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QUEENSLAND.

BUREAU OF SUGAR EXPERIMENT STATIONS.

DIVISION OF ENTOMOLOGY.
BULLETIN No. 9.

SOME LEPIDOPTEROUS PESTS
New to Sugar-Cane in Queensland

BY

EDMUND JARVIS,
Assistant Entomologist.

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BRISBANE:
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Bureau of Sugar Experiment Stations,

Brisbane, 1st January, 1920.

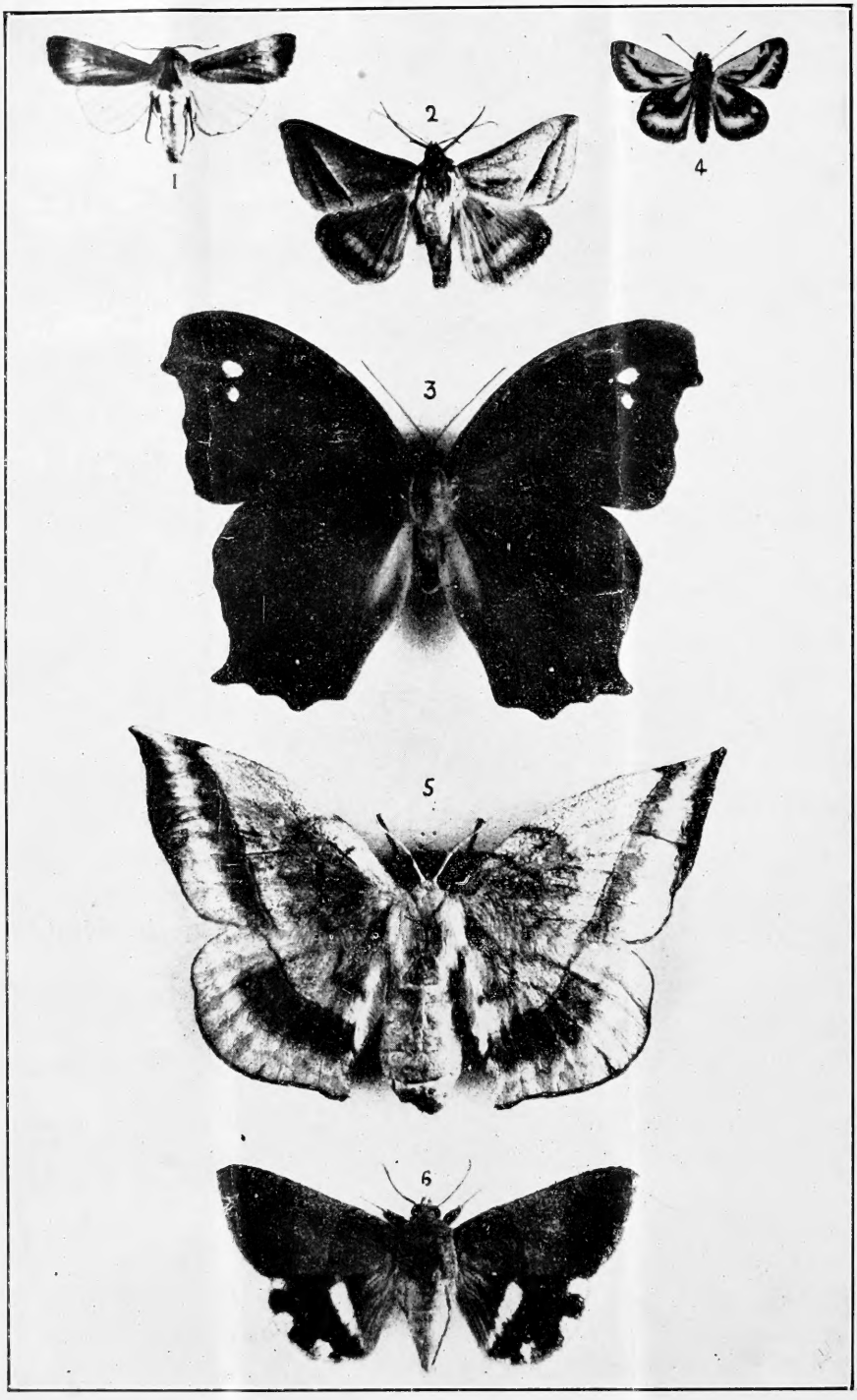
The Under Secretary,
Department of Agriculture and Stock,
Brisbane.

