

Notes and Descriptions of New Zealand Lepidoptera.

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As the present paper describes several obscure species, it has been thought advisable to figure not only the male genital structures of the new species, but also those of some closely related forms. The characters of the lepidopterous genitalia have not been previously used to any extent in the discrimination of species in New Zealand; it may be useful, therefore, to give a brief account of the methods of procedure.

Owing to the fact that the genital armature is usually more or less withdrawn within the preceding segments, and, where protruding, is frequently hidden beneath a covering of scales, it is of little use attempting the examination of dry material. It is necessary to remove the whole, or the apical portion, of the abdomen, and to soften and clear the parts. This is a very simple process and takes but little time. If the abdomen be gently levered upwards with a pin or dissecting-needle it will usually break off readily at its junction with the thorax. If it is desired to remove the apical portion only, the severance can be effected with a pair of very fine scissors, those with the blades curved round being the most suitable. In order to avoid the danger of the severed piece flying off and being lost, it is advisable to moisten the abdomen with spirit. When the desired part is secured it is placed in a small porcelain crucible with some 10-per-cent. solution of caustic potash and boiled for a minute or two. This dissolves the fatty parts, muscles, &c., and leaves the chitinous organs clearly displayed. For examination the object is removed to a watch-glass and immersed in glycerine. It can be studied at once, but where drawings are desired it is better to allow it to soak in the glycerine for a day or so. A lateral view of the genitalia *in situ* and an inside view of one of the valvae are usually all that is necessary for descriptive purposes, but it is sometimes advisable to secure a dorsal view of the ninth tergite (upper part of the tegumen); the most desirable aspects will vary with the genus or family to which the species under consideration belongs.

NOCTUIDAE.

Melanchra furtiva n. sp. (Fig. 1, B.)

♂ ♀. 36–40 mm. Head whitish mixed with ferruginous. Palpi ferruginous sprinkled with white, terminal segment ochreous. Antennae, stalk pinkish-white, bipectinations moderate, slightly longer than in *M. mutans* (Walk.), dark fuscous. Thorax with moderate anterior crest, whitish, densely mixed with pink; a Λ -shaped anterior line dark ferruginous margined behind with white; tegulae margined outwardly with deep ferruginous. Abdomen greyish-ochreous, pinkish laterally and posteriorly. Legs and under-parts ochreous-white densely mixed with pinkish. Forewings moderately dilated, costa almost straight, apex obtuse, termen obliquely rounded; pale pinkish-brown; markings blackish-ferruginous; veins strewn with white and dark scales; a submedian basal streak, slightly

sinuate and pointed, reaching about half-way to claviform; stigmata not prominent, obscurely pale-margined within, shape normal but orbicular rather large; traces of transverse lines, in the form of double dark strigulae, on costa at base, $\frac{1}{3}$, and middle; an obscure waved pale sub-terminal line, irregularly dark-margined anteriorly, above tornus the margining being produced into a prominent streak; veins in subterminal area clearly dark-marked; three white dots on apical $\frac{1}{3}$ of costa; a thin dark terminal line; fringes pink mixed with ochreous and white. Hindwings fuscous-grey, ochreous-tinged; fringes ochreous mixed with ferruginous and white, except on basal line.

The female differs in having the ground-colour white with only a trace of pink suffusion.

This species has previously been confused with *M. mutans* (Walk.), and, as far as markings go, there is little to separate the two. But the ground-colour is constantly different and the antennal pectinations are longer in the first species. Reference to the figures will show that the valvae of the two forms exhibit good differentiating characters.

The species appears to occur in mountainous localities from 1,000 ft. to 4,000 ft. A good series was taken on the Mount Arthur tableland in December, and in the Wakatipu district examples have been secured at Ben Lomond, Elfin Bay, Lake Luna, and Lake McKenzie in the months of November and December. Holotype (♂), allotype (♀), and a series of paratypes in coll. Cawthron Institute.

TORTRICIDAE.

Capua intractana (Walk.), *Char. Het.*, p. 83 (1869).

This Australian species must now be placed on the New Zealand list. During February and March, 1923, nine or ten of each sex were taken at light. The species is small and obscure, but (owing to its habit of coming to light) it is hardly likely to have been passed over if it had previously occurred in any numbers. In Australia *C. intractana* is widely distributed, being found in Queensland, New South Wales, Victoria, and South Australia. A short description is appended, which may assist New Zealand lepidopterists to recognize the species.

