A REVISION OF NEW ZEALAND DIPTYCHOPHORINI (LEPIDOPTERA: PYRALIDAE: CRAMBINAE)

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Summary

Seventeen New Zealand species of Crambinae are transferred to *Pareromene* Osthelder, 1941; *Pareromene chrysochyta* (Meyrick, 1882), *P. selenaea* (Meyrick, 1885), *P. leucoxantha* (Meyrick, 1882), *P. auriscriptella* (Walker, 1864), *P. bipunctella* (Walker, 1866), *P. harmonica* (Meyrick, 1888), *P. elaina* (Meyrick, 1882), *P. helioctypa* (Meyrick, 1882), *P. interrupta* (Felder & Rogenhofer, 1875), *P. lepidella* (Walker, 1866), *P. metallifera* (Butler, 1877), *P. microdora* (Meyrick, 1905), *P. planetopa* (Meyrick, 1923), *P. epiphaea* (Meyrick, 1885), *P. holanthes* (Meyrick, 1885), *P. parorma* (Meyrick, 1925), and *P. pyrsophanes* (Meyrick, 1882). One new species is described, *Pareromene gurri*.

A new tribe, the Diptychophorini, is defined, containing five crambine genera: *Diptychophora* Zeller, 1866, *Microcausta* Hampson, 1895, *Pareromene* Osthelder, 1941, *Tamisca* Zimmerman, 1958, and *Microchilo* Okano, 1962. The tribe differs from all other Crambinae in having dorsal and ventral ostiolar sclerites invaginated into the ostium in the female genitalia. The phylogeny of the tribe is discussed.

Some New Zealand species apparently form part of monophyletic species clusters with species from New Guinea; it is suggested that the genus reached New Zealand during the Miocene by way of the former Melanesian Arcs.

INTRODUCTION

The ostiolar sclerites (collectively the sterigma) are structures in the intersegmental membrane between the seventh and eighth abdominal sternites of female Lepidoptera (Diakonoff, 1954; Klots, 1956; Dugdale, 1966). I am convinced that correct interpretation of the fate of these structures is essential for a proper understanding of crambine phylogeny. Several quite distinct variants of sclerite structure and arrangement occur in the Crambinae; these will be discussed within the context of the phylogeny of the subfamily in a later paper. However in the Diptychophorini, the subject of the present study, the two sclerites are invaginated within the ostium, one forming a shield-like plate in the dorsal roof of the ostium, and the other a complementary ventral plate.

The greatest contributions in recent years to our knowledge of the Crambinae have been made by Dr S. Bleszynski. In the decade prior to his death he revised the Palaearctic Crambinae (1957; 1965) and made progress with tropical and neotropical genera (1960a; 1960b; 1961; 1962; 1963; 1964; 1966; 1967). In two papers on the genus *Euchromius* Guenee

(Bleszynski 1960b; 1961) he noted that ostiolar sclerites provided good characters for specific distinctions. However in general he concentrated on other characters, especially those of males, in his classification. This bias reflects in part the dearth of females in the series of many species in the European museum collections on which most of his studies were based.

Morphological terminology used in this paper is that established for other groups of Lepidoptera by Diakonoff (1954), Klots (1956) and Dugdale (1961; 1966). The term "apomorphic" is applied in the sense used by Hennig (1957; 1960; 1965) to characters of a species which appear to represent a condition more advanced than that of homologous characters in other species within the same monophyletic grouping. Use of this term does not imply detailed acceptance of the methods of systematic analysis described by Hennig.

The author has been able to examine the Meyrick types of all previously described New Zealand *Pareromene* in the collection of the British Museum; I am most grateful to Mr P. E. S. Whalley for access to that collection, and to both him and Mr D. Carter for their summaries of type label data supplied to me while still in New Zealand. Collections of Crambinae were made in a number of North Island localities, and more were available to the writer in the various institutes and museums within New Zealand.

The following abbreviations are used in the text: AM = Auckland Institute and Museum; CM = Canterbury Museum, Christchurch; DM = Dominion Museum, Wellington; ED = Entomology Division, DSIR, Nelson; FRI = Forest Research Institute, Rotorua; LC = Lincoln College, Canterbury; PDD = Plant Diseases Division, Auckland. All other three-letter combinations indicate codes for the author's genitalia preparations, a complete list of which is held in the Massey University library as an appendix to the PhD thesis "Systematics and Biogeography of the New Zealand Crambinae (Lepidoptera: Pyralidae), 2 vols.

DESCRIPTIONS

Tribe DIPTYCHOPHORINI

Type of the tribe: *Diptychophora azanalis* (Walker, 1859, List of the Species of Lepidopterous insects in the collection of the British Museum, 19, p. 967: ?*Zebronia*) Guiana, Brazil, Peru.

DIAGNOSIS

Antennae filiform to serrate; maxillary palpi triangular with hair-like scales; labial palpi elongate, porrect, with hair-like scales; frons plano-convex; ocelli small; chaetosemata vestigial or absent; compound eye generally lacking nude peri-orbital margin; haustellum fully developed;

forewing with r_5 free, Sc frequently running into r_1; forewings often bearing metallic markings, especially near termen; hindwing with discal cell closed, and moderate hair pecten developed on lower margin of cell; male frenulum single, female frenulum single, double or triple.

♂ genitalia with pseudosaccus absent; arms of vinculum narrow; saccus usually broadly developed into a dorsal cup; tegumen slender; uncus and gnathos well developed, apex of gnathos often elaborate; valva having undeveloped sacculus; costal lobe of valva usually developed into one or two prongs or protuberances; valvula generally moderately broad with weakly haired cucullus on inner surface; juxta plate-like or slightly crescentic, sometimes with short prongs or lobes; aedoeagus curved ventrad, slender, external ornamentation usually limited to one or two apical thorns; internal vesica frequently with cornuti.

♀ genitalia with ostiolar sclerites developed in dorsal and ventral positions, completely invaginated into ostium bursae, only very weakly fused in lateral midlines, this feature distinguishing this tribe from the other crambine tribes; ductus bursae often with swollen pouch region of unknown function, which may be close to the ostium or as far anterior as three quarters of the way along the ductus bursae (thus these structures may not be homologous); anal papillae weakly fused, with long to very long posterior apophyses; eighth sternite absent; eighth tergite free, usually with long or very long anterior apophyses.

REMARKS

In the Diptychophorini the ostiolar sclerites are dorsal and ventral plates within the mouth of the ostium. The ostium is a dorso-ventrally flattened opening protected by the posterior margin of the seventh sternite. Long anterior apophyses are retained in the tribe, and there is no sign of any tendency for the eighth tergite to fuse with the ostiolar sclerites around the ostium as in the Crambini. The tribe shows one important apomorphic character in the loss of the eighth sternite.

I include in the Diptychophorini, which is a pantropical tribe with representatives in suitable temperate forest regions, five closely related genera. The three most distinct genera are *Diptychophora* Zeller, redefined as a neotropical genus with 3 known species (Bleszynski, 1967); *Microcausta* Hampson with 5 species, also neotropical and redescribed by Bleszynski (1966); and *Pareromene* Osthelder, redefined by Bleszynski (1965), with about 70 species, not all of which have been revised. Less distinct are the Hawaiian endemic genus *Tamsica* Zimmerman with 6 species and the eastern Palaearctic *Microchilo* Okano with at least 6 species in Japan.

The relationship between these genera is so close that some may require

synonymising when the tribal study is completed. *Diptychophora* and *Microcausta* both have distinctive apomorphic characters which set them apart from the other three genera. However *Pareromene*, *Tamsica* and *Microchilo* not only share the distinctive apomorphic character of a dorsally cupped vinculum-saccus in the male genitalia, but are currently distinguished only by differences in wing venation which present studies suggest are very minor.

Genus ***Pareromene*** (Osthelder) 1941

Pareromene Osthelder, 1941, Beitrag zur Kleinschmetterlings fauna Kretas Mitt. Münch, ent. Ges. 31, p. 366. Type species *Pareromene rebeli* Osthelder 1941.
Diptychophora sensu Zeller, 1877 (nec Zeller, 1866), Beschreibung einiger amerikanischen Wickler und Crambiden. Ent. Ztg. Stettin, 27, p. 153.
Ditomoptera Hampson, 1893, The Macrolepidoptera of Ceylon (Heterocera), v. 182 pp. (p. 179). Type species *Ditomoptera minutalis* Hampson, 1893. (Monotypic, nomen praeoccupatum).
Pagmania Amsel, 1961, Arkiv. f. zool. 13, p. 332. Type species *Pagmania bilinealis* Amsel, 1961 (monotypic).

DIAGNOSIS

As described by Osthelder (1941) and redefined by Bleszynski (1965, p. 51).

DISTINCTION FROM RELATED GENERA

Pareromene differs from *Diptychophora* Zeller, 1866 in having a dorso-anteriorly cupped saccus, from *Microcausta* Hampson, 1895 in lacking a transparent area or "window" in the lateral wall of the vinculum, from *Microchilo* Okano, 1962 in not having the hindwing veins m_2, m_3 stalked, and from *Tamsica* Zimmerman, 1958 in having veins Sc and r_1 of the forewing coincident or concurrent (Figs 19, 20).

REMARKS

Pareromene is the dominant genus of the Diptychophorini in numbers of species. The known species have a largely tropical-subtropical range of distribution, with representation in the southern parts of the Palaearctic and Oriental regions, and in Australasia and southern Oceania.

Many unrevised species are still listed as in *Diptychophora* Zeller by Bleszynski & Collins (1962). However most of the Palaearctic species have been transferred to *Pareromene* by Bleszynski (1965) since publication of the earlier catalogue.

Recently Bleszynski (1967) redefined *Diptychophora* as an endemic Central-South American genus. In the same paper he listed 9 South and Central American species formerly placed in *Diptychophora* as being in *Pareromene*, although he did not publish drawings or diagnoses. The

presence of *Pareromene* in tropical America would not necessarily be anomalous, since Bleszynski (1966) confirmed the presence of the genus in tropical Africa; four species are now known from Africa south of the Sahara and from the Seychelle Islands. Past dispersal from Africa to South America would presumably have occurred by the North East Trade winds.

There is considerable variation within *Pareromene* with respect to the relationship of veins Sc and r_1 in the forewing. While we must for the time being accept the present distinction between *Pareromene* and *Tamsica* as resting only on the arrangement of these veins I agree with Bleszynski (1967) that this character is of no importance at the generic level in most Crambinae.

The valval sacculus is never differentiated in *Pareromene*, but there is considerable variation in the development of the costal lobe of the valva; it is in many species prone to production into bizarre prongs, lobes or spines. Some of these are of use in classification at the species level, but in my opinion they must be used with care since there has undoubtedly been much parallel development. They are not important systematic characters at the generic level.

Swellings are present in the ductus bursae in several species groups in this genus. They differ in shape, position and degree of differentiation. While there is a common tendency for some kind of swelling to develop on the ductus in the genus, one must doubt the homologous nature of say, the stalked pouch present near the ostium bursae in *Pareromene holanthes* Meyr. and the globate swelling found near the corpus bursae and the junction of the bursae with the ductus seminalis in *Pareromene gurri* sp.nov.

Few characters in the relatively uniform female genitalia of *Pareromene* species serve to segregate groupings within the genus. While female genitalic characters are of great importance in the systematics of Crambinae at the tribal level, male genitalic characters are more valuable for detailed phylogenetic analysis below the generic level. This is explicable in fairly simple terms; there are relatively few basic designs of receptacle (female genitalia), but far more variation is possible in the evolution of functional parts used in the male genitalia to hold on to and penetrate the receptacle.

Among the species so far examined by the author only those of the endemic New Zealand *P. parorma* (Meyr.)—*P. pyrsophanes* (Meyr.)—*P. holanthes* (Meyr.)—*P. epiphaea* (Meyr.) species cluster are distinct from all other on the genitalic characters of females as well as males. In the latter a permanently everted aedoeagal apical sac is present, and in the females this structure is complemented by a fully developed stalked ostiolar pouch.

On the whole, New Zealand representatives of the genus are among the most conservative with regard to uncus and gnathos structures, and show little or no tendency for deep division of the juxta.

Male genitalic characters, especially the structure of the valvae, the form of the gnathos and the structure of the cornuti in the aedoeagus in the New Guinea species *P. ajaxella* Blesz. and *P. morobella* Blesz. strongly suggest common lines of phylogenetic descent with, respectively, New Zealand *P. harmonica* (Meyr.), and the New Zealand *P. auriscriptella* (Walk.)—*P. bipunctella* (Walk.) species cluster. The author also considers that group to include *P. harmonica*, though *P. ajaxella* appears closer to that species than does *P. morobella*. These relationships provide some evidence within the Crambinae for a past link from New Guinea to New Zealand through the Melanesian Arc. More collecting in New Caledonia and the New Hebrides is needed, and Fijian and Samoan species need to be re-described.

Bleszynski & Collins (1962) listed 6 species from Fiji and 3 from Samoa under *Diptychophora*. These species have not been redescribed at the time of writing, and their affinities are unknown. However they will almost certainly prove to belong to *Pareromene* (Dr S. Bleszynski, *in litt.*).

About 12 species of *Pareromene* are known from Australia (Dr I. F. B. Common *in litt.*, Dr S. Bleszynski *in litt.*), 8 of them from Queensland. Considering the close relationship found by Common (1960) between the stem-boring Schoenobiinae of North Australia/Queensland and New Guinea, we might expect to find a similar relationship between *Pareromene* species when the Queensland species have been revised.

At the present time I have only had opportunity to examine one Australian species, *Pareromene ochracealis* (Walk.) which is widely distributed in the regions south of the tropical-temperate MacPherson–Macleay overlap in eastern Australia. The male genitalic characters of this species show a clear relationship with the eastern Palaearctic *electra-rosanna* cluster of species but no relationship at all to known New Guinea or New Zealand species. *P. ochracealis* shares with 5 species from China and Amurland a peculiar apomorphic character which might be called a "tooth-brush" gnathos apex (Fig. 23). It also has a remarkable plesiomorphic character in the male genitalia, to the best of my knowledge unique in the Crambinae, of having the ductus ejaculatorius entering the aedoeagus at the anterior extremity, rather than dorsally at some distance from the anterior end as in all other species.

The Chinese species *P. parthenie* Blesz. shares a number of male genitalic characters with the New Zealand endemic *P. gurri* sp.nov. which do not seem to be parallel developments, but indicative of common phylogenetic descent. The Palaearctic species *P. copernici* Blesz. and

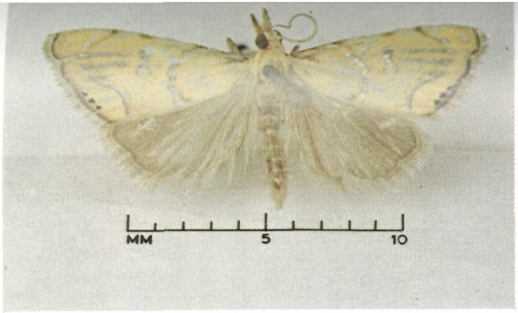


FIG. 1—*Pareromene auriscriptella* (Walk.).

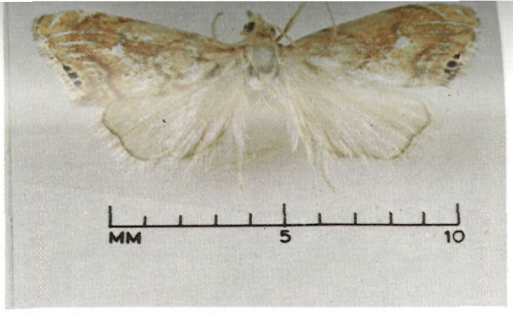


FIG. 2—*P. bipunctella* (Walk.).

FIG. 3—*P. chrysochyta* (Meyr.).

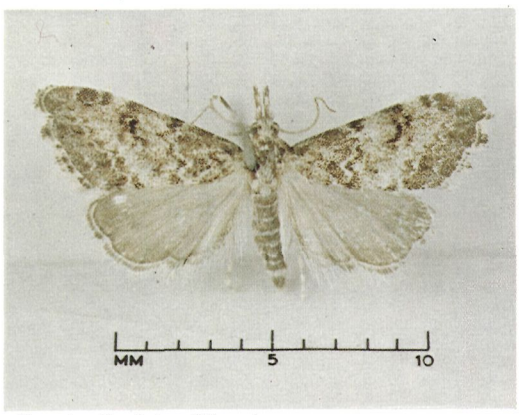


FIG. 4—*P. elaina* (Meyr.).

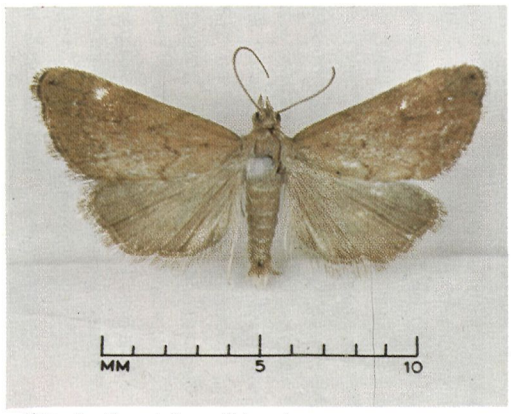


FIG. 5—*P. epiphaea* (Meyr.).

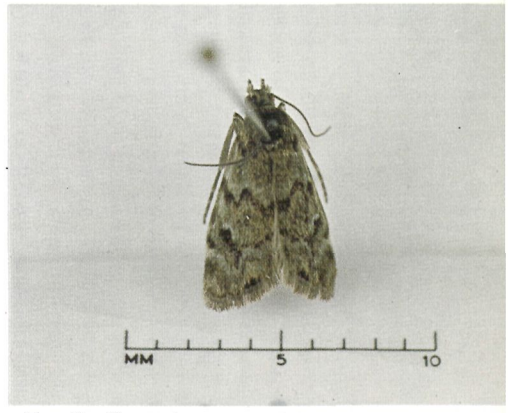


FIG. 6—*P. gurri* sp.nov.

FIG. 7—*P. harmonica* (Meyr.).

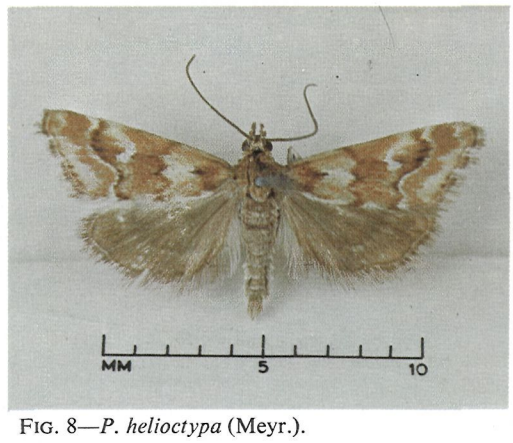


FIG. 8—*P. helioctypa* (Meyr.).