SIR,—I have the honour to recommend for publication as Bulletin No. 9 of the Division of Entomology, Bureau of Sugar Experiment Stations, the following "Notes on some Lepidopterous Pests new to Sugar Cane in Queensland," by Mr. Edmund Jarvis, Assistant Entomologist.

I have, &c.,

HARRY T. EASTERBY, General Superintendent.

Approved:
E. G. E. SCRIVEN,
Under Secretary.



1. *Cirphis loreyi* Dup.
2. *Mocis frugalis* F.
3. *Melanitis leda banksia* Fab.
4. *Padraona hypomoloma* Lower.
5. *Anthela acuta* Walker.
6. *Ophiusa melicerte* Drury.

SOME LEPIDOPTEROUS PESTS

New to Sugar Cane in Queensland.

My object in publishing the following notes is to officially record the presence in North Queensland canefields of a few Lepidoptera not included in Bulletin No. 3 of this Office.

Four of these insects affect cane in other countries; two of them—which happen to be closely related to the destructive "Army Worm" (*Cirphis unipuncta* Haw.)—becoming at times sufficiently injurious to necessitate repressive measures.

In addition to describing, where thought advisable, early life-cycle stages, the writer has prepared lists enumerating a number of Lepidoptera allied to the insects under consideration that affect cane elsewhere, reference to which will enable readers to determine at a glance indigenous species that may prove hurtful to this crop in the future, together with those whose possible introduction into Queensland is undesirable.

Among the latter class, for instance, may be cited the "Pink Borer" of cane (*Sesamia vuteria* Stoll.), an insect very closely related to our own moth-borer *Phragmatiphila truncata* Walk.

D'Emmerez de Charmoy considers this pest the most harmful cane borer in Mauritius. "Its attacks," he states, "are so severe in certain localities that it is not uncommon to notice young virgin fields completely destroyed or so mined that only a few plants remain, whose presence seems to emphasise the importance of the damage done."

It was introduced into Mauritius in cane-stalks, and occurs also as a serious sugar pest in Celebes, Java, Reunion, Madagascar, and throughout Africa.

During 1909 Kircaldy[1] published a preliminary catalogue of the insects frequenting canefields, in which he mentions no less than eighty-two species of Lepidoptera. Of these fully 75 per cent. belong to the Bombylidæ, Noctuidæ, Pyralidæ, and Tineidæ; the remainder being scattered among eleven other families.

[1] "A Bibliography of Sugar Cane Entomology." Hawaiian Sugar Planters' Association, Bulletin No. 8, Division of Entomology, Hawaii 1909.

Since that date, however, we[2] have listed ten Australian species known to be more or less injurious, while possibly an additional thirty or forty lepidopterous insects might easily find a place in the fauna of our canefields.

In all probability the total number of moths and butterflies at present recorded by entomologists as associated prejudicially with sugar-cane will be found to fall little short of 100 species.

Whilst aware that some of the insects forming the subject of the present bulletin are of minor economic importance, the writer feels that their occurrence in Queensland canefields being of scientific interest warrants official recognition.

CIRPHIS LOREYI Dup. (Family NOCTUIDÆ).

(Figure 1.)

Synonymy—*Leucania albistigma* Moore.
Leucania collecta Walker.
Leucania denotata Walk.
Leucania designata Walk.
Leucania exsanges Guen.
Leucania exterior Walk.
Leucania loreyi Dup.
Leucania thoracica Walk.
Leucania tenebrifera Walk.

