

terior margins produced backwards. The terminal plate of the operculum triangular, about one-third the length of the basal plate. Colour brown, with minute black punctations. Length 15mm. (thorax 11mm., postabdomen 4mm.), the ratio of the length to the breadth being as 11 to 1.

Hab. Auckland; found in a tube.

The tube in which this animal was found is about $\frac{1}{2}$ in. long, and appears to be part of the hollow stem of some plant. Whether the presence of the animal in this tube is accidental or habitual is uncertain, but the short legs and strong antennæ seem to favour the latter supposition.

The description given above is mainly taken from Mr. Thomson's description, but I have rearranged it and added to it to some extent. He describes *four* joints in the peduncle and *two* in the flagellum of the antennæ. In the peduncle there seem to be *five* joints, but the first is very short, as it usually is in the *Idoteida*, and hidden in a dorsal view by the head. In the flagellum I can only make out a single joint—a flagellum of a single joint is, in fact, given as one of the generic characters of *Cleantis*.

Judging from the description this species is very close to *Cleantis granulosa*, Heller, from St. Paul's, but from a tracing of Heller's figure in "Reise der Novara," pl. xii., fig. 2, kindly made for me by Mr. R. M. Laing, it is evident that the legs in that species are much longer than in *C. tubicola*.

ART. XXIII.—*Descriptions of New Zealand Lepidoptera.*

By E. MEYRICK, B.A., F.E.S.

[Read before the Philosophical Institute of Canterbury, 7th November, 1889.]

I GIVE here descriptions of the whole of the New Zealand species of the three following groups: viz, *Bombycina*, *Sphingina*, and *Hypsina*. They are remarkable for their very small number, and for the absence of any specially characteristic or peculiar forms. They prove with certainty that the New Zealand fauna of these three groups is entirely of comparatively recent growth, and is also of solely Australian origin. Considering the powerful flight of many species in these groups, and their relative abundance in Australia, it is perhaps a matter for surprise that a larger number have not found their way across. One Australian species which I have not included hereafter—*Cossus lituratus*, a large insect, of which the larva feeds in the trunk of trees—was once taken by

Mr. Fereday, but under circumstances which left no doubt that it had recently emerged from imported timber; it is not, therefore, entitled to a place in the list. The corresponding Australian list numbers probably about eight hundred species, against which New Zealand is at present unable to furnish twenty, nor is it probable that more than some half-dozen others remain to be discovered.

BOMBYCINA.

HEPIALIDÆ.

Ocelli absent. Tongue generally obsolete. Antennæ less than half forewings. No maxillary palpi. Tibiæ without spurs. Forewings with all main veins and costa connected by crossbars near base; 1 furcate towards base (the furcation appearing as a parallel vein connected by terminal bar); 9 and 10 stalked, 11 from near base, forked parting-vein well defined. Hindwings without frenulum; 1c present; neuration essentially identical with that of forewings.

A curious family of very ancient development; it is of very general distribution, not very largely developed anywhere, but perhaps most in Australia. The New Zealand genera are characteristically Australian. This is the only family of the group which is represented by a fair number of species, all or nearly all being endemic; and it is therefore probable that their ancestors were the first to gain a footing in the country, and that they were specially favoured in meeting with suitable food. The larvæ of the family feed usually on the roots of grass, less commonly in the wood or on the roots of trees; and, whilst it seems to me that the forests in New Zealand are of comparatively recent date, there can be no question that grass-feeding insects have always found abundant room. To this fact, rather than to the undoubtedly real antiquity of the family, I attribute its greater development.

The two genera may be distinguished by the structure of vein 8. Besides the species given, *Pielus ingens*, Walk., a very large unicolorous brownish-ochreous or reddish insect, has been stated to occur; but I believe the record to be erroneous: it is certainly Australian, and I have never met with a really authentic New Zealand specimen. At the same time, I must admit having been unable to learn to what species the so-called "vegetable caterpillar" (infested with the *Sphæria* fungus) is referable, except that it is a large brown species of this family. It was formerly attributed to *Hepialus virescens*, but this was certainly erroneous, as the larva of that species lives in the stems of trees, and never goes beneath ground even to pupate, whilst the larva in question is subterranean. It ought to be easy for local collectors possessed of a little perseverance to clear up this difficulty.

1. PORINA, Walk.

Antennæ $\frac{1}{4}-\frac{2}{5}$, in ♂ bipectinated, or more or less shortly bidentate. Palpi moderate, porrected, basal joint rough-haired, second joint rough-haired or almost smooth, terminal joint smooth, sometimes subclavate. Posterior tibiæ densely rough-haired. Forewings with vein 7 from angle of cell, 8 and 9 out of 10, rising from upper margin much before angle. Hindwings as in forewings.

