

LEPIDOPTERA FROM THE CAPE EXPEDITION AND ANTIPODES ISLANDS

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Abstract

This paper is divided into three parts, viz:—

Part I: Introduction, by J. T. Salmon.

Part II: Descriptions of New Genera and Species, by J. T. Salmon and J. D. Bradley.

Part III: Description of New Species, by J. T. Salmon.

Altogether twenty-nine species of Lepidoptera are identified, ten for the first time, from the Subantarctic Islands of New Zealand; six new genera, eleven new species, and one new subspecies of moths, some of which are brachypterous forms, are described and illustrated. Additional descriptions and notes on *Euproteodes galathea Viette, 1954*, are also included.

PART I: INTRODUCTION. By J. T. SALMON

This paper deals with some 360 specimens of Lepidoptera collected in the Auckland and Campbell Islands by members of the Cape Expedition during the years 1941-45, together with, for convenience, a small collection made in 1950 on the Antipodes Islands, by Mr E. G. Turbott, of the Auckland Institute and Museum.

The most extensive collection, and by far the most interesting, was made by Mr J. H. Sorensen on Campbell Island. This collection included considerably more than one hundred specimens of several species of brachypterous flightless moths quite unlike anything hitherto found on these islands, and having their nearest counterparts in the semi-apterous moths of Kerguelen Island. In discussing these moths with me and in his notes, Mr Sorensen has laid great stress on their ability to leap and their superficial resemblance to small grasshoppers. When touched or otherwise disturbed, nearly all of these brachypterous species fall to the ground and sham death. If left, they "revive" after a moment or two and begin to crawl about quickly; when amongst the tussock they are very difficult to see. This habit seems worthy of note as, according to Sorensen, the only natural enemy they could have had in the past was the pipit, *Anthus novaeselandiae*, and it is doubtful whether this bird was ever sufficiently abundant on Campbell Island to have caused the development of this habit. Of the introduced Passerine birds, Sorensen says: "I cannot say that I have ever seen them taking these moths."

The development of the flightless habit can probably be explained best by the very exposed nature of these islands and the constant winds to which their terrain is subjected. I feel, however, myself, that this environmental influence cannot of itself *solely* account for this development, and that there must have been firstly in these moths a genetic tendency towards brachypterism. This conclusion cannot help but be influenced by the fact that the Campbell Island insect fauna includes a number of Lepidoptera with apparently normal wings, several of which are quite large species. If wind were the only factor influencing the development of brachypterism, one would expect these large moths to show this tendency as well as the smaller ones.

When leaping, these flightless moths are apparently assisted to some extent by the abbreviated wings, for Sorensen has told me that after landing on a tussock or fern they almost invariably fold their wings and drop down amongst the dead leaves or fern beneath the tussock. During the leap the wings are held outstretched and possibly have a gliding function.

CAPE EXPEDITION LEPIDOPTERA COLLECTIONS

Turning now to the taxonomy of the Cape Lepidoptera Collection, this has proved very interesting for two reasons; firstly, the presence of a strong tendency towards brachypterism, and secondly, the absence of so many of the species discovered during the brief expedition in 1907 to the Subantarctic Islands of New Zealand. Considering the length of time the members of the Cape expedition were stationed on the Auckland Islands the absence from their collections of so many of the species of Lepidoptera discovered there by the 1907 expedition is difficult to understand, but may be correlated with reported changes in the vegetation.

The following species have been identified and the specimens deposited in the Dominion Museum, Wellington. Those marked * are new records for the Auckland Islands and Campbell Island.

Superfamily TINEOIDEA

**Endrosis lacteella* Schiff. 1 sp., Auckland Islands.

**Monopis cthelella* Newm. 3 sp., Auckland Islands.

Proterodesma brysopola Meyr. 1 male, Auckland Islands; 1 male, Campbell Island.

Superfamily TORTRICOIDEA

Carposina gonosemana Meyr. 1 sp., Auckland Island.

Capua plagiatana Walk. 16 sp., Campbell Island, Auckland Islands!

Superfamily PTEROPHOROIDEA

Platyptilia aelodes Meyr. 15 sp., Campbell Island, Auckland Islands.

Superfamily PYRALIDOIDEA

Protyparcha scaphodes Meyr. 14 sp., Auckland Islands.

Musotima nitidalis Walk. 1 sp., Rose Island.

**Scoparia rotuella* Feld. 34 sp., Campbell Island and Auckland Islands.

Scoparia parnifera Meyr. 16 sp., Campbell Island, Ewing Island.

Scoparia triscclis Meyr. 1 sp., Auckland Island.

Scoparia halopis Meyr. 18 sp., Campbell Island, Auckland Islands.

**Scoparia locularis* Meyr. 2 sp., Auckland Islands.

Scoparia sabulosella Walk. 8 sp., Campbell Island.

**Scoparia paltomacha* Meyr. 2 sp., Campbell Island, Auckland Islands.

Superfamily NOCTUOIDEA

**Agrotis ypsilon* Rott. 1 sp., Auckland Islands.

**Leucania pagaia* Huds. 3 sp., Auckland Islands.

Melanchra erebia Huds. 4 male, 2 female, Auckland Islands.

This last species was described originally from the female. The male (Fig. 4) is superficially very similar to the female but has the wing markings more clearly demarcated and the antenna strongly bipectinated.

Superfamily GEOMETROIDEA

Chloroclystis semialbata Walk. 2 male, 9 females, Campbell Island; Auckland, Enderby, and Ewing Islands.

**Chloroclystis dryas* Meyr. 1 sp., Ewing Island; 1 sp., Auckland Islands.

**Chloroclystis aristias* Meyr. 2 sp., Campbell Island, Auckland Islands.

**Hydriomena similata* Walk. 14 sp., Campbell Island and Auckland Islands. Hudson mentions damaged specimens of a moth near to *H. similata* being captured during the 1907 expedition (*Subant. Isds. N.Z.*, p. 65) but which were unfit to describe. Some of Mr Sorensen's specimen's from Campbell Island were in perfect condition, and I can find no difference between these and the New Zealand mainland species of this moth.

Venusia charidema Meyr. 109 male, 40 female, Campbell Island and Auckland Islands.

Xanthorhoe oxyoptera Huds. 24 male, 9 female, Campbell Island and Auckland Islands.

The last species, known previously only from the male, now proves to have a brachypterous, flightless female discovered on Campbell Island by Mr Sorensen. The male is illustrated in Fig. 1 and the female in Figs. 2 and 3. In addition to the material in the Dominion Museum, a series comprising 5 males and 2 females of this species has been deposited in the British Museum (Natural History), London. Sorensen found females on Campbell Island only during September, crawling over *Dracophyllum* or crawling on the ground.

The remainder of the collection is classified into five new genera and eleven new species to be described later in this paper.

ANTIPODES ISLANDS COLLECTION

The following species have been identified from the collection made by Mr Turbott in the Antipodes Islands. These are the first records of Lepidoptera from the Antipodes Islands.

Superfamily **NOCTUOIDEA**Family **ARCTIIDAE**

Nyctemera annulata Boisd. *antipodea* n.subsp. Figs. 5-6.