This moth was first noticed in the vicinity of Gordonvale, North Queensland, towards the end of the year 1914, when several specimens were bred at the Sugar Experiment Station from caterpillars found eating leaves of young plant and ratoon cane.

Whilst writing Bulletin No. 3 of this Office in 1916 its occurrence here as a cane pest was overlooked, and not alluded to in subsequent monthly reports; so that up to the present it has never before been recorded by us.

Larva.

The caterpillar of this noctuid resembles somewhat in general appearance and colouration that of the well-known "Army Worm" (*Cirphis unipuncta* Haw.), inflicting injuries to the foliage identical in character to those occasioned by the latter insect.

Like larvæ of *unipuncta*, they usually conceal themselves by day in the centre of affected plants among the unfolding leaves, and feed mostly at night-time; so that under such conditions the presence of *loreyi* might very easily remain unnoticed, and in all probability its occurrence in our canefields is by no means uncommon.

Veitch[3] has described Fiji specimens of the larva as being light

[2] "Notes on Insects Damaging Sugar Cane in Queensland." Qld. Bureau Sugar Experiment Stations, Div. Entomology Bull. No. 3, Brisbane 1916.

[3] From an unpublished report entitled, "Some Observations on a Sugar-cane Army Worm, *Cirphis loreyi* Dup." Fiji 1915.

straw colour "with small brown spots irregularly scattered over the body."

The colouration, however, like that of certain related noctuid caterpillars, doubtless varies somewhat under different climatic conditions. Our Gordonvale specimens of *loreyi* were reddish yellow, and produced imagos darker in shade than the typical form.

It may be mentioned in this connection that during 1910, whilst in Victoria, the writer collected a number of exceptionally dark, well-marked caterpillars of *Cirphis unipuncta* Haw.—selected from an immense army that was traversing part of the western district—from which emerged a distinct variety of this moth with greyish wings.

Imago, or Perfect Insect.

This species differs from *unipuncta* in being decidedly smaller, the fore-wings darker and lacking the indistinct oblique apical streak, and by the hind-wings being white, semihyaline, seldom suffused with fuscous.

Hampson gives the following brief description:—"Ochreous. Forewing with a dark or red-brown suffusion on median nervure and outlining the obscure apical fascia; a postmedian series of specks; a white speck at lower angle of cell. Hind-wing semihyaline, white. Underside immaculate. Some species have the head, thorax, abdomen, and forewing smoky-brown, irrorated with dark specks; hind-wing with some fuscous on outer margin. Expanse, 34-42 mm." (Expanse of *Cirphis unipuncta,* 44-50 mm.)

The specimens of *loreyi* bred at Gordonvale in 1914 had the forewing dark-brown, somewhat pinkish in certain lights.

Natural Enemies.

The only parasite reared from caterpillars of *loreyi* at Gordonvale was a small (undetermined) Tachinid fly; but doubtless, like *unipuncta,* this moth is kept in subjection by numerous natural enemies—predaceous, parasitic, and bacterial.

Control.

At present this species does not call for repressive measures in Queensland.

Habitat.

Europe; throughout India, Burma, and Ceylon: (Hampson). Fiji.

Specimens have been received by Mr. G. Lyell (lepidopterist) of Gisborne, Victoria, from Waroona (West Australia), Sydney, and Brisbane.

In Rhodesia and Zanzibar it occurs as a notable pest of maize.

LIST OF NOCTUIDÆ AFFECTING SUGAR-CANE.*

The following list of Noctuidæ, including seven species of Cirphis, have been recorded from various parts of the world as being more or less injurious to sugar-cane:—