♂, 11–13 mm.; ♀, 14–17 mm. Forewings rather broad, costa strongly arched, termen straight, oblique; dull brown mixed with ochreous, especially in female; costal patch in male small, ochreous, confined to costal half and frequently obsolete; in female dark brown, margin obliquely outwards to above middle, thence angled sharply inwards; following this is an ochreous fascia, dilated dorsally, usually absent in male; a sub-terminal ochreous fascia, triangularly dilated, on upper half. The markings are often indistinct and frequently absent. Hindwings fuscous-grey with paler mottling.

Epichorista abdita n. sp. (Fig. 2, D and E.)

♂, 11½–13 mm. Head, palpi, and thorax bright reddish-ochreous. Antennae in male ciliated, 1½. Abdomen dark fuscous. Legs ochreous-whitish, tarsal segments annulated with fuscous. Forewings, costa strongly arched at base, apex rectangular, termen very slightly oblique, rounded beneath; bright ochreous-reddish; markings very obscure; five or six fuscous dots on basal half of costa; traces of some leaden-white fasciae at $\frac{1}{3}$; apical half of wing with numerous obscure waved leaden-white

fasciae, visible only under magnification; central fascia indicated by a clear reddish area on costa at middle: fringes ochreous-reddish, tips paler. Hindwings dark fuscous: fringes greyish-fuscous, with basal band and the tips round termen tinged with ochreous.

In one example the markings are quite obsolete and the ground-colour is much paler.

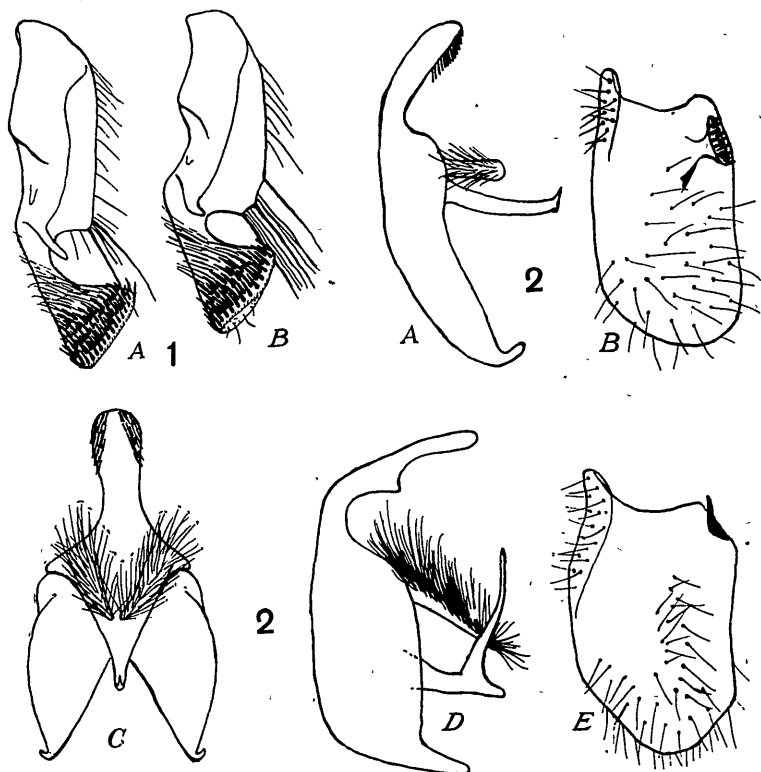


FIG. 1.—A. *Melanchra mutans* (Walk.). Inner view of valva.

B. *Melanchra furtiva* n. sp. Inner view of valva.

FIG. 2.—A. *Epichorista emphanes* (Meyr.). Lateral view of tegumen. B. Inner view of valva. C. Ventral view of tegumen.

D. *Epichorista abdita* n. sp. Lateral view of tegumen. E. Inner view of valva.

Superficially very like some varieties of *E. emphanes* (Meyr.), but a smaller and duller species; the longer antennal ciliations form a good distinguishing structural character.

Mount Arthur tableland, during the first week in March. Five males taken in open country at an elevation of 4,500 ft. Holotype (♂) and three paratypes in coll. Cawthron Institute.

GELECHIIDAE.