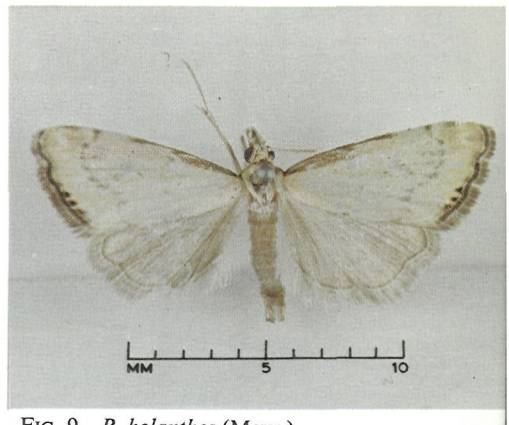


FIG. 9—*P. holanthes* (Meyr.).

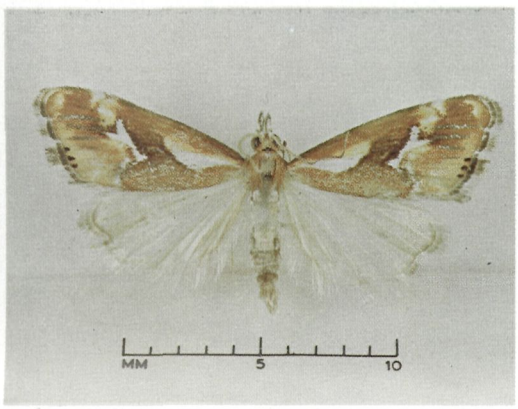


FIG. 10—*P. interrupta* (Feld. & Rog.).

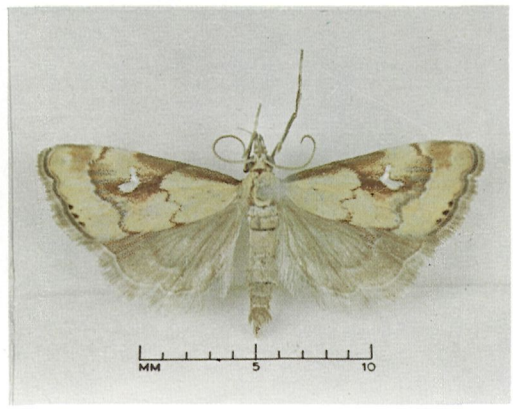


FIG. 11—*P. lepidella* (Walk.).

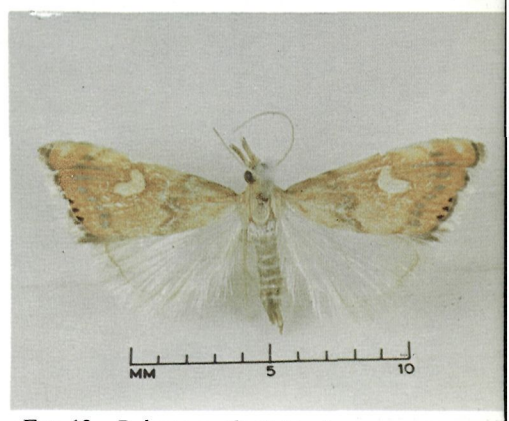


FIG. 12—*P. leucoxantha* (Meyr.).

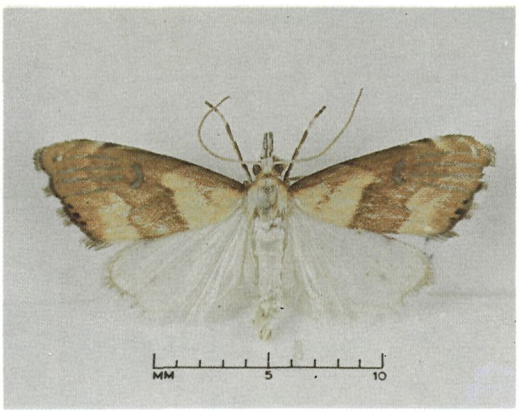


FIG. 13—*P. metallifera* (Butl.).

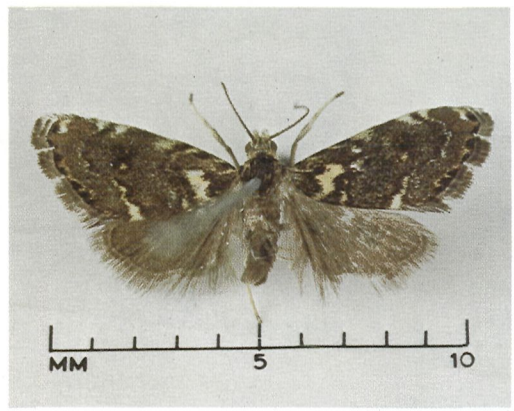


FIG. 14—*P. microdora* (Meyr.).

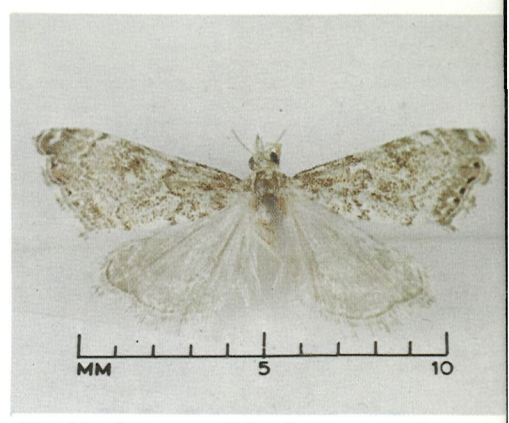


FIG. 15—*P. parorma* (Meyr.).

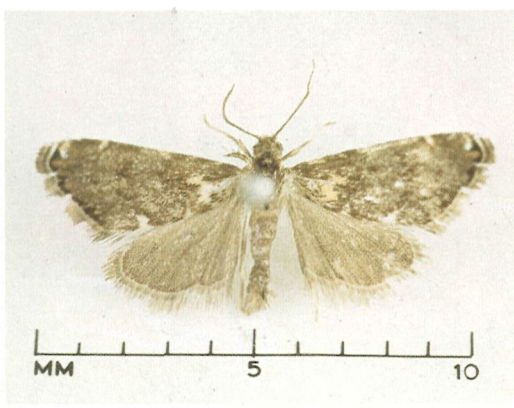


FIG. 16—*P. planetopa* (Meyr.).

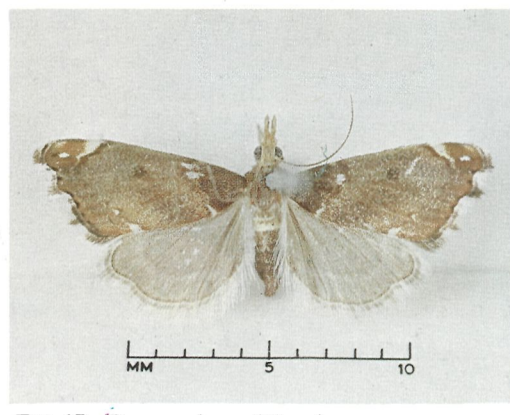


FIG. 17—*P. pyrsophanes* (Meyr.).

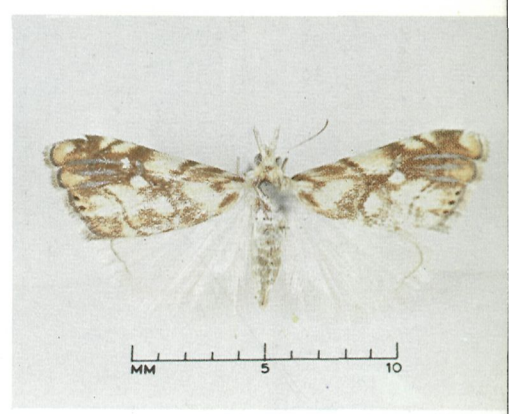


FIG. 18—*P. selenaea* (Meyr.).

P. vermeeri Blesz. also resemble one or two New Zealand species in male genitalic characters, but the case for common ancestry is not so strong in this instance. While the revised species of *Pareromene* can be grouped into provisional species groups or clusters for purposes of discussion, a detailed phylogenetic analysis of the genus is premature at this time.

New Zealand species of *Pareromene* may have relatives in New Guinea, but none in Australia (or South America, probably). On present evidence then we can assume that the genus reached New Zealand by an "island-hopping" route through the inner or outer Melanesian Arcs. The major biotic dispersal routes between New Zealand and neighbouring land masses have been discussed in detail by Fleming (1962) and Gaskin (1970).

Since a crambine fossil record is totally lacking (Bleszynski, 1965) we can only guess at the age of this genus and the time of arrival in New Zealand. With a very few exceptions other New Zealand Crambinae are grass-feeders, while *Pareromene* species appear to be moss feeders chiefly in forests. Consequently it is not necessary to postulate that all crambine genera represented in New Zealand arrived at about the same period of geological time. The presence of two very different species groups on one hand in New Guinea and New Zealand (and probably Queensland), and on the other in southern Australia lends credence to the concept of two invasions into the region by this genus. An alternative hypothesis which cannot be fully discounted until the tribe is better revised is that Australia was the original centre of evolution of *Pareromene*, since only an Australian species is known to preserve the archaic entry point of the ductus ejaculatorius into the aedoeagus. However the present New Zealand representatives or their precursors can be assumed with fair certainty to have entered the archipelago from the north.

During the Lower Miocene in New Zealand there was increased relief and higher topography, probably associated with higher rainfall (Fleming, 1962). In the Middle and Upper Miocene conditions were cooler, but Fleming noted that elements of Indo-Malayan origin were continuing to arrive. This was also the time when conditions favoured the spread of *Nothofagus* (*brassi*-species) into New Guinea and New Caledonia (Cranwell, 1963). One can postulate the Middle or Upper Miocene as the most likely period for the successful establishment and dispersal of *Pareromene* throughout the region and especially in New Zealand. If there was a prior invasion into Australia it might have taken place in the early Middle Miocene or Lower Miocene. After the Middle Miocene average summer temperatures and maximum temperatures declined relatively steeply and steadily if the marine coral faunae are taken as a guide (Keyes, 1968) or the planktonic Foraminiferida (Jenkins, 1968) or the marine molluscs (Beu & Maxwell, 1968). These biological observations are broadly sup-

ported by oxygen isotope determinations of paleotemperatures within New Zealand (Devereux, 1968) and in Victoria (Gill, 1968). The failure of a second invasion of *Pareromene* to colonise the southern part of Australia (if *P. ochracealis* is representative) could probably be explained by the suitable ecological niches already being occupied by a different but equally successful species group of the same genus.

Pareromene species are well represented in subalpine forest in the North Island, especially on the central plateau and Mt Egmont. The genus still shows a distinct northern bias in distribution. The Auckland Pleistocene biotic refugium (Willett, 1950) may be assumed to have played a major part in the survival of the genus in the glacial periods in the North Island. Only 2 species out of a total of 18, *Pareromene helioctypa* (Meyr.) and *Pareromene planetopa* (Meyr.), appear to be confined to the South Island. Two species are confined to the North Island, 8 range throughout the country, and 5 are not found in Otago–Southland. The peri-Cook Strait "central" distribution of *Pareromene microdora* (Meyr.) and *Pareromene bipunctella* (Walk.) may reflect survival in the Pleistocene Nelson–Marlborough biotic refugium only but this distribution may be spurious, the result of under-collecting in New Zealand. No species are known from Snares, Auckland, Campbell and Antipodes Is.

KEYS FOR THE IDENTIFICATION OF NEW ZEALAND SPECIES OF *Pareromene*

MALE GENITALIA

1 Cornuti appear to be absent from aedoeagus when viewed under low power (10–30×) with stereo microscope (50–70 minute transparent cornuti visible using 80–100×); no apical thorn on aedoeagus; costa of valva barely elaborated ..... *chrysochyta* (Meyr.)
— Cornutus or cornuti and/or apical aedoeagal thorn present; costa of valva almost always showing some elaboration 2
2(1) Aedoeagus with small cornuti only, from two to several, often linearly arranged ..... *selenaea* (Meyr.)
— One large cornutus or apical thorn always present if small cornuti also present; or simply one apical aedoeagal thorn present without other cornutal structures 3
3(2) One large thorn or cornutus present in aedoeagus, but always internal when vesica not everted 4
— Thorn or thorns permanently everted at apex of aedoeagus, sometimes dorsally, sometimes ventrally 8
4(3) Uncus long, about or greater than ½ aedoeagus 5
— Uncus much less than ½ aedoeagus 6
5(4) Costal prong arising at ½ valvular length, short, straight ..... *leucoxantha* (Meyr.)
— Costal prong arising subapically on valvula, long, sinuate, projecting well beyond tip of valvula ..... *gurri* sp.nov.
6(4) Costa of valva with single prong, or if small costal spur present, this directed at right angles to apical prong 7
— Dorsal spur present, directed parallel with apical prong ..... *harmonica* (Meyr)
7(6) Costal prong terminating well anterior to tip of valvula; juxta subhastate; cornutus complex with apical hook ..... *auriscriptella* (Walk.)

— Costal prong equal to valvula; juxta oblong; cornutus simple, not hooked ..... *bipunctella* (Walk.)
8(3) Uncus long, equal to or more than ½ aedoeagus 9
— Uncus short, much less than ½ aedoeagus 12
9(8) Costa of valva pronged, but no dorsal projection on margin anterior to prong ..... *interrupta* (Feld. & Rog.)
— Costal dorsal projection present 10
10(9) Large dorsal projection on costa, set about ⅔ from tip; juxta hastate ..... *elaina* (Meyr.)
—Dorsal projection present as small spur at base of prong, or present ¼ to ½ from tip; juxta oblongate or sub-triangular 11
11(10) Juxta oblongate ..... *lepidella* (Walk.)
— Juxta sub-triangular ..... *helioctypa* (Meyr.)
12(8) Aedoeagal apical sac absent 13
— Aedoeagal apical sac present 15
13(12) Aedoeagus with small pair of dorsal apical thorns ..... *planetopa* (Meyr.)
— Aedoeagus with single ventral apical thorn 14
14(13) Juxta oblongate, elongate ..... *microdora* (Meyr.)
— Juxta short and broad, shield-shaped, with posterior margin concave ..... *metallifera* (Butl.)
15(12) Costa of valva with apical prong, dorsal projection also present; aedoeagal spur ventral ..... *parorma* (Meyr.)
— Costa with some form of apical prong, long or short, blunt or nearly obsolete; aedoeagal thorn dorsal 16
16(15) Costal prong elongate, arising from about ½ from tip of valvula ..... *epiphaea* (Meyr.)
— Costal prong short or nearly obsolete, close to valval apex 17
17(16) Costa with a very short spur at about ⅓ from valval apex; elongate aedoeagal sac present ..... *pyrsophanes* (Meyr.)
— Costa spur prominent at about ⅕ from valval apex, aedoeagal apical sac subglobular ..... *holanthes* (Meyr.)

FEMALE GENITALIA

1 Stalked ostiolar pouch present 2
— Ostiolar swelling present or absent, if present, never stalked from ductus bursae 5
2 Ductus seminalis joining ductus bursae at about ⅓ ..... *epiphaea* (Meyr.)
— Ductus seminalis joining ductus bursae at ½ or beyond 3
3 Ductus bursae strong to about ⅓ ..... *holanthes* (Meyr.)
— Ductus weak or lightly chitinised at ostium only 4
4 Ductus bursae about 3× length of anterior apophyses ..... *pyrsophanes* (Meyr.)
— Ductus bursae about 6× length of anterior apophyses ..... *parorma* (Meyr.)
5 Large star-shaped signum on corpus bursae ..... *interrupta* (Feld. & Rog.)
— Signum absent 6
6 Posterior apophyses extremely elongate, at least 4× length of 8th tergite ..... *elaina* (Meyr.)
— Posterior apophyses "normal", i.e. not more than about 2× length of 8th tergite 7
7 Ductus bursae with an abruptly swollen region at some part of its length 8
— Ductus bursae without such a region: either tapering gradually to corpus bursae from ostium, or with a very slight and elongate swelling 15
8 Ventral lip of ostium with median cleft, lamella antevaginalis almost heart-shaped posteriorly ..... *microdora* (Meyr.)
— Ostium lip without such a cleft 9
9 Ductus bursae weak or only chitinised to about ⅛ total length from ostium 10
— Ductus bursae strong to at least ⅓ 11
10 Ductus seminalis joining ductus bursae at about ⅜ ..... *harmonica* (Meyr.)
— Ductus seminalis joining ductus bursae at about ¾ ..... *selenaea* (Meyr.)
11 Swelling in ductus closer to ostium than ½ 12
— Swelling occurring at or beyond ½ 13

12 Ostiolar swelling large, lateral, at $\frac{1}{4}$, anterior apophyses about equal to posteriors ..... *metallifera* (Butl.)
— Ostiolar swelling small, not lateral, at $\frac{1}{3}$, anterior apophyses $\frac{3}{4}$ posteriors ..... *auriscriptella* (Walk.)
13 Anterior apophyses about equal to posteriors ..... *helioctypa* (Meyr.)
— Anteriors about $\frac{3}{4}$ posteriors 14
14 Ostium bursae a flattened convex funnel, ductus bursae with reverse loop at $\frac{5}{8}$, ductus bursae about 3 × anterior apophyses ..... *gurri* sp.nov.
— Ostium bursae a flattened funnel with almost straight sides; without reverse loop in ductus bursae, latter about 5 × length of anterior apophyses ..... *lepidella* (Walk.)
15 Ductus bursae with strong region from ostium mouth to about $\frac{1}{8}$, then weak to $\frac{1}{4}$, strong again from $\frac{1}{4}$ to $\frac{1}{2}$ ..... *leucoxantha* (Meyr.)
— Ductus bursae with single region of chitinisation from mouth of ostium to $\frac{1}{4}$ or a little less 16
16 Ductus seminalis joining ductus bursae at $\frac{1}{2}$ ..... *bipunctella* (Walk.)
— Ductus seminalis joining ductus bursae at $\frac{7}{8}$ ..... *chrysochyta* (Meyr.)

Pareromene auriscriptella (Walker) comb.nov.

auriscriptella Walker, 1864, List of the Species of Lepidopterous insects in the collection of the British Museum, 30, p. 976 (*Eromene*). ——, Meyrick, 1883, Trans. N.Z. Inst., 15, p. 16; ——, Hudson, 1928, Plate XIX, fig. 37; ——, Gaskin 1966, Plate 18, fig. 5 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Blesynski and published for the first time here), in British Museum (Natural History) labelled "New Zeal.54.4".

EXTERNAL CHARACTERS

Eye without periorbital nude strip; female frenulum triple; wing span 14–18 mm (both sexes).

MALE GENITALIA (Fig. 28)

As for generic diagnostic description except for the following details: Arms of vinculum about equal to uncus; saccus longer than uncus; juxta a subhastate spear-shaped plate; costa of valva with prong reaching to tip of valvula; dorsal margin of costa, including prong, about $2\frac{1}{2}$ × uncus; total length of valva about equal to aedoeagus; uncus longer than gnathos, tapered, pointed; aedoeagus tubular, about 4 × uncus, length to median breadth ratio about 13:1, apically truncate, with hooked rose thorn-shaped cornutus below apex.