Agrotis crinigera Butler	Hawaii.
Agrotis dislocata Meyrick	Hawaii.
Argyroploce schistaceana Haw.	Hawaii.
Calymniodes (Prodenia) latifascia Walk.	British Guiana.
**Chusaris rhodias* Turner	Australia.
Cirphis amblycasis Meyrick	Hawaii.
Cirphis humidicola Guen.	Trinidad.
Cirphis latiuscula H.S.	Egypt; U.S. America; Porto Rico.
**Cirphis loreyi* Dup.	India; Burma; Ceylon; Fiji; Java; Mauritius; Orient; Australia.
Cirphis multilinea Walk.	U.S. America.
Cirphis pyrrhias Meyrick	Hawaii.
**Cirphis unipuncta* Haw.	U.S. America; India; Java; Mauritius; Australia.
Diacrisia strigulata Walk.	Orient.
Laphygma exigua	Egypt.
Laphygma frugiperda S. & A.	Porto Rico; Trinidad; British Guiana.
Lycophotia (Agrotis) infecta Boisd.	British Guiana.
Lycophotia margaritosa Haw.	Hawaii.
**Mocis frugalis* Fab.	Orient; Australia; South America; British Guiana.
Mocis repanda F.	Brazil; British Guiana; Barbados; Trinidad.
Mocis undata F.	Orient.
**Phragmatiphila truncata* Walk.	Australia.
Prodenia litura F.	India; Orient.
Sesamia inferans Walk.	India; Java; Orient; Reunion.
Sesamia uniformis Dudg.	India.
Sesamia vulteria Stoll.	Algeria; Mauritius; Java; Reunion.
Spodoptera mauritia Boisd.	Mauritius; Hawaii.
Spodoptera pecten Gn.	Orient.

MOCIS FRUGALIS F. (Family NOCTUIDÆ).

(Figure 2.)

Synonymy—*Chalciope lycopodia* Geyer.
Remigia frugalis Fabr.
Remigia translata Walker.

The first record of this insect as a cane-pest in Queensland was published in 1916, at which time, during April, thousands of slender greenish brown caterpillars were observed at Gordonvale and Meringa stripping the leaves of both young and old stools, often to the midrib, over areas of considerable extent. This damage was confined principally to plantations where weeds had been allowed to mature between the rows, these having perhaps attracted the moths in the first instance.

* All Australian species listed in this Bulletin are marked by an asterisk.

The caterpillars had evidently found the foilage of sugar-cane more palatable than their native food-plants, and were observed when attacking very young sets to consume the entire leaf-blade.

While resting inactively on cane-stools the lava assumes a lineal position, lying stretched at full length against the midrib or edge of a leaf, usually selecting some dead brownish portion harmonising with its own general colouration. If touched it seeks to escape notice by falling to the ground, and, contorting the body to the shape of a letter S or U, lies rigid and motionless, exposing to view the black transverse edges of the fourth and fifth abdominal segments, which, together with the somewhat snake-like form assumed, may possibly serve in some way to frighten small insectivorous birds and lizards.

Larva.

General colour variable, light pinkish grey or pale ochreous yellow, with two darker, broad, subdorsal bands running the whole length of body, and a narrower band of same shade just above spiracles extending from head to middle of tenth body segment. Each abdominal segment with four tiny black dots (seen with pocket lens) on subdorsal bands, larger towards and on anal segment, and partly encircled by a whitish eye-like blotch. A yellowish band occurs immediately below spiracles. Venter with central dark-brown or blackish stripe. Entire body closely marbled with numerous irregular fine lines consisting of chains of dots and short streaks. Hind marginal edge of fourth and fifth body segments velvety blue-black. Legs yellowish. Head inconspicuous, frontal half of eyes dark greenish brown, labrum yellowish, base and teeth of mandibles black. Body tapering gradually towards each extremity, and sprinkled with a few short black hairs. Length about 45 mm. ($1\frac{3}{4}$ in.).

Pupa.

Pupa efflorescent, yellowish brown; eyes and dorsal surface reddish and much darker; mesonotum transversely wrinkled; extremity of anal segment bluntly convex, the dorsum of same furnished with tooth-like lamellæ arranged in semicircle, becoming less pronounced on venter, and enclosing a few yellow, hooked bristles. Length 20 mm. (about $\frac{3}{4}$ in.).

The pupa is generally concealed within a sort of tube made by the caterpillar webbing together opposite edges of a leaf-blade, the tips of the foliage being often selected for such purpose.