This new geographical subspecies of *Nyctemera annulata* Boisd. was reared from some larvae which Mr Turbott collected off *Senecio antipodus*. It is distinguished from the typical form by having the white dots on the fore wing nearer to the tornus, and by their being arranged more or less in a straight line instead of having an obtuse angle between the lines of the two groups of dots; on the hind wing the white dot is double instead of single, and larger than in the typical mainland form. The female is smaller than the male, the expanse of the fore wings being: in the male, 47.5 mm., and in the female, 40 mm. In the Dominion Museum Collection there is also a specimen of this subspecies which was bred from a pupa collected by Dr W. R. B. Oliver during a visit to the Antipodes in 1927.

Types: Male holotype and female allotype in the Auckland Institute and Museum, Auckland; Paratype in the Dominion Museum, Wellington.

Superfamily **PYRALIDOIDEA**

Musotima nitidalis Walk. 3 sp.

Scoparia augastis Meyr. 2 sp.

Scoparia elaphra Meyr. 2 sp.

Scoparia philerya Meyr. 1 sp.

One specimen from this collection was too badly damaged to enable an accurate identification or description to be made. Another series of five specimens constitutes a new genus and species to be described later in this paper.

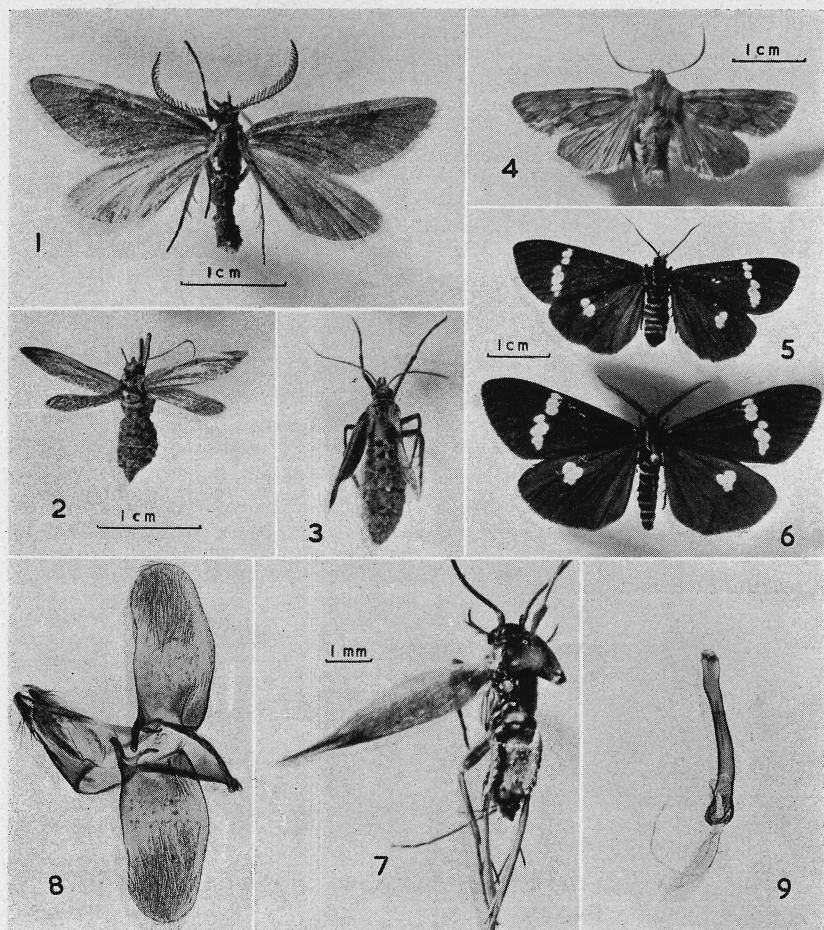
PART II: DESCRIPTIONS OF NEW GENERA AND SPECIES

By J. T. SALMON AND J. D. BRADLEY

Superfamily **TINEOIDEA**Family **TINEIDAE**

Genus *Antipodesma* nov.

Brachypterous forms with the fore wing attenuated apically to a long fine point, hind wing much reduced to a short, pointed but broad lobe, about one-fifth as long as the fore wing. Head rough; labial palpus long, ascending, the terminal segment about half as long as the second, pointed, all segments clothed with closely adpressed scales; the second segment with the scales ruffled below and bearing two long apical bristles and generally with at least one similar long bristle near the middle. Maxillary palpus long, thin, and about half as long as labial palpus. Wing venation vestigial and of no diagnostic use. All femora, particularly that of the fore leg, and the fore tibia, markedly broadened and flattened. Hind tibia with two pairs of long unequal spurs, one pair subapical, the other apical, both pairs having the longer spur on the inner side; middle tibia with apical spurs only; fore tibia without spurs. Male genitalia with simple valva and narrow



FIGS. 1-3.—*Xanthorhoe oxyoptera* Huds. Fig. 1, male; Fig. 2, female (wings spread); Fig. 3, female (wings normal position).

FIG. 4.—*Melanchra erebia* Huds., male.

FIGS. 5-6.—*Nyctemera annulata antipodea* n.subsp. Fig. 5, Female Allotype;

Fig. 6, Male Holotype.

FIGS. 7-9.—*Antipodesma turbotti* n.g. and sp. Fig. 7, Paratype showing attenuated fore wing, vestigial hind wing, and labial palpus (right side wings removed for venation studies); Fig. 8, male genitalia, ventral view; Fig. 9, aedeagus, lateral view.

Photos: Figs. 1-7, J. T. Salmon; Figs. 8-9, British Museum (Nat. Hist.).

tegumen tapering towards uncus which is small; gnathos with arms separated.

Antipodesma is probably nearest related to *Proterodesma* Meyrick. It is known, at present, only from male forms.

Type species for the genus: *Antipodesma turbotti* sp. n.

Antipodesma turbotti sp.n. Figs. 7-9.

Expanse of the fore wings 12 mm. Wings, labial palpus, head, thorax, abdomen, and legs clothed with pale creamy white scales; fore wing

with a broad streak of dark brown extending from the middle of the base to the tornus, a second narrower streak of dark brown running from the middle of the wing into the apex; a weak admixture of scattered brown scales medially. Antenna filiform, with whorls of adpressed, short, fine golden hairs.

Male genitalia with valve narrowing very slightly towards apex, a thin covering of fine hair on the inner side distally; costa strengthened basally and produced as a short, strongly sclerotized arm; uncus bifid; vinculum V-shaped; saccus short. The aedeagus cylindrical, slightly constricted, a little before apex and with a slender internal scar or cornutus about middle.

Locality: Antipodes Islands, amongst the tussock on the plateau above Rigdove Bay; and one specimen from the Bounty Islands; collected by E. G. Turbott, after whom we have pleasure in naming the species.

Types: Type and two paratypes in the Auckland Institute and Museum; two paratypes in the Dominion Museum, Wellington, and three paratypes in the British Museum, Natural History, London. Genitalia and wings of the type are mounted on separate microscope slides Nos. 19/53 and 19/54 respectively, deposited in the Auckland Museum, Auckland.

Superfamily **HYPONOMEUTOIDEA**

Family **HYPONOMEUTIIDAE**

Genus *Tinearupa* nov.

Labial palpus long, upwardly curved, terminal segment longer than second. All wings lanceolate. Fore wing with 1b strongly furcate and thickened; radial veins very weak, 2 from before angle of cell; 3-7 reduced to three veins, 7 to termen; 8 and 9 stalked or connate at base; 10-12 much thickened. Hind wing with veins 2 and 3 strong, but other radial veins weak and reduced, 7 to costa, 8 strong. Male genitalia not enveloped by eighth segment; abdominal tergites spined; valva with transtilla from basal angle of costa; gnathos developed; saccus short.