FEMALE GENITALIA (Fig. 46)

As for generic description except for following details: Anterior apophyses about $\frac{3}{4}$ posteriors; ductus bursae about $3\frac{1}{2}$ × length of anterior apophyses; strong to $\frac{1}{3}$, with pouched sac-like pleated swelling at base of this zone, with ductus seminalis joining at $\frac{1}{2}$; ostium bursae a flattened funnel.

TYPE LOCALITY: "New Zealand"—probably Auckland.

DISTRIBUTION

A common species in lowland and subalpine forest throughout the North and South Islands of New Zealand from Southland north to Te Aroha; also recorded from Great Barrier Island. As well as the localities listed in the next section I have been given reliable records from Burgess Park, New Plymouth; White Pine Bush, Hawke Bay; and Little-Bush, Hawke Bay (T. H. Davies, *in litt.*). The flight period extends from November to March; however most specimens have been recorded in the period between late November and early January, so there is probably only one generation per year.

MATERIAL EXAMINED: 58 ♂♂, 18 ♀♀

Akaroa: 2 ♂♂, Dec. 1924, CM, A. Tonnoir. Aniseed Valley, Nelson: 1 ♂, 2.xii.24, 2 ♂♂, 8.xii.25, ED, A. Philpott. Blackmillar, Marlborough: 1 ♂, 3 ♀♀, 26–29.xii.29, CM, S. Lindsay. Bluecliff, Southland: 1 ♀, 17.xii.17, ED, A. Philpott. Campbell's Hill, Wellington: 1 ♀, IGA, 7.xii.13, DM, G. V. Hudson. Christchurch: 6 ♂♂, no date, CM, R. W. Fereday. Claverley, Marlborough: 2 ♂♂, 1 ♀, 27–29.xii.32, CM, S. Lindsay. Dun Mt. Nelson: 3 ♂♂, 29.xii.25, ED, A. Philpott. Hoon Hay, Canterbury: 2 ♂♂, Jan.1920, 1 ♂, Mar.1920, CM, S. Lindsay. Karori, Wellington: 1 ♂, ALY, 3.i.1897, DM, G. V. Hudson. Longwoods, Southland: 2 ♂♂, 1 ♀, 29.xii.15, ED, A. Philpott. Monowai: 1 ♀, 21.xii.14, ED, A. Philpott. Mt Grey, Canterbury: 1 ♀, Jan.1921, CM, S. Lindsay. Mt Ruapehu, 3,000 ft: 1 ♂, 1 ♀, 18.i.67, GC, D. E. Gaskin. Nelson: 6 ♂♂, 2 ♀♀, 14–29.xii.20, 1 ♂, 22.xii.22, 1 ♂, 1 ♀, 24.xi.25, 1 ♂, 9.xii.27, ED, W. Heighway and A. Philpott. Palmerston North: 1 ♂, 26.xi.65, GC, D. E. Gaskin. Price's Bush, Canterbury: 1 ♂, 7.xii.30, CM, S. Lindsay. Puhi-puhi, Marlborough: 2 ♂♂, 1 ♀, 26–28.xii.29, CM, S. Lindsay. Pukeatua Bush, Port Hills, Canterbury: 1 ♂, 28.i.27, CM, S. Lindsay. Sunnyside, Southland: 2 ♂♂, 1 ♀, ED, 1 ♂, ALQ, DM, 20.xii.14, C. E. Fenwick. Takitimo Mtns: 1 ♂, 28.xii.12, ED, A. Philpott. Tapu, Coromandel Pen., 1 ♂, 16.ix.64, FRI, J. S. Dugdale. Tuatapere: 2 ♀♀, 18.xxi.17, AM, C. E. Clarke. Tisbury: 1 ♂, 1 ♀, 3–11.i.12, ED, A. Philpott. Upper Maitai, Nelson: 2 ♂♂, 26.xi.23, ED, E. S. Gourlay. Wadestown, Wellington: 1 ♂, 24.xi.1895, DM, G. V. Hudson. Wainuiomata: 1 ♂, 30.xi.1900, DM, G. V. Hudson. Wellington: 2 ♂♂, ALX, Dec.1888, DM, G. V. Hudson. West Plains, Southland: 2 ♂♂, 1 ♀, no date, DM, C. E. Fenwick. Whakarewarewa, Rotorua: 1 ♂, 14.xi.60, FRI, J. S. Dugdale. Whangaparapara, Great Barrier Island: 3 ♂♂, 1 ♀, 15–16.xi.50, PDD, K. A. J. Wise.

REMARKS

This species has also been discussed briefly in the appropriate section on *P. lepidella*. *P. auriscriptella* can be distinguished by the clear white crescentic stigma in the forewing disc. While there is considerable variation in the strength of the silvery cross-lines in *P. auriscriptella* the species can always be separated from the superficially very similar *Pareromene holanthes* by its white reniform stigma; in *P. holanthes* the stigma is represented by a pair of small black dots.

The male genitalia figured by Philpott (1929, fig. 5) as those of *Diptychophora auriscriptella* Walk. are those of *Pareromene harmonica*, while those shown as *Diptychophora harmonica* Meyr. (1929, fig. 17) are in fact those of *Pareromene auriscriptella*.

Pareromene bipunctella (Walker) comb.nov.

bipunctella Walker, 1866, List of the Species of Lepidopterous insects in the collection of the British Museum, 35, p. 1761 (*Eromene*).
——, Meyrick, 1885, Trans. N.Z. Inst., 17, p. 132; ——, Hudson, 1939, Plate LVI, fig. 32 (*Diptychophora*).

Holotype: ♂ in British Museum (Natural History) labelled "New Zeal.54.5."

EXTERNAL CHARACTERS

Eye lacking nude periorbital strip, female frenulum triple, wing span 15–17 mm (both sexes).

MALE GENITALIA (Fig. 29)

As for generic diagnostic description except for the following detail: Arms of vinculum about $\frac{3}{4}$ uncus; saccus slightly less than uncus; juxta an oblongate plate, less than half as wide as long; costa of valva with prong terminating well anterior of valvula tip, dorsal margin of costa a little less than 2× uncus; total length of valva about equal to aedoeagus; uncus and gnathos tapered, pointed, equal in length; aedoeagus tubular, truncate, about $3\frac{1}{4}\times$ uncus, length to median breadth ratio about 9–10:1, single cornutus present anterior to apex.

FEMALE GENITALIA (Fig. 47)

As for generic description except for the following detail: Anterior apophyses about $\frac{3}{4}$ posteriors; ductus bursae about $3–3\frac{1}{2}\times$ length of anterior apophyses, strong to $\frac{1}{4}$, with pleated swelling from $\frac{1}{4}$ to $\frac{1}{2}$, narrowing at $\frac{1}{2}$ and widening again towards corpus bursae; ductus seminalis joining at $\frac{1}{2}$; ostium bursae a flattened funnel.

TYPE LOCALITY: "New Zealand".

DISTRIBUTION

Known from Nelson Province and the southern part of the North Island to Palmerston North and Pohangina (Ruahine Range), in dense indigenous forest; apparently not a common species, with a flight period in November–December.

MATERIAL EXAMINED: 5 ♂♂, 2♀

Gollans Valley, Wellington: 1 ♂, ALJ, 7.xi.34, DM, E. S. Gourlay. Palmerston North: 1 ♂, 6.xii.66, GC, D. E. Gaskin. Pohangina Valley, Manawatu: 2 ♂♂, ALH, 1 ♀, IGG, 4.xii.29, DM, G. V. Hudson. Upper Maitai, Nelson: 1 ♂, 26.xi.23, ED, E. S. Gourlay. Wainuiomata: 1 ♀, ALI, 31.xii.05, DM, G. V. Hudson.

REMARKS

The exact identity of this species has been much confused in the past. Hudson (1928) stated that he was not able to recognise the species from the descriptions by Walker (1866) and Meyrick (1885). However a study of his catalogue numbers related to the specimens held in the Hudson collection shows that he did not possess any true *bipunctella* specimens at that time, only the variable *harmonica* with which it is easily superficially confused. In his later work (1939) he was able to give a re-description of the species together with an illustration based on Pohangina Valley specimens.

Although Philpott (1929) gave drawings of the male genitalia of most known New Zealand species of *Diptychophora*, his paper is confused. The male genitalia labelled *bipunctella* (fig. 10) are those of *Pareromene elaina* (Meyr.), while those labelled *elaina* (fig. 7) are unidentifiable from his drawing; the slide labelled *elaina* in his collection has nothing on it. In his 1929 paper he does not in fact figure genitalia of *bipunctella* under any name.

Pareromene chrysochyta (Meyrick) comb.nov.

chrysochyta Meyrick, 1882. New Zealand Journal of Science [Dunedin], 1, p. 186 (*Diptychophora*).
——, Meyrick, 1883, Trans. N.Z. Inst., 15, p. 12; ——, Hudson, 1928, Plate XIX, fig. 10 (*Diptychophora*).
chrysoclyta Hampson, 1896, Proc. zool. Soc. Lond. 1895, p. 942. (Misspelling of *chrysochyta*) (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here) in the British Museum (Natural History), labelled "Auckland, New Zealand, 20/1/80."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 13–17 mm (both sexes).

MALE GENITALIA (Fig. 24)

As for generic diagnostic description, except for the following: Arms of vinculum slightly less than uncus; saccus slightly longer than uncus; juxta an oblongate plate more than twice as long as wide, slightly concave on anterio-dorsal surface; costa of valva fused with valvula for most of its length but with slight apical separation, dorsal margin of costa about 3× uncus; uncus about $1\frac{1}{4}$× gnathos, tapered, pointed, curved ventrad; aedoeagus tubular, tapered apically, about 4× uncus, length to median breadth ratio about 14:1, with row of 40–70 microscopic cornuti from near apex to about $\frac{7}{8}$, nearly transparent and not visible under low power of stereo microscope.

FEMALE GENITALIA (Fig. 42)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae about 5–6× length of anterior apophyses, lightly chitinised to about $\frac{1}{6}$, smoothly tapering from the flattened ostium; no swelling or ostiolar pouch present; ductus seminalis joining at about $\frac{7}{8}$.

TYPE LOCALITY: Auckland.

DISTRIBUTION

Central and western South Island and central districts of the North Island; I have a single report of the species from Trounson's Park, Northland (Mr T. H. Davies, *in litt.*). Flight period December, January, in dense forest, where it is best taken by sweep-netting at dusk.

MATERIAL EXAMINED: 22 ♂♂, 9 ♀♀

Aniseed Valley, Nelson: 1 ♂, 8.xii.25, ED, A. Philpott. Aratiatia Rapids: 1 ♂, 30.xii.16, CM, S. Lindsay. Claverley, Marlborough: 1 ♂, 24.xii.22, CM, S. Lindsay. Greenhills, Southland: 1 ♂, 7.i.20, ED, A. Philpott. Karori, Wellington: 1 ♂, Dec.1900, ED, G. V. Hudson. Lake Rotoroa: 1 ♂, 18.i.27, 1 ♂, 26.i.28, ED, A. Philpott. Longwoods: 1 ♂, 24.xii.15, DM, C. E. Fenwick. Mt Greenland, Westland, 2,900 ft: 1 ♀, 6.i.43, ED, E. S. Gourlay. Mt Ruapehu, 2,700 ft: 4 ♂♂, 1 ♀, 18.i.67, GC, D. E. Gaskin & D. J. Greenwood. Okere: 1 ♂, 27.xii.16, CM, S. Lindsay. Pelorus Bridge: 2 ♂♂, 28.i.28, ED, 1 ♀, 16.i.31, CM, A. Philpott. Price's Bush ,Canterbury:

1 ♂, 27.xii.42, CM, S. Lindsay. Puhi-puhi River, Marlborough: 1 ♂, 2 ♀♀, 26.x–i.29–4.i.30, CM, S. Lindsay. Punakaiki: 1 ♀, 13.i.31, CM, S. Lindsay. Queenstown: 1 ♀, 4.i.20, AM, C. E. Clarke. Tuatapere: 2 ♀♀, CM, 1 ♀, HLN, AM, 18.xii.17, C. E. Clarke. Wellington: 1 ♂, no date, CM, G. V. Hudson; 1 ♂, ALU, no date, DM, G. V. Hudson (?). West Plains, Southland: 2 ♂♂, 1 ♀, no date, ED, A. Philpott.

REMARKS

Relative to most other New Zealand members of the genus this shows only primitive development of the major characteristic genitalic features. Both the valva and the ductus bursae are simple. On the other hand the great reduction in cornuti can be considered an advanced feature.

The yellow outer discal region of the forewings crossed by silvery lines provides a useful criterion for distinguishing the species on external characters.

Pareromene elaina (Meyrick) comb.nov.

elaina Meyrick, 1882, New Zealand Journal of Science (Dunedin), 1, p. 187 (*Diptychophora*).
——, Meyrick, 1883, Trans. N.Z. Inst., 15, p. 17; ——, Hudson, 1928, Plate XIX, fig. 31; ——, Gaskin, 1966, Plate 18, fig. 4 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here), in British Museum (Natural History), labelled "Wellington, New Zealand 31/12/59".

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 12–16 mm (both sexes).

MALE GENITALIA (Fig. 31)

As for generic diagnostic description except for the following detail: Arms of vinculum about $\frac{1}{2}$ uncus; saccus about $\frac{7}{8}$ uncus; juxta a hastate plate less than half as wide as long; costa of valva produced posteriorly into a long prong extending to just beyond the tip of the valvula, and having a second projection dorsally, at about $\frac{1}{3}$ from base; total length of valva about equal to aedoeagus; uncus nearly straight, parallel-sided for most of its length, with rounded apex, slightly longer than gnathos; gnathos curved dorsad, parallel-sided for most of its length, apically swollen and sharply pointed; aedoeagus tubular, about 2× uncus, with length to median breadth ratio about 9–10:1, with dorsal

apex having a straight spur, a cluster of cornuti present, of graduated size, between 6 and 9 in number, around base of spur; in the body of the aedoeagus about 18–20 microscopic cornuti are also present, lying between $\frac{1}{4}$ and $\frac{1}{2}$ from apex in the uneverted condition.

FEMALE GENITALIA (Fig. 49)

As for generic description except for the following details: Both anterior and posterior apophyses very elongate compared to those of other known members of the genus; anterior apophyses about $\frac{7}{8}$ posteriors; posterior apophyses almost as long as ductus bursae; ductus bursae very slender, weak, with no trace of ostiolar swelling; ductus seminalis joining at about $\frac{3}{8}$.

EGG

Flattened ovoid; no ribs; having a microscopic hexagonal pattern on shell; dimensions 0·32–0·34 × 0·19–0·20 mm.

LARVA (Fig. 22, 4th instar, cf. Fig. 21, generalised 6th instar chaetotaxy of crambine larva).

Final instar larva slender, 10–12 mm in length, greenish grey with series of wedge-shaped marks between segments 5–9 running down the dorsal line, these wedges cleft apically and facing caudad; head dark brown with pale median streak. First described by Fereday (in Meyrick, 1883), almost as above. Chaetotaxy: On prothorax: L2 dorso-cephalad of L1, SV2 slightly dorso-cephalad of SV1. On Meso- and Metathorax: D2 longer than D1, SD1 longer than SD2, dorso-caudad of L2. On abdominal segments 1, 2; SV2 dorsad of SV1, SV3, L1 dorso-caudad of L2, SD2 very small, D1 longer than D2. Abdominal segments 3–6: SV3 dorso-cephalad of SV2, SV1, L1 dorso-caudad of L2. Abdominal segment 7: L1 dorso-caudad of L2, SV1 ventro-caudad of SV2. Abdominal segment: D1, SD1 on separate pinacula.

TYPE LOCALITY: Wellington.

DISTRIBUTION

In the South Island of New Zealand this species has a northern-biased distribution, being absent from Southland. Up to the time that this study was completed only two specimens had been taken south of a line from Mt Cook to Christchurch. *P. elaina* is the most common member of the genus in North Island lowland forest, ranging from Wellington to Waitangi and east to Rotorua. It has not yet been recorded in the Hawkes Bay district (T. H. Davies, *in litt.*). The flight period extends from October to March, and there are two complete generations each year.

HOST PLANTS

Moss, including *Funaria* sp.

MATERIAL EXAMINED: 42 ♂♂, 31 ♀♀

Alford Forest: 1 ♂, 4.ii.28, CM, S. Lindsay. Auckland: 1 ♂, 1929, ED, D. A. Milligan. Blackmillar, Marlborough: 1 ♀, 28.xii.27, CM, S. Lindsay. Christchurch: 6 ♂♂, 3 ♀♀, no date, 1 ♂, Jan.1875, CM, R. W. Fereday. Claverley, Marlborough: 1 ♂, 27.xii.32, CM, S. Lindsay. Dunedin: 1 ♂, 30.iii.1902, ED, G. V. Hudson. Dun Mt Nelson: 1 ♀, 14.i.26, ED, A. Philpott. Eglinton Valley: 1 ♂, 31.xii.20, DM, C. E. Fenwick. Flora Camp, Mt Arthur, Nelson: 1 ♂, 24.i.24, CM, S. Lindsay. Governor's Bay, Christchurch: 1 ♂, 1 ♀, 18–19.xi.22, CM, S. Lindsay. Hoon Hay, Canterbury: 1 ♂, 1.xii.23, CM, S. Lindsay. Karori, Wellington: 2 ♂♂, ALB, 1 ♀, Jan. 1884, 1 ♀, Dec.1909, 1 ♀, ALE, Jan.1915, DM, G. V. Hudson. Lake Rotoroa: 1 ♀, 15.iii.31, CM, W. Heighway. Lees Valley, Canterbury: 1 ♂, 9.ii.29, CM, S. Lindsay. Makara, Wellington: 1 ♀, 5.xii.23, DM, G. V. Hudson. Maruia Springs: 1 ♀, 5.i.40, CM, S. Lindsay. Mt Cook: 1 ♂, 4.i.29, ED, A. Philpott. Mt Grey, Canterbury: 1 ♀, 12.xi.23, 1 ♀, 23.ii.24, 1 ♂, 17.xi.29, CM, S. Lindsay. Mt Ruapehu: 1 ♂, ALC, 4.i.22, DM, C. E. Fenwick, 1 ♂, 18.i.67, GC, D. J. Greenwood. Nelson: 2 ♂♂, 8 ♀♀, 5–8.xxii.20, 1 ♂, 29.xi.21, 1 ♂, 1.iii.24, 1 ♀, 23.xii.25, ED, A. Philpott. New Creek, Mt Cook district: 1 ♂, 4.i.29, ED, A. Philpott. Palmerston North: 2 ♂♂, 1 ♀, 1–3.xi.66, 1 ♂, 1 ♀, 15.xi.66, GC, D. E. Gaskin. Price's Bush, Canterbury: 1 ♀, 25.xii.42, CM, S. Lindsay. Puhi-puhi River, Marlborough: 6 ♂♂, 1 ♀, 26.xii.29–6.i.30, CM, S. Lindsay. Wainuiomata: 1 ♀, ALA, 28.xii.25, DM, G. V. Hudson. Waitangi: 1 ♂, 23.x.63, FRI, J. S. Dugdale. Wellington: 1 ♂, 15.ii.1868, CM, R. W. Fereday, 1 ♀, Nov.1898, DM, 2 ♂♂, Dec.1904–Jan.1905, ED, 1 ♀, 9.i.24, DM, G. V. Hudson. Whakarewarewa, Rotorua: 1 ♀, ALF, 31.x.63, FRI, "R.H.M." Wilton's Bush, Wellington: 1 ♂, 21.xii.28, DM, G. V. Hudson, 1 ♀, 30.xii.37, CM, S. Lindsay.

