted with long hair to the extremity of the tarsi; forewing ample; the costa straight, shortly depressed at apex which is slightly produced; termen faintly sinuous; inner margin strongly convex; scaling thick and dense. Type: *E. inangulata* *Guen.*

A tropical genus with numerous species, some of which are very variable; the type species and one other occur in China and Kiushiu.

E. inangulata *Guen.* (= *comitata* *Walk.*, *umbrosa* *Walk.*) (66 e). Forewing grey, sometimes yellowish *inangulata*. tinged in the ♀, irrorated with fuscous, with darker fuscous markings; inner, median, outer, and subterminal sinuous thick lines, varying in clearness; orbicular stigma small, reniform large, both indistinct; a series of dark dots before termen; the ♀♀ generally with a grey or whitish praeapical blotch; a dark spot is often present on the subterminal line above inner margin; hindwing with the outer lines repeated; — **sobria** *Walk.* *sobria*. (66 e) from Kulu, N.W. India, (= *aliena* *Walk.*) from Moreton Bay, Australia, is the form with fewest and most obscure markings; — **optativa** *Walk.*, from N. India, is the form most strongly banded and spotted with darker; — **optatura** *Walk.*, from Ceylon, is tinged with ochreous yellow in the ♀♀; in **pertendens** *Walk.* *optativa*. *optatura*. *pertendens*. from Ceylon and S. India, the dark lines and bands are cut up into spots between the pale veins, especially striking in the pale ♀♀. Of this species, so common and variable throughout the Indo-Australian region, an example is recorded by LEECH from Kwei-chow, W. China; the type of WALKER'S *comitata* was from Shanghai.

E. fraterna *Moore* (66 e). Much smaller and with decidedly narrower forewings than in *inangulata*; *fraterna*. the ♀ generally with dark fascia before subterminal line; obscurely grey and apparently not much subject to variation; the inner margin of forewing of the ♂ is marked with a slight lobe without fringe at middle. A single example of this species, originally described from Ceylon, but occurring throughout India, in Burma, Hainan, Java, Dutch Timor, and Luzon, is also recorded by LEECH from Kiushiu. There are two forms of the species: one dark with the markings strongly expressed, the other paler and duller, with the markings faint; the Ceylon form seems to be intermediate.

11. Genus: **Sypna** *Guen.*

Tongue developed; frons smooth, flat; palpi erect, upturned in front of face, the second segment rough haired, the third nearly as long as second, slender and smooth; antennae of ♂ long, thick, strongly crenulate beneath, with fascicles of cilia; of ♀ narrow, with bristles; in both sexes constricted near base; abdomen short, ending conically in ♀, squarely in ♂; the dorsum crested; legs strong and long, the tibiae without spines; wings ample, the termen crenulate. Type: *S. omicronigera* *Guen.*

An oriental genus occurring in India and the Malay Islands; also in Central Asia, China, and Japan.

mormoides. **S. mormoides** *Btlr.* (66f). Larger and darker than the succeeding species, *omicronigera* *Guen.* dark fuscous with a purplish tinge; the waved lines paler; the bands deep fuscous, less distinctly edged with black; the subbasal obscure towards inner margin; the inner line narrower; orbicular stigma smaller, with a pale centre; the reniform of the ground colour, with somewhat paler edging; the subterminal spots white-dotted; hindwing bronzy brown towards base, fuscous terminally; the outer lines blackish, becoming faint towards costa; subterminal dots white. A Sikkim species recorded by LEECH from W. China.

omicronigera. **S. omicronigera** *Guen.* (66f). Forewing dark grey brown, crossed by three darker bands edged externally with black; the inner with some black also on its inner edge at inner margin; orbicular stigma round, black with a pale centre; reniform large, obscurely defined, often marked externally with ochreous; the line edging the subterminal band biconcave; a subterminal row of dark pale-edged lunules, that on submedian fold double and edged with pale blue; hindwing paler, more ochreous brown; the bands distinct only on inner margin; *purpurata.* there are several aberrant forms; in ab. **purpurata** *ab. nov.* (66f) the forewing is uniformly purplish fuscous, crossed by wavy leaden blue lines; the bands are feebly marked, and the reniform stigma has an orange *albovittata.* yellow diffuse spot in middle; in ab. **albovittata** *Moore* (66g) the inner edge of the subbasal band, the space between it and the inner band, the outer edge of the latter and of the outer band, and the edging of the subterminal spots are all pale blue; the centres of the two stigmata and the outline of the reniform are also *sublucida.* bluish white; in ab. **sublucida** *ab. nov.* (66f) the interspaces between the dark bands are paler, more ochreous brown; the centre of the orbicular, the outer edge of reniform, and a streak beyond in outer line, as well as the subterminal spots are strongly bluish white; the inner arm of the outer line above and beyond the reniform is marked by a black dash. A North Indian insect; also recorded by LEECH from W. China.

dubitaria. **S. dubitaria** *Walk.* (66f). Resembles *omicronigera*, but the second band is prominently black, narrower, and more curved; the outer line is marked by a black tooth-shaped streak at costa; the orbicular stigma is lost in the black band. Occurs in Bhutan and Assam, N. India; probably not in W. China; LEECH's specimens belonging to the true *omicronigera* *Guen.*

picta. **S. picta** *Btlr.* (66g). Forewing pale or dark wood brown, dusted with darker; the transverse bands dark fuscous brown, often purplish-tinged; inner and outer lines wavy, somewhat inwardly oblique, bluish white, double; the outer arm of outer line bent outwards and blackish round the reniform, which is long, constricted at middle, its centre bright ochreous edged with brown and outlined with bluish white; space between subbasal and inner lines and that before subterminal line dark fuscous brown; this latter line is black, irregularly dentate, indented beyond cell, and followed in its upper half by a paler brown area; the median area is filled with bluish white scales, the costal end broadly and the inner marginal end narrowly remaining dark brown; orbicular stigma a small snow white spot; a row of black spots edged with bluish white before the termen; hindwing dark brown, with blackish outer line and broad subterminal shade followed by a narrow *achatina.* one; — in ab. **achatina** *Btlr.* (66g, 67a) the whole of the median area is fuscous brown, the double inner and outer lines and the veins between them, — sometimes the edges of the reniform, — alone remaining slenderly *fumosa.* blue; — in **fumosa** *Btlr.* (67a) all the bluish white scaling is absent, except the costal strigae of outer line, *fuliginosa.* which together form the U-shaped marking mentioned by BUTLER; the ab. **fuliginosa** *Btlr.* (67a) differs only in the forewing being suffused throughout with dark purplish brown; in both the reniform is very indistinct but the yellow of the centre is sometimes visible. Widely distributed, occurring in Amurland, Corea, W. China, and Japan. A form analogous to the ab. *achatina*, but darker in ground colour, occurs in the Khasia Hills, Assam.

punctosa. **S. punctosa** *Walk.* (67b). Forewing dark brown with a purplish tinge; inner and outer lines black, waved, the latter excurved round cell; subterminal line waved and sinuous; a terminal row of pale dots; orbicular stigma a pale dark-ringed speck; reniform ochreous or grey white; hindwing with indistinct sinuous median and straight subterminal line; fringe at apex ochreous; underside with the dark median band on a pale space; in the form **umbrosa** *Btlr.* (= ? *submarginata* *Walk.*) (67b) rather larger than typical *punctosa*, the underside is unicolorous ochreous grey without distinct pale area or dark median band. This species which is common in India, is recorded by LEECH from Central and Western China, and from Kiushiu.

S. distincta *Leech* (67b). Forewing dull pale brown; subbasal, inner, and outer lines dark brown, accompanied by white spots, round and lunulate; inner line nearly straight, outer excurved round cell; subterminal obscure, waved, between a dark brown shade and a darker line; median shade brown, plain below middle; orbicular stigma a white dot in a brown ring; reniform white, large and round, surrounded by four whitish dots, with a short white dash between the inner two; a row of blackish white-tipped spots before termen; hindwing with a dentate, angled median line, edged outwardly by whitish, forming a white spot above anal angle; a double dark subterminal band and a row of black and white dots. Recorded only from Kiu-kiang, China. The ♀, of which I have seen only one worn example, is smaller, paler, with obscure markings and pointed forewing. *distincta.*

S. astrigera *Btlr.* (67b). Forewing grey brown, the shadings darker brown, and the lines blackish; inner and outer lunulate dentate, vertical, both deeply indented in cell; the inner inwardly grey-edged with blue grey scales on each side at inner margin; the outer excurved round cell; orbicular stigma a white dot; reniform with round white centre edged with black, often with a pale lunule before it, and with white dots round it; a dark shade before the subterminal line, which is followed by a paler space beyond the cell fold; the terminal spots black and white; hindwing fuscous grey, with a dark waved outer line and a dark subterminal band ending at a pale patch above anal angle. Japan and Kiushiu. *astrigera.*

S. albistigma *Leech*. Differs from *astrigera* *Btlr.*, to which it is most nearly allied, by its browner coloration, the bluish white reniform stigma, more angulated subterminal line, and much paler terminal area; on the underside the postmedian band of hindwing is oblique, not angled; the basal $\frac{3}{4}$ of both wings blackish, and the terminal area light brown. West China. *albistigma.*

S. cyanivitta *Moore* (67b, c). Forewing pale grey brown, thickly powdered with dark, the basal and median areas deeper brown; inner and outer lines dark brown, conversely edged with ochreous, the inner inbent at costa, the outer nearly straight or inbent at inner margin, and irregularly excurved and dentate round cell; subterminal line sinuous and irregularly dentate, marked with black below costa and above inner margin; an indistinct series of dark dots just before termen; reniform stigma narrow, elongate, pale edged, sometimes obsolete; hindwing uniform fuscous brown, with traces of median and subterminal dark lines on inner margin; — in the ab. **brunnea** *Moore* (67c) the whole forewing is darker brown with a purplish tinge; the basal area tinged with bluish; the lines and reniform stigma finely edged with blue and the subterminal spots connected by a fine dentate bluish line; it is this form of the N. Indian insect that *LEECH* records from West China; a paler form occurs in India — ab. **sabulosa** *ab. nov.* (67c) — having the forewing sandy brown, with the basal and median areas peppered with dark brown. *cyanivitta.*
brunnea.
sabulosa.

S. curvilinea *Moore* (67c). Forewing dark red brown; the postmedian area fulvous tinged, as in the ab. *rubrifascia* *Moore*; the apical blotch paler brown; inner and outer lines double, white, slightly waved; the inner curved, the outer straight, in line with the white edged yellow centred reniform; a white speck marks the orbicular stigma; some white scales on the terminal black dots; hindwing fuscous brown with traces of dark median and double subterminal lines, clearer and marked with white on inner margin; fringe fulvous in the apical half of wing; the terminal lunules often slenderly marked with bluish white; this description refers to ab. **moorei** *Btlr.* (= *fraterna* *Moore*); in typical *curvilinea* the median area is suffused with bluish white except a large blotch on costa and inner margin; in ab. **rubrifascia** *Moore* (67d) the whole median area is dark fuscous. A single specimen from Ta-tsien-lu, W. China, is referred by *LEECH* to this N.W. Indian species. *curvilinea.*
moorei.
rubrifascia.

S. simplex *Leech* (67d). Forewing olive brown, more uniform than in *rectilinea* *Moore* and without the fulvous shade of the basal and postmedian areas in that insect; inner and outer lines white and double; orbicular stigma a white dot; reniform a flattened oblong with yellow centre, lying between the arms of outer line; subterminal line indented on both folds, marked with blackish spots below costa; in its ab. **lilacina** *Leech* (67d) the median area is washed with pale lilac grey. Occurs throughout West and Central China. *simplex.*
lilacina.

S. prunosa *Moore*. (67f). Forewing deep purple brown; inner and outer lines pale and double, approximated to each other, fairly straight; the space between them, except at costa, filled in with pale, so that a pale fascia is formed across wing, narrowing downwards; this fascia sometimes remains ochreous grey or is varied with lilac grey, or bluish, or ferruginous; orbicular stigma a large round pale dot, lying on the outer arm of inner line; the reniform stigma has its outer half protruding beyond outer line, the shading on each side of median fascia deeper; subterminal line indented at each fold and marked with black below costa; hindwing deep fuscous brown with three dark pale edged outer lines; the apical fringes yellow. A Sikkim species, found also at Wa-shan, Omei-shan, Chia-kou-ho in Western China. *prunosa.*

- kirbyi*. **S. kirbyi** *Btlr.* (67 d, e). Differs from *prunosa* in being rather smaller, of a dull brown colour without any purple brown suffusion; the underside more uniformly coloured and with the markings indistinct. Omei-shan, W. China; occurring in India in both the Punjab and Sikkim.
- hercules*. **S. hercules** *Btlr.* (67 e). Forewing dull grey brown; the terminal area paler; the dark tints strongest just outside the pale median fascia; lines bluish white and double, diffuse; the space between, except at costa and inner margin, rather paler; a small whitish orbicular stigma and a large reniform extending beyond outer line, with its centre yellow between the arms; a pale curved band halfway between median area and subterminal line, which is black, especially below costa, and, as usual, indented on the folds; hindwings fuscous brown, paler towards inner margin, with fine black outer line and yellowish crenulated subterminal, preceded by a dark fuscous shade. This species is smaller than *kirbyi* and its allies, with the fascia broader and less oblique; in the ab. **albifusa** *ab. nov.* the median area is suffused with bluish white. Japan and Yesso.
- quadri-notata*. **S. quadrinotata** *Leech*. Forewing greenish grey; basal patch small, violet brown, limited by the black subbasal line; median band violet brown, limited basewards by the black irregular inner line; outer line black, strongly angled and dentate beyond cell, then incurved and forming outer edge of median band; subterminal line black, wavy, bidentate at middle, traversing a subquadrate violet brown patch, and preceded by an obscure violet brown shade; terminal line wavy, black; orbicular stigma of the ground colour, with black outline; reniform undefined; hindwing blackish, the basal area paler, limited by a buff-coloured band; fringe buff, marked with blackish towards anal angle; underside yellowish buff, with two black lines and a black subterminal band, touching in forewing a black quadrate patch on termen. Central and West China.
- postflavida*. **S. postflavida** *Leech*. Forewing dark violet brown; subbasal, inner, and outer lines black, marked with white; the first straight, with a white dot on costa and median vein; inner line indented, marked with white on costa and inner margin and between the veins; outer line, outcurved above middle, with 7 white spots, the last double; subterminal line black, sinuous; terminal area beyond it pale brown clouded with violet brown in lower; half a row of white black edged spots before termen; orbicular stigma white outlined with black; reniform pale brown ringed with white and again with black; hindwing yellow, the basal and terminal areas blackish; median line angulated, black, not reaching costa, followed by a diffuse black band, indistinct above middle; a row of black lunules along termen, increasing in size downwards; underside yellowish, with cellspot, median, and subterminal bands black. Described by LEECH from a single ♂ taken at Pu-tsu-fong, W.-China.
- marginata*. **S. marginata** *Leech* (67 g). Forewing pale grey brown, or greyish ochreous, dusted with fuscous, except the terminal area which remains clear and pale; lines blackish, wavy, and more or less interrupted at the veins; a row of black terminal spots; orbicular stigma a black spot; reniform a pale lunule with undefined dark lateral outline; hindwing fuscous brown with a sinuous dark outer line, separated by a pale space from the darker subterminal area which contains two subterminal shades; a row of black terminal spots; fringe light brown; underside pale grey brown; the forewing suffused, the hindwing thickly dusted with fuscous; cellspot pale, black edged; in the ab. **albipunctata** *Leech* the transverse lines, marginal dots, and reniform stigma are marked with white, thus somewhat resembling *distincta*. Recorded from Ni-tou and Tsi-tien-lu, W. China. The ♀ more uniformly brown without grey tints; the ♂ paler, more greyish ochreous, with the lines paler.
- plaga*. **S. plaga** *Leech*. Forewing dark brown; inner and outer lines broad, greenish grey edged with black; the inner interrupted below costa and excurved below middle; the outer excurved and interrupted beyond cell, and expanded between veins 1 and 2; subterminal line black, sinuous; orbicular and reniform greenish grey, the reniform with greenish grey marks round it; terminal lunules greenish grey, black edged; hindwing pale brown, with fuscous suffusion; median line blackish, indented near middle; an obscure dusky outer band and lunular black terminal line. Described from a single ♀ from Pu-tsu-fong, W. China.
- sobrina*. **S. sobrina** *Leech* (67 f). Forewing brown with a violet tinge; inner and outer lines double, black; the inner dentate above middle, the outer angled below costa, bidentate beyond cell, and dentate below vein 2, most distinct towards costa; a broad blackish median shade is sometimes present; the black subterminal line is sharply angled below middle; reniform stigma obscured; orbicular a white dot; a row of contiguous black lunules dotted with white before termen; hindwing paler, blackish along inner margin; a short black line before anal angle; terminal markings as in forewing; — in the ab. **ornata** *Leech* (67 e) the inner half of median band between inner line and median shade is powdered with bluish grey scales except in the costal third. Like *olena* *Swinh.* but larger; the antennae more strongly fasciculate; the subterminal line more sharply angulated, and differing also in the markings of underside. Pu-tsu-fong, W.-China.

S. olena *Swinh.* (67f). Forewing dark brown, crossed in outer field by several paler lines; inner and outer lines deep black; the inner waved, curved outwards, approaching subbasal on inner margin; outer line excurved round cell; subterminal line sinuous, the outward elbow in middle nearly reaching termen; orbicular stigma a pure white dot; reniform very large, ringed with black; a row of brown, white edged spots before termen; hindwing with indistinct lines, plain only on inner margin; underside greyish ochreous with brown suffusion; cell of forewing brown, with a quadrate brown mark at end, followed by the pale cellspot; a waved black outer band, crossing hindwing also on a pale space; a broad black subterminal band. West China. *olena.*

S. watanabii *Holl.* Forewing wood brown, lightest in median area; basal and median areas marked by minute dark striae; between them a broadish sharply defined maroon band margined by deep black, and externally sharply toothed near the rise of vein 2; outer line black, irregularly waved and toothed, externally edged by a broad deep brown shade; a black streak along vein 2 from outer line to termen; at apex a subocellate spot of brown, preceded on costa by a brown subquadrate blotch; hindwing dark grey brown. Oiwake, Japan. No known species of *Sypna* answers to this description; possibly it should be referred to an *Ercheia*. *watanabii.*

12. Genus: **Polydesma** *Bsd.*

Tongue present; palpi upturned, the second segment well scaled, the third short; antennae of ♂ ciliated; tibiae without spines; thorax smoothly scaled; wings ample; in the ♂ the underside of hindwing is clothed with long silky hairs. Type *P. collutrix* *Hbn.-G.*

P. otiosa *Guen.* (= *brevipalpis* *Walk.*) (67g). Forewing pale brownish fuscous; inner, median, and outer waved dark lines arising from black costal spots; subterminal line pale, crenulate, preceded by fuscous suffusion; a series of black terminal lunules; hindwing with similar lines; on the underside the fuscous suffusion of forewing is restricted to the costal half, and in the ♂ the whole of the hindwing is covered with silky hairs, whereas in *collutrix* the forewing beneath is fuscous from costa to inner margin, and only the base of hindwing beneath in the ♂ is clothed with silky hairs. Kwei-chow, Western China. *otiosa.*

13. Genus: **Pandesma** *Guen.*

Differs from *Polydesma* *Bsd.* in that the hindwing of ♂ on the underside is simply scaled, without a bed of silky hair. Larva with the first two pairs of abdominal prolegs rudimentary. Type *P. quenavadi* *Guen.*

P. quenavadi *Guen.* (= *fugitiva* *Walk.*) (67g). Forewing pale to brownish grey; inner, median, and outer lines dark, the outer excurved; the subterminal waved; a terminal series of black dots; stigmata both usually indistinct; hindwing whitish, the outer half brownish grey, with obscurely marked outer and subterminal lines. This Indian insect, especially common in N. W. India, occurs over the frontier in Kashmir. *quenavadi.*

P. anysa *Guen.* (= *terrigena* *Christ.*, *grandis* *Stgr.*) (67g). Smaller and paler than *quenavadi*, especially the ♂♂; the lines finer and blacker; the praesubmarginal shade narrower and more broken up; terminal area beyond it as pale as basal half; subterminal band of hindwing similarly reduced, the terminal area pale; the ab. **similata** *Moore* (67h) appears to be only a small and dark grey form of the ♀; the subsp. **sennaarensis** *Fldr.* (67h) is larger and dull sandy grey, with the veins in postmedian area of both wings dark; the subterminal shading still more reduced, especially on the underside of hindwing. Not so common in India as *quenavadi*, perhaps overlooked; *terrigena* *Christ.* from Palestine, Persia, and Java seems to me actually identical with the Indian form; of *sennaarensis* there are specimens in the Tring Museum from Kerma in N. Sudan, Nakheila on R. Atbara, and Shendi. *anysa.*
similata.
sennaarensis.

14. Genus: **Belciana** *Walk.*

Tongue present; palpi upturned, the second segment thickened, the third slender, erect; antennae with short ciliations; thorax smoothly but coarsely scaled; abdomen with slight dorsal crests; tibiae without spines, slightly fringed with hair. Larva with the first two pairs of abdominal prolegs rudimentary. Type *B. biformis* *Walk.*

A genus of rather striking insects, the forewings with more or less green or blue green coloration mixed with brown; hindwings with broad dark terminal border; a considerable number occur in India and the Malay Islands to Australia, often closely resembling each other; two only are recorded from the palae-arctic region.

virens. **B. virens** *Btlr.* (= *japyx* *Stgr.*) (67 h). Forewing pale grey green, speckled with black scales; lines double filled in with green mixed with whitish; the inner nearly vertical, indented on subcostal vein and dentate outwards below it, rectangularly angled outwards on median vein; its inner arm deeply indented between submedian fold and vein 1; space between subbasal and inner lines filled up with a chocolate brown fascia, outwardly black-edged, as far as submedian fold; its inner edge reaching vein 1 narrowly; outer line lunulate dentate, oblique outwards to vein 4, where it is acutely angled, and toothed at 6, below 4 insinuate inwards, followed by a chestnut brown fascia, inwardly black-edged and broad to vein 5, paler and narrow below: the veins across its broad upper half black; subterminal line green, interrupted and confused: a row of green lunules with black centres along termen, continuous in costal half of wing, interrupted by the thickened brown vein ends in the lower; fringe chequered brown and green; orbicular stigma a white spot; reniform whitish, subquadrate, the discocellular green at its centre, with a black dot at each end; a dark grey median shade running parallel to outer line; hindwing dull greenish grey with the veins and the lunulate dentate outer line dark; a dull brown terminal border from apex to vein 2, darkest and broadest at apex; terminal lunules black, edged inwardly with green and below vein 2 with white; fringe brown rayed and tipped with green. Japan, Yesso, Amurland.

staudingeri. **B. staudingeri** *Léech* (= ? *niveola* *Motschl.*) Forewing pale bluish green, crossed by several conspicuous, black, wavy-dentate lines; a black brown patch on costa towards base, a larger brownish patch in apical area, with a smaller one below it at anal angle; stigmata white with black outlines; hindwing pale fuscous, with two dark median lines and a broad diffuse submarginal band. Described from a single ♀ from Gensan, Corea. — Distinguished from *B. virens* *Btlr.* by the black transverse lines, white stigmata, and brown patches.

15. Genus: **Batracharta** *Walk.*

Tongue present; frons with slightly projecting scales; palpi obliquely upturned, the second segment thick, reaching vertex, the third long, slender, blunt; antennae of ♂ with sessile fascicles of cilia; abdomen elongate, slender, tufted on first two segments of dorsum; mid and hind tibiae with a fringe of long hair on upperside; forewing elongate, the costa straight; apex rounded; termen obliquely curved; inner margin sinuate; covered with strigose shading and suffusion; the usual lines indistinct; veins 8 and 9 anastomosing to form an areole; vein 5 in both wings from just above 4. Type *B. obliqua* *Walk.* from Borneo.

cossoides. **B. cossoides** *Walk.* (67 h). Forewing deep red brown with numerous dark curved strigae; the black areas without any white dotting as in *irrorata* *Hmps.*; basal black area limited by an oblique deep black line from median vein to inner margin; outer line forming two conspicuous teeth outwards above and below median vein, the upper one acute; the black shade preceding narrow and not connected with the basal area except along costa; subterminal line black, close to termen, and swollen, as in *irrorata*, into tooth-edged blotches on both folds; veins towards termen reddish, vein 1 red beyond inner line; hindwing brownish, with veins and cellspot darker; fringe pale ochreous. Closely allied to *irrorata* *Hmps.* but rather smaller; the type from Borneo; a ♀ in Tring Museum from the Khasia Hills; recorded by LEECH from Kiukiang.

16. Genus: **Erygia** *Guen.*

Tongue developed; frons smooth; palpi slender, obliquely upturned, the second segment hardly reaching vertex, the third pointed; antennae of ♂ ciliated; metathorax with large tuft; basal segments of dorsum with slight tufts; hind tibiae and tarsi dotted with long hair; forewing elongate triangular; the costa straight; apex produced; termen oblique, crenulate; inner margin sinuate, the anal angle with slight tooth of scales. Type *E. apicalis* *Guen.*

apicalis. **E. apicalis** *Guen.* (= *exempta* *Walk.*, *squamiplena* *Walk.*, *geometroides* *Walk.*) (67 h). Forewing dark brown with red intermixed on a pale ground; with numerous indistinct and interrupted inwardly oblique waved lines: a blackish band before inner line from cell to inner margin; black markings on costa towards apex and before anal angle; hindwing fuscous with reddish patch near middle of termen. The species, which occurs from India to Australia, is mentioned by LEECH from Japan, Corea, and W. China. *Usta* *Walk.*, with median area clearer, seems to me a distinct species.

17. Genus: **Capnodes** Guen.

Tongue present; frons smooth, rounded; palpi upcurved, the second segment broad and curved, the third long, slender and erect; antennae of ♂ ciliated; thorax and abdomen smoothly scaled; tibiae moderately hairy; wings ample; hindwing with anal angle truncate; vein 5 from below middle of discocellular. Type *C. anhypa* Guen., from Brazil.

C. cinerea Btlr. (70e). Forewing blue black, densely dusted with white scales; costal area to outer line creamy whitish, interrupted near base by a blackish spot followed by an oblique black dash, and above end of cell by a large ferruginous spot, followed by a similar black dash; a large ferruginous spot close to base; a small fulvous spot in cell; reniform stigma fulvous at centre ringed with white, divided by a black line; apical border pale tawny; fringe mottled whitish and grey; hindwing fuscous, the costa pale; body blackish; collar black; prothorax and base of abdomen crossed by white belts. Yokohama, Japan.

C. brunnea Leech (68 i). Forewing bright wood-brown; the lines blackish grey; inner line waved, obscure; the basal area within it somewhat darker; outer line blacker, distinct, acutely dentate; median shade obscure; the space between them clouded; orbicular stigma a black dot; reniform a black angled line; submarginal line indicated between two fuscous shades; a marginal row of distinct black dots; hindwing with the lines but no cloudy shade. Oiwake, Japan.

C. jankowskii Oberth. (70e). Forewing bright ferruginous red; costa washed with pale fulvous and marked by two small black spots before middle, then by a much larger triangular one, really formed of two black spots and the red reniform; from the last spot rises the outer line which is dentate and black, accompanied by a white punctiform edging; terminal area clouded with dark brown and fawn colour paler than the ground; hindwing with the basal half thickly black and pale speckled; outer line dentate lunulate, obscure, edged with white towards inner margin; a pale greenish pearl subterminal band as in forewing; dark terminal spots before the yellow basal line of the fringe in both wings; fringe itself yellow, mottled with fuscous; the ♂ is darker, more fuscous, and smaller. Askold Island.

18. Genus: **Diomea** Walk.

Differs from *Capnodes* in the shorter palpi, the second segment not reaching above vertex and roughly scaled, the third shorter and bent; the metathorax and dorsum tufted; forewing with the apex more rounded, the costa depressed; hindwing with anal angle not truncate. Type *D. rotundata* Walk.

Sect. I. Legs of ♂ not tufted with hair; the tufts on dorsum and metathorax slight.

D. cremata Btlr. (70e). Forewing dark brown suffused with fuscous; traces of subbasal, inner, median, and outer curved crenulate lines; the outer starting from an ochreous white costal spot; subterminal line sinuous, pale; terminal spots black; hindwing reddish brown, with inner and outer waved dark lines; terminal line crenulate. Japan, Yesso, Corea, China, and Amurland; also occurs in N. India.

D. fabularis Swinh. Forewing brown peppered with black scales; costa tinged with red; lines straight, pale, edged with red, starting from black costal spots; the inner vertical, but inbent in cell; the outer sharply angled inwards on subcostal vein, then running horizontally outwards, and acutely angled outwards on vein 8; reniform stigma a black lunule with pale edges; subterminal line finely zigzag; hindwing with the line central; in the subsp. *rufistigma* subsp. nov. from Burma the reniform stigma is red, like the edges of the lines; the whole ground colour paler and redder. The type of *fabularis* from North China.

19. Genus: **Panilla** Moore.

Tongue present; palpi short, obliquely porrect, the second segment well fringed with hairs below, the third quite short; antennae of ♂ ciliated; metathorax and dorsum with slight tufts; tibiae without spines, in the ♂ with fringes of long hair the coxae of forelegs in ♂ with tufts of long hair; forewing short and broad, the apex blunt; termen slightly crenulate; hindwing with the same markings as forewing. Type *P. dispila* Walk. from India.

This genus is analogous to the Indian genus *Moepa* Walk., which has the mid tibiae spined. It contains some half dozen species from India and the Malay islands, and as many more from Australia and the Solomons; two only are known from the palaeartic region.

petrina. **P. petrina** Btlr. (= *costipunctata* Leech). Forewing pale brown, powdered with fuscous; the lines blackish, starting from black costal spots; the inner indented below costa; the median wavy, slightly curved; the outer also wavy and more strongly curved; subterminal line pale, indistinct; a large blackish cloud on costa before subterminal line, with a smaller cloud below it; terminal area suffused with dark brown; hindwing with dark brown inner and blackish outer line, with a fuscous brown shade between; cellspot linear, black; terminal area, as in forewing, dark traversed by a paler subterminal line. BUTLER's type was from Japan; LEECH recorded *costipunctata* from Chia-kou-ho, Moupin, and Omeishan, all in W. China, and from Satsuma, Kiu-shiu.

fasciata. **P. fasciata** Leech. Forewing pale reddish brown, with some strongly sinuous transverse whitish lines on basal area, and some longitudinal whitish streaks on the terminal; inner and outer lines dark brown; the inner curved, somewhat dentate, swollen on costa; the outer sinuous, broken up into spots, and followed by a wavy pale line; the median space between the two lines ashy grey dusted with darker; a terminal row of diamond-shaped dark spots edged with white; reniform stigma dark brown; hindwing pale chocolate brown with dark brown inner line and median band; this latter has its inner edge traversed by a pale line and its outer edged by a white one. Described from a pair only, the ♂ from Changyang, Central China, the ♀ from Chia-kou-ho, W. China. This species is a third as large again as *petrina*, which is about the same size as *dispila* Walk.

20. Genus: **Apopestes** Hbn.

Tongue present; frons slightly bulged, with a tuft of hair above; palpi upcurved, the second segment thickly and roughly haired beneath, the third long, erect, pointed, slightly curved in front; antennae of ♂ with fasciculate cilia; thorax and abdomen smoothly scaled; pectus and femora woolly; forewing with costal and inner margins nearly equal in length, the apex blunt, the termen rounded. Larva with 16 feet, slender and very lively; feeding in spring on Papilionaceae, pupating in a slight cocoon spun among the twigs or dead leaves; the imago appears in autumn and hibernates. Type *A. spectrum* Esp.

spectrum. **A. spectrum** Esp. (= *socrus* Giorna, *genistae* Vill., *indica* Moore) (68 a). Forewing ochreous brown irrorated with black scales; lines blackish; the inner strongly waved; the median, as a rule, inconspicuous; outer line irregularly waved, outcurved round end of cell; reniform stigma obscurely outlined with dark; a series of pale subterminal specks with blackish patches inside them towards inner margin; terminal spots black; hindwing fuscous, with the fringe luteous; underside of both wings with a narrow median black band;

fasciata. — ab. **fasciata** Spul. (68 a) differs in having a broad blackish median shade, traversing the reniform stigma,

obscura. on upper side; ab. **obscura** Spul. (68 a), from Wallis and S. Tyrol, has the ground colour dusted with blackish

phantasma. grey; subsp. **phantasma** Ev. (68 a), occurring in Armenia and Mesopotamia, has the usual black markings very faint and subobsolete, the ground colour of forewing grey, of hindwing dark fuscous brown, and a dark lunule

innotata. on the hindwing beneath; in a form from Amasia, Syria, — subsp. **innotata** subsp. nov. (68 b), the ground colour is pale ochreous grey, with the markings quite faint, the stigmata very obscure, the hindwing paler, the

maura. underside pale glossy ochreous with the lines nearly effaced; — the Algerian form, — subsp. **maura** subsp.

centralasiae. nov. (68 b) — is brighter in ground colour, the lines blacker but finer, not diffuse; — finally; — subsp. **centralasiae** subsp. nov. (68 b) from the Goorais Valley, Kashmir, Issyk-Kul, Tibet, Afghanistan, and Persia agrees with *phantasma* Ev. in its grey tint and in having a dark cell lunule on underside of hindwing, but the forewing above is thickly and coarsely sprinkled with blackish and marked with one large black blotch before subterminal line on submedian fold. Larva yellow, with four black subdorsal lines enclosing the yellow dorsum; on each side a row of black spots and dots; a double black line above the feet; head yellow with black dots; feeds on Genista and Sarothamnus. Occurs throughout S. Europe except in S. W. Russia; in Algeria and Morocco; in Asia Minor Palestine, Armenia, through Central Asia to Amurland; also found in India.

21. Genus: **Autophila** Hbn.

Differs from *Apopestes* in the palpi having the third segment much smaller, sometimes hardly visible, the second much more loosely scaled; the legs less heavily clothed with hair; all the species smaller and of weaker build. Type *A. dilucida* Hbn.

A. cataphanes Hbn. (68 c). Forewing pale ochreous grey dusted with darker grey; costa with dark spots at origin of lines; lines fuscous; the inner waved, the outer dentate lunulate, excurved beyond cell; submarginal pale preceded by a dark grey macular shade; marginal spots dark; orbicular stigma a grey ring; reniform lunular, with dark outside edge; hindwing grey, with darker outer line, followed by a paler, more ochreous band; fringe pale, glossy; — the subsp. **ligaminosa** Ev. (68 c), from Armenia, Pontus, Taurus, and Turania, is darker, with greenish grey forewings, and with a broad blackish border on the underside of both wings; — **subligaminosa** Stgr. (68 c), from Ferghana, Turania, and Samarcand, is distinguished from *ligaminosa* by the pale grey of the forewing and the strong black mark before its apex; — subsp. **praeligaminosa** Stgr. (68 d), from the Altai and Uliassutai Mts., the Ussuri district, and Japan, is still darker, being dusted with black; another form, occurring in Turania, Ferghana, the Issyk-Kul district, and Kashgar, — ab. **maculifera** Stgr. (68 c) is reddish grey with scattered darker spots on the cross lines of the forewings and one between the stigmata; — subsp. **maura** Stgr. (68 c), from N. Africa, has reddish yellow grey forewings; and ab. **roseata** Roths., from the northern Sahara, is very closely allied to *maura*, but has stronger black markings and appears restricted to the more purely desert areas. Larva very slender, attenuated at both ends; pale yellowish grey, with several fine, contiguous, dark wood-coloured lines besides the usual well-developed dorsal and subdorsal lines; spiracular line whitish; tubercles and spiracles very small; feeds on *Genista purgans* and *Ulex europaeus*. The species occurs throughout S. Europe (except Italy and Russia), in N. Africa, Asia Minor, Syria, Armenia, Turania, Ferghana, Turkestan, to N. China.

A. limbata Stgr. (68 c). Forewing ochreous grey with dark dusting; lines blacker and plainer than in *cataphanes*; the terminal area suffused with blackish, and the praesubmarginal shade thick, black, and well-marked; the orbicular a black point, the reniform a dark lunule; hindwing fuscous grey, with dark terminal border preceded by a pale ochreous band; the fringe pale ochreous. In Europe this species is met with in Spain, S. E. France, and Greece; also in Pontus, Taurus, Armenia, and N. E. Persia, where, as well as in Ferghana and Turania, is found the subsp. **obscurata** Stgr. (68 c), with the forewings above much cloudier and more obscurely marked. Larva brownish, mottled all over with brown and pale streaks and spots; a paler lateral line below the spiracles; forelegs wholly black; head marbled dark and light; living on *Astragalus echinus*, growing in small bushes.

A. dilucida Hbn. (68 d). Forewing pale ochreous dusted with grey; the lines grey, obscurely marked, starting from grey costal spots; the outer line more waved, less dentate; submarginal line pale, wavy, preceded by a continuous dark grey shade, the terminal area also often dark; orbicular stigma a dark point; reniform an obscure dark lunule; hindwing pale luteous grey, darker towards termen; the fringe pale; the type form is found in Germany, Carinthia, S. Tyrol, and S. Europe generally; also in Algeria; — other forms are: subsp. **rosea** Stgr. (68 d), from N. Africa, with the forewings reddish yellow; — subsp. **asiatica** Stgr. (68 d), from Pontus, Ferghana, Samarcand, and the Ili district, has a more conspicuous brown terminal border to the forewings, and paler underside; — from Turania also the subsp. **laetifica** Stgr., with yellowish grey sharper marked forewings, without terminal border, and paler hindwings with a broad black border; — subsp. **subfusca** Christ., likewise from Turania and S. E. Caucasus, is much darker, with stouter transverse lines and very broad border in forewings. Larva dark brown along dorsum, brownish yellow on the sides, varied with grey longitudinal striae; dorsal line blackish, conspicuous, finely edged with yellow; the subdorsal lines pale, edged above with blackish, beneath with red; tubercles conspicuous, black in yellow rings; feeding on *Medicago*, *Onobrychis*, *Genista*, and other papilionaceous plants, living concealed by day on the surface of the ground.

A. libanotica Stgr. Forewing much broadened outwardly, fawn colour, with a slight reddish tinge; the usual lines obsolete; submarginal line marked by three black blotches preceding it; a large one at costa, a small one at middle, and a third on inner margin; hindwing with the dark band stronger, sharper, and straighter than in *cataphanes*; its underside with a broad black terminal border and sharply marked narrow black median band. Occurs in Syria only; nearly allied to *cataphanes*.

22. Genus: **Tathorhyncus** *Hmps.*

Tongue present; frons smooth; palpi upturned, hairy, the second segment with a long porrect tuft of hair produced to a point; antennae with fasciculate cilia; thorax and abdomen slender; forewing narrow, elongate. Type *T. exsiccata* *Led.*

exsiccata. **T. exsiccata** *Led.* (= *vinctalis* *Walk.*). (68 e). Forewing whitish, thickly suffused with grey brown, darker towards termen; the orbicular and reniform stigmata marked by pale spots separated by a black dash; another beyond reniform; outer line pale preceded by black marks; a terminal row of black lunules; hindwing greyish white, darker terminally. Described originally from Syria; occurs also in Italy and Algeria; in Aden and throughout India, whence WALKER's *vinctalis*.

23. Genus: **Dinumma** *Walk.*

Tongue present; frons flat; palpi erect in front of face, the second segment thickly scaled, the third erect, slender, pointed; antennae of ♂ filiform; dorsum with small crests; the thorax smoothly scaled; pectus and femora woolly; tibiae without spines, slightly fringed with hair; forewing of nearly uniform width throughout, the scaling very smooth; vein 5 of hindwing from close above 4. Type *D. placens* *Walk.* from India.

deponens. **D. deponens** *Walk.* (= *bipunctata* *Motschl.*, *largetaui* *Oberth.*) (67 h). Forewing olive brown with a slight rufous tinge; a small basal patch on costa and the median area deep olive brown; inner edge of median area trisinate, outer edge with two prominent projections on veins 5 and 1; lines pale pinkish ochreous, forming fine edgings to basal patch and median fascia; the last is followed by a distinct lilac line parallel to it; subterminal line pinkish ochreous, indistinctly lunulate dentate, followed by another pale line close before and parallel to termen edged with black triangles; space between these two lines containing a square black spot between veins 6 and 7, and sometimes a dark blotch between 5 and 4, with a pinkish ochreous space between the two; hindwing fuscous brown. Described from India, but occurring throughout China, in Corea, and Japan.

24. Genus: **Ophiussa** *Hbn.*

Tongue present; frons smooth, bearing a short tuft of hairs; palpi stout, upturned in front of face, the second segment thickly scaled, the third shorter and smoother; antennae of ♂ pubescent, subserrate, with fine short bristles; prothorax slightly tufted; tibiae without spines; wings ample, the termen not crenulate. Larva slender, with 16 feet, but the first pair of prolegs shortened; feeding on Leguminaceae, hibernating small, full fed in May and June; pupating among leaves and rubbish in a loosely spun cocoon. Type *O. lusoria* *L.*

lusoria. **O. lusoria** *L.* (= *orobi* *Dup.*) (68 e). Forewing pale mouse colour, covered with darker striae; lines very obscure; inner diffuse, darker, slightly curved; outer wavy, sinuate, excurved above, incurved below middle, followed by a brownish fuscous shade, the outer edge of which denotes the subterminal line; a terminal row of black points; orbicular stigma a black dot; reniform a conical or L-shaped black blotch; hindwing browner, with a broad fuscous terminal border; the form **amasina** *Stgr.* from Syria, Asia Minor, and Kurdistan is larger and darker, with the subterminal fascia obsolete; — another form, from the Taurus Mts., is smaller than the typical, pale luteous ochreous, without striae, but dusted with darker, and has the fascia brownish and distinct only in costal half of wing; the reniform stigma velvety brown, broadened below and projecting between veins 3 and 4; the orbicular obsolete, subsp. **sublutea** *subsp. nov.* (68 e); **fusca** *Kysel.*, from the Vienna district, is ochreous brown with the markings darker brown. Larva bluish grey, with a conspicuous red central line in a white dorsal stripe and on each side of this last a black line; two brick red lateral lines, with the space between them dotted black and white; head small and brown; feeding on *Vicia* and *Astragalus*. Found in Germany, Switzerland, Austria, Hungary, Galicia, Rumania, S. Russia, the Altai Mts., and Asia Minor.

glycyrrhizae. **O. glycyrrhizae** *Rmb.* (68 e). Forewing pale stone grey, with slight olive grey dusting, the lines and subterminal shade all but obsolete; the reniform a narrow olive brown mark on discocellular, hardly broader at lower end; hindwing rather darker and browner; an aberration sent by RIBBE as **alfacaria** (68 e) from the Sierra

de Alfacar, is thickly striated with olive grey and entirely without lines or shading, the pale olive reniform stigma being quite obscure. Known only from Andalusia.

O. lubrica *Frr.* (68 f). Forewing whitish grey regularly striated with darker grey; the inner, median, *lubrica*. and outer lines rarely distinct, except at costa; when visible, cloudy and interrupted; the reniform stigma brown, its inner edge velvety black, and with three black spots on its outer; subterminal line pale grey, flexuous, preceded by a diffuse dark grey shade, the terminal area generally darker grey; hindwing dull yellowish brown suffused with grey, with a broad blackish terminal border and whitish fringe; in the form **obscurata** *Spul.* *obscurata*. (68 f) the forewing also is invaded by the yellow brown tinge, and the markings are often diffusely darker; — in **sublubrica** *Stgr.* (68 f) the striae and markings of the forewing are all strongly blackish fuscous and the *sublubrica*. hindwing is much darkened; — **lubrosa** *Stgr.* is paler ash grey, the hindwing yellower, with sharply defined *lubrosa*. black terminal border. The species is found in the Ural and Altai Mts., Russia; *sublubrica* occurs in the Ural, Uliassutai, and Thian-shan Mts., and in the Issyk-Kul district; *lubrosa* at Ili and Issyk-Kul.