The difference in the structure of the antennæ does not here justify generic division: every gradation is found in the Australian species between strong pectination and almost imperceptible dentation, and no line can be drawn. In all the species the forewings are elongate-triangular, with costa somewhat sinuate, apex rounded-obtuse, hindmargin very obliquely rounded, continuous with inner margin; the hindwings formed as the forewings, but less elongate. The species are troublesome to distinguish, owing to their great variability of marking and colour, and some are imperfectly known to me. The following tabulation may therefore be found not entirely accurate:—

1. Forewings with a conspicuous pale streak above inner margin	3. <i>enysii</i> .
Forewings without a conspicuous pale streak above inner margin	2.
2. Forewings with oblique, diverging, blackish discal bars	2. <i>mairi</i> .
Forewings without oblique, diverging, blackish discal bars	3.
3. Forewings with conspicuous blackish spot above middle of inner margin	4. <i>characterifera</i> .
Forewings without conspicuous blackish spot above middle of inner margin	4.
4. Antennæ of ♂ strongly pectinated	1. <i>dinodes</i> .
Antennæ of ♂ bidentate	5.
5. Cilia of hindwings ochreous, unicolorous	6.
Cilia of hindwings dark fuscous or barred with dark fuscous	7.
6. Central white streak of forewings almost straight	7. <i>umbraculata</i> .
Central white streak of forewings irregular or broken into uneven spots	8. <i>signata</i> .
7. Discal white spots of forewings simple	6. <i>despecta</i> .
Discal white spots of forewings composed of about three confluent spots	5. <i>cervinata</i> .

1. *Por. dinodes*, n. sp.

♂. 59mm. Head whitish-ochreous, face and palpi fuscous. Antennæ ferruginous, strongly bipectinated. Thorax fuscous, with small whitish central spot. Abdomen and legs greyish-ochreous. Forewings fuscous, somewhat ochreous-tinged; numerous irregular well-defined crescentic white marks; on dorsal half these are placed to margin four transverse series of

roundish fuscous spots becoming obsolete on costal half, except fourth which runs to apex, first two much confused; a double submarginal series of irregular similar marks; cilia white, barred with dark fuscous. Hindwings light brownish-ochreous; cilia white, barred with fuscous.

Invercargill; two specimens (coll. Fereday), taken by Captain Hutton. Nearest to some Australian forms, as *fuscomaculata*; excluding the two following species, of which the antennæ in the ♂ are unknown to me, this species differs from all the other five by the strongly-pectinated antennæ.

2. *Por. mairi*, Buller.

(*Porina mairi*, Buller, "Trans. N.Z. Inst.," 1872, 279, pl. xvii.)

130mm. Forewings light brownish-ochreous; a whitish-ochreous blotch towards middle of inner margin, partly suffusedly margined with dark fuscous; a blackish mark in disc towards base; two oblique diverging blackish marks in disc before middle, margined with whitish; a triangular white spot below cell, and a white patch beyond it; three blackish transverse lines beyond cell, reaching below middle of wing, with brown interspaces; a posterior series of rounded dark spots circled with whitish; a submarginal series of wedge-shaped blackish spots; a hindmarginal series of black spots, preceded by a waved whitish line. Hindwings fuscous-grey, more brownish posteriorly, with eight interrupted blackish transverse lines.

North Island, in forest. I have not seen a specimen of this species, and have drawn the preceding description from a comparison of the original description and figure; nor can I speak positively as to the generic position, since no structural characters are given; but, if there is no error, the species must be very easily recognisable from all others of this genus by its very much greater size.

3. *Por. enysii*, Butl.

(*Porina enysii*, Butl., "Proc. Zool. Soc. Lond.," 1877, 381, pl. xlii., 7.)

♂ ♀. 52–62mm. Forewings ochreous-brown, more or less mixed and marbled with dark fuscous or black; an ochreous-white irregular streak from base to inner margin at $\frac{3}{4}$, partially margined with darker suffusion, sometimes widened above to form a whitish-ochreous band extending to anal angle. Hindwings yellow-ochreous.

North Island. I have seen only the type in the British Museum and a specimen in Mr. Fereday's collection, both badly damaged. I have not been able to determine properly the generic position, and the above description is merely a rough diagnosis, but the species appears distinct, and it would be useless to attempt more from such poor material.

4. *Por. characterifera*, Walk.

(*Hepialus characterifer*, Walk., "Suppl.," 594; *Oxycausus impletus*, ib., 598.)

♂ ♀. 68–80mm. Head and thorax brownish-ochreous; antennæ of ♂ shortly bidentate. Forewings yellow-ochreous, closely marbled with blackish; two or three irregular posterior series of very small subtriangular blackish white-centred marks; several small dark fuscous spots towards base; a moderate subtriangular conspicuous blackish-fuscous spot above middle of inner margin. Hindwings dark fuscous-grey, sometimes with one or two posterior series of pale rings; cilia yellow-ochreous barred with dark grey.

Auckland; two specimens (Brit. Mus. Coll.). Easily known by the characteristic blackish spot towards middle of inner margin.

5. *Por. cervinata*, Walk.

(*Elhamma cervinata*, Walk., "Suppl.," 595; *Porina vexata*, ib., 597; *Pielus variolaris*, Gn., "Ent. Mo. Mag.," v. 1; *Porina fulginea*, Butl., "Cist. Ent." ii., 488.)