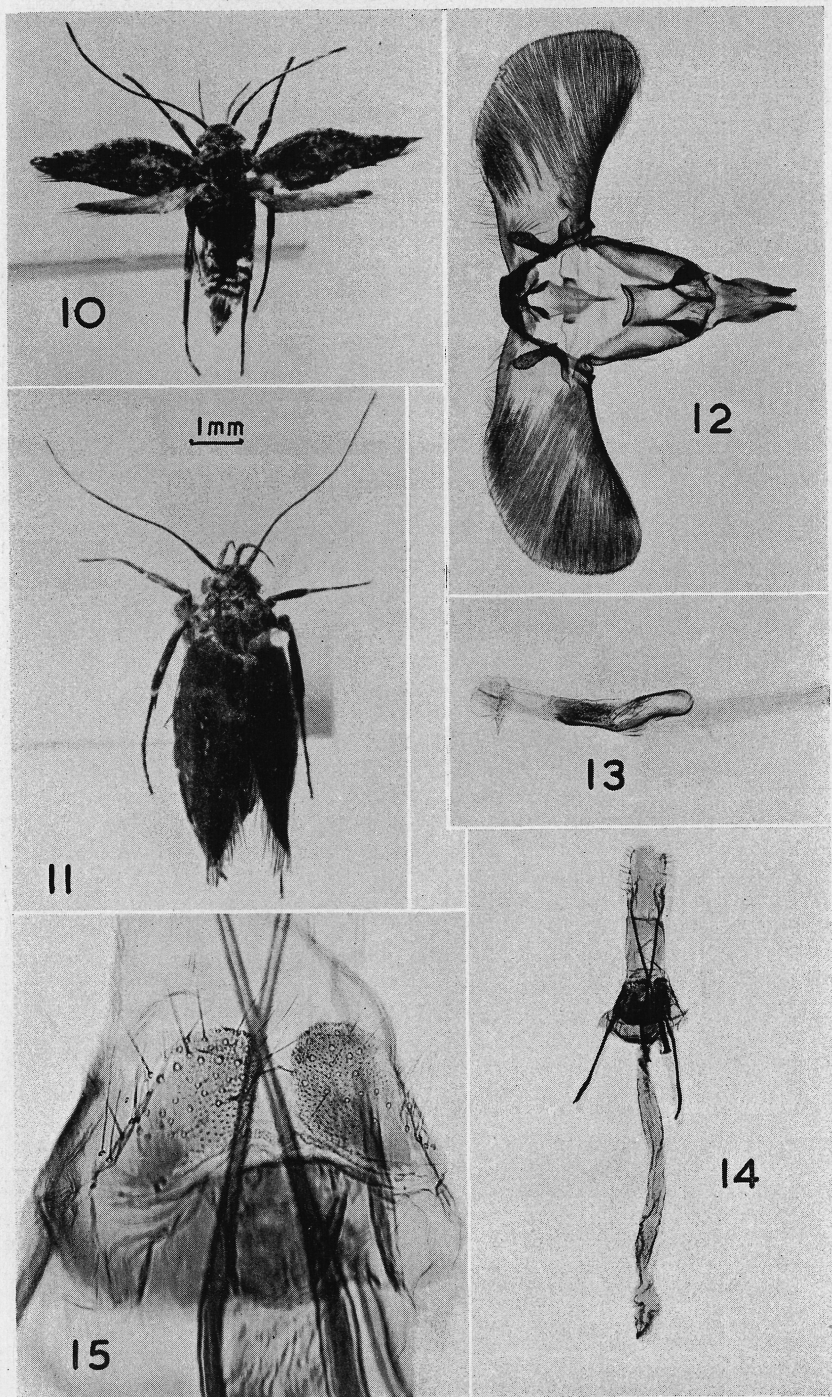
Female genitalia with slender ovipositor lobes; ostium pads weakly sclerotized and provided with numerous fine setae.

Type species for the genus: *Tinearupa sorenseni* sp. n.

Tinearupa sorenseni sp.n. Figs. 10-15.

Expanse of the fore wings 8-9 mm. Labial palpus with the apical segment pointed, naked and black, basal segment clothed with light brown and white scales. Fore wing, antenna and abdomen fuscous, the fore wing sprinkled with dirty white scales mostly along the costa and distal portion of the termen, and generally *with a large triangulate area of yellowish scales in the middle of the wing*; the last four abdominal segments sprinkled with heavy whitish scales dorsally; anal tuft light brown mixed with whitish; underside of thorax, abdomen, and legs whitish. Hind wing light brown, basally, fuscous towards apex, sometimes sprinkled with white. Cilia of fore wing and hind wing a lighter brown than the respective wing in each case.

Male genitalia (Fig. 12): Distal part of valva clothed with long fine



FIGS. 10-15.—*Tinearupa sorenseni* n.gen. and sp. FIG. 10.—Holotype specimen (wings spread). FIG. 11.—Paratype (wings in normal position). FIG. 12.—Male genitalia, ventral view. FIG. 13.—Aedaegus, lateral view. FIG. 14.—Female genitalia, ventral view. FIG. 15.—Female genitalia, ventral view showing ostium.

Photos: Figs. 10-11, J. T. Salmon; Figs. 12-16, British Museum (Nat. Hist.).

hairs on inner side; transtilla in the form of a strongly sclerotized, sharply bent arm-like appendage; uncus appears to be in two halves weakly fused medio dorsally and cut off square at the posterior end; gnathos as two broad lateral arms with ends fused and forming a slightly curved tongue; saccus very wide, projecting inwards (not showing in photograph); tegumen deeply cut, narrow laterally. Aedeagus, very short, apical part not tubular, produced below point of articulation as a blind bulb; vesica with a coronet of fine setae and a sclerotized patch of minute spicules in the aedeagus.

Female genitalia (Figs. 14–15): Ovipositor lobes rather slender, slightly setiferous; ostium pads weakly sclerotized and with fine setae; ostium opening situated at about middle of genital plate, moderately wide, the inner wall thickened to commencement of ductus bursae; ductus bursae and bursa copulatrix indistinguishable, combining to form a long narrow membranous sac; no signa; both pairs of apophyses strongly developed.

Locality: Campbell Island, on rocks of Courjolles Peninsula; collected by J. H. Sorensen, who says that these moths were found on the exposed dark rocky faces of the peninsula, overlooking the sea, and that their coloration was a perfect camouflage, rendering them invisible to the eye until they moved.

Types: Holotype male and allotype female in the Dominion Museum Collections (genitalia on slides 5/100 [male paratype] and 5/101 [female allotype], also four paratypes. Two male and two female paratypes in the British Museum (Natural History), London; one paratype in Canterbury Museum, Christchurch. We are pleased to name this species in honour of the collector.

Genus *Campbellana* nov.

Small brachypterous species with greatly attenuated fore wings and vestigial hind wings. Labial palpus moderately long, ascending slightly; second segment long, thickened beneath; terminal segment less than half length of second. Maxillary palpus extremely small. Tongue vestigial. Antenna of male specialized with clothing of very long fine hairs; of female, filiform; scape smooth-scaled in both sexes. Ocellus absent. Male genitalia with valva simple, sacculus separated; transtilla represented by a short hook on costa of the valva near its base; gnathos absent; uncus well developed; anellus strong; tegumen broad, deeply emarginate dorsally; vinculum with small saccus; aedeagus bulbous at base. Female genitalia with ovipositor lobes small; ostium membranous; ductus bursa long and very narrow; the bursa copulatrix small, probably without signum.