O. pastinum *Tr.* (= *lusoria* *Hbn.* nee *L.*) (68 f). Forewing pale luteous grey covered with dark vermiculations; the costa and terminal area brownish grey; inner line outwardly curved, greyish brown, often obscure; *pastinum*. outer line dark edged with pale, outcurved above, indented on submedian fold, followed by a diffuse dark shade; the subterminal line hardly distinct; orbicular stigma a black dot; reniform a black lunule, its lower end produced outwards and followed by two black points; hindwing pale brownish grey, with an indistinct outer pale line; the form **astragali** *Rmb.*, from Spain, is more densely covered with dark striae on the forewing, of *astragali*. which the terminal spots are hardly visible; on the other hand, **dilutior** *Stgr.*, from the Kentei Mts., has paler, *dilutior*. less marked, forewings; ab. **decolor** *ab. nov.* (68 f) is much paler and without any brown tinge: nearly a score *decolor*. of this form were taken in July and August 1901—1903 at Tarasp in the Engadine by Mr. ROTHSCILD and Mr. HARTERT; they may be identical with ab. *dilutior* *Stgr.* from Kentei. Larva pale yellowish grey, dotted with black, with a row of yellow spots in the middle and a row of small yellow spots on each side of the back; laterally with a broad white grey-mottled black-dotted stripe above, and beneath an orange stripe dotted with white and edged below with yellow; also a black stripe above the feet; feeds on *Vicia cracca* and *Lathyrus palustris*. Occurs in Britain, Scandinavia, Finland, throughout Central Europe, Portugal, Spain, Livonia, Galicia, S. Russia, Dauria, and Amurland.

O. viciae *Hbn.* (= *coronillae* *H.-Sch.*) (68 g). Forewing pale lilac grey, thickly striated with olive and *viciae*. fuscous; the costal spots (sometimes the costal stripe), the lines and shadings olive brown; the lines are often very indistinct, more particularly in the ♂; subterminal line paler, preceded by a broad olive shade; reniform stigma olive brown, its black edges cut up into small spots; veins towards termen finely pale; hindwing pale olive grey brown, with a darker subterminal shade; in the ab. **caecula** *Stgr.* (68 g) the reniform stigma *caecula*. is without black outline, while all the lines and shadings are clear and well defined; ab. **brunnea** *ab. nov.* *brunnea*. (68 g) resembles *caecula* in the brownness and clearness of the inner, median, and outer lines and of the praesubmarginal shade, and in the two diffuse dark shades of hindwing, but the reniform stigma agrees with that of typical *viciae*; the pale veins are also very little marked. The ♀ described has no locality label, but from the setting is probably from the same locality as the ♂ example of *caecula* in the Tring Museum, viz. Wiesbaden. Larva light grey; dorsal line dark, swollen on each segment, with a white central line; subdorsal lines blackish; dorsal tubercles black in white rings; on the sides are dark oblique streaks, and beneath the black spiracles two dark dentate lines; on *Vicia*. The larva of this species is said to feed up in autumn and pupate without overwintering. Found in Scandinavia, the Baltic provinces of Russia, St. Petersburg, Central Europe, Holland, France, Switzerland, Rumania, S. Russia, the Altai and Tarbagatai Mts., and in Amurland.

O. craccae *F.* (68 f). Larger than *viciae*. Forewing darker grey, with a slaty violet tinge, striated *craccae*. and dusted with darker; the veins pale; costal spots blackish; lines very faint, except the paler subterminal, and that often only shown by the darker shade preceding it; hindwing paler, sometimes with a yellowish tinge, with a smoky fuscous terminal border; — ab. **immaculata** *Stgr.*, like *caecula* *Stgr.*, the aberration of *viciae*, *immaculata*. has no black edging to the reniform stigma and the costal spots paler; — subsp. **laevigata** *subsp. nov.* (68 f), *laevigata*. from the South Tyrol, is large, with the forewing uniformly slate coloured, and without darker dusting or striation; in a ♀ from Uralsk, received from M. BARTEL, — subsp. **grisea** *subsp. nov.* (68 g), the forewing has the *grisea*. costal spots prominently black, the inner and outer lines dark fuscous and distinct, the space between them and the terminal area both dark grey, contrasting strongly with the paler basal area and pale outward edging of the outer line; the reniform stigma has the inner edge finely black, but is filled up with the dark grey of the median area, its outer edge being represented by two or three black points only; the pale veins show up distinctly in the dark grey suffusion; the hindwing is wholly dark fuscous; the example is only as large as average *viciae*,

- brunnea*. and may be specifically distinct; two other forms appear to require a distinctive name; ab. *brunnea ab. nov.*
- lutosa*. (68 h), instead of the typical grey ground colour, is brown, sometimes with a rufous tinge; while subsp. *lutosa subsp. nov.* (68 h) from the South of France, is luteous grey in the forewing and luteous ochreous in the hindwing. Larva pale yellowish grey; dorsal stripe broad, grey brown, divided by a fine dark brown line with pale edges; on the sides of segments 5, 6, 7, and 10 an oblique blackish streak; on segment 12 a triangular yellowish white blotch; a brown shading below the spiracles; feeds on *Vicia*. Occurs throughout Europe and through Central Asia to Amurland.
- recta*. **O. recta** *Brem.* (= *lilacina Btlr.*) (68 g). Forewing lilac grey striated with dark; inner, median, and outer lines obscurely olive brown; in well marked examples the inner and outer are conversely edged with paler, the inner sharply angled on subcostal vein, the outer excurved from costa to submedian fold, then vertical; subterminal line nearly straight, pale, preceded by a darker shade; reniform stigma brown; its inner edge formed of two black spots, the lower large and protruding basewards; its outer edge of black spots separated by the pale veins; hindwing brownish fuscous with darker outer line and broad terminal border; in the ab.
- suffusa*. **suffusa ab. nov.** (68 g) the costal and the terminal area, sometimes the whole wing, is suffused with olive brown;
- lutea*. in another form — ab. **lutea ab. nov.** — the ground colour is brownish ochreous instead of grey, without dusting or striation, and with all the markings more or less obliterated; the hindwing yellowish brown with dark border. Found only in Amurland, Japan, and Corea.
- limosa*. **O. limosa** *Tr.* (? = *procax Hbn.*) (68 g). Forewing dull fuscous brown, darker along costa, which is thickly covered with oblique black striations, and smoky fuscous with dark striae in terminal area; a pale curved outer line is sometimes visible before the dark area; the reniform stigma is represented by an angled black line, and the orbicular by a pale dot; hindwing smoky fuscous, darkening outwardly. Larva pale bluish grey, thickly black-dusted; dorsal and lateral lines orange; above the feet a whitish line, broadly edged below with yellowish brown; feeds on *Vicia*, *Coronilla*, *Colutea*. A South European insect, occurring in Switzerland, S. Tyrol, Dalmatia, Istria, Hungary, and Bulgaria.
- angustipennis*. **O. angustipennis spec. nov.** Forewing distinctly narrower, like *limosa*, speckled not striated with black; pale grey, with the cellmark V-shaped; the inner line interrupted, not vertical and continuous below the subcostal vein; the other lines grey and fairly distinct throughout; the veins not paler; the terminal black dots distinct; the costa quite plain, without oblique striae; hindwing dull fuscous throughout. Occurs at several localities in N. W. India and in the Goorais Valley, Kashmir.
- vulcanca*. **O. vulcanca** *Btlr.* Forewing brownish grey strongly glossed with violet and covered with somewhat indistinct dark vermiculations; inner, median, and outer lines denoted by dark costal spots only; subterminal indented on the two folds, paler, preceded by darker clouding, especially at costa; extreme termen paler, with dark spots between veins; orbicular stigma a white dot; reniform a foot shaped mark, widened at base and bearing on outer edge a black dot at top and two at bottom; hindwing dark violet fuscous, deeper along termen; a form occurs of quite a pale grey with only a slight violet gloss, densely covered throughout with
- strigosata*. fuscous vermiculations, the hindwing brownish fuscous with a darker terminal border, — ab. **strigosata ab. nov.** A large species occurring in W. China and Japan.
- nigricostata*. **O. nigricostata** *Graes.* (68 h). Forewing pearl grey, coarsely striated with black; the costa broadly blackish with oblique striae, the terminal area smoky blackish fuscous; reniform stigma a pale black-edged lunule, preceded at lower end by a black spot; a pale outer line can be faintly distinguished, hindwing dirty whitish, with the terminal border broadly fuscous. The forewings are narrow and more pointed at apex than those of *limosa*, and the hindwings much paler; the thorax is black like the head. Found in Fergana, Ussuri district, Amurland, and Japan.
- emaculata*. **O. emaculata** *Graes.* Forewing bluish grey, like *pastinum*, with a few dark scattered striae; lines not marked except by their dark costal spots; reniform stigma large, pale brownish grey, not black, hardly distinguishable from the ground colour, followed by three black points, inwardly prolonged along median vein into a sharp yellowish brown tooth, and outlined there by a dark curved line which runs obliquely through the cell; orbicular a pale dot; subterminal line preceded by a broad dark shade, strongest at costa and along its outer margin; terminal lunules black; hindwing brownish fuscous. This species was described by GRAESER from a single ♀ from the Ussuri River.

25. Genus: **Exophila** *Guen.*

Tongue present; frons with tuft of hair above; palpi thickly scaled, obliquely porrect upwards, the terminal segment short and stumpy; antennae of ♂ subserrate, shortly fasciulate; thorax and abdomen smooth; legs short and stout, without spines; the femora and tibiae, like the pectus, woolly; forewing short, uniformly broad, termen vertical. Larva slender; the first pair of abdominal prolegs aborted; feeding in spring on *Celtis australis*; pupating in a cocoon spun among the leaves of its food plant. Type *E. rectangularis* *Hbn.-Gey.*

E. rectangularis *Hbn.-Gey.* (68 h). Forewing pale greyish fawn colour, with sparse black atoms and ochreous striae; outer line sometimes indicated by a few dark patches; costa dull olive yellowish; a yellow waved terminal line; hindwing pale luteous, with a grey outer line and terminal border; the fringe pale. Larva pale yellowish green; an angular white mark on each segment of dorsum; subdorsal lines continuous, whitish, with oblique white streaks below them; feeding on the lower twigs of its foodplant. A south European insect found in S. Tyrol, Istria, Dalmatia, Macedonia; in Syria, Armenia, Pontus, Taurus, and S. Fergana. *rectangularis.*

26. Genus: **Chrysothrum** *Btlr.*

Tongue well developed; frons somewhat rounded, smooth, with a short, thick tuft of hair above; palpi stout, upcurved, laterally flattened, the second segment thickly scaled, the third smooth, about half as long as second, porrect; antennae of ♂ lamellate, finely pubescent; metathorax with a short double crest; abdomen smooth; pectus and femora woolly; forewing elongate triangular, the apex slightly produced; the termen curved, crenulate; vein 5 of hindwing from close above vein 4. Type *C. amata* *Brem.*

A genus without any apparent close affinity.

C. amata *Brem.* (= *fuscum* *Btlr.*) (68 a). Forewing of ♂ violet grey, of ♀ grey suffused with brown; markings in ♂ dark olive fuscous, in ♀ brownish; a broad outwardly bent fascia near base, limited by the subbasal and inner lines; a large incompletely Y-shaped fascia beyond middle; its inner arm not reaching above cell, where it forms a triangular mark; the outer very dark and broad on costa, often interrupted below vein 6, angled externally above vein 3 and then deeply indented, outwardly edged by the subterminal line, beyond which the termen is generally paler; a black spot in cell, and often two dark spots beyond the triangular mark in cell; hindwing in ♂ fuscous, in ♀ blackish, with a broad orange fascia beyond middle, narrowing towards and hardly reaching inner margin; a dull yellowish patch at apex and on termen beyond submedian fold; BUTLER'S *fuscum* appears to be merely the ordinary form of the ♀, though some examples of the ♀ occur showing the coloration of the ♂; — **rufescens** *Btlr.* (68 a) is a pale rosy brown form of the ♀, with the markings tawny olive. The species occurs in Amurland, where it was first discovered, in China, Japan, Yesso, and Corea. *amata.* *rufescens.*

C. flavomaculata *Brem.* (= *maximowiczi* *Brem.*) (68 a). Forewing pale violet grey, with darker clouding; the markings purplish fuscous; basal patch dark, deepest along its edges, limited by the wavy pale dark-centred inner line, which does not quite reach inner margin at $\frac{1}{3}$, and is then curved inwards to near base; an outer Y-shaped fascia as in *amata*, but much narrower, closely preceded by a straight dark shade; the end of the shortened inner arm forms a black triangle, preceded by a large velvety black spot in cell; terminal area paler, more violet grey, with blackish clouds and a black spot at apex; hindwing orange, with a large dark cell spot, up to which the inner margin is fuscous; a black terminal border varying in width; the Japanese form subsp. **sericeum** *Btlr.* (68 b) is darker, more purplish fuscous; — the ab. **fuliginosum** *ab. nov.* (68 b) is still deeper purple, the hindwing wholly dark, except a short median orange band. Found in the Ussuri district, Amurland, Dauria, and Japan. *flavomaculata.* *sericeum.* *fuliginosum.*

27. Genus: **Arcte** *Koll.*

Tongue well-developed; frons smooth; palpi with closely appressed scales, upcurved in front of face. the third segment short; antennae of ♂ simple; tibiae fringed with long hair, without spines; thorax and abdomen clothed with long hairy scales; the penultimate segment of dorsum of ♂ bearing a roughly ridged brown horny plate at middle. A genus of large, stoutly built, moths with elongate forewings, occurring chiefly in India and the Malay islands, one species only being found in Kashmir. The genus is closely related to *Coccy-*

todes Guen., which bears on the dorsum a similar scaleless rasp, but in it the mid and hind tibiae are spined. Type *A. polygrapha* Koll.

polygrapha.

A. polygrapha Koll. (67 b). Forewing uniform olive fuscous without dark dusting; basal area and cell with a few blue scales intermixed; lines black; inner line outcurved, thick; basal area above vein 1 black; median shade thick and black, oblique outwards and interrupted by the large reniform stigma, which is black edged and bears a black lunule at centre, below cell oblique inwards and dentate lunulate; outer line oblique outwards as far as vein 7, where it is sharply angled, then lunulate dentate, ending in an acute angle on inner margin; the teeth emitted by the median line run up along the veins in the centre of the lunules; a similar line, more broadly lunulate, emits its teeth inwards between the lunules; an interrupted subterminal line of dark blotches; an interrupted black terminal line; hindwing ochreous at base, olive fuscous along costa; a broad blackish terminal border from vein 6, and an outer black band, which is preceded and followed by bands of bluish scales, the inner one reduced by fuscous suffusion along inner margin to a triangular blotch; cellspot large and black. A North Indian insect occurring in the Punjab, Sikkim, Bhutan, and Assam; also found in Kashmir.

28. Genus: **Catephia** Ochs.

Tongue present; frons smooth; palpi long, upcurved, second segment thickened with appressed scales, third long and slender; antennae of ♂ with fasciculate cilia; thorax and abdomen smoothly scaled; the metathorax with a slight tuft; dorsum strongly crested; tibiae rough haired, without spines; forewing elongate, with both angles blunt; the termen nearly vertical, crenulate; vein 5 of hindwing close above 4. Larva slender, with pairs of tubercles; those on the 5th and 12th segments swollen into points; the first two pairs of prolegs aborted; feeds on oak in autumn; pupates in a slight cocoon spun among leaves, and emerges in spring. Type *C. alchymista* Schiff.

alchymista.

C. alchymista Schiff. (67 i). Forewing ash-black; lines deep black; inner and outer irregularly dentate, partially brown-edged externally; subterminal line light brown, irregular and dilated in places, at costa marked with white; stigmata with deep black edges; hindwing white in basal half, except along inner margin, which like outer half is blackish; terminal spots white, running out into the fringe, at apex and above anal angle. Larva reddish brown, marbled with black and whitish; dorsal tubercles black; head brown; segment 2 yellow in front; feeding on oak. Occurs in Central Europe, except Holland, in the Baltic provinces, and in South Europe; in Algeria; in Pontus, Palestine, Persia, and Kurdistan in Asia. The examples captured from time to time on the S. E. coasts of England were certainly stragglers from the continent; the ab. **varia** Chr. (67 i), from Sarepta, has greenish grey forewings with very strongly marked black lines.

varia.

29. Genus: **Anophia** Guen.

Tongue present; frons smooth; palpi upturned close in front of face, the third segment porrect outwards; thorax thickly scaled; metathorax with strong crest; abdomen of ♂ elongate, narrowing to end, with long silky anal tuft, the second segment with two upwards curved lateral tufts of hair; strong dorsal tufts on first four basal segments, the third the largest; pectus and legs woolly; antennae of ♂ pubescent; forewing elongate, with slight scale tooth at anal angle; apex blunt; termen curved, faintly crenulate; hindwing of ♂ beneath with a rough-scaled fork on abdominal margin. Larva feeds on *Convolvulus* and pupates in an earthen cocoon, in which it lives as larva till spring. Type *A. leucomelas* L.

leucomelas.

A. leucomelas L. (= *ramburii* Tr., *adepta* Hbn.-Gey., *acronyctoides* Leech nec Guen.) (67 i). Forewing purplish black; inner and outer lines double, deep black; the inner wavy and oblique, the outer lunulate dentate, slightly outbent beyond cell; subterminal line pale, wavy, preceded by a deep black shade; orbicular stigma round, the reniform kidney shaped, dark with pinkish ochreous annuli, the reniform externally marked with white; claviform purple black, followed by a pink patch on vein 2 at base; hindwing white with outer half black; a white subapical and submedian space extending into the fringe; the inner margin narrowly fuscous; in ab. **rufimixta** ab. nov. (67 i) from Algeria, the forewing has the dark ground colour invaded between the veins by coarse rufous ochreous scales. Larva grey or green, coarsely black-dotted; dorsal line broadly orange; lateral lines narrowly orange; an orange line above the spiracles, and a yellow line with blackish lower edge below them; head yellow dotted with black; feeds on *Convolvulus* in autumn. Occurs throughout S. Europe; in Algeria; in Bithynia, Pontus, Armenia, and Persia; recorded also by LEECH from Gensan, Corea.

rufimixta.

A. flavescens *Bldr.* (67 i). Forewing ochreous speckled with grey brown; the inner margin with brown-*flavescens.* black suffusion; a purplish black blotch on inner margin before inner and beyond outer line; lines black, double and waved, the outer lunulate dentate and interrupted in midwing; claviform stigma brown; the upper stigmata pale, with very fine black outlines; a black brown patch at apex; hindwing very pale yellow, with broad blackish terminal border; the apex and fringe beyond it yellowish. A North Indian insect, but recorded by LEECH from many localities in Western China. In this species the terminal segment of palpi is quite short.

30. Genus: **Aedia** *Hbn.*

Resembles *Anophia Guen.*, but the palpi are much longer, reaching well above the vertex; antennae of ♂ ciliated and with fine bristles; abdomen shorter, blunter at end, with a short stout anal tuft, and without the lateral tufts on second segment; legs short and smooth; forewing shorter and smoother. Larva cylindrical, naked, feeding on *Convolvulus* in autumn, and pupating in an earthen cocoon, in which it passes the winter unchanged, and emerges in summer. Type *A. funesta Esp.*

A. funesta *Esp.* (= *alchymista Esp. nec Schiff.*, *leucomelas Hbn. nec L.*) (67 i). Forewing purple black, *funesta.* with the lines and outlines of all three stigmata finely intense black; on the costa before the outer line, and partly encroaching both on it and the reniform stigma, is a large pale flesh coloured blotch; subterminal line interruptedly rufous, preceded by black blotches; hindwing black; a round white patch at base, not reaching either margin; a white patch at apex and anal angle in the black fringe. Larva brownish grey with fine orange yellow dots; dorsal markings kite-shaped; the lateral lines pale; feeds on *Convolvulus* in July and August, hiding by day in the ground or under leaves. Inhabits Central and Southern Europe, except Holland and England; also found in Asia Minor, Syria, Persia, and Armenia.

31. Genus: **Serrodes** *Guen.*

Tongue present; frons with conical tuft of hairs; palpi strong, the second segment upturned, the third short, pointed, porrect; antennae of ♂ shortly ciliated; thorax and abdomen smooth; the tibiae not spined, but clothed with dense hair; wings with termen crenulate. Type *S. inara Cram.*

S. campana (= *nigha Guen.*, *basisignum Walk.*, *korana Fldr.*) (68 b). Forewing of ♂ with basal patch *campana.* and outer half of wing brown, like the head and thorax, with only the median area pale greenish or brownish ochreous; inner line black, curved, starting from a black costal spot, and below median vein swollen into a large black lunule basewards, then outcurved and filled in with leaden grey; outer line double, more or less curved, filled in with rufous, angled just below costa; reniform stigma broken up into dark spots with pale edges; hindwing fuscous, with an obscurely pale median band; in the ♀ — *nigha Guen.* — the median area is suffused with brown, nearly as dark as the rest of the wing; the outer line straight and vertical. A common Eastern species, recorded by LEECH from China.

32. Genus: **Hypactra** *Guen.*

Tongue present; frons smooth, with a prominent tuft of hair above; palpi upturned, long, the second segment stout, thickly scaled, slightly curved, the third smooth, straight, and thin; antennae of ♂ varying from shortly bipectinate to fasciculate; thorax and abdomen smoothly scaled; tibiae of ♂ strongly fringed with hair, the middle tibiae with a fold containing a pencil of hairs, the hind tibiae with a diffuse tuft of hair at middle; forewing triangular, generally marked with blackish blotches; hindwing slightly elbowed at end of vein 2, the anal angle truncate. Type *H. noctuoides Guen.*

Sect. I. Antennae of ♂ with stiff regular pectinations.

H. chinensis *spec. nov.* (68 c). Forewing pale fawn grey, not so bright as that of *bubo Hbn.*; basal *chinensis.* area purplish grey, followed by a large triangular velvety black blotch, its apex at median vein, with a subquadrate black costal blotch above it reaching subcostal vein; then a pale greyish ochreous space limited

by a brown irregular waved median line and containing a black orbicular dot; costal area between it and outer line redbrown; outer line thick, velvety black, oblique inwards to below 7, then swelling out into a large blotch the inner edge of which forms a blunt protuberance inwards beyond and a slighter one between veins 2 and 3, with an outward trunklike projection between filled in with yellow ochreous, the outer edge obliquely curved inwards and joining inner edge on vein 2, forming an oblique dark streak to vein 1 and a black outward lunule below it; the lower median area olive grey; subterminal line blackish grey, irregularly lunulate dentate, the termen with a brown cloud invading the fringe, except at apex which is ochreous; hindwing dark brown, with an interrupted dark subterminal shade, followed by a pale space from vein 2 to 3 with a black mark on 2; basal line of fringe dull orange, the fringe itself dark brown marked with whitish below apex and below vein 2; a patch of smooth brown scales along vein 6 towards termen; face black; palpi externally, tegulae, and patagia black brown; dorsum dark brown like hindwing. Described from a single ♂ in the Tring Museum marked simply „China“. Superficially very much like *bubo Hbn.*; distinguished by the black face and darker thorax, as well as by the different structure of the antennae; *bubo Hbn.* has not been recorded from China or Japan.

33. Genus: **Lacera** *Guen.*

Tongue developed; palpi upturned, the second segment thick, broad at base, the third thin and erect; antennae of ♂ shortly ciliated; thorax and abdomen clothed with coarse hair and scales; tibiae thickly tufted with hair, without spines; forewing elongate with apex shortly depressed and pointed; the termen oblique and crenulate, shortly produced at veins 4 and 6. Larva with the first two pairs of abdominal prolegs aborted Type *L. alope* *Cram.*

alope. **L. alope** *Cram.* (= *capella Guen.*, *procellosa Btlr.* (68 b). Forewing brownish fuscous, tinged with red; lines black; the inner curved, lunulate outwards, dentate inwards on veins; outer line irregularly lunulate dentate, narrowly outbent beyond cell, with a pale mark in the bend and another above vein 1; subterminal line pale, much waved, with a dark blotch at middle; reniform stigma obscure; hindwing with an indistinct, waved, partly double, pale outer line; a dark terminal line with some bluish grey specks on it; underside variegated with purple, red, and white. Larva green, with dark streaks along dorsum, the hind margin of each segment with a dark speck and similar subdorsal specks; two dark prominences on back of segment 12; on *Pisonia* and *Canthium*. This common tropical species is found in Japan, and Central and Western China; the type of BUTLER'S *procellosa* was from Yokohama.

34. Genus: **Oxyodes** *Guen.*

Tongue present; frons rounded; palpi upturned, the second segment broad and smoothly scaled, the third erect, long and slender; antennae of ♂ filiform, simple; thorax and abdomen smoothly scaled, slender; forewing with costa strongly arched towards apex, which is prominent but blunt; termen oblique, slightly sinuous; hindwing with rounded termen. Type *O. scrobiculata* *F.*

scrobiculata. **C. scrobiculata** *F.* (= *clytia Cram.*) (68 c). Forewing yellow ochreous, or brownish ochreous, or grey brown without the ochreous tint; lines darker, rather indistinct; the inner irregular, angled on subcostal vein and vein 1; followed by a curved diffuse cloudy median shade; outer line double, dentate lunulate, the inner arm black and distinct; subterminal line wavy; the terminal area clouded with darker; orbicular stigma a black ring; reniform edged and often filled in with black; hindwing with double postmedian and wavy subterminal lines; a velvety black bar along outer half of costa squarely cut off above vein 6. Generally distributed through the tropics, and occurring in China.

35. Genus: **Ischyja** *Hbn.*

Tongue developed; frons smooth; palpi stout, obliquely porrect, the second segment broad, slightly curved, thickly scaled, the third obliquely porrect forwards, long and spatulate, smoothly scaled; antennae in ♂ with fasciculate cilia; thorax and abdomen smoothly scaled; tibiae without spines; the fore tibiae with a triangular tuft of hair; the mid tibiae slightly fringed with hair; the hind tibiae clothed with long hair; forewing with the costa strongly arched towards apex, which is acutely produced; the termen obliquely sinuous;

hindwing with the cell very short; in the ♂ veins 2, 3, 4 run close together and parallel for two thirds of their course. Larva with 4 pairs of abdominal prolegs; the pupa efflorescent. Type *I. manlia* Cram.

I. manlia Cram. (68 d). Forewing pale to dark redbrown, in the ♂ more mixed with grey; stigmata *manlia*. pale, diffuse, the orbicular round and small, the reniform large, without dark outline in the ♀, much larger and laterally edged with white in ♂; a velvety black anvil-shaped blotch in cell between them and a larger one beyond reniform; in the ♂ only two black blotches obliquely below them, connected by a narrow black line, each marked by a white lunule, representing inner and outer line, which are both sinuous, much interrupted and obscure; hindwing fuscous brown, with an outer curved blue band, thinning out before inner margin beneath an ochreous black edged spot. This beautiful and variable oriental species is noted by LEECH from Central and Western China.

36. Genus: **Platyja** Hbn.

Tongue well developed; frons smooth; palpi upcurved in front of face, the second segment stout, curved, thickly scaled, the third short, slender, blunt; thorax and abdomen smooth; dorsum with long coarse hair; tibiae and hind tarsi of ♂ very hairy; forewing with costa strongly arched towards apex, which is acutely produced; termen obliquely sinuous; hindwing with cell quite short, the anal angle truncate. Type *P. umminea* Cram.

Sect. I. Antennae of ♂ bipectinate with short stiff branches; mid and hind legs with tufts of very long hair from the femoro-tibial joint.

P. umminea Cram. (= *drepanoides* Walk., *falcata* Fldr.) (68 e). Forewing olive fuscous, sometimes *umminea*. more reddish tinged, with a few grey specks; lines dark and fine; the inner wavy, vertical below middle; the outer crenulate, strongly but narrowly excurved beyond cell, then bent inwards and upwards to below reniform stigma, then vertically waved to inner margin; a dark oblique streak from apex to outer line at vein 5, with pale grey scaling below it; orbicular stigma a black dot; reniform with blackish outline; in the ♀, towards anal angle two superimposed round spots edged with dark, *subunita* Guen. (68 d), sometimes filled up with *subunita*. orange or white, *removens* Walk., (= *trajecta* Walk.) (68 d) and enclosing chestnut brown rings or spots; hindwing *removens*. with crenulate outer line and obscure subterminal cloud; fringe in both wings tipped with white; underside with dark linear cellspots, and crenulate outer line speckled with white. Occurs in Assam, Sikkim, Ceylon, the Andamans, the Malay peninsula, Borneo, Java, Hainan, the Moluccas, Celebes, the Louisiades, New Guinea, and Queensland.

37. Genus **Crithote** Walk.

Tongue developed; frons flat and smooth; palpi upcurved in front of face, the second segment thick and broad, the third short, button-shaped; antennae of ♂ bipectinate with short branches; thorax and abdomen smoothly scaled; dorsum clothed with coarse hairs; anal tufts large; tibiae without spines; mid tibiae moderately hairy; hind tibiae and tarsi with extraordinarily developed tufts of hair; forewing with costa straight, but arched towards apex which is subacute; termen oblique, slightly curved; hindwing large, the apex produced and acute; the termen nearly straight, but faintly bent at vein 2. Type *C. horridipes* Walk.

Sect. II. Termen of hindwing rounded; a fringed lobe at base of inner margin of forewing.

C. prominens Leech. Forewing grey with a pink tinge; the median third, except along costa, dark *prominens*. chocolate brown; its inner edge oblique and defined by the inner line, its outer diffuse; a small patch of paler ground colour reappears on inner margin; apical area with some fuscous suffusion, inwardly limited by an oblique dark line; outer line defined only towards costa; hindwing fuscous grey. Described from a single ♂ taken at Changyang, Central China.

38. Genus **Episparis** Walk.

Tongue present; frons with a short tuft; palpi erect in front of face, rough-scaled, the third segment quite

short, thrown forward; antennae of ♂ bipectinated to two-thirds; thorax and abdomen clothed with coarse hair; the tibiae somewhat hairy; forewing with the apex produced and acute; termen excised from apex to vein 4, then oblique and straight; hindwing with termen bent at vein 4, thence straight to tornus. Type *E. penetrata* Walk. from Africa.

liturata. **E. liturata** F. (= *varialis* Walk., *signata* Walk.) (68c). Forewing olive brown, sometimes pale and fulvous tinged, at others darker, suffused with fuscous; inner and outer lines whitish, conversely brown edged; inner line curved to median vein, along which it runs outwards, then inwardly oblique, straight or slightly curved; outer line excurved and wavy to vein 2, then vertical, starting from a triangular white costal spot; median shade thick, dark, excurved to median vein, starting from between two flattened white marks; orbicular stigma a black dot; reniform a hyaline white lunule bilobed at base; beyond lower end of cell a diffuse orange yellow patch; a fulvous yellow costal patch before apex; subterminal line nearly straight from vein 6, white; a large terminal brown lunule from vein 7 to 4, and three small ones below 4, all edged inwardly with white; hindwing with black cell bar, with small orange patch below it; a brown median shade and slender white outer line, both angled at middle; the large terminal lunule smaller; in the darker typical form the terminal area beyond *davallia*. subterminal line is whitish; in the lighter, ab. *davallia* Fldr. (68c) leaden grey, with all the other white markings diminished in extent and plainness, and the dark markings paler. The species is well distributed in India and the islands; the dark form is the commoner, and it is this which occurs in China.

39. Genus: **Chrysopera** Hmps.

Tongue well-developed; palpi upturned, smoothly scaled, the second segment broad, the third slender, long, and slightly curved; antennae of ♂ serrate, with fascicles of cilia; thorax and abdomen smoothly scaled; tibiae without spines; forewing with apex prominent, the termen curved and even. Type *C. combinans* Walk.; the only species of the genus.

combinans. **C. combinans** Walk. (68c). Forewing deep purplish brown, with indistinct inner, median, and outer dark lines; a pale praeapical costal semicircular patch with its outer edge excised; hindwing with a large bright yellow terminal space from costa before apex to end of vein 2. An Indian insect, of which a single specimen is recorded by LEECH from Ta-chien-lu, Western China.

40. Genus: **Hamodes** Guen.

Tongue present; frons smooth with a rounded tuft; palpi stout, short, the third segment blunt; antennae in ♂ with short fasciculations; head and thorax smoothly scaled; tibiae smoothly scaled, without spines; forewing with costa strongly arched towards apex, which is typically produced; termen sinuate; hindwing with the anal angle truncate; vein 5 from lower angle of cell. Type *H. propitia* Guen.

butleri. **H. butleri** Leech (68f). Forewing grey brown with a pinkish tinge; the terminal area olive brown clouded with dark grey; the basal area clothed with olive brown hair; inner line dusky, curved and wavy; median shade irregular, dusky, followed by a reddish brown oblique line, inwardly tinged with whitish, running from apex to inner margin beyond middle; subterminal line blackish, angulated, touching the oblique line beyond cell; orbicular stigma a black dot; reniform stigma a white dot ringed with black in the ♂, of normal shape and outlined with black in the ♀; hindwing with the oblique reddish brown line continued across it; underside yellow, with blackish cellspot and two dark lines; palpi velvety black, with the basal segment yellow. W. China.

mandarina. **H. mandarina** Leech (68e). Forewing dusky ochreous brown with obscure inner and oblique outer line, not reaching costa and outwardly edged with ochreous; this oblique line, as well as two obscure wavy lines beyond, is continued across the hindwing. A single ♀ from Omeishan, W. China.

These last two species differ from typical *Hamodes* in having the palpi less erect, the second segment more loosely scaled in front; the apex of forewing is not produced, the termen not sinuous, and the whole wing broader, as in *H. unilinea* Swinh.

Publ. 20. XI. 1913.

41. Genus: **Thermesia** Hbn.

Tongue present; frons with a sharp tuft of hair above; palpi stout, obliquely upturned, the third segment long and erect; antennae of ♂ ciliated; forewing ample, scaling rough and thick, lines thick and straight. Type *T. gemmatalis* Hbn. from America.

T. orientalis Leech. Forewing fuscous brown; the terminal area darker, limited inwardly by a dark brown line with whitish edge; inner and outer lines obscure, blackish, the outer marked with black dashes on the veins; orbicular stigma a black dot; reniform a white dot ringed with black; both wings with an indistinct pale wavy subterminal line; terminal line wavy, dark, dotted with whitish. Kwei-chow, W. China. *orientalis.*

42. Genus: **Blasticorhinus** Btlr.

Differs from *Azazia* in being more roughly scaled; the lines thick and distinct; the outer line not angled; the reniform a small dot; hindwing of ♂ with a large vesicular fold at base of inner margin, and a tuft of long hair attached to it. Type *B. rivulosa* Walk.

B. ussuriensis Brem. (= *unduligera* Btlr.) (69 e). Forewing pale brownish grey, speckled with darker; lines dark: the inner wavy; outer line dentate lunulate, oblique to vein 6, indented beyond cell, inwardly oblique below 4; both ending in black dots on inner margin; the outer line followed by a pale fascia limited by a similar line; an oblique diffuse straight dark median shade; orbicular stigma a black dot; reniform two superimposed white dots; subterminal line interrupted at costa, yellowish, edged inwardly by brown beyond cell; terminal area darker, limited above by an oblique shade from apex; terminal spots dark; hindwing with three indistinct lines; the ♀ is generally paler with less distinct markings, but in some instances the median shade ends in a black blotch on inner margin. A common species, occurring in Amurland, China, Corea, Japan, and Yesso. *ussuriensis.*

43. Genus: **Azazia** Walk.

Tongue present; frons with a sharp tuft of hair above; palpi obliquely upturned, the second segment thickened with scales, the third porrect, short; thorax and abdomen smoothly scaled; the ♂ with the tibiae simple; antennae of ♂ ciliated and with short bristles from each segment; forewing with costa straight, depressed before apex, which is subacute; the termen obliquely curved, slightly sinuous; scaling fine and smooth, glossy. Type *A. rubricans* Bsd.

A. rubricans Bsd. (69 e, f). Forewing grey or grey brown to yellow and rufous fulvous; lines fine, ferruginous; the inner curved, near base; the outer acutely angled outwards on vein 6, then inwardly oblique; subterminal interrupted, obscure; a dark oblique streak from apex; median shade dusky, thick and straight; orbicular stigma a white dot; reniform very large, edged with brown, with two black dots on it; hindwing with fine median line, and interrupted subterminal; a dark terminal cloudy border. A widely spread insect occurring in Africa, India, and the Malay Islands; recorded by LEECH from Yokohama, Japan. The typical form *rubricans* is comparatively rare and usually large; the more common form is ochreous yellow in the ♀, ab. *consuetata* Walk. (69 e), fawn grey in the ♂, ab. *transducta* Walk. (69 f). *rubricans.*
consuetata.
transducta.

44. Genus: **Hyospila** Guen.

Tongue present, not strong; frons smooth, with a strong pointed tuft of hair at top; palpi obliquely upturned, the second segment broad, with appressed scales, the third narrower, blunt, half as long as second; antennae of ♂ long and slender, pubescent, with fine short bristles; femora and tibiae loosely rough-haired; hindwing in ♂ with some veins distorted, accompanied by a semihyaline grooved space; the cell very short; vein 3 with a fringe of hair towards base. Type *H. bolinoides* Guen.

In the typical species, forming section I, the hyaline area occupies the basal half of cell and space beyond and is nearly always conspicuous on the upper side; GUENÉE's type ♂ was from Java, but the species does not seem to occur westward of that point; all the Indian, Malaccan, and Andaman examples are *signipalpis* Walk.

Sect. II. Hindwing with long semihyaline groove between veins 7 and 8, running to near apex; veins 6, 7 distorted, divergent at origin.

signipalpis.

H. signipalpis *Walk.* (= *bolinoides* *Guen.* ♀ only) (69 f). ♂ Forewing greyish fuscous, tinged with olive, darker along costa; the terminal area generally darker, and sometimes the whole wing except the space around outer line; lines black and slender; the inner inangled on the folds and projecting between; the outer excurved above and strongly humulate dentate; a thick diffuse median shade parallel to outer line; orbicular stigma a black dot; reniform a white one, lying in the median shade; an oblique straight dark line with pale inner edge parallel to termen; subterminal line obscure, wavy, sometimes indicated by a dark fascia preceding it; black terminal lunules; hindwing with the lines repeated in inner marginal half; ♀ larger, red-brown, with the markings less distinct, except the oblique line; the terminal lunules with pale yellow dots between them; palpi with basal segment snowwhite, and tip of third segment whitish, the rest black. Occurs in India, Ceylon, the Malay peninsula, and the Andaman Ids.; the examples recorded from China almost certainly belong to this species and not to *bolinoides*.

45. Genus: **Hypocala** *Guen.*

Tongue present; frons smooth, tufted above; palpi porrect, triangularly scaled, rostriform; antennae in ♂ shortly ciliated; thorax and abdomen smooth; legs without spines and only slightly hairy; forewing narrow, the termen curved; variable in the markings and suffusion; hindwing orange with black termen. A tropical genus, two species of which occur in Western China. Type *H. deflorata* *F.*

subsatura.

H. subsatura *Guen.* (69 f). Forewing dark violaceous grey; inner line waved, angled on submedian fold; outer line sinuous, excurved beyond cell, then incurved to below reniform; submarginal deep brown, double, filled in with whitish, starting from termen below apex and bluntly angled outwards at vein 3; hindwing orange; a large black cellspot connected with a black costal streak; terminal border black brown, its inner edge angled inwards at vein 2, its outer with submarginal orange spot at vein 2 and a smaller marginal one towards anal angle; fringe orange; in the typical form all the markings of forewing are indistinct; — in the form **aspersa** *Btlr.* (69 g) the scaling is much brighter and the markings prominent; — **limbata** *Btlr.* (69 f) has the forewing suffused with dark chocolate, above a broad pale inner-marginal band speckled with brown and angled upwards to lower end of cell; the costa shows a grey triangular patch before apex. All 3 forms are recorded by LEECH from Western China.

aspersa.
limbata.

moorei.

H. moorei *Btlr.* (= *efflorescens* *Moore* nec *Guen.*) (69 g). Forewing paler than in *subsatura*; hindwing with inner edge of marginal black band even, not angled inwards on vein 2; the submarginal orange spot absent; the smaller marginal one elongate. Recorded by LEECH from Kwei-chow, Western China.

46. Genus: **Calpe** *Tr.*

Tongue present; frons with a large truncated tuft of hair; palpi upturned, broadly scaled below the third segment hidden in the dense scaling, which is sharply cut off, so as to appear subquadrate; antennae short, stout, varying in structure; abdomen thickly haired at base of dorsum; pectus woolly; legs of ♂, especially the hindlegs, thickly haired, without spines; wings strong, ample; forewing with subfalcate apex and sinuous termen; inner margin with two fringed lobes, a larger one before middle, and a smaller at anal angle; vein 5 in hindwing close above 4. Larva with 16 feet; of bright colour; feeding exposed on low, plants; pupating in a slight cocoon on the ground, among leaves and moss. Type *C. capucina* *Esp.*

Sect. I. Antennae of ♂ bipectinate.

capucina.

C. capucina *Esp.* (= *thalietri* *Bkh.*, ? *sodalis* *Btlr.*) (70 a). Forewing pale or dark fawn colour, often with a pink tinge, the darker shading olive green; costal edge pale; costal streak speckled with ochreous or grey; three oblique olive greenish parallel shades, subbasal, antemedian, and median; a diffuse blackish spot at each end of the discocellular; a ferruginous nearly straight outer line from apex to middle of inner margin, sometimes deeper-edged internally; the terminal area beyond it paler, sometimes lilac grey, with some olive clouds in it, and a waved, often interrupted, olive subterminal line; the whole surface is co-

vered with pale transverse striae, formed by the slightly raised pale tips of linearly arranged scales; hindwing greenish ochreous, with darker outer line and diffuse terminal shade; the ♂ is darker, more violet grey, with the oblique line edged internally by an olive band, preceded by an additional fine olive line incurved to costa; the subterminal line sometimes marked by dark vein dashes; hindwing darker grey, sometimes fuscous. Japanese examples are usually of the same size as European; but one form, — ab. *intensiva* ab. *intensiva*, *nov.* (69 g) of which I have seen 2 ♀♀ only, is considerably larger, of a much darker violet grey, with the olive green bands well marked, and the whitish transverse striae unusually numerous; the hindwings blackish fuscous with an olive flush; this may be a distinct species. Larva green, with a prominent dark green dorsal line widened on each segment, traversing a broad brown dorsal stripe; a line above the spiracles with a black spot in middle of each segment; sometimes uniform green; feeding on *Thalietrum flavum*, the winter brood hibernating small. A South European insect, found in Spain, the Pyrenees, and Southern Alps, in Carinthia, Hungary, the Bukowina, the Balkans, and S. Russia; in Armenia, Ili, Issyk-kul, Amurland, Corea, and Japan.

C. bicolor *Moore* (69 g). Forewing brownish ochreous tinged with purplish; the intervals between the browner oblique fasciae greyish; the outer oblique line red; the pale transverse strigulae distinct; on the veins towards termen are some black and white dots; hindwing wholly clear yellow; head and thorax, palpi, and forelegs above brownish ochreous, speckled with grey; abdomen and legs yellow; near *ophideroides* *Guen.*, but smaller, the forewing of quite a different colour. An Indian species recorded by LÉECH from Omeishan, W. China.

Sect. II. Antennae of ♂ with tuberculate fascicles of cilia.

C. minuticornis *Guen.* (69 g). Like *capucina*, but the ground colour of forewing shining pinkish or violet grey, the bands and suffusion deep olive green, the oblique red line thicker and straighter; hindwing smooth fuscous, with pale yellowish fringe. Described originally from Java, and also occurring in India; recorded from Raddefka in Amurland.

Sect. III. Antennae of ♂ with pedicellate fascicles of cilia.

C. aureola *Graes.* (69 h). Distinguished from *capucina* by the deep golden brown suffusion of the forewing, which pervades the costal streak and termen, and partially obscures the lines; the oblique line is deep red, ending at apex in a dark grey spot; the cilia are also visibly crenulate; the fore tibiae and palpi are dull deep orange; on the underside the hindwing is pale yellowish ochreous with a grey subterminal band. From Sidemi, Corea, and Japan.

47. Genus: **Oraesia** *Guen.*

Allied to *Calpe*, but sufficiently distinguished by the uniseriate antennae of the ♂ and simple antennae of the ♀, and, more especially, by the long porrect rostrate palpi, which, like the frons and shoulders, are orange dotted with fiery red and veined with dark. Type *O. emarginata* *F.*

Sect. I. Termen of forewing angled at vein 4.