♂ ♀. 34–40mm. Head, thorax, and abdomen brownish-ochreous. Antennæ fuscous, in ♂ bidentate. Forewings yellowish-ochreous or fuscous; a small round white black-margined spot in disc at $\frac{1}{8}$; two or three irregular somewhat larger spots confluent in disc at about $\frac{1}{4}$; two or three others united to form an oblique transverse mark in middle; sometimes another between these and the preceding; the whole of these connected by a broad cloudy darker streak, sometimes mixed with black; two white black-circled dots below disc at $\frac{1}{4}$; three transverse more or less visible series of triangular white black-margined dots, first beyond middle, first two terminating in small black spots on inner margin, third more or less confluent into a connected line; between second and third a cloudy darker shade, sometimes mixed with black; sometimes a hindmarginal series of black dots; in specimens with fuscous ground-colour many of these markings tend to be obscured: cilia whitish-ochreous, more or less distinctly barred with dark fuscous, or almost wholly dark fuscous. Hindwings yellowish-ochreous, greyish-tinged in disc, sometimes partially or wholly suffused with dark grey or fuscous; sometimes an indistinct subterminal series of dark fuscous spots; a hindmarginal series of blackish dots; cilia as in forewings.

Auckland to Dunedin; common. Very variable: northern specimens are more yellow-ochreous, and more distinctly spotted, and they become more fuscous in proportion as they are further south; Dunedin specimens are constantly fuscous, but there appears to be a complete gradation between the forms. The ochreous forms are easily distinguished from other species by the numerous spots, and the absence of a continuous

pale discal streak; the fuscous forms are sometimes very similar in colouring to *P. despecta*, but they are distinctly shorter-winged, and the compound discal spots appear to be a good persistent character.

6. *Por. despecta*, Walk.

(*Hepialus despectus*, Walk., "Suppl.," 594.)

♂ ♀. 41–50mm. Head, thorax, and abdomen fuscous, and tuft ochreous-whitish. Antennæ fuscous, in ♂ bidentate. Forewings fuscous; a small white dark-margined wedge-shaped spot in disc at $\frac{1}{3}$, and a larger one in middle, sometimes with traces of a cloudy darker fuscous connecting streak extending from base to $\frac{2}{3}$; the second white spot sometimes sends a short projection upwards; sometimes a pale whitish-fuscous narrow transverse band at $\frac{2}{3}$, marked with a more or less complete double series of fuscous marks, but this often very faint or obsolete; sometimes traces of a series of pale rings beyond this, and two or three more above second discal spot, often absent: cilia rather darker fuscous, tips ochreous-whitish barred with dark fuscous. Hindwings light fuscous; cilia as in forewings.

Christchurch, Otira River, Lake Wakatipu; common. Longer-winged than the preceding (the ♀ is also longer-winged than the ♂), and characterized by its uniform fuscous colour and simple marking.

7. *Por. umbraculata*, Gn.

(*Pielus umbraculatus*, Gn., "Ent. Mo. Mag.," v., 1.)

♂ 37–41mm., ♀ 43–53mm. Head and thorax light yellowish-ochreous, sometimes fuscous-tinged. Antennæ ochreous, in ♂ bidentate. Abdomen light yellowish-ochreous. Forewings light yellowish-ochreous, more or less partially fuscous-tinged; costa sometimes narrowly fuscous; a nearly straight slender white central longitudinal streak from about $\frac{1}{3}$ to $\frac{4}{5}$, attenuated to both extremities, interrupted beyond middle, posterior portion sometimes much reduced, the whole margined above slenderly with dark fuscous, and beneath by a moderate dark-fuscous suffusion extending in ♂ almost to base of wing, in ♀ less marked; generally four or five small dark fuscous linear dots, centred with one or two white scales, between posterior extremity of central streak and costa, and two or three more towards inner margin, all tending to be obsolete; sometimes a series of small dark fuscous dots on hindmargin, and an indistinct fuscous hindmarginal line: cilia whitish-ochreous. Hindwings in ♂ yellow-ochreous, in ♀ paler and becoming pale greyish posteriorly; an indistinct fuscous hindmarginal line; cilia whitish-ochreous.

Wellington and Christchurch; common. Sufficiently well distinguished by the straight white median streak.

8. *Por. signata*, Walk.

(*Elhamma signata*, Walk., "Bomb.," 1563; *Porina novæ-zealandiæ*, ib., 1573.)

♂ ♀. 49–58mm. Head and thorax rather deep ochreous or fuscous. Antennæ yellowish-ochreous, in ♂ bidentate. Abdomen yellowish-ochreous, slightly reddish-tinged, posteriorly sometimes fuscous-tinged. Forewings yellowish-ochreous, somewhat reddish, or ochreous-fuscous; costal edge suffusedly dark-fuscous; a short cloudy whitish streak from base beneath costa, margined beneath with dark fuscous; a cloudy dark fuscous streak proceeding from this to disc at $\frac{2}{3}$, marked on its upper edge with two short longitudinal white streaks, first about $\frac{1}{4}$, second in middle, anterior extremity of second produced as a slightly-curved short white dark-margined streak obliquely upwards; sometimes these three connected into a continuous angularly-sinuate streak; several very small whitish subtriangular marks, margined with dark fuscous, irregularly placed towards costa about $\frac{3}{4}$, sometimes increased and enlarged to form a transverse series of short irregular longitudinal white streaks, and others towards anterior half of inner margin; a pale suffusion in disc beyond middle; a cloudy fuscous transverse shade about $\frac{3}{4}$; a more or less obscure transverse series of whitish dots, connected by a fuscous line, between this and hindmargin; a hindmarginal series of dark-fuscous dots: cilia fuscous, sometimes barred with whitish-ochreous. Hindwings yellow-ochreous, sometimes reddish-tinged; a fuscous hindmarginal line; cilia whitish-ochreous.