Gelechia neglecta n. sp.

♂. 10–13 mm. Head and thorax ochreous-white. Palpi ochreous-whitish, more or less infuscated. Antennae bronzy-fuscous. Abdomen

ochreous-whitish, brassy-yellow on anterior segments. Legs whitish-ochreous, anterior and middle pairs infuscated. Forewings lanceolate; ochreous-whitish; a ferruginous suffusion along fold, sometimes extended to before apex, sometimes absent; area beneath fold usually clearer white; fringes greyish-ochreous. Hindwings and fringes pale fuscous-grey.

An obscure species, but not easily confused with any other; it is the smallest yet described.

Cobb Valley, in December. Five males among rough herbage. Holotype (♂) and three paratypes in coll. Cawthron Institute.

Stomopteryx simplicella (Walk.), Tin., 1924; Meyrick, *Proc. Linn. Soc. N.S.W.*, vol. 29, p. 305, 1904. (Fig. 3, A, B, and C.)

This common Australian species is now established in New Zealand. Several specimens have been taken at Nelson, the dates varying from February to April. Mr. Meyrick, to whom I am indebted for the identification, informs me that the species is common throughout the southern half of Australia and also in Tasmania. I give below a brief description.

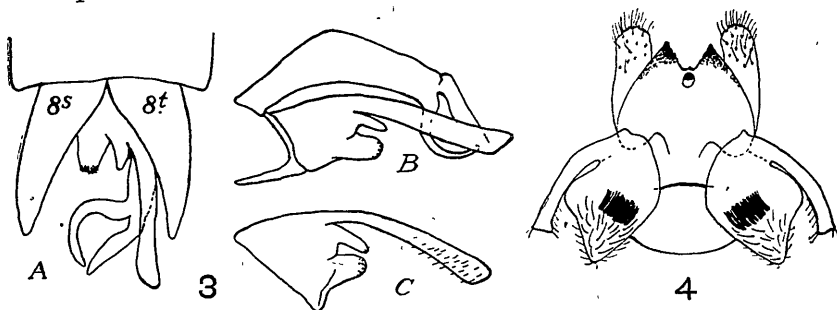


FIG. 3.—A. *Stomopteryx simplicella* (Walk.). Lateral view of genitalia: 8^s = eighth sternite; 8^t = eighth tergite. B. Lateral view of genitalia, eighth segment removed. C. Inner view of valva.

FIG. 4.—*Mnesarchaea similis* n. sp.: Inner view of genitalia (drawn under cover slip).

♂ ♀. 9–11 mm. Head shining pearly-grey. Palpi ochreous-white, terminal segment blackish outwardly. Antennae dark greyish-fuscous. Thorax shining grey. Abdomen shining grey, anal tuft ochreous. Legs whitish-ochreous, more or less infuscated. Forewings lanceolate, grey sprinkled with dark fuscous, especially on apical half; usually an irregular whitish spot on costa at $\frac{3}{4}$; plical stigma elongate, dark fuscous, sometimes absent; fringes greyish-fuscous sprinkled with blackish-fuscous. Hindwings with apex produced, termen rounded beneath; pale greyish-fuscous; fringes uniformly fuscous-grey.

GLYPHIPTERYGIDAE.

Simaethis tillyardi n. sp.

♀. 17½ mm. Head and thorax white mixed with pale fuscous. Palpi, second segment strongly tufted beneath, white mixed with fuscous, terminal segment white mixed with black. Antennae black annulated with white. Abdomen bronzy-fuscous, suffusedly annulated with whitish. Legs whitish mixed with bronzy-fuscous, apices of tibiae and tarsi annulated with white.

Forewings moderate, costa hardly arched, apex pointed, termen markedly sinuate, oblique; pale bronzy-fuscous mixed with dark fuscous; markings snow-white; a small basal patch; a broad band before middle, projecting outwardly in disc and touching following band; an outwardly-oblique fascia from costa beyond middle, coalescing in disc with broad band at $\frac{1}{4}$, and terminating on tornus; a terminal band, dilated at apex; in the dark-fuscous discal area and above dorsum at $\frac{3}{4}$ are a few shining steel-blue scales: fringes on termen pale bronzy-fuscous with three white lines, on costa darker fuscous with median white line. Hindwings greyish-fuscous; apical $\frac{1}{2}$ suffusedly white: fringes fuscous; a broad median band and tips white.