O. emarginata *F.* (= *metallescens* *Guen.*, *alliciens* *Walk.*, *tentans* *Walk.*, (69 h). ♂. Forewing dull greyish ochreous, tinged with pink, suffused, especially below middle, with olive; median vein and space immediately below it dark brown; two wavy oblique olive brown lines near base, the median shade straighter and thicker, followed by a fairly clear dark-edged reniform stigma; the oblique outer line double, running from $\frac{3}{4}$ of costa to an acute point on the termen at vein 7, then oblique and divergent inwards to $\frac{3}{4}$ of inner margin, the interval filled up with pinkish; beyond it an olive shade broadening downwards, and at anal angle becoming bright golden; hindwing dingy luteous with the termen dark fuscous; some examples are much suffused with purplish fuscous; the ♀ is much gayer, the pale and dark tints being each intensified; a pale pinkish streak is in some cases visible along vein 2. Larva dark violet brown, with a subdorsal series of scarlet and yellow spots, and a sublateral series of white dots. An Indian species extending into China, Japan, and the Corea.

rectistria. **O. rectistria** *Guen.* (69 h). Forewing longer and more richly coloured than that of *emarginata*; violet grey throughout, the lines and shading rich olive brown; the ♀ differing from the ♂ only in being darker; the anal triangle larger and bronzy golden; hindwing of ♀ very dark fuscous, with pale fringe; of ♂ very pale straw colour, with the veins and a faint subterminal cloud grey brown. Occurs in Japan, as well as in India.

Sect. II. Termen of forewing rounded at vein 4.

excavata. **O. excavata** *Btlr.* (69 h). Forewing purplish red brown with the lines dark olive; four before the reniform stigma, angled below costa, then oblique inwards, incurved on each fold; three beyond the reniform, more acutely angled, and less clear below; reniform large, with a black dot at its base on median vein; this vein is black defined by white lines; the oblique outer line double, the outer arm thick, the inner fine, the interspace filled up with paler, as far as vein 3, where they diverge; veins 6 and 7 finely black; a white spot above vein 7, touching the oblique line; terminal area with a pale cloud from above middle of oblique line towards anal angle; hindwing straw yellow, with a diffuse fuscous brown terminal border; the fringe yellow. Larva spins a cocoon interwoven with strips of fibre and leaves on the stems of trees, resembling the bark in colour. Occurs in China, Japan, and Corea.

lata. **O. lata** *Btlr.* Resembles *excavata*, but larger and broader, paler in coloration; forewing a mixture of lilac and bronzy ochreous; the transverse streaking golden yellow; the markings olive brown as in *capucina*; the oblique outer line reddish; hindwing dull luteous, with an outer diffuse line and broad subterminal cloud. Japan and Corea.

striata. **O. striata** *Pouj.* Forewing violaceous grey, with fine white irregular transverse streaking; outer line nearly straight, greenish brown, externally pale-edged; subterminal brown on a paler ground; the inner line, and the median shade, and the reniform stigma represented by cloudy patches; fringe deep greenish brown with a pale line at base; hindwing pale brown, still paler in basal area. Moupin, W. China.

48. Genus: **Deva** *Walk.*

Tongue present; palpi upturned, the second segment long and roughly scaled, the third erect, short, and smooth; antennae of ♂ shortly ciliated; thorax and abdomen smooth, slender, without tufts; legs smoothly scaled; forewing with termen slightly bent at middle, the inner margin sinuous, excised from anal angle to middle, where there is a projecting tooth of scales; the whole wing overlaid with metallic scales. Larva with only two pairs of abdominal prolegs. Type *D. coelonota* *Koll.*

coelonota. **D. coelonota** *Koll.* (= *chalsytoides* *Guen.*, *conducens* *Walk.*, *agens* *Fldr.*) (70 a). Forewing dull golden bronzy, mixed with brownish fuscous scales; inner and outer lines double, brown, the inner waved, the outer oblique and angled below costa; stigmata obscure, the reniform large, dull golden, with dark outline; an irregularly sinuous dull golden subterminal band with dark edges, broadening at inner margin; hindwing fuscous. Larva purple black, marbled with grey, with pink blotches on segments 8 and 12; head reddish. Occurs in China; widely spread in India and the Malay islands.

auripicta. **D. auripicta** *Moore* (70 a). Differs from *coelonota* in being larger; forewing darker, more mixed with golden brown and overlaid with bluish grey scales; the reniform bluish grey with darker centre; a dark cloud on termen below apex; the outer line not so oblique, more waved, and curved inwards to costa. Occurs in China as well as in India.

casta. **D. casta** *Btlr.* (70 a, b). Forewing pale olive brown; the lines dark brown; inner line double, filled in with orange, angled on subcostal, then oblique inwards and bent on median and vein 1, followed by an iron grey shade; in the basal area, beyond the ferruginous subbasal line a broad fascia of pale golden, with a lunule below submedian fold; outer line double, rising close to inner line, obliquely curved outwards to 6, indented beyond cell, again bluntly projecting on vein 3, then incurved to inner margin just beyond the lobe; a brown median shade from below a large reniform stigma with pale rounded edges; subterminal line very fine, pale golden edged with brown, acutely dentate, becoming double and divergent towards inner margin,

where the inner arm traverses a pale golden ochreous patch; some dark brown triangular terminal marks above vein 4, broadly bordered with bluish white, which runs up into the apical fringe; a fine dark terminal line; fringe pale, with inner half brown above vein 4; hindwing pale brownish white; fringe white. Amurland, China, Corea, Japan.

49. Genus: **Pasipeda** Walk.

Tongue present; frons smooth; palpi upturned, the second segment thickly scaled and oblique, the third long, erect and slender; antennae of ♂ ciliated, and with bristles from each segment; thorax, abdomen, and legs smoothly scaled; wings ample, with thick furry scaling; in forewing veins 8, 9 anastomose to form the areole; hindwing with cell very short; vein 5 from just above 4. Larva with only 2 pairs of abdominal prolegs; the anterior and posterior segments with short thick hairs. Type *P. rufipalpis* Walk.

P. haemorrhoea Guen. (= *patna* Feld.) (70 b). Forewing dark brown to dark fuscous; lines darker *haemorrhoea*, but obscure; the outer bent inwards below cell; the subterminal waved; a pale spot on discocellular; hindwing with obscure median and outer lines; abdomen except basal segments, fore coxae and tibiae, and the palpi bright scarlet. An Indian species, found also in W. China; the Chinese insects have the cellspot white and the dark lines edged with whitish; the whole ground colour dusted with paler. The ♀ figured is from India and shows the difference.

50. Genus: **Calesia** Guen.

Differs from *Pasipeda* Walk. in that the forewing of the ♂ has a large tuft of curved hairs beyond the cell below costa; veins 8, 9, 10 are stalked in both sexes, so that the forewing has no areole; veins 5 and 6 are convergent at $\frac{1}{3}$ from cell, then divergent. Type *C. dasypterus* Koll.

C. dasypterus ♂ Koll. (= *leucostigma* ♀ Koll., *comosa* ♂ Guen., *stigmoleuca* ♀ Guen.) (70 b). Forewing *dasypterus*, grey brown, with the lines very obscure; the outer line waved; a dark spot on the discocellular in the ♂, a white spot in ♀; head, collar, abdomen, fore coxae and tibiae, and the middle tibiae crimson. An Indian species, recorded from China also.

51. Genus: **Acantholipes** Led.

Tongue present; frons smooth, with a tuft of hair above; palpi laterally flattened, upcurved, the second segment thickly scaled, the third short, porrect; antennae long, thin, shortly ciliated; thorax and abdomen smooth; tibiae without spines; forewing triangular, the termen evenly curved. Larva slender, with only 2 pairs of abdominal prolegs; feeding on low plants. Type *A. regularis* Hbn.

A genus of several small species, only one or two of which occur in the Palearctic region.

A. regularis Hbn. (70 b). Forewing earth brown; a sinuous blackish median shade, obsolete at costa, *regularis*, very broad towards inner margin; outer line yellowish, outwardly somewhat darker clouded, straight from costa and slightly bent outwards towards anal angle; hindwing with the median shade and outer line reproduced, the latter still broader than on forewing. Larva slender, elongate, yellow tinged with reddish, covered with many fine, slightly sinuous and interrupted reddish brown lines, which form darker subdorsal and spiracular lines; spiracles white with black rings; feeding on *Glycyrrhiza glandulifera*. In Europe the species is found only in S. E. Russia; in Asia it is more widely distributed, occurring in Armenia, Pontus, Syria, Transcaspia, Ferghana, Issyk-kul, and Kashgar.

A. curvilinea Leech. Forewing iron grey sprinkled with dark atoms; inner and outer lines bandlike, blackish; *curvilinea*, the inner vertical, the outer sinuous, neither actually reaching costa; subterminal line oblique and straight, yellowish rufous, preceded by a slight irregular grey cloud, and followed by three blackish blotches, stretching horizontally, at the two extremities and in the middle; stigmata black; orbicular punctiform; reniform lunular; hindwing with the subterminal line broad, pale yellow, with fuscous edges; a dark waved median line; fringes grey with slight blackish marks at base. W. China. The species is larger and darker than the Indian *trajecta* Walk.

52. Genus: **Loxioda** *gen. nov.*

Tongue present; palpi obliquely porrect upwards, the second segment more thickly scaled, the third minute; antennae of ♂ ciliated and with bristles; thorax and abdomen smoothly scaled; tibiae without spines; forewing triangular, the apex produced and prominent, the termen oblique and even; lines oblique towards apex, the ground colour mostly ochreous. Type *L. similis* Moore. Several species occur in India, but one only extends into China.

similis. **L. similis** Moore (= *ochreifascia* Hmps.) (70 c). ♂ Forewing ochreous tinged with brown; lines dark, oblique and straight; two inner and two median indistinct; an oblique outer diffused line, with black specks on it towards inner margin, and a slight waved line beyond it; a terminal series of dark specks; hindwing with two inner lines; a median line outwardly diffused, and a subterminal line; the ♀ is paler with the lines more prominent. A North Indian species, recorded by LEECH from several localities in Central and Western China.

53. Genus: **Dragana** Walk.

Tongue present; frons smooth; palpi obliquely porrect, weak; the second segment with slight rough scales, the third short; antennae of ♂ bipectinate, the branches weak; thorax and abdomen smooth; the tibiae nearly simple; forewing triangular, the apex subacute, the termen oblique and curved. Type *D. pansalis* Walk. The genus contains only two or three species of small size and fragile build, occurring in the Indo-oriental region, one only of which is found in E. China and Kiu-shiu. It is excessively abundant in certain Eastern localities.

pansalis. **D. pansalis** Walk. (= *evulsalis* Walk., *concors* Walk.) (70 c). Forewing greyish brown or ochreous, sometimes with a rufous tinge, and slightly irrorated with dark scales; the lines darker, generally indistinct; an inner, a double median, and an outer, this last better marked, and followed by a cloudier area, sometimes with fuscous patches at middle and inner margin; a terminal row of black specks; hindwing with sinuous outer line and traces of a pale subterminal through the darker terminal area. Recorded from Ningpo, E. China.

54. Genus: **Hemipsectra** Hmps.

This genus of small and slightly built insects is distinguished by the peculiar structure of the antennae of the ♂; these are shortly pectinated as far as the middle on the outer side, and ciliated, with bristles from each segment on the inner side throughout. Type *H. plumipars* Hmps. from India.

fallax. **H. fallax** Btlr. Forewing pale olive grey; three indistinct, parallel, curved grey lines in basal area, the innermost dotted with black; a median curved band, darker on inner margin, followed by a row of dark dots; outer line grey; a row of black terminal dots; hindwing grey. Japan, Kiushiu, Corea, Central China.

55. Genus: **Brevipecten** Hmps.

Tongue present; frons flat; palpi upbent, the second segment thickened with scales, the third slight, porrect; antennae of ♂ bipectinated to $\frac{3}{4}$; thorax and abdomen smoothly scaled; tibiae slightly tufted on outer side; forewing with apex subacute, the termen obliquely curved, not crenulate. Type *B. captata* Btlr.

captata. **B. captata** Btlr. (70 c). Forewing brownish grey; lines dark edged with pale; a short subbasal line; an oblique slightly sinuous inner line; median line vertical, followed by a large triangular deep chocolate brown patch with white edges, extending from costa to lower angle of cell; outer line excurved beyond cell, then inwardly oblique, nearly touching median line on inner margin; beyond it on costa a triangular chocolate brown patch with white edges; submarginal line obscure marked by a slightly darker shade; in some spe-

imens there are three dark specks beyond lower angle of cell; hindwing fuscous grey. The species, which occurs in the N. W. Himalayas and in the Nilgiri Hills in the South of India, is also found in China.

B. consanguis *Leech* (70 c). Closely allied to *captata* *Btlr.*, but more violaceous grey; lines in the same *consanguis*. position relatively, but the inner line is more oblique, and the outer more sharply angled; the median line is straight, not sinuous; the dark costal patch larger, not indented on its outer edge, while that before apex is more triangular; the examples on the average smaller. Central and Western China: Ichang, Changyang, Nitou, Moupin.

B. apicalis *Leech*. Forewing pale cinnamon brown; the lines paler; the inner oblique, the outer curved; *apicalis*. the stigmata outlined with pale; on outer third of costa a conspicuous chocolate brown blotch with its outer edge indented; below it above inner margin a small brown spot; hindwing cupreous brown, the termen suffused with fuscous. The type specimen from Chekiang, E. China; there is a specimen in the British Museum collection from Burma.

56. Genus: **Scedopla** *Btlr.*

Tongue present; frons smooth; palpi upturned, the third segment short; antennae of ♂ bipectinate or ciliated; hindwing with veins 6,7 stalked. Type *S. regalis* *Btlr.*

Sect. I. Antennae of ♂ bipectinate.

S. regalis *Btlr.* Forewing dark brown with a purple sheen in basal $\frac{2}{3}$, terminal third deep sandy *regalis*. yellowish; a broad band across middle of wing indicated by sinuous black lines limiting it; cell mark black; subterminal line denoted by a dark costal patch before it; terminal dots black, minute; hindwing brown, with the costal area whitish; termen and fringe sandy whitish. Yokohama, Japan.

Sect. II. Antennae of ♂ ciliated.

S. bifidalis *Leech*. Forewing with the basal two thirds brownish buff, clouded along termen and towards *bifidalis*. apex with darker brown; the line that limits the two shades blackish edged with whitish, sharply toothed below middle; a dark wavy inner line; a discal series of black dots forming an indistinct Σ ; hindwing fuscous, paler towards costa; underside fuscous; the hindwing with a darker central line.

S. mollis *Btlr.* (70 c). Forewing pale grey with a lilac tinge in places; costal edge yellow; inner *mollis*. and outer lines brown, the inner bent, the outer excurved, below costa, then nearly parallel, inwardly oblique; a median shade close before outer line; subterminal slight, obscure; termen diffusely cupreous brown; fringe purplish grey; hindwing pale silky brown; fringe cream colour. Yokohama, Japan.

57. Genus: **Anumeta** *Walk.*

Tongue present; frons smooth and flat; palpi obliquely porrect upwards, the second segment well scaled, the third slender, porrect; antennae of ♂ shortly ciliated; thorax and abdomen smoothly scaled; foretibiae with spines and terminal claws; mid and hindtibiae with tufts of long spinose hair at middle and end; forewing with costa and inner margin nearly straight; apex blunt; termen obliquely curved; hindwing whitish, with a black blotch across veins 2 to 4 before termen. Type *A. atrosignata* *Walk.* from N. W. India. A genus of desert insects found in Central Asia, Arabia, and N. Africa, in the Old World.

A. atrosignata *Walk.* (70 c). Forewing luteous grey or whitish, flushed with brownish fuscous; inner, *atrosignata*. outer, and subterminal lines dark with slight pale edges, obliquely curved outwards from costa, then oblique inwards, parallel to termen; a row of dark terminal dots; hindwing white, flushed with pale brownish grey, leaving a central curved whitish band, and a whitish space before termen containing a black blotch along termen from vein 2 to 4; a dark terminal line; fringe whitish; the ♀ is larger and darker. In this form,

described originally from Sind in N. W. India, and which also seems to occur in Afghanistan and the Transcaspian region, the pale ground colour is predominant; in *spilota* Ersch. (70 d) also occurring in Transcaspia, the fuscous suffusion is stronger and the white ground colour is more or less wholly obscured; this darker form also occurs in the Algerian Sahara.

cashmirensis. **A. cashmirensis** Hmps. Forewing brown, thickly suffused with grey; a median white band, limited inwardly by the dark brown inner line, and outwardly by the outer line, which is strongly excurved beyond cell and as strongly incurved to its lower angle; subterminal line pale, indistinct, nearly straight; a dark line on discocellular; hindwing brown; the interspaces in basal area whitish; a white spot on termen at vein 2; fringe white. Kashmir.

chinensis. **A. chinensis** Alph. Resembles *Anydrophila picta* Christ., but larger, and differing in the longer cilia-tions of the antennae of the ♂. Found in Mongolia, W. China, and Kashgar.

dentistrigata. **A. dentistrigata** Stgr. (70 d). Forewing white tinged with grey; veins black; subbasal line black, biangulate; inner line black, zigzag, angled inwards on each fold, outwards on subcostal vein and on each side of submedian fold; outer line oblique outwards, bent on vein 6, roundly projecting between 3 and 5, deeply indented on veins 1 and 2, preceded by a brownish shade; veins black before subterminal line, which is white and runs close to termen, indented on both folds, preceded by a blackish shade; terminal area chocolate brown; a black terminal line edged with white; hindwing whitish, washed with pale brown; veins brownish; an irregular brownish grey subterminal cloud, containing a dark blotch at termen below middle and a slighter one at anal angle; fringe white. Transcaspia, Issyk-Kul, Tibet; in ab. *languida* ab. nov. (70 d), from the Ili district the ground colour is pale ochreous grey, with all the markings pale brown and obscure.

henkei. **A. henkei** Stgr. (70 e). Forewing white speckled with black, more or less flushed with pale reddish brown; veins marked with black and white scales; the inner, median, and outer lines blackish, waved, the outer black, more defined, vertically curved, approximated to median line below middle; a dark diffuse spot at end of cell; subterminal line pale, undulating, preceded by a dark shade following a dark curved band; a black spot at apex; a row of black white-dotted terminal spots; hindwing white, with double dark line before middle, and a broad blotch between veins 2 and 4; fringe white, tinged with brown beyond the blotch; the ♀ is deeper brown and somewhat larger; the base of hindwing suffused with brownish fulvous. Flies on the desert steppes of S. E. Russia and in the Transcaspian district.

harterti. **A. harterti** Roths. (70 d). ♀ Forewing brown grey; the veins darker; costa and inner margin greyer; inner and median lines oblique outwards from costa, then incurved and obscure; subterminal line white, wavy, starting from a praeapical spot; black wedge shaped marks on termen between veins; fringe broad and brown; a diffuse pale patch at base of inner margin, and a dark streak from base below cell; hindwing paler brown, with pale median space; terminal area white except at apex, with a double subterminal black spot from 2 to 4; a fine black crenulate terminal line; fringe whitish, the tips darker. The largest species of the genus. Described from a single ♀ from North of El Golea, Central Algerian Sahara.

cestis. **A. cestis** Mén. (70 e). Forewing pale or dark grey, washed with brownish, and with dark fuscous suffusion, confined in the ♂ to a wedge shaped area below middle, extending from vein 2 to 5, the costal half and the inner margin remaining paler; in the ♀ the whole wing is suffused with blackish fuscous, except the terminal area; inner line black, angled on subcostal and median veins and on submedian fold; the reniform stigma a black ring; a row of black terminal dashes between the veins, externally white tipped; hindwing white; the inner margin with a tawny cloud in the ♀, which is quite faint in the ♂; a large irregular blackish subterminal cloud, swollen in middle into a black blotch, very large in ♀ and touching termen; — *uniformis.* in the ab. **uniformis** ab. nov. (70 f) the whole forewing is uniform reddish brown without blackish suffusion; *punctata.* in ab. **punctata** Mén. (70 f) the forewing is greyish ochreous with very little suffusion, and all the markings distinct, the subterminal band of hindwing and the black spot below middle both reduced and inconspicuous. Occurs in the desert regions of S. E. Russia, Transcaspia, Ferghana, Ili, and Issyk-Kul; also in Algeria; the ab. *uniformis* is equally distributed, but *punctata* appears restricted to the eastern localities.

cestina. **A. cestina** Stgr. (70 f). Forewing whitish dusted with black, with grey suffusion in places, darker and mixed with blackish in the ♀; a slight redbrown tinge is often visible along the two folds; veins mottled black and white; lines black, starting from distinct black costal spots, the inner strongly angled, the outer excurved, the median shade variable; reniform stigma a dark spot; submarginal line white, preceded by

an interrupted dark shade and followed by a dark spot at apex; the terminal area rufous and fuscous; hindwing white, more or less grey tinged, especially in ♀; subterminal band black, its inner edge nearly straight, its outer protending a quadrate black blotch to termen below middle; fringe white; this border is much narrower in the ♂; underside of hindwing with two separate black submarginal blotches; — a paler form occurs, — ab. *denotata* *ab. nov.* (70f) — in which the ♀ is more uniformly pale grey, like the typical ♂, with the lines and markings not black, and the ♂ is dull white, with no grey dusting, the reniform stigma black and distinct. Transcaspia, Afghanistan, Tura. A smaller species, distinguished by its black and white mottled appearance.

A. fricta *Christ.* (70d). Forewing pale grey dusted with darker, in ♀, as also in some ♂♂, with a brownish grey or dark grey suffusion from base along and below cell to apex before subterminal line; inner line interrupted, blackish, outcurved in middle and inwardly oblique from submedian fold; outer line interrupted below costa, dentate and black below median; an obscure dark cell spot; subterminal line whitish, preceded by a dark shade with a strong sharp projection on vein 4; fringe mottled dark and white; veins before subterminal line often blackish; hindwing white; the base tinged with grey or ochreous; a diffuse irregular subterminal dark band, emitting a subquadrate blackish blotch to termen below middle; in the ab. *ochrea* *ochrea. ab. nov.* the ground colour of forewing is ochreous grey, the markings very distinct, and the basal half of hind wing yellow ochreous. Transcaspia.

A. hilgerti *Roths.* (70f). Larger than *fricta*, suffused with brownish grey, the suffusion stronger in the ♀; veins all blackish throughout; lines edged with pale, not so much interrupted, the outer distinctly outcurved below costa; the projection on vein 4 of the subterminal line blunter; the terminal black spots stronger; fringe mottled pale and dark grey brown; hindwing white throughout; the subterminal band much broader and blacker in the ♀, diffuse as in *fricta* in the ♂; in the ab. *brunnea* *ab. nov.* (70g) the forewing and fringe are wholly brown, with the veins and terminal spots only black. The Algerian Sahara.

A. fractistrigata *Alph.* (70g). Forewing pale grey, powdered with darker; often with a brown tinge along both folds; inner line interrupted, angled outwards in both folds and inwards on median vein; outer line black, excurved to vein 2, indented on it and vein 1, followed by a distinct white edging; subterminal white, preceded by a dark grey, sometimes blackish shade, projecting above 6 and below 4; the veins dark; a row of black terminal dots; cell spot dark, generally indistinct; fringe pale mottled and streaked with grey; hindwing white, in basal half tinged with ochreous and grey, with an outer line followed by a pale band; the terminal area diffusely fuscous grey, with a black blotch below middle; the terminal line black; fringe white. Transcaspia.

A. sabulosa *Roths.* Forewing yellow ochreous, suffused with greyish fuscous; inner and outer lines blackish comparatively vertical, the inner slightly excurved below middle, the outer bent below 6, crenulate; subterminal white, indented on both folds; outer line also edged with whitish; veins dark; termen and fringe ochreous; terminal black and white spots; hindwing whitish, suffused with grey-brown; a median line, the termen, and fringe white; a black blotch between veins 2 and 4 attached to subterminal band. The Algerian Sahara.

58. Genus: **Aleucanitis** *gen. nov.*

Differs from *Leucanitis* *Guen.* in the mid tibiae not being spined, but armed with tufts of spinous hair, chiefly below the upper end; the foretibiae in many cases with a pair of terminal claws. Type *A. caolino* *Lef.*

Sect. I. Foretibiae with distinct terminal claws.

A. flexuosa *Mén.* (70g). Forewing pale grey dusted with darker, the basal and terminal areas suffused with brownish fuscous; inner line double, black, oblique, indented on vein 1; outer line blackish, broken up into spots, incurved from vein 4 to 2, then oblique outwards, followed by a dark fuscous shade edged by the pale subterminal line, which is deeply indented on both folds and marked with white scaling at costa; a blackish spot at apex; reniform stigma an obscure dark lunule; hindwing white, suffused with fuscous, except along the broad black terminal border, which in its turn is edged with white, except at veins 3 to 4, where there is a deep black blotch; the fringe white. Occurs in Bokhara, Transcaspia, Sarawschan, Ferghana, Ili, Issyk-Kul, Korta, Kashgar. The form *singularis* *Koll.* from Persia has the forewing yellowish grey, and is usually somewhat larger than the type; *mongolica* *Stgr.*, described from a single ♀ from the Uliassutai Mts., has the

white margin beyond the black terminal border of hindwings broader, probably a merely accidental exaggeration; *caspica*. — *caspica* Stgr., from the shores of the Caspian sea, is a darker form, the forewings fuscous or brownish grey, and the white of the hindwing more darkened with fuscous.

sinuosa. **A. sinuosa** Stgr. (70 g). Like *flexuosa* Mén., but the ground colour of forewing whiter; the dusting and shadings blacker; a white costal striga beyond outer line; markings exactly the same; hindwing with the basal half pure white, except only a slight grey tinge along inner margin. Transcaspiæ, Bokhara, Afghanistan.

tenera. **A. tenera** Stgr. (70 g). Forewing dull blue grey speckled with brown; the usual lines brownish, but only just visible; the subterminal thickened towards costa; the reniform visible; hindwing pale brownish with blackish cell mark and broad smoky fuscous marginal border containing a short pale streak on termen at vein 3, embracing a round black marginal blotch; underside pale greyish ochreous with darker borders; cell spots black; both wings with a large black blotch below middle of termen. Recorded from Narün, S. E. Russia, Ili, Issyk Kul; — the form *antiqua* Stgr. (70 g), from Kashgar, has the forewing paler, luteous grey, the basal area and that between outer and subterminal lines deeper grey; the lines blackish edged with yellow; the subterminal yellow luteous, distinct; hindwing grey in basal half with a pale whitish blotch beyond the dark cellspot; apex and a subterminal band bent to termen at vein 2 darker grey, encircling a semicircular white blotch on termen containing a round deep black blotch; fringe white; underside of both wings whitish; the cell spots and outer bands pale brownish grey; a round black submarginal spot in each wing on veins 3 and 4.

aberrans. **A. aberrans** Stgr. (70 h). Forewing very pale bluish grey; the lines all starting as oblique black costal streaks, the inner line oblique to middle of wing, yellowish from subcostal to vein 1; a slight rusty yellow cellspot; the median streak, like the basal, not reaching beyond subcostal vein; outer line black accompanied by yellow scales, angled on veins 6, 4 and 3, and conjoined below vein 1 by a black streak to inner line; subterminal line pale, hardly visible except just at costa; veins towards margin dark; hindwing sordid whitish, with veins and cellspot brown; a smoky black terminal border with two whitish blotches; fringe white. Ili, Issyk Kul, Kashgar.

stuebeli. **A. stuebeli** Calb. Forewing bluish ashgrey, suffused in basal half with blackish, in terminal area more brownish, darkest in cell; at end of cell a yellowish white oblong externally diffuse reniform stigma; veins blackish, especially before termen; three black costal spots, from which the lines arise; a short tooth only from the subbasal spot with a black mark below it; the inner line forms a short inward tooth, then runs obliquely to below reniform, where it is connected by a black streak with outer line; this is fine, excurved, irregularly dentate; from its projection at vein 5 a blackish shade runs through cell 6 to termen; hindwing dirty white, dusted with brown at middle; a broad black terminal border, narrowing off to anal angle; on its outside at apex a dirty white spot. Described from a single ♂ from the desert. of El Arish, S. E. Palestine. Its position here is not certain.

Sect. II. Foretibiae without or with very short terminal claws.

The first two species have the hindwings yellow.

catocalis. **A. catocalis** Stgr. (70 h). Forewing yellowish grey, dusted and suffused in parts with darker; basal patch fuscous grey, limited by the double black waved inner line; outer line black, slender, descending to vein 2, with a blunt angle on vein 6, incurved to below reniform, then waved to inner margin, followed by fuscous shading to the evenly dentate subterminal line, which is pale, emphasised by the black before it; reniform stigma grey, with black outline obscured by a diffuse median shade; the median area on each side of it paler yellow; hindwing deep yellow, with a somewhat triangular black lunule at end of cell, a black dentate-edged subterminal band, and two terminal patches of black; fringes grey mixed with yellowish; in ab. **grumi** Alph. (70 h) the hindwing is pale yellow. Ili, Issyk-Kul, Tarbagatai Mts., Ferghana, Sarawschan.

langi. **A. langi** Ersch. (70 h). Forewing pinkish ochreous, dusted with grey; inner line black, curved inwards below submedian fold, preceded by a leaden grey band inwardly edged with darker, toothed inwards along median vein to join subbasal line; outer line double, acutely dentate outwards, strongly inangled beyond cell the inner arm running inwards below 3 to beneath reniform, then vertical, the outer arm only curved to inner margin; reniform subtriangular, grey with black edges, its inner edge in line with lower half of outer

line; median shade double, grey and straight; subterminal line sinuous, sandy yellow, preceded by black wedge shaped marks and followed by a grey line; a dark festooned terminal line; hindwing dull yellow, slightly dusted with grey; a dark grey cell humule; a broad fuscous outer band with angled edges; dark terminal patches above and below middle, protruding across the pale fringe. Afghanistan.

A. scolopax *Alph.* Larger than *catocalis*; forewing brownish grey, instead of yellowish; the hindwing *scolopax*. paler; markings as in *catocalis*, but all less clearly defined, and brown instead of black. Recorded from Nan Shan, Kuku Nor, and Amdo, Tibet.

A. saisani *Stgr.* (70 i). Forewing bluish grey dusted with black; the central area white, with slight *saisani*. grey dusting in the ♂, and denser ochreous grey dusting in ♀; inner line double, thrice outcurved, the outer arm thick and black, the inner dark grey and dentate inwards, filled up with olive yellowish; outer line black, fine, somewhat bracket-shaped to vein 3, then roundly curved inwards and upwards to touch the reniform, and again bracket-shaped to inner margin, edged throughout by olive yellow and grey; the subterminal line, which is deeply indented beyond cell, and incurved below middle, is preceded by a black shade forming a blotch at costa, and followed by a yellowish line; reniform stigma olive yellowish with darker outline edged with whitish, beyond a dark median shade from costa; hindwing white flushed with fuscous, especially in ♀; a very broad black border with two white terminal spots, between which the black is deeper, and the fringe, otherwise white, is blackened also. Transcaspia, Afghanistan. Tarbagatai Mts., Ili, Issyk-Kul, Armenia. The form **clara** *Stgr.* (70 i) from Mardin, Mesopotamia, has the median area nearly white. *clara*.

A. obscurata *Stgr.* (70 k). Forewing greyish ochreous or fuscous ochreous with darker suffusion; basal area leaden grey, edged by the double black brown-filled inner line, which forms a projecting prominence on submarginal fold and is then retracted basewards; outer line fine, black, dentate on subcostal vein, and on veins 6, 4 and 3, the veins to each tooth dark; the lower part of outer line is straight and slightly outwardly oblique, in line with the black inner edge of the reniform stigma, which is narrow above and widened below; the pale space before it contains two brown lines forming a shade; submarginal line pale, waved, followed by a darker line and preceded by a velvety black line emitting teeth inwards; the pale terminal area darker towards the dark waved terminal line; fringe brown with pale base; hindwing dirty luteous, with a fuscous terminal border, partly broken by a pale submarginal twice-arched pale cloud; cell lunule and veins fuscous. Occurs in Central Asia, the Tarbagatai and Ala Tau Mts., Ili, Issyk-Kul, Ferghana and Sarawschan. The ♂♂ are larger and generally paler than ♀♀. *obscurata*.

A. cailino *Lef.* (= *caylino* *Hbn.-Gey.*) (70 i). Forewing blackish fuscous in basal area and the space between *cailino*. outer and subterminal lines; terminal area bluish grey, darker along termen; space between inner and outer lines brownish ochreous; inner line double, the outer arm black and straight, bent on submedian fold; the inner duller and more diffuse, the space between them olive; outer line black, acutely dentate on vein 6, and bluntly projecting on 3 and 4, incurved to below reniform, then vertical, in a line with the black inner edge of the reniform; the pale inner half of median area is traversed by a brown line, separating its ochreous inner portion from the brown outer area, which contains another brown line; subterminal line grey edged with darker; hindwing white, the cellspot, the median vein, and veins 2 and 3 finely dark; a black terminal border containing a sinus on submedian fold, and a white spot on termen beyond. This species is found in the South of Europe, S. France, Spain, Greece, and the Crimea; in Algeria; and in Asia in Asia Minor, Armenia, Syria, Transcaspia, Ili, and Issyk-Kul. The form **philippina** *Aust.* (70 i), from Algeria, described from a single *philippina*. ♀, is darker in the forewing, and the terminal border of the hindwing is broader and shows a deeper sinus; — the *ab. obscura* *Stgr.* (70 h), from S. E. Russia and Ala Tau and Tarbagatai Mts., is rather smaller than typical *obscura*. examples, with the forewing darker and the white of the hindwing discoloured; the terminal border occupying half the width of the wing. Larva elongate, greyish yellow, with a redbrown appearance, caused by rows of many fine red-brown dots; dorsal line obscure, very slender, redbrown, often interrupted; subdorsal plainer, double, ferruginous on each segment; spiracular line redbrown, obscure; forefeet very long, yellowish brown; feeding on *Salix viminalis*, pupating in a grey cocoon. W. China, Mongolia, and Kashgar.

A. herzi *Alph.* Resembles *picta*, but with broader and paler forewings; the reniform larger; *herzi*. the median band wider; the inner line more waved; the markings of the hindwing more broadly and intensely black. Tura and Armenia.

A. kusnezovi *Johns.* Differs from *herzi*, with which it is easily confounded, in having a protuberant *kusnezovi*. frons; forewings narrower, more rounded at apex; all the markings slightly variant. Transcaspia.

caucasica. **A. caucasica** Kol. (= *astrida* Ev.) (70i). Forewing bluish grey or brownish grey; inner line black, faintly curved, abbreviated at each end, preceded by a dense brown shading; outer line black, starting from subcostal vein (the costal portion being obsolete), incurved beyond cell and shortly projecting on veins 3, 4, incurved to below reniform, and obliquely curved outwards to inner margin; followed by a broad brown shade merging into paler brown or bluish grey; sometimes a subterminal line is present, dividing the dark inner from the paler outer area; black terminal lunules before fringe; reniform stigma grey, with dark centre, very indistinct; median area in ♀ broad, in ♂ narrower, pale grey, the inner band between subcostal vein and vein 1 fulvous; in both sexes dusted with grey, and darkest along costa; hindwing dull whitish, with broad blackish terminal border containing a pale blotch on margin at vein 3, sometimes curved and continued to termen above vein 5; a dark lunule at end of cell connected with the border. Armenia, Kurdistan, Sarawschan, *aksuensis*. Ferghana, Ili, Issyk-kul, Transcaspia, Siberia; the ab. *aksuensis* Fuchs (70 i) has the interval between inner and outer lines from subcostal vein to vein 1 brighter yellow; the hindwing blacker with all the white areas greatly reduced.

hyblaeoides. **A. hyblaeoides** Moore (= *caucasica* Alph. nec Kol.) (70k). Forewing dark blue grey or slaty grey, finely dark-dusted; lines darker, hardly visible; inner line curved, nearly vertical; outer line only plain in the lower part below reniform, which is dark and cloudy; subterminal line paler, fairly distinct, followed by a thick rusty fuscous line or shade wider at each end; marginal lunules dark; fringe brownish; hindwing whitish tinged with grey; the cell-lunule and veins blackish; a broad blackish terminal border with a large somewhat angled whitish patch from below vein 2 to 4; fringe white; in the ab. *tincta* ab. nov. (70 k) the two parts of the median area are dull rust colour like the edge of subterminal line, and the dark shadings are more defined. Kashgar, Pamir, Kappak, Alexander Mts.; the aberration from Turkestan.

sesquilina. **A. sesquilina** Stgr. Resembles *caolino* in markings and coloration, but darker; the brownish middle band and the large tooth shaped blotch above it never mixed with white; the blotch shorter and less sharply dentate, uniform light brown in colour; the basal half of hindwing and underside of both wings dirty whitish grey, not white; the subsp. *sequax* Stgr. has the hindwings snow white, with broad black terminal border and with no dark cell lunule, and the underside of forewings broadly and deeply black; the single example was from N. W. Kurdistan; the type form from Samarcand, Ferghana, and Thian shan Mts.

yerburyi. **A. yerburyi** Btlr. (= *schematias* Meyr.). Forewing dark slate grey; inner and outer lines black, the inner oblique outwards, irregularly waved, followed by a broad curved pure white band; outer line squarely outcurved beyond cell, running in along vein 4 to below reniform, thence to inner margin, forming below middle the outer edge of the white band; reniform stigma dark grey, black-edged, followed by a white blotch in the curve of outer line; subterminal line sinuous, starting from a white costal tooth; terminal area paler grey, with the veins darker; a black festooned terminal line; fringe fuscous; hindwing white in basal half, the outer half slaty fuscous; extreme termen white with a black terminal blotch beyond veins 3 and 4; a fuscous brown streak to base along median vein and another along vein 1; fringe white, fuscous towards anal angle. Aden.

sculpta. **A. sculpta** Püng. Forewing pale grey with dark grey and fuscous suffusion; inner line black, oblique outwards, excurved below middle and incurved basewards, edged by white and preceded by a slaty fuscous band, the basal area within it being pale grey; reniform stigma dark, swollen outwards below, edged internally by a black white-margined bar; outer line black acutely dentate on veins 6, 4, 3, curved inwards and upwards along vein 3 to below inner edge of reniform, then slightly outwards to inner margin; median space brownish fuscous; space beyond reniform dull white with grey clouds; subterminal line white, preceded by black wedge-shaped marks, indented on each fold, followed by a whitish band before the dark termen; a black festooned terminal line; fringe dark grey with a white line at base; hindwing white smudged with grey, with grey cell lunule and veins; a broad dark fuscous terminal border, with diffuse whitish patches at end of vein 2 and beyond cell. From Togus-torau.

indecora. **A. indecora** Johns (70 k). Forewing dull grey densely powdered with darker grey; the veins finely blackish; lines blackish, obscure; inner line double, obliquely waved outwards, angled on submedian fold, the inner arm thick and grey, the outer fine and black; outer line sharply indented on vein 5, then rounded, running up along vein 3 to below the indistinct grey reniform, then sharply dentate to inner margin, the tooth on submedian fold nearly touching the angle of inner line; subterminal line pale, only visible at costa; a dark festooned terminal line; fringe mottled dark grey and white; hindwing whitish, in basal half suffused with grey, except just beyond the blackish cellspot; terminal border smoky blackish, with two rather large whitish

patches on termen; underside dull white, speckled with grey in hindwing; costa of forewing dark grey; black cellspots and a dark grey subterminal band on each wing; terminal area of forewing grey, of hindwing whitish with a black marginal spot at end of veins 3 and 4. From Turkestan.

A. axuana *Püng.* Forewing brownish grey mixed with whitish, coarsely scaled, with 2 large pale blotches; the first oblique, limiting the oblique inner line, toothed outwards on median vein and submedian fold; the second filling the curve of outer line beyond the reniform, strongly constricted at middle; subterminal line pale; veins terminally dark; terminal dots black; hindwing whitish; a large black cell lunule; a blackish subterminal band; below middle of termen a large white space containing a black blotch. Described from 2 ♂♂ from Aksu, E. Turkestan. *axuana.*

59. Genus: **Armada** *Stgr.*

Tongue well developed; frons with a strong chitinous projection varying in shape; palpi sinuous, the second segment slightly curved and oblique upwards, the third porrect, both closely scaled; antennae of ♂ simple, lamellate; mid tibiae of ♂ with a tuft of spinous hairs at top; abdomen of ♂ long, with strongly developed anal tufts; forewing with veins 7, 8 and 9, 10 stalked, 8 and 9 forming the areole; hindwing with veins 3, 4 shortly stalked. Type *A. dentata*.

Sect. I. Frons with the projection laterally flattened, prow-shaped.

A. panaceorum *Mén.* (= *beckeri* *Stndtjs.*) (70k, l). Forewing ochreous grey with brownish grey suffusion and shading; inner and outer lines ochreous edged with black; inner line slightly angled outwards on subcostal vein, more strongly on submedian fold, and more acutely below vein 1, on which it is acutely inangled; the submedian fold black from base to inner line; the veins paler; outer line projecting on veins 3, 4, insinuate on submedian fold; orbicular stigma oval, oblique, brown in an ochreous ring; reniform oblong, elongate, reaching below median, brown, with dark outline and ochreous ring; subterminal line pale, preceded by black wedge-shaped marks, followed by a brownish terminal space; terminal line black; fringe ochreous, with a black middle line and brown tips; hindwing white, the extreme base grey; a subquadrate black cell mark and broad black terminal border, containing a pale subterminal spot on and above vein 2; fringe white, with a dark patch between veins 3 and 4. S. E. Russia the Kirghiz steppes, Taurus, Armenia, Transcaspia, Samarcand, Ferghana, Tibet; Egypt, Algeria. *panaceorum.*

Sect. II. Frons horizontally flattened, the projection ending in a tridentate edge.

A. hueberi *Ersch.* (70 l). Forewing cream white; inner line thick, black, projecting on submedian fold; outer line black, excurved to submedian fold, lying in a white band; subterminal line interrupted, formed of pale spots preceded by black wedge shaped marks; median and terminal areas filled up with brown and leaden blue scales; stigmata small, black with some white scales; fringe mottled white and leaden grey; hindwing white; a large subquadrate fuscous cellspot; a broad fuscous terminal border, with a white spot in it between 2 and 3; inner margin smoky brown. Transcaspia, Ferghana, Samarcand. *hueberi.*

A. eylandti *Christ.* (74 a). Forewing cream white; the cellspot, some costal spots, and the two lines black brown; both lines much interrupted, the median in the middle, the subterminal on the folds; fringe brown in basal half, mottled with white in outer half; hindwings luteous brown, whiter towards base, with a slight dark cellspot. Transcaspia. This species is said to have the same tridentate edge of frons as *hueberi*, but it scarcely looks as if it belonged here. *eylandti.*

Sect. III. Frons cylindrically produced and truncate, with a central conical projection.

A. dentata *Stgr.* (70 l). Forewing ochreous, varied with lilac grey and ochreous grey; inner and outer lines black and distinct; the inner wavy, angled outwards on submedian fold; the outer deeply and squarely *dentata.*

excurved above middle, indented on submedian fold, where it forms a large black lunule; orbicular stigma oblique, oval, pale brown in a white ring; reniform large, trilobate, olive fuscous with white outline; subterminal line preceded by a series of black wedge shaped markings, alternating with others lilac grey; terminal area brownish grey; fringe white, with dark triangles in basal half and brown spaces in outer half beyond each fold; hindwing as in *hueberi*, but the white spot in terminal border enlarged into a large tooth, with two or three smaller ones above it. Transcaspia.

eremophila.

A. eremophila *Rbl.* (70 l). Forewing whitish, more or less washed with olive ochreous; inner and outer lines black, indistinct, except below middle, where they approximate and are conjoined on submedian fold; subterminal line white preceded by black wedge shaped marks; a clear space of white ground colour from costa to middle beyond outer line; terminal line black; fringe white, with a brown middle line; hindwing white; cellspot round, fuscous; terminal border black, with a tridentate white blotch of which the middle tooth, between veins 3 and 4, is longest. Syria and Algeria.

clio.