Napier, Palmerston, and Wellington; common. Varies extremely in marking, but the discal streak appears never to become straight, preserving the irregular shape of the spots of which it is composed.

2. HEPIALUS, F.

Antennæ $\frac{1}{4}$ – $\frac{1}{8}$, in ♂ simple. Palpi short or moderate, projected, with rough projecting hairs, terminal joint naked, subclavate. Posterior tibiæ densely rough-haired, sometimes with long projecting tuft above in ♂. Forewings with vein 7 from angle of cell, 8 from upper margin much before angle, 9 and 10 stalked from near 8. Hindwings as in forewings.

The genus is nearly cosmopolitan. The Australasian species are all more or less green, and these have commonly been regarded as a separate genus, under the name of *Charagia*, but I am unable to discover any structural distinction. The sexes differ in marking and colour, sometimes to an extraordinary degree. The larvæ of the Australasian species live in galleries in solid wood, but their natural food appears rather to be the bark, which they devour sometimes for a con-

siderable distance round the mouth of the gallery, protecting themselves meanwhile beneath a shelter of silk and refuse.

9. *Hep. virescens*, Dbl.

(*Hepialus virescens*, Dbl., "Dieff. New Zeal.," ii., 284: White, "Tayl. New Zeal.," pl. i., 6: *Hepialus rubroviridans*, White, l.c., pl. i., 1: *Charagia virescens*, Walk., "Bomb.," 1569; Scott, "Trans. Ent. Soc. N.S. Wales," ii., 28: *C. fischeri*, Feld., pl. lxxx., 1: *C. hectori*, Butl., "Proc. Zool. Soc. Lond.," 1877, 380.)

♂. 86–96mm. Head green. Antennæ yellow-ochreous. Thorax green, posterior extremity becoming whitish-ochreous. Abdomen whitish-ochreous, towards middle greenish-tinged. Forewings somewhat elongate-triangular, costa sinuate, apex round-pointed, hindmargin oblique, rather strongly sinuate inwards on upper half, rounded beneath continuously with inner margin; bright green, with irregular transverse series of partially confluent paler rings; two or three of these sometimes become whitish towards inner margin; a nearly straight series of about six rather cloudy white transverse marks, interrupted in middle, from beneath $\frac{3}{4}$ of costa to above $\frac{2}{3}$ of inner margin: cilia green. Hindwings whitish, more or less tinged with green towards hindmargin; and more broadly and strongly towards anal angle.

♀. 100–140mm. Forewings green, with obscure transverse darker marks; four or five quadrate fuscous spots on costa between base and $\frac{2}{3}$; two series of reddish-fuscous sometimes double or triple transverse marks parallel to hindmargin, sometimes including whitish spots, first at $\frac{2}{3}$, second at $\frac{5}{6}$; a narrow reddish-fuscous streak along inner margin; a hindmarginal series of reddish-fuscous marks. Hindwings red, apex green.

Auckland to Wellington; probably generally distributed in the North Island. The larva feeds in the stem and branches of *Melicytus* and other trees. This species has been stated to occur in Australia, but it seems certain that this was an error, founded on confusion with one of the larger Australian species.

PSYCHIDÆ.

No tongue. No maxillary palpi. Antennæ short, in ♂ bipectinated. Forewings with vein 1 furcate, posteriorly coalescing with veinlike submedian fold, 8 and 9 stalked. Hindwings with frenulum developed, 1c present, 8 connected by bar with 7, with one or more additional veins rising from it. Female apterous.

The larvæ live in portable cases, constructed of silk, and usually covered with pieces of stick or refuse; they are polyphagous, feeding indiscriminately on various trees and plants. The two New Zealand species are endemic, but have considerable relationship to ordinary Australian forms.

The two genera are best distinguished by the character of the additional veins rising from vein 8 of the hindwings.

3. *ÆCETICUS*, Guild.

Ocelli present. Antennæ $\frac{1}{3}$, in ♂ strongly bipectinated, much more shortly on apical half. Labial palpi extremely short, rough-haired. Abdomen in ♂ very elongate, roughly hairy. Legs hairy, tibiæ without spurs, posterior tarsi extremely short and stout. Forewings with veins 4 and 5 short-stalked, 7 sometimes out of 9, 8 and 9 stalked, forked parting-vein well defined. Hindwings with veins 4 and 5 stalked, forked parting-vein well defined, 8 connected by bar with cell beyond middle, an additional vein (9) rising from 8 beyond bar, another (10) from 8 before bar, and another (11) from base of costa running into 8 before 10.

This generic name was wrongly spelt *Oiketicus* by its originator and others, for which there is no possible justification. I have corrected it.

10. *Æc. omnivorus*, Fdy.