Very distinct; from the breadth of the white band the general effect is that of a white species with narrow fuscous fasciae.

A single female taken in March by Dr. R. J. Tillyard on Mount Cook at an altitude of 2,500 ft. Type in coll. Cawthron Institute.

MNESARCHAEIDAE.

Mnesarchaea similis n. sp. (Fig. 4.)

♂. 11 mm. Head white. Palpi white with a few brown scales on second segment. Antennae dull ochreous. Thorax pale ochreous, mixed with fuscous anteriorly. Abdomen fuscous-grey. Legs greyish-fuscous, tarsi annulated with ochreous-white. Forewings lanceolate, costa moderately arched, apex acute, termen straight, very oblique; ochreous-whitish, densely irrorated with bronzy and dark fuscous on apical half; a broad stripe of bronzy-fuscous along basal half of costa, its apex angled obliquely downwards towards tornus and extending across wing; a large subtriangular blotch of white or ochreous-white on costa following apex of costal stripe; an ochreous stripe along dorsum enclosing a dark-fuscous blotch at $\frac{3}{4}$; a white striga from costa at about $\frac{5}{8}$, margined posteriorly with black; a narrow white line between this and apex; a black band along termen, interrupted with white scales: fringes pale bronzy; a black spot opposite apex followed by white tips and some white tips about middle of termen. Hindwings fuscous with purplish reflections: fringes bronzy-fuscous.

Very similar to *M. hamadelphe* Meyr. in colour and markings, but a slightly larger and darker insect; the genitalia offer very distinct characters.

Mount Arthur tableland (4,500 ft.), in December; Cobb Valley (2,800 ft.), also in December; and Flora River (3,250 ft.), in January. A few male specimens from each locality. Holotype (♂) and paratypes in coll. Cawthron Institute.

MICROPTERYGIDAE.

Sabatinca aemula n. sp. (Fig. 5, C and D.)

♂♀. 11–12 mm. Head and thorax reddish-ochreous. Palpi ochreous. Antennae dark fuscous, basal fifth (in ♀ basal third) ochreous. Abdomen greyish-fuscous. Legs ochreous, last tarsal segment fuscous. Forewings ovate-lanceolate, costa strongly arched basally, apex acute, termen very oblique, slightly sinuate; shining ochreous, darker on apical half and above dorsum at base; a silvery-white fascia from costa at middle; irregular and variable in shape, sometimes spot-like, sometimes reaching middle of wing where it touches an irregular black spot; a similar but usually broader fascia at $\frac{3}{4}$, also connecting with a black (generally transverse) spot; sometimes a silvery-white dot or dots between second fascia and apex; a series of silvery-white spots round termen: fringes reddish-ochreous with

a very obscure dark basal line. Hindwings fuscous-violet: fringes, fuscous on basal half of dorsum, ochreous with a fuscous basal line on remainder of wing.

This and the following species are superficially very similar to *S. chrysargyra* (Meyr.). The present form is a rather larger insect and has less whitish suffusion. Good structural differences are to be found in the genitalia.

Cobb Valley, in December. Common among rough herbage and undergrowth at a damp spot on the edge of the forest. A single specimen taken also on the Mount Arthur tableland at an elevation of about 4,000 ft. Holotype (♂), allotype (♀), and a series of paratypes in coll. Cawthron Institute.