The form of the labial palpus, absence of ocellus, and certain aspects in the structure of the genitalia are suggestive of the Hyponomeutidae, and this genus has accordingly been placed in that family. It is not, however, a typical genus of the Hyponomeutidae and when either more material or some information regarding the biology of the species in the genus becomes available, further investigation may show the present assignment to be incorrect.

Type species for the genus: *Campbellana attenuata* n.sp.

Campbellana attenuata n.sp. Figs. 38–41.

Expanse of the fore wings, 13 mm. Head, thorax, and fore wing medium to dark brown in the female, paler and with scattered pale ochreous scales and a crest of ochreous on top of the head in the male; antenna of female filiform, pale ochreous to creamy white, that of the male dark brown with the flagellum clothed by open whorls of extremely long fine hairs. Labial palpus pale fawn darkening to medium brown on terminal segment. The ventral surface and legs are paler in both sexes. Fore wings much reduced and tapering from base to apex as a long attenuated filament. Hind wings vestigial. Cilia absent from both fore and hind wings.

Male genitalia (Figs. 37 and 39): Valva narrow, gently curved apically and tapering to a rounded point, the inner side clothed with fine hair; transtilla process on costa at the base of the valva prominent and strongly sclerotized; sacculus a small angular lump articulated at a point at the base of the valva and with the anellus plate (juxta); uncus a very narrow strongly sclerotized hook; vinculum broad mid-ventrally, produced to a short saccus; the anellus plate deeply cleft at point of articulation with aedeagus which is produced as a hollow blind tube basally, wide and irregular apically, the vesica bearing an elongate patch of minute spines.

Female genitalia (Figs. 36 and 40): Ostium opening wide, pocket-like; ductus bursae narrowing soon after leaving ostium to a long membranous tube; bursa copulatrix a small spherical sac, without a signum; apophyses strongly developed, the posterior pair about twice as long as the anterior.

Holotype male and allotype female deposited and their respective abdomens and genitalia mounted on slide 5/109 and 5/110, in the Dominion Museum Collection, Wellington.

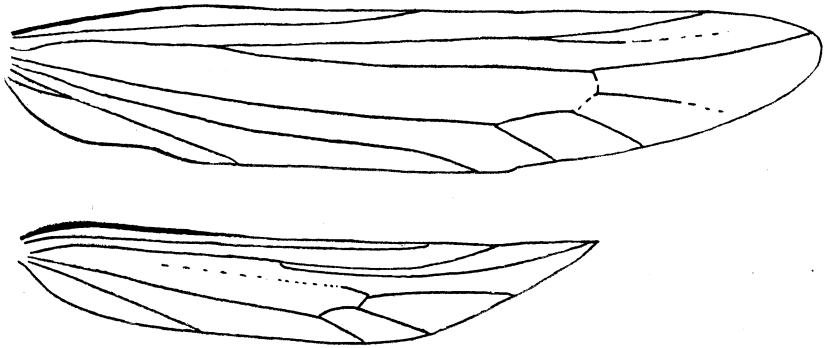
This species at present is known only from these two specimens.

Locality: Campbell Island, August, 1945. Speaking of this species, Sorensen says "it is uncommon, occurs amongst the tussock, and springs like a grasshopper."

Superfamily **GELECHIOIDEA**Family **COSMOPTERYGIDAE**Genus *Reductodermes* nov.

Head smooth. Labial palpus very long, the terminal segment longer than the second, scaled and pointed, the second segment tufted below near apex and both joints compressed dorso-ventrally; maxillary palpus vestigial; fore femur greatly enlarged and compressed laterally; middle and hind tibiae both with a pair of very long subapical spurs and a pair of long apical spurs, the inner spurs being longer than the outer in each case. Fore wing elongate, rounded apically and tufted; hind wing elongate, apex acute and slightly upturned; both wings with the venation reduced as in Text Fig. 1. Frenulum present.

Type species for the genus: *Reductodermes fuscoflava* sp. n.



TEXT FIG. 1.—Wing venation of *Reductoderces fuscoflava* sp.n.; forewing above, hindwing below.

—J.T.S. del.

Reductoderces fuscoflava n.sp. Fig. 22, Text Fig. 1.

Expanse of the fore wings 8 mm. Fore wing dark brown with three large yellow blotches along the costa, one at one-third, one just beyond middle, and the other subapical; extensive irregular yellow shading occurs along the dorsum and extends inwards almost half-way across the wing; there is a suggestion of some yellow shading at the apex; apical tuft light brown shaded with dark brown; cilia medium brown. Hind wing pale brown, deepening to very dark brown towards apex and along termen; cilia dark brown along termen, lighter brown along inner angle. Head, thorax and abdomen dark brown; antenna dark brown basally, lighter distally and clothed with whorls of short fine hairs; labial palpus medium brown.

Locality: Campbell Island, collected by J. H. Sorensen.

Type: A female, in the Dominion Museum Collection, the only known specimen.

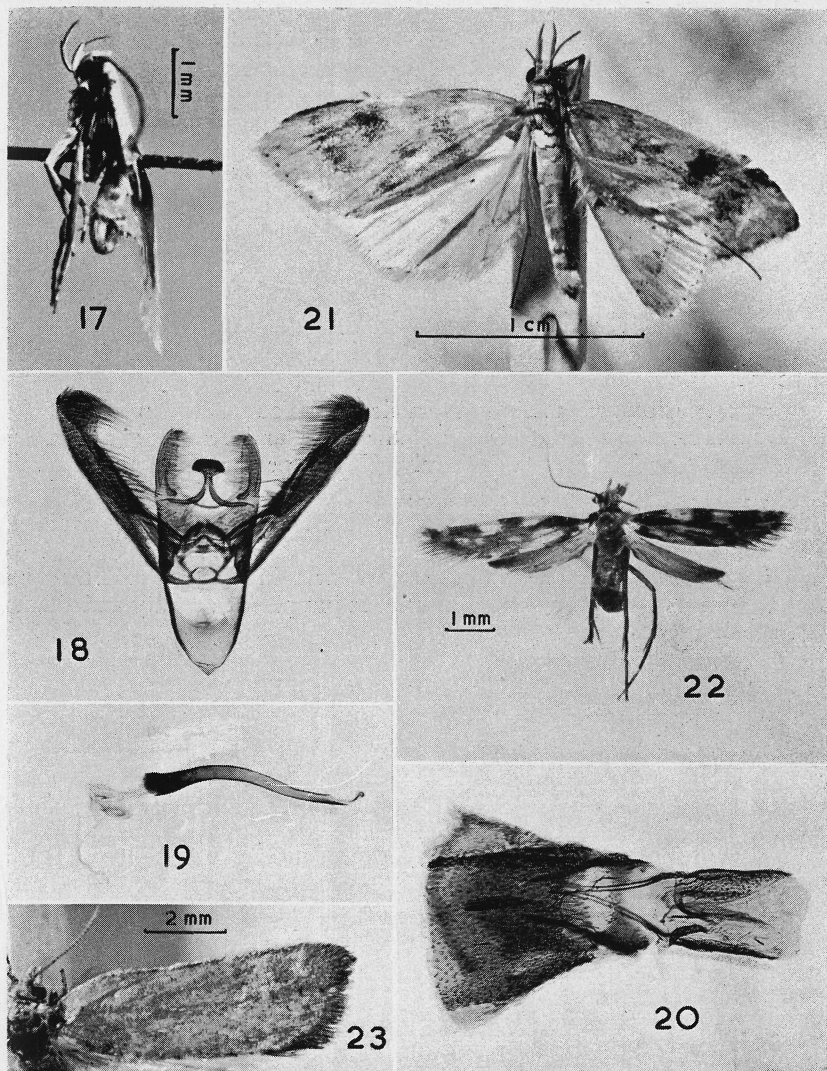
Superfamily **ELOCHISTOIDEA**
Family **ELACHISTIDAE**