(*Liothula omnivora*, Fdy., "Trans. N.Z. Inst.," 1877, 260, pl. ix.)

♂. 34mm. Head, antennæ, thorax, abdomen, and legs dark fuscous. Forewings very elongate-triangular, costa hardly arched, apex rounded, hindmargin rounded, rather strongly oblique; thinly scaled, dark fuscous. Hindwings ovate-triangular, thinly scaled, dark fuscous, more thinly and semi-transparent towards base, veins naked.

Christchurch, in September and October. The larva constructs a smooth case, without sticks, and feeds on various plants.

4. *OROPHORA*, Fdy.

Ocelli present. Antennæ $\frac{2}{5}$, in ♂ moderately bipectinated throughout. Labial palpi rudimentary, hairy. Abdomen densely hairy. Forewings with veins 4 and 5 short-stalked, 7 and 8 out of 9. Hindwings with veins 4 and 5 stalked, parting-vein well defined, 8 connected by bar with cell beyond middle, an additional vein (9) rising out of 8 before bar.

11. *Or. unicolor*, Butl.

(*Psyche unicolor*, Butl., "Proc. Zool. Soc. Lond.," 1877, 381; *Orophora toumatoru*, Fdy., "Trans. N.Z. Inst.," 1877, 262, pl. ix.)

♂. 26mm. Head, antennæ, thorax, and abdomen dark grey, clothed with long ochreous-whitish hairs, appearing light grey. Legs dark grey. Wings semi-transparent, strewn with short dark-grey hair-scales, cilia dark grey, tips whitish; forewings very elongate-triangular, costa slightly arched, apex rounded, hindmargin rounded, rather oblique; hindwings broad-ovate.

Rakaia (coll. Fereday). The larva constructs a case covered with pieces of stick, and feeds on low shrubs.

SPHINGINA.

SPHINGIDÆ.

Ocelli absent. Antennæ short, swollen towards middle or posteriorly, apex more or less bent into a slender hook. No maxillary palpi. Abdomen large, conical. Forewings with vein 1 furcate towards base, 2 from near middle of cell, 5 from near middle of transverse vein, parallel to 4, 6 from point with or out of 8, 7 out of 8, 9 out of 10 or absent (coincident with 10). Hindwings with frenulum developed, in ♂ simple, in ♀ sextuple; 1c absent, 5 from near middle of transverse vein, 6 and 7 from a point or stalked, 8 connected with cell by a transverse oblique bar towards base.

The only New Zealand representative of this family is a nearly cosmopolitan insect, possessing great powers of flight, which enable it to cross wide seas.

5. SPHINX, L.

Tongue well developed. Eyes sometimes with marginal cilia. Antennæ $\frac{1}{3}$, swollen towards apex, in ♂ ciliated. Labial palpi moderate, ascending, very densely scaled, terminal joint concealed. Thorax with small tufts on each side of posterior margin. Abdomen without anal tuft. Anterior and middle tibiæ sometimes spinose, posterior tibiæ with all spurs present.

12. *Sph. convolvuli*, L.

(*Protoparce distans*, Butl.)

♂ ♀. 88–96mm. Head and thorax grey; metathoracic tufts black, edged in front with bluish and behind with ochreous-whitish. Abdomen above rosy, posterior margin of segments, except apical, broadly blackish, base of second segment whitish, an uninterrupted dorsal stripe and two apical segments grey. Forewings very elongate-triangular, costa posteriorly moderately arched, apex rectangular, hindmargin very obliquely rounded, waved; rather light brownish-grey; nine more or less well-indicated strongly and irregularly dentate darker grey or dark fuscous transverse lines, somewhat parallel to hindmargin but angulated above middle—viz., two before $\frac{1}{4}$, very indistinct, two before middle, little marked, three about $\frac{2}{3}$, of which two are well marked, and two subterminal, more or less obsolete and broken up to form irregular rings; two long black longitudinal lines beneath middle of disc; an irregular oblique somewhat interrupted black line from apex towards disc: cilia grey, barred with dark fuscous and white. Hindwings grey-whitish, more or less suffused with grey posteriorly; three blackish fasciæ, first at $\frac{1}{4}$, angu-

lated below middle, suffused beneath, second and third roughly parallel to hindmargin, second beyond middle, rather broader; cilia as in forewings.

Taranaki and Napier; sometimes common. I have found the larva at Taranaki feeding on a species of *Convolvulus* growing on the coast sandhills; but it will feed on almost any species of *Convolvulaceæ*. The insect occurs throughout Europe, Asia, Africa, Australia, and the islands of the South Pacific, wherever a suitable situation is found, and has been met with far out at sea. In America it is represented by a form which seems to be regarded as specifically distinct, but I think this is very doubtful.

HYPISINA.

SESIADÆ.

Ocelli present, large. Antennæ about $\frac{3}{4}$, thickened towards apex. No maxillary palpi. Posterior tibiæ with all spurs present. Forewings with vein 1 shortly furcate or simple, 2 from near angle of cell, 7 and 8 stalked, 11 from $\frac{4}{5}$ of cell. Hindwings with frenulum developed, 1c present, 8 free.

This family is a development of the *Zygænidæ*, and has no relationship whatever to the *Sphingidæ*, with which it has been often classed. It is represented in New Zealand only by one artificially-introduced but well-established species.