A. clio *Stgr.* (70 l). Differs from *dentata* in the basal area and space between outer and subterminal lines being lilac grey dusted with brown; inner and outer lines brown, becoming black below middle, conversely edged with white; the median space filled in with fuscous brown, except the narrow space between reniform stigma and outer line, which is white; orbicular stigma pale, round, rarely distinct; reniform oblong, with dark outline, also obscure; subterminal line pale, interrupted, preceded by a dark fuscous shade containing indistinct black marks; terminal area brownish grey; fringe white flecked with black; hindwing as in *hueberi*. Transcaspia.

secunda.

A. secunda *Ersch.* (70 l). Forewing olive grey brown; inner line black, vertically waved, broadly edged with white internally; outer line widely outcurved round cell and indented on submedian interval, outwardly edged with white; the median area somewhat darker; orbicular stigma round and large, white with an ochreous centre; reniform large, white, with black lunule internally; subterminal line white, preceded by some black scaling, indented strongly on the two folds; fringe white chequered with grey; hindwing grey brown with dark discal bar and outer curved line, with darker terminal border. A smaller species, from Transcaspia.

Sect. IV. Frons produced as a pointed beak, with a tridentate edge in front below.

kisilkumensis.

A. kisilkumensis *Ersch.* (70 l). Forewing bone colour stained with pale brown; inner line black, straight; outer line pale brown, obscure, excurved above, enclosing a small pale space beyond the reniform, and marked with black below middle; stigmata, which are black edged, the orbicular round, and median area leaden fuscous, the submedian fold marked with ferruginous; a dark band between outer and subterminal lines; fringe grey; hindwing bone colour suffused with fuscous; a darker cellspot and fuscous border; fringe bone colour, with a grey patch below middle; underside pale ochreous, the forewing with a large, the hindwing with a narrow, black cellmark; head, thorax, and abdomen ochreous; face brownish grey. Transcaspia.

limata.

A. limata *Christ.* (? = *elongata* *B.-Haas*) (70 l). Forewing brown in basal third, limited by the oblique black, outwardly white edged inner line; outer line finely black, lunulate dentate, incurved below 4, approaching inner line on inner margin; median area leaden bluish with paler scales intermixed; reniform stigma a black lunule edged with ochreous, followed by a tawny grey patch; the outer line is edged with pale brown; terminal area slaty fuscous, darker before the powdery subterminal line; fringe dark and light grey; hindwing brownish luteous, with broad diffusely edged fuscous terminal border and dark cell spot; fringe white; in the ♀ the basal area is blackish, the patch beyond cell greyish white; in the hindwing the pale basal area is ampler in ♂ than in ♀. Transcaspia. The antennae of the ♂ are shortly ciliated.

60. Genus: **Eremonoma** *gen. nov.*

Tongue present; frons flat; palpi upbent, the third segment as long as second, bent forwards at an angle and broadening at apex. Antennae of ♂ long, with very fine sessile fascicles of cilia; thorax and dorsum smoothly scaled; foretibiae with 5 or 6 spines, one long; midtibiae with tuft of spinous hairs at top. Type *E. straminea* *Bang-Haas*.

E. straminea *Bang-Haas* (71 a). Forewing pale to brownish ochreous, dusted and suffused in some *straminea*. cases with blackish; a velvety black slightly curved streak from base along submedian fold; a round blackish reniform, sometimes with a black dash through it; in the darker suffused specimens a dark curved outer line is visible and a blackish praesubterminal shade; terminal lunules black; fringe whitish with grey lines; hindwing white, with the veins terminally darker and a diffuse subterminal cloud; fringe white. The Algerian Sahara.

61. Genus: **Teinoptera** *Calb.*

Tongue well developed; frons with corneous prominence bearing a strong quadrangular projection as in *A. panaceorum*, thickly covered with scales; palpi upturned, long, the second segment thickly scaled, the third porrect, smooth, spatulate at extremity; antennae of ♂ simple; forewing narrow, elongate, with produced apex; the costa sinuous; termen even, vertical above, obliquely rounded below; hindwing large, elongate; vein 5 weak, well separated from 4; 6, 7 short stalked; costal anastomosing for some distance with subcostal. Type *T. culminifera* *Calb.*

T. culminifera *Calb.* Forewing pale bluish grey, whiter at apex; costa and an oblique subapical streak *culminifera*. brownish; lines absent; reniform stigma ill defined, whitish; an elongate black streak from base to termen along submedian fold, broader in basal half, browner terminally, edged on both sides with white; a second starting from reniform and ending at middle of cell 5; a third from middle of cell 6, running through cell 7 to termen, both edged with white streaks; a short black oblique streak on costa near base; veins black dusted with white, lined with white streaks before termen; a row of black terminal dots, that in cell 3 large and produced basewards as a line; hindwing brownish grey with dark cellspot. From the desert of El Arish, Palestine.

62. Genus: **Metopistis** *gen. nov.*

Tongue present; frons roughly protuberant; palpi obliquely upturned, short; the second segment thickly scaled, the third minute; thorax and abdomen smoothly scaled; antennae of ♂ simple, lamellate; fore tibia with 4 bent claws on the outside; forewing elongate, narrow; the costa slightly insinuate in middle; apex produced; termen oblique. Type *M. erschoffi* *Christ.*

M. erschoffi *Christ.* (71 a). Forewing grey brown, varied with ochreous; the lines black, thick, inwardly oblique; the inner indented on submedian fold; the outer strongly dentate, widely outcurved above middle, then strongly incurved; stigmata deep black, finely white edged; the orbicular round, the reniform oblong; terminal area purer brown; a row of pale grey, dark centred, lunules along termen; fringe mottled brown and white; hindwing grey overlaid with pale brown; the fringe whitish; cellspot dark. Turcomania.

63. Genus: **Marsiphophora** *Johns.*

Frons smooth, rounded, with a tuft of hair above; palpi short, the second segment obliquely ascending, the third short, porrect; antennae of ♂ simple, with short bristles; thorax rough scaled; dorsum smooth; forewing with areole; hindwing with vein 5 obsolescent; mid and hindtibiae with tufts of spinous hairs; fore tibiae short, with one strong terminal claw. Type *M. christophi* *Ersch.* The single species stands quite by itself.

M. christophi *Ersch.* (71 a). Forewing white, suffused in parts, especially towards termen, with olive *christophi*. fuscous; the veins white; a black angled mark on costa close to base, another shortly beyond; a white somewhat sickle-shaped mark in cell, preceded and edged above with black; an oblong white blotch near base of submedian interval, with a longer narrower one above it, the interval around them velvety black; a black streak on inner margin near base; median vein broadly white; an oblique row of black streaks from costa to end of cell; a row of terminal black streaks in the interspaces; the inner margin, the anal angle and a blotch on vein 3 white; fringe dark grey, rayed with white; hindwing white, with large round black cell mark, and diffusely edged blackish terminal border; fringe pure white. Transcaepia.

64. Genus: **Imitator** *Alph.*

Tongue present; palpi long, porrect, flattened; second segment well-scaled, the third about $\frac{1}{3}$ the length of the second; antennae of ♂ ciliated; forewing elongate, triangular; hindwing ample; forewing with an areole. ♀ semiapterous; forewing lanceolate and narrow; hindwing very short; antennae simple. Type *I. ciliaria* Mén.

ciliaria. **I. ciliaria** Mén. (= *dentistrigatae* *Alph.*) (74 a). ♂ Forewing ochreous grey, the veins dark; the median vein always white, sometimes the inner margin; inner line often obsolete; a dark oblique oval reniform stigma, united by a black line to a punctiform orbicular; outer line dark, oblique outwards from costa to vein 6, thence oblique inwards, irregularly dentate lunulate, inwardly diffuse, outwardly edged with paler; subterminal whiter, more sinuous; hindwing silky white, with a more or less visible but interrupted outer dark line; the ♀ is semiapterous; the thorax, costa, and grey spaces of the ♂, bone white. Described originally from Bokhara; also occurring in Tura and the Ili district.

palpangularis. **I. palpangularis** Püng. Forewing uniform grey brown; the orbicular and reniform stigmata small, with black outlines, the former laterally produced, the latter round, with a faint median shade beneath it; inner line obsolete; outer outcurved above, then outwardly toothed, and forming an inward sinus below; subterminal line lighter grey, bluntly denticulate; terminal line blackish; costa with some dark marking; hindwing brown grey, paler basewards, with a dark cell spot. Merv.

65. Genus: **Epharmottomena** *Johns.*

Tongue well developed; frons strongly rounded, without prominence, smoothly scaled; antennae simple, shortly ciliated; palpi upturned, the second segment thickly scaled, the third bare; thorax rough scaled; dorsum smooth, without crests; a spreading wreath of scales behind the 7th segment; forewing narrow, with blunt apex; the areole present; hindwing broad, termen rounded; vein 5 obsolescent; mid and hind tibiae with bristly scales on outer side; foretibia with short strong terminal dart on outer side. Type *E. nana* *Stgr.*

nana. **E. nana** *Stgr.* (71 a). Forewing brown grey; inner and outer lines black, conversely pale-edged, the median space between them below middle blackish; the stigmata generally obscure, outlined with dark; the inner line toothed inwardly, the outer slightly sinuous, faintly dentate, excurved beyond cell; hindwing dirty whitish with a more or less obscure dark terminal border. Tura.

66. Genus: **Metoponrhis** *Stgr.*

Frons produced into a snoutlike prominence with a roughened surface; palpi short and broad, smooth, the third segment short; antennae simply filiform; thorax and abdomen smoothly scaled, without crests. Type *M. albirena* *Christ.*

albirena. **M. albirena** *Christ.* (= *kisilkumensis* *Christ. nec Ersch.*) Forewing pale olive brown, with some red scales below subcostal vein in basal area, around the stigmata, beyond the outer line below costa and vein 1, and before the black terminal spots; lines black conversely white-edged; the inner lunulate, projecting below middle; outer line squarely produced beyond cell, then inwardly oblique and lunulate dentate to vein 2, then vertical; median area darker, with leaden purple patches in cell before orbicular and on each side of vein 1; orbicular stigma olive brown with pale outline; reniform very large, dark with pale edge, its outer half a long oval white patch with some ochreous towards outer edge; subterminal line white, deeply dentate, preceded by black wedge shaped marks; some yellowish buff towards anal angle; terminal line dark, with white dots at the vein ends; fringe olive brown in basal third, mottled olive brown and white in outer two thirds; hindwing bright luteous tinged with grey; the veins dark; a dark cellspot, dark outer line edged with paler, and broad fuscous terminal border, streaked with dark and broken up below middle.

picturata. **M. picturata** *Roths.* (74 c). Forewing ochreous white; costal streak dusted with dark; inner line fuscous, oblique, marked only below middle; space between veins 2 and 4 fuscous grey; outer line oblique, fulvous, between vein 2 and inner margin followed by a fulvous orange belt, which is seen again, but greyer, above vein 4; reniform stigma a black mark followed by some blue scaling; subterminal line pale, edging the fulvous fascia and followed by a slight grey shade; fringe chequered grey and white; hindwing dark grey; fringe white. S. Algeria.

M. plumbizonata *Hmps.* (74c). Forewing luteous ochreous; inner and outer lines rufous edged with ochreous, *plumbizonata*. the outer strongly excurved beyond cell; a broad band before inner line, a median band passing between the stigmata, and a third beyond outer line, leaden grey; terminal area of the ground colour, with the veins thickly leaden grey; orbicular stigma a dark dot in a pale space; reniform diffuse, a pale, ill defined space; hindwing whitish, grey-tinged in terminal half. Egypt.

M. costiplaga *Warr.* (74c). Forewing dark slaty fuscous; the median area black; inner and outer lines black, *costiplaga*. conversely edged with yellowish white; orbicular stigma a small yellow ring-spot; reniform with only the lower inner segment visible, the rest blotted out by a creamy white blotch, which fills up the curve of outer line, except a slaty grey tooth at vein 6; subterminal line slightly paler across the slaty fuscous terminal area; hindwing white with terminal area grey along veins 3 and 4, where the terminal line also shows black; fringe white; head and thorax dark; dorsum white. Egypt.

67. Genus: **Acrobyla** *Rbl.*

Tongue well developed; frons with a naked corneous spike; palpi with smooth, porrect upwards second segment and porrect pointed third segment; thorax roughly scaled; metathorax with slight crest; wings broad; vein 5 of hindwing strong. Near *Metopoceras*. Type *A. kuenckeri* *Rbl.*

A. kuenckeri *Rbl.* Forewing fuscous and brownish on a paler ground; inner and outer lines yellow- *kuenckeri*. ish, sharply dentate; stigmata black brown with pale annuli; subterminal line whitish, indented on the folds, preceded by a brownish band; fringe mottled brown and white; hindwing with basal half white, terminal half blackish; a dark cell mark and fine outer line. Mt. Sinai, Arabia.

68. Genus: **Aëthia** *Hbn.*

Palpi sickle-shaped, upcurved above the head, the slender terminal segment obliquely porrect; antennae of ♂ shortly ciliated; frons with slight tuft of scales; thorax and abdomen smooth; forelegs of ♂ simple; forewing with apex rectangular; hindwing with vein 5 from close above 4. Larva with first pair of prolegs aborted, feeding up in autumn on dry fallen leaves, and pupating in a slight cocoon. Type *A. emortualis* *Schiff.*

A. emortualis *Schiff.* (= *olivaria* *Bkh.*) (71 a). Forewing pale ochreous finely dusted with brown; *emortualis*. inner and outer lines whitish ochreous, nearly straight; a similarly coloured streak at end of cell; hindwing similar, but without inner line. Larva yellowish brown; dorsal line dark brown; subdorsal lines black; the tubercles black; head small, round, reddish brown with black rim; feeding on fallen oak and beech leaves. Found throughout North and Central Europe, North Italy, Dalmatia, the Ural Mts.; in Asia Minor, Armenia, the Ussuri district, and Amurland. In the ab. **consonalis** *Spul.* the inner line of forewing is wanting; — in *consonalis*. **fascialis** *Spul.* the median area of forewings and basal area of hindwings are conspicuously darkened with grey *fascialis*. scales.

A. trilinealis *Brem.* (71 b). Forewing grey, densely and minutely striated with olive rufous; inner, *trilinealis*. median, and outer lines very indistinct, except at costa; olive brown, inwardly oblique, all slightly waved, the outer bluntly bent below costa; an oblique yellow ochreous straight subterminal stripe, inwardly edged with olive rufous; a dark pale-edged line on discocellular; fringe concolorous, with a bright pale yellowish line at base; hindwing with the two outer dark lines very obscure, the subterminal stripe distinct. Amurland.

A. helialis *Stgr.* (71 b). Forewing light chocolate grey; outer line in both wings olive brown, out- *helialis*. wardly edged with whitish, inwardly diffuse; inner line on forewing only, dark, vertical, usually ill-defined; in the ♀ a very faint lunule at end of cell; a fine terminal line in both wings. Amurland.

69. Genus: **Laspeyria** *Germ.*

Tongue present; palpi upturned, the second segment thickly haired, the third quite small, depressed;

antennae of ♂ pubescent; scaling smooth; forewing with acute apex, the termen excised between apex and middle; hindwing with termen rounded. Larva flattened; the first two pairs of abdominal prolegs shorter and thinner; a subspiracular ridge bearing fleshy filaments; feeding on tree-lichens in autumn, hibernating half grown, and feeding up in spring. Type *L. flexula* Schiff.

flexula. **L. flexula** Schiff. (= *flexularia* Hbn.) (71 b). Forewing greyish fawn colour, sprinkled with dark atoms; the inner and outer lines brown, double, filled in with pale ochreous, both angled below costa; subterminal line pale, but faint; reniform stigma represented by two transversely placed dots; terminal area suffused with pale ferruginous, deepening towards apex which itself remains whitish; a black spot in fringe at apex; hindwing ochreous whitish, dusted with black; outer line fuscous, straight. Larva whitish grey, sometimes greenish- or ochreous-tinged; dorsal line darker, especially at the segmental incisions; subdorsal lines pale, edged above with dark, and below with dark green; segments 9 and 10 somewhat darker; tubercles black; feeding on lichens growing on tree trunks. Throughout Central Europe, also in S. Scandinavia and St. Petersburg, and in Italy in the South; in Armenia and the Ussuri district.

rectilinealis. **L. rectilinealis** Graes. (71 b). Forewing pale greenish yellow, with two straight reddish brown lines, conversely edged with paler, and somewhat approximated on inner margin; the median area between them slightly darker, also the extreme termen; costal edge narrowly yellow; hindwing yellowish grey, with a faintly darker transverse line. Amurland.

lilacina. **L. lilacina** spec. nov. (74 a). Differs from *rectilinealis* Graes. from Amurland in the ground colour being pale lilac grey; the inner line is bent on the subcostal vein, and the outer hardly bent in cell; in the cell are two black dots, representing the two stigmata; subterminal line indicated by blackish spots in the terminal intervals; fringe deep brown, the tips pale in the excision only; hindwing pale brownish fuscous, with traces of a darker outer line above anal angle. Described from a single ♂ from Japan.

70. Genus: **Colobochyla** Hbn.

Tongue present; frons smooth, bearing a tuft of scales; palpi obliquely porrect, the second segment thickened with appressed scales, the third short and blunt; thorax and abdomen smoothly scaled; antennae in ♂ ciliated; forewing with termen curved, not excised; markings simple, consisting of oblique lines. Larva with rudimentary prolegs on segment 8, and none on segment 7; full fed in summer, probably hibernating small; pupa in a slight cocoon. Type *C. salicalis* Schiff.

salicalis. **C. salicalis** Schiff. (71 b). Forewing pale fuscous finely dusted with whitish, so as to appear grey; lines ferruginous edged with pale ochreous; the inner straight, the outer and subterminal somewhat curved inwards, the latter running into apex; hindwing pale fuscous, darker terminally, showing a faint subterminal line. A local but widely spread species, rare in Britain, found throughout Central Europe, in Asia Minor, Persia, and through Central Asia to Amurland and Japan; the forms occurring in these last localities are greyer or paler; that in Japan, — ab. *cinerea* Btlr., — greyer than the type; while the Amurland form — ab. *laetalis* Stgr. — is not only much paler but slightly smaller. Larva green, with the segmental incisions yellowish; the head also green; spiracles black; feeding on leaves of *Salix*, especially *S. capraea*, also on *Populus tremula* and *pyramidalis*.

inquinata. **C? inquinata** Led. (= *pyrami* Rghfr.) (74 a). Forewing in ♂ dusty brownish grey, in the ♀ whiter with slight irroration; reniform stigma suffused with blue grey; inner and outer lines, rising from blackish costal streaks, are obsolete below middle; the inner somewhat curved, the outer waved and outcurved beyond the reniform; subterminal line diffusely pale, preceded by a darker shade, irregularly waved; hindwing brownish grey, with traces of dark lines on inner margin only. Beirut, Syria, Cilicia.

platyzona. **C? platyzona** Led. Forewing dark ashy grey, darker along termen; the median area olive brown, edged by dentate white inner and outer lines, the latter with one larger tooth in middle; hindwing ashy grey. Transcaucasia.

flavomaculata. **C. flavomaculata** Oberth. (71 b). Forewing with pointed apex; the termen slightly bent below middle;

grey, with two brown lines, outwardly pale edged; the inner straight, the outer elbowed, oblique and sharply angled below costa; termen washed with brown red; hindwing uniformly brown. Ussuri, Amurland, Corea, N. China.

71. Genus: **Parascotia** Hbn.

Tongue strongly developed; palpi long, porrect, rough scaled throughout; antennae in ♂ bipectinated, in ♀ serrate, with bristles from each segment; head, thorax, and abdomen smoothly scaled; wings broad, the termen crenulate; the coloration and markings alike; vein 5 of hindwing parallel to 4. Larva geometriform, with only two pairs of abdominal prolegs; a fine hair from each tubercle; living on fungi growing on rotten wood, in cellars and damp places; pupating in a cocoon covered with refuse. Type *P. fuliginaria* L.

P. fuliginaria L. (71 b). Forewing blackish fuscous; lines yellowish ochreous, edged with black; the outer *fuliginaria*. dentate, the subterminal waved; a black mark at end of cell; hindwing like forewing; — the ab. **flava** Horm., *flava*. from the Bukowina, has in the ♂ quite pale ochreous wings, with two blackish fasciae in middle of wing and almost obsolete terminal spots; the ♀ is pale yellowish brown, with darker dusting, especially in the basal and terminal areas; — ab. **carbonaria** Esp. (71 b) is wholly black. Found throughout North and Central Europe, *carbonaria*. in Italy and Rumania, the Ural Mts. in Russia, in Armenia and Asia Minor. Larva black; dorsal stripe white, swollen in places, with a black line in middle; several fine, interrupted, wavy, whitish lateral lines; tubercles large, with long hairs, those on the sides and the hind pair on each dorsal segment orange; head black, with yellow lines; on fungi growing on rotten wood, hibernating small, and feeding up in spring.

P. detersa Stgr. (74 b). Forewing in basal half blackish brown, in outer half pale red brown mixed with *detersa*. greyish white; an obscure wavy inner line; a dark dentate outer line excurved above; beyond it two large dark blotches, one at costa before apex, the other at middle of termen, in dark specimens united to form a fascia; terminal line black and crenulate; cellspots large, black. Antioch, Hadjin, Korb.

P. robiginosa Stgr. (74 c). Forewing narrower and with more pointed apex than in *fuliginaria*; lighter red *robiginosa*. brown in ground colour, with more or less blackish suffusion; two interrupted black cross lines; the inner distinct only below median vein; outer excurved and dentate, pale-edged outwardly; the cell light red brown; a dark median shade from its lower angle; terminal area dark, leaving a lighter patch at apex; in some instances two lines of pale points are visible; hindwing with outer line only, dark edged with paler. Asia Minor; nearest to the next species *cognata* Stgr. from Amurland.

P. cognata Stgr. Forewing blackish grey, as in *fuliginaria*, but the pale dusting is not yellowish, but *cognata*. violet or violet grey; inner line black, not paler edged; beyond it a black dot in cell, and at end of cell a large black lunule beyond a dark median shade; outer line dentate edged with violet; just beyond it a much clearer, more deeply dentate violet line; some black wedge-shaped marks between them; hindwing with large lunule crossed by the black median shade. Like the last a smaller insect, from Amurland.

P. nysseni Trti (71 c). Forewing yellow ochreous; inner line indistinct; the outer excurved and den- *nysseni*. tate lunulate to submedian fold; median area between the lines filled in with dark fuscous below cell; the portion above forming a pale costal streak of ground colour, crossed only by the lines at their origin; orbicular stigma a black dash, reniform a black lunule; subterminal line zigzag, yellowish, between two thick diffuse dentate reddish fuscous shades, of which the inner is interrupted by clear yellow patches on each fold; terminal line black and wavy; fringe yellow with fuscous lunules at middle; hindwing with large black cell lunule and waved outer line; the basal suffusion and the two subterminal shades reddish. Algeria.

72. Genus: **Epizeuxis** Hbn.

Tongue present; palpi smoothly scaled, sickle shaped, with long acute third segment; antennae thick, in the ♂ shortly bipectinated; thorax and abdomen, also the legs, smoothly scaled; wings ample; forewing with blunt apex and rounded termen; the imago rests on tree trunks, head downwards, with the wings flattened against the surface. Larva with the first pair of abdominal prolegs aborted; the head small and round; the tubercles large, each crowned with a single hair; feeding on low plants, and pupating in a cocoon formed with grains of sand and rubbish. Type *E. calvaria* F.

calvaria. **E. calvaria** *F.* (= *calvarialis* *Hbn.*) (71 c). Forewing blackish fuscous, powdered with white; inner and outer lines thick and black, wavy, conversely white edged; median shade thick and black; subterminal line wavy, whitish, preceded by a dense black shade; a row of blackish terminal lunules; fringe grey, the outer half paler; orbicular stigma a yellowish dot; reniform large, yellowish, with two black dots or a lunule at centre; hindwing dark fuscous grey, with three darker pale-edged waved bands, more obscure in the ♂. Occurs from Central Europe southwards, Italy, Sardinia, Greece, the Bukowina, and S. Russia; also in Armenia, Pontus, Kurdistan, and Persia. Larva brown with two rows of large black tubercles down the back and one on the sides; spiracles black, small; head, thoracic, and anal plates uniform dark brown; feeds on dry and withered leaves, hibernating small.

curvipalpis. **E. curvipalpis** *Btlr.* (= *quadra* *Graes.*) (74 b). Forewing dark smoky brown, with a taint purplish reflection; beyond the centre crossed by three partly white-edged irregularly zigzag black lines; a terminal series of subconfluent black triangular spots, followed by a whitish line at base of fringe, which is grey with a brown line at middle; a partly white edged zigzag black line near base; cellspots small, buff; hindwing like forewing. Japan.

73. Genus: **Prothymia** *Hbn.*

Tongue present; frons smooth; palpi upcurved, the second segment thickly and roughly scaled below, the third short, pointed; antennae in the ♂ pubescent; forewing triangular, with hairlike scales; marked with bands rather than lines; 7, 8 and 9, 10 stalked, 8 anastomosing with 9 to form areole; in hindwing 3, 4 shortly stalked. Larva in autumn on Polygala; the imago emerging in the following spring. Type *P. viridaria* *Cl.*

viridaria. **P. viridaria** *Cl.* (= *laccata* *Scop.*, *purpurata* *F.*, *latruncula* *Esp.*, *olivacea* *View.*) (71 d). Forewing olive brownish; the costa at base, and an outer and terminal fascia deep rosy purple; the outer band varying in width; a pale line of ground colour between them; hindwing olive with a median and terminal darker band more or less tinged with purple; in ab. *fusca* *Tutt* (= *modesta* *Carad.*) the purple tints are replaced by dark brown; — in *aenea* *Hbn.* (= *cincta* *Tr.*) the ground colour is olive grey or fuscous instead of green; ab. *suffusa* *Tutt* is a rare form, blackish fuscous with a still darker terminal border. Larva green with darker pale-edged dorsal line; the other lines pale, the subspiracular becoming white on anal segments; feeding on Polygala. — A widely spread species, common wherever its food plant abounds. Found throughout Europe except the extreme north, in N. Africa, Bithynia, Pontus, Armenia, the Altai Mts., Tarbagatai Mts., Ili and Issyk-Kul districts, Fergana, Kentei Mts., E. Siberia.

sanctiflorentis. **P. sanctiflorentis** *Bsd.* (71 d). Forewing grey brown or greenish; the costa and inner and outer lines dark brown; when fresh tinged with reddish; the inner line curved and wavy, obscure; the outer broad and straight; a faint wavy dark subterminal shade; a dark dot in cell and pale 8-shaped reniform with each half dark centred; hindwing with dark median and terminal shades; both wings yellowish on underside. Spain.

leda. **P. leda** *H.-Sch.*, (Fig. 553) (74 a). Forewing fawn colour suffused with greyish fuscous or with brick red; the inner and outer lines, which approximate somewhat on inner margin, and the praesubterminal shade brown; hindwing uniform grey. Occurs in Western Asia, Pontus, Taurus, Antioch, Armenia, and W. Kurdistan.

erubescens. **P. erubescens** *Bang-Haas* (= ? *leda* *H.-Sch.* Fig. 594) (74 a). Forewing whitish flushed with rosy in the terminal half, with the lines all finer and less marked than in *leda* typical.

74. Genus: **Raparna** *Moore.*

Tongue present; frons rounded, smooth; palpi sickle-shaped, the second segment thickly scaled, the third also in the ♂ and slightly shorter, in the ♀ slender and acute, as long as second; thorax and dorsum smooth, without crests; tibiae moderately scaled; antennae of ♂ finely ciliated and with bristles. Type *R. ochreipennis* *Moore.*

R. transversa Moore (71 d). Forewing yellow, thickly speckled and striated with pinkish orange; the *transversa*. costa purplish black; the striae forming more or less defined dark lines; the outer well-defined and straight, often marked in purple; a dark speck at lower angle of cell; a terminal series of red specks; fringe red brown; hindwing with the line central. Found in Central and Western China, Corea, and Kiu-shiu; originally described from N. W. India.

R. ferrilineata Hmps. (74 b). Forewing greyish brown irrorated with black scales; head ferruginous; anal tuft *ferrilineata*. fringed with ferruginous; inner and outer lines straight, nearly vertical, ferruginous; costa narrowly fulvous, with 2 black specks before apex; hindwing fuscous. Chang Yang and Kiukiang, Central China; described from the Khasia Hills.

R. conicephala Stgr. (= *barcinonensis* Mill.) (74 a). Head and collar ash grey; rest of body yellowish; *conicephala*. forewing yellowish; cell spot obscurely dark; outer line formed of grey lunules; terminal dots black externally reddish; hindwing pale, becoming grey towards apex; an obscure grey median streak; in the ab. **fumicollis** *fumicollis*. *Rghfr.* the forewing is partially suffused with rosy violaceous. Spain, Syria.

75. Genus: **Pyralidesthes** *gen. nov.*

Allied to *Raparna*, but the apex of forewing is more pointed; the scaling smoother and more glossy; the markings consisting of oblique bands; from its bright yellow and rosy tints the type species was placed by BUTLER among the *Pyralidae*. Type *P. amata* Btlr.

P. amata Btlr. Forewing yellow; the markings rose-red; viz., the costal margin, the termen, a broad *amata*. oblique subterminal band, and a horizontal dash below median vein between the rise of veins 2 and 3; hindwings dull yellowish white, the terminal half more or less suffused with dull rosy. Japan.

76. Genus: **Hingula** Moore.

Tongue present; frons with short conical tuft of hair; palpi porrect, twice as long as head, the second segment thickly scaled, the third slender, pointed, erect; antennae of ♂ filiform, pubescent, with minute bristles; forewing with apex squared, termen bent at vein 4; an areole present; hindwing with 3, 4, and 6, 7 from ends of cell; stigmata large, edged, like the black apical spot, with hyaline white. Type *H. albolunata* Moore.

H. erebina Btlr. (= *imparata* Hmps. nec Walk.) (71 d). Forewing grey dusted with darker, in the *erebina*. median area flushed with golden brown according to the light; inner and outer lines starting from oblique brown costal streaks; the subbasal from a small spot; inner line, interrupted by the orbicular stigma, oblique inwards, lunulate dentate; outer line marked by brown drops between veins, oblique to vein 6, vertical to 4, then insinuate to middle of inner margin, edged outwardly by a pale line, preceded by a dark shade which is limited inwardly by the median line; subterminal line pale, flexuous, preceded by a black shade; orbicular stigma large, semicircular, open above, black edged, outlined with hyaline white; reniform large, dark, with hyaline dots and striae at the sides; beneath the median, at base of vein 2 a small dark oval spot with hyaline white edging; a velvety black round spot at apex externally white edged; hindwing with large cell-spot slightly edged with hyaline dots; outer and subterminal lines as in the forewing; fringe of both wings shagreened with darker. Japan.

77. Genus: **Orectis** Led.

Tongue present; palpi long, obliquely porrect upwards, the second segment rough-scaled above, the third thin and long, needle shaped, almost erect, smoothly scaled; thorax and abdomen smoothly scaled, the latter slender; the tibiae smooth; forewing moderately broad, finely scaled; the apex blunt; veins 8, 9, 10 stalked; hindwing with a repetition of the markings of forewing. Type *O. proboscidata* H.-Sch.

proboscidata. **O. proboscidata** *H.-Sch.* (= *massiliensis* *Mill.*) (74 b). Forewing light ash grey; costa marked with dark spots from which rise the sinuous inner and outer lines and the very faint median shade; subterminal line more distinct, pale on a darker ground; cellspot small and dull; hindwing with fainter reproduction of the markings of forewing. Occurs in S. Europe, Hungary, Dalmatia, Istria, Carniola, S. Tyrol, S. France, and Sicily; also in Pontus.

barteli. **O. barteli** *Trti.* Forewing differs from *proboscidata* in its earth-brown colour, with the lines and cellspot darker; subbasal line marked by two black dots; inner lunulate, from a dark costal spot; median area darker; outer line pale, excurved beyond cell, then incurved and vertical below vein 2; the praesubterminal shade broader and more diffuse towards costa; hindwing with three obscure dark lines. Catania, Sicily.

78. Genus: **Paragona** *Stgr.*

Tongue present; palpi porrect, thickly haired; antennae of ♂ subserrate, ciliated; abdomen slender, with strongly developed genitalia and large anal tuft in the ♂; insects of small size and delicate structure, with dull coloration. Type *P. multesignata* *Christ.* The genus seems closely allied to *Orectis* *Led.*

multesignata. **P. multesignata** *Christ.* (71 d). Forewing pale grey, dusted with darker; inner and outer lines black; conversely edged with whitish; the outer strongly dentate, preceded below middle by a broad brown fascia; a black crescent at end of cell; subterminal line whitish, flexuous, indented on the folds; terminal area brownish, brownish patches also beyond outer line at each extremity; a black festooned terminal line; hindwing darker, with black crescent at end of cell, fine outer and subterminal lines, with a brown band between. Amurland.

cleorides. **P. cleorides** *Wilem.* Forewing white dusted with grey; the markings dark grey, not brown as in *multesignata*; the outer less dentate, slightly curved; median line thick and plain; the black lunule at end of cell followed by a pale space; subterminal line denticulate, pale, between dark grey clouds; hindwing whitish with the markings dark grey, placed as in *multesignata*. Japan.

obliquisigna. **P. obliquisigna** *Hmps.* Forewing dull grey; the three lines black and fine, more or less parallel; the inner indented in cell; the median oblique to a large black cellspot, then incurved; outer line sharply dentate outwards, indented on both folds; terminal area darker grey with the subterminal line pale; terminal line black and thick; hindwing with inner and outer lines and a dark subterminal shade. In the type specimen the black cellspot is joined to the black costal mark at origin of median line, so forming an oblique black costal bar, whence the name. Japan.

79. Genus: **Chara** *Stgr.*

Tongue present but weak; frons smooth; palpi feeble, shortly porrect; antennae of ♂ with long ciliations; wings of delicate structure. Type *C. albesignata* *Stgr.*

albesignata. **C. albesignata** *Stgr.* (71 d). Forewing dull brownish ochreous; inner and outer lines curved, formed of white spots, those at each end largest, edged by black scales; a row of black scales along termen; hindwing with a faint cellspot and double outer line darker; fringe ochreous; shoulders conspicuously whiter than thorax. S. Ussuri district, Amurland.

bimaculata. **C. bimaculata** *Stgr.* (74 c). Forewing uniform sandy grey; costa marked with two white spots, at $\frac{1}{3}$ and $\frac{3}{4}$; fringe paler, yellowish; terminal dots blackish; hindwing grey; head and thorax concolorous; the shoulders snow white. S. Ussuri district, Amurland.

80. Genus: **Rivula** *Guen.*

Tongue present; frons flat, with a projecting tuft of scales; palpi obliquely upturned, the second segment long, densely scaled, the third short, button shaped; antennae of ♂ pubescent; thorax and abdomen

smoothly scaled; the tibiae smooth; forewing triangular, the apex rectangular, the termen curved; veins 7, 8, 9 stalked, 10, 11 separate; no areole; in hindwing veins 3, 4 stalked; 5 from above lower angle of cell. Larva with 16 feet, feeding on grasses; pupating on the underside of a bent blade protected by some transverse silken threads. Type *R. sericealis* Scop.

R. sericealis Scop. (= *munda* Hufn.?) (71 i). Forewing straw yellow, becoming deeper terminally; *sericealis*. with a black brown reniform stigma containing two black dots; inner and outer lines brownish, obscure, the outer sinuous, excurved round the cell; hindwing luteous with a yellow tinge, darker terminally. Larva green; dorsal line darker; subdorsal white; head greenish ochreous; feeding on *Brachypodium sylvaticum*. Common throughout Europe and through Asia to Japan.

R. unctalis Stgr. (71 i). Like *sericealis*, but bone colour, without markings; the head bright yellow. *unctalis*. Amurland.

81. Genus: **Araeognatha** Hmps.

Tongue well developed; frons smooth; palpi sickle shaped, the second segment reaching to vertex, thickened with close scales, the third long and slender; antennae of ♂ ciliated; thorax and abdomen smoothly scaled; mid and hind tibiae slightly fringed with hair; forewing ample, the termen crenulate; markings of forewing repeated on hindwing; vein 5 from lower angle of cell. Type *A. umbrosa* Hmps. from India.

A. cineracea Btlr. (71 c). Forewing purplish fuscous; lines darker, but all confused and indistinct; *cineracea*. subbasal and inner lines both double, wavy; outer also double, lunulate dentate, projecting outwards on vein 5; the median shade thick and more conspicuous, the space between it and outer line clouded with darker; subterminal line preceded on costa by a large dark fuscous blotch, marked by dark pale-tipped teeth on the veins; a slight dark cloud to termen at middle; a black terminal lunule on submedian interval; orbicular stigma a black dot; reniform lunular, obscured; hindwing with two dark waved median lines, and pale sinuous subterminal line between dark shades. W. China, Japan, and Kiu-shiu.

A. externa Leech (74c). Both wings with a finer purplish grey tinge than in *cineracea* Btlr., but otherwise *externa*. not distinguishable from it. Described from a single large and perfect ♀ from Changyang, Central China.

A. lankesteri Leech (74c). Forewing smooth purplish grey, the shadings clouded, olive fuscous; subbasal *lankesteri*. and inner lines double, slightly curved and diffuse; outer line excurved beyond cell, then vertically sinuous, preceded by a cloudy thick median shade; reniform stigma inangled, white; subterminal line white on costa, where it is preceded by a dark olive blotch, and marked by pale vein dashes only near anal angle; hindwing with 2 inner lines distinct; the others more or less lost in olive suffusion; the subterminal line followed at anal angle by a patch of ochreous yellow scales and a dark lunule on margin. W. China. Resembles *cineracea*, but has a smoother appearance.

A. ambigua Leech (71 c). Forewing dull slaty fuscous; costa with five dull blackish spots, from *ambigua*. which rise the usual lines, obscure across wing; the inner vertical and waved; the outer excurved above; the third costal spot conjoined with the black reniform stigma; the fifth the largest; hindwing with two wavy inner lines and a broad curved outer blackish band, followed by the dark, often interrupted, subterminal line; terminal lunules black in both wings. A small, ill-marked species from Moupin, W. China.

A. costimacula Leech (74c). Forewing paler slate colour than *ambigua*; the costal blotches more intensely *costimacula*. black; the third and fourth conjoined with reniform stigma to form a black triangle; orbicular stigma a black dot; outer line and the shades enclosing subterminal line lunulate dentate, the two last deeper black between veins 3 and 5; hindwing with black cellspot and a dark cloud below it; a wavy outer line and pale waved subterminal between two broad blackish shades; terminal lunules black. Described from a single ♀ taken at Chia-Kou-ho, W. China.

A. duplicata Leech (74c). Forewing fuscous grey with faint purplish flush; three brown spots on costa, from *duplicata*.

the second of which an irregular dark median shade runs, and from the third an obscure outer line, excurved above; reniform stigma a dusky lunule; hindwing with two inner dark lines divergent towards costa; the subterminal sinuous, edged with yellow towards inner margin. A small obscurely marked insect, of which only a single ♀ was captured, at Ship-y-shan, Central China.

subviolacea. **A. subviolacea** *Bthr.* (71 c). Forewing deep purple fuscous; the markings deeper, somewhat diffuse; inner line dark, swollen at costa; beyond the black orbicular dot the median shade is slightly incurved to costa, the space beyond it diffusely darker, followed by the obscure outer line; reniform stigma a pale purplish lunule on the shade; subterminal line pale, wavy, but distinct only at costa, where it is preceded by an irregular costal blotch and followed by a slight apical spot; hindwing with dark inner and median lines close together, and a subterminal pale line between dark shades, the inner of which is broad and diffuse. Described from Japan, where it is found in several localities, also in Corea, and Central and Western China. The Indian species, *virgata* *Swinh.*, referred by LEECH to *subviolacea*, seems to me distinct; the costal blotch is well-defined and triangular.

subcostalis. **A. subcostalis** *Walk.* (71 c). Forewing dull purplish fuscous, in the ♂ with a slight violaceous tinge; lines darker, wavy, all parallel to termen, but bent below costa, where they are swollen into spots, the costal edge between them showing pale ochreous; subterminal line marked by dark pale-tipped spots on veins, and preceded on costa by an olive brown triangular blotch; orbicular stigma a small brown dot; reniform obsolete; hindwing with a pale nearly straight subterminal line, preceded by a broad olive brown shade; two median parallel finer brown lines. China, Corea, and Kiu-shiu. WALKER's type was from North China.

nubiferalis. **A. nubiferalis** *Leech* (71 e). Forewing golden brown with purplish terminal suffusion; costa marked with three brown spots, from which arise three dark serrate lines; the inner excurved above and below median vein, followed by a black dot representing the orbicular stigma; outer line excurved round cell, lunulate dentate; hindwing with two dark median lines; subterminal darker brown, the border beyond it purplish. Japan and Kiu-shiu.

mollita. **A. mollita** *spec. nov.* (71 e). Forewing dark lilac grey, with the lines slightly darker, but indistinct, placed as in *agrestis* *Swinh.* which it much resembles; space between outer and subterminal line browner; terminal area and fringe finely dusted with pale lilac grey; terminal line of brown lunules; hindwing with dark, grey edged, outer line towards inner margin, not followed by a yellow patch; underside brownish fuscous with indications of darker outer and paler subterminal lines; costa marked with yellow, especially towards apex; palpi black, with the extreme tip whitish. 1 ♀ from Ichang, China, 6—8000 feet. Type in the Tring Museum.

82. Genus: **Psimada** *Walk.*

Differs from *Araeognatha* *Hmps.* in the third segment of the palpi being shorter and blunter and porrected; the antennae of the ♂ are flattened and thickened from near base to $\frac{3}{4}$ of length, this portion being matted with grey scales, the lower edge pubescent, the rest of the shaft brown; in both wings the termen is gibbous in the middle. Type *Ps. quadripennis* *Walk.*

quadripennis. **Ps. quadripennis** *Walk.* (71 e). Forewing greyish pink; the lines inconspicuous; the inner and outer conversely lunulate dentate; the median shade thicker and oblique inwards, being near outer line at costa and inner line on inner margin; a large triangular chocolate brown costal blotch, edged by the pale subterminal line, which below the blotch is marked by dark pale-tipped dashes on veins; orbicular stigma punctiform; reniform with brownish outline; in the ♂ the space between median shade and outer line is suffused with brown, which more or less darkens the whole terminal area; hindwing with dark inner and median lines; the subterminal line angled outwards in middle, and preceded by a broad chocolate brown band; the terminal area from anal angle to middle conspicuously pale greyish pink. An Indian species recorded also from North China.

83. Genus: **Avitta** *Walk.*

Tongue present; frons smooth; palpi obliquely upturned, the second segment reaching vertex, smoothly scaled, the third as long as second, narrow and slightly curved; antennae of ♂ long, shortly ciliated;

thorax and abdomen smoothly scaled; femora and tibiae fringed with hair; forewing elongate, the apex blunt. Type *A. subsignans* Walk.

A. conspicua *Leech*. (74d). Forewing greyish brown with a pinkish tinge; a broad darker brown oblique *conspicua*. band traverses the median area, its interior on inner margin being of the pale ground colour; subterminal line indistinct, wavy, preceded on the costa by a small dark brown patch; fringe chequered dark and light; hindwing ochreous suffused with fuscous terminally; underside straw colour, becoming golden yellow in terminal area, and clouded with fuscous on median area of forewing. Described from a single ♂ taken at Hakodate, Yesso.

84. Genus: **Megazethes** *gen. nov.*

Tongue present; frons smooth, with a short tuft at top; palpi upturned, the second segment just reaching vertex, broad and thickly scaled, the third short and pointed; antennae of ♂ shortly ciliated, with bristles from each segment; thorax and abdomen smoothly scaled; forewing with apex produced, termen elbowed or angled at vein 4; hindwing with denticulations at veins 4, 6 and 7, incised between 4 and 6; the anal angle truncate; markings simpler than in *Zethes*. Type *M. musculus* *Mén.*

M. musculus *Mén.* (71 e). Forewing dull lilac grey, suffused with deep brownish fuscous to outer *musculus*. line; the lines dark conversely edged with pale grey; the inner oblique outwards, bent inwards on submedian fold; the outer sinuous, incurved below middle; cell mark linear, dark, outwardly pale edged; a darker shade beyond outer line with straight oblique outer edge; subterminal line hardly visible; termen slightly darker; veins finely pale; hindwing like forewing, without inner line or cellspot. Amurland, Japan, Corea.