**Euproteodes galathea* Viette, 1954. Figs. 17–20.

Expanse of the fore wings 10 mm. Brachypterous, the fore wing tapering to a long slender point, distal half fringed with very long cilia; the hind wing thread-like. Wings, abdomen and legs light oatmeal colour or white, antenna dark blackish brown overlaid with white scales in fresh specimens, scape white; cilia white. Labial palpus long and thin, curved upwards, the terminal segment pointed, shorter than the second, and all segments clothed with closely adpressed white scales. Antenna finely pilose in male, filiform in female. Wing venation extremely modified, unstable and of no diagnostic use.

Male genitalia (Fig. 18): Valva narrow, widening on the costal side a little before apex, apex broadly rounded; hairy on inner side, ventral margin produced distally to a minute, thorn-like point. Uncus lobes

*Since this paper went to press, this species, which was collected from Campbell Island by the Galathea Expedition, has been named and described by Monsieur P. Viette, of the Paris Museum, in *Entom. Meddel.*, 27, p.21, 1954.



FIGS. 17-20.—*Euproteodes galathea*, Viette, 1954. FIG. 17.—Lateral view showing labial palpus and tufted fore wing. FIG. 18.—Male genitalia, ventral view. FIG. 19.—Aedeagus, lateral view. FIG. 20.—Female genitalia, ventral view showing ostium. FIG. 21.—*Mecyna antipodea* n.sp. Holotype. FIG. 22.—*Reductodermes fuscoflava* n.gen. and sp. Holotype. FIG. 23.—*Epagoge parallela* n. sp., fore wing showing arrangement of scales.

Photos: Figs. 17, 21-23, J. T. Saimon; Figs. 18-20, British Museum (Nat. Hist.).

deeply indented and widely separated, each with a small protuberance near base on inner side not found in the genus *Elachista*. Sacculus free as in *Elachista*, indian-club shaped and extending a little beyond anellus (the sacculus is not discernible in the photomicrograph). Gnathos similar to *Elachista*, slightly compressed.

Aedeagus (Fig. 19): Clyindrical, somewhat bow-shaped, apex very oblique, without cornutus.

Female genitalia (Fig. 20): Ovipositor lobes moderately long, slightly setiferous; no sclerotized genital plate. Ostium membranous, situated at extreme anterior edge, cup-shaped; a conspicuous sclerotized band on ductus bursae a little below ostium; bursa copulatrix weakly developed and very fragile, without signum (not shown in the photograph).

Locality: Campbell Island; collected by J. H. Sorensen from the tussock *Poa litorosa*.

Types: Plesiotypes, male and female, and four other specimens in the Dominion Museum Collections, the male and female genitalia on slides 5/102 and 5/103 respectively. Four specimens in the British Museum (Natural History), London.

Remarks: In his notes from Campbell Island, Mr. Sorensen states that this species is found only on the tussock from near sea-level to high up in the hills. The moth appears first in August and may be found onwards throughout the summer. It jumps with agility and shams death if disturbed.

Superfamily **TORTRICOIDEA**

Family **TORTRICIDAE**

Epagoge parallela n.sp. Fig. 23.

Expanse of the fore wings, 16 mm. At first sight this little moth appears to have the fore wings coloured a medium iridescent bronzy brown and hind wings white. Closer examination with a hand lens, however, reveals that the fore wings are clothed with scales arranged in parallel rows from the costa to the dorsum; some of these scales are white, some brown and some white tipped with brown, and they are so arranged to give the appearance of alternate thin transverse lines of white and brown extending from the costa to the dorsum and termen; on the posterior dorsal half of the fore wing, yellow scales are intermingled amongst the white to give irregular areas of pale yellow shading; dark brown scales are more prominent near the base and groups of these scales form 8-9 small dark brown marks along the dorsum; the last of these, on the tornus, is very dark brown, almost black; cilia dark bronzy-brown in general appearance, but actually consisting of an irregular mixture of orange-red, ochreous, brown and black elongated scales.

Hind wing entirely white, iridescent; cilia long, white. Head and thorax brown speckled with ochreous; labial palpus banded alternately with brown and ochreous; antenna with dark brown and ochreous annuli and clothed with short, extremely fine hairs. Abdomen and ventral surface silvery white.

Locality: Auckland Islands; known only from the Type specimen.

Type: A male, in the Dominion Museum Collection.

Genus *Sorensenata* nov.

Brachypterous forms in which both fore and hind wings are reduced and taper to a point at the apex.

Labial palpus slightly recurved, second segment very long, terminal segment short, drooping. Antenna of male specialized, with whorls of very long fine hairs. Ocellus well developed, posterior to antenna. Tongue vestigial. Thorax without crest.

Male genitalia: Valva simple; transtilla present, gnathos arms connected mid-ventrally by a small sclerotized plate; uncus moderately broad basally, flattened apically, with a blunt top; socii absent. The extreme reduction of the wing venation of the species described below provides no ready means of characterizing the genus or of placing it phylogenetically. The structure of the male genitalia, however, suggests affinities with or near the genus *Epagoge* Hübner (*sens. lat.*).

We are pleased to name this genus in honour of its discoverer, Mr J. H. Sorensen.

Type species for the genus: *Sorensenata agilitata* n. sp.

Sorensenata agilitata n.sp. Figs. 42-45.

Expanse of the fore wings, 18 mm. Body and fore wings entirely ochreous to creamy-white, with a shading of light brown scales sparsely but regularly distributed over the posterior two-thirds of the wing from the base to the apex giving it a somewhat deeper shade than the anterior portions. Hind wings white. Cilia present only around the distal portions of the fore wings, ochreous in colour; cilia of the hind wings extending along the dorsum, white. Labial palpus entirely ochreous to creamy-white. Antenna with each segment distinctly picked out by whorl of whitish scales and a whorl of extremely long, very fine curved hairs.

Male genitalia (Figs. 43 and 44): Valve elongate, apex rounded, costa narrowly sclerotized, sacculus weak; uncus digitate, basal half stout, apical half somewhat flattened and curving ventrally, rounded at apex; gnathos arms almost straight, connected by a triangular mid-ventral plate; transtilla a simple sclerotized band, narrow in the middle, broad at the ends; aedeagus stout basally gradually tapering to a point; a cluster of ten or eleven extremely slender cornuti.

Female unknown.

Locality: Campbell Island, found only during September and October on *Poa litorosa* growing between 500 ft and 1000 ft altitude. According to Mr. Sorensen, this moth was confined to *Poa litorosa* on which it leaped quickly from stem to stem with great agility. It was not very common, appearing only during the two months September-October.