6. SESIA, F.

Tongue well developed. Antennæ thickened on terminal half, apex sometimes more swollen in ♂, more or less strongly ciliated in ♂, terminating in a small apical fascicle. Labial palpi moderately long, arched, ascending; second joint shortly rough-scaled beneath; terminal joint moderate, cylindrical, tolerably pointed. Abdomen with large expansible anal tuft. Posterior tibiæ rough-haired above. Forewings with vein 7 running to apex. Hindwings with veins 3 and 4 approximated at base or short-stalked, 5 from about middle of transverse vein, 6 absent, 7 from angle of cell.

The neurulation of the forewings, as given by me in the "Proceedings of the Linnean Society of New South Wales for 1886," is wrong, and founded on a mistaken comprehension. I now correct it.

13. *Ses. tipuliformis*, Cl.

♂. 18–19mm. Head and thorax black, collar slenderly orange. Palpi black, longitudinally ochreous-yellow beneath. Antennæ black. Abdomen black, with slender ochreous-yellow subbasal, median, and subapical rings. Forewings very narrow, elongate, gradually somewhat dilated, apex obtuse, hindmargin oblique, hardly rounded; colourless,

transparent; a moderate black margin all round; a narrow black fascia on transverse vein; apical half of posterior clear space very dull orange, anteriorly black-margined; veins black, posteriorly broad: cilia black. Hindwings elongate-ovate; colourless, transparent, with a narrow black margin; veins black; a small black triangular spot on upper half of transverse vein: cilia black.

Christchurch to Dunedin; common. Introduced from Europe with the garden currant (*Ribes*), in the shoots of which the larva feeds.

ARCTIADÆ.

Antennæ not thickened. No maxillary palpi. Posterior tibiæ with all spurs present. Forewings with vein 1 simple, 7 and 8 stalked. Hindwings with frenulum developed, 1c absent, 6 and 7 stalked or approximated at base, 8 rising out of upper margin of cell from beyond $\frac{1}{3}$, completely coincident with it towards base.

Represented by one cosmopolitan species, and one small endemic genus of Australian affinity. The family is numerous in Australia, and many of the species are lichen-feeders and would find abundant food in New Zealand, but these are principally weak fliers and have perhaps been unable to reach our shores.

Antennæ in ♂ bipectinated; ♀ apterous..	..	<i>Metacrias</i> .
" " filiform; ♀ winged ..	..	<i>Deiopeia</i> .

7. METACRIAS, Meyr.

Tongue obsolete. Antennæ in ♂ moderately bipectinated throughout. Palpi rather short, hairy, concealed in rough hairs of head. Thorax and femora densely hairy beneath. Anterior tibiæ with developed spine beneath, and apical hook. Forewings with vein 2 from $\frac{2}{3}$, 6 from point with or out of 9, 7 and 8 out of 9, 10 sometimes connected with 9 at a point above 7. Hindwings with veins 3 and 4 almost from point, 6 and 7 from point or short-stalked, 8 from about $\frac{1}{3}$. Wings in ♀ rudimentary.

An interesting and peculiar genus, apparently most allied to some Australian forms of *Spilosoma*, but quite distinct. Three species have been discovered, two of them quite recently, and it is not unreasonable to hope that additional forms may hereafter be found amongst the mountains, to which they seem especially attached.

1. Hindmargin of hindwings crimson ..	..	14. <i>strategica</i> .
" " not crimson ..	..	2.
2. Forewings with " red subcostal streak from base ..	..	16. <i>huttonii</i> .
Forewings without a red subcostal streak from base ..	..	15. <i>erichrysa</i> .

14. *Met. strategica*, Hudson.

(Arctia strategica, Hudson, "Entom.," 1889, 53.)

♂. 35mm. Head black, forehead ochreous. Thorax black, collar and inner margin of patagia yellow. Forewings black; costa and inner margin narrowly ochreous-yellow; a longitudinal ochreous-yellow streak above middle from base to hindmargin, and another above inner margin; a short yellowish interrupted line before hindmargin beneath apex, and three similar lines, lengthening downwards, between the two longitudinal streaks. Hindwings ochreous-yellow; a broad submarginal black band, interrupted above anal angle; hindmargin crimson-red: cilia ochreous-yellow.

Richardson Ranges (3,000ft.), near Albury; one specimen. I have not seen this species, but Mr. Hudson kindly sent me a coloured figure, from which and his published description I made the above diagnosis. It is evidently very distinct.

15. *Met. erichrysa*, Meyr.

(Metacrias erichrysa, Meyr., "Proc. Linn. Soc. N.S.W.," 1886, 749.)

♂. 31–33mm. Head and thorax black. Forewings black; markings orange-yellow; a slender costal streak, much dilated on basal fourth; a slender dorsal streak; a wedge-shaped discal spot before middle; a streak along submedian fold from near base to $\frac{3}{4}$; a curved discal series of five elongate spots about $\frac{2}{3}$; a subterminal series of eight dots or small spots, more or less connected by fine longitudinal lines with hindmargin. Hindwings orange-yellow; a curved black transverse discal spot; a black hindmarginal band, on upper half containing three or four yellow dots, on lower half with an elongate yellow marginal spot sending an acute projection to inner edge of band near anal angle.