M. subfalcata *Mén.* (71 f). Forewing dull grey, suffused with blackish fuscous to the oblique shade *subfalcata*. beyond outer line; inner and outer lines conversely lunulate dentate, black edged with greyish ochreous; orbicular stigma an ochreous grey dot; reniform bilunate, dark with pale outer edge; subterminal line pale grey, near and parallel to termen, preceded by a slight ochreous tint; terminal line black and crenulate; hindwing with outer and subterminal lines, the ochreous shade stronger; the termen in both wings is more sharply angled and denticulate than in *musculus*. Amurland and Central China.

M. magna *Leech* (74d). Forewing lilacine grey irrorated and clouded with dark brown; inner and outer lines *magna*. dark velvety brown, the inner diffuse, strongly angled in middle, the outer broad towards costa, outwardly elbowed beyond cell, thence inwardly oblique to inner margin; stigmata tinged with ochreous, the reniform with a dark brown lunule at centre, and placed in the angle of a velvety brown median shade extending from costa to angle of inner line, postmedian area paler, almost whitish towards costa, clouded with brown towards anal angle; subterminal line dark brown edged with whitish, wavy, oblique outwardly to vein 6, thence inwardly to inner margin; hindwing with the brown dusting and suffusion heavier, with three dark brown lines; of these the first bisects a large ochreous discal spot; the second is outwardly oblique from costa to cell, where it curves inwards and then runs wavy to inner margin; the third is arched and double. Central and Western China; a ♂ from Mou-pin, a ♀ from Ichang. A large species, the ♀ expanding 65 mm.

85. Genus: **Zethes** *Rmb.*

Tongue present; frons with a slight tuft at top; palpi obliquely upturned, the second segment reaching above vertex and thickly scaled, the third erect, long and slender; antennae of ♂ pubescent, with short fine bristles; thorax and abdomen smoothly scaled; wings ample; typically angled and denticulate at vein 4. Type *Z. insularis* *Rmb.*

Z. insularis ¹*Rmb.* (= *natlyi* *Frr.*) (71 f). Forewing lilac grey, suffused to outer line with velvety *insularis*. brown black, deepest just before each line; lines black, finely edged with yellowish white; inner line oblique outwards, bent inwards on submedian fold; outer forming an acute point on vein 6, and a blunt elbow on submedian fold, then inwardly oblique; a truncate conical costal blotch before subterminal line, preceded by a black striga with yellow edges; subterminal very obscure; a dark shade on inner margin beyond outer

line; fringe dark grey with pale basal line; hindwing with inner, outer, and subterminal lines, the last angled on vein 5, preceded by a black shade and followed by a fuscous line; underside with white dark-edged lunules on discocellular of each wing. A mediterranean species, found in Spain, Algeria, Corsica, Sardinia, Croatia, Greece, Asia Minor, and Palestine.

propinquus.

Z. propinquus *Christ.* Differs from *insularis* in having the termen of forewing even, not elbowed at vein 4. Forewing violet grey; the basal area, the median field, and a blotch on costa before apex blackish; the lines whitish; the inner straight and outwardly oblique; the outer twice angled, concave between, followed on costa by a large and on inner margin by a smaller dark blotch; the hindwing paler, with traces of two lines on inner margin before anal angle, the outer darker and edged with whitish. Lagodekhi, Transcaucasia. Described from a single ♀.

86. Genus: **Pangrapta** *Hbn.*

Allied to *Zethes*, but both wings longer and narrower; variable in contour; in some species approaching *Zethes*, with well-marked angle at vein 4 and the termen even; more often with the termen more or less strongly crenulate and the angle rounded off; many of the species are very much alike; mainly a tropical genus, but largely developed in China and Japan. Type *P. decoralis* *Hbn.* from N. America.

trimantesalis.

P. trimantesalis *Walk.* (71 f). Forewing fuscous dusted with grey and with a more or less prominent reddish brown flush; a slight subbasal line; the dark inner line diffuse; reniform stigma indistinct; outer line sinuous, excurved beyond cell, followed on costa by a large grey triangular blotch; subterminal line dentate, indistinct; hindwing with obscure inner line, the median slightly angled beyond cell, and traces of a dentate subterminal; a slight rufous suffusion on disc of both wings. An Indian species, recorded by LEECH from China, Corea, and Kiushiu.

mandarina.

P. mandarina *Leech.* (74 d). Forewing grey sparingly dusted with fuscous; a pale grey costal blotch towards apex; inner and outer lines blackish; the former curved and indented below costa, the outer oblique outwards to lower edge of costal blotch, then obliquely waved inwards; the space between it and median line chocolate brown; subterminal line also blackish, waved, and black-dotted; stigmata obscurely outlined with brown; hindwing with oblique dusky inner line and waved black outer line, the latter with a bend about middle and followed by a blackish shade; subterminal line wavy, marked by dots in its lower half; cellspot dark in a white ring; allied to *trimantesalis* *Walk.* but greyer, with the lines differently placed. Described from a pair, the ♂ from Ichang, the ♀ from Chow-pin-sa, Central and Western China.

cana.

P. cana *Leech* (71 g). Forewing leaden grey, with a lilacine tinge towards termen; inner and outer lines fuscous, the former curved and indented below costa, the outer excurved above round cell and sinuous inwards; subterminal line wavy, marked by black points and edged towards costa with partially connected creamy spots; a lilacine whitish triangular costal blotch before apex and a similar coloured spot at apex; below the costal triangle is seen a rufous cloud; reniform stigma with a dark lunule at centre edged with creamy white, and outlined, like the orbicular, with brown; hindwing with fuscous inner and outer lines, the outer broadly suffused with brown; subterminal line serrate, whitish, interrupted, with dark dots and specks on it; underside brown, the forewing white along costa; the lines fuscous; the stigmata whitish; subterminal line of hindwing formed of two series of creamy white lunules, followed by yellower spots towards anal angle. From Kiukiang and Ningpo, Eastern and Central China.

trilineata.

P. trilineata *Leech* (71 g). Forewing grey brown, towards termen tinged with lilacine; lines distinct; the inner and median fuscous, the former curved and twice bent, the latter sinuous and straight; outer line blackish, elbowed beyond cell; subterminal line wavy, but indistinct, edged towards costa with luteous and preceded by a rufous brown patch; costal triangle grey dusted with fuscous; an apical spot of same colour; orbicular and reniform stigmata outlined in brown, the latter with a brown centre; hindwing with inner line oblique, outer line elbowed, the latter blackish; subterminal line dentate, pale-edged; cellspot blackish edged with pale; Recorded from Kiukiang, Ningpo, and Kweichow, Central, Eastern, and Western China. Nearest to *flavomacula* *Stgr.*, but darker; the cross lines stronger, shaped differently on the hindwing.

P. indentalis *Leech* (71 g). Very close to *suavcola* *Stgr.* from Amurland, and perhaps only a *indentalis* local form; the ground colour paler; the shape of the markings apparently different. Yesso, Corea, W. China.

P. dentilineata *Leech*. (74d). Forewing greyer than in *trilineata*, hindwing much greyer; the inner line *dentilineata*. of forewing curved, slightly indented below costa; the outer line more deeply elbowed; the costal triangle whiter; both wings with a blackish, strongly dentate, subterminal line, which is clearly defined on underside also; the fringe of hindwing hardly crenulate. Described from a single ♀ from Wa-ssu-kow, W. China.

P. saucia *Leech* (71 g). Forewing pale brown, dusted with fuscous and suffused with lilacine grey; *scaucia*. inner and outer lines brown, the former curved and indented below costa, the outer obtusely angled beyond cell and sinuous inwards to inner margin, with a diffuse internal brown shade, traversed by a dark sinuous line; subterminal line wavy, preceded at costa by a rufous brown cloud; costal triangular blotch greyish, followed by an irregular grey apical patch; the stigmata with rufous brown outlines; hindwing with dark inner and outer lines, the former nearly straight, the latter somewhat curved and edged externally with leaden grey; subterminal line brown, dentate, outwardly pale-edged; cellspot blackish, ringed with whitish. Kiukiang, Changyang, and Ningpo, Eastern, Central and Western China. Allied to *P. shivula* *Guen.* and superficially much resembling *P. trimantesalis* *Walk.*

P. squamea *Leech*. (74d). Forewing greyish brown, with a lilacine tinge; the transverse lines and other *squamea*. markings are like those of *P. trilineata*, but the outer line of forewing is more waved below the elbow which is itself more pronounced; the costal triangle is whiter, the reniform stigma yellower; in the hindwing the outer line is obtusely angled beyond the cell, while the subterminal is more strongly dentate; the cellspot is surrounded by a cluster of semihyaline spots. These differences are equally marked on the underside. A pair only from Changyang, Central China.

P. umbrosa *Leech* (71 g). Forewing brownish with violet grey suffusion; inner and outer lines dark, *umbrosa*. the former curved and waved, the latter outwardly oblique to upper end of cell, there obtusely angled, and waved to inner margin; subterminal line waved, obscure, towards costa marked with whitish; costal triangle white, with brown dots along costal edge; the stigmata light brown in ♂, ochreous in ♀, both outlined in dark brown, the reniform with a brown lunule at centre, the orbicular placed on the inner line; space between inner and median lines in costal half white; hindwing pale grey brown, with three or four semihyaline discal dots; lines dark brown; the inner oblique; the median wavy, followed by a brownish shade; the outer marked by dots in middle and paler towards inner margin. Central and Western China; Kiushiu. The termen in both wings is crenulate.

P. ingratata *Leech* (74d). Forewing pale whitish-brown, tinged with fuscous; the basal and marginal areas *ingratata*. suffused with fuscous brown; lines fuscous brown, the inner and median obscure, the outer waved, excurved beyond cell; subterminal line whitish, wavy; stigmata outlined with fuscous brown, their centres black; hindwing with black cell lunule accompanied by whitish dots; three waved transverse fuscous lines, the outer two broader; subterminal line whitish, marked with blackish dots. Described from a single ♀ from Pu-tsu-fong, Western China.

P. pulverea *Leech*. (74d). Forewing purplish brown, slightly powdered with bluish-grey; inner and outer *pulverea*. lines bluish-grey; the inner curved and externally bordered with dark chocolate-brown; the outer obtusely angled beyond cell, then sinuous to inner margin, internally bordered with chocolate-brown, paler on the costa and reaching to the blackish wavy median line; subterminal line black, waved towards anal angle and marked with black towards apex; orbicular stigma a black dot; reniform obscure, with black outline; the triangular costal blotch irrorated with bluish grey; a pale chocolate patch beyond it at apex; hindwing with bluish grey outer line on the outer edge of a chocolate-brown band; subterminal line bluish grey, wavy with a large angular projection above middle, filled in with chocolate brown and towards inner margin preceded by the same colour. Described from 2 ♀♀, from Central China, Kiukiang and Changyang. Termen of both wings slightly angled and crenulate.

- adusta.* **P. adusta** *Leech* (74 b). Forewing light brown, with grey dusting and suffusion; the lines dark brown; the inner and median curved; the outer externally edged with whitish, followed by a pale triangle on costal area, and strongly projecting beyond cell; the space before it, as far as median line, brown; apical area with a diffuse rufous cloud; orbicular stigma annular, brown; reniform obscure, with black outline; hindwing with basal two thirds blackish, outer third light brown; outer line wavy, whitish; cell lunule black surrounded by whitish; the edge of the dark basal area with an interrupted velvety black border margined with rufous, angled beyond cell and not reaching costa. Moupin and Changyang, Central and Western China. Allied to *curtalis* *Walk.*, but the outer line is angulated, not curved.
- costinotata.* **P. costinotata** *Btlr.* (71 g). Forewing dark purple grey from base to outer line, before which the grey becomes mixed with orange; inner and median lines and stigmata invisible; a white dot on costa at $\frac{1}{3}$ indicates the inner line; a large triangular white blotch at $\frac{2}{3}$, from which the strongly dentate lunulate outer line rises; subterminal line fuscous projecting between 2 and 4; the interval between it and outer line occupied by a reddish orange band, which on inner margin is overlaid with purplish grey; a row of black dots before termen; hindwing dull purple grey, with the orange band showing only in the middle. Japan and Kiu shiu.
- parvula.* **P. parvula** *Leech* (74 b). Forewing brown, tinged with lilacine grey along termen and inner margin; lines much obscured; inner line curved; median line almost erect, distinct; outer line wavy, originating apparently at the apex of a whitish triangle on costa; a slight white cloud at apex; hindwing lilacine, powdered with brown on basal half; the inner and median lines wavy, brown, the latter followed by a dark shade; fringes crenulate. A small species, described from a ♂ from Changyang, Central China, and a ♀ from Japan.
- ornata.* **P. ornata** *Leech* (74 d). Forewing purplish brown, shading to golden brown at termen; inner line obscure, with some white specks on it, starting from a curved white linear mark on costa; outer line blackish, oblique, but slightly curved beyond cell, edged on each side with whitish below a white costal triangle; median shade and sinuous subterminal line fuscous; a row of blackish points on veins before termen; hindwing brown, lines as in forewing. 1 ♂ only from Ichang, Central China. This species, which resembles *P. costinotata* *Btlr.*, is distinguished from it by the more strongly angled termen of forewings and by the pale transverse lines.
- sordidata.* **P. sordidata** *Leech* (74 e). Forewing fuscous grey; inner and outer lines blackish, the inner angled about middle, the outer obtusely angled beyond cell; the area between them fuscous brown with traces of a deeper median shade; subterminal line greyish white, rather wavy; stigmata indistinct; hindwing with dark inner and outer bands and a blackish median shade. Described from a single ♂ from Wa-ssu-kow, Western China.
- curtalis.* **P. curtalis** *Walk.* (= *disruptalis* *Walk.*) (74 e). Forewing pale fulvous brown, somewhat greyer towards termen; the lines brown; inner line vertical, dentate inwards on veins, outcurved between them; outer line darker, oblique outwards to 6, bluntly rounded, then sinuous inwards, closely preceded by the parallel median shade, the space between them darker, followed by an oblique fuscous shade running to costa and enclosing a grey costal triangle between it and the oblique part of outer line; subterminal line irregular, dentate, pale, dark-edged on both sides; a dark lunulate terminal line; orbicular stigma annular; reniform larger, but indistinct; hindwing browner, without grey; a black inner line and double diffuse black outer line, not reaching costa, followed by a slight shade and subterminal dark wavy line; cellspot black. WALKER'S types were both from Shanghai; the species is also recorded from Corea and Japan.
- manleyi.* **P. manleyi** *Leech* (74 e). Forewing whitish powdered with olive brownish; the lines darker brown; inner line outwardly oblique, indented in cell, and outcurved on each side; outer line outcurved beyond cell and wavy inwards, closely preceded by the median shade and with a fainter line on each side of it; subterminal line pale, diffuse, indented in cell and strongly on submedian fold, connected on vein 6 with a conical grey spot beyond outer line; orbicular stigma white, dark-ringed; reniform a black lunule, laterally edged with whitish; fringe chequered with dark; hindwing with black lunule at end of cell and three wavy diffuse lines beyond middle, edged with whitish and marked in places by dark vein-dashes. Yokohama, Japan. The ♀♀ only are known.
- obscurata.* **P. obscurata** *Btlr.* (71 g). Forewing purplish, the shadings dark brownish fuscous; inner line diffuse, curved; median line curved; outer line oblique outwards to 6, bluntly bent, and irregularly incurved; the space between them dark brown; the upper arm of outer line is whitish edged with fulvous, forming the inner edge of a pale grey costal spot, with outer fulvous edge followed by a brown shade; hindwing paler, especially

along costa and base, with dark median and outer lines the latter followed by a dark band; the species in contour of wings approaches *Zethès*, both wings having the termen strongly bent at vein 4. Japan.

P. textilis *Leech* (71 g). Forewing ochreous white powdered with brown; lines brown; inner twice *textilis*. curved outwards; outer and middle close together, both strongly angled outwards in middle; a dark streak from the angle to termen at angle of wing; subterminal line white, interrupted; reniform stigma white with brown centre; orbicular a pale ring; hindwing with brown inner and outer lines, the latter bent at middle; cell mark as in forewing; fringe yellowish with black basal and middle lines. Throughout China and in Corea.

P. albistigma *Hmps.* (71 h). Smaller than *textilis*; forewing ochreous white, the basal and terminal *albistigma*. areas suffused with brownish grey, darkest and greyest at anal angle of forewing; median and outer lines curved, not angled; orbicular stigma a black dot instead of a pale ring; reniform wider, touching median line; subterminal line with two white lunules beneath costa and two yellowish ones below them; all the markings blurred below middle; hindwing brown between outer and subterminal lines, the latter deeply dentate; terminal area ochreous. LEECH records an example from Changyang, Central China; HAMPSON'S type was from the Khasia Hills,

P. porphyrea *Btlr.* (71 h). Forewing dark purplish slate colour; inner and outer lines pale, fine; the *porphyrea*. inner curved, the outer crenulate, excurved round cell; space between them purplish with darker bands along each line; orbicular stigma a dull yellow black-edged oval spot; the reniform obscure with black inner edge; subterminal line zigzag, white below costa, then grey, interrupted altogether by the dull black suffusion between veins 2 and 4; a grey spot at apex; a yellowish grey costal suffusion beyond outer line; fringe whitish mottled with dark; hindwing with basal half blackish, limited by a crenulate line angled in middle; submarginal yellower, sharply dentate. Yokohama, Japan.

P. similistigma *spec. nov.* (71 h). Forewing dull brown, tinged with grey; the markings dark fuscous; *similistig-* basal area fuscous; inner line obliquely curved, followed by a black interrupted shade; median and outer *ma*. lines near together and parallel, strongly sinuous, excurved above beyond cell and incurved on submedian fold; the outer edged with paler; space between them brown; subterminal line obscure, whitish, dentate above middle, curved below, plainest at inner margin, followed by indistinct black dashes; orbicular stigma a round diffuse brown spot; reniform a black lunule with hyaline white on each side; a dark crenulate terminal line; fringe brown; hindwing dark fuscous to outer line which is angled on vein 4 and edged with pale grey; subterminal line dentate preceded by irregular black markings above middle, curved and preceded by a black band below; terminal area tinged with bright brown, grey at apex; reniform stigma like that of forewing; underside whitish dusted with grey; the terminal half brownish grey; a brown median line in both wings and two subterminal dark shades in hindwing; the discal lunules expressed; head, thorax, and abdomen grey brown. 1 ♀ marked simply China.

P. amphidecta *Btlr.* (71 h). Forewing fawn colour tinged with darker; reniform stigma brown, constrict- *amphidecta*. ed in middle, with two hyaline white spots before it and a large white lunule beyond it; a large brownish fuscous triangle on outer half of costa, the apex reaching vein 4; subbasal and inner lines brown, strongest above middle; outer line strongly bent outwards below costa and edged with bluish scales, then lunulate dentate, incurved below middle; median brown shade strongly marked; subterminal line marked only by the difference between the paler ground colour and the darker brown termen; black terminal dots; hindwing with cell mark of brown dots marked with white; a brown median shade below it; outer line lunulate dentate, marked with white scales below middle. Japan. Termen of both wings strongly crenulate below middle, concave between apex and middle tooth.

P. vasava *Btlr.* (= *incisa* *Stgr.*) (71 h). Forewing blackish in basal half, with some lighter shading *vasava*. and lines; in outer half uniform brownish grey, through which the pale subterminal line is just visible; inner line pale, bent at middle, followed by a violet grey shade; reniform stigma hardly visible; before the slightly dentate outer line a dark shade forming a band, followed on costa by a triangular violet grey blotch; hindwing with basal half blackish, discal mark formed of four white spots grouped round the dark discocellular; inner and outer lines dark; in the middle of the light edging of the outer line a small triangular black spot. Amurland, Japan, and Yesso.

P. flavomacula *Stgr.* (71 h). Forewing violet grey, darker terminally and mixed with some yellow; *flavomacula*.

orbicular stigma small, annular; reniform large, yellowish with dark centre; inner line dark, bent at middle; median and outer lines near together and parallel, the median dull, the outer sharply black; subterminal line preceded by yellowish scaling and a dark cloudy band; hindwing yellowish grey, dusted with darker; a dark inner and double outer line with dark lunule between them; a dark fascia-form space before subterminal line. Described from Amurland; found also in Eastern China, Corea, and Japan.

suaveola.

P. suaveola *Stgr.* (71 h). Forewing dark violet grey; lines blackish; inner line outcurved; outer line double, slightly curved round cell, preceded closely by the dark median shade; a whitish triangular costal blotch beyond outer line and a smaller one beyond it before apex; subterminal line slightly marked; orbicular stigma small, round, often obsolete; reniform obscure brown with brown outline; hindwing violet grey, more brownish towards base; inner line dark; outer line double, blackish; a dark pale-edged lunule on discocellular; a pale subterminal line. Amurland.

costaemaculata.

P. costaemaculata *Stgr.* (= ? *mandarina* *Leech*) (71 h). From the description and also the shape of the figure this might well be identical with the Indian species *perturbans* *Walk.*, to which SWINHOE sinks it, but the colouring of the figure is more uniformly dark grey than *perturbans*; it is not recorded by LEECH as occurring in China or Japan. The original specimens were from Amurland.

marmorata.

P. marmorata *Stgr.* (71 i). Forewing brownish, light greyish ochreous along costa and at apex; inner and outer lines double, dark filled in with pale, the outer excurved beyond cell; reniform stigma white with the centre dark; beyond it on outer line a small black spot; subterminal line whitish, wavy; a dark spot in the angle at middle, running out into the pale fringe; hindwing brownish marbled with grey; a dark inner line; a double dark outer line filled in with white, followed by a dark fascia edged by the pale subterminal line; discal mark composed of four white spots clustered round the dark discocellular. Amurland.

87. Genus: **Tamba** *Walk.*

Allied to *Zethes*; forewing broad; the apex produced and the termen angled or bent at vein 4; the hindwing also broad, strongly crenulate; the inner margin abbreviated, the termen truncate from vein 1 to 2; tibiae often strongly tufted with hair; abdomen of ♂ elongate; wings usually pale, ochreous or fawn colour, with strongly developed markings and coloration; antennae of ♂ nearly simple. Type *T. submicacea* *Walk.* A largely developed tropical genus, of which certainly 3 species are palaeartic.

gensanalis.

T. gensanalis *Leech.* (74e). Forewing violet grey; a small brown spot at base of costa, followed by a broad brown band limited by the subbasal and inner lines, the latter edged externally by a narrow white line; two indistinct parallel wavy lines across middle of wing; outer line curved, double, black filled in with white; reniform stigma faintly outlined, except on external edge which is bordered with blackish and precedes a brown patch; orbicular stigma a black dot; subterminal line zigzag; terminal area brown, with a row of black dots just before termen; hindwing with only the outer lines repeated. Corea.

corealis.

T. corealis *Léech.* (74e). Forewing cinnamon brown with a slender dark brown basal patch, a broad dark band bordered internally by the black, partly double, inner line, and externally by the double black, whitish filled outer line, both excurved in and beyond cell; a waved dark subterminal line; a dark oblique apical streak; orbicular stigma a black dot; reniform a square grey blotch; hindwing with curved inner line and double median; three black dots on inner margin towards anal angle. Gensan. Corea.

cinnamomea.

T. cinnamomea *Leech* (74e). Forewing cinnamon brown with faint blackish lines and whitish spots; basal area darker, limited by a blackish subbasal line, which becomes brown towards inner margin; median line blackish, dentate; outer line whitish, edged externally with brown, angled beyond the cell, with a whitish mark upon it above the angle; submarginal line blackish, sinuous, with blackish specks upon it towards inner margin; reniform stigma brown, its inner edge blackish; hindwing with a blackish cell lunule; outer line whitish, edged with brown; subterminal line blackish, interrupted, ending in a black spot on abdominal margin. 1 ♀ from Omeishan, Western China.

88. Genus: **Lophomilia** *gen. nov.*

Agrees with the next genus *Lophograptia* in having crests on the three basal segments of dorsum; but veins 3, 4 of hindwing are not stalked, and there is no pale streak along costa of forewing; the forewing is narrower, with the termen entire, not angled at vein 4, but at most slightly bent. Type *L. polybapta* *Btlr.*

L. polybapta *Btlr.* (71 i). Forewing flesh colour with a grey tinge; inner line chestnut brown, diffuse *polybapta.* and oblique from $\frac{1}{3}$ of costa to median vein, then inwardly oblique, concise and straight to near base of inner margin; outer line white, slender, preceded by a diffuse chestnut brown shade, and followed by olive brown, indented in cell and deeply incurved on submedian fold; terminal area olive brown; subterminal line pale, with black spots between veins, that below costa largest; fringe brown; a small black cell dot; hindwing pale fuscous, with a dark outer line. Found in Japan, Corea, and Kiushiu.

89. Genus: **Lophograptia** *gen. nov.*

Distinguished from *Pangraptia* by the prominent crests on the 3 basal segments of dorsum; the stalking of veins 3, 4 in the hindwing; and by the broad pale basicostal streak of forewing extending also over base of hindwing. Type *L. pulcherrima* *Btlr.*

L. pulcherrima *Btlr.* (71 i). Forewing with basicostal area for $\frac{2}{3}$ pale rosy, clouded, streaked, and *pulcherrima.* externally bordered with gravel yellow; the tornal area dull grey; inner line curved, obscure; outer oblique outwards to vein 4, followed by a large white tooth-shaped costal blotch, which is interrupted beyond cell by a streak of yellow and edged with olive grey, below vein 4 incurved and waved; apical area olive mixed above vein 4 with rosy and brown; subterminal line formed by four black and rosy spots above middle and by a waved oblique pale line towards inner margin; two blackish spots on the discocellular, one at each end; hindwing grey, tinged with olive beyond the rosy basal area; subterminal line a row of whitish spots, ending on inner margin as a yellow ferruginous bordered line. Japan.

L. albicostalis *Leech.* (74e). Forewing violet grey; a broad whitish stripe, clouded with greyish, occupying *albicostalis.* the whole of the basal and a large portion of costal area, but not extending to apex; apical third chocolate brown clouded with darker; a faint basal line; the outer line whitish; the subterminal bidentate; fringe dark grey, narrowly rayed with white, with a brown fleck at middle; hindwing with whitish basal patch, a linear brown cellspot, angulated and indented blackish median line, and a large blackish spot with some blackish scales on each side at anal angle; a terminal row of black dots; thorax and basal half of dorsum white. Ningpo and Foo-chau, China. Apparently allied to *pulcherrima*.

90. Genus: **Dierna** *Walk.*

Tongue present; palpi upcurved, the second segment long and broadly scaled, reaching above vertex, the third slender and pointed; thorax and abdomen smoothly scaled, stout; antennae of ♂ ciliated, with long curved bristles on inner side to $\frac{3}{4}$, where the shaft is thickened and bent; forewing triangular; the costa straight, apex acute, termen oblique and curved at tornus; hindwing with inner margin short, and truncate at tornus; forewing with oblique parallel markings. Type *D. strigata* *Moore.*

D. strigata *Moore* (= *multistrigaria* *Moore*) (71 l). Forewing greyish ochreous, with a fine black *strigata.* line from apex to middle of inner margin, above which it is slightly curved; this line is edged inwardly by a fine whitish line limited by a fine grey thread; outwardly it is followed by a diffuse fuscous shade; the whole wing varied with long fine transverse grey striae; before the middle there are traces of two obliquely curved dark shades, the inner sometimes marked by a black dot on vein 1; reniform a long grey pale-edged blotch, prolonged outwardly; the terminal area always darker, with traces of a curved pale outer line followed by a dark shade, sometimes marked by black dots on veins 2, 3, 4; small black terminal dots; fringe pale silky grey; hindwing dappled and striated with dark grey, diffusely darker towards termen, espec-

monotona. ially at apex; the ab. *monotona ab. nov.* (71 l) is nearly uniform ochreous grey, with very few striae. An Indian species recorded by LEECH from Central and Western China.

91. Genus: **Talapa** Moore.

Tongue present; palpi obliquely porrect upwards, the second and third segments long, the second rough haired; antennae of ♂ minutely ciliated; thorax and abdomen smoothly scaled; the tibiae hairy; forewing ample; the apex produced and acute; hindwing with vein 5 from lower angle of cell. Type *T. caliginosa* Walk. from India.

Sect. II. Forewing with termen not angled.

obliquilineata. **T. obliquilineata** Leech. (74b). Forewing pale grey-brown flushed with pink; lines reddish brown; the inner curved, the median broad and oblique, the outer nearly straight, followed towards costa by a black dot or small cloud; a black dot in cell; hindwing also with three lines, the first broad, being the continuation of the second line of forewing; the second and third are oblique and parallel. A large species recorded from Omeishan, Western China.

92. Genus: **Ectogonia** Hmps.

Frons tufted above; palpi very long, the second segment obliquely porrect upwards, fringed above with long hair, the third with a large tuft on inner side; antennae in the ♂ bipectinated; thorax and abdomen smoothly scaled, without crests; tibiae naked; forewing with costa indented just beyond middle; the apex rectangular; termen angled at vein 4, oblique and straight above, crenulate below; veins 7, 8, 9, 10 stalked; in hindwing vein 5 from lower angle of cell. Type *E. viola* Hmps.

opalina. **E. opalina** Btlr. (74e). Forewing strongly angulated; pearly grey with brownish costal margin and fringe; inner and outer lines ferruginous edged with orange; hindwing pale brown; a dusky terminal line followed by a whitish line at the base of the fringe; body pale brown. Japan.

butleri. **E. butleri** Leech (= *ecephurealis* Leech nec Walk.) (71 i). Forewing violet grey tinged with brownish, more strongly in the basal two thirds; the lines white, plainest towards costa, the inner wavy, the outer excurved beyond cell; submarginal line also whitish, indistinctly waved; hindwing with two obscure whitish lines; fringe brownish grey, the tips white, except at apex and the middle angle of forewing. Quite a small species, taken in the island of Kiushiu.

albomaculalis. **E. albomaculalis** Brem. (74b). Forewing yellowish; inner line oblique, straight; outer line oblique, externally broadly bordered with violet grey; subterminal line faint; all three fuscous; orbicular stigma distinct, white; reniform a fuscous lunule; hindwing grey, the basal half paler, with a single dark line across it. Described from Ussuri, Amurland; also found in China, Corea, and Japan.

93. Genus: **Megaloctena** gen. nov.

Tongue present; frons smooth; palpi upcurved over vertex, flattened, the second segment three times the length of third; antennae of ♂ variable, typically bipectinate heavily to apex, or fasciculated with long bristles and a thickening of shaft, or without the thickening, or fasciculated without bristles; in the typical section the femora are hairy, and the foretibiae simple; in the others the fore tibiae bear a sheath containing an expansible tuft of hairs; fore and hindwings large and ample; grey powdered with darker grey and brown. Type *M. mandarina* Leech.

Sect. I. Antennae of ♂ broadly bipectinate.

mandarina. **M. mandarina** Leech (71 l). Forewing pale grey brown dusted with darker; inner and outer lines fuscous, wavy, diffuse, the latter excurved beyond the reniform stigma, which is outlined with dark fuscous; submar-

ginal line whitish, sinuous, inwardly lined with fuscous; hindwing slightly paler, with two fuscous transverse lines, both curved towards inner margin, the outer edged with whitish; — ab. *pallens* *Leech* is smaller and paler, *pallens*. the hindwing whitish; the submarginal line more crenulate; the pectinations of the antennae of the ♂ somewhat finer than in the type. Both type and aberration from Moupin, Western China.

Sect. II. Antennae of ♂ with tuberculate fascicles ending in a curved bristle.

M. alpherakyi *Leech* (74e). Forewing greyish brown, powdered with blackish; inner and outer lines blackish, sinuous, the latter excurved beyond the cell; subterminal line blackish, interrupted; reniform stigma black, sometimes with a pale centre; hindwing somewhat paler, with two blackish transverse lines, both angled slightly towards inner margin, and neither extending beyond middle. Recorded from Moupin, Western China. *alpherakyi*.

M. angulata *Leech* (74f). Forewing light brown with darker dusting; inner and outer lines dark brown, wavy, the former angled below median, the latter below costa, and excurved beyond cell; subterminal line blackish, interrupted, edged with whitish; reniform stigma outlined with dark brown; hindwing brown; outer line dark; subterminal whitish, angled towards inner margin, preceded by a dark shade. Described from a single ♂ from Wa-shan, Western China. *angulata*.

Sect. III. Antennae of ♂ fasciculate.

M. punctilinea *Leech* (71 l). Forewing pale brown dusted with darker, towards termen suffused with fuscous; inner and outer lines blackish, wavy, the former angled below the median, the latter near costa and excurved beyond the cell; subterminal line blackish, with blacker dots upon it; reniform stigma black on a dusky median shade; hindwing paler and more greyish; a faint median line; subterminal line blackish margined externally with whitish. A pair from Tats-ien-lu, Western China. The ♀ is somewhat paler than the ♂, with the lines fainter. *punctilinea*.

Sect. IV. Antennae of ♂ with tuberculate fascicles and bristles, swollen into a knot before middle.

M. sordida *Leech* (74f). Forewing grey brown powdered with fuscous; inner and outer lines very faint; subterminal line pale grey preceded by fuscous shading, clearest towards inner margin; a blackish reniform stigma, which sometimes has a pale centre; hindwing grey brown; subterminal line fuscous ending close above anal angle. Moupin, Western China. *sordida*.

94. Genus: **Pseudaglossa** *Grote*.

Frons with slight tuft of hair; palpi sickle-shaped, the second segment reaching to above vertex, curved and thickly scaled, the third long, aciculate, or sometimes in ♂ minute; thorax and abdomen smooth without crests; forewing elongate, widening outwards; apex blunt; termen evenly curved; antennae of ♂ with tuberculate fascicles of cilia ending in a bristle, or with simple fascicles and bristles. Type *P. lubricalis* *Hbn.-Gey.* from N. America.

Sect. I. The lines of forewing more or less vertical.

P. albomaculata *Leech* (71 k). Forewing blackish fuscous, smooth; inner line blackish, vertically waved, pale-edged inwardly; outer line oblique outwards, then rounded, and below middle dentate, outwardly pale-edged, at costa white; subterminal white with darker shading before it; terminal area with whitish scales and dark veins; basal line of fringe white; orbicular stigma a white dot; reniform a white F-shaped mark; median shade dark; hindwing with dark inner line, and dark white-edged outer and subterminal lines. Omeishan and Kweichow, W. China. The species is allied to *curvipalpis*. *albomaculata*.

annulata. **P. annulata** *Leech*. Forewing dull clouded grey; inner line black, vertical, thrice-curved; outer line dentate lunulate, outcurved round cell, starting from a black costal spot; subterminal line irregularly waved and dentate, pale with a dark shade before it; orbicular a black dot; reniform with black lateral edges; hindwing with blackish cellspot, waved and dentate outer and subterminal lines edged with paler grey; black terminal lunules on each wing. From Ta-tsien-lu and Wa-ssu-kow, W. China.

curvipalpis. **P. curvipalpis** *Btlr.* (= *quadra* *Graes.*) (71 i, k). Forewing blackish fuscous; inner line vertical, dark, grey-edged inwardly; outer line black, edged with whitish at costa, not so strongly excurved round cell as in *albomaculata*, nor so insinuate below cell; subterminal line waved, finely white; orbicular stigma a white dot; reniform a white spot; hindwing with black inner line and dentate white-edged outer and subterminal lines. Smaller than *albomaculata*. Described from Yokohama, Japan, the species is also found in Amurland, and at Gensan and Tsuruga in Corea.

Sect. II. The lines or bands oblique.

pryeri. **P. pryeri** *Btlr.* (74 f). Forewing purplish grey, with four oblique blackish lines; inner line entire; median shade thick, not reaching costa, touching a yellowish reniform stigma with dark lunular centre; outer line fine, bent below costa; subterminal grey, also bent below costa, preceded by a broad blackish shade; terminal lunules dark before a bright white basal line; hindwing with three lines, the subterminal angled in middle. Yokohama, Japan.

butleri. **P. butleri** *Leech* (74 f). Resembles *pryeri*; but without yellow reniform, the subterminal line white, straight, and complete to apex in both wings. Kiukiang, Central China.

obliqua. **P. obliqua** *Stgr.* (71 k). Forewing narrower, light chocolate grey, dusted with dark; inner line marked by dark spots; the veins whitish; a black spot at lower angle of cell; an oblique outer line of black points from before apex to before middle of inner margin, sometimes forming a line and externally edged with whitish; subterminal line from apex to inner margin before tornus edged outwardly with white, the space between it and outer line dark; hindwing whitish with two slight dark outer lines; the shaft of antennae of ♂ broad, with strong cilia and a slight thickening before middle. Ussuri district.

95. Genus: **Edessena** *Walk.*

Tongue present; frons smooth, slightly rounded; palpi flattened, upcurved, the second segment broad, closely scaled, the third about half as long, pointed; antennae of ♂ subserrate, with a pair of curved bristles from each serration; thorax and abdomen smoothly scaled; femora and tibiae with enormous tufts of hair, the base of tarsi with smaller tufts; forewing ample in ♀, more elongate in ♂, the apex produced, the termen slightly sinuous, the anal angle truncate in the ♂; hindwing large; discocellular in both wings followed by a subhyaline space; veins 6, 7 of hindwing stalked; vein 5 from close above lower angle of cell. Type *E. gentiusalis* *Walk.*

gentiusalis. **E. gentiusalis** *Walk.* (72 a). Forewing blackish fuscous, with traces of inner, median, outer, and subterminal parallel waved black lines; a large blotch beyond discocellular subhyaline white, its inner edge straight, the outer variable; a minute white dot in cell; hindwing with three dark lines, and a hardly perceptible white line beyond discocellular. N. W. China and Japan.

hamada. **E. hamada** *Fldr.* (72 a). Forewing dull greyish fuscous, sometimes washed with grey in terminal area; the lines more visible; the white blotch much smaller, angled; hindwing with the white mark plainer. China and Japan. Apparently much commoner than the type species.

96. Genus: **Cidariplura** *Btlr.*

Allied to *Edessena*, distinguished at once by the enormously developed palpi of the ♂; the first segment correct, some 4 mm in length, the second and third, equally long, bent back at an acute angle over

the vertex and thorax, and fringed with hair. Type *C. gladiata* Btlr. This genus corresponds to the genera *Mastigophorus* of the New World.

C. gladiata Btlr. (71 k). Forewing pale olive fuscous; stigmata white; orbicular a white dot; reniform kidney-shaped; inner line fine, dark, oblique outwards and waved; outer line outcurved below costa, then straight, edged outwardly with whitish; subterminal line hardly visible, waved; hindwing rather paler, with outer and subterminal lines. The type was from Yokohama, Japan; also from Kiushiu, and from Ichang and Omeishan, Central and Western China.

C. ochreistigma Leech (74f). Forewing brown; inner and outer lines ochreous edged with dark brown; the inner wavy and oblique, the outer obtusely angled beyond cell; subterminal line ochreous, interrupted; orbicular and reniform stigmata ochreous; hindwing somewhat paler than forewing; outer line ochreous edged with dark brown; subterminal line interrupted. Allied to *gladiata* Btlr., distinguished by the larger, ochreous, reniform stigma. Recorded from Central China, Ichang, Kiukiang, Changyang.

C. modesta Leech (71 k). Differs from *ochreistigma* Leech in the reniform stigma being blackish with the outline only pale; the inner line is more oblique, not wavy, terminating on the inner margin nearer the outer line. Described from a single ♂ from Moupin, Western China.

C. butleri Leech (74g). Forewing purplish brown; inner and outer lines darker, the inner externally pale-edged and indented about middle, the outer slightly curved towards inner margin and inwardly edged with paler; subterminal line dark brown, sinuous, paler-edged; reniform stigma dark brown with paler outline; hindwing brown, with lunular cellspot; outer and subterminal lines as in forewing. 2 ♂♂ from Chia-kou-ho and Wa-shan, Western China.

C. nigristigmata Leech (74f). Forewing fuscous brown, dusted with darker, with smoky transverse shades; inner and outer lines black edged with whitish, the inner wavy, the outer excurved above; subterminal line whitish, waved, inwardly bordered with fuliginous; orbicular and reniform stigmata velvety black, outlined with whitish; hindwing with waved black median line outwardly pale-edged, and an interrupted whitish subterminal line. 1 ♀ from Omei-shan, Western China.

C. signata Btlr. (74f). Forewing smooth cloudy grey, with darker grey suffusion; inner line curved, pale, marked with black externally at costa and inner margin, often obsolete; outer line slightly curved outwards, pale, dark-marked internally at extremities; subterminal whitish, preceded by dusky shading which is blackish at costa; orbicular stigma a black point; reniform an angled black mark; dark lunules before fringe which is unicolorous grey; hindwing grey, with dark cell spot, dark pale-edged outer line, and faint subterminal. Described by BUTLER from Yokohama, Japan and recorded by LEECH from Gensan, Corea and Central China.

C. brevivittalis Moore. Forewing smoky black; a narrow white inner band and a similar oblique outer band, with a white streak from it to termen below apex, crossing the sinuous subterminal line, which is white at costa; orbicular and reniform stigmata large and black, outlined with white; hindwing with narrow white median band, obsolete towards costa and indistinct waved outer line; a terminal series of black white on both wings. A North Indian species, of which a single ♀ example has been taken at Gifu, Papau.

97. Genus: **Simplicia** Guen.

Tongue present; frons with short tuft of hair; palpi sickle-shaped, smoothly scaled, the third segment long and acute; antennae filiform, in ♂ moderately ciliated, with a pair of bristles from each segment; foretibia of ♂ bearing a sheath concealing within it a mass of flocculent scales; forewing with no areole, veins 8, 9, 10 stalked; in hindwing vein 5 rising close to 4. Type *S. rectalis* Ev.

S. rectalis Ev. (72 b). Forewing luteous grey; inner and outer lines darker, but not prominent, curved nearly parallel to each other; the subterminal yellowish white, straight; a dark cell spot; hindwings paler, with a whitish subterminal line starting from anal angle, bent on vein 4, and fading out before

reaching the costa. Europe, Amurland, China, Corea, and Japan. Chinese specimens agree with the type form in being paler and larger, and the Amurland examples are the same; subsp. *sicca* Btlr. (72 b), from *minoralis*. Japan and Corea is darker, brownish grey; a smaller form, subsp. *minoralis* subsp. nov. (72 b), from Bosnia, is simply grey, without any brown or luteous tinge. In the typical form of the ♀ the two lines are wider apart than in the other forms.

98. Genus: **Nodaria** Guen.

Intermediate between *Simplicia* and *Zanclognatha*; forewing with an areole which is wanting in *Simplicia*; vein 5 of hindwing rises very close to 4, in *Zanclognatha* at $\frac{2}{3}$ of the discocellular; the forewing also is shorter and stumper; palpi sickle-shaped, rising far above the head; the third segment acute; antennae of ♂ ciliated, with bristles, with a knotlike thickening before middle. Type *N. hispanalis* Guen.

nodosalis. **N. nodosalis** H.-Sch. (= *aethiopolis* H.-Sch., *hispanalis* Guen.) (72 b). Forewing dark mouse grey, dusted with blackish; inner and outer lines blackish, the inner oblique, the outer outcurved above middle, often denticulate; both variable in intensity; subterminal dentate, the teeth marked with white on the veins; reniform blackish, obscure; hindwing pale dull grey. Sicily, Spain, Central Italy, and Algeria.

niphona. **N. niphona** Btlr. (72 b). Forewing mouse grey; costal edge yellow; inner and outer lines obscure, dark, denticulate, both curved outwards; a small black dot in cell between them; subterminal line bright whitish, straight or slightly concave outwards; blackish terminal dots; hindwing with the white line bent below vein 2 at termen, not reaching costa. Japan.

similis. **N. similis** Moore (72 b). Much paler than *niphona* with a faint yellow tinge; the lines grey, not denticulate; the cellspot larger but duller; subterminal line yellowish white; no distinct terminal spots; hindwing with the pale line duller. An Indian species, which occurs also in Kashmir.

praetextata. **N. praetextata** Leech. Forewing brown suffused with fuscous; the area beyond the straight subterminal line pale brown; inner and outer lines blackish, sinuous, obscure; the inner indented above inner margin; a blackish mark at end of cell; hindwing grey brown suffused with fuscous, except in the area beyond the pale subterminal line which ends at anal angle; cell dot blackish. West China. Allied to *niphona*, but distinguished by the pale terminal area of both wings.

tristis. **N. tristis** Btlr. (72 c). Forewing blackish fuscous; the lines black; inner and outer denticulate, approximating on inner margin; a black cell lunule; subterminal line lunulate dentate, the teeth marked pale, sometimes strongly white on the veins; a row of black terminal triangles; hindwing fuscous, with traces of two dark outer lines. Japan.

externalis. **N. externalis** Guen. (72 c). Very much like *nodosalis* H. Sch., a little larger and more coarsely brown. An Indian insect occurring in Kashmir.

flavifusca. **N. flavifusca** Hmps. (72 c). Forewing dark fuscous brown tinged with yellow; the basal half clothed with thick flaky yellow scales, more conspicuous in the ♂; a yellowish subterminal line, sometimes slightly curved; the outer line as in *externalis*; hindwing fuscous. Described from a single ♀ from the Naga Hills, Assam; in the Tring Museum are several examples of both sexes from Kashmir.