Imago (Perfect Insect).

Greyish brown; fore-wing with a much darker streak running from apex to hind margin, bordered internally with light yellow, outwardly with reddish brown and a submarginal row of black specks. Hind-wing with a suffused central band and broad outer border dark grey; tibiæ and tarsi of male clothed with long dense hairs. Average wing expanse 45 mm. ($1\frac{5}{8}$ in.).

Habitat.

Widely distributed in Australia from Port Darwin to Sydney; being found also in West Africa and throughout the Oriental region.

Its occurrence in Queensland as a cane-pest in 1916 may, I think, be attributed primarily to abnormal climatic conditions. The trying drought experienced during 1914 to 1915 terminated about December of the latter year, the rainfall registered for that month and January 1916 being collectively 48·1 in., as against 25·83, the average for these two months in the Cairns district during the preceding twenty-seven years. The caterpillars appeared about seven weeks subsequent to this downpour, towards the end of March, and by April had attained sufficient size to work appreciable damage to the cane.

It seems that very wet conditions apparently favour the increase of an allied noctuid, *Laphygma frugiperda* S. & A. ("Southern Grass Worm").

In Porto Rico, for instance, the larvæ of this moth[4] in company with those of *Mocis repanda* F., are stated by H. T. Jones to have "occurred during 1912 in enormous numbers at Rio Pedras over an area that had been overflowed during the previous month." Among the factors assigned by him as possibly responsible for serious infestations of this nature may be mentioned—(1) migration of the species owing to unsuitable conditions, as lack of food, abundant water, &c., and (2) transportal by floods of the eggs and caterpillars amongst vegetable débris, &c., which being washed from watersheds to low-lying ground would naturally tend to accumulate on flats liable to temporary flooding.

In our own case I am inclined to believe that the drought conditions already mentioned may have operated as a decided natural check to the increase of various parasitic insect enemies of *Mocis frugalis*, thus enabling most of the first-brood caterpillars to attain the moth stage. An abundant food supply induced by copious rains insured the rapid development of these larvæ, causing also the resultant brood of moths to meet with conditions eminently favourable to the increase of their offspring. It was the enormously large number of eggs deposited by this second brood that gave rise to the July infestation, but apparently by that time the balance of nature had been practically restored, as the following brood of larvæ occurring in the same locality during June (two months later) was very small. On this occasion, however, they were destroying plant cane growing in a paddock free from weeds of any kind, a fact which although trivial is not without significance, since it furnishes another illustration of the readiness with which certain insects will acquire a liking for cultivated plants.

Mocis frugalis—termed in America "White Nile Army Worm"—attacks sugar-cane in Brazil, where it has been known for the past twelve

[4] "Some Notes on *Laphygma frugiperda* S. & A. in Porto Rico," Journal of Economic Entomology, vol. 6, p. 230, April 1913.

years. In British Guiana it occurs on cane as a minor pest; while in the Orient it damages sorghum and millet. The closely allied species *Mocis repanda* defoliates sugar-cane in British Guiana, Barbados, and Trinidad. Lastly, another species of the same genus—*Mocis undata* F.—attacks this crop in the Oriental region.

Natural Enemies.

The only insect enemies of *frugalis* observed by the writer are a tachinid fly (undetermined) and a Sphegid wasp (*Sphex clavus* Sm.); the former bred from pupæ at Gordonvale in 1916, and the latter observed at Meringa during June 1918. This wasp was watched on several occasions in the act of boring the tunnel leading to its nest. The site selected by it in each case was the headland of a canefield, the soil being typical red volcanic and very dry.

The nest consists simply of a narrow vertical tube about an inch long opening into a roughly excavated chamber $\frac{3}{4}$ by $1\frac{1}{2}$ in. in size, large enough to accommodate a single caterpillar. Having paralysed and carried its host to the spot, the parasite drags it underground, glues an egg to the venter of its fifth abdominal segment, and after blocking the lower portion of the tubular entrance with one or two large nodules of soil in order to prevent earth from falling into the chamber, fills the remainder with coarse particles, carefully hiding all signs of the whereabouts of the nest by levelling the surface and brushing dust over it.