REMARKS

P. elaina is distinctive in its great degree of elongation of the apophyses in the female genitalia. Although superficially very similar to *Pareromene parorma* (Meyr.), *P. elaina* is quite distinct on genitalic characters (see Figs 40 ♂, 57 ♀, *parorma*; 31 ♂, 49 ♀, *elaina*). Externally *P. elaina* can be easily distinguished from *parorma* by its forewings lacking in the line of terminal black dots characteristic of the latter species.

Philpott's fig. 10 (1929) labelled *D. bipunctella*, shows the male genitalia of *elaina*, clearly recognisable by its hastate juxta. His fig. 7, labelled *D. elaina*, could possibly have been based on a specimen of *Pareromene*

chrysochyta (Meyr.), although the juxta is the wrong shape in the drawing for that species. The slide in Philpott's collection on which the drawing was based has nothing on it.

Pareromene epiphaea (Meyrick) comb.nov.

epiphaea Meyrick, 1885. Trans. N.Z. Inst. 17, p. 132 (*Diptychophora*).
——, Hudson 1928, Plate XIX, fig. 40 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here), in British Museum (Natural History), labelled "Arthur's Pass, New Zealand, 3,000 ft. 25/1/83."

EXTERNAL CHARACTERS

Eye intermediate diurnal/nocturnal type, with partial nude periorbital margin. Female frenulum triple, wing span 13–17 mm (both sexes).

MALE GENITALIA (Fig. 36)

As for generic diagnostic description, except for the following: Arms of vinculum about equal to uncus; saccus about $\frac{7}{8}$ uncus; juxta an oblate plate, slightly constricted medially and ventrally rounded, dorsally concave; costa of valva with prong, dorsal margin including prong about $1\frac{7}{8}=$ uncus; total length of valva slightly more than aedoeagus; uncus tapered, pointed, curved slightly ventrad, about equal to gnathos; gnathos tapered, pointed, curved dorsad; aedoeagus tubular, with ventral apical sac and short dorsal spur, length about $3\times$ uncus, length to median breadth ratio 9:1, cornuti absent.

FEMALE GENITALIA (Fig. 55)

As for generic description except for the following: Posterior and anterior apophyses about equal; ductus bursae weakly chitinised near the mouth, distinct stalked ostiolar pouch present, ductus bursae about $3\frac{1}{2}\times$ length of anterior apophyses; ductus seminalis joining at $\frac{1}{3}$.

TYPE LOCALITY: Arthur's Pass.

DISTRIBUTION

Alpine moss bogs of the South Island of New Zealand (Mr J. S. Dugdale, *in litt.*). Also from the central plateau of the North Island. Not confirmed from Mt Egmont. Flight period September to March, diurnal.

MATERIAL EXAMINED: 44 ♂♂, 11 ♀♀

Arthur's Pass: 1 ♀, 8.xii.17, 3 ♂♂, 2 ♀♀, 2–4.ii.26, CM, S. Lindsay; 7 ♂♂, 9.xii.26, 5 ♂♂, 1 ♀, 23.i.28, ED, A. Philpott; 4 ♂♂, 27.xii.31–1.i.32, 1 ♂,

30.xii.40, CM, S. Lindsay. Castle Hill, Canterbury: 1 ♂, Jan.1893, ED, G. V. Hudson. Chateau Tongariro, 3,600 ft: 1 ♂, 21.ii.65, ED, G. Kuschel. Cleddau: 2 ♂♂, ALR, HGW, 20.xii.44, DM, J. T. Salmon. Eglington Valley: 1 ♂, 11.xii.45, DM, G. Howes. Flagstaff, Dunedin: 1 ♂, 1.ii.16, DM, C. E. Fenwick. Glenorchy: 1 ♂, 2.i.11, DM, G. Howes. Homer: 3 ♂♂, ALP, 26.xii.44, DM, J. T. Salmon. Longwoods, Southland: 1 ♀, 29.xii.15, ED, A. Philpott. Milford Track: 2 ♂♂, 1 ♀, 24–29.xii.20, DM, C. E. Fenwick. Mt Arthur: 1 ♂, 12.xii.22, 1 ♂, 2.iii.22, 1 ♂, 1.xii.24, ED, A. Philpott. Mt Cleughearn: 1 ♀, 1.i.15, 3 ♀♀, 13.i.16, ED, A. Philpott. Mt Cook: 3 ♂♂, 1 ♀, 5.i.29, CM, A. Philpott. Mt Ruapehu: 1 ♂, 2.i.22, DM, C. E. Fenwick. Mt Torlesse, 4,000 ft: 2 ♂♂, 6.ii.37, CM, S. Lindsay. Old Man Range, 4,200 ft: 2 ♂♂, 18.i.63, FRI, J. S. Dugdale. Waitati: 1 ♂, 3.ix.16, CM, C. E. Clarke.

REMARKS

While *P. epiphaea* and *P. gurri* are externally very similar, and could easily be confused by someone not familiar with the genus, they are quite distinct on genitalic characters, and are not closely related. In addition, *P. epiphaea* has a metallic apical mark on the forewing which is absent in *P. helioctypa;* some dark specimens of the latter species could be confused with *P. epiphaea.*

Pareromene gurri sp.nov.

Holotype: ♂, author's genitalia prep. JFU; paratype ♀, author's genitalia prep. HGY; paratype ♂, ♀; in DSIR Entomology Division collection, Nelson, New Zealand. All labelled "Tapu-Coroglen Road, 1,200 ft, 16.11.64, J.S.D."

EXTERNAL CHARACTERS

Antennae nearly smooth in both sexes; eye without periorbital nude strip; frons planoconvex; maxillary palpi triangular, brown; labial palpi porrect, white but flecked with brown distally, about equal to head length; thorax and abdomen dull brown; forewings dull greenish brown, reniform stigma pale grey towards base and red-brown towards termen, first, second and third lines single, dark brown, and angled abruptly at centre, subterminal region dull yellowish brown, termen sinuate in male, slightly incised, nearly straight in female; cilia greyish brown with dark brown bases; hindwings dark brown; undersurfaces of all wings dull greyish brown with some obscure markings in forewing subterminal region; frenulum single in male, triple in female; wing span 11–15 mm (both sexes.

MALE GENITALIA (Fig. 26, holotype)

As for generic diagnostic description except for the following detail: Arms of vinculum about $\frac{1}{2}$ uncus; saccus about $\frac{5}{8}$ uncus; juxta a roughly oblong plate slightly tapered dorsad; costa of valva with large prong extending beyond tip of valvula, dorsal margin of costa including prong, 2 × uncus; total length of valva about equal to aedoeagus; uncus and gnathos slender, parallel-sided for most of their length, apically swollen and sharply pointed, uncus curved slightly ventrad, gnathos slightly dorsad; aedoeagus tubular, slightly tapered apically, $1\frac{7}{8}$ × uncus, length to median breadth ratio about 10:1, with long straight cornutus rooted near $\frac{1}{2}$ and reaching to apex, also row of about 20 microscopic cornuti, rose thorn-shaped, present anterior to base of large cornutus.

FEMALE GENITALIA (Fig. 44, paratype)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae about 3 × length of anterior apophyses, strong to $\frac{1}{2}$, with swelling and reverse loop at $\frac{5}{8}$, ductus seminalis joining at $\frac{3}{4}$ - $\frac{7}{8}$; ostium bursae a flattened funnel, tapering sharply at a little beyond $\frac{1}{8}$.

TYPE LOCALITY: Tapu–Coroglen Road, 300 m.

DISTRIBUTION

Presently known only from Coromandel and South Auckland.

MATERIAL EXAMINED: 7 ♂♂, 2 ♀♀

Tapu–Coroglen Road, 1,200 ft, Coromandel: 2 ♂♂ (JFU holotype), 2 ♀♀ (HGY allotype), 16.xi.64, FRI, J. S. Dugdale. Mt Te Aroha, summit, 3,200 ft: 5 ♂♂, 23.x.67, ED, J. S. Dugdale.

REMARKS

This species shares apomorphic characters with *P. leucoxantha* (Meyr.) and the Chinese species *P. parthenie* Blesz. Superficially it is quite like *P. epiphaea* (Meyr.), an alpine species found in both the North and South Islands of New Zealand, and is further discussed in the remarks section on that species. Nevertheless *P. gurri* is easily distinguished from *P. epiphaea* by genitalic characters of both sexes. Externally the species are much harder to separate, although the tornus of the forewing in *P. epiphaea* is obtusely angled, and in *P. gurri* more nearly a right angle.

Pareromene harmonica (Meyrick) comb.nov.

harmonica Meyrick, 1888, Trans. N.Z. Inst. 20, p. 71 (*Diptychophora*).
——, Hudson, 1928, Plate XIX, fig. 38, and Plate LII, fig. 30 (as *bipunctella*) (*Dipytchophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here) in British Museum (Natural History) labelled 'Auckland New Zealand 22/12/85."

EXTERNAL CHARACTER

Eye without nude periorbital strip; female frenulum triple, wing span 13–18 mm (both sexes).

MALE GENITALIA (Fig. 30)

As for generic diagnostic description except for the following: Arms of vinculum about equal to or slightly longer than uncus; juxta a quadrate plate tapering posteriad; dorsally concave; costa of valva with slender prong terminating anterior to tip of valvula, and also with a dorsal spinose projection at about $\frac{1}{2}$; dorsal margin of costa including prong about $2\frac{1}{2}\times$ uncus; total length of valva about equal to aedoeagus; uncus and gnathos tapered, pointed, equal in length; aedoeagus tubular, apically truncate, about $4\times$ uncus, with length to median breadth ratio about 8:1, with single large cornutus below apex.

FEMALE GENITALIA (Fig. 48)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae weak, about $4\times$ length of anterior apophyses, with swollen pleated pouch at about $\frac{3}{8}$; ductus seminalis joining at about $\frac{3}{8}$. Ostium bursae a very slender funnel with a slightly chitinised constriction at about $\frac{1}{8}$, ostium only slightly flared at mouth.

TYPE LOCALITY: Auckland.

DISTRIBUTION

Probably occurs throughout the North and South Islands of New Zealand in indigenous lowland to subalpine forest. The flight period extends from October to February; there are probably two complete generations each year.

MATERIAL EXAMINED: 38 ♂♂, 4 ♀♀

Arthur's Pass: 1 ♂, 25.xii.40, CM, S. Lindsay. Claverley, Marlborough: 2 ♂♂, 28.xii.32–3.i.33, CM, S. Lindsay. Dun Mt, Nelson: 1 ♀, 8.i.22, ED,

1 ♂, 31.xii.27, ED, A. Philpott. Gollans Valley, Wellington: 1 ♂, 11.xi.19, DM, 1 ♂, 7.xi.34, DM, G. V. Hudson. Hump Ridge, Southland: 1 ♂, 23.xii.13, DM, C. E. Fenwick. Karori, Wellington: 1 ♂, no date, ED, 1 ♂, IGD, 7.ii.1891, DM, G. V. Hudson. Lake Rotoroa: 4 ♂♂, 7.i.28, ED, A. Philpott. Longwoods, Southland: 1 ♂, DM, 1 ♂, ED, 5.xii.15, C. E. Fenwick. Manapouri: 4 ♂♂, 25–29.xii.22, CM, S. Lindsay. Milford Track: 2 ♂♂, 29–31.xii.30, DM, C. E. Fenwick. Mt Grey, Canterbury: 1 ♀, 8.i.29, CM, W. Heighway. Mt Ruapehu: 2 ♂♂, 10.i.41, DM, G. V. Hudson. Nelson: 2 ♂♂, 9–29.xii.20, ED, 1 ♂, 15.xii.21, ED, A. Philpott. Pelorus Bridge, Nelson: 5 ♂♂, 1 ♀, 28.xi.28, ED, E. S. Gourlay. Pukeatua Bush, Port Hills, Canterbury: 1 ♂, 12.i.30, CM, 1 ♂, 29.xi.32, CM, S. Lindsay. Waimarino: 1 ♀, BLQ, 19.ii.22, AM, C. E. Clarke. Wainuiomata: 1 ♂, 25.xii.15, 1 ♂, 10.xii.31, DM, G. V. Hudson. Waioeka Gorge: 1 ♂, 9.x.64, FRI, J. S. Dugdale. West Plains, Southland: 1 ♂, ALS, DM, 1 ♀, ED, no date, C. E. Fenwick. Whiterock, Canterbury: 1 ♂, 26.xi.22, CM, S. Lindsay. Wilton's Bush, Wellington: 1 ♂, 21.xi.28, DM, G. V. Hudson.

REMARKS

This species can be separated from *P. bipunctella* by its having metallic markings on the subterminal costa of the forewing, and silvery markings on the veins in the subterminal region.

While *P. bipunctella* shares apomorphic characters with *P. auriscriptella*, *P. harmonica* shares at least one derived character with *Pareromene ajaxella* Blesz., a species described from New Guinea.

It is worth noting again here that the labelling of the male genitalia drawing by Philpott (1929, fig. 5, cf. fig. 17) is confused with *P. auriscriptella*. The captions are reversed.

Pareromene helioctypa (Meyrick) comb.nov.

helioctypa Meyrick, 1882, New Zealand Journal of Science [Dunedin], 1, p. 187 (*Diptychophora*).
——, Meyrick, 1883, Trans. N.Z. Inst., 15, p. 17; ——, Hudson, 1928, Plate XIX, fig. 39 (*Diptychophora*).

Lectotype ♂ (selected by Dr S. Bleszynski and published for the first time here), in British Museum (Natural History), labelled "L. Wakatipu, New Zealand /1/81 RWF" and "New Zealand, 96.182".

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 12–16 mm (both sexes).

MALE GENITALIA (Fig. 32)

As for generic diagnostic description except for the following: Arms of vinculum about ½ uncus; saccus about ½ uncus; juxta a subtriangular, almost dolabrate plate, with dorsal edge concave, dorsal surface concave; costa of valva with a strong prong and a short spur at the base of the prong on the dorsal margin, latter about 1¼× uncus; total length of valva about equal to aedoeagus; uncus slightly longer than gnathos, both tapering, nearly parallel-sided for most of their lengths, uncus curved ventrad, gnathos dorsad; aedoeagus tubular, apically tapered, about 1⅔× uncus, length to median breadth ratio about 10–11:1; a line of about 60 small cornuti present, in addition to a straight ventro-apical thorn directed anterio-ventrad.

FEMALE GENITALIA (Fig. 50)

As for generic description except for the following: Anterior apophyses about equal to posteriors; ductus bursae strong to ½, about 2½× length of anterior apophyses, with pleated swelling at ½; ductus seminalis joining at ⅞; ostium bursae a flattened funnel.

TYPE LOCALITY: Auckland.

DISTRIBUTION

Throughout the South Island of New Zealand in lowland and subalpine native forest, from Tasman Mts (N.W. Nelson) to Southland. No North Island records. Flight period late November to mid-February.

MATERIAL EXAMINED: 75 ♂♂, 12 ♀♀

Arthur's Pass: 1 ♀, 31.xii.40, CM, S. Lindsay. Bold Peak: 1 ♀, 24.xii.13, DM, C. E. Fenwick. Central Otago: 1 ♂, no date, ED, A. Philpott. Claverley, Marlborough: 2 ♀♀, 25.xii.32–1.i.33, CM, S. Lindsay. Cobb Valley, Nelson: 5 ♀♀, 1 ♀, 9.xii.22, ED, A. Philpott. Drayton Station, Canterbury: 1 ♂, Jan.1877, CM, R. W. Fereday. Eglinton: 1 ♂, 11.xii.44, DM, G. Howes. Franz Josef: 1 ♂, 3.xii.64, FRI, J. S. Dugdale. Glen Tui: 4 ♂♂, 1 ♀, 20–30.xii.21, CM, S. Lindsay. Greenhills, Invercargill: 1 ♂, 3.xii.16, ED, C. E. Fenwick. Homer: 3 ♂♂, 23.xii.41, DM, J. T. Salmon. Horseshoe Lake, Canterbury: 2 ♂♂, 29.xi.24, ED, CM, 1 ♂, 7.i.28, CM, S. Lindsay. Kinloch: 1 ♂, 2.i.1881, CM, R. W. Fereday. Lake Moana: 1 ♂, 16.xii.35, CM, A. Tonnoir. Lake Tekapo: 8 ♂♂, 23.xii.28, ED (4), CM (4), S. Lindsay. Lake Marion, Hollyford V., Otago: 1 ♂, 1.i.43, DM, G. Howes. Maruia Springs: 2 ♂♂, 5.i.40, CM, S. Lindsay. Milford Sound: 4 ♂♂, ALV, 20.xii.43, DM, J. T. Salmon. Milford Track: 1 ♂, 30.xii.20,

DM, C. E. Fenwick. Mt Cook: 2 ♂♂, ED, 1 ♂, DM, 1 ♀, CM, 3–9.ii.29, A. Philpott. Mt Greenland, 2,500 ft: 12 ♂♂, 6.i.43, ED, E. S. Gourlay. Mt Grey, Canterbury: 2 ♂♂, Jan. 1921, CM, S. Lindsay. New River: 1 ♂, no date, ED, A. Philpott. North Lake Mavora: 2 ♂♂, 1.i.40, DM, G. Howes. Paradise: 5 ♂♂, ALW, 4.i.16,-M, C. E. Fenwick. Queenstown: 1 ♀, HGZ, 18.ii.13, DM, G. Howes; 1 ♀, 4.i.20, AM, C. E. Clarke; 5 ♂♂, 2 ♀♀, 18–20.xii.23, ED, G. Howes. Seaward Moss, Southland: 1 ♂, DM, 1 ♂, ED, no date, A. Philpott. Traill's, Southland: 2 ♂♂, 29.xii.13, ED, G. Howes. West Plains, Southland: 1 ♂, no date, ED, A. Philpott. Whiterock, Canterbury: 1 ♂, 1 ♀, 26–28.xi.22, CM, S. Lindsay. Wyndham: 1 ♂, 5.xii.14, ED, G. Howes.