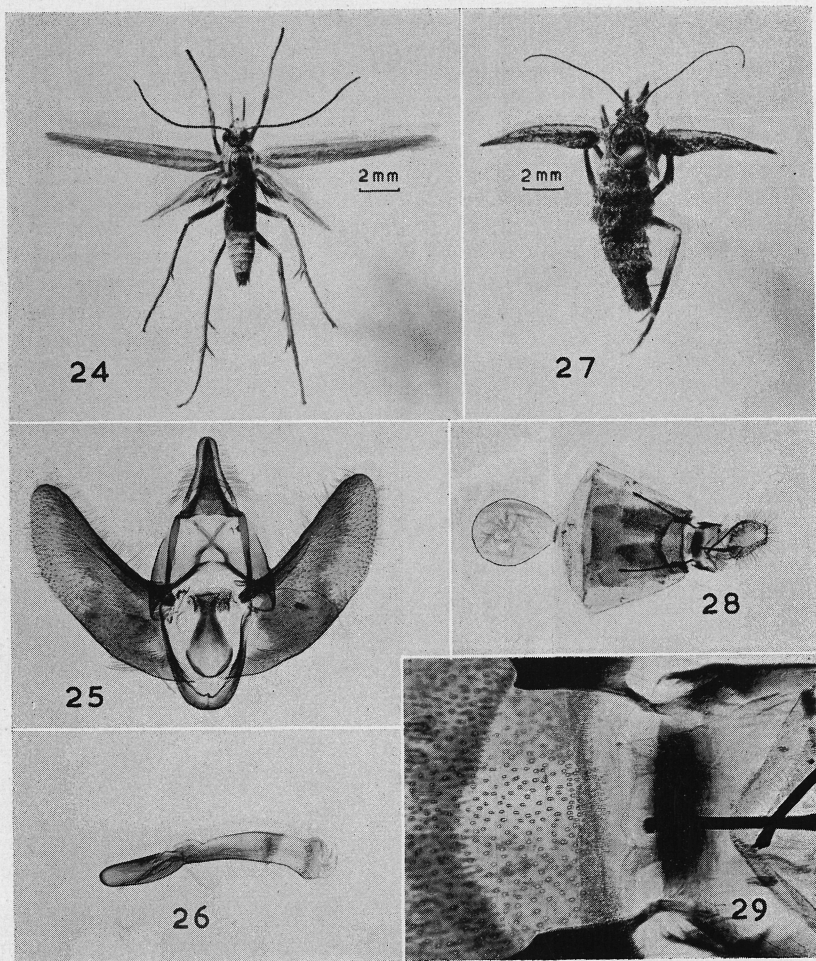
Types: Type and three Paratypes in the Dominion Museum, Wellington; two Paratypes in the British Museum (Natural History), London. Genitalia on slide 5/111 in the Dominion Museum Collection.

Superfamily PYRALIDOIDEA

Family CRAMBIDAE

Genus *Exsilirarcha* nov.

Brachypterous forms with the fore wings long and narrow, pointed and tufted apically; the hind wings broad near the base, attenuated



FIGS. 24-30.—*Exsilirarcha graminea* n.g. and sp. FIG. 24.—Male Holotype.

FIG. 25.—Male genitalia, ventral view. FIG. 26.—Aedeagus, lateral view.

FIG. 27.—Female Paratype. FIG. 28.—Female genitalia, ventral view. FIG. 29.

—Female genitalia, enlarged ventral view to show ostium.

Photos: Figs. 24 and 27, J. T. Salmon; Figs. 25-26, and 28-29, British Museum (Nat. Hist.).

towards the apex; head loosely haired, a prominent tuft behind each antenna; face rounded, lateral ocellus well developed; tongue present; labial palpi porrected, entirely clothed with long projecting hairs which obscure the segments; maxillary palpi short, porrected and clothed with projecting scale-like hairs; antennae, in male, finely uniserrate and clothed with short, fine, projecting, silvery hairs; in the female, filiform and heavily clothed with short, fine golden hairs; thorax with both hairs and scales, patagium well developed; femur broadened, clothed with both hairs and scales; middle tibia with a pair of apical and subapical spurs, the inner spur always the longer; fore tibia without spurs; wing venation unstable and of little diagnostic

use, the fore wings with 3, 4, and 5 probably coincident, 8 and 9 stalked, 6 and 7 stalked or separate, others variable or missing; hind wings similarly with 3-5 coincident, 6 free, 7 to costa and anastomosing with 8, others missing.

Type species for the genus: *Exsilirarcha graminea* n. sp. This genus is probably closest related to *Protyparcha* of Meyrick, from Auckland Islands.

Exsilirarcha graminea n.sp. Figs. 24-30.

In the male the expanse of the fore wings is 18-20 mm. Wings, the head posteriorly, thorax, legs, and terminal portion of abdomen in the male clothed with pale creamy white or ochreous scales. Fore wing sometimes whitish basally, and, in some examples, whitish along dorsum; hind wing on the basal portion, particularly towards the dorsum with some scattered dark brown scales; metathorax posteriorly, and Abds. I and II with very dark brown scales, those on the abdominal segments overlaid with a few scattered pale creamy-white scales which gradually increase in number to cover entirely Abd. III; a very long slender frenulum reaches one-quarter along the costa of the hind wing; cilia and apical tufts of both wings white or very pale creamy-white; hind wing with long white and brown hairs fringing basal section of dorsum. Labial palpus pale ochreous basally darkening towards apex; maxillary palpus entirely creamy-white; hairs of the head and thorax deep ochreous, of the legs pale creamy white. Antenna dark brown, sparsely clothed with creamy-white scales, more so near base.

Male genitalia (Figs. 25-26): Valva simple, moderately well sclerotized along costa and at base, distal margin weakly sclerotized; uncus hooded, sparsely clothed with fine setae laterally; gnathos strongly sclerotized, tapering to a point, of about the same length as uncus; vinculum a narrow strongly sclerotized band; tegumen with some conspicuous dorsal sutures; aedeagus cylindrical, expanding slightly at apex, developed into an elongate bulb basad to the point of articulation with the juxta.

Expanse of the fore wings of female 12 mm. Abdomen greatly distended. The wings are further reduced, the hind wing being vestigial, barely one-sixth the length of the fore wing. The general coloration is dark brown with scattered ochreous scales on the thorax, abdomen, legs, and distal portions of the wings; the fore wing with a long creamy-white streak below the costa from the base to two-thirds; the apical tufts and cilia medium brown; hind wing almost scaleless or with a few whitish scales; there is a faint evidence of posterior transverse bands of ochreous and white scales on the metathorax and abdominal segments, more especially laterally. Labial palpus ochreous basally becoming black on apical portion; maxillary palpus with a mixture of ochreous and black hairs; antenna black or dark brown.

Female genitalia (Figs. 28-29): Ovipositor lobes setiferous; ostium membranous, extended as a short, projecting funnel at opening (not discernible in photograph); ductus bursae short; bursa copulatrix a thin membranous spherical sac; without signum.

Locality: Campbell Island, 97 specimens; collected by J. H.