It may be of interest to state in this connection that in Trinidad *Mocis repanda* is preyed upon by *Polistes canedensis* J. & S., one of the social wasps. In Porto Rico the insect enemies of *repanda* are tachinid flies and a carabid beetle (*Calosoma alternans* F.). A bacterial disease is known to affect caterpillars of this species in British Guiana.

Control Methods.

Hand-picking, and dry arsenate of lead, have been recommended against *repanda*, the latter being considered the cheaper and more effective remedy. Such treatment would apply equally to *Mocis frugalis*, and in the event of this pest becoming troublesome might be given a trial.

MELANITIS LEDA Linn. (Family SATYRINÆ).

("Leaf Butterfly" Figure 3.)

Synonym—*Cyllo leda* Linne.

Both forms of the Australian race of this widely distributed insect —viz., *Melanitis leda banksia* Fab., and *M. leda banksia* f. *barnardi* Lucas—have been bred by the writer at Gordonvale, North Queensland, from eggs deposited on the foliage of sugar-cane.

The frequent occurrence of this butterfly in canefields was first noticed during 1916 (Australian Sugar Journal, vol. viii., p. 377), and naturally excited suspicion, as the insect in question was known to affect cane in Java and elsewhere. Examination of an extended area of young plant cane in the Cairns district resulted in a discovery of both eggs and

larvæ of *Melanitis* on widely separated plantations; leaving little room for doubt that this butterfly, although of minor importance, breeds habitually in such situations.

Owing to its habit of flying chiefly at nightfall, and more especially to its remarkable protective colouration, it contrives to avoid general notice, although a fairly plentiful insect in most reserves, public parks, &c. When disturbed it seldom flies more than a few feet, seeking rather to escape by dodging about in an erratic manner for a short distance and then settling hurriedly on the ground or amongst withered leaves, when it remains motionless, shutting its wings so as to expose to view only the leaf-like lower surface.

Egg.

The glassy, pale-green eggs, which are spherical and 1 mm. in diameter, are laid side by side in batches of from three to eight on the under surface of a leaf-blade.

Larva.

The caterpillar may be briefly described as grass-green, sluggish in habit, and about 2 in. long; the body finely tuberculate and tapering slightly towards each extremity. Owing to its colour, and custom of resting on the lower surface of leaves, it usually escapes detection, but when found will be seen at once to differ from the larvæ of other Queensland cane-pests in having two conspicuous reddish or dark-brown horns rising vertically from the head, while a couple of pointed fleshy protuberances project horizontally from the anal segment.

Pupa.

About 1 in. in length, stoutly proportioned, and of a uniform delicate shade of pea-green.

Imago (Perfect Insect).

This well-known butterfly is chocolate or red-brown on the upper surface, merging into dull orange on the fore-wings, which are deeply scalloped on outer edges and ornamented with a conspicuous, black, eye-like blotch enclosing two large white spots. The colouration of the lower surface varies from light to very dark purplish brown, and is crossed by a few blackish lines resembling the veins of a leaf, the outer angles of the hind-wings being prolonged in the form of two short tails. Wing expanse about 3 in.

According to Waterhouse and Lyell, the more abundant of our two forms of *Melanitis* (var. *banksia* Fab.) occurs from April to August and again later in the season; while the less plentiful, ocellated form (var. *barnardi* Lucas) is met with from December to March. In view of the interest attaching to our Australian forms of Melanitis, scientific readers are referred to the above authors for a detailed description of these butterflies.[5]

[5] "The Butterflies of Australia," Waterhouse and Lyell; Angus and Robertson Ltd., Sydney, Australia, 1914.

Habitat.

This insect has been recorded as damaging leaves of sugar-cane in Java, Mauritius, and North Queensland. A closely related species, *Melanitis ismene* Cr. is similarly destructive in the Orient.