REMARKS

This species shares apomorphic genitalic characters with *Pareromene lepidella* and *P. elaina*. This species is extremely variable; no two specimens are exactly alike. Colour can range from an almost uniform dark brown to a smudgy reddish-yellow. The white comma-shaped reinform stigma is a good character for most specimens, and the species can generally also be distinguished from the superficially similar *Pareromene chrysochyta* by the shape of the second line on the forewings; this line is single and serrate in *helioctypa* and doubled and waved in *chrysochyta*. In all cases of doubtful identity by externals, examination of genitalia is necessary.

Pareromene holanthes (Meyrick) comb.nov.

holanthes Meyrick, 1885, Trans. N.Z. Inst., 17, p. 131 (*Diptychophora*).
——, Hudson, 1928, plate XIX, fig. 36 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here) in the British Museum (Natural History), labelled "Otira Gorge, New Zealand, 1,600 ft 24/1/83."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 14–18 mm (both sexes).

MALE GENITALIA (Fig. 37)

As for generic diagnostic description except for the following: Arms of vinculum, and saccus, about equal to uncus; juxta an oblate plate with convex ventral margin, about half as wide as long and dorsally concave; costa of valva with short spur near the posterior extremity, dorsal margin of costa about $2\frac{1}{2}\times$ uncus; total length of valva equal to aedoeagus; uncus and gnathos equal in length, tapered, pointed, uncus curved ventrad, gnathos dorsad; aedoeagus tubular, curved strongly

ventrad, with ventral apical sac and short dorsal apical curved spur or thorn, nearly 4× uncus, length to median breadth ratio 11:1, cornuti absent.

FEMALE GENITALIA (Fig. 56)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae with stalked ostiolar pouch, about $4\frac{1}{2}$–5× length of anterior apophyses, strong to $\frac{1}{3}$, ostium bursae a very wide flattened funnel with sinuate ventral margin below posterior margin of 7th sternite.

TYPE LOCALITY: Otira Gorge.

DISTRIBUTION

Northern part of the South Island (north of about latitude 44°S), and two areas of the North Island, around Wellington and in the subalpine forest of the central plateau. Not yet collected from Mt Egmont. Flight period late November to early February.

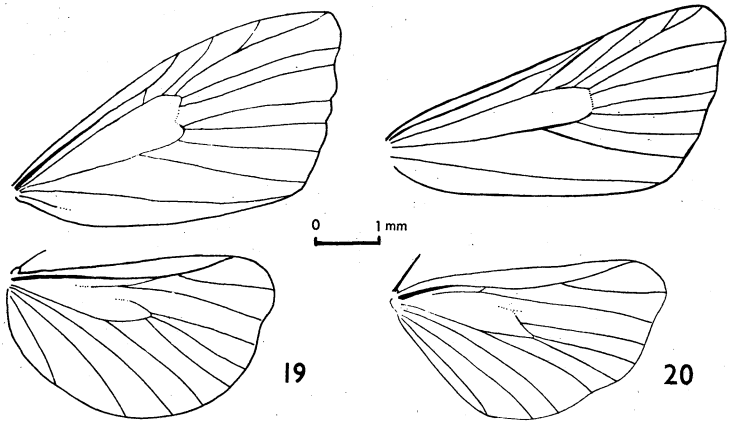
MATERIAL EXAMINED: 39 ♂♂, 14 ♀♀

Christchurch: 1 ♂, 26.i.1883 (syntype?), CM, R. W. Fereday. Dun Mt, Nelson: 5 ♂♂, 8.i.22, 2 ♂♂, 3.ii.24, 1 ♂, 27.xii.27, ED, A. Philpott. Glen Tui: 3 ♂♂, 26.xii.21, CM, S. Lindsay. Golden Downs, Nelson: 8 ♂♂, 3 ♀♀, 8.i.26, ED, E. S. Gourlay. Jack's Pass: 1 ♂, 29.xii.30, CM, S. Lindsay. Lake Rotoroa: 1 ♀, 18.i.27, ED, E. S. Gourlay. Mt Grey, Canterbury: 2 ♂♂, CM, 2 ♀♀, ED, Jan.1921, 1 ♂, CM, 2 ♂♂, ED, 28.xii.24, S. Lindsay and W. Heighway. Mt Ruapehu: 2 ♂♂, 1 ♀, 18.i.67, GC, D. E. Gaskin and D. J. Greenwood. Pelorus Bridge, Nelson: 1 ♂, 20.xi.28, ED, E. S. Gourlay. Port Hills, Canterbury: 1 ♂, 15.i.30, CM, W. Heighway. Ross, Westland: 2 ♂♂, 1 ♀, 24.xii.39, CM, S. Lindsay. Waimarino: 1 ♂, 26.xii.21, DM, C. E. Fenwick. Wainuiomata: 1 ♂, 1 ♀, 23.xii.1900, 6 ♂♂, ALG, 3 ♀♀, HGN, 29–31.xii.26, 1 ♀, 9.xii.31, DM, G. V. Hudson.

REMARKS

For comments on a comparison of forewing pattern of this species and that of *P. auriscriptella*, see the remarks section under *P. auriscriptella*.

Together with *P. epiphaea*, *P. parorma* and *P. pyrsophanes*, this species is part of a closely interrelated species cluster restricted to New Zealand, the group being characterised by the apical aedoeagal sac of the male and the stalked ostiolar pouch of the female. An ostiolar pouch is present in the Japanese species *P. mutuurella*, but I regard this as a parallelism; and there is no aedoeagal sac in this species. In fact the vinculum/saccus in that species is quite unlike that of other members of *Pareromene*.



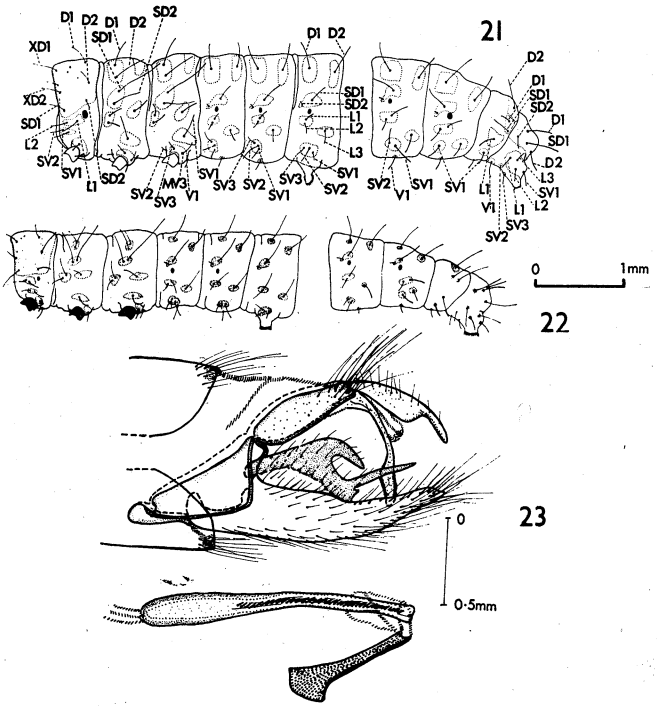
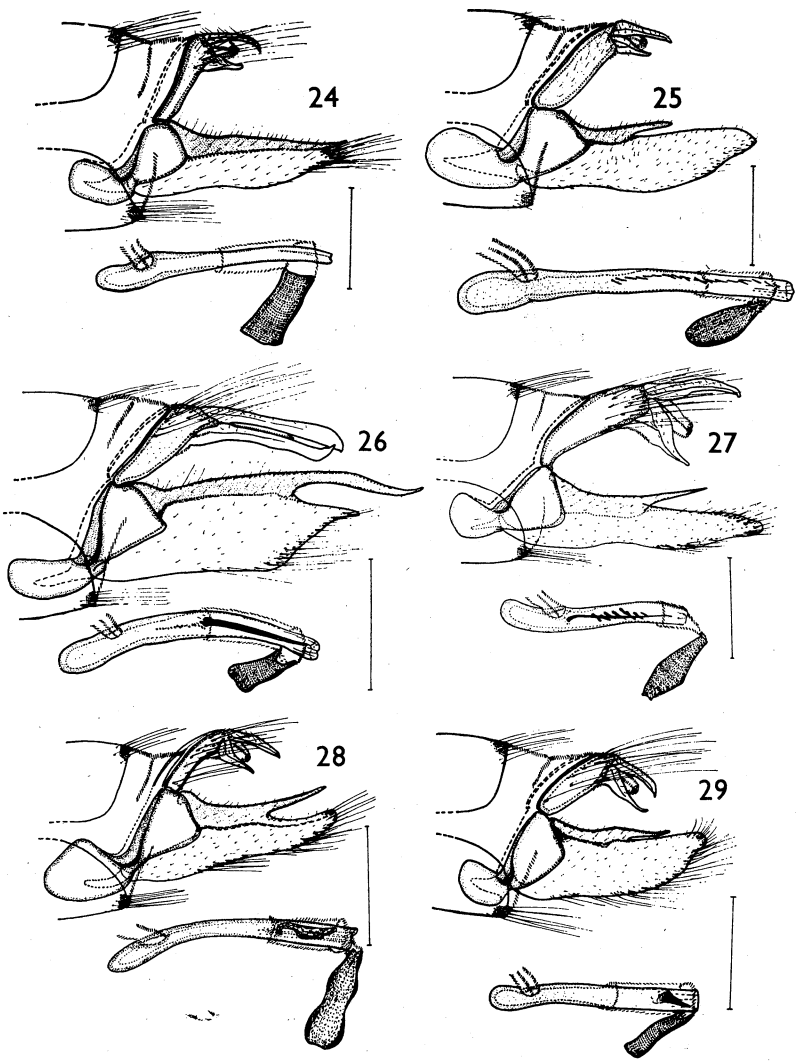
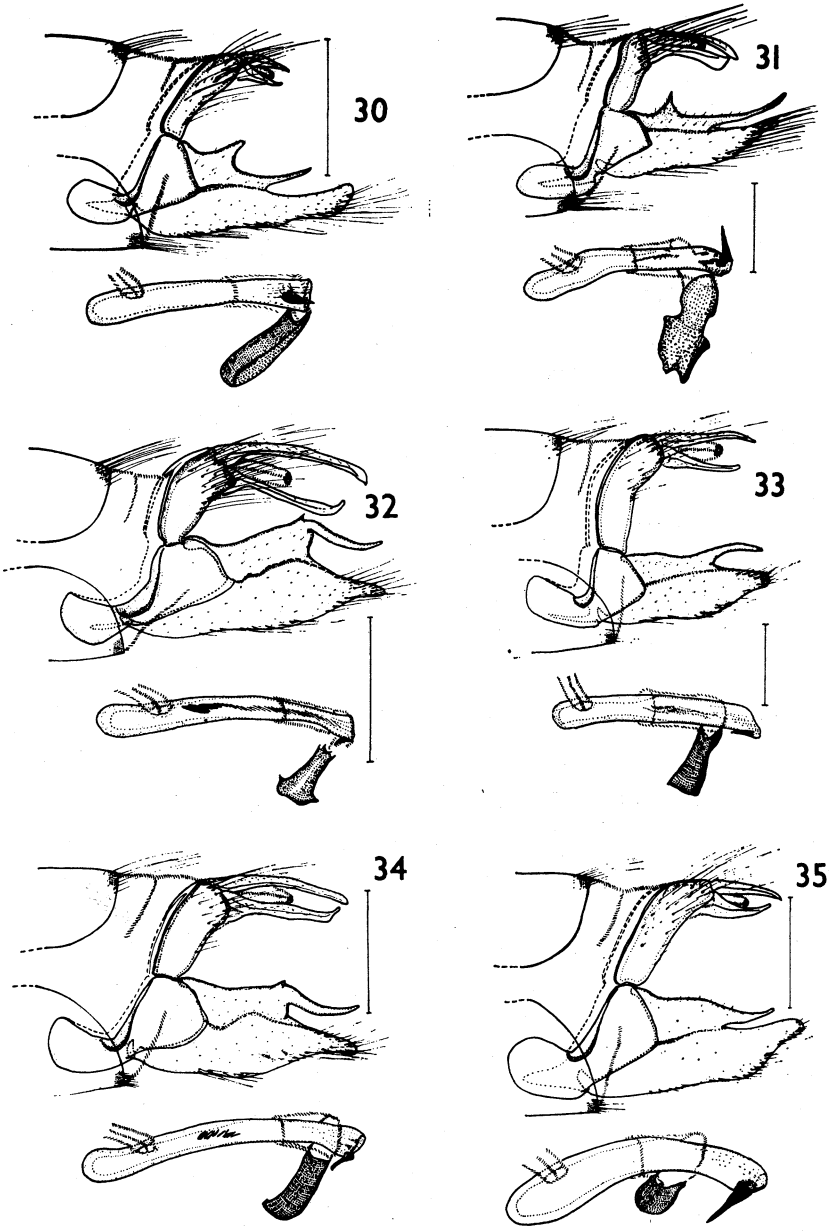


FIG. 19—Venation of *P. epiphaea*, Sc, r_1 of forewing coincident.
FIG. 20—Venation of *P. metallifera*, Sc, r_1 of forewing concurrent.
FIG. 21—Chaetotaxy of typical final instar crambine larva.
FIG. 22—Larva of *P. elaina* (4th instar).
FIG. 23—Male genitalia of Australian *Pareromene ochracealis* (Walk.) (left lateral aspect), showing primitive point of entry of ductus ejaculatorius into aedoeagus, and "toothbrush" apex of gnathos.



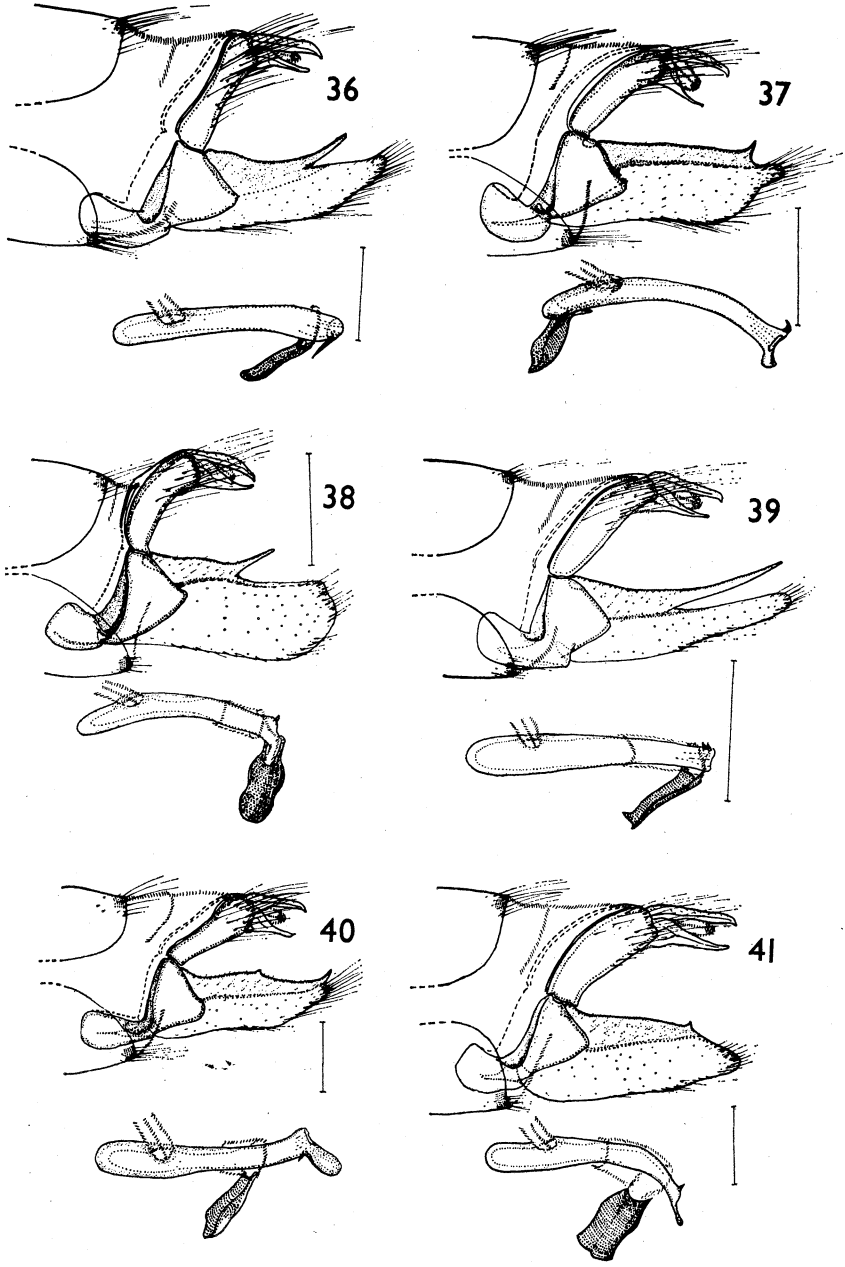
FIGS 24–29—Male genitalia of New Zealand species of *Pareromene*, left lateral aspect, all scale lines = 0·5 mm.

FIG. 24—*P. chrysochyta*, Wellington.
FIG. 25—*P. selenaea*, Longwoods, Southland.
FIG. 26—*P. gurri*, Coromandel holotype.
FIG. 27—*P. leucoxantha*, Mt Ruapehu.
FIG. 28—*P. auriscriptella*, Wellington.
FIG. 29—*P. bipunctella*, Pohangina Valley.



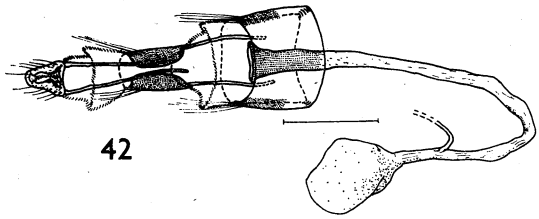
FIGS 30–35—Male genitalia of New Zealand species of *Pareromene*, left lateral aspect, all scale lines = 0·5 mm.

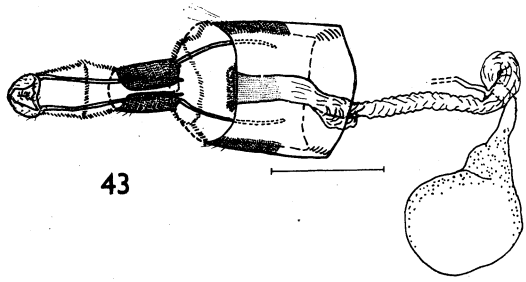
FIG. 30—*P. harmonica*, Wellington.
FIG. 31—*P. elaina*, Wellington.
FIG. 32—*P. helioctypa*, Milford Sound.
FIG. 33—*P. interrupta*, Homer.
FIG. 34—*P. lepidella*, Dunedin.
FIG. 35—*P. metallifera*, Wellington.