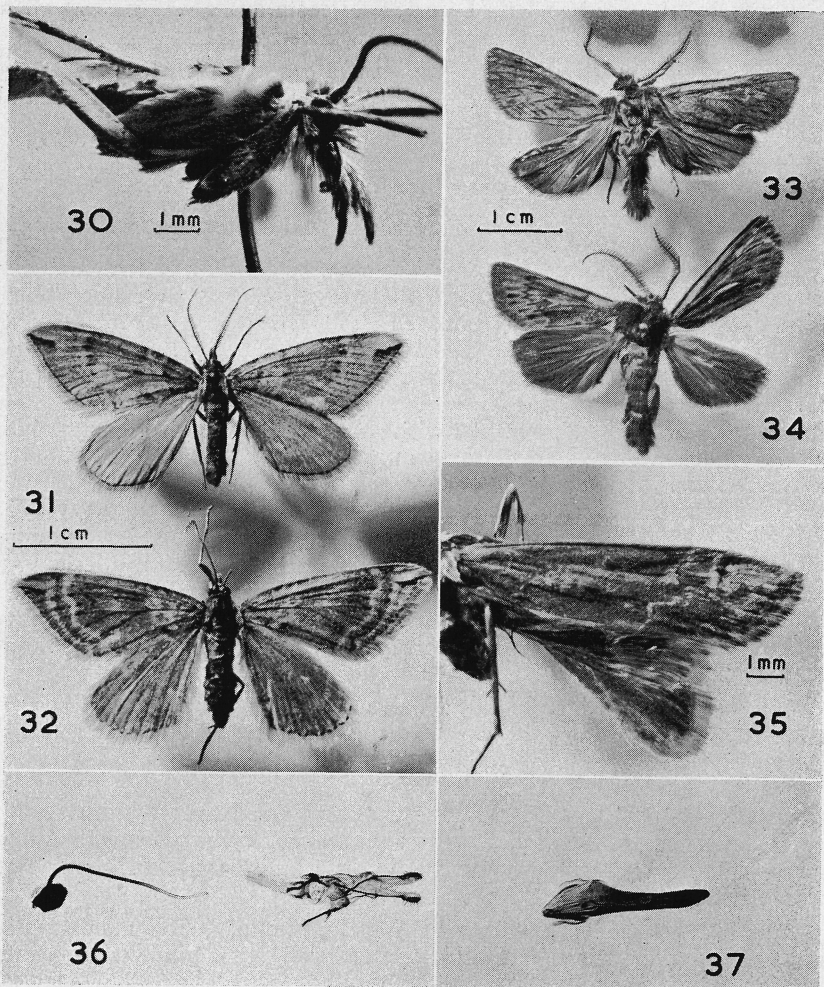


FIG. 30.—*Exsilirarcha graminea* n.g. and sp. Side view of head of Holotype to show tongue, labial, and maxillary palpi.

FIGS. 31-32.—*Xanthoroe subantarctica* sp. Fig. 31, Male Holotype;
Fig. 32, Female Allotype.

FIGS. 33-34.—*Melanchra oceanica* sp.n. Fig. 33, Paratype; Fig. 34, Type.
FIG. 35.—*Scoparia albafasciula* sp.n. Wings on right side of Type (hind wing folded).

FIGS. 36-41.—*Campbellana attenuata* n.g. and sp. Fig. 36.—Ventral view of female genitalia. Fig. 37.—Lateral view of aedeagus.

Photos: Figs. 30-35, J. T. Salmon; Figs. 36-37, British Museum (Nat. Hist.).

Sorensen; Auckland Islands, two specimens; collected by R. W. Balham; in both places amongst tussock.

Types: Holotype male and allotype female, together with a series of Paratypes in the Dominion Museum, Wellington; a series of four Paratypes in the Canterbury Museum, Christchurch; and a series of 14 Paratypes in the British Museum (Natural History), London. Wings and genitalia of four male Paratypes and female Allotype on slides 5/104, 5/105, and 5/106 (genitalia), 5/108 (wings and genitalia) and 5/107 (female genitalia), in the Dominion Museum.

Remarks: This moth is commonly found crawling over the tussock *Poa litorosa* which grows profusely on Campbell Island, and on other small plants associated with the tussock. Mr Sorensen says that it is abundant in late August and throughout September, appearing first in early August and disappearing in October. The moths leap with great agility, and when their wings are folded along the body their appearance and manner of behaviour could lead them to be mistaken for small grasshoppers. When touched they instantly drop to the ground and remain still. These moths are disturbed in countless numbers when walking through the tussock in September. They leap away in all directions.

PART III: DESCRIPTIONS OF NEW SPECIES. By J. T. SALMON

Family PYRAUSTIDAE

Mecyna antipodea n.sp. Fig. 21.

Expanse of the fore wings 24 mm. Fore wing pale yellowish-white, liberally speckled with bright orange scales; basal line and basal streak absent, first line pale brown, broad, faint on the costa, more distinct from middle towards dorsum; a broad elongate area of pale orange-brown runs along dorsum between the first and second lines; second line broad, of slightly darker brown than first line, of irregular outline and passing down from costa, almost parallel with termen, to sweep inwards acutely along the cubitus and then drop abruptly on to the pale orange-brown shaded area of the dorsum; a series of five black patches along the costa from about two-thirds to apex, continuing along the termen as a series of marginal black patches, one on each alternate vein; below the costa, in the region of the cell, a pale brown shading extends outwards from the first line and this is followed by a fairly large round area of white, bordered by orange scales, which abuts on to a large rectangular-shaped dark brown reniform stigma; no sub-terminal line or apical patch; cilia white. Hind wing white with some scattered dark brown scales forming an irregular broad band, slightly in from the tornus, and with a central black dot; alternate veins along the termen each with a terminal dark brown patch; cilia white. Thorax, antenna and palps ochreous brown; abdomen pale yellowish-white with ochreous terminal tuft.

Locality: Antipodes Islands, above Ringdove Bay; collected by E. G. Turbott,

Type: In the Auckland Institute and Museum Collections, the only known specimen.

Scoparia alfafascicula n.sp. Fig. 35.

Expanse of the fore wings 18 mm. Fore wing medium orange-brown lightly suffused with white and ochreous scales at the base, continuing as a broad but lightly suffused band of white along the axis of the wing, as far as the second line which is faintly indicated as a broad, irregular shading of pale ochreous scales that sweep back from the costa towards the dorsum; between the second line and the apex a broad area of ochreous scales with a broad, irregular, subterminal line of white scales passing from this down the termen. A further series of patches of alternating white and ochreous scales along the termen; cilia of long ochreous scales tipped with white. Hind wing medium brown with evenly scattered white scales interspersed amongst the brown; the cilia ochreous. Head and thorax deep orange-brown, palps ochreous, abdomen brown banded with gold on anterior segments but with dark ochreous on posterior segments.

Locality: Campbell Island; collected by J. H. Sorensen.

Type: The only specimen so far known of this species is in the Dominion Museum. The specimen when captured was in perfect condition, but has been slightly damaged in subsequent mounting, though not sufficiently so to prevent it being described. It is a very beautiful little moth.