99. Genus: **Zanclognatha** Led.

Tongue developed; frons smooth, with short projecting tuft of hair; palpi sickle-shaped, reaching far above the head, the third segment pointed; antennae of ♂ ciliated and with bristles, often with a knotlike swelling at middle; forelegs with a long expansible pencil of hairs. Larva feeding small through the winter on dry and decayed leaves feeding up in spring; pupating in a white cocoon on the ground. Type *Z. tarsiphumalis* Hbn.

Z. tarsiplumalis *Hbn.* (= ? *ventilabris* *F.*) (72c). Forewing grey brown with a faint purplish tinge; *tarsiplumalis.* inner and outer lines dark brown, fine and faint; the inner bent on each fold, vertical in the main; the outer widely excurved and irregularly crenulate beyond cell, insinuate on submedian fold; subterminal line stronger, oblique from before apex and straight, outwardly edged by whitish; a conspicuous slender brown lunule at end of cell; terminal line dark, edged with a bright white line at base of fringe; hindwing with outer and subterminal lines marked on inner marginal half of wing. Larva reddish yellow; the segmental incisions paler; dorsal line redbrown; three subdorsal, irregularly crenulate or hidden in blotches, finer, parallel, pale reddish lines; beneath the black spiracles a double irregularly crenulate lateral line; feeding on rotten leaves and all kinds of low plants. Occurs throughout Europe (not in Britain); also in Armenia, the Altai Mts., East Siberia, Amurland, the Ussuri district, and Japan.

Z. tarsicristalis *H.-Sch.* (74g). Forewing greyer, less purple, than *tarsiplumalis*; the subterminal *tarsicristalis.* line better marked, bordered with dark on both sides; the outer line more dentate; the cell lunule ocellate; the ab. *zelleralis* *Wocke.* (74g), from Silesia, has narrower wings with fainter markings. Found in Nassau, *zelleralis.* Silesia, S. Tyrol, Hungary, Croatia, Dalmatia, Bulgaria, S. W. France, and Sicily; also recorded from Bithynia. Larva greyish yellow, finely dusted with dark; dorsal line reddish, swollen laterally at the hinder edge of the segments; the reddish subdorsal shewing on the front halves of each segment; the colour varies from grey to brown with the green of the inside showing through; on rotten leaves and low plants generally.

Z. tenuialis *Rbl.* Forewing grey brown; the inner and outer lines running nearly parallel to one *tenuialis.* another; the subterminal line with a broad dark shade internally, running into apex. Found in S. Tyrol, Piedmont, and Slavonia.

Z. tarsipennalis *Tr.* (= *tarsicrinalis* *Hbn.* nec *Knoch*, *denticornalis* *Wocke.*, *kuwerti* *Fuchs*, *varialis* *Fuchs*) (72d). Forewing narrower and greyer, less purple, than *tarsiplumalis*, sometimes with a yellowish *tarsipennalis.* flush; the inner and outer lines nearer together; the subterminal line simple, brown without any shade before, slightly concave outwards; the cell lunule obscurer; hindwing paler grey, the subterminal dark, strongly white-edged externally; the ab. *bidentalis* *Hein.* is paler grey, with a faint yellowish or rufous flush, the sub- *bidentalis.* terminal line of hindwing hardly angled. Well distributed throughout Europe and in Armenia, the Ussuri region, Corea, and Japan. Larva dull grey; the dorsal line greyish black; tubercles black ringed with yellowish green; spiracles black; head black brown; on grasses and low plants.

Z. nemoralis *F.* (= *grisealis* *Schiff.*) (72d). Forewing grey brown often with a yellow tinge; lines *nemoralis.* dark brown; the inner straight, oblique, thick; the subterminal thick, concave outwards, curving into apex; outer line fine, sickle shaped; a short dark line at end of cell; hindwing quite pale grey with outer and subterminal obscure lines. Larva blackish grey, with a dorsal row of black triangles edged behind with yellowish grey, and black lateral oblique streaks; other descriptions make it reddish yellow grey; feeding on horn-beam, rubes, and other plants. Found more or less throughout Europe.

Z. tarsicrinalis *Knoch* (72d). Forewing pale grey, yellower than *tarsipennalis*; the three lines brown; *tarsicrinalis.* the inner angled on subcostal, then slightly oblique inwards; the outer oblique to 6, vertical to 4, then incurved and vertical to inner margin; the subterminal oblique and straight from before apex to before tornus; a broad straight diffuse brownish median shade containing the dark cell mark; hindwing paler, especially along costa, with traces of outer and subterminal dark lines; in the ab. *pallida* *Spul.* the median shade and the lines as well are all subobsolete. Throughout Europe (except Britain); Armenia, Siberia, Amurland, Ussuri region, and Corea.

Z. griselda *Btlr.* (72e). Forewing lilac grey, the ♀ paler than the ♂; lines brown; the inner straight *griselda.* and vertical, rarely slightly curved, often shortly bent on subcostal vein; outer oblique outwards to 6, sharply angled and incurved to vein 2, thence vertical; subterminal band broad, internally diffuse, slightly curved from apex to before anal angle; a terminal line of dark strigae between veins; a narrow brown black lunule at end of cell; hindwing with outer line and subterminal band angled on submedian fold. Japan, Corea, Ussuri district, Amurland.

Z. fumosa *Btlr.* (= *assimilis* *Stgr.*) (72d). Forewing dark brown to grey brown, sometimes with a *fumosa.* yellowish flush; lines brown, the inner curved, the outer sinuous, incurved in submedian fold, sometimes visibly bent on vein 6; subterminal irregularly flexuous, with pale outer edging which is also sometimes

present in the outer line; a dark cell lunule; terminal line finely black, followed by a conspicuous white line at base of fringe; hindwing with outer and subterminal brown lines, bent on submedian fold, the latter edged with white; terminal line as in forewing. Japan, China, Ussuri district, Amurland.

- robiginosa*. **Z. robiginosa** Stgr. (74 e). Forewing yellowish ferruginous, the lines dark; the inner line curved, slightly bent in middle; the outer sinuous, incurved on submedian fold; the subterminal waved, incurved on both folds; median shade diffuse, passing over a dark pale-edged lunule at end of cell; a dark terminal line; hindwing yellowish white; a dark subterminal line visible at anal angle. Amurland.
- crystalalis*. **Z. crystalalis** Stgr. (75 e). Near *tarsicristalis* but smaller; the ground colour paler ash grey; inner line straighter, only twice excurved; outer line less dentate, and in its upper course running quite close to reniform stigma; subterminal line white, less straight, especially at each end; hindwing with dark median and subterminal lines. Amurland.
- violacealis*. **Z. violacealis** Stgr. (= ? *extinctalis* Fuchs). Close to *stet* Brem. (75 e), from which it is distinguished by the darker, violet grey, ground colour of forewing; the inner line forms generally two larger teeth; the outer line is more dentate, irregularly inbent, not plainly sinuous; subterminal line met below costa by a blackish oblique apical streak; the black cell spot clearer. Amurland, Ussuri district, and Corea.
- umbrosalis*. **Z. umbrosalis** Stgr. (75 e). Forewing violet grey; the median and subterminal lines preceded by an inwardly diffusely edged brown shade; inner line as in *stramentacealis* Brem.; the outer more sinuous, strongly excurved above; cell lunule obscured by the diffuse median shade; hindwing darker, blackish grey, with two faint dark outer lines; the antennae of ♂ as in *tarsipennalis* and *violacealis*. Ussuri district.
- arenosa*. **Z. arenosa** Btlr. (74 g). Like *tarsicrinalis*, to which it has been sunk, but with a pale straw-coloured ground; the markings similar. Japan.
- helva*. **Z. helva** Btlr. (74g). Forewing pale stramineous speckled with brown; inner and outer lines brown, slender and irregular, with a dark cell dot between them; subterminal line oblique from apex to anal angle, dark brown, bounded on each side by a diffused brownish indistinct stripe; terminal line black; hindwing with costal half whitish; the outer and subterminal lines edged with white. Japan, Corea, and Kiushiu.
- dolosa*. **Z. dolosa** Btlr. (74g). Forewing above sandy brown; inner line slender, dark brown, angulated; outer line close beyond cell, parallel to it; subterminal nearly straight; a <-shaped dusky marking at end of cell, interrupting a dusky diffuse median streak; terminal line slender, black; hindwing greyer than forewing, with two indistinct oblique dusky lines, outer and subterminal, the latter edged with white. Japan.
- innocens*. **Z. innocens** Btlr. (= *undulata* Moore) (74 h). Forewing lilacine grey; the basal half of costa an oblique diffuse median shade, and the terminal area olive brown; inner, outer, and subterminal lines fine, dark brown, oblique and parallel, nearly straight; the inner slightly sinuous; the other two bluntly bent outwards at middle; the subterminal followed by a diffuse paler space; a dark cell spot, and fine black terminal line; hindwing dirty grey with two dusky outer lines. Japan, Corea, China.
- leechi*. **Z. leechi** South (= *fentoni* Leech nec Btlr.) (74 h). Forewing greyish brown; the inner, median, and outer lines fine, curved and oblique; the subterminal sinuous with white outer edge; terminal spots dark brown, triangular; reniform stigma testaceous, with two black dots at centre; hindwing with two dark lines and the subterminal black edged with white. Japan and Corea.
- germana*. **Z. germana** Leech. (74 h). Forewing grey brown; inner and outer lines darker, the inner curved, the outer excurved above and incurved below middle; subterminal line broad, curved from apex to inner margin close before anal angle; reniform lunular on a dusky median shade; hindwing rather paler; a slightly curved median line; subterminal line most distinct towards anal angle before which it is acutely angled and preceded by dark shading; a black slender terminal line. Changyang, Ichang, and Moupin, Central and Western China. Allied to *griselda* Btlr.

Z. angulina *Leech* (74h). Forewing grey brown, with a pinkish tinge; inner line brown, almost erect, *angulina*. with a slight dent below costa; outer line brown, slender, sharply angled beyond cell; subterminal brown, broadly diffuse, curved from apex to anal angle; cell mark linear, curved, with a dot at its lower end; hindwing browner in basal and median areas; outer line fine, subterminal broad, not reaching costa, both brown and angled towards inner margin; a fine black terminal line. A single ♂ from Changyang, Central China. Very similar to *griselda* *Btlr.*, but much larger; the outer line more acutely angulated, not indented between the angle and inner margin.

Z. triplex *Leech* (74h). Forewing greyish brown dusted with darker brown; the lines dark brown; inner *triplex*. curved or elbowed below costa, thence nearly straight to inner margin; outer sinuate, with a slight projection beyond cell; subterminal rather oblique, whitish, preceded by brownish shading; an oblique brown streak from apex; a black lunule at end of cell upon a dusky median shade which is variable in intensity; hindwing greyish brown dusted and suffused with darker; cellmark blackish; outer line black, subterminal whitish, preceded by brown shading, both angled below vein 3, and faint at each extremity; terminal line black. Central and Western China Corea. Browner than *germana*; both lines of hindwing angled.

Z. incerta *Leech* (74h). Similar to *triplex*, but some examples strongly suffused with fuscous on both wings. *incerta*. The main differences are found in the outer line of forewing, which is serrate and in the lines of the hindwing, which are wider apart. Central and Western China.

Z. centralis *Leech* (74h). Forewing pale grey-brown; lines fuscous; inner line angled near costa, then *centralis*. straight; outer angled below costa, then undulated; subterminal slightly sinuous, pale, internally clouded with fuscous brown; a blackish lunule on discocellular, placed on a fuscous median shade; hindwing dull whitish, dusted and tinged with fuscous; median line irregular, indistinct; subterminal inwardly shaded with fuscous, angled before anal angle and obsolete towards costa; a black terminal line. Taken at various localities in Central and Western China.

Z. vermiculata *Leech* (74h). Forewing grey finely irrorated with brown; lines fuscous; inner line straight, *vermiculata*. angled at costa; outer excurved and indented beyond cell, thence incurved; subterminal sinuous, whitish, preceded by brown shading which starts as an oblique streak from apex; a blackish lunule on discocellular upon a brown median shade; hindwing fuscous grey; a dusky median line visible towards inner margin; a whitish subterminal line, inwardly bordered with dark, sinuous towards costa and angled before inner margin. Western China: 1 ♂ taken at Moupin; resembles the paler forms of *fentoni* *Btlr.*

Z. paupercula *Leech* (74i). Forewing pale fuscous grey; lines blackish; inner line bluntly dentate below *paupercula*. costa and sharply dentate above inner margin; outer line excurved beyond cell; subterminal whitish, preceded by a brown shade; a blackish lunule on discocellular, below which the median shade is thick and strongly marked; hindwing paler, but suffused with fuscous; median and subterminal lines obscure, the latter whitish, inwardly brown bordered, and sharply angled above anal angle. Western China. Only the ♀♀ are known.

Z. annulata *Leech* (74i). Forewing greyish brown, heavily powdered with darker between the black *annulata*. inner and outer lines; inner line almost straight, with a small angle near costa; outer line excurved round cell, then incurved; subterminal straight; orbicular a black dot; reniform a brown annulus; hindwing fuscous grey, with dark cell spot and two dark curved outer lines, the subterminal slightly angled towards anal angle. Described from a single ♂ from Ship-y-shan, Central China.

Z. subnubila *Leech* (74i). Forewing glossy brown, showing purplish in certain lights, and darker in basal *subnubila*. half; inner and outer lines blackish, wavy; median shade and subterminal line diffuse, dusky, the latter waved and with white dots on the veins; an interrupted black terminal line; orbicular stigma a black dot; reniform with the centre and outline black; hindwing fuscous brown, with two darker transverse lines. Taken in various localities in Western China.

Z. nigrisigna *Leech* (74i). Forewing pale brownish grey, crossed by three blackish lines; the subbasal short; *nigrisigna*. the inner wavy, expanding on the costa; the outer elbowed about middle, rising from a black eostal blotch; subterminal pale, sinuous, shaded inwardly with blackish about middle, and intersecting a blackish apical cloud; reniform stigma blackish with pale centre; a row of terminal black lunules; fringe grey with pale

line at base; hindwing pale fuscous; a dusky central line and pale subterminal, the latter angled and edged with black. Central and Western China: Changyang, Ichang, Ship-y-shan, Wa-ssu-kow.

- sinensis.* **Z. sinensis** *Leech* (74i). Forewing light brown; the lines black; the subbasal short; the inner sinuous; the outer elbowed beyond the cell; subterminal line pale, inwardly shaded with blackish, joined by an oblique streak from apex; a terminal row of black lunules; reniform stigma with black outlines, the inner edge broadest; hindwing pale fuscous, with blackish cellmark and median line; outer line pale, inwardly blackish-shaded. 2 ♂♂ from Changyang, Central China. Apparently allied to *palumbina* *Btlr.* from N. India.
- stramentacealis.* **Z. stramentacealis** *Brem.* (= *stramentalis* *Brem.*) (74i). Forewing pale greyish straw-colour sprinkled with fuscous; the fringe fuscous; inner line outwardly curved; outer line dentates flexuous; subterminal wavy; a diffuse median shade, including the reniform stigma, fuscous; hindwing pale straw colour, with two dark cross lines. Kengka Lake, Ussuri.
- fascialis.* **Z. fascialis** *Leech* (74i). Forewing pale brown with a faint pinkish tinge; an indistinct dark basal band; both wings traversed by a narrow white subterminal band, bordered internally with olive brown, which colour is continued to apex of forewing. Described from a single ♂ from Hakodate.
- linealis.* **Z. linealis** *Leech* (74i). Forewing pinkish buff, with minute dark cellspot and straight narrow brown subterminal band, faintly bordered with whitish externally; hindwing pale brown. Described from a pair only, the ♂ from Satsuma, the ♀ from Nagasaki.
- planilinea.* **Z. planilinea** *Hmps.* (74k). Differs from *erecta* in being grey brown; forewing with inner line slightly curved, not angled below costa; cell lunule larger; outer line more excurved beyond cell and less oblique towards inner margin; hindwing grey brown. An Indian insect recorded by LEECH from Changyang, Central China and Gensan, Corea.
- fractalis.* **Z. fractalis** *Guen.* (= *raptatalis* *Walk.*) (74k). Forewing grey brown with a violet flush, with a row of subterminal dark marks; the lines distinct, especially the median which is straight and strong, and the subterminal, which is very neat, shaded internally, edged with pale externally and twice indented; hindwing with two lines, the subterminal pale and plainer. A South Indian and African species which LEECH records from Kiushiu and Corea.
- incultalis.* **Z. incultalis** *Leech* (74g). Forewing pale brown suffused with darker; inner line black, indented and slightly curved; outer line black, elbowed and curved, preceded by a faint fuscous median shade; subterminal line angulated, broad and blackish, edged externally with whitish; reniform linear, black; hindwing traversed by two black lines, both pale-edged towards abdominal margin; a black terminal line before the pale brown dark-spotted fringe; a black spot on last segment of dorsum. Described from a ♀ from Fushiki.
- maculifera.* **Z. maculifera** *Btlr.* (74h). Nearly allied to *lignea* from Japan, but much smaller, paler, whitish and grey; orbicular stigma black, wedge-shaped; reniform larger, black edged with white; outer line, less denticulated, white-edged; terminal border internally pale-edged; hindwing whitish at base; inner half of the area between median band and outer border white; otherwise like forewing. Described from the Punjab; recorded by LEECH from Yokohama, Japan, from Gensan, Corea, and Kiushiu.
- lignea.* **Z. lignea** *Btlr.* (74i). Forewing pale reddish brown, with the centre of the disc, between outer line and termen, whitish; two irregularly dentate sinuate blackish lines limiting the median belt, which is also traversed externally by a blackish streak nearly parallel to outer line; discocellular black; a slender black terminal line; outer border irregularly sinuate and with a dusky margin internally; a blackish subapical costal spot, enclosing a whitish dot on margin; dorsum with a black belt, corresponding to the black mark on inner margin of hindwing, where the median shade and outer line coalesce. Yokohama, Japan.
- aegrota.* **Z. aegrota** *Btlr.* (74k). Forewing whity brown, crossed by four equidistant irregularly sinuated whitish bordered black lines; costa greyish; terminal area broadly dark; terminal spots black; reniform stigma outlined in black; hindwing greyish, darker terminally; two black outer lines, the outermost edged clearly with white in lower half of wing. Yokohama, Japan.

100. Genus: **Herminia** Latr.

Tongue present; frons smooth, with slight tuft of hairs; palpi obliquely upbent, rough scaled, the second segment very long, straight, the third short, pointed; antennae of ♂ with fine pectinations or ciliations, with a thickening of the shaft below middle; thorax and abdomen smooth; tibiae smoothly scaled; foretibiae of ♂ often with a large expansible hair pencil. Pupæ in a slight spun cocoon. Type *H. tentacularia* L.

Sect. I. Antennae of ♂ with long, thin pectinations and a knotlike swelling at middle.

Subsect. A. Forelegs of ♂ with pencil of hairs.

H. cribrumalis Hbn. (= *cribralis* Hbn.) (72 e). Forewing bone colour, slightly brown speckled; inner and outer lines formed of cloudy dark fuscous marks; the subterminal of indistinct dark dots; cell dot black; hindwing with the termen brownish; cell dot grey. Larva pale greyish brown with yellow freckles; dorsal line darker, pale edged; subdorsal and spiracular lines paler; feeds on marsh grasses, *Carex*, *Luzula*, etc., hybridizing small. Occurs throughout Europe. *cribrumalis*.

H. crinalis Tr. (= *barbalis* Schiff., nec Cl.) (72 e, f). Forewing greyish ochreous, dusted with dark brown; inner and outer lines dark yellowish brown, bent below costa and somewhat sinuous; subterminal line cloudy, dark brown, nearly straight; cell mark dark, ill-defined; hindwing whitish dusted with fuscous except towards costa and apex, with obscure dark outer and subterminal lines. Larva diffusely yellow and red, sometimes wood brown; dorsal line broad, brown; a square white spot in the incisions of the segments; subdorsal lines narrow; a strong dark oblique streak at sides of each segment; head dull black; feeds on *Rubia peregina*; when disturbed rolls itself up into a knot. *crinalis*.

H. gryphalis F. R. Smaller than the other species, somewhat resembling *tentacularia*, but the colour is a much warmer red. Hungary, Slavonia, the Tyrol, Armenia, Amurland, Ussuri district, Corea. *gryphalis*.

Subsect. B. Forelegs of ♂ without pencil of hairs.

H. tentacularia L. (= *tentaculalis* Schiff.) (72 f). Forewing bone colour, thickly dusted with yellow brown; the lines brown; the inner curved in cell, the outer angled on vein 6, the subterminal oblique, straight or slightly bent; a dark lunule at end of cell; hindwing with traces of outer and subterminal lines, the latter pale-edged; ♀ always smaller than ♂; the ab. *modestalis* Heyd. (72 f) the mountain form, is without the yellow tinge and therefore duller; on the other hand, ab. *carpathica* Horm. (72 f), though partially retaining the yellow flush, is more or less without dark dusting; Japanese examples belong to this form, and STAUDINGER quotes the Kentei Mts. for it. Larva pale brownish grey, shagreened with white atoms; dorsal streak dark; head round, dark brown; feeding on low plants, especially *Hieracium pilosella*, and grasses. Of partial distribution in Europe, also occurring in Armenia and through northern Asia to Amurland and Japan. *tentacularia*, *modestalis*, *carpathica*.

Sect. II. Antennae of ♂ without knotlike swelling, ciliated and with bristles.

H. derivalis Hbn. (72 f). Forewing bright rufous ochreous thickly dusted with brown; inner and outer lines brown, curved, more or less parallel; the subterminal dark and waved, but rarely distinct; a dark linear cellspot; hindwing with cellspot, outer line, and traces of a subterminal. Larva dark yellowish brown, narrow in front; head and thoracic plate dark brown, the latter edged and bisected with white; anal plate of the ground colour, bluntly triangular; dorsal and lateral tubercles black, interspersed with numerous pale points; feeding on dry and decaying leaves of oak, sallow, etc. Fairly distributed in Europe, and occurring in Asia Minor, Armenia, the Kentei Mts., Amurland, and the Ussuri district. *derivalis*.

101. Genus: **Pechipogo** Hbn.

Differs from *Herminia* in the very much smaller areole; the antennae of the ♂ without knotlike swelling, ciliated and with bristles; the forelegs of ♂ with hair pencil. Type *P. barbalis* Cl.

barbalis. **P. barbalis** Cl. (= *pectitalis* Hbn.) (72 g). Forewing ochreous dusted very densely with yellow brown; a slight dark cell mark; inner and outer lines brownish, more or less parallel, the inner curved in cell, the outer more widely beyond it; subterminal line oblique; hindwing with costal area pale, without markings; a faint outer line; subterminal dark, externally edged with pale. Larva dull reddish ochreous, with dorsal, subdorsal, and lateral rows of dark freckled diamond shaped marks; head fuscous; feeding on decayed leaves of oak, birch, and alder. Throughout Europe except the northern parts, in Amurland and the Ussuri district.

102. Genus: **Adrapsa** Walk.

Tongue present; palpi of ♀ sickle-shaped; the second segment well-scaled, upcurved, narrowing at tip, the third as long as second, aciculate; of ♂ thickly haired, with a tuft of hair porrect from end of first segment, second segment erect, densely haired above, third thrown forward, short and slightly tufted; antennae of ♂ with fasciculate cilia, the shaft thickened before middle, with tufts of short scales above and on inner side; cell of hindwing short; veins 6, 7, and 3, 4 stalked. Type *A. abtualis* Walk.

rivulata. **A. rivulata** Leech (74 k). Forewing fuliginous brown; lines wavy, whitish; inner, outer, and submarginal; the median shade black; some grey scaling on the costal and in the median areas, with patches of grey in the terminal area; a white dot represents the orbicular stigma and a white spot the reniform; hindwing with outer and submarginal wavy white lines, and some grey scales in terminal area. Described by LEECH from a single ♂ taken at Omeishan, Western China.

incertalis. **A? incertalis** Leech (74 k). Forewing brownish fuscous, darker along termen; inner and outer lines wavy, blackish, conversely paler-edged; submarginal line broken up into a row of pale spots; orbicular stigma a white dot, the reniform a white bar, touching a blackish median shade; hindwing with the same lines, except the inner; underside ochreous brown; the terminal area dark brown; a subquadrate patch of pale ground colour below apex of forewing. A large species known only from a single ♂ from Omei-shan, Western China.

reticulatis. **A? reticulatis** Leech (74 k). Forewing cream white; the transverse markings broad and diffuse, blackish fuscous; the inner band curved, the outer sinuous, angled beyond cell; submarginal band also sinuous, inwardly diffuse; two horizontal blackish streaks from inner to submarginal line, one above middle, the other above inner margin; hindwing whitish, with two dark curved lines and a small black cell spot. Described from a ♀ taken at Changyang, Central China; both sexes taken since in Yesso, Japan.

103. Genus: **Badiza** Walk.

Differs from *Adrapsa* in the antennae of the ♂ being unipectinate, the palpi variable. Type *B. ereboides* Walk.

notigera. **B. notigera** Btlr. (74 k). Forewing dark brown black; inner and outer lines white, wavy, but only plain on costa and inner margin; subterminal line forming a white mark on costa and two more above middle; a large white oval spot at end of cell and a white dot in the cell; fringe black, with whitish lunules at base and a white spot below apex; hindwing with obscure white cell spot and two wavy whitish outer lines. Japan.

simplex. **B. simplex** Btlr. (74 k). Forewing bronzy olive brown; a small white spot near base of cell and large one at its end; outer line marked by a white costal spot; subterminal by a white spot on costa and two or three irregular ones below; fringe brown chequered with white; hindwing with pale cellspot and median and subterminal pale edged lines. Japan.

104. Genus: **Bocana** Walk.

Palpi of ♂ with the second segment simple, without tufts, the third upturned and naked; antennae of ♂ bipectinate; forewing of ♂ with a large costal fold on underside; otherwise like *Adrapsa*. Type *B. manifestalis* Walk.

B. spacoalis *Walk.* Forewing greyish fuscous tinged with purple; the lines white, oblique; the inner *spacoalis*. nearly vertical; the outer waved, dilated towards costa; hindwing with the outer line nearly straight. Described from N. China; also in E. and W. China, Corea, Japan, and Yesso.

B. bistrigata *Stgr.* Forewing dark grey brown, almost brown black; inner and outer lines straight, *bistrigata*. sulphur yellow; the inner often somewhat curved; the outer just beyond middle, always straight; at end of cell a curved yellowish streak, often connected by short yellow dashes with the outer line; subterminal line pale, faint, denticulate; hindwing dark, above anal angle with the beginning of two paler cross lines. The species was described from Amurland and is recorded by LEECH from Japan. Antennae of ♂ shortly bipectinate, with long cilia and no swelling.

B. marginata *Leech* (74k). Forewing pale whitish brown, darker in basal area and between the two lines, *marginata*. which are blackish; the inner inwardly oblique; the outer excurved from costa to below middle, then sharply incurved, and lastly straight to inner margin; subterminal line blackish, inwardly shaded with dark brown; reniform a dark lunule on a dusky median shade; hindwing with obscure median line and dark subterminal band; a black cell dot. Described by LEECH from a single ♂ taken at Kiukiang, Central China. The antennae are bipectinate.

105. Genus: **Apladrapsa** *gen. nov.*

Distinguished from *Adrapsa*, *Badiza*, and their allies by the antennae of the ♂ being armed with long bristles and not contorted by thickening; Type *A. ochracea* *Leech*.

A. ochracea *Leech* (74l). Forewing pale ochreous brown, the terminal area purplish brown; lines blackish, *ochracea*. indistinct; the inner slightly curved; the outer waved and sinuous; subterminal pale, sinuous, followed below apex by an ochreous blotch; orbicular and reniform stigmata whitish outlined with fuscous, separated by a dark median shade; hindwing with basal as well as terminal area purplish brown. Ichang and Moupin, China. Antennae of ♂ with long bristles, not contorted.

106. Genus: **Trotosema** *Btlr.*

Allied to *Echana*; palpi not so long, recurved and closely applied to the face; forewing broad and short; the costa beyond cell with a pouchlike tuft of over lapping curly hair in the ♂. Type *T. sordidum* *Btlr.*

T. sordidum *Btlr.* (74l). Forewing dull fuscous; inner line plain only on inner margin; outer line lunulate *sordidum*. dentate, very fine and obscure; subterminal line pale, sinuous, preceded by a dark shade; stigmata black; the orbicular a dot, the reniform a vertical black spot; median shade thick below middle, extended across hindwing before middle, followed by outer and subterminal lines. Known only from a single ♂ from Yokohama, Japan.

107. Genus: **Bleptina** *Guen.*

Tongue present; frons smooth; palpi sickle-shaped, the second segment reaching far above vertex, the third long and pointed, slender, with tuft of hair on inner side; antennae of ♂ with short fascicles of cilia; thorax and abdomen smoothly scaled; forewing with areole; hindwing with vein 5 from near lower angle of cell; foretibiae usually with a sheath beneath which are hidden masses of flocculent scales. Type *B. confusalis* *Guen.* from S. America.

B. albovenata *Leech* (72g). Forewing fuliginous brown; the markings white; inner and outer lines *albovenata*. oblique, the outer somewhat excurved about middle; median vein and its branches to just beyond outer line and the discocellular white; orbicular stigma black ringed with white; reniform consisting of two black dots; subterminal whitish, generally indistinct; hindwing fuscous; outer line interrupted; traces of a pale subterminal line. From various localities in Western China.

- proxima.* **B. proxima** *Leech* (741). Differs from *albovenata* in being paler in ground colour; the inner and outer lines both curved and merely paler than the ground, not white; the median vein and veinlets and the discocellular not white; the subterminal line more deeply sinuous; the stigmata blackish, but obscure. 2 ♂♂ from Ta-t sien-lu, Western China.
- ambigua.* **B. ambigua** *Leech* (741). Forewing fuliginous brown; inner and outer lines white, both a little outcurved about the middle; the median vein and its veinlets to just beyond outer line and the discocellular white as in *albovenata*; subterminal whitish, sinuous; terminal line black, with white dots at ends of veins; hindwing fuscous; the outer and subterminal lines pale, both white towards inner margin. Allied both to *albovenata* and *proxima*, but larger than either, and the outer line is placed farther from the end of the cell. A single ♀ from Western China.
- tripartita.* **B. tripartita** *Leech* (741). Forewing with basal and terminal areas chocolate brown; median area ochreous overlaid with brownish, traversed by two darker wavy lines; basal third limited by a bright ochreous line, excurved below costa; terminal third limited internally by a similar line, which is oblique and slightly indented below costa; subterminal line wavy, plainest towards costa; the terminal area beyond greyer; a terminal row of black dots; hindwing fuscous, costal area whitish; inner and outer lines darker, white-edged. From Wa-shan and Chia-kou-ho, Western China.
- curvilinea.* **B. curvilinea** *Leech* (741). Forewing with basal and terminal areas dark brown, the median area greyish brown suffused in middle with fuscous; the dark areas limited each by a pale ochreous line; subterminal line obscure, sinuous, starting from an elongate whitish costal spot; the area beyond greyish; orbicular stigma a black dot; reniform narrow, blackish, outwardly bordered with whitish; hindwing dark brown, paler within the whitish outer line; subterminal line wavy, but clear only towards inner margin. From Central and Western China. Allied to *tripartita*, but darker; the inner and outer lines both curved; subterminal line starting from a white costal spot.
- descripta.* **B. descripta** *Leech* (741). Forewing brown; inner and outer lines pale ochreous; the former nearly straight, the latter angled obtusely above the middle; subterminal line whitish, wavy, interrupted, plainest at costa; a row of black terminal dots; orbicular stigma a black dot; reniform with the outer edge pale ochreous; hindwing greyish brown; outer and subterminal lines whitish; the outer preceded by an interrupted blackish line; a row of black terminal lunules. A single ♂ from Changyang, Central China.
- sinuosa.* **B. sinuosa** *Leech* (741). Forewing ochreous; the basal and terminal areas dark brown; the edge of the basal patch is curved; the inner edge of the terminal area is crenulate and incurved below middle; subterminal line ochreous, crenulate; stigmata indistinct, outlined with blackish; hindwing brown, with two crenulate ochreous lines, the outer the plainer, but neither attaining the costa. Central and Western China, Changyang, Ichang, and Omei-shan.
- propugnata.* **B. propugnata** *Leech* (75 a). Forewing yellowish, the basal and terminal areas purplish-brown; the edge of basal patch is straight; the inner edge of the terminal area is sinuate towards costa and strongly indented at middle; subterminal line pale, wavy, but indistinct; a terminal row of black dots; orbicular stigma punctiform; reniform a colon-like mark; a dull median shade between the stigmata; hindwing whitish, with two broadish fuscous bands; the basal and terminal areas clouded with fuscous. Described from a single ♀ from Wa-shan, Western China.
Allied to *B. latifasciata* *Hmps.* from India.
- nigristigma.* **B. nigristigma** *Leech* (75 a). Forewing brown; the basal two thirds brighter; the inner and outer lines double, dark brown; the latter incurved below cell and edged externally with blackish; subterminal line brownish, wavy, edged and marked with whitish, most distinct towards costa; orbicular stigma black, punctiform; reniform black; hindwing fuscous grey, with two pale cross lines. Central and Western China. Allied to *B. hadenalis* *Moore*.
- venata.* **B. venata** *Leech* (75 a). Forewing light brown; the venation ochreous brown; inner and outer lines ochreous brown, erect, the inner angled below costa; subterminal line pale, sinuous; terminal line pale brown; discocellular ochreous; hindwing fuscous; the outer line pale; the subterminal obscure and wavy. 1 ♂ from Omei-shan, Western China.

B. parallela *Leech* (75 a). Forewing pale brown dusted with fuscous; inner and outer lines clear pale brown, *parallela*. outwardly edged with dark brown, and parallel to each other; area beyond outer line darker brown, with a blackish cloud about middle and a smaller one above it, not always plain; subterminal line pale, sinuous, edged with blackish but indistinct; reniform stigma represented by two black dots and a pale line; hindwing with a clear pale brown outer line with fuscous edge; the area beyond fuscous brown; subterminal line wavy, edged with blackish; a row of black terminal dots on both wings. Northern and Western China. The lines are like those of *B. trilinealis* *Brem.*, but the species is larger.

B. albolinealis *Leech* (75 a). Forewing ochreous brown, with three whitish oblique stripes bordering the black *albolinealis*. transverse lines; inner line very oblique, fading out before costa; outer and subterminal lines oblique, diverging towards inner margin; hindwing pale whitish brown, tinged on basal area with fuscous, and with a broad brown band on outer area; cell-spot blackish. Kiukiang, Central China.

B. rectilinea *Leech* (75 a). Forewing brown with slight purplish reflection; inner and outer lines whitish, *rectilinea*. almost straight, both edged with dark brown; subterminal line pale, wavy, angulated towards costa and inner margin; a row of black terminal lunules; reniform stigma whitish with an obscure dark outline; hindwing with whitish outer line and wavy, pale, subterminal; terminal lunules black as in forewing. Central and Western China.

B. ? vestitalis *Leech* (75 a). Forewing pale redbrown, the basal two thirds whitish; lines black; inner angled *vestitalis*. outwardly at middle; median broad, bidentate; outer wavy, white-edged, excurved beyond cell, dentate towards inner margin; subterminal wavy, whitish, but indistinct; a black costal dot between inner and median lines, and at end of outer line; reniform whitish, containing a black lunule; orbicular a black dot; hindwing with the lines black, the inner broad, the outer sinuous, white-edged. Moupin, Western China.

B. ningpoalis *Leech* (75 a). Forewing fuscous brown; inner and outer lines very dark brown; the subterminal line pale, internally edged with dark brown; the stigmata yellow edged with dark brown, the orbicular quite small, the reniform large; hindwing with two parallel dark lines beyond the middle. From the Snowy Valley, Ningpo and Chang-yang. *ningpoalis*.

B. contigua *Leech* (75 b). Forewing pale brown tinged with greyish; inner and outer lines fuscous, the inner *contigua*. wavy, the outer curved beyond cell, and slightly waved; subterminal line pale, wavy, internally shaded with dark; a pale ochreous spot at end of cell; hindwing with an oblique, fuscous median line and an obscure, curved, pale subterminal. Recorded only from Changyang, Central China. Allied to *B. ningpoalis* *Leech*, from which it is separated by its smaller size, lighter colour, and oblique, not curved, inner line on hindwing.

108. Genus: **Bertula** *Walk.*

Differs from *Bleptina* *Guen.* in that the palpi of the ♂ are recurved over the vertex to middle of thorax, the second segment being fringed with hair in front and bearing tufts of long hair from the inner side, and the third segment also being tufted; the forewings beneath have a costal fold serving for retinaculum. Type *B. abjudicalis* *Walk.*

Sect. I. Forewing of ♂ with the costal fold narrow.

B. abjudicalis *Walk.* (= *thyrisalis* *Walk.*) (75 b). Forewing brownish ochreous grey; basal area red brown *abjudicalis*. limited by an oblique ochreous inner line; outer line sinuous from costa to vein 4, there angled and inbent below end of cell to inner margin; a white lunule at end of cell; an indistinct sinuous dark subterminal line; hindwing fuscous grey, with pale waved median and subterminal lines, partially defined by dark; in the form **tumidalis** *Walk.* the median area between the inner and outer lines of forewing is much darker. A South Indian species, recorded by LEECH from Omeishan, W. China; the space between the lines is said to be broader than in Indian examples of *abjudicalis*; this is likewise the case with *dentilinea* *Hmps.* from Sikkim, N. India with which the Chinese form is perhaps more nearly allied.

Sect. II. Forewing of ♂ with the costal fold large and wide.

hisbonalis. **B. hisbonalis** *Walk.* Forewing dark fuscous brown with slight purple flush; a pale speck at end of cell; a pale straight and oblique subterminal line from apex; the terminal area beyond it greyish; hindwing with oblique outer line; the whole outer area grey; the tufts from second segment of palpi ochreous. Described from the Khasia Hills, Assam; an example in Tring Museum from Japan.

jutalis. **B. jutalis** *Walk.* (= *incongruens* *Btlr.*, *amurensis* *Stgr.*) (72 h). Forewing purplish fuscous; inner line blackish; median shade oblique, diffuse; outer line waved and oblique, curved below costa; subterminal line waved, obscure, on a diffuse dark band; a dark speck in cell, and yellowish white dark ringed spot at end; hindwing with similar markings, except the stigmata; the tufts on palpi of ♂ ochreous. Amurland, China, Corea, Japan; described originally from Ceylon, and occurring also in Burma.

obliqua. **B. obliqua** *Wilem.* (75 b). Forewing grey brown; an oblique black line from apex to $\frac{2}{3}$ of inner margin, outwardly bordered with pale; terminal area beyond it and the fringe paler; a series of large black terminal spots; a slight dark dot in cell and indistinct mark at its end; hindwing like forewing, with a curved dark outer line limiting the darker basal area. Japan; Kiushiu and Shikoku.

109. Genus: **Hydrillodes** *Guen.*

Palpi long and sickle shaped, the second segment curved back over the head, the third long; thorax and abdomen smoothly scaled, without crests; forewing in the ♀ elongate; the cell short; the discocellular weak; veins 4, 5 stalked; 7, 8, 9, 10 stalked; hindwing with the cell short; veins 3, 4 and 6, 7 stalked; in the ♂ the forewing is subject to various abnormal developments; antennae of ♂ pubescent.

Sect. I. Palpi smoothly scaled; forewing of ♂ without abnormalities.

morosa. **H. morosa** *Btlr.* (72 h). Forewing of ♀ with basal half sordid cream colour with slight speckling; the outer half dark fuscous with a pale subterminal line of dots, and preceded by the crenulate dark outer line; the ♂ smaller, dull brownish without markings; hindwing fuscous. Japan.

funeralis. **H. funeralis** *sp. nov.* (72 h). Forewing whitish suffused with dull grey in basal half, fuscous in terminal; a small dark basal patch; the inner line inwardly oblique, wavy; the outer crenulate, incurved below middle; reniform a black lunule; subterminal line whitish, rarely distinct; terminal spots triangular, large and black; space between outer and subterminal lines darkest; hindwing uniform fuscous; in ab. *semialba* *ab. nov.* (72 h) the basal half of forewing is much whiter. Japan and Amurland.

110. Genus: **Capnistis** *gen. nov.*

Frons with strong tuft of hairs above; palpi with second segment long, obliquely porrect upwards, with a heavy fringe of hairs above, third segment also fringed, about $\frac{1}{3}$ the length of second; antennae of ♂ with tuberculate fascicles of cilia and bristles; wings broad; apex of forewing slightly produced; termen bluntly bent at vein 4; hindwing truncate at tornus. Type *C. albinotata* *Btlr.*

albinotata. **C. albinotata** *Btlr.* (75 b). Forewing bronzy brown, with the termen grey; two nearly central parallel stripes, slightly darker than the ground colour, ending on costa in reversed snow white spots; a praeapical costal white dash at rise of subterminal line; cellspot an orange lunule; hindwing dull olive brown, with grey termen separated by a slightly darker diffused band. Japan.

111. Genus: **Falcimala** *Hmps.*

Tongue present; frons smooth; palpi upcurved in front of face, the second and third segments both long, the third slender and pointed; antennae of ♂ ciliated; thorax and abdomen smoothly scaled; a distinct dorsal tuft on first segment; forewing elongate, narrow, the termen oblique; vein 6 from the depressed end of cell, 7 from the bend, 8, 9, 10 stalked; hindwing with both 3, 4 and 6, 7 stalked; vein 5 from middle of discocellular. Type *F. atrata* *Btlr.* from India.

F. japonica *Btlr.* (75 b). Forewing lilacine grey; three equidistant black spots on basal half of costa, from the third of which a broad diffuse dark band crosses the wing; a blackish zigzag white edged line from costa before apex to vein 6; a black spot on inner margin close to anal angle; terminal dots black; hindwing pale brownish grey; a whitish edged diffuse grey streak from anal angle to middle of wing. Tokio, Japan.

112. Genus: **Olulis** *Walk.*

Tongue present; frons smooth; palpi upturned, the second segment long, straight and smooth, the third erect, slender; antennae of ♂ pubescent; thorax and abdomen smooth; middle legs of ♂ with a pencil of hair from base of tibiae; forewing elongate, the costa arched at base; termen angled in middle; veins 8, 9, 10 stalked; hindwing with well-rounded termen; veins 3, 4 stalked; 5 from below middle of discocellular. Type *O. puncticinctalis* *Walk.*

O. puncticinctalis *Walk.* (= *lignulina* *Walk.*, *lignigeralis* *Walk.*) (75 b). Forewing ochreous, with slightly darker dusting; inner line obscure, curved, dark-dotted on veins; outer line double, curved, minutely waved; a diffused oblique dark line from costa before middle to lower angle of cell; small red specks in and at the end of cell and beyond its lower angle; a row of dark terminal dots; hindwing pale ochreous, the outer half rosy pink. Of this insect, which is found in N. India, Ceylon, and Borneo, LEECH records a specimen from Nagasaki, Kiushiu.