♀. Wholly whitish-ochreous; wings minute, aborted; legs short, stout, well developed.

Mount Arthur (4,000ft.); five specimens. Larva wholly black, clothed with long black hairs, those covering segmental incisions brownish-ochreous; feeds on *Senecio bellidioides*; pupa in a slight cocoon.

16. *Met. huttonii*, Butl.

(Phaos huttonii, Butl., "Cist. Ent.," ii., 487; Metacrias huttonii, Meyr., "Proc. Linn. Soc. N.S.W.," 1886, 750.)

♂. 29mm. Differs from *M. erichrysa* as follows: Head and thorax with some yellow-whitish hairs. Forewings with markings whitish-ochreous; no costal streak; a bright crimson subcostal streak from base to $\frac{1}{4}$. Hindwings yellow, towards base mixed with blackish; spots in hindmarginal band reduced, supra-anal spot moderate, triangular, not reaching edge of band.

Lake Wakatipu; discovered by Professor Hutton, who also observed the apterous ♀.

8. DEIOPEIA, Stph.

Tongue well developed. Antennæ in ♂ filiform, shortly ciliated, with scattered longer cilia. Palpi moderate, arched, ascending; second joint thickened with dense loosely-appressed scales; terminal joint moderate, cylindrical, obtuse. Spurs extremely short. Forewings with vein 2 from $\frac{2}{5}$, 7 and 8 out of 9. Hindwings with veins 6 and 7 approximated at base, 8 from middle.

17. *Deio. pulchella*, L.

♂ ♀. 33–36mm. Head and thorax ochreous-whitish, spotted with black and orange. Forewings ochreous-whitish; six angulated transverse series of black dots between veins, alternating with five series of two or three small subquadrate red spots; four additional black dots transversely placed in disc between fourth and fifth series. Hindwings white; two almost connected small blackish discal spots on transverse vein; a narrow irregular blackish-grey hindmarginal band, dilated into a triangular blotch at apex, and a quadrate smaller blotch below middle.

Wainuiomata; recently observed by Mr. Hudson; probably only an occasional immigrant. Although a feeble-looking insect, it possesses extraordinary capabilities of flight, and is sometimes met with far out at sea. It occurs throughout Europe, Asia, Africa, Australia, and the Pacific Islands.

HYPSIDÆ:

Ocelli present. Antennæ not thickened. No maxillary palpi. Posterior tibiæ with all spurs present. Forewings with vein 1 simple, 7, 8, and 9 stalked. Hindwings with frenulum developed, 1c absent, 6 and 7 stalked or approximated at base, 8 anastomosing with upper margin of cell, separating towards base, or connected by a median bar only.

9. NYCTEMERA, Hb.

Tongue well developed. Antennæ in ♂ bipectinated throughout. Palpi moderately long, porrected or rather ascending, with appressed scales; terminal joint moderate, cylindrical. Forewings with vein 6 out of 9 or separate, 7 and 8 out of 9, 10 connected with 9 by a bar. Hindwings with veins 6 and 7 stalked or separate, 8 anastomosing shortly with margin of cell near base.

The New Zealand species is endemic, but nearly allied to an Australian form.

18. *Nyct. annulata*, Boisd.

(*Leptosoma annulatum*, Boisd., "Voy. Astr.," v., 197, pl. v., 9; Dblid., "Dieff. N. Zeal.," ii., 284: *Nyctemera doubledayi*, Walk., "Bomb.," 392: *Nyctemera annulata*, Meyr., "Proc. Linn. Soc. N.S.W.," 1886, 760.)

♂ ♀. 38–42mm. Head black. Thorax black; margin of collar and a stripe on each side of back, meeting behind, orange. Abdomen orange, base of segments broadly black. Forewings blackish; an orange basal dot beneath costa; an irregular ochreous-white fascia from costa beyond middle towards anal angle, but not nearly reaching it, more or less widely interrupted in middle, and cut by two or three black veins, sometimes reduced to two small spots, or wholly obsolete: cilia black. Hindwings blackish; a roundish ochreous-white spot towards costa beyond middle, sometimes obsolete: cilia black.

Common throughout North and South Islands. Larva black; hairs black; spots large, indigo-blue; dorsal and lateral lines narrow, irregular, reddish-orange; head black; feeds on various species of *Senecio*, sometimes entirely stripping the plants. The imago has the curious habit of soaring in the early morning sunshine, soon after sunrise, in calm fine weather. I have seen them in numbers flying round the tops of trees at a height of over 100ft.

This concludes the above-mentioned groups. I add now descriptions of three species recently received from Mr. G. V. Hudson, of Wellington.

BOARMIADÆ.

Boarmia astrapia, n. sp.