Superfamily **NOCTUOIDEA**

Family **MELANCHRIDAE**

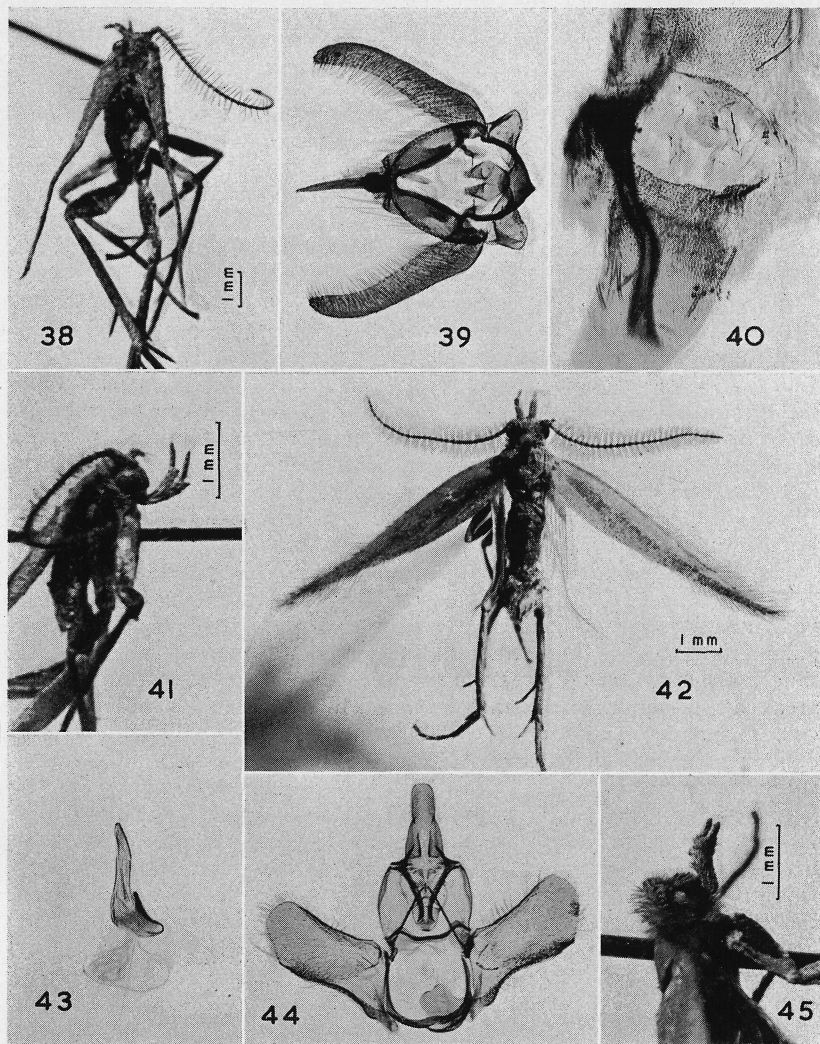
Melanchnra oceanica n.sp. Figs. 33-34.

Expanse of the fore wings 40-42 mm.; the thorax and fore wing dull reddish-brown or bright chestnut with the wing veins overlaid by rows of paler brown or ochreous-brown scales; the jugal area suffused with orange-brown or deep reddish-brown; the cilia ochreous-brown distally, dark brown basally. Hind wing an even brown, slightly paler basally and with a light ochreous basal streak; the cilia light ochreous distally, pale brown basally. Abdomen dark brown with an ochreous or chestnut terminal tuft. Markings of the fore wing not very distinct, basal line and basal streak absent or the streak faintly suggested by some scattered groups of black scales; first line and orbicular stigma absent, claviform and reniform stigmas indistinct but suggested by uneven shadings of black scales in each case; second line black, arising on costa and extending towards termen for some distance before describing a broad curve of very deep scollops to the dorsum and diffusing inwards along the dorsum to merge with the claviform shading; subterminal line broken, consisting of 5-6 elongated black blotches between the veins and towards the dorsum only; the apex and the area between the subterminal line and the termen evenly shaded with occasional black scales giving it an overall darker hue. Antenna strongly bipectinate, almost to tips, the tips and pectinations clothed with many fine hairs and each pectination with two strong curved setae at its apex. Basal section of antennal midrib clothed with light ochreous scales, the face and top of head reddish brown, palps reddish brown tipped with ochreous,

Locality: Ocean Island, Auckland Islands; collected by Dr. R. A. Falla. Known only from two male specimens.

Type and Paratype in the Dominion Museum Collection.

Remarks: This species closely resembles *M. erebia* Huds. in the form of the second line but differs markedly from that species in general appearance and in the absence of the basal and first lines.



FIGS. 38-41.—*Campbellana attenuata* n.g. and sp. FIG. 38.—Holotype (abdomen removed) showing greatly attenuated fore wings. FIG. 39.—Ventral view of male genitalia (aedeagus removed). FIG. 40.—Ventral view of ostium. FIG. 41.—Holotype, lateral view, showing labial palpi. FIGS. 42-45.—*Sorensenata agilitata* n.g. and sp. FIG. 42.—Type specimen. FIG. 43.—Lateral view of aedeagus. FIG. 44.—Ventral view of male genitalia. FIG. 45.—Lateral view of Type showing labial palpi.

Photos: Figs. 38, 41-42, 44, J. T. Salmon; Figs. 39-40, 43, 45, British Museum (Nat. Hist.).

Superfamily **GEOMETROIDEA**
Family **HYDRIOMENIDAE**

Xanthorhoe subantarctica n.sp. Figs. 31-32.

Expanse of the fore wings 26 mm. in the male, 28 mm. in the female. General coloration: fore and hind wings pale ochreous brown with a broad median band of slightly darker ochreous brown across the fore wing. In the male the fore wing has the basal line and the first line each marked by three broad blotches of dark brown scales, one on the costa, one on the cubitus and one on the dorsum in each case; the second line is marked by similar blotches of dark brown scales one on each vein especially the three veins arising from the cell; there is a long, broad, oblique apical streak of dark brown and the termen is edged with a narrow line of dark brown scales; there is a suggestion of a dark brown basal streak but all stigmas are absent; the areas between the base and the basal line and between the first and second lines form broad bands of slightly darker ochreous brown; basally the costal margin is shaded with dark brown and there is a suffusion of whitish-ochreous scales over the entire wing; these scales are more concentrated on the lighter coloured areas of the wing and form a very distinct light ochreous apical patch above the apical streak and a suggestion of a broad outer edging to the second line; in the region of the reniform there is a slight irregular suffusion of yellowish to orange coloured scales; cilia pale ochreous with a faint suggestion of brown basally. Hind wing entirely pale ochreous brown with the termen edged by a narrow dark brown line and the cilia pale ochreous. In the female the dark brown markings on the fore wing are the same as in the male but the suffusion of pale whitish-ochreous scales is replaced by a suffusion of pure white scales which are concentrated between the basal and first lines, on the outer edge of the second line, in the apical patch and to form a distinct broad white subterminal line from the inner end of the apical streak to the tornus; the claviform and reniform areas are irregularly marked by concentrations of yellow to orange coloured scales and the orbicular is marked by a black dot, in the median shade; the cilia are very pale ochreous, almost white, partially banded with a few dark brown scales at regular intervals; there is a tendency for some of the veins to be picked out in yellow towards the termen. The hind wings are similar to those of the male except that the cilia are much paler and the wings generally are more heavily spattered with white scales and the apices of the veins are picked out in yellow.

The antenna in the male strongly bipectinate with the bipectinations finely ciliated and dark brown coloured, whereas the shaft is clothed with ochreous scales; in the female the antenna are filiform alternately banded by ochreous and dark brown scales. Head and labial palpus ochreous speckled with white or brown; thorax medium brown with the patagium ochreous, Abd. I pale ochreous, remainder of abdomen brown with the posterior segmental margins marked with golden and ochreous bands and each segment with a dark brown to black patch on each side of the mid-dorsum; anal tufts ochreous.

Locality: Campbell Islands, 16 specimens; collected by J. H. Sorensen.

Type and Paratypes: In the Dominion Museum Collections,

Remarks: Hudson (1909, Sub. Ant. Isllds. N.Z., I: 68) mentions this species of which he had several specimens which he regarded as faded specimens of *X. orophylloides* from Auckland Islands. However, although *X. subantarctica* is very closely allied to *X. orophylloides* I am satisfied that it constitutes a distinct species peculiar to Campbell Island.