113. Genus: **Plumipalpia** *Hmps.*

Frons with a conical tuft; palpi obliquely porrect upwards; second and third segments fringed above with long hair; antennae of ♂ bipectinate; metathorax with tuft of scales; forewing with raised tufts of scales, long and narrow; in the forewing 7, 8, and 9, 10 are stalked; 8 anastomosing with 9 to form areole. Type *P. lignicolor* *Hmps.*

P. simplex *Leech* (75 b). Forewing pale whitish brown, slightly dusted and in parts suffused with darker; reniform stigma a black lunule placed on a whitish spot; beyond it an obscure dark transverse shade, which on inner margin is marked with black; a similar, but shorter mark, is visible at middle of inner margin; some indistinct dark markings along termen. Described by LEECH from a single ♂ taken at Ichaug, Central China.

114. Genus: **Dichromia** *Guen.*

Tongue well developed; frons with pointed tuft of hairs; palpi horizontally porrect, second segment elongate, flattened, roughly scaled above and below, third similar, but much shorter and upturned; antennae in ♂ pubescent, with short bristles; thorax and abdomen smooth; tibiae thickly scaled; forewing elongate; costa faintly shouldered near base and insinuate in middle; termen obliquely curved; hindwing with vein 5 parallel to 4; 3 and 4 usually shortly stalked; hindwing yellow; ♀ slightly smaller than ♂. Type *D. trigonalis* *Guen.*

Mainly an eastern and tropical Genus.

D. trigonalis *Guen.* (= *sextalis* *Walk.*) (72 h, i). Forewing dark fuscous brown; the basal area and terminal third thickly sprinkled with whitish scales; lines whitish; inner oblique and straight outwards to vein 1, where it is lost in an ochreous streak along inner margin; outer line oblique inwards, slightly waved, reaching inner margin at the end of the ochreous streak; an oblique whitish streak from apex running in along vein 6, with a dark diffusely edged cloud below it; subterminal line waved, pale, on costa preceded by a blackish patch; hindwing deep yellow, with a broad blackish apical border; abdomen yellow above and below; hindlegs yellow. Found in Central and Western China, Corea, and Japan. Larger than *amica* *Btlr.*, distinguished by the yellow abdomen.

D. frustalis *spec. nov.* Like *trigonalis* *Guen.*, but distinguished as follows; the lines are grey, not white; the outer line straight, not waved; the inner obliquely curved outwards appears to join outer line above inner margin, the base and inner margin below vein 1 being uniformly grey; the oblique patch from apex is grey, not whitish; hindwing paler yellow, the dark terminal border fuscous, not black, less defin-

ed internally; the base fuscous-tinged along median vein and vein 1; abdomen greyish fuscous, with a yellow tinge in ♀; in the ab. *completa* Warr. there is no pale scaling along inner margin below vein 1; the inner line is simply curved, and the outer preceded by a thick brown line; the bluish grey scaling of the basal and terminal areas tends to meet along the costa; in the hindwing there is some dark scaling at end of vein 1. Perhaps only a form of *trigonalis*, along with which it occurs.

amica. **D. amica** Btlr. (72 i). Differs from *frustalis* in having no pale scaling along inner margin below vein 1; the pale grey inner line is simply curved, and the outer preceded by a thick brown line; the whole median area therefore is dark across wing, and not merely a triangular costal space, as in *trigonalis* and *frustalis*; the bluish grey scaling of the basal and terminal areas tends to meet along the costa, which is dark only just before outer line; in the pale yellow hindwing there is some additional dark scaling at end of vein 1. Japan and Yesso. Intermediate in size between *trigonalis* and *frustalis*.

opulenta. **D. opulenta** Alph. (72 i). Forewing fuscous brown; the inner margin below vein 1 pale dull grey; the basal area grey speckled with brown; inner line grey, oblique to vein 1; outer line nearly vertical, projecting slightly outwards on each fold, followed by a broad white space with diffuse outer edge, speckled with brown; the obliquely curved apical streak and the tornal area white thickly dusted with black, the subapical cloud and the patch on costa before subterminal line brown; a row of slender dark terminal lunules preceded by a white line; fringe whitish, with three waved grey lines; hindwing pale yellow, with a fuscous terminal border, diffusely edged internally, running to submedian fold; terminal line blackish; fringe pale grey, darker towards apex; abdomen luteous grey. Persia and Bokhara.

claripennis. **D. claripennis** Btlr. (72 i, k). Forewing pale chocolate brown; a broad costal stripe dark grey, finely dusted with pale; inner line absent; outer oblique, nearly straight, lilac grey, followed by a band of lilac grey speckled with brown; a triangular apical patch of the same colour; subterminal line obscure, lilac grey, plainest below middle; terminal line deep brown, preceded by some lilac grey scaling; fringe lilac grey, with three wavy dark lines; hindwing orange yellow; fringe grey, preceded by a slight brown shade; abdomen yellow; the ♀ has the basal area of forewing yellower, showing a raised black spot in cell, which is sometimes visible also in the ♂. Japan.

orosia. **D. orosia** Cram. (72 i). Forewing pale grey thickly peppered with fine dark atoms; a little before middle of costa a large deep chocolate brown cone-shaped blotch, its truncated apex reaching vein 1, its edges formed by the pale inner and outer lines which become confluent; terminal area towards apex shaded with brown; fringe grey brown; hindwing bright yellow, with a brownish fuscous terminal border, gradually attenuated to vein 2; fringe brownish, yellow at anal angle; abdomen and hindlegs yellow. Larva pale green, covered with series of small black tubercles. Found in China, as well as throughout India.

quadralsis. **D. quadralsis** Walk. (= *mollis* Swinh.) (72 k). A large edition of *trigonalis*; the inner line curved across wing to meet outer line on inner margin, where the grey of the basal area becomes tinged with brown; hindwing bright yellow, with a black border which is very broad at costa, narrowing to a point below vein 2. An Indian species which extends into Japan.

115. Genus: **Rhynchina** Guen.

Tongue present; palpi porrect, very long, fringed with long hair above, the terminal segment obliquely upturned; frons with a sharply pointed tuft of scales; thorax and abdomen smooth; tibiae smooth; forewings narrow and elongate, with acute apex and oblique termen; hindwings broad and ample; no tufts of raised scales on forewing. Type *R. pionealis* Guen.

Sect. II. Antennae of ♂ subserrate, with fascicles of long cilia.

Subsect. A. Forewing not exceptionally narrow.

abducalis. **R. abducalis** Walk. (72 k). Forewing pale grey or lilac grey, often brownish before an oblique rufous brown line from apex to before middle of inner margin, elbowed on vein 4, and sprinkled throughout with blackish scales; a faint curved oblique line from base of vein 1 to middle of cell, beyond a dark dot in cell; two small dark dots on discocellular; the oblique line from apex is edged with paler; in the pale terminal space are two pairs of curved dark lines, often much obscured, but plainest on inner margin; terminal line finely rufous; a row of minute dark subterminal dots; fringe with three dark grey lines; hindwing

brownish grey, darker along termen; in the type form the oblique line is preceded by broad olive brown shading, containing within it a darker more diffuse line; in *vigens* *Btlr.* (72k) the ground colour is paler, more shining whitish, and the dark shadings brown black, with the four outer lines well marked; hindwing paler; fringe whitish; — in *curviferalis* *Walk.* (72k) the ground colour is uniform lilac grey; the oblique line fine, usually without dark shading before it. West China; the subspecies *vigens* *Btlr.* from Japan; also in India, whence both of WALKER'S types.

R. columbaris *Btlr.* (72k). Somewhat smaller than *abducalis*; distinguished by the outer oblique line not being elbowed at vein 4, but straight or scarcely curved; it varies like *abducalis*, some examples having the dark sealing before the oblique line, and the outer lines dark and well marked, — ab. *imitans* *ab. nov.* — as in *vigens* *Btlr.*; others being uniformly tinged. Japan and Corea.

R. calamina *Btlr.* (75b). Forewing pale buff, with two minute blackish dots on discocellular at the angles of cell; a subterminal row of minute black dots; fringe brownish, at anal angle white; hindwing creamy white, with a fine black terminal line and row of grey subterminal dots. Recorded from Yokohama, Japan, and Nagasaki, Kiushiu.

R. morosa *Btlr.* (75c) Forewing grey brown; lower half of median area yellow, crossed by an oblique externally dark-edged snow white stripe, which runs from inner margin to apex; terminal area grey; fringe dark mottled; hindwing sand coloured. Japan, Kiushiu, Corea, Central and Western China.

R. kengkalis *Brem.* (72l). Forewing brownish grey with fine dark dusting; a black dot in cell, from beneath which a dark oblique inner line runs to inner margin; outer line brown, externally pale-edged, from costa well before apex to middle of inner margin, distinctly flexuous; traces of a dark subterminal line of brown spots between the veins; two dark dots on discocellular; hindwing dull grey; — in ab. *bicolor* *ab. nov.* (72l) the inner line is dark and distinct throughout, angled outwards on median vein; the whole space from base to outer line fuscous, darkening before the line which is red brown; terminal area quite pale lilac grey; the only example from Nanchuen, Szechuen; — in the typical form the outer line is curved inwards to costa well before apex; in ab. *obliquialis* *ab. nov.* examples of which come from Ningpo, China, Nagasaki, Kiushiu and Iehikishiri, Yesso, the line runs obliquely, reaching costa before apex, but not running into apex, as in *similalis* *Leech.* Amurland, China, Corea, Yesso.

R. similalis *Leech* (72l). Forewing lilac grey; the outer oblique line runs from the apex itself to middle of inner margin, externally edged with paler; the preceding space generally more brownish; the black dots on discocellular conspicuous; subterminal line distinct, formed of blackish spots between the veins; termen and fringe rather darker; hindwing pale brownish grey. Japan.

R. striga *Fldr.* (72l). Forewing bright buff, deeper tinted in ♂; costal edge white; an oblique silvery white line from apex to below angle of cell, externally edged by a deep brown line followed by a yellowish brown shade, which meets at an angle the brown upper half of submedian interspace; the submedian fold itself narrowly pale; inner margin below it olive buff suffused with grey; a faint wavy subterminal line; terminal line rufous; fringe white, filled with black speckles; hindwing olive brown speckled with grey. FELDER'S type from India; but LEECH records it from Chow-pin-sa, West China; it is found also in the Scinde and Goorais Vallies, Kashmir.

R. cramboides *Btlr.* (72l, 73a). Forewing sandy buff sprinkled with fine blackish atoms; a broad white oblique streak from apex to vein 1 at middle of wing, outwardly edged with brown, meeting a fine white line along submedian fold from base; a minute dark dot in cell, and another at its end, often obliterated; terminal area yellow, containing a dentate oblique subterminal line edged with grey brown, beyond which the termen is whitish; fringe white with two grey lines; before the upper half of the oblique white line the veins are often white or yellowish white; the inner margin below vein 1 is generally pale grey; hindwing grey, often with a yellow flush; fringe pale. Japan, Kiushiu, Central and Western China.

R. albidula *spec. nov.* (73a). Forewing creamy ochreous, with fine dark speckling; a diffusely double oblique blackish shade from apex to middle of inner margin, the branches there diverging; cell and space preceding the oblique shade to lower end of cell whitish; a black spot in cell towards base and another

at its end; the outer branch of oblique shade is tinged with rufous; subterminal line dark grey; terminal lunules black; fringe pale with two broad grey lines; hindwing ochreous dusted with olive grey, with dark cellspot and terminal line; fringe whitish; nearest to *cramboides* *Bldr.*, but without the brown tints; the forewing narrower with sharper apex. Kashmir.

innotata. **R. innotata** *spec. nov.* (73 a). Forewing ochreous, dusted and suffused with dusky grey; a diffuse dark fuscous shade from apex to beyond middle of inner margin; terminal area, except towards inner margin, and fringe greyish fuscous; hindwing dull grey, paler towards base. The ♂ is paler than ♀, more ochreous, without the fuscous tinge. Scinde Valley, Kashmir. Smaller and stunter than *albidula*.

Subsect. B. Forewing elongate and much narrower.

angustalis. **R. angustalis** *Warr.* (73 a). Forewing dark grey tinged with brown, thickly speckled with fuscous; a black dot in cell towards base; inner line rarely visible, marked by a black dot at base of vein 2; outer line oblique, formed of black spots between veins, that below vein 6 displaced basewards; an ochreous white streak from apex to upper angle of cell; hindwing uniform fuscous grey, with a dull dark cell spot. Described from the Punjab; occurring in the Goorais Valley, Kashmir.

116. Genus: **Rhynchodontodes** *gen. nov.*

Differs from *Rhynchina* *Guen.* by its shorter and broader forewings, which bear a tooth of scales on inner margin before anal angle; scaling thicker and heavier; slight tufts of raised scales as in *Hypena*; the markings more varied; palpi with terminal segment upturned; forewing with two double lines, the inner angled below, the outer above the middle; subterminal line dentate. Type *R. antiqualis* *Hbn.*

antiqualis. **R. antiqualis** *Hbn.* (73 b). Forewing bluish grey or bluish white, suffused with brown and fuscous; the lines white with a rufous central line; the inner angled on submedian fold and more acutely on subcostal vein; the outer bluntly angled beyond cell, and followed below middle by black spots between the veins; subterminal line irregularly denticulate, preceded by black wedge shaped marks and at costa by a patch of whitish irroration, accompanied throughout by ferruginous brown scaling; orbicular stigma indistinct, formed of black semi-erect scales; the reniform a vertical ridge of white scales; fringe dark grey, with a bluish white line at base and another beyond middle; hindwing brownish grey, the fringe darker towards apex. Occurs in Dalmatia, Carniola, the Tyrol, and S. E. Europe; also in Asia Minor, Armenia, and Turæ. Larva feeds, teste Mann, in the upper leaves of *Salvia officinalis*.

ravalis. **R. ravalis** *H.-Sch.* (73 a). Forewing grey with very slightly developed markings and scarcely any brown suffusion; the lines, where visible, are placed much as in *antiqualis*, but the outer line only is distinct, and *centralis.* the subterminal pale without dark shading; the form separated by STAUDINGER as ab. **centralis** from Central Asia (Margelan, Taschkend, Namangan, etc.) has, however, well developed markings, mixed with dark brown, the examples often varying much inter se, sometimes with the basal half brownish and the outer half, sharply contrasted, grey; the typical more uniformly grey examples occur in Syria (Amasia) and Taurus (Hadjin, Marasch), *syriacalis.* Malatia, and Mardin; — subsp. **syriacalis** *Stgr.* (= *revolutalis* *Led. nec Zell.*) (73 b) is a light greyish brown form, with a powdery look, having some dark marks beyond outer line as in *antiqualis*; besides Syria, STAUDINGER mentions 2 examples of this from Schahrud, N. Persia and a specimen from Afghanistan is *extorris.* in the Tring Museum; the subsp. **extorris** *subsp. nov.* (73 b) from Cyprus (Larnaca) and Luxor, Egypt, is sandy grey, with the outer line rusty on an ochreous yellow curved streak, which is more obliquely placed than in *syriacalis*.

mardinalis. **R. mardinalis** *Stgr.* Forewing light grey; the costa broadly dark to beyond middle; a dark oblique band from apex to inner margin, often interrupted in middle; outer line often obsolete below costa, when present sharply angulated outwards, finer below and pale brownish; hindwing pale or dark grey; resembles *antiqualis* *Hbn.*, in the contrast between the light and dark grey markings, rather than *ravalis*. Mesopotamia.

ravulalis. **R. ravulalis** *Stgr.* (73 b). This species was separated by STAUDINGER as having the forewings decidedly narrower, with more acute apex, and a faint whitish apical streak. Found only at Sarepta.

R. diagonalis *Alph.* This central Asiatic species is said by STAUDINGER to be closely related to, and perhaps a form of, his *ravulalis*, of which it has the shape, and also a more conspicuous whitish apical streak, continued obliquely across the wing; it is recorded only from Ili and Fergana.

R. separata *spec. nov.* (73 b). Forewing pale ash grey coarsely dusted with black, the lines and shadings black, with no admixture of brown or rufous; inner line indistinct, the outer plain, followed above inner margin by black spots in the intervals, and connected by a black dentate shade, running from inner margin towards apex, with the black-edged subterminal line; hindwing brownish grey; head, thorax, and abdomen pale ash grey. Described from a single ♀ from Samarcand. This is probably the same insect as three examples from Turcomania, referred to by STAUDINGER (*Iris* IV, p. 335) as possibly a subvariety of his *centralis*, in which the markings are described as well developed, but without any brown suffusion.

R. plusioides *Btlr.* (73 a). Forewing grey, slightly tinged with brown in places, and with sparse black speckling; lines grey edged with whitish on both sides; the inner obliquely curved outwards to submedian fold, almost touching the white inner edging of outer line, then oblique inwards and obscure; the outer angled outwards beyond cell, the angle itself somewhat interrupted, the line below the angle olive brown instead of grey, edged outwardly with yellowish brown; subterminal line irregularly dentate, preceded by wedge shaped marks and accompanied by brownish scaling; a diffuse whitish patch oblique from apex, edged beneath by a dark shade from apex of fringe; a black spot in cell towards base and a diffuse cloud at its end; fringe dark grey with a pale basal line; hindwing brownish grey, with pale grey fringe; the white scaling is more developed in some examples than others. Japan, Kiushiu, Corea, West China.

R. biformalis *Leech.* Forewing of ♂ brown, the costa and basal two-thirds greyer; outer line dark brown, elbowed beyond end of cell, closely followed by an oblique grey line from apex; subterminal line grey, waved and sinuous, the terminal area beyond ferruginous; reniform stigma grey with two black dots on it; hindwing brown with dark cell dot; ♀ brown; a creamy streak above inner margin from base to outer line, which is whiter than in ♂; reniform stigma ferruginous-tinged, with a white dot at its lower end. Chow-pin-sa, W. China.

R. mandarinialis *Leech* (73 b). Forewing pale ashy grey suffused with darker grey and dusted with blackish; lines blackish, edged on each side with pale; the inner hardly visible except above inner margin; the outer obscure in costal half, bluntly angled beyond cell and often interrupted, oblique inwards to submedian fold, and there again bent, falling more vertically on inner margin; an oblique dark shade from apex, partly swollen across the terminal area; subterminal line grey and obscure except above anal angle, where it is white and dentate, intersecting a black streak; a dark spot in cell, accompanied by raised white scales; hindwing pale luteous grey powdered with darker; in the ♀ the costal and terminal areas are darkened with purplish fuscous; the basal area below median vein as far as outer line standing out conspicuously pale; the pale oblique streak from apex also stronger; the hindwing darker. The species is recorded by LEECH only from W. China; a single ♀ in the Tring Museum from Japan has the dark and light shades still more strongly contrasted; the pale apical streak tinged with pale brown, which passes beneath the cell and extends to the pale basal area; the fringes of both wings and the base of hindwing are whiter than in Chinese specimens.

R. cretacea *spec. nov.* (73 c). Forewing chalk white, tinged with dull grey along costa and in terminal area; inner line fine, rufous, angled below median vein; outer line double, brown black, shaped as in *mandarinialis*, the angle broken by the white streak from apex, limited below by the grey terminal suffusion, which is traversed by a curved whitish subterminal line; between the subterminal line and a diffuse dark shade, which reaches inner margin beyond the outer line, the space is white to above vein 3; on each side of vein 4 the grey suffusion contains a black brown streak reaching from outer to subterminal line; fringe dark grey; hindwing luteous grey. Described from a single ♂ from the Goorais Valley, Kashmir.

R. curvatula *spec. nov.* (73 c). Resembles *mandarinialis*, but smaller; the double brown-black outer line runs obliquely from inner margin to median vein without being bent on the submedian fold, but is there strongly curved outwards, its upper course and angle being, however, lost in the grey suffusion; a dark oblique shade runs from apex to inner margin beyond outer line; the obscure subterminal line is preceded by black dashes, and like *mandarinialis* is distinct only at anal angle, but even there is not so strongly

marked hindwing grey. Scinde and Goorais Vallies, Kashmir. The dark pale-edged curve of the outer line on median vein is characteristic.

sagittata. **R. sagittata** Btlr. (73 c). Forewing whitish, suffused throughout with dull purplish grey; the base and inner margin below median, the terminal edge, and the costal area before apex, alone remaining pale; inner line obscure, apparently angled on submedian fold, and followed by a diffuse dark spot in cell; outer line double, dark purplish, angled beyond cell, preceded, and also filled in just above median vein, by some white scaling; a deep purplish fuscous shade oblique from apex to before outer line on inner margin, diffused over outer area, but leaving the termen itself pale; subterminal line pale grey, distinct only in lower half; dark terminal lunules above middle; fringe purplish grey, with a pale line at base; hindwing brownish grey. W. China.

angulata. **R. angulata** Walk. Forewing fawn colour, with a white discal dot and a white angular stripe, which ends at a little beyond the point, and is there connected with the end of a diffuse whitish streak, which extends to the tip of the wing; a white hardly undulating subterminal line nearly parallel to termen, and having between it and the first line some slight short streaks composed of black speckles; termen whitish hindward; terminal points brown; hindwing fawn grey. Described from India; a single ♂ specimens is recorded by LEECH from Changyang, Central China.

soricalis. **R. soricalis** Püng. ♀ forewing brownish grey with slight dark dusting; inner line faint or obsolete; median thick, erect, not reaching costa; subterminal obscure, parallel to termen, white-edged outwardly; hindwing pale grey, without markings; ♂ darker and browner. Aksu, E. Turkestan.

117. Genus: **Bomolocha** Hbn.

Allied to *Hypena*, from which it is separated by the shorter stouter palpi, by the eyes being fringed with cilia, and by the dorsum, in the ♂ especially, being strongly tufted from base to middle. Type *B. fontis* Thnbg. The larva of the type species feeds on *Erica*, pupates in autumn, and emerges the following summer.

Sect. I. Forewings broad.

fontis. **B. fontis** Thnbg. (= *crassalis* F., *achatalis* Hbn.) (73 c). Forewing with basal two-thirds dark chocolate brown, limited by the pale outer line, which is oblique and concave outwards to vein 5, there strongly angled, and sinuous inwards to inner margin beyond middle, meeting on vein 1 an oblique line from base of median vein; the area below it pale with bright brown suffusion in ♂, chalk white with faint discoloration in ♀; terminal area grey in ♂, chalk white in ♀; subterminal line formed of interrupted fuscous lunules tipped with white in the ♂ and preceded by brown suffusion; in the ♀ merely a row of dark spots; an oblique thick brown streak from apex; a row of black terminal triangular spots; a dark dot in cell and lunule at its end;

terricularis. hindwing dark brownish fuscous with a ruddy tinge in ♂, greyish white or pale fuscous in ♀; the ab. **terricularis** Hbn. is a nearly black form of the ♂ with a few terminal white markings. Larva green with the lines darker; feeding on *Erica*. Throughout Central and Northern Europe, Italy, and Armenia.

zilla. **B. zilla** Btlr. (73 c). Resembles *fontis*, but the brown of basal area paler; the outer line whiter, more prominently projecting as a blunt tooth at vein 5, and more obliquely bisinuate to inner margin; inner line faintly angled below costa, then oblique inwards to median vein, and again outwards and white to vein 1; the brown median area reaching inner margin; subterminal line pale, without black lunules, but preceded by a brown cloud on costa and above inner margin; an oblique brown streak from apex; ground colour grey in both sexes; hindwing fuscous. The Japanese representative of *fontis*; occurs also in Amurland, Ussuri, and Corea.

stygiانا. **B. stygiانا** Btlr. (73 c, d). Forewing dark chocolate brown to beyond middle, limited by a white outer line, which forms a distinct projecting tooth outwards above vein 5, and is then bisinuate to inner margin; basal area not quite so dark, limited by the inner line, which is whitish, inangled on median vein and ending on vein 1; terminal area pale grey, darker beyond subterminal line, which is indistinct except at costa and inner margin; a dark oblique shade from apex; hindwing dark fuscous. Found in Japan, Yesso, Kiushiu, Corea, and E. China.

B. squalida *Btlr.* (73 d). Resembles *zilla* *Btlr.* in that the large brown blotch touches the inner margin *squalida* shortly just before middle; the outer white line limiting the blotch is minutely eremulate throughout, and is followed by a faint brown line; the projection at vein 5 is stronger than in *zilla*; the oblique line from base is white, with some fuscous scales beneath it, and the inner margin from base brown; a black dot in cell and slight lunule at its end; terminal area blue grey, mixed with fuscous and brown; subterminal line indicated by black white-tipped spots, preceded by a dark triangular patch at costa and inner margin; a brown subapical cloud; hindwing greyish fuscous; the above description applies to the ♀; the ♂ is wholly darkened with purplish grey; hindwing deep brownish fuscous. Recorded from Japan, Kiushiu, and Corea.

B. obductalis *Walk.* (= *rhombalis* *Alph. nec Guen.*) (73 d). Differs from *rhombalis* in the shape of the *obductalis* dark blotch, the outer edge of which, instead of curving outwards to near termen, runs nearly vertical to vein 6, forming there a mamilliform projection, and is curved inwards to join the inner edge on vein 1, the whole edged by a pale and dark line; subterminal line formed of dark white-edged spots is not interrupted by the projection, and the dark curved wisp from apex is well separated from it; as in the allied species, the ♀ has the ground colour much paler than the ♂. Described from India, but occurring in China as well.

B. mandarina *Leech* (73 d). Forewing grey clouded with fuscous brown; a large irregular chocolate *mandarina* brown patch occupies nearly the whole median area and reaches the costa; its outer edge, bordered by whitish, is incurved to vein 5, obtusely angled there, then straight and oblique inwards to just above middle of inner margin, whence it curves obliquely inwards to base of wing; the patch is limited throughout by a fine dark line; an oblique diffuse blackish streak from apex; subterminal line a wavy series of black and white dots; hindwing fuscous, with blackish discal lunule. This species, allied to *rhombalis*, is recorded from Central and Western China.

B. albopunctalis *Leech*. Forewing pale fuscous, with a faint brownish tinge; inner line dark, thick *albopunc-* and shortly oblique outwards at costa, oblique inwards and fine on inner margin, interrupted between; outer *talis* line dark, edged with pale, vertically waved, the outward curves lying on the folds; a conspicuous white dot in cell, and an obscure dark spot at end, on the brown median shade which runs close before outer line; subterminal pale, wavy dentate, the teeth filled up with dark; terminal lunules black; hindwing fuscous. Central China, Corea, and the Goraus Valley, Kashmir; also from Kiushiu, teste Wileman.

B. bipartita *Stgr.* (73 e). Forewing chestnut brown to outer line, then whitish grey; a faint nearly *bipartita* straight inner line, within which the basal area is sometimes paler; outer line strongly marked, milk white, variable in shape, sometimes twice bent in middle, at others slightly curved only; subterminal line faint, pale, preceded by a grey shade which starts from a brown costal patch; hindwing fuscous. Amurland.

B. bicoloralis *Graes.* Forewing with the costa, termen, and inner margin yellowish white; the whole *bicoloralis* interior of the wing occupied by a black brown rhomboid patch as in *fontis* and other species; hindwing dark brown. Chabarofka, Amurland.

B. rhombalis *Guen.* (= *telamonalis* *Walk.*, *basistrigalis* *Moore*) (73 d). ♂ forewing very dark redbrown, with a *rhombalis* large fuscous semicircular patch on the costa before apex, irrorated with a few bluish white scales; an oblique line from termen below apex to inner margin beyond middle; the area beyond it fuscous, irrorated with bluish white scales; a fuscous streak on inner margin; hindwing dark fuscous; the ♀ is redder; the forewing with the costal patch, the inner marginal, and terminal areas ochreous; in *veronica* *Btlr.* (75 c) the lower angle of the *veronica* costal patch extends to the inner margin; in the ab. *perspicua* *Leech* the rhombus, which is clearly outlined *perspicua* in white, has its outer angle rather more produced than in the type, and is well separated from the apical streak; the lower angle, as in *veronica*, reaches the inner margin; in ab. *obscura* *Leech* the forewing is almost *obscura* wholly fuliginous, the only markings visible being the costal end of the white outline of the rhombus, a white apical cloud, and a few white specks indicating the subterminal line. An Indian species, which also occurs in Yesso and Central, Eastern, and Western China.

B. tenebralis *Moore* (73 e). Forewing very dark brown, slightly irrorated with grey; inner and outer *tenebralis* lines very faint, the outer incurved below the cell and nearly meeting inner line on inner margin; a dark streak on discocellular; a subterminal series of black and white specks from the costa to vein 4, thence an indistinct curved line to inner margin; an obscure grey apical streak; the area beyond the outer line of forewing is sometimes paler. A north Indian species, one example of which is recorded by LEECH from Wa-shan, Western China.

indicatalis. **B. indicatalis** Walk. (= *lasalis* Walk., *semiclusalis* Walk., *velatipennis* Btlr., *tortuosa* Moore, *eidarioides* Moore, *persimilis* Hmps., *argialis* Snell.) (73 e). Forewing with the basal half dark purplish brown; a small white lunule at end of cell; the outer line incurved from the upper of its two angles to the inner margin; three sinuous lines on the outer area; a dark lower edge to the curved streak. Common in India and the Malay Islands; recorded by LEECH from Japan, Central China, and Corea.

occatas. **B. occatus** Moore (= *crassipalpis* Btlr.) (73 e). Forewing pale grey flushed in places with pale olive brownish; the outer line oblique and straight with two slight angles externally, closely preceded by the median shade, the two lines forming a faint band; a pale apical space edged beneath by a sinuate blackish shade from below apex, forming two black marks; hindwing pale grey. Occurs throughout India, also in Central China and Corea.

thermesialis. **B. thermesialis** Walk. (= *rectifascia* Hmps.) (75 e). Forewing suffused with purplish; the median line quite straight, slightly oblique; the hindwing dark fuscous; the underside without pale subapical speck; some examples are tinged with reddish. Another Indian insect which also is met with in China.

uniformis. **B. uniformis** Hmps. (75 e). Forewing greyish fuscous with a slight purplish or rufous tinge; inner line indistinct, obliquely waved, followed by a dark speck in cell; an almost erect and straight outer line with a pale outer edge; traces of a waved subterminal line with some dark specks on it; hindwing dark fuscous. Occurs in China; the Indian specimens differ somewhat inter se according to localities.

Sect. II. Forewings narrow and elongate.

narratalis. **B. narratalis** Walk. ♂ (= *urticola* Btlr. ♀) (73 f). Forewing grey shaded with brownish and speckled with darker; inner line vertical, toothed above and below median vein; outer line blackish with pale edges, oblique from costa and strongly angled outwards above vein 5 and inwards on vein 2; the three stigmata marked by tufts of grey and black scales; subterminal a row of black dashes, the upper two lying in a pale elongate costal space reaching from apex to angle of outer line; in the ♂ the whole wing except this pale patch is suffused with dark brown and fuscous, and more thickly speckled; hindwing dark fuscous in ♂, paler in ♀. Occurs in Kashmir; otherwise from N. W. India.

tristalis. **B. tristalis** Led. (= *tripunctalis* Brem.) (73 f). The ♀ is whiter than in *narratalis* Wlk., the median space on costa forming a more prominent blotch; the outer line is vertical from costa, then waved; but otherwise like *narratalis*. Amurland, Japan, and China.

obesalis. **B. obesalis** Tr. (73 f). Differs from the two preceding species in the ground colour being light ochreous, not white or grey; the inner line becomes obscure below median; the outer is vertically outcurved from subcostal to median vein with two smaller curves below. Europe. Larva grass green with yellow segmental incisions; dorsum grey; lateral lines slender, white; spiracles orange; feeds on nettles gregariously in spring and autumn, spinning up for pupation in a leaf.

118. Genus: **Hypena** Schrank.

Tongue present; frons with a projecting tuft of scales; palpi porrect, the second segment very long, flattened, with rough projecting scales on each side, the third obliquely upturned, pointed, rough scaled; antennae of ♂ ciliated; thorax and tibiae smooth scaled; abdomen with small dorsal crest near base; forewing with slight tufts of raised scales. Larva with first pair of abdominal prolegs absent; with fine hairs from the tubercles; feeding on Urticaceae, pupating in a slight spun cocoon. The imago usually emerges in autumn and overwinters. Type *H. rostralis* L.

proboscidalis. **H. proboscidalis** L. (= *ensalis* F., *proboscidentis* F., *proboscidatus* Haw.) (73 g). Forewing grey brown with numerous dark transverse striae, and with a brownish yellow suffusion in the ♀♀; the lines dark brown; the inner curved or bent in middle; the outer oblique, nearly straight, slightly incurved at costa, internally shaded with dark brown; the subterminal cloudy and partially interrupted, above middle marked with black

white-tipped dashes, followed by a brown cloud, the subapical edge of which is oblique; hindwing pale greyish. As a rule most ♀♀ are brownish, — ab. *brunnea* Tutt, — most ♂♂ grey without the brown; — the form *brunnea* *deleta* Stgr., from the Altai Mts., Amurland, and Kamschatka, is paler, the forewing yellowish, sprinkled with brown, with less distinct markings; — *tatorhina* Btlr. (73 g), from Japan, is small, grey in both sexes, with dingy fuscous suffusion, and a black spot in cell; the hindwing fuscous; — from W. China (Omei-shan and Tatsien-lu) comes a form, — subsp. *flexilinea* subsp. nov. — (73 g) dark grey brown in the ♀, with the transverse striae and the shades preceding the lines dark smoky fuscous, the outer line visibly bent above middle; in the ♂♂ the dark shading is slight; — a similar but smaller form, ? = *indicalis* Guen., occurs in the Goorais Valley, Kashmir, where the outer line has a tendency to be elbowed on both folds, and the ♂, which is quite without dark shading, has a small black dot in cell and a large black spot at its end. Larva velvety green; dorsal line darker green, the subdorsal lines paler; head, legs, and tubercles green; feeding on *Urtica*. The species is found throughout Europe, in N. Africa, throughout Asia to Japan, and in India.

H. rostralis L. (= *variegata* Tutt) (73 h). Forewing grey brown, sometimes the grey, at others the brown tints predominating, speckled and striated with black and mixed with pale grey; lines black, conversely ochreous-edged: the inner strongly dentate, the outer nearly straight, slightly projecting on each fold; costa with oblique dark striae; median area, and often the basal as well, darker, especially the cell; orbicular stigma a tuft of raised scales, black or black and white, connected by a long black line with an ill-defined black reniform; subterminal line pale, dentate, generally obscure, preceded by a brown shade; an oblique black shade from apex; a row of black terminal lunules; hindwing fuscous grey; the ab. *radiatalis* Hbn. (73 h) is suffused with fuscous, the costal streak and a broad submarginal space remaining pale dull ochreous; termen with wedge shaped grey marks, confluent with the fuscous suffusion on the two folds; the lines and stigmata feebly marked: — in ab. *unicolor* Tutt (73 h) the forewing is uniformly grey brown, nearly all the black scaling being absent; — *palpalis* F. (73 h) is also unicolorous, but dark grey without any brown tint; — *vittatus* Haw. appears to be simply a form in which the costal streak is paler than the rest of the wing; — sometimes the ground colour is ochreous, and when all the markings are well developed as well, we have the ab. *ochrea-variegata* Tutt (73 h), which is not uncommon, whereas the form *ochrea* Tutt, a third unicolorous form without markings, is very rare. Larva green with pale lines, feeding on *Humulus*. Common throughout Europe, occurring generally in western Asia, and through Central Asia to Amurland.

H. whitelyi Btlr. (73 h). On careful comparison this species seems to me to be essentially different from *rostralis*; the forewing being longer and narrower, pale ochreous in ground colour, coarsely speckled with black, and with some slight brownish suffusion; the inner line, in the specimens seen, is obsolete, but this is sometimes the case with *rostralis*; the outer line is more oblique, straight, without any projection on the folds, and brown instead of black; the termen suffused with brown, and the apical patch whitish; hindwing and abdomen luteous white. BUTLER'S type, described as a *Crambus*, in very bad condition, having evidently overwintered, was from Hakodate, Yesso, and LEECH records a second specimen from the same locality as *rostratus*; the above description is made from a ♀ in fair condition in the Tring Museum from Ichikishiri, in the same island.

H. extensalis Guen. (= *palpalis* Hbn. nec F.) (73 i). Forewing fawn colour, thickly and minutely speckled with black, suffused with fuscous in median and with pale brown in terminal area; inner and outer lines black and waved, conversely pale-edged; the outer bluntly projecting at vein 5, and with a small roundish projection on submedian fold, followed by a pale lilac grey band; across the brownish terminal area the subterminal line is formed of whitish spots inwardly black scaled in places; a dark triangular subapical cloud; the stigmata formed of raised black and grey scales; the fawn coloured tint is strongest along the folds; hindwing smooth greyish fuscous; the subsp. *armenialis* Stgr. from Armenia, Caucasia, and Pontus has no brown tinge on forewings, and the apical streak is either absent or very faint. A South European insect, found in S. France, Italy, Corsica, Carniola, Dalmatia, and the Balkans; also from Asia Minor, Syria, and Mesopotamia. Larva on *Parietaria*.

H. obsitalis ♂ Hbn. (= *costipuncta* ♀ Tutt) (73 i). Forewing whitish in ♀, grey in ♂, more or less suffused with grey and fuscous and covered with dark transverse striae; the lines waved, dark with pale edges; the outer angled shortly outwards on each fold and inwards on vein 2, followed on costal half by a grey patch in ♂ and a white patch in ♀; a pale triangular apical patch, edged below by a dark oblique shade from apex, containing three black teeth; the submarginal line pale and wavy, preceded in costal half by black teeth; stigmata marked by tufts of raised dark scales; a row of black dashes along termen; fringe shining grey, with a dark middle line; all the pale areas are intensified in the ♀; hindwing fuscous with black terminal line. A south European species, occurring also in N. Africa, Madeira, and the Canaries; in

Asia Minor and Syria; in Britain and other northern localities it is merely a chance immigrant. Larva on *Urtica*, *Parietaria*, etc., green with dark dorsal line and paler subdorsal, much resembling that of *proboscidalis*, preferring shady places.

- rusticalis*. **H. rusticalis** *Leech* (75 c). Forewing brown, thickly dusted with fuscous scales and tinged with pink; outer and subterminal lines slightly oblique, blackish; fringe brown, interlined with black; hindwing dark fuscous. Described by LEECH from a single ♂ from Hakodate, Yesso.
- incisa*. **H. incisa** *Leech* (75 c). Forewing violet grey; the lines pale; the inner bidentate above middle and deeply incised above inner margin; outer line slightly oblique, with a small angular projection above middle, followed by a dark line; median area clouded with fuscous and black; subterminal line whitish at costa, preceded by a broad dark wavy band, deeper at the edges; a cloudy dark subapical streak, containing a black bar and short line; hindwing fuscous. Described by LEECH from a single ♀ from Wa-shan, W. China.
- satsumalis*. **H. satsumalis** *Leech* (75 c). Forewing dark brown; the basal and terminal areas sprinkled with grey; outer line white, narrow and oblique; subterminal line wavy, whitish, starting from apex as a broad streak; hindwing fuscous. Satsuma, Kiushiu. Allied to *indicatalis*, but the outer line is not angled, and there is no white discal spot.
- insolita*. **H. insolita** *Leech* (75 c). Forewing pale brownish fuscous; the basal area chocolate brown varied with lilacine; inner line lilacine, straight or nearly so in the upper half, obliquely sinuous below; outer line blackish, edged on costa with white, sinuous, with a prominent projection outwards above middle, and approaching inner line below vein 1; median shade diffusely waved; subterminal line a series of lilacine edged black lunules, with some grey patches between veins 1 and 5; a short oblique subapical black streak; hindwing paler, fuscous brown. Described by LEECH from a single ♀ from Pu-tsu-fong, Western China.
- confusa*. **H. confusa** *Leech* (75 d). ♂ Forewing fuscous brown, darker in basal half; inner and outer lines blackish; the inner wavy but indistinct, the outer vertical, slightly sinuous; a dark subapical patch with a white dot in it; subterminal line indicated by a sinuous row of black dots, obscured above by a slight dark cloud; hindwing fuscous; fringe preceded by a black line in both wings, in forewing mottled with black; ♀ forewing pale brown, dusted with fuscous; the basal half darker; costal area before subapical patch whitish; inner line clearer, outer obscured; the submarginal black dots well-defined. Ship-y-shan, Central China.
- conspersalis*. **H. conspersalis** *Stgr.* (= *passerinalis* *Graes.*) (75 d). Forewing olive brown, crossed by three white lines, and strongly flushed with white in the terminal region; inner line denticulate, slightly marked; orbicular stigma a faint black dot; reniform obsolete; outer line faintly waved, almost straight, generally well marked; a triangular greyish white fleck at apex close to costa; hindwing light grey with dark dusting. Amurland.
- bambusalis*. **H. bambusalis** *Leech* (75 d). Forewing purplish brown; an outer and a terminal golden brown suffusion; basal half of wing darker than outer half, separated by a white bidentate line; a dark shade before termen; hindwing fuscous. Described by LEECH from a single ♂ from Foo-chau.
- bipartita*. **H. (?) bipartita** *Leech* (75 d). Forewing with basal half blackish brown, outwardly limited by an incised and dentate pale line; outer half dark fuscous, sparsely powdered with grey; subterminal line wavy, rather darker, with some grey scales upon it; the stigmata blackish; hindwing fuliginous; a black discal dot. Described from a single ♂ from Yokohama, Japan.
- simplex*. **H. (?) simplex** *Leech* (75 d). Forewing light brown with a pale discal dot; inner line dark brown, wavy and slightly curved, ill-defined; outer line dark brown and wavy, curved round end of cell, then oblique to inner margin; subterminal line indicated by blackish dots; hindwing pale fuscous. Described from a single ♀ from Kiukiang, Central China.
- ella*. **H. ella** *Bltr.* (73 i). Forewing with basal and terminal areas pale purplish grey, thickly speckled with brown atoms; lines pale grey, distinct only at costa; the inner oblique outwards, the outer inwards, and bent below vein 2, so as almost to meet inner line on inner margin, the included space deep brown,

broadly edged along the lines with pale chocolate brown; a brown irregular subapical cloud beneath an apical grey triangular space; a small brown costal patch before the indistinct submarginal line; hindwing brownish fuscous. Japan and Kiushiu.

H. belinda *Btlr.* (73 i). Forewing reddish brown in basal half, grey brown with dark striae in terminal *belinda* area; the basal half is limited by the nearly straight vertical whitish outer line, which is followed by a bluish white diffusely edged band with blackish striae on it; inner line scarcely visible; above vein 7 a black spot outwardly tipped with a white dash indicates the position of the subterminal line, which is preceded by one or two brown clouds; a row of black dots on a narrow pale brown terminal space; hindwing dark fuscous. Found in Japan, Corea, and Kiushiu.

H. subcyanea *Btlr.* (75 d). Forewing greyish brown, shot with pale lilacine blue, towards base becoming *subcyanea* silvery blue; two or three black dots near base; outer line oblique, black, slightly crinkled towards costa, crossed by an oblique white apical dash; a discal series of black dots or abbreviated dashes; fringe dark brown; hindwing with a fine whitish terminal line; the termen itself black; fringe whitish. Described from a single example from Formosa; LEECH records its occurrence in Japan, Corea, Foo-chau, and Changyang, Central China.

H. rivuligera *Btlr.* (75 d). Forewing fuliginous brown; a terminal series of linear black dots; a testaceous *rivuligera* line at base of fringe, which is externally chequered with ochreous; a very irregular lilacine subbasal line; inner and outer lines parallel, very irregularly sinuated, lilacine; costal area here and there irrorated with pale scales. Tokio and Yokohama, Japan. Allied to *laccessalis* *Walk.* from India.