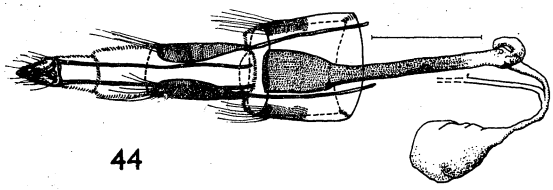


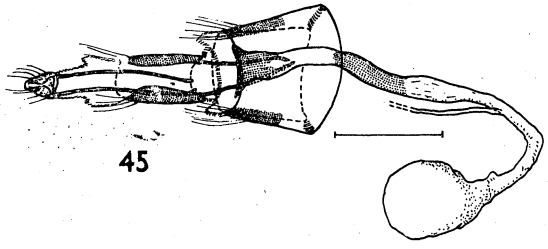
FIGS 36–41—Male genitalia of New Zealand species of *Pareromene*, left lateral aspect, all scale lines = 0·5 mm.

FIG. 36—*P. epiphaea*, Arthur's Pass, topotype.
FIG. 37—*P. holanthes*, Mt Ruapehu.
FIG. 38—*P. microdora*, Mt Arthur, topotype.
FIG. 39—*P. planetopa*, Arthur's Pass.
FIG. 40—*P. parorma*, Wainuiomata.
FIG. 41—*P. pyrsophanes*, Mt Ruapehu.









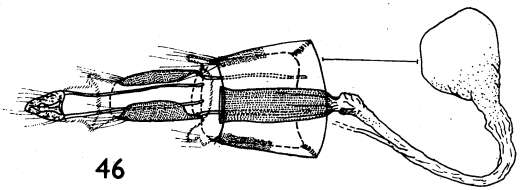
FIGS 42–45—Female genitalia of New Zealand species of *Pareromene*, ventral aspect, all scale lines = 0·5 mm.

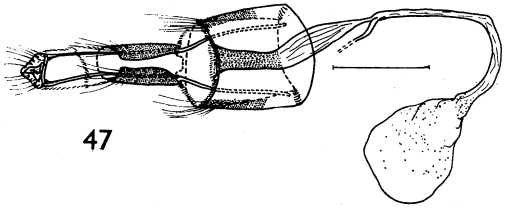
FIG. 42—*P. chrysochyta*, Wellington.

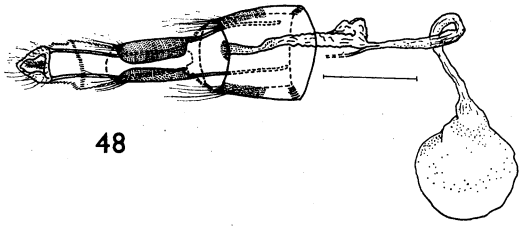
FIG. 43—*P. selenaea*, Longwoods, Southland.

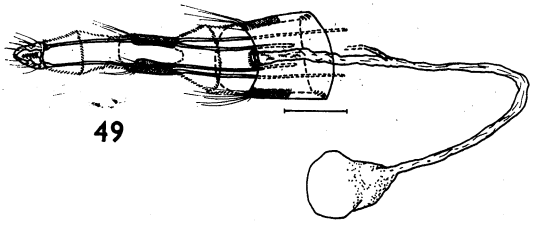
FIG. 44—*P. gurri*, Coromandel, paratype.

FIG. 45—*P. leucoxantha*, Mt Ruapehu.



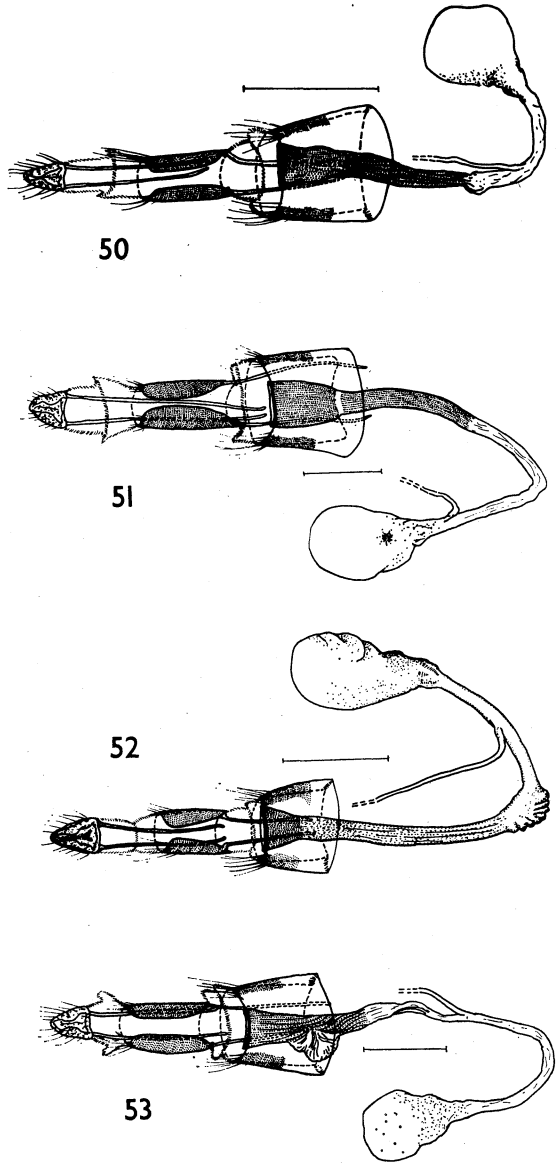




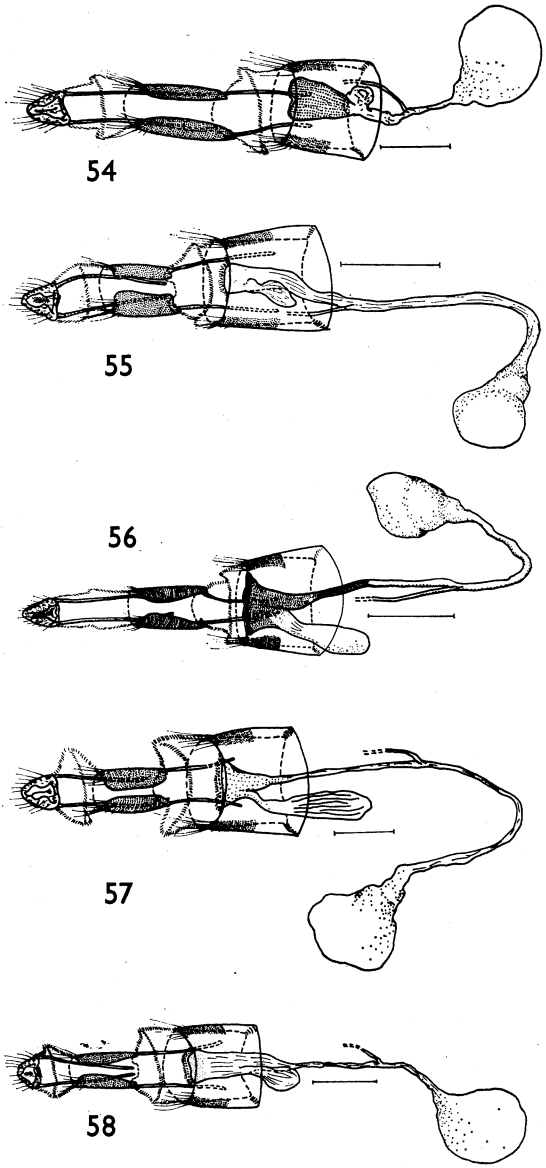


FIGS 46–49—Female genitalia of New Zealand species of *Pareromene*, ventral aspect, all scale lines = 0·5 mm.

FIG. 46—*P. auriscriptella*, Palmerston North.
FIG. 47—*P. bipunctella*, Pohangina Valley.
FIG. 48—*P. harmonica*, Wellington.
FIG. 49—*P. elaina*, Wellington, Topotype.



FIGS 50–53—Female genitalia of New Zealand species of *Pareromene*, ventral aspect, all scale lines = 0·5 mm.
FIG. 50—*P. helioctypa*, Milford Sound.
FIG. 51—*P. interrupta*, Homer.
FIG. 52—*P. lepidella*, Dunedin.
FIG. 53—*P. metallifera*, Wellington.



FIGS 54–58—Female genitalia of New Zealand species of *Pareromene*, ventral aspect, all scale lines = 0·5 mm.

FIG. 54—*P. microdora*, Wellington.
FIG. 55—*P. epiphaea*, Cleddau.
FIG. 56—*P. holanthes*, Mt Ruapehu.
FIG. 57—*P. parorma*, Wainuiomata.
FIG. 58—*P. pyrsophanes*, Mt Ruapehu.

Pareromene interrupta (Felder and Rogenhofer) comb.nov.

interruptus Felder & Rogenhofer, 1875. Reise der osterreichen Frigatte Novarae, Lepidoptera, 5: pl. cxxxv, fig. 15 (*Crambus*).
——, Meyrick, 1885, Trans. N.Z. Inst. 17, p. 130; ——, Hudson, 1928, Plate xix, fig. 13 (*Diptychophora*).

astrosema Meyrick, 1883, Trans. N.Z. Inst. 15, p. 13 (*Diptychophora*) syn. Meyrick, 1885, p. 130.

Holotype: ♂ in British Museum (Natural History) labelled "Novara cxxxv f.15 *Crambus interruptus*, N. Seeld. ♂".

Holotype: ♂ in British Museum (Natural History) labelled "Christchurch, R.W.F., 27.1.1873", "*Diptychophora astrosema* Meyr."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 16–22 mm (both sexes).

MALE GENITALIA (Fig. 33)

As for generic diagnostic description except for the following: Arms of vinculum about $\frac{1}{2}$ uncus; saccus about $\frac{7}{8}$ uncus; juxta a quadrate plate medially less than half as wide as long; costa of valva developed into a prong, dorsal margin of costa including prong, about $1\frac{1}{3}\times$ uncus; total length of valva slightly less than aedoeagus; uncus parallel-sided for most of its length, curved ventrad, pointed, slightly longer than gnathos; gnathos tapered, pointed, curved slightly dorsad; aedoeagus tubular, $2\times$ uncus; length to median breadth ratio 7–8:1, with 80–100 microscopic Cornuti from $\frac{1}{4}$ to $\frac{1}{2}$, ventral lip of aedoeagus with a straight thorn directed anterio-ventrad.

FEMALE GENITALIA (Fig. 51)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors, ductus bursae about $3\times$ length of anterior apophyses, lightly chitinised to $\frac{1}{2}$, with narrow very weak band at $\frac{1}{4}$, ductus seminalis joining at about $\frac{7}{8}$; single large star-shaped signum on corpus bursae.

TYPE LOCALITY: Christchurch.

DISTRIBUTION

Lowland to subalpine forest throughout the South Island of New Zealand; in the North Island so far recorded only from Mt Ruapehu and the Wellington area. Flight period extends from October to March; there are probably two complete generations each year.

MATERIAL EXAMINED: 52 ♂♂, 12 ♀♀

Akaroa: 1 ♂, Dec.1924, CM, A. Tonnoir. Aniseed Valley, Nelson: 1 ♂, 8.xii.25, ED, E. S. Gourlay. Arthur's Pass: 1 ♂, 9.ii.26, CM, S. Lindsay; 1 ♂, 2 ♀♀, 23.i.28, ED, A. Philpott. Cawthron Park, Nelson: 1 ♀, 6.xi.25, ED, E. S. Gourlay. Flora Range, Nelson: 1 ♂, 22.ii.24, ED, A. Philpott. Homer: 1 ♂, IFU, 1 ♀, IFT, 1.i.43, DM, 2 ♀♀, IFR, IFS, 23.xii.43–1.i.44, DM, G. Howes. Hoon Hay, Canterbury: 1 ♂, 10.i.25, CM, S. Lindsay. Lake Rotoiti, Nelson: 1 ♂, 31.xii.35, CM, S. Lindsay. Lake Wanaka: 1 ♂, no date, ED, A. Philpott. Leithfield: 2 ♂♂, IFO, IFP, 1 ♀, IFN, 3.xii.15–1.i.16, DM, C. E. Fenwick, 1 ♂, 17.i.16, ED, C. E. Clarke, 1 ♀, 20.i.16, AM, C. E. Clarke. Mt Arthur: 1 ♂, no date, ED, G. V. Hudson. Mt Cook: 12 ♂♂, ED, 5 ♂♂, CM, 21.xii.28–3.i.29, A. Philpott; 1 ♀, IFQ, 8.ii.29, DM, C. E. Fenwick. Mt Ruapehu: 1 ♀, 18.i.67, GC, D. E. Gaskin & D. J. Greenwood. Nelson: 1 ♀, 28.i.1870, CM, R. W. Fereday, 1 ♂, 17.iii.22, ED, A. Philpott. Okuti Valley: 1 ♀, 28.i.33, CM, S. Lindsay. Otira: 1 ♂, IFL, Dec.1908, DM, G. V. Hudson; 1 ♂, 20.ii.27, CM, S. Lindsay. Pelorus Bridge, Nelson: 5 ♂♂, 28.xi.28, ED, S. Lindsay. Price's Bush, Canterbury: 1 ♀, 18.xii.32, 1 ♂, 27.xii.42, CM, S. Lindsay. Sentinel Rock, Franz Josef: 2 ♂♂, 1 ♀, IGF, 3.xii.64, FRI, J. S. Dugdale. Sleepy Bay, Banks Peninsula: 1 ♂, 26.xi.38, CM, S. Lindsay. Table Hill, Southland: 1 ♂, 29.xii.13, ED, A. Philpott. Upper Maitai, Nelson: 3 ♂♂, 26.x.25, ED, E. S. Gourlay. Waiho River, Westland: 1 ♂, 27.xii.39, CM, S. Lindsay. Wainuiomata: 1 ♂, IFM, 5.xii.1898, DM, G. V. Hudson. Waitati: 1 ♂, 25.xii.15, ED, A. Philpott; 1 ♂, 30.i.18, CM, S. Lindsay; 1 ♀, 18.xii.19, AM, C. E. Clarke.

REMARKS

Not as variable as many other New Zealand members of the genus, and always recognisable by the Y-shaped reniform. Related to *Pareromene lepidella* and *P. helioctypa* and *possibly* shares apomorphic characters with the Asiatic species *P. vermeeri* and *P. copernici.*

The genitalia labelled *Diptychophora interrupta* by Philpott (1929, fig. 13) are those of *Pareromene selenaea*, while those labelled *D. selenaea* (Fig. 14) are those of *P. interrupta.*

Pareromene lepidella (Walker) comb.nov.

lepidella Walker, 1866, List of the species of Lepidopterous insects in the collection of the British Museum, 35, p. 1761 (*Eromene*).
——, Meyrick 1883, Trans. N.Z. Inst. 15, p. 14; ——, Hudson, 1928, Plate xix, figs 14, 15 (*Diptychophora*).

gracilis Felder & Rogenhofer, 1875, Reise der osterreichen Frigatte Novarae, Lepidoptera, 5, pl. cxxxvii, fig. 26 (*Crambus*). syn. Meyrick, 1883, p. 14.

Lectotype ♂ (selected by Dr S. Bleszynski and published for the first time here), in British Museum (Natural History), labelled "Auckland, N.Zeal.60.73." (without abdomen).
Holotype: ♂ in British Museum (Natural History) labelled "Novara CXXXVII, f.26. *Crambus gracilis* ♂. N. Seeld. F. & R."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 14–18 mm (both sexes).

MALE GENITALIA (Fig. 34)

As for generic diagnostic description except for the following: Arms of vinculum about $\frac{1}{2}$ uncus; saccus slightly less than $\frac{1}{2}$ uncus; juxta an oblongate plate about $\frac{1}{3}$ as wide as long; costa of valva drawn into strong prong with short dorsal spur at its base; dorsal margin of costa about $1\frac{1}{4}\times$ uncus; total length of valva about $\frac{7}{8}$ aedoeagus; uncus and gnathos equal in length, parallel-sided for most of their length, uncus curved slightly ventrad, gnathos straight until apex, then curved sharply dorsad, pointed; aedoeagus tubular, tapering to apex, curved ventrad, $1\frac{7}{8}\times$ uncus, length to median breadth ratio about 11–12:1, with group of 7–10 small elongate cornuti between apex and $\frac{7}{8}$, ventral lip of aedoeagus with straight thorn directed anterio-ventrad.

FEMALE GENITALIA (Fig. 52)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae about $5\times$ length of anterior apophyses, strong to $\frac{2}{3}$, with swollen and horizontally pleated pouch at $\frac{2}{3}$; ductus seminalis joining at $\frac{7}{8}$; ostium bursae a flattened funnel.

TYPE LOCALITY: Auckland.

DISTRIBUTION

Lowland to subalpine indigenous forest in the South Island of New Zealand, but in the North Island recorded only from Auckland and Castlepoint on the Wairarapa coast. Flight period November to February.

MATERIAL EXAMINED: 50 ♂♂, 14 ♀♀

Anderson's Bay, Dunedin: 5 ♂♂, ALP, 1 ♀, 30.xi.–16.xii.13, DM, C. E. Fenwick. Capleston: 1 ♀, 22.i.57, ED, E. S. Gourlay. Castlepoint, Wairarapa: 3 ♂♂, 25.xii.63, GC, K. Maynard & D. E. Gaskin. Christchurch: 5 ♂♂, no date, CM, E. W. Fereday. Claverley, Marlborough: 1 ♀, 31.xii.32,

CM, S. Lindsay. Dunedin: 1 ♂, 3.xii.13, 1 ♂, ALK, 28.xi.14, 1 ♂, 20.xii.16, DM, C. E. Fenwick, 1 ♀, 21.i.20, AM, C. E. Clarke. Evansdale, Otago: 1 ♀, 1.i.16, AM, C. E. Clarke. Glen Tui: 1 ♂, 28.xii.21, CM, S. Lindsay. Hermitage, Mt Cook: 1 ♂, Feb.1888, CM, R. W. Fereday. Hokitika: 1 ♂, 1.xii.29, CM, S. Lindsay. Homer: 1 ♂, 23.xii.41, DM, G. Howes. Kaikoura: 1 ♂, no date, ED, A. Philpott. Kauaeranga State Forest: 1 ♂, 9.xi.63, FRI, P. Crowhurst. Kinloch: 1 ♂, 3.i.1881, CM, R. W. Fereday. Lake Rotoroa: 1 ♂, 7.i.28, ED, A. Philpott. Lloyd Cottage, Christchurch: 1 ♀, 9.i.1865, 1 ♂, 10.xii. 1866, CM, R. W. Fereday. Maruia: 1 ♂, 3.i.40, CM, S. Lindsay. Mt Cook: 1 ♀, 31.xii.25, CM, S. Lindsay. Mt Grey, Canterbury: 3 ♂♂, Jan. 1921, CM, S. Lindsay; 1 ♀, 6.xii.24, ED, W. Heighway; 2 ♂♂, 28.xi.24, 2 ♂♂, 1 ♀, 15.xii.29, CM, S. Lindsay. New Creek, Southland: 1 ♂, 24.i.29, ED, A. Philpott. Paradise Bay, Banks Peninsula: 1 ♀, Dec. 1933, CM, S. Lindsay. Puhi-puhi, Kaikoura: 1 ♀, 25.xii.29, CM, S. Lindsay. Riwaka: 1 ♀, 15.xi.28, ED, A. Philpott. Stuart's Gully, Canterbury: 1 ♂, Nov.1919, 1 ♂, Dec.1920, CM, S. Lindsay. Sunnyside, Southland: 1 ♂, 20.xii.11, ED, A. Philpott. Tisbury: 1 ♀, no date, ED, A. Philpott, 1 ♂, 22.xii.12, 1 ♂, 16.i.22, ED, A. Philpott. Traill's, Southland: 2 ♂♂, 29.xii.13, ED, C. E. Fenwick. Upper Maitai, Nelson: 5 ♂♂, 26.xi.23, ED, E. S. Gourlay. Upper Mawheraiti, Maimai: 1 ♂, 30.xi.64, FRI, J. S. Dugdale. Waihi Gorge: 1 ♂, 3.i.44, CM, S. Lindsay. West Plains, Southland: 2 ♂♂, ED, 1 ♀, HGL, DM, no date, A. Philpott and G. Howes.