PADRAONA HYPOMOLOMA Lower. (Family HESPERIDÆ).

(Figure 4.)

Synonym—*Ocybadistes hypomoloma* Lower.

This butterfly was recorded for the first time as feeding on cane-leaves in August 1917 (Australian Sugar Journal, vol. ix., p. 303), when it was observed by the writer damaging "Badilla" plants growing in pots at the Entomological Laboratory, Gordonvale, North Queensland. It is the fourth species found attacking cane in the Cairns district, the other three—two of which affect cane in Java—having been previously recorded in Bulletin No. 3 of this Office.

In 1914 A. P. Dodd, Assistant Entomologist, found larvæ of *Telicota augias-kreffti* Mael., *Padraona marnas* Feld., and *Parnara mathias* Fab., attacking cane leaves at Babinda and Harvey's Creek; while in 1915 the writer bred *augias-kreffti* and *mathias* from affected stools at Gordonvale, finding these two species to be of common occurrence in our canefields.

Unfortunately the early stages of the life-cycle of *hypomoloma* were not noted. The pupa, however, which is about $\frac{3}{4}$ in. long, is pale brownish yellow with a dull-red U-shaped plate on dorsum of anal segment bearing two very short pointed horns. The rounded edge of anal plate lying between these horns is scalloped, while the extremity of the anal segment is obtuse, reddish, somewhat flattened vertically, and furnished with numerous yellow bristles.

The general colouration of this "skipper" butterfly may be briefly described as—Dark-brown, contrasted conspicuously with rich orange-yellow, the latter colour being arranged on fore-wing in the form of an oblique stripe near outer margin, and a large triangular blotch on costa. A broad transverse band of the same colour, placed below two spots, crosses the middle of hind-wing. Expanse—25 to 33 mm. ($1\frac{1}{4}$ in.).

A detailed description of this insect was published in 1911 by Lower, who placed it in genus *Ocybadistes;* to which entomologists are accordingly referred for more complete information regarding its specific distinction.[6]

Waterhouse and Lyell, however, in 1914 merged *Ocybadistes* in *Padraona,* putting *hypomoloma* in the latter genus.[7]

[6] "Revision of Australian Hesperidæ," Trans. Royal Soc., South Australia, vol. xxxv, 1911.

[7] "The Butterflies of Australia," Waterhouse and Lyell; Angus and Robertson Ltd., Sydney, Australia, 1914.

Habitat.

This hesperid has been previously recorded from Prince of Wales Island, Kuranda, Rockhampton, Brisbane, Sydney, Herberton, in March; and from Roseville near Sydney in April.

The following Hesperidæ have been recorded as being harmful to the foliage of sugar-cane:—

1.	*Discophora celinde* Stoll.	Oriental region.
2.	*Hesperia conjuncta* Herr Sch.	Java.
3.	*Hesperia philino* Moschler	Java.
4.	*Hesperia* sp. (undetermined)	Trinidad.
5.	*Hesperia* sp. (undetermined)	Trinidad.
6.	*Padraona dara* Koll.	Orient.
* 7.	*Padraona hypomoloma* Lower	Queensland.
* 8.	*Padraona marnas* Feld.	Queensland.
9.	*Pamphila* sp.	British Guiana.
*10.	*Parnara mathias* Fab.	Java; Queensland.
11.	*Perimeles remus* Fabr.	Mexico.
12.	*Prenes ares* Feld.	Porto Rico.
13.	*Prenes nero* F.	Porto Rico.
*14.	*Telicota augias-kreffti* Macl.	Java; Queensland.
15.	*Thymelicus* sp.	British Guiana.

"BAG-MOTH" (Family PSYCHIDÆ).

A species of "Bag-moth" (undetermined, but near *Hyalarcta*) is often noticed in plantations around Gordonvale and Meringa, where it occasions minor damage to leaves of sugar-cane, resembling in character that due to grasshopper injury.