H. rectivittalis ♀ *Moore* (= *beatialis* *Fldr.*, *minna* ♂ *Btlr.*, *vecordialis* *Swinh.*) (73 i, k). ♀ Forewing pale *rectivittalis* grey, with a violet or pale brownish suffusion, and speckled or freckled with dark; inner line dark, rarely well expressed, outwardly toothed on subcostal and median veins, and strongly excurved below submedian fold; a white dot surrounded with black scales in base of cell and some black scales only at its end; outer line straight and oblique, double, black and brown, the space between filled up with brown; subterminal line dentate lunulate, the outward teeth marked by black dashes between veins, indented on both folds; a row of black dots before termen; ♂ (= *minna* *Btlr.*) with the outer line single, fine and brown; the subterminal line ending in a round black spot on inner margin just beyond outer line; hindwing fuscous; ab. *obscura* *obscura*. *ab. nov.* (73 k) has the whole forewing densely dusted with fuscous and black scales; the outer line in ♀ not filled in with dark, and in ♂ followed by a clear pale line; in ab. *innotata* *ab. nov.* (73 k) the forewing is almost *innotata* without markings, except the outer line and the spot at base of subterminal line; in ab. *picta* *ab. nov.* (73 k) *picta*. the costal edge is strongly fulvous, the ground colour lilac or slate grey; the basal area paler, becoming ochreous before the well-marked inner line which is rust-coloured; the outer line is red brown followed by a diffuse vinous red shade; the subterminal well marked; stigmata hardly shown. 1 ♀ from Japan. The species occurs in Japan, China, and Corea, as well as India.

H. iconicalis *Walk.* (= *sulalis* *Walk.*, *subnotalis* *Walk.*, *similata* *Moore*) (73 k). Forewing reddish grey *iconicalis* brown, slightly dusted with dark atoms; inner line sinuous, indistinct; a black speck in cell; median line dark, straight, almost vertical, with some bluish grey scaling on outer edge and often with the area beyond it grey; a sinuous subterminal series of black and white specks; hindwing fuscous. LEECH records a single example from Moupin, W. China of this common Indian and Malay species.

H. masurialis *Guen.* (= *obacerralis* *Walk.*) (75 d). Forewing pale or dark greyish red brown, slightly dusted *masurialis* with dark scales; an obscure waved inner line, followed by a dark dot in cell; an oblique, slightly sinuous, ferruginous line from costa before apex to middle of inner margin; traces of an oblique dark line from the apex, often with a more or less complete series of dark specks on it; hindwing fuscous; the ab. *caerulealis* *caerulealis*. *Walk.* from N. India and Australia has the costal area of forewing whitish; the subsp. *ferriscitalis* *Walk.* from *ferriscitalis*. Australia is a dark form, while *eremialis* from Sind is much paler, with the markings obsolete. An Indian *eremialis*. and Australian species extending into Kashmir; a single specimen is recorded by LEECH also from Ship-yshan, Central China.

H. strigifera *spec. nov.* (73 l). Forewing bluish grey tinged with pale red brown in basal half, entirely red- *strigifera* dish brown towards termen, covered with numerous red brown and fuscous irregular interlacing striae; inner

and outer lines brown, conversely edged with blue grey; the inner waved, near base, the outer, also waved and slightly oblique, a little before middle; a dark spot in cell; a black white tipped spot above vein 7; a row of black dots along the grey termen; hindwing dull fuscous. Allied to *belinda* Btlr., but quite distinct. Found in China.

kashmirica. **H. kashmirica** *spec. nov.* (731). Differs from *strigifera* in being altogether greyish red brown, without any blue grey admixture, covered throughout with dark vermiculations; the costal area slightly paler; inner and outer lines brown, waved, placed as in *strigifera*, but without any paler edging; two black white-tipped spots, one on each side of vein 7, not, or scarcely, showing on underside, as in the allied species; hindwing fuscous. Kashmir.

lividalis. **H. lividalis** *Hbn.* (= *abjurialis* *Walk.*, *scissalis* *Walk.*, *perna* *Fldr.*) (73 l, 74 a). Forewing olive green in basal area, limited by a fine oblique white line, before which it is marked by purple scales; terminal area olive grey, thickly and finely dusted; apex pale grey; a black dot in cell; terminal line rufous; fringe grey with three darker grey lines through it; hindwing uniform dark grey. A south European species, also found in N. Africa, Madeira, and the Canaries; in Asia Minor, Syria, Bithynia, Pontus; and in India. Larva between leaves of *Parietaria diffusa* throughout the year.

munitalis. **H. munitalis** *Mann.* (73 l). Forewing dull grey brown thickly irrorated with ochreous white scales; lines ochreous; the inner waved, very obscure; the outer waved, outwardly curved on each fold, preceded by a darker, less irrorated band; terminal spots dark with pale edges; fringe mottled grey and ochreous, outer half paler; hindwing deep yellow; terminal line dark brown; some brownish sealing in apical area; fringe yellowish, above middle greyer; abdomen yellowish speckled with grey, with darker grey patches down middle of dorsum. Occurs in Bulgaria only in Europe; in Asia Minor in Lydia, Taurus, Pontus, and Armenia. The larva lives gregariously on *Vincetoxium toleum*.

119. Genus: **Hypenodes** *Guené*

Tongue present; frons with short tuft; palpi correct, very long, second segment thick, with rough projecting scales above, third short, smooth, upturned; antennae of ♂ finely ciliated; thorax, abdomen, and tibiae smoothly scaled; dorsum with small erect on basal segment; forewing long and narrow; 6 and 7 separate; 8, 9, 10 stalked, 8 and 9 separating close before margin. Larva without prolegs on segments 7 and 8. Type *H. taenialis* *Hbn.* The species are all quite small.

taenialis. **H. taenialis** *Hbn.* (= *albistrigatis* *Haw.*, *albistrigatus* *Stph.*, *aeuminalis* *H.-Sch.*, *albistrigalis* *Guené*.) (73 l). Forewing brownish; a fine black dash beneath costa at base; inner line dentate, blackish; outer black, outwardly whitish-edged, indistinct towards costa, straight and conspicuous in lower half; cellspot dark, obscure, paler posteriorly; subterminal line pale, indistinct; hindwing light grey. Occurs in Germany, Austria, Britain, Holland, Belgium; Armenia, the Canaries, Corea. Larva on low plants, especially thyme.

costaestrigalis. **H. costaestrigalis** *Stph.* (*caeuminalis* *H.-Sch.*) (73 l). Forewing whitish ochreous, mixed with brownish fuscous towards costa; a fine black dash beneath costa at base; inner line partly blackish, dentate; outer oblique, irregular, partly marked with dark and edged posteriorly with whitish; cellspot small, blackish, connected with outer line by dark fuscous suffusion; subterminal line indistinct, pale; hindwing luteous whitish, with a grey discal dot. Larva dark purplish brown; dorsal and subdorsal lines pale, the latter black-edged beneath; sides more ochreous; will feed on flowers of thyme in captivity. Found in Central Europe, Denmark, Livonia, S. France, Spain, the Canaries, Madeira, Syria, Armenia. Larva, like the last species, on thyme.

kalchbergi. **H. kalchbergi** *Stgr.* (73 l). Forewing dark grey; inner line very faint; outer line clearer, just beyond cell, excurved above middle; a whitish cell lunule; both lines limited internally by a well-defined black line; subterminal very obscure, pale, dentate, close to termen; beyond outer line towards costa four pale flecks; hindwing uniform dark grey. Sicily. The subsp. **orientalis** *Stgr.*, from Derbent and Macedonia, is smaller, paler grey, with a dark cellspot and two obsolete dark lines.

balneorum. **H. balneorum** *Alph.* Very close to *kalchbergi*; forewing narrower, with the termen straighter; shining

black, with a very small white middle point, beyond which is an obscure whitish outer line, clearest on inner margin, more oblique than in *kalchbergi*, without a curve beyond cell. N. Caucasia.

120. Genus: **Schrankia** H.-Sch.

Differs from *Hyphenodes* in the palpi being recurved, sickle-shaped, smoothly scaled, the second segment thickened, the third long and pointed; in the forewing 7 and 8 are coincident, 9, 10 stalked. Type *S. turfosalis* Wocke.

S. turfosalis Wocke (731). Forewing whitish ochreous, irrorated irregularly with brown and dark *turfosalis*. fuscous; inner line indistinct; outer irregular, oblique, dark fuscous, posteriorly whitish edged; cellspot small, dark, outwardly whitish edged; subterminal line straight, whitish, ill-defined, preceded by fuscous suffusion, running to apex; hindwing grey. N. Germany, Silesia, Holland, Britain, Switzerland, Jutland, Galicia, Russia, E. Siberia, Amurland, Ussuri.

121. Genus: **Britha** Walk.

Tongue present; frons smooth; palpi long and obliquely porrect upwards, the second and third segments fringed with very long hair above; antennae bipectinate in ♂, with long spines from end of branches; first two segments of dorsum tufted; forewing of ♂ with a large smooth patch occupying inner area on underside, with a tuft of long hairs on vein 1; hindwing with costa much arched and a large smooth patch on upper-side; veins 3, 4 and 6, 7 stalked; 5 from close above 4. Type *B. biguttata* Walk.

B. biguttata Walk. (= *incertalis* Walk.) (75 e). Forewing grey mixed with red brown; the lines rufous; *biguttata*. the inner angled on subcostal vein, then oblique inwards; median line similar, but abbreviated; outer line edged with whitish, angled below costa, then oblique inwards, twice bent; subterminal line rufous and whitish, straight and oblique from apex; termen rufous; terminal line fine and two more in the fringes; hindwing fuscous, the median outer area grey and brown, crossed by a short rufous and pale line. The species which occurs from Ceylon to Australia is recorded from N. China.

B. ? pectinata Leech (75 e). Forewing pale pinkish brown; a short, brown, subbasal band; inner line straight *pectinata*. towards costa, curved and recurved towards inner margin; median line dark brown preceded by a dark brown shade which is broader towards costa; outer line fuscous, slightly wavy, excurved beyond cell, thence running inwards across median line, beyond which it descends to inner margin; subterminal line fuscous, double, sinuous, rising from a fuscous costal cloud; a dark dot in cell and lunule at its end; hindwing pale fuscous, with obscure outer and subterminal lines on inner margin. 1 ♂ from Ship-y-shan, Central China. The position of this insect is doubtful.

B. inambitiosa Leech (75 e). Forewing pale brown; the lines dark; the inner outwardly shaded with dark; *inambitiosa*. the outer obtusely angled above middle and shaded with dark inwardly; subterminal line fuscous, sinuous, ill-defined; a blackish lunule on discocellular; hindwing pale fuscous. Described by LEECH from a single ♀ from Kiu-kiang, Central China. Wileman records 3 ♂♂ with pectinated antennae from Japan.

122. Genus: **Aventiola** Stgr.

Frons smooth with a short tuft; palpi obliquely porrect upwards, the second segment long, fringed with scales above, the third minute; antennae of ♂ simple, the segments angulate; thorax and abdomen, also the tibiae, smoothly scaled; forewing long and narrow; the termen bent at vein 4; veins 7, 8, 9 stalked; hindwing with termen subdentate at vein 4, truncate and subcrenulate to anal angle; veins 3, 4 and 6, 7 stalked; 5 from near lower angle of cell. Type *A. pusilla* Btlr.

A. pusilla Btlr. (= *maculifera* Stgr.) (75 e). Forewing brownish grey with slight dark dusting; inner *pusilla*.

line slender, blackish, outcurved; median line curved, oblique below; outer line excurved above, incurved below middle, edged outwardly with white; the space between them filled in with fuscous; reniform stigma consisting of two black superimposed spots edged with white; subterminal line preceded on costa by a subquadrate black blotch; black terminal spots; hindwing with two median lines and a whitish outer line. The type of *pusilla* from Japan, of *maculifera* from Amurland.

123. Genus: **Naarda** Walk.

Tongue slight; frons with a tuft of hair; palpi porrect, the second segment heavily fringed above and below, the third typically short; Antennae of ♂ variable; wings short and broad, thickly scaled, marked by a pale dot in cell and a lunule, generally yellowish, at its end. Type *N. ineffectalis* Walk. A genus of Eastern and African species, including one Palaearctic.

maculifera. **N. maculifera** Stgr. Forewing blackish grey; a small yellowish dot in cell, a long narrow yellow lunule at the end; the lines vertical and wavy, dark with paler tint beyond them; hindwing dark grey with three faint lines. Amurland.

Addenda to the Subfamily Noctuidae.

The following 30 species of *Noctuidae*, either new or unrecorded, from Japan, mentioned in Wileman's paper in the Transactions of the Entomological Society of London for 1911, pp. 245—269, and unfortunately overlooked in the course of preparation of the Subfamily, are here appended under their proper genera.

11. Genus: **Sypna** Guen.

lucilla. **S. lucilla** Btlr. (75 i). ♀ Forewing with basal and terminal areas deep brown, the median area bluish white more or less wholly suffused with pale brownish; between basal patch and outer band of the dark basal third a curved blackish band, followed (in the Japan specimen only) by a bluish white patch on inner margin; edge of the brown basal area projecting slightly outwards in cell and running in basewards on median vein, then oblique and concave outwards; orbicular stigma a white dot in the brown basal area; reniform ill-defined of the pale ground colour, sometimes with darker edge; outer line macular, much interrupted, generally shown by two spots above inner margin, and followed by a triangular brown blotch on costa; subterminal line black, indented on the folds; black and white terminal dots; in the ♂ the median area is dark slate colour, and the outer band of basal area blackish; hindwing luteous grey; the base brown limited by a curved blackish line, followed often by a pale band; a narrow brown outer line, and two diffuse brown subterminal bands coalescing into a blotch at apex; fringe dark, whitish at apex. An Indian species occurring in Sikkim and Assam; a ♀ recorded from Japan by Wileman; another in Tring Museum.

obscurata. **S. obscurata** Btlr. (75 h). Forewing, like *lucilla*, with basal and terminal areas black brown, the median area paler, wood brown, or ochreous brown, or white tinged with bluish or ochreous, as in *lucilla*; the markings resembling those of *lucilla* from which it is at once distinguished by the edge of the basal third; in *lucilla* this runs inwards along the median vein, in *obscurata* it runs outwards, but is, as a rule, much straighter than that of *lucilla*, being vertical in its lower half instead of outwardly oblique. Occurs in Sikkim, Assam, and Burma, and a pair is recorded by Wileman from Japan. Wileman, following Hampson, sinks both these species to *quadrirotata* Walk. (= *replicata* Feld.), but they are quite distinct from that species as well as inter se.

24. Genus: **Ophiussa** Hbn.

stigmata. **O. stigmata** Wilem. Forewing greyish tinged with violet and dusted with brown; reniform stigma brown; the lines brown; inner nearly straight, diffuse towards inner margin; median wavy, also diffuse below middle; outer band expanding towards costa, its outer edge undulated; terminal dark dots; fringe grey; hindwing fuscous brown. Described from a ♀ from Hakodate, Yesso; nearest to *dorsigera* Walk.

74. Genus: **Raparna** Moore.

R. nigripuncta Wilem. Forewing pale brown dusted with darker, especially along termen; a blackish *nigripuncta*. discal dot; a row of subterminal black dots obsolescent towards inner margin, and some black dots on termen; hindwing with black cell dot. 1 ♂ from Yoshino, Hondo, Japan.

80. Genus: **Rivula** Guen.

R. angulata Wilem. (75 k). Forewing whitish tinged with pink and clouded with brownish; inner line brownish, bidentate at costa, inwardly oblique and slightly wavy to inner margin; outer line white, inwardly edged and shaded with brownish, outwardly oblique to just beyond end of cell, then inwardly oblique to inner margin, followed by a brownish cloud from which a wavy dusky line runs to inner margin, where it ends in a slight brownish cloud; fringe brownish, preceded by an interrupted black line which extends inwards along costa; hindwing fuscous with traces of a darker median line. Yoshino, Hondo, Japan. *angulata*.

R. confusa Wilem. (75 l). Forewing pale whitish brown powdered with darker; inner and outer lines shown on costa by oblique whitish streaks; a black dot at upper angle of cell, and a black speck at lower angle; black terminal dashes, followed by a white line at base of fringe; hindwing pale fuscous. 1 ♂ from Osumi, Kiushiu. *confusa*.

R. nigripunctalis Wilem. (75 l). Forewing pale ochreous brown; a black dot at outer extremity of cell; some small black dots on costa; a black subbasal dot on costa; inner and outer lines blackish, crenulate, starting from black costal spots; subterminal line blackish, wavy, with a black dot on it beyond cell and another between veins 3 and 4; hindwing paler, with a black discal dot. Both sexes from Hondo and Kiushiu, Japan. *nigripunctalis*.

R. curvilinea Wilem. (74 l). Forewing whitish suffused with brown, especially on costal and terminal areas; a black mark at end of cell, placed on the edge of a blackish curved line from costa to the blackish outer line, which is almost parallel to termen and outwardly edged with whitish; subterminal band blackish narrowing downwards; a terminal black line; hindwing fuscous. Both sexes from Hondo and Kiushiu, Japan. *curvilinea*.

R. errabunda Wilem. (75 l). Forewing greyish brown powdered with dark brown; a white mark at middle of costa; a brown median line, ill-defined, but appearing to be outwardly oblique from the white mark to the upper of two black dots at end of cell, thence inwardly oblique to inner margin; outer line brown, faint above vein 6, inwardly oblique to vein 1, then vertical; hindwing fuscous grey. Yoshino, Hondo, Japan. *errabunda*.

R. biatomea Moore. (75 h). Forewing pale ochreous, irrorated with fuscous, especially towards termen; costa dark at base; two black specks at end of cell; an indistinct curved subterminal series of dark specks and a prominent terminal series; hindwing with inner half fuscous brown. A South Indian and Ceylonese species, recorded by WILEMAN from Kiushiu. *biatomea*.

83. Genus: **Avitta** Walk.

A. puncta Wilem. Forewing brown with slight grey suffusion, crossed by 5 slender black lines; the first two irregular and towards costa indistinct, the rest serrate; stigmata black, the orbicular punctiform, the reniform round; hindwing black with fringe brown. A ♂ from Satsuma, Kiushiu. *puncta*.

86. Genus: **Pangrapta** Hbn.

P. suffusa Wilem. Forewing pale greyish brown, with a pinkish suffusion in disc; lines blackish; subbasal double with a kink below costa; median zigzag; outer edged with whitish and marked with ferruginous especially at end of cell, where it is elbowed and the white edging dilated; postmedian area ferruginous towards costa, subterminal line dentate; black dots on termen; a blackish dot in cell between subbasal and inner lines; a dark cloud at end of cell; fringe ferruginous in upper half; hindwing with indistinct blackish inner and subterminal lines, the latter with two black spots near anal angle; outer line as on forewing. 2 ♂♂ from Kiushiu. *suffusa*.

98. Genus: **Nodaria** Guen.

parallela. **N. parallela** Wilem. (75 a). Forewing brownish rufous, with three slightly darker lines; the inner curved; the outer outcurved round cell, with a faint bend on vein 6, then sinuous to middle of inner margin; the subterminal nearly straight, with a slight kink at vein 3; hindwing luteous dusted with grey, with a median and double outer curved lines; terminal line dark in both wings. Central China and Japan.

assimilata. **N. assimilata** Wilem. Forewing brownish rufous with four darker oblique lines; the inner indented below middle; the median diffuse, passing over the discal spot; outer line incurved below cell to join the median; subterminal indented below middle; hindwing luteous white, with two darker lines; both wings with dark terminal line. 1 ♂ from Hakodate, Yesso.

discisigna. **N. discisigna** Moore (= *lunifera* Moore). (751). Forewing ochreous white; an inner fulvous band with black speckling, almost straight; a broad median band with wavy line on its outer edge; a prominent white lunule at end of cell; subterminal line dentate lunulate edged with white; terminal dark specks; hindwing with slight fuscous suffusion; outer and subterminal dark lines, outwardly angled, obsolete towards costa, the outermost with pale border. An Indian insect recorded by WILEMAN from Hondo, Japan.

98a. Genus: **Catada** Walk.

Tongue present; frons smooth, rounded; palpi slender, sickle-shaped, naked; second segment tapering to extremity well above vertex of head, third very long and slender; antennae of ♂ thickened and flattened, or minutely ciliated; thorax and abdomen smoothly scaled; forewing with vein 7 from upper angle of cell, 6 from below it; hindwing with vein 5 from middle of discocellular. Type *C. vagalis* Walk.

Sect. I. Forewing with veins 9 and 10 absent.

fatua. **C. fatua** Warr. (75 h). Forewing pale grey with fuscous shading; median area blackish, bounded by sinuous inner and outer lines, the latter excurved beyond cell, where it encloses a black spot; a pale subterminal spot above middle; hindwing with dark sinuous median and pale sinuous subterminal lines obsolete at costa; palpi black at base; in both wings the termen is indented below apex. Described from the Khasia Hills, India; recorded by WILEMAN from Hondo, Japan.

102. Genus: **Adrapsa** Walk.

ablualis. **A. ablualis** Walk. (75 h, i). Forewing brownish fuscous; the costal streak often pale; outer line white, shortly angled below costa, then oblique inwards, sometimes crenulate; inner line very obscure; median dark below middle; a white dot in cell and white spot at end; subterminal line whitish, wavy, with a more prominent white crescent beyond cell; hindwing with white central line; the ♀ is darker, with all the white markings less prominent except sometimes costal streak of forewing. Antennae of ♂ with thickened tufts of dark scales on inner side to middle; the outer side with uniseriate pectinations from near base. This species, described in the first instance from Ceylon, and occurring throughout the islands to Australia, is recorded from Kiushiu by WILEMAN.

107. Genus: **Bleptina** Guen.

caliginosa. **B. caliginosa** Wilem. (75 l). Forewing sooty brown, tinged with purplish; a whitish lunule at end of cell, followed by the wavy whitish outer line, which becomes subobsolete below middle; subterminal line sinuous, whitish, interrupted below costa; terminal line black, interrupted, edged finely with white; hindwing dark fuliginous, paler along costa. Described from a ♂ taken at Hakodate, Yesso, Japan.

medialis. **B. medialis** Wilem. Forewing whitish brown, freckled and clouded with darker brown; lines black,

thick and dentate; space between inner and outer lines blackish, with dark central shade and lunule at end of cell; subterminal line white, dentate, ill-defined; hindwing similar, without inner line; the subterminal clearer. Described from 2 ♀♀ from Yoshino, Hondo, Japan. From the figure this species looks out of place here; both wings have the termen crenulate.

113a. Genus: **Latirostrum** *Hmps.*

Tongue present; forehead with tuft of hair above; palpi porrect, very long; second segment fringed with very long hair above, tapering to extremity, the third broadly spatulate at tip; antennae of ♂ ciliated; thorax and abdomen smoothly scaled; the tibiae hairy; forewing long and narrow; the costa arched at base then straight; the termen produced to points at apex and vein 4; vein 5 almost crowded out; veins 8, 9 anastomosing to form areole; vein 5 of hindwing just below middle of discocellular; termen well rounded. Type *L. bisacutum* *Hmps.*

L. bisacutum *Hmps.* (75 f). Forewing reddish brown; a yellowish patch on inner margin at base; black spots on a yellow ground in and at the end of cell; above the outer of these a yellowish dark speckled costal patch; subterminal line indistinct, black, inwardly yellowish-edged; a yellow subapical spot and yellowish patch, speckled with dark, on termen below middle; a row of black terminal spots; hindwing fuscous, the fringe yellow. An Indian species recorded by WILEMAN from Japan. *bisacutum.*

113b. Genus: **Anoratha** *Moore.*

Tongue slight; frons smooth; palpi porrect, second segment with a slight downward curve, fringed above with scales, the third long, slender and depressed; thorax and abdomen smoothly scaled, the latter in ♂ very elongate; forewing with straight costa, curved just before apex which is somewhat produced; termen elbowed at middle; hindwing with veins 3 and 4 shortly stalked; 5 from middle of discocellular; termen excised towards anal angle in ♂. Type *A. costalis* *Moore.*

A. paritalis *Walk.* (75 f). Forewing pale chestnut dusted with darker; the costa slightly paler; inner line very indistinct, angulated; an outer straight white line; hindwing fuscous; a slight dark pale-edged flexuous outer line. Recorded by WILEMAN from Hondo Japan; otherwise from Ceylon. *paritalis.*

113c. Genus: **Marapana** *Moore.*

Tongue present; frons smooth; palpi with second segment very long, porrect, the third short, slightly upturned; antennae of ♂ minutely ciliated; forewing with apex subacute; the termen sinuous; hindwing with anal angle truncate; 5 from below middle of discocellular; 3 and 4 shortly stalked. Type *M. pulverata* *Guen.*

Sect. I. Second and third segments of palpi fringed with hair above; vein 10 of forewing from areole.

M. olivescens *Hmps.* (75 l). Forewing whitish tinged with ochreous and pink and on costal area with olive green; an inner olive green band from subcostal vein to inner margin, obliquely curved; an obscure dark-edged whitish lunule at end of cell, with black dot at lower angle and traces of a wavy line thence to inner margin; outer line pale, oblique, with olive green beyond it from costa to vein 4, where it is strongly angled and becomes obsolescent; subterminal line indistinct, pale, lunulate, strongly angled at vein 5, with black streak from its angle into the fringe; a row of short black striae just before termen, which is excurved below apex, and sharply angled at vein 4; hindwing purplish pink with dark cell dot; a faint sinuous outer line; termen crenulate, with fine dark line. Described from Wynaad, Madras and Ceylon; recorded by WILEMAN from Yoshino, Hondo, Japan. *olivescens.*

Sect. II. Second segment of palpi fringed with hair only at extremity, third naked; vein of forewing from beyond areole.

puncti-
margo. **M. punctimargo** *Hmps.* Forewing reddish ochreous brown; traces of a waved rufous inner line; a black speck in cell; a diffuse waved median fuscous line and traces of two similar outer lines; two black specks at end of cell; both wings with terminal black specks. A Ceylonese insect, of which a ♂ is recorded by WILEMAN from Yoshino, Hondo, Japan.

117. Genus: **Bomolocha** *Hbn.*

triangularis. **B. triangularis** *Moore.* (75 k). Forewing grey brown with an obscure obliquely waved inner line all but joined at inner margin by a similar inwardly oblique outer line; the cell tufts black; apical streak indistinct, with rufous above and below it; a slight subterminal line and series of terminal dots; in *triangularis* there is a large dark triangular patch on costa of forewing between the inner and outer lines; in the form *absimilis.* **absimilis** *Moore* the wing is uniformly irrorated with black. Described from the Khasia Hills, Assam, and recorded by WILEMAN from Kiushiu and Shikoku. I believe the forms are sexual only. Termen excised below apex, excurved at middle.

118. Genus: **Hypena** *Schrank.*

pulveru-
lenta. **H. pulverulenta** *Wilem.* Forewing whitish grey powdered with olive brown, tinged with ochreous along inner margin; inner line oblique, blackish, obscure towards costa, uniting with the equally obscure double wavy outer line below vein 2; subterminal line olive brown, broader on costal area and there outwardly edged with white; apex whitish; apical streak brown black; fringe grey, preceded by a sinuous blackish line which is clearer towards costa; hindwing fuscous grey. 1 ♂ 1 ♀ captured at Gokanoshō, Hyuga, Japan.

hampsonia-
lis. **H. hampsonialis** *Wilem.* (75 k). Forewing, like head and thorax, violet grey; crossed by three darker lines; the inner curved, but indistinct; the outer sinuous, outwardly white-edged; the subterminal whitish, marked with darker, waved and interrupted; a row of terminal black dots; hindwing fuscous grey; terminal line crenulate, dark. Japan.

caliginosa. **H. caliginosa** *Wilem.* (75 k). Forewing dark brownish; inner line brown edged with pale ochreous, oblique, ending at vein 1; outer line erect and wavy, black edged outwardly with pale ochreous, with black dots on it at end of cell and on vein 2; subterminal line formed of pale ochreous dots and two black ones towards costa; a row of terminal white dots; hindwing dark fuscous. 1 ♂ from Kobe, Hondo, Japan.

furva. **H. furva** *Wilem.* Forewing fuscous brown flushed with grey; inner line wavy, indistinct; outer line somewhat oblique, ochreous, inwardly black edged, deepest on the two folds; subterminal line ochreous inwardly black edged, indistinctly waved; hindwing dark fuscous brown; both wings with terminal black lines. 1 ♂ from Kagoshima, Satsuma, Kiushiu. Allied to *minna* *Bllr.*

sinuosa. **H. sinuosa** *Wilem.* (75 k). Forewing dark brown tinged with grey, except the median area; a black discal dot inner and outer lines darker, the former angled below cell, the latter sinuous; subterminal line dusky, wavy, obscure below middle; hindwing dull brown flushed with grey. Described from a pair from Satsuma, Kiushiu.

lignealis. **H. lignealis** *Walk.* (75 k). Forewing redbrown, the inner marginal area suffused with blue grey, which is narrowest at middle; some black spots in and below cell; an indistinct strongly angled outer line with a black spot on it below cell; the curved apical streak very long and prominent, with two black spots above it; an obscure subterminal series of black dots; hindwing fuscous. A Ceylon species recorded by WILEMAN from Kiushiu and Shikoku.

taxia. **H. laxia** *Swinh.* (75 k). Forewing pinkish brown covered with brown irrorations; an oblique double pale line from costa before apex to near middle of inner margin, slightly curved outwards; a sinuous blackish line at apex, with a whitish space above it; below it a subterminal row of small blackish marks; a whitish terminal suffusion, and row of black lunules; hindwing blackish brown. 1 ♂ from Kiushiu; described from the Khasia Hills, Assam.

Publ. 28. I. 1914.

Alphabetical List

of the forms of the Palaearctic Noctuae with reference to the original descriptions

* signifies that the form is figured at the place quoted.

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| <i>uniformis</i> Warr. Gad. 292 . . . 53 b | | | | <i>vigens</i> Bllr. Rhynch. 429 . . . 72 k |
| <i>uniformis</i> Warr. Lup. 185 . . . 43 d | | | | <i>vigilans</i> Grote Hill. 123 |
| <i>uniformis</i> Warr. Parast. 165 . . . 39 f | | | | <i>viguraea</i> Püng. Eux. 29 . . . 6 c |

V.

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- vacillans* H.-Schöff. Eux. 31
- vaciva* Püng. Disc. 67
- vaga* Spul. Catoc. 305 . . . 55 b
- vaga* Stgr. Eux. 30
- vagalus* Wkr. Cat. 442
- valdensis* Bsd. Rhyac. 50
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- valesiaca* Frr. Rhyac. 48
- valesicola* Guen. Sid. 98
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- valida* Wkr. Rhyac. 49 . . . 10 k
- vallantini* Oberth. Catoc. 313 . . . 57 f
- vallesiaca* Bsd. Rhyac. 55 . . . 13 b, c
- vallesiaca* Stn. Rhyac. 52
- valligera* Gmel. Rhyac. 36
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- v-argenteum* Esp. Phyt. 350 . . . 64 i
- v-argenteum* Esp. Phyt. 351
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- varia* Swinh. Rhyac. 37
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- variabilis* Pill. Phyt. 354 . . . 65 c, d
- variago* Stgr. Xest. 58
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- variegata* Oberth. Auch. 197 . . . 44 g
- variegata* Oberth. Atr. 176 . . . 41 c
- variegata* Spul. Lithoph. 126 . . . 31 a
- variegata* Stgr. Parast. 167
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- variegata* Tutt Dryob. 134 . . . 32 i
- variegata* Tutt Hyp. 435
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- variegata* Warr. Amph. 158 . . . 38 b
- variegata* Warr. Erch. 335
- variegata* Warr. Morm. 303 . . . 54 c
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- variolosa* Wkr. Cosm. 359
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- vaulogeri* Stgr. Cleoph. 115 . . . 24 f
- vau-punctatum* Esp. Con. 146 . . . 35 h
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vilis *Hbn.* Parast. 171
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viola *Stgr.* Stemm. 259 . . . 50 h
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xanthenes *Germ.* Hydr. 227 . . . 46 f
xanthenes *Germ.* Hydr. 225
xanthiana *Stgr.* Isochl. 64 . . . 15 c

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xanthochloris *Bsd.* Polyph. 197 . . . 44 g
Xanthoecia *Hmps.* 225
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x-signata *Stgr.* Acron. 15
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Y.

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Z.

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zelotypa *Led.* Brachyx. 227 . . . 46 g
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zilla *Btlr.* Bom. 433
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zollikoferi *Frr.* Sid. 178 . . . 41 h
zonalis *Wkr.* Corg. 272
zosimi *Hbn.* Phyt. 348 . . . 64 e

Corrections and Additions to Vol. III.

- P. 6 line 10 from the bottom: after *chinensis* *form. nov.* add (1 e).
- P. 8 „ 11 „ „ top: after *O. funebris* *Moore* add (vol. XI, pl. 3 f).
- P. 11 „ 17 „ „ top: after *minor* *ab. nov.* add (2 b).
- P. 12 „ 3 „ „ bottom: after *degener* *Hbn.* instead of (2 e) read (2 e, f).
- P. 13 „ 24 „ „ bottom: after *albonigra* *Herz* add (75 g).
- P. 15 „ 18 „ „ top: after *nigricans* *Leech* read (75 g).
- P. 17 „ 18 „ „ bottom: after (3 i add: ♀, 2 k, ♂).
- P. 24 „ 24 „ „ bottom: after *unctus* *Christ.* instead of (18 a) read (12 d).
- P. 24 „ 7 „ „ bottom: after *matritensis* *Vasquez* delete (12 c).
- P. 24 „ 9 „ „ bottom: after *subatratus* *Haw.* add (5 d).
- P. 26 „ 24 „ „ bottom: after *obscura* *Frr.* add (5 f).
- P. 28 „ 2 „ „ bottom: after *polygonides* *Stgr.* delete (6 b).
- P. 42 „ 11 „ „ bottom: after *atlantica* instead of (9 f) read (15 i).
- P. 42 „ 19 „ „ bottom: after *innuba* instead of (9 e) read (9 f).
- P. 42 „ 21 „ „ top: after *prosequa* add (9 d).
- P. 44 „ 1 „ „ top: after *subpurpurea* add (9 k).
- P. 49 „ 20 „ „ top: „*obducta*“ is omitted in the margin.
- P. 53 „ 16 „ „ bottom: after *larixia* read (12 i) instead of (21 i).
- P. 65 „ 4 „ „ bottom: after the genus *Actinotia* insert:

42 a. Genus: **Auchmis** *Hbn.*

Tongue developed; frons smooth; palpi obliquely projecting, 2nd segment densely scaled; antennae of the ♂ ciliated. Thorax and abdomen crested; hindtibiae showing a single spur between the middle and terminal spurs. Forewing long and narrow with the terminal margin dentate. Type *A. comma* *Schiff.*

A. comma *Schiff.* (= *tanaceti* *Esp.*, *detersa* *Esp.*, *petrorhiza* *Bkh.*, *indicatura* *Walk.*) (75 l). Forewing light grey, dusted with dark grey: along the submedian a white basal streak, underlined with black. Orbicular and reniform stigmata pale with grey centre and black margins, the orbicular flat and prolonged so as to touch the reniform; the lines very ill defined except at the costa, where they are marked by dark oblique striae; veins finely black; subterminal line oblique and running straight from below the apex to the inner margin, in the intervals marked with black patches; on the submedian fold before it a small white spot and behind it a blackish spot, which runs into a larger dark marginal spot; fringes grey. Hindwing white with dark veins and dull grey marginal shade, which is much stronger in the ♀, whole whose hindwing shows a grey tone. Fringes white. A common species in South Europe: France, Switzerland, Germany, Austria, Hungary, South-West Russia; in Asia in Armenia, Asia Minor, Persia and Kurdistan. — The larva is described as slate-coloured with darker streaks; dorsal and subdorsal lines dark; lateral lines broad and brown; on Berberis.

- P. 66 line 11 from the bottom: before „Subfamily *Hadeninae*“ add „4.“.
- P. 89 „ 1 „ „ bottom: after *rufescens* *Tutt* read (22 b) instead of (22).
- P. 90 „ 30 „ „ top: after *immaculata* *Stgr.* read (22 c) instead of (22).
- P. 100 „ 15 „ „ bottom: after *fuscovenosa* *Math.* add (25 k).
- P. 102 „ 7 „ „ top: before „Subfamily *Cucullianae*“ add „5.“.
- P. 104 „ 10 „ „ top: after *propinqua* *Ev.* add (28 a).
- P. 104 sixth marginal name: read *umbristriga* instead of *umbristigra*.

- P. 117 line 16 from the top: after *platyptera* add (28 c).
 P. 119 „ 16 „ „ top: after *scillae* *Chrét.* add (28 e).
 P. 139 „ 13 „ „ bottom: after *cortex* *Alph.* add (28 e).
 P. 157 „ 1 „ „ top: before „Subfamily **Amphipyriinae**“ add „6.“.
 P. 168 „ 24 „ „ top: after *fuscata* *ab. nov.* delete (40 c).
 P. 189 „ 23 „ „ top: after *albidisca* add (42 l).
 P. 202 „ 7 „ „ bottom: after *gnorima* *Püng.* read (40 c) instead of (40 e).
 P. 217 „ 13 „ „ top: after *mandane* *Druce* delete (50 a).
 P. 217 „ 20 „ „ bottom: supply the marginal name „*baueri*“.
 P. 217 „ 7 „ „ bottom: for *abbreviata* *Hmps.* read *albiviata* *Hmps.*
 P. 218 „ 12 „ „ bottom: for *Prospalta* read *Prospalta*.

P. 237 line 15 from the top: *Archanara hessii* *Bdv.* (49 h) was here referred to *dissoluta* *Tr.* as a synonym. It is, however, possible that *hessii* was a distinct form, larger and darker than typical *dissoluta*. It formerly occurred in ponds at Darmstadt in Germany and in the Whittlesea and Yaxley Meres in England, but has become extinct in both places in consequence of the draining of the fens.

- P. 245 line 1 from the top: before „Subfamily **Melicleptriinae**“ add „7.“.
 P. 250 „ 1 „ „ top: before „Subfamily **Heliothidinae**“ add „8.“.
 P. 259 „ 23 „ „ bottom: before „Subfamily *Erastrinae*“ add „9.“.
 P. 267 „ 22 „ „ bottom: after *guenéi* *Spul.* add (52 a, as *grata*).
 P. 270 „ 23 „ „ top: after *gayneri* add (52 a).

P. 273. The name **Xantholeuca** has been employed for two genera (cf. p. 145, 47. Genus). It should therefore be replaced here (p. 273) by: 19. Genus: **Chiono-xantha** *Hmps.*

- P. 273 footnote: read vol. II, p. 295 instead of 293.
 P. 275 line 27 from the bottom: after *brunnea* *Leech* read (51 m) instead of (51 n).
 P. 280 „ 21 „ „ top: after *munda* *Leech* read (52 e) instead of (22 e).
 P. 282 „ 10 „ „ top: for *undata* read *undulata*.
 P. 285 „ 21 „ „ top: to *urania* add (52 h, i).
 P. 287 „ 1 „ „ top: before „Subfamily **Eutelianae**“ add „10.“.
 P. 288 „ 7 „ „ top: read *grabczeuwsii* instead of *grabeczenskii*.
 P. 288 „ 2 „ „ bottom: before „Subfamily **Stictopterinae**“ add „11.“.
 P. 289 „ 17 „ „ bottom: before „Subfamily **Sarrothripinae**“ add „12.“.
 P. 290 „ 7 „ „ bottom: read *chamaeleon* instead of *chamaleon*.
 P. 293 „ 7 „ „ bottom: before „Subfamily *Acontianae*“ add „13.“.
 P. 296 „ 14 „ „ top: to **Chlorophyllana** add (53 h).
 P. 301 „ 11 „ „ top: after *transversa* read (152 m, n) instead of (52 m).
 P. 301 „ 10 „ „ bottom: before „Subfamily **Catocalinae**“ add „14.“.
 P. 305 „ 8 „ „ bottom: after *deducta* delete (63 d).
 P. 310 „ 1 „ „ top: after *leechi* read (63 f) instead of (63 e).
 P. 310 „ 15 „ „ top: after *amanda* *Bdv.* read (56 e) instead of (56 a).
 P. 316 „ 17 „ „ top: after *dauidi* read (63 e) instead of (63 f).
 P. 317 „ 25 „ „ top: after *fumi-plaga* read (57 c) instead of (57 b).

- P. 317 line 5 from the bottom: after *connexa* read (57 e) instead of (57 f).
P. 318 .. 2 top: to *fasciata* add (57 d)
P. 321 .. 20 bottom: after *endoleuca* read (58 a, b) instead of (58 a).
P. 323 .. 14 top: to *macrops* add (58 e).
P. 326 .. 5 bottom: after *lunaris* read (60 d, e) instead of (60 e).
P. 327 .. 20 top: to *rufa* add (60 e).
P. 327 .. 20 bottom: read *separans* instead of *superans*.
P. 329 .. 19 top: after *albivitta* read (61 b) instead of (61 h).
P. 339 .. 1 top: after *squalens* read (62 e) instead of (62 c).
P. 341 .. 24 bottom: read *sesquistria* instead of *sesquistoria*.
P. 343 .. 25 bottom: after *illuminata* read (62 h, i) instead of (62 i).
P. 344 .. 2 bottom: read *devergens* instead of *divergens*.
P. 345 .. 8 bottom: after *gemmifera* read (64 e) instead of (64 e).
P. 346 .. 24 top: read *microgamma* instead of *misrogramma*.
P. 357 .. 22 bottom: after *separanda spec. nov.* add (65 h) as *abrostoloides*.
P. 364 .. 11 bottom: add: „*flavipuncta form. nov.* (67 a) is a form of *fumosa*, in which the reniform patch is yellow.”
P. 365 at the end of the page add:

S. amplifascia spec. nov. (67 e). Resembles *kirbyi*, but the median band and its boundary lines are placed vertically instead of obliquely and the band is much broader and of uniform width throughout. Occurs in West China and Japan, as well as in the Khasia Hills in Assam.

- P. 336 line 12 from the top: to *albifusa* add (67 d, as *albimedia*).
P. 372 .. 3 bottom: read *glycyrrhizae* instead of *glycyrrhiza*.
P. 375 .. 10 bottom: after *sericeum* read (69 b) instead of (68 b).
P. 376 .. 6 bottom: after *rufimixta* read (68 i) instead of (67 i).
P. 397 .. 2 bottom: read *Laspeyria* instead of *Laspheyria*.
P. 399 .. 15 bottom: read *nissenii* instead of *nysseii*.

P. 404. The form *costipannosa* figured at pl. 71 e is not Palearctic and is figured by mistake; cf. what is said of this species in vol. XI.

Corrections to the Plates

(so far as not already corrected in the text).

- | | |
|--|--|
| Pl. 1, Heading: read <i>Agaristidae</i> instead of <i>Acaristidae</i> . | Pl. 32 c: for <i>vultarina</i> read <i>vulturina</i> . |
| .. 7 e: for <i>peperita</i> read <i>peperida</i> . | .. 40 l: for <i>longestriata</i> read <i>longistriata</i> . |
| .. 12 d: for <i>glarivena</i> read <i>clarivena</i> . | .. 42 h: for <i>lentina</i> read <i>dentina</i> . |
| .. 15 k: for <i>lanzarotis</i> read <i>lanzarotensis</i> . | .. 45 heading: for <i>Prospalta</i> read <i>Propsalta</i> . |
| .. 17 a: for <i>ochracea</i> read <i>oleracea</i> . | .. 51 a: for <i>luteifascialis</i> read <i>lulefascialis</i> . |
| .. 22 i: for <i>contracta</i> read <i>contacta</i> . | .. 51 f: for <i>scitulososa</i> read <i>siticulososa</i> . |
| .. 23 and 24: in the heading read <i>Sideridis</i> for <i>Leucania</i> . | .. 52 e: for <i>argentula</i> read <i>argentata</i> . |
| .. 24 b: for <i>dactylids</i> read <i>dactylidis</i> . | .. 52 f: for <i>delecta</i> read <i>delecta</i> . |
| .. 31 e: for <i>lunigera</i> read <i>lunijera</i> . | .. 57: for <i>thalamus</i> read <i>thalamos</i> . |

Of figured, mostly trifling aberrations, which are not dealt with in detail in the text, belong.

- | | |
|--|--|
| Pl. 8 b: <i>intermedia</i> to <i>Rhyacia senescens</i> Stgr. | Pl. 44 k: <i>brunnea</i> to <i>Thalpophila matura</i> . |
| .. 8 h: <i>rufovirgata</i> to <i>Rhyacia festiva</i> Schiff. | .. 44 k: <i>depicta</i> to <i>Thalpophila matura</i> . |
| .. 10 i: <i>iberica</i> to <i>Rhyacia</i> Hbn. | .. 52 l: <i>confluens</i> to <i>Erastria trabealis</i> . |
| .. 42 c: <i>ruja</i> to <i>Luperina testacea</i> Hbn. | |

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