REMARKS

Variation in the forewing pattern of *P. lepidella* is generally limited to the greater or lesser amounts of dark scaling between the first and subterminal lines. The reniform stigma is often indistinct in very pale specimen, but is never completely obscured. The species can usually be easily separated on forewing pattern alone from similar species. It has a silver reniform, compared with two black dots in *P. holanthes*, and a single serrate first line, compared with a double waved first line in *P. auriscriptella.*

Pareromene leucoxantha (Meyrick) comb.nov.

leucoxantha Meyrick, 1822, New Zealand Journal of Science [Dunedin], ——, Meyrick, 1883, Trans. N.Z. Inst. 15, p. 15; ——, Hudson, 1928, Plate xix, figs 16, 17 (*Diptychophora*).

Holotype: ♂ in British Museum (Natural History) labelled "L. Wakatipu New Zealand 2/1/81, RWF".

EXTERNAL CHARACTERS

Eye without nude periorbital strip; female frenulum triple; wing span 12–19 mm (both sexes).

MALE GENITALIA (Fig. 27)

As for generic diagnostic description except for following details: Arms of vinculum about $\frac{7}{8}$ uncus; saccus about $\frac{2}{3}$ uncus; juxta a diamond-shaped plate less than half as wide as long, tapering most sharply posteriorly; costa of valva with prong, but placed considerably anterior to tip of valvula; total length of valva slightly more than that of aedoeagus; uncus about $\frac{1}{4}$ longer than gnathos, tapering, pointed, curved ventrad; gnathos tapering, apically curved slightly dorsad; aedoeagus tubular, slightly tapered apically about 2× uncus, length to median breadth ratio about 9:1, with long cornutus rooted at about $\frac{7}{8}$ and reaching near to apex, with 8 small elongate cornuti also present.

FEMALE GENITALIA (Fig. 45)

As for generic description except for following details: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae about 4× length of anterior apophyses, weakly chitinised from ostium to $\frac{1}{8}$ and again from $\frac{1}{4}$ to $\frac{1}{2}$, with the ductus seminalis joining at $\frac{7}{8}$; ostium bursae a flattened funnel; no trace of pouch-like swelling in ductus bursae.

TYPE LOCALITY: L. Wakatipu.

DISTRIBUTION

A common species in lowland to subalpine forest throughout the South Island of New Zealand. In the North Island it has been taken in the Wellington district, on Mt Ruapehu, on Mt Egmont (T. H. Davies, *in litt.*), and in the Pouakai Range just north of Egmont. The flight period extends from November to early February.

MATERIAL EXAMINED: 60 ♂♂, 16 ♀♀

Arthur's Pass: 13 ♂♂, 2 ♀♀, 2–9.ii.26, CM, S. Lindsay; 1 ♂, 23.i.28, ED, A. Philpott; 1 ♂, 28.xii.31, CM, 2 ♀♀, 30–31.xii.40, CM, S. Lindsay. Cass, Canterbury: 1 ♂, Nov.1924, CM, A. Tonnoir. Cawthron Park, Nelson: 1 ♂, 6.xi.26, ED, A. Philpott. Dun Mt, Nelson: 1 ♂, 1.i.21, 3 ♂♂, 2 ♀♀, 8.i.22, 2 ♂♂, 1 ♀, 8–29.xii.25, 1 ♂, 24.xii.27, ED, A. Philpott. Forest Hill, Southland: 1 ♂, 29.xi.15, ED, A. Philpott. Greenhills, Southland: 1 ♂, 16.xii.13, CM, A. Philpott. Hump Ridge, Southland: 1 ♂, 1 ♀, 24.xii.15, DM, C. E. Fenwick. Karori, Wellington: 1 ♂, no date, ED, G. V. Hudson.

Lake Rotoiti, Nelson: 2 ♂, 25.xii.33–2.i.34, CM, S. Lindsay. Lake Rotoroa. 1 ♂, 1 ♀, 7.i.28, ED, A. Philpott. Longwoods, Southland: 3 ♂, 5.xii.13, ED, 1 ♂, 29.xii.15, ED, A. Philpott. Manapouri: 1 ♂, 30.xii.22, CM, S. Lindsay. Maruia Springs: 1 ♂, 3.i.40, CM, S. Lindsay. Milford Track: 4 ♂♂, ALL, ALM, 3 ♀♀, 26–30.xii.20, DM, C. E. Fenwick. Mt Greenland, Westland: 1 ♂, 12.i.31, ED, E. S. Gourlay. Mt Grey, Canterbury: 2♂♂, 28–29.xii.35, CM, S. Lindsay. Mt Ruapehu: 1 ♂, 1 ♀, 18.i.67, GC, D. J. Greenwood and D. E. Gaskin. Nelson: 3 ♂♂, 6–9.xii.20, ED, A. Philpott. Otira: 1 ♂, Dec.1914, DM, G. V. Hudson. Porirua, Wellington: 1 ♂, 25.xi.11, CM, W. Heighway. Pouakai Range, Taranaki: 2 ♂♂, 6.xi.66, GC, D. E. Gaskin. Table Hill, Southland: 1 ♂, 29.xii.03, ED, G. V. Hudson. Waitati: 1 ♂, 12.xii.16, DM, C. E. Fenwick, 1 ♀, 18.xii.16, AM, 1 ♀, 16.xii.18, AM, C. E. Clarke. Wellington: 1 ♂, 1 ♀, HGP, no date, DM, G. V. Hudson. West Plains, Southland: 4 ♂♂, no date, ED, A. Philpott. Whiterock, Canterbury: 1 ♂, 26.xi.22, CM, S. Lindsay.

REMARKS

The forewing pattern is very variable, though I have not detected any regionalism. The species can almost always be distinguished from related species by the heart or kidney-shaped reniform stigma and the silvery veins in the subterminal region of the forewing. A rather remarkable form has the forewings bright sulphur yellow, with the reniform stigma still typically heart-shaped, but purplish black. Normally yellowish brown and orange are the most common forewing ground colours, although greyish is not unknown and a few specimens have a strong reddish tinge. The reniform varies in colour from white to purplish brown. The species might prove useful for a long term genetics experiment. The variation may be random, genetically controlled, or relate to discrete populations adapted to different foodplants or habitats.

Pareromene metallifera (Butler) comb.nov.

metallifera Butler, 1877, Proc. zool. Soc. Lond. 1877, p. 401, pl. xliii, fig. 11 (*Eromene*).
——, Meyrick, 1883, Trans. N.Z. Inst., 15, p. 15; ——, Hudson, 1928, Plate xix, figs 32, 33 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here) in British Museum (Natural History), labelled "N.Zeal.77.34, *Eromene metallifera* Butler type."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 18–24 mm (both sexes), Venation shown by Bleszynski (1966).

MALE GENITALIA (Fig. 35)

As for generic diagnostic description except for the following: Arms of vinculum equal to uncus; saccus slightly longer than uncus; juxta a concave shield-shaped plate; costa of valva drawn into a prong, dorsal margin of costa including prong 2× uncus; total length of valva a little less than aedoeagus; uncus slightly longer than gnathos, tapered, pointed, curved ventrad; gnathos tapered, pointed, curved dorsad; aedoeagus tubular, curved strongly ventrad, about 3½× uncus, length to median breadth ratio about 7–8:1, without cornuti, ventral lip of apex with large straight spur directed anterio-ventrad.

FEMALE GENITALIA (Fig. 53)

As for generic description except for the following: Anterior apophyses almost equal to posteriors; ductus bursae strong to ⅓, with pouched ostiolar swelling at about ¼; ductus seminalis joining at about ½; ostium a flattened funnel.

LARVA

Figured in colour by Hudson (1928, Plate III, fig. 1). Described by Hudson as stout, shiny and glassy-looking, dull brownish green with head and prothorax brownish black, with a double series of brownish tubercles with a black bristle on each segment. Length in illustration given as 15 mm.

TYPE LOCALITY: "New Zealand".

DISTRIBUTION

Lowland and subalpine indigenous forest in the northern part of the South Island, with the most southerly record about the latitude of Christchurch (43½° 30′S). In the North Island recorded from Wellington northwards to Mt Ruapehu and National Park. Also from Mt Egmont, and Little Bush and White Pine Bush in Hawkes Bay (T. H. Davies, *in litt.*). Associated with forested valleys (Hudson, 1928); common on the banks of the Mangawhero Stream on Mt Ruapehu where it can be netted at dusk. Flight period October to February with probably two generations per year.

HOST PLANT

Moss sp. (Hudson, 1928). Larva described as tunnelling actively through wet moss on logs and stones in forest.

MATERIAL EXAMINED: 42 ♂♂, 25 ♀♀

Aniseed Valley, Nelson: 1 ♂, 8.i.25, ED, A. Philpott. Cawthron Park, Nelson: 1 ♂, 6.i.25, ED, A. Philpott. Christchurch: 7 ♂♂, no date, CM,

R. W. Fereday. Campbell's Gully, Wellington: 2 ♂♂, JFF, JFH, 14.xii.13, DM, 1 ♀, AM, G. V. Hudson. Claverley: 1 ♂, 26.xi.32, CM, S. Lindsay. Crow's Nest Hill, Wellington: 1 ♂, JFI, 9.xi.1892, DM, G. V. Hudson. Day's Bay, Wellington: 1 ♀, 8.xi.25, ED, A. Philpott. Dun Mt Nelson: 1 ♂, 8.i.22, 1 ♂, 31.ii.22, 1 ♂, 3 ♀♀, 8–29.xii.25, 1 ♂, 24.ii.27, ED, A. Philpott. Glen Tui: 2 ♂♂, 1 ♀, 29–30.xii.21, CM, S. Lindsay. Gollan's Valley, Wellington: 1 ♀, JFL, 3.xii.27, DM, G. V. Hudson. Kaka Head, Wellington: 1 ♂, JFN, 16.xi.1890, DM, G. V. Hudson. Karori, Wellington: 1 ♂, 1 ♀, Dec.1913, ED, G. V. Hudson. Lake Rotoroa: 5 ♂♂, 6 ♀♀, 7.i.28, ED, A. Philpott. Mt Grey, Canterbury: 3 ♂♂, 1 ♀, 28.xii.25, CM, S. Lindsay, 1 ♂, 2.1.29, CM, W. Heighway. Mt Ruapehu: 1 ♂, 18.i.67, GC, D. E. Gaskin & D. J. Greenwood. Nelson: 1 ♂, 29.xii.20, 1 ♂, 25.xi.27, ED, A. Philpott. Pelorus Bridge, Nelson: 1 ♀, 28.xi.28, ED, A. Philpott. Upper Maitai, Nelson: 2 ♂♂, 26.xi.23, 1 ♂, 2 ♀♀, 27.xi.25, ED, E. S. Gourlay. Wadestown, Wellington: 2 ♂♂, JFK, JFO, 4.xi.1894, 3 ♀♀, JFG, JFL, JFM, 6.xii.1914, DM, G. V. Hudson. Waioeka Gorge: 1 ♀, HGQ, 9.x.64, FRI, J. S. Dugdale. Wellington: 2 ♂♂, JFD, JFE, no date, DM, A. Hamilton; 2 ♂♂, no date, ED, G. V. Hudson; 2 ♀♀, 5.xii.27, ED, A. Philpott. Wilton's Bush, Wellington: 1 ♀, Nov.1924, CM, S. Lindsay.

REMARKS

P. metallifera is related to *P. microdora* of New Zealand and possibly to *P. bilinealis* of Afghanistan. *P. planetopa* of New Zealand is probably also in the same group, but as the female has not yet been collected no opinion can be offered on its systematic position within *Pareromene*.

Most specimens of *P. metallifera* are easily recognisable by the silver kidney-shaped reniform and the bright orange ground colour of the forewings, often clouded with blackish. A larger species than most New Zealand members of the genus.

Pareromene microdora (Meyrick) comb.nov.

microdora Meyrick, 1905, Trans. ent. Soc. Lond., 1905, p. 227 (*Diptychophora*).
——, Hudson, 1928, plate xix, fig. 12 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here), in British Museum (Natural History), labelled "Mt. Arthur, New Zealand, 3,000 ft. 19/1/86".

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 10–13 mm (both sexes).

MALE GENITALIA (Fig. 38)

As for the generic diagnostic description except for the following: Arms of vinculum about equal to uncus; saccus a little longer than uncus; juxta an oblate plate, dorsally concave, less than half as wide as long; costa of valva with a prong, dorsal margin of costa including prong about 2× uncus; total length of valva equal to aedoeagus; uncus slightly longer than gnathos, tapered, pointed, curved ventrad; gnathos tapered, pointed, almost an isoceles triangle in ventral aspect; aedoeagus tubular, $2\frac{7}{8}$–3× uncus, length to median breadth ratio about 9:1, cornuti absent, but ventral lip of apex with straight thorn directed anterio-ventrad.

FEMALE GENITALIA (Fig. 54)

As for generic diagnostic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae barely 2× length of anterior apophyses, strong to and with swollen pouch at $\frac{1}{3}$; ductus seminalis joining at $\frac{2}{3}$; ostium bursae a flattened funnel, with the anterior margin (beneath 7th st) medially cleft.

LARVA

Described by Hudson (1928) as follows: "Very slender, dull brownish-green; head and second segment horny, shining brownish black; there is a double series of obscure tubercles on each segment, each tubercle emitting a black bristle."

TYPE LOCALITY: Mt Arthur, 910 m.

DISTRIBUTION

In lowland to subalpine indigenous forest in the South Island of New Zealand from Nelson Province to south central Canterbury; from the Wellington district only of the North Island. Flight period November to February.

HOST PLANT

Given only as "dry moss" by Hudson (1928), with species not named.

MATERIAL EXAMINED: 44 ♂♂, 5 ♀♀

Arthur's Pass: 1 ♂, IFK, 19.i.20, DM, C. E. Fenwick; 1 ♂, CM, 1 ♀, AM, 14.i.23, C. E. Clarke; 10 ♂♂, 2 ♀♀, 19–24.i.23, AM, C. E. Clarke; 1 ♂, 8.ii.26, CM, S. Lindsay; 1 ♂, 23.i.28, ED, A. Philpott. Campbell's Bush, Wellington: 1 ♂, IFI, 28.xii.07, 2 ♂♂, IFE, IFH, 18.xii.10, 1 ♂, IFF, 17.i.15, DM, G. V. Hudson. Dun Mt, Nelson: 1 ♂, 31.xii.23, ED,

A. Philpott; 2 ♂♂, 24.xii.27, CM, ED, A. Philpott. Gouland Downs, Nelson: 1 ♂, 7.ii.22, ED, A. Philpott. Karori, Wellington: 2 ♂♂, IFG, IFJ, 17.xi.06, DM, G. V. Hudson. Lake Rotoroa: 9 ♂♂, 7.i.28, ED, A. Philpott. Maruia Springs: 2 ♂♂, 3-5.i.40, CM, S. Lindsay. Mt Arthur, 4,000 ft, Nelson: 1 ♂, 23.xii.21, 1 ♂, 27.i.24, ED, A. Philpott. Otira: 4 ♂♂, 1 ♀, 30.i.22, AM, C. E. Clarke. Waiho Gorge, Canterbury: 3 ♂♂, 1 ♀, 16.i.25, AM, C. E. Clarke.

REMARKS

This diminutive species shares an apparent apomorphic character in the male genitalia with *P. metallifera* and the Afghanistan species *P. bilinealis*.

It can be separated from the similar *Pareromene planetopa* on externals in that it lacks the circular reniform of that species.

Pareromene parorma (Meyrick) comb.nov.

parorma, Meyrick, 1925, Trans. N.Z. Inst., 55, p. 202 (*Diptychophora*).
——, Hudson, 1928, p. 176 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here) in British Museum (Natural History), labelled "Mt. Ruapehu New Zealand GVH.2800'.1.22."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 14–16 mm (both sexes).

MALE GENITALIA (Fig. 40)

As for generic diagnostic description except for the following: Arms of vinculum about $\frac{7}{8}$ uncus; saccus slightly longer than uncus; juxta an oblate plate, about half as wide as long, ventrally convex and dorsally concave; costa of valva with short triangular projection at about $\frac{1}{2}$, and also with short spur or prong at posterior extremity; dorsal margin of costa $2\frac{1}{2}\times$ uncus; total length of valva a little less than aedoeagus; uncus slightly longer than gnathos, tapered, pointed, curved slightly ventrad; gnathos tapered, pointed, curved slightly dorsad; aedoeagus tubular, curved slightly dextrad, $3–3\frac{1}{4}\times$ uncus, length to median breadth ratio 9:1, ventral lip of apex with small thorn directed anterio-ventrad, apical sac present posterior to this thorn, cornuti absent.

FEMALE GENITALIA (Fig. 57)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors, ductus bursae weak, about $6\times$ length of anterior apophyses, ductus seminalis joining at $\frac{1}{2}$; stalked ostiolar pouch present on ductus bursae, ostium bursae a weak flattened funnel.

TYPE LOCALITY: Mr Ruapehu.

DISTRIBUTION

Wellington area and central plateau area of the North Island of New Zealand, associated with lowland to subalpine indigenous forest. Hudson (1928) also gave Whangarei as a locality, but I have not been able to locate this specimen, and hence ignore the record because of the strong possibility of confusion with *P. elaina*. Flight period December, January.

MATERIAL EXAMINED: 13 ♂♂, 11 ♀♀

Ohakune: 2 ♂♂, 5 ♀♀, 18–24.xii.16, AM, C. E. Clarke. Waimarino: 1 ♂, 2 ♀♀, 24.i.19, AM, C. E. Clarke, 1 ♂, Jan.1922, DM, G. V. Hudson. Wainuiomata: 1 ♂, 2 ♀♀, 31.xii.05, 1 ♂, HGX, 28–31.xii.25, 4 ♂♂, ALC, 2 ♀♀, HGV, 25.xii.26, 3 ♂♂, 10.xii.31, CM, G. V. Hudson.