♂ ♀. 33–35mm. Head and thorax pale ochreous, with a slender dark fuscous central longitudinal streak. Palpi pale ochreous, suffusedly mixed with dark fuscous. Antennæ pale greyish-ochreous spotted with dark fuscous. Abdomen pale ochreous. Legs pale ochreous, anterior and middle pair banded with dark fuscous. Forewings with costa moderately arched, hindmargin crenulate; pale ochreous, sometimes brownish-tinged, thinly sprinkled with dark fuscous and black; a short irregular black longitudinal streak from middle of base; lines double, dark fuscous, strongly and acutely dentate; first from $\frac{1}{5}$ of costa to $\frac{1}{3}$ of inner margin, angulated outwards above middle; second from $\frac{2}{3}$ of costa to $\frac{2}{3}$ of inner margin, sinuate inwards on lower half; subterminal parallel to hindmargin, interrupted in middle; traces of a dark fuscous transverse discal mark in middle, connected with costa by an indistinct dentate line; a hindmarginal row of black dots: cilia pale ochreous, base mixed with dark fuscous.

Hindwings with hindmargin rounded, crenate; pale yellowish-ochreous; a fuscous discal dot; a fuscous subterminal line, parallel to hindmargin; hindmargin suffusedly irrorated with fuscous; cilia whitish-ochreous, with a fuscous line.

Wellington; three specimens. It was a ♀ of this species which I formerly described as the ♀ of *B. fenerata*, the two insects being very similar in marking, but differing widely in the shape of the hindwings, which I supposed to be sexual; but I have since received both sexes of *B. astrapia* from Mr. Hudson, who also informs me that the ♀ of *B. fenerata* resembles the ♂ in the peculiar form of hindwings, as well as in colour and markings; thus there can be no doubt of their distinctness.

CECOPHORIDÆ.

Cecophora nycteris, n. sp.

♂ ♀. 14mm. Head, palpi, antennæ, thorax, abdomen, and legs dark fuscous; face pale greyish-ochreous; palpi with second joint rough-scaled beneath; posterior tarsi ringed with pale-ochreous. Forewings elongate, costa moderately arched, apex pointed, hindmargin very obliquely rounded; rather dark bronzy-fuscous; a cloudy darker transverse mark at anal angle, reaching half across wing; cilia dark bronzy-fuscous. Hindwings dark fuscous, somewhat lighter towards base; cilia dark fuscous.

Wellington, in November; two specimens received from Mr. Hudson. Although belonging to the ordinary New Zealand type, it is not very near any other species, and is easily distinguished by its general dark colouring.

ELACHISTIDÆ.

Stathmopoda caminora, n. sp.

♀. 12mm. Head whitish-yellowish, slightly ferruginous-tinged on crown, face more whitish. Palpi and antennæ yellow-whitish. Thorax ferruginous, posteriorly pale yellowish. Abdomen and legs whitish, anterior legs infuscated. Forewings elongate, very narrow, slightly broadest near base, long-pointed; pale yellowish; a thick cloudy ferruginous-reddish longitudinal median streak from base to apex, posteriorly dilated so as to extend along hindmargin to anal angle, and abruptly dilated towards base so as to extend to inner margin; a large ferruginous-reddish spot about middle of inner margin, confluent with central streak; a dark-grey longitudinal streak from base of costa to anal angle, traversing central ferruginous streak and lying wholly in it; cilia ochreous-grey-whitish. Hindwings and cilia ochreous-whitish.

Wellington; one specimen received from Mr. Hudson. Apparently very distinct.

DESCRIPTIONS OF LARVÆ.

I am also indebted to the zeal and kindness of Mr. Hudson for the following descriptions of larvæ, which are drawn up by myself from notes furnished by him:—

Cidaria deltoidata, Walk. Larva cylindrical, wrinkled, with a few short black hairs; unicolorous dark-brown. Feeds on *Plantago* and probably also other low plants; eggs hatched in March, larvæ full grown in September. Pupa in an earthen cocoon.

Lyrcea alectoraria, Walk. Larva stout, head relatively small, anal segment with fleshy projection; bright green, with numerous fine wavy yellow lines and dots; a series of transverse yellow lines across each segment; an interrupted reddish dorsal line; spiracles, prolegs, and apex of anal projection reddish. Feeds on *Pittosporum eugenoides* in September and October; sluggish in habit. Pupa in a slight cocoon, formed with three or four leaves of the shrub on which it feeds.

Lyrcea hemipteraria, Gn. Larva green, with two yellow lateral lines, lower broader; rarely brown, with a single line. Feeds on various species of *Veronica*, from October to December; in repose it closely resembles a leaf of its food-plant. Pupa amongst refuse on the ground.

Isonomeutis amauropa, Meyr. Lava light yellowish-pink; head brown. Feeds beneath the bark of *Podocarpus spicata*. Pupa in a tough cocoon.

Semiosma platyptera, Meyr. Larva whitish; dorsal brown; spots brown; head, second segment, and a bisected patch on third light brown. Feeds beneath the bark of dead trees of *Elaeocarpus dentatus*, burrowing both in wood and bark, generally appearing to feed near the surface, but having a deeper tunnel into which it retreats when disturbed; full-grown in July. Pupa in a loose cocoon beneath the bark. Imago in September and October.

Ecophora scholæa, Meyr. Larva dark brown, with a whitish lateral line; head pale brown; segments 2-4 whitish, each with a horny plate; prolegs little developed. Feeds in subterranean silken galleries, probably on dead tree-roots; found beneath an old stump.