Larvæ of this species construct as a protection an elongated bag, beautifully lined inside with soft but exceedingly strong silk, to the outside of which they attach at first minute woody fragments, and finally, when nearly full-grown, a number of sticks of varying lengths attached at one end near the mouth of the bag.

It is no easy matter to tear or even cut open one of these cases, yet the writer has often found those of the "Stick-case Moth" (*Clania ignoblis* Walk.), a common Victorian species, torn open, presumably by some bird of prey. The larvæ, moreover, are very subject to attacks from hymenopterous parasites, which are able to pierce the tough silken bag with their needle-like ovipositors; and also from tachinid flies, which manage to glue their eggs to its body near the head whilst it is feeding.

Owing to the female moth being wingless, and the larvæ unfitted for travelling far afield, infestation is necessarily confined to very limited areas.

Some of the Psychidæ, as *Thyridopteryx ephemeræformis* Haw., occasion considerable injury to shade trees, evergreens, &c.

Our cane "bag-worm" sustains a severe check during harvesting operations, so is not likely to increase to an injurious extent.

ANTHELA ACUTA Walker (Family LIPARIDÆ).

(Figure 5.)

This is one of the so-called "Tussock," "Brown-Tails," or "Vapourer" moths, some of which are pre-eminently destructive to the foliage of shade trees, and under favouring conditions, as in the case of the notorious "Gypsy Moth," may cause immense financial losses.

The genus *Anthela* (formerly *Darala*) happens to be peculiar to Australia, and according to Froggatt about thirty species have been described. Specimens of *acuta* were first noticed at Deeral, North Queensland, during April 1917, feeding on cane-leaves, being reported to be not uncommon in such situations. Its caterpillar is of the typical "wooly-bear" appearance, about 3 in. in length, dark-brown, and densely clothed with long, hair-like bristles. The perfect insect (bred from a larva sent to the writer) varies somewhat in colouration, soft shades of grey predominating, suffused on body and basal areas of wings with fawn colour. The central areas are crossed by an oblique band of greenish grey bounded by a darker line, and abruptly serrated on outer border. The female moth measures about 3 in. across the fully expanded wings.

OPHIUSA MELICERTE Drury (Family NOCTUIDÆ).

(Figure 6.)

Synonymy—*Achæa catella* Guen.
Calocala traversii Fereday.
Noctua tigrina Fabr.

There seems little doubt, from evidence available, that this noctuid deserves to be classed among our minor pests of sugar-cane.

Although the larvæ have not yet been observed here in the field damaging stools, the moth is not uncommon at certain seasons, flying about plantations of young cane; while during 1914 Mr. A. P. Dodd (Assistant Entomologist) found several pupæ of *melicerte* in such situations at Gordonvale attached to cane-leaves.

The foregoing evidence, coupled with the fact of this insect having already been recorded from India as a cane-pest, appears sufficiently conclusive to warrant the following brief description by Hampson of its caterpillar stage:—"Larva: Bluish grey speckled with blue-black; lateral and sub-lateral yellowish bands with intervening blue-grey lines; a dorsal black stripe bordered by reddish-white spots between 4th and 5th somites; a pair of dorsal red tubercles on anal somite; spiracles and fore-legs red; the head black-striped."

Imago.

Both larval and imago stages of this moth are subject to variation in size and colouration. A brief description, taken from specimens bred at Gordonvale, will help growers to recognise the species:—Fore-wing pale reddish-brown, darker on basal and outer areas. Hind-wing brownish-black, basal area lighter, an oblique band across middle of

wing and three large spots on outer margin, white. Beneath: lighter greyish-brown. Fore-wing with central white band, and hind-wing with a large black blotch at inner angle. Wing expanse about 55 mm.

Some years ago, whilst in Southern Queensland, the writer bred *Ophiusa melicerte* very plentifully from caterpillars defoliating castor-oil plants (*Ricinus communis*) along the banks of the Brisbane River. This noctuid has also been recorded as especially destructive to beans of the above plant in India, where its more important insect enemies are said to be a tachinid fly and hymenopterous parasites.

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