REMARKS

Much confused with *P. elaina* in New Zealand collections, which species lacks the black forewing terminal dots characteristic of *P. parorma*. For further discussion of the systematic positions of the two species, see the remarks section under *P. elaina*.

Pareromene planetopa (Meyrick) comb.nov.

planetopa Meyrick, 1923, Trans. N.Z. Inst., 54, p. 162 (*Diptychophora*).
——, Hudson, 1928, plate xlix, fig. 19 (*Diptychophora*).

Holotype: ♂ in British Museum (Natural History) labelled "L. Wakatipu New Zealand GVH: 10.2.11."

EXTERNAL CHARACTERS

Eye lacking nude periorbital strip, wing span 9–10 mm (male). Female unknown.

MALE GENITALIA (Fig. 39)

As for generic diagnostic description except for the following: Arms of vinculum about 7 uncus; saccus slightly longer than uncus; juxta an oblate plate, less than half as wide as long; costa of valva with very long prong developed, dorsal margin of costa including prong a little under 3× uncus; total length of valva about equal to aedoeagus; uncus slightly longer than gnathos, tapered, pointed, nearly straight; gnathos tapered, pointed, curved slightly dorsad; aedoeagus tubular, tapering to apex, about 3× uncus, length to median breadth ratio 7–8:1, cornuti absent, but apex having pair of short thorns directed anterio-dorsad.

TYPE LOCALITY: L. Wakatipu.

DISTRIBUTION

Confirmed only from Arthur's Pass and Lake Wakatipu, although Hudson (1928) gave Lakes Te Anau and Manapouri as well. I have not been able to locate these specimens. Flight period January, February.

MATERIAL EXAMINED: 3 ♂♂

Arthur's Pass: 3 ♂♂, BLP, 14.i.23, AM, C. E. Clarke.

REMARKS

The systematic position cannot be confirmed until a female is collected.

Pareromene pyrsophanes (Meyrick) comb.nov.

pyrsophanes Meyrick, 1882, New Zealand Journal of Science, 1, p. 186 (*Diptychophora*).
——, Meyrick, 1883, Trans. N.Z. Inst., 15, p. 11; ——, Hudson, 1928, plate xix, fig. 11 (*Diptychophora*).

Lectotype: ♂ (selected by Dr S. Bleszynski and published for the first time here), in British Museum (Natural History), labelled "Wellington, New Zealand, 9/1/80."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 13–18 mm (both sexes).

MALE GENITALIA (Fig. 41)

As for generic diagnostic description except for the following: Arms of vinculum about $\frac{7}{8}$ uncus; saccus $\frac{7}{8}$ uncus; juxta an oblongate plate about half as wide as long, ventrally convex with slight median cleft, dorsally concave; costa of valva with very short spur close to posterior costal extremity, dorsal margin of costa about $1\frac{1}{2}\times$ uncus; total length of valva about equal to aedoeagus; uncus slightly longer than gnathos, tapered, pointed, nearly straight; gnathos tapered, pointed, curved dorsad; aedoeagus tubular, curved ventrad, with elongate apical sac ventro-caudad, short spur dorso-caudad, about $2\frac{1}{2}\times$ uncus, length to median ratio about 10:1, cornuti absent.

FEMALE GENITALIA (Fig. 58)

As for generic description except for the following: Anterior apophyses slightly shorter than posteriors, ductus bursae weak except for slight chitinisation near the mouth of the ostium, about $3\times$ length of anterior apophyses, ductus seminalis joining at $\frac{2}{3}$, stalked ostiolar pouch on ductus bursae at $\frac{7}{8}$.

TYPE LOCALITY: Wellington.

DISTRIBUTION

In lowland to subalpine indigenous forest throughout new Zealand. In addition to the records listed below, Hudson (1928) noted it from Stewart Island, and there are reliable records for Little Bush and White Pine Bush in Hawke's Bay (T. H. Davies, *in litt.*). Flight period late October to February.

MATERIAL EXAMINED: 57 ♂♂, 22 ♀♀

Arthur's Pass: 1 ♀, 8.xi.57, ED, E. S. Gourlay. Blackmillar, Marlborough: 2 ♂♂, 27–8.xii.27, CM, S. Lindsay. Cass, Canterbury: 1 ♂, Nov.1924, CM, S. Lindsay. Castlepoint, Wairarapa: 1 ♂, Dec.1963, GC, D. E. Gaskin. Christchurch: 4 ♂♂, no date, CM, R. W. Fereday. Claverley, Marlborough: 1 ♂, 1 ♀, 25.xii.32–1.i.33, CM, S. Lindsay. Drayton Station, Canterbury: 1 ♂, 1.i.1879, CM, R. W. Fereday. Dun Mt 2,000 ft, Nelson: 2 ♂♂, 1 ♀, 20–24.i.21; 1 ♂, 8.i.22; 1 ♀, 7.i.26; ED, A. Philpott. Evansdale, Otago: 1 ♀, 1.i.16, AM, C. E. Clarke. Flagstaff, Dunedin: 1 ♂, 15.i.15, ED, C. E. Fenwick. Glen Tui, Nelson: 5 ♂♂, 1 ♀, 28–29.xii.21, CM, S. Lindsay. Golden Downs, Nelson: 1 ♂, 8.i.26, ED, A. Philpott. Hokitika: 1 ♂, 1.xii.29, CM, S. Lindsay. Homer: 1 ♀, 24.xii.15, DM, G. Howes. The Hump Range: 1 ♀, 24.xii.15, DM, C. E. Fenwick. Kinloch: 1 ♀, 2.i.1881, CM, R. W. Fereday. Lake Moana: 1 ♀, 16.xii.25, CM, A. Tonnoir. Lake Rotoiti, Nelson: 1 ♂, 27.xii.33, CM, S. Lindsay.

Lake Rotorua: 2 ♂♂, 7.i.28, ED, A. Philpott. Longwoods, Southland: 3 ♂♂, 1 ♀, 26–9.xii.15, DM, C. E. Fenwick. Manapouri: 1 ♂, 27.xii.22, CM, S. Lindsay. Lake Marion, Hollyford V., Otago: 1 ♂, 20.xii.42, DM, G. Howes. Maruia: 1 ♂, 24.xii.38, CM, S. Lindsay. Milford Track: 1 ♀, 27.xii.20, DM, C. E. Fenwick. Mt Cook: 1 ♂, 31.xii.28, CM, S. Lindsay; 3 ♂♂, 3–8.ii.29, ED, 1 ♂, DM, A. Philpott. Mt Grey, Canterbury: 1 ♂, 8.xi.29, 3 ♂♂, 15.xii.29, CM, S. Lindsay. Mt Ruapehu, 3,300 ft: 4 ♂♂, 2 ♀♀, 18.i.67, GC, D. J. Greenwood and D. E. Gaskin. Nelson: 1 ♂, 9.xii.20, 1 ♂, 1 ♀, 15.xii.21, ED, A. Philpott. Peter's Pool, Franz Josef: 1 ♂, 5.xii.64, FRI, J. S. Dugdale. Pouakai Range, Taranaki: 1 ♂, 6.xi.6, GC, D. E. Gaskin. Puhi-puhi River, Marlborough: 1 ♂, 28.xii.29, CM, S. Lindsay. Queenstown: 1 ♂, 7.i.14, DM, G. Howes. Rowallan: 1 ♂, 1 ♀, 26.xii.15, ED, A. Philpott. Tararua Range, 2,000 ft 1 ♂, Nov.1967, GC, D. E. Gaskin. Tarawera: 1 ♂, 14.xi.29, ED, A. Philpott. Traill's, Southland: 1 ♀, 29.xii.13, ED, A. Philpott. Upper Maitai, Nelson: 1 ♂, 26.xi.23, ED, E. S. Gourlay; 1 ♂, 1 ♀, 27.xi.25, ED, A. Philpott. Upper Mawheraiti, Maimai: 1 ♂, 30.xi.64, FRI, J. S. Dugdale. Waitati: 1 ♀, 27.i.18, AM, C. E. Clarke. West Plains, Southland: 1 ♂, 3 ♀♀, no date, ED, A. Philpott. Whakarewarewa, Rotorua: 1 ♀, 24.x.59, FRI, J. S. Dugdale.

REMARKS

The systematic position of this species was discussed in the remarks section on *P. holanthes*. *P. pyrsophanes* is easily recognised by its size and forewing pattern. It lacks the oval silvery reniform of *P. planetopa*, and the large yellow sigma shape of the first forewing line of *P. microdora*. In *P. pyrsophanes* this only has a small yellow comma-shaped mark.

Pareromene selenaea (Meyrick) comb.nov.

selenaea Meyrick, 1885, Trans. N.Z. Inst. 17, p. 131 (*Diptychophora*).
——, Hudson, 1928, plate xix, fig. 30 (*Diptychophora*).

Lectotype: ♂ (selected by Mr P. E. S. Whalley and published for the first time here) in the British Museum (Natural History), labelled "Dunedin, New Zealand, A.P./82."

EXTERNAL CHARACTERS

Eye without nude periorbital strip, female frenulum triple, wing span 15–18 mm (both sexes).

MALE GENITALIA (Fig. 25)

As for generic diagnostic description except for the following: Arms of vinculum about $1\frac{1}{4}\times$ uncus; saccus about $1\frac{7}{8}\times$ uncus; juxta an oval plate a little less than half as wide as long; costa of valva little developed, distinct costal region extending about half way along dorsal margin of valvula, having small prong; dorsal margin of costa, including prong, barely $2\times$ uncus; total length of valva about $\frac{7}{8}$ aedoeagus; uncus and gnathos tapering, pointed, uncus slightly curved ventrad, gnathos nearly straight; aedoeagus tubular, tapering to apex; about $5–6\times$ uncus, length to median breadth ratio about 14:1, with row of small elongate cornuti present between apex and $\frac{1}{2}$.

FEMALE GENITALIA (Fig. 43)

As for generic description except for the following: Anterior apophyses about $\frac{7}{8}$ posteriors; ductus bursae about $4–4\frac{1}{2}\times$ length of anterior apophyses, weakly chitinised to about $\frac{1}{8}$, pleated from $\frac{1}{8}$ to $\frac{7}{8}$, with a swollen sac-like region at $\frac{1}{4}$ representing slight development of an ostiolar pouch, ductus with swollen reversed loop at $\frac{7}{8}$, ductus seminalis joining at $\frac{7}{8}$; ostium bursae a flattened simple funnel.

TYPE LOCALITY: Dunedin.

DISTRIBUTION

Lowland to subalpine indigenous forest of New Zealand from the Three Kings Islands to Southland, also on Little Barrier and Great Barrier

Islands. Reported as occurring at Clifton and Little Bush, both in Hawkes Bay (Mr T. H. Davies, *in litt.*). Flight period September to May.

Probably two complete generations per year.

MATERIAL EXAMINED: 47 ♂♂, 22 ♀♀

Aniseed Valley, Nelson: 1 ♀, 3.xii.24, ED, A. Philpott.Blackmillar, Marlborough: 1 ♀, 28.xii.29, CM, S. Lindsay. Bluecliff, Otago: 2 ♂♂, 1 ♀, 17.xii.17, ED, E. Meyrick (?). Claverley, Marlborough: 4 ♂♂, 1 ♀, 28.xii.32–3.i.33, CM, S. Lindsay. Day's Bay, Wellington: 1 ♀, IFW, 21.x.27, DM, "W.T.M.". Dun Mt, Nelson, 3,000 ft: 1 ♂, 8.i.22, 1 ♂, 24.xii.27, ED, A. Philpott. Fernthumb Track, Little Barrier Island: 1 ♂, 23.xi.54, PDD, K. A. J. Wise. Flora River: 1 ♀, 15.i.22, ED, A. Philpott. Great Barrier Island: 1 ♂, 22.xi.40, PDD, D. Spiller. Great Island, Three Kings: 1 ♂, 3.v.46, AM, A. G. Turbott. Karori, Wellington: 1 ♂, no date, ED, G. V. Hudson. Knife and Steel Peaks, Otago: 1 ♀, 11.xii.17, AM, C. E. Clarke. Lake Moana: 1 ♀, 16.xii.35, CM, A. Tonnoir. Lake Rotoiti, Nelson: 1 ♂, 27.xii.33, CM, S. Lindsay. Lake Rotoroa: 2 ♂♂, 18.i.27, 3 ♂♂, 7.i.28, ED, A. Philpott. Longwoods: 5 ♂♂, IFY, IFZ, 25–29.xii.15, ED, A. Philpott. Manapouri: 4 ♂♂, 5 ♀♀, 27–29.xii.22, CM, S. Lindsay. Maruia: 1 ♀, no date, CM, S. Lindsay. Milford Track: 2 ♂♂, IFX, JFC, 30.ii.20, DM, C. E. Clarke. Mt Grey, Canterbury: 1 ♂, Dec.1924, ED, 2 ♂♂, 7–8.i.29, ED, W. Heighway; 1 ♀, 28.xii.24, CM, S. Lindsay. Mt Ruapehu, 3,300 ft: 5 ♂♂, 2 ♀♀, 18.i.67, GC, D. E. Gaskin and D. J. Greenwood. Nelson: 1 ♂, 22.i.22, CM; 1 ♂, 26.xii.23; 1 ♂, 3.i.29; ED, A. Philpott. Puhi-puhi River, Marlborough: 1 ♀, 27.xii.29, CM, S. Lindsay. Rowallan: 1 ♂, 26.xii.15, ED, A. Philpott. Sandhill Plain, Southland: 1 ♂, 8.xii.17, ED, E. Meyrick (?). Taieri: 1 ♀, 16.xii.23, AM, C. E. Clarke. Tisbury, Southland: 1 ♂, JFB, no date, DM, G. Howes. Wellington: 1 ♀, IFV, no date, DM, G. V. Hudson. West Plains, Southland: 2 ♂♂, 1 ♀, no date, ED, A. Philpott. Whakarewarewa, Rotorua: 1 ♂, 28.x.60; 1 ♂, 1 ♀, IGE, 13.ix.62, FRI, J. S. Dugdale.

REMARKS

This species is easily separated from superficially similar species by the circular white reniform and the black-marked veins in the subterminal region of the forewings. There is otherwise considerable variation in ground-colour of the forewings, but little or no variation in genitalia except in size.

Philpott (1929) had his captions for figs 13 and 14 reversed. Fig. 13 in fact shows the male genitalia of *P. selenaea*, not *interrupta* as stated. Fig. 14 illustrates the male genitalia of *P. interrupta*.

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APPENDIX

LIST OF REVISED SPECIES OF *Pareromene* OST.

1. *ajaxella* Bleszynski, 1966. New Guinea, see: Bleszynski (1966, p. 461).
2. *albilinealis* (Hampson, 1893) Assam, see: Bleszynski (1965, p. 61).
3. *auriscriptella* (Walker, 1864: *Eromene*) n.comb. New Zealand.
4. *bilinealis* (Amsel, 1961). Afghanistan, see: Bleszynski (1965, p. 60).
5. *bipunctella* (Walker, 1866: *Eromene*) n.comb. New Zealand.
6. *chrysochyta* (Meyrick, 1882: *Diptychophora*) n.comb. New Zealand.
   chrysoclyta (Hampson, 1895: *Diptychophora*)
   (Misspelling of *chrysochyta* Meyr.)
7. *copernici* Bleszynski, 1965. China, see: Bleszynski (1965, p. 58).
8. *elaina* (Meyrick, 1882: *Diptychophora*) n.comb. New Zealand.
9. *electra* Bleszynski, 1965. China, see: Bleszynski (1965, p. 57).
10. *epiphaea* (Meyrick, 1885: *Diptychophora*) n.comb. New Zealand.
11. *euchromiella* (Ragonot, 1895). Near East, see: Bleszynski (1965, p. 53).
12. *exsectella* (Christoph, 1881). Amurland, Japan, see: Bleszynski (1965, p. 57).
13. *gurri* sp.nov. New Zealand.
14. *harmonica* (Meyrick, 1888: *Diptychophora*) n.comb. New Zealand.
15. *helioctypa* (Meyrick, 1882: *Diptychophora*) n.comb. New Zealand.
16. *holanthes* (Meyrick, 1885: *Diptychophora*) n.comb. New Zealand.
17. *interrupta* (Felder & Rogenhofer, 1875: *Crambus*) n.comb. New Zealand.
    astrosema (Meyrick, 1883: *Diptychophora*) syn. Meyrick 1885, p. 130.

18. *lathonia* Bleszynski, 1966. New Britain, see: Bleszynski (1966, p. 459).
19. *lepidella* (Walker, 1866: *Eromene*) n.comb. New Zealand.
    gracilis (Felder & Rogenhofer, 1875: *Crambus*) syn. Meyrick, 1883, p. 14.
20. *leucoxantha* (Meyrick, 1882: *Diptychophora*) n.comb. New Zealand.
21. *melistoma* (Meyrick, 1931). China, see: Bleszynski (1965, p. 57).
22. *metallifera* (Butler, 1877: *Eromene*) n.comb. New Zealand.
23. *microdora* (Meyrick, 1905: *Diptychophora*) n.comb. New Zealand.
24. *minutalis* (Hampson, 1893) Assam, see: Bleszynski (1965, p. 58).
25. *moriokensis* (Okano, 1962). Japan, see: Bleszynski (1965, p. 59).
26. *morobella* Bleszynski, 1966. New Guinea, see: Bleszynski (1966, p. 462).
27. *mutuurella* Bleszynski, 1965. Japan, see: Bleszynski (1965, p. 52).
28. *ochracealis* (Walker, 1866: *Cataclysta*) n.comb. Australia.
29. *omeishani* Bleszynski, 1965. Japan, see: Bleszynski, p. 63).
30. *paradisella* Bleszynski, 1966. Congo, see: Bleszynski (1966, p. 462).
31. *parorma* (Meyrick, 1925: *Diptychophora*) n.comb. New Zealazd.
32. *parthenie* Bleszynski, 1965. China, see: Bleszynski (1965, p. 63).
33. *planetopa* (Meyrick, 1923: *Diptychophora*) n.comb. New Zealand.
34. *pyrsophanes* (Meyrick, 1882: *Diptychophora*) n.comb. New Zealand.
35. *ramona* Bleszynski, 1965. China, see: Bleszynski (1965, p. 61).
36. *rosanna* Bleszynski, 1965. China, see: Bleszynski (1965, p. 58).
37. *rosannoides* Bleszynski, 1965. China, see: Bleszynski (1965, p. 58).
38. *selenaea* (Meyrick, 1885: *Diptychophora*) n.comb. New Zealand.
39. *subalbilinealis* Bleszynski, 1965. China, see: Bleszynski (1965, p. 61).
40. *tripunctata* (Moore, 1888). Assam, see: Bleszynski (1965, p. 62).
41. *vermeeri* Bleszynski, 1965. Japan, see: Bleszynski (1965, p. 60).

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