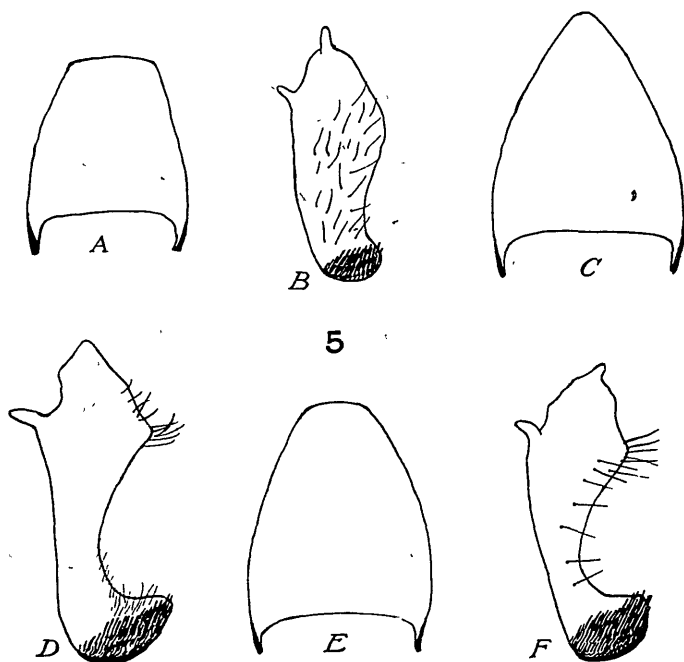


FIG. 5.—A. *Sabatinca chrysargyra* (Meyr.). Dorsal view of ninth tergite (upper half of tegumen). B. Inner view of valva.

C. *Sabatinca aemula* n. sp. Dorsal view of ninth tergite. D. Inner view of valva.

E. *Sabatinca aurantiaca* n. sp. Dorsal view of ninth tergite. F. Inner view of valva.

Sabatinca aurantiaca n. sp. (Fig. 5, E and F.)

♂♀. $10\frac{1}{2}$ – $12\frac{1}{2}$ mm. Head, palpi, and thorax ochreous. Antennae fuscous, basal $\frac{1}{5}$ (in ♀ basal $\frac{1}{3}$) ochreous. Abdomen greyish-fuscous. Legs ochreous, tarsi annulated with fuscous. Forewings ovate-lanceolate, costa strongly arched basally, thence straight, apex acute, termen very oblique, slightly sinuate; reddish-ochreous; a silvery-white irregular fascia from costa at $\frac{1}{2}$, sometimes reaching across wing; a similar fascia at $\frac{3}{4}$, expanding into a blotch on costa; two silvery-white spots on costa between $\frac{3}{4}$ and apex; five or six interrupted blackish fasciae between $\frac{1}{2}$ and apex, forming

prominent spots on costa, termen, and dorsum: fringes reddish-ochreous. Hindwings fuscous-violet: fringes fuscous, mixed with ochreous round apex.

The species may be separated from both *chrysargyra* and *aemula* by the dark apical strigae and the general darker colouring: the genitalia of the male show sufficiently definite differentiating characters.

Dun Mountain, Nelson. Five specimens taken in November and December in forest at elevations of from 1,000 ft. to 2,500 ft. Holotype (♂), allotype (♀), and three paratypes in coll. Cawthron Institute.

A Method of Injecting the Tracheae of Insects.

By H. B. KIRK, M.A., F.N.Z.Inst., Professor of Biology, Victoria University College, Wellington.

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THE following method of injecting the tracheae of insects is so simple and obvious that I find it hard to suppose that it is new. I cannot, however, find any mention of it, nor can I find any one that is acquainted with it.

Prepare metagelatine in the usual way, by adding ammonia to a gelatine solution and keeping the solution melted for some hours until, on cooling, it does not set. Add a solution of carmine, and pass the mixture through a thin filter-paper. Place the mixture in a small beaker or other vessel, and put the insect (killed by chloroform to which amyl-nitrite has been added) in the mixture, submerging it by means of a disc of perforated zinc or otherwise. Set the beaker in a desiccator fitted with an exhaust-tube. It is desirable that it should also have a stop-cock. Exhaust by means of a suction-pump. When the desiccator is as completely exhausted as possible, stop the pump and reopen the stop-cock a very little, allowing the air to enter slowly. The pressure of the air, of course, forces the mixture into the exhausted tracheae. The advantage of the stop-cock is that the pressure is not restored all at once, and thus the mixture has time to reach the finer tracheae.

Remove the insect, and at once make a slit in the body-wall to permit the access of liquid to the peri-visceral spaces. Place the insect in acid alcohol of 70 or 75 per cent. in order to set the gelatine and precipitate the carmine. Dissection may be made in twenty-four hours. If the operation has been successful, not only will the main tracheae and the air-sacs be filled, but the finer tracheolae as well. Unless much time has been lost before immersion of the insect in acid alcohol, the colouring-matter will not have diffused through the tracheal walls.

In the case of adult lepidopterous insects it may happen that one or more of the stigmata become closed by loose scales, so preventing the inflow of the gelatine mixture.

Among other applications of the method is the filling of the lungs of air-breathing vertebrates in case it is desired to obtain a cast of the lung-cavity.