

LIFE-HISTORIES OF AUSTRALIAN COLEOPTERA.

PART III.

BY WALTER W. FROGGATT.

This paper contains my contribution to the study of the habits of our Coleoptera for the season 1894-5, and is really a continuation of previous notes on this subject; for the observations of one year run into the next, and some of the insects have to be watched for over twelve months before the larva can be correlated with the perfect insect.

As before, I am indebted to the Rev. Thos. Blackburn for the determination of some of my beetles, and to Mr. R. T. Baker for the verification of the botanical names of some of their food plants.

APHANASIVM AUSTRALE, Boisd.

Larva short and stout, pale yellow, with well-defined abdominal segments; jaws black, and truncated at the tips, mouth parts raised upon a slightly lobed projection, the basal portion of the head forming an encircling fold, slightly overhanging in front; on the lower edge of the forehead are four irregular yellow patches; thoracic segments narrow, legs small, short, ferruginous; on the dorsal surface the first five segments flattened, of regular size, produced into an elongate oval, slightly impressed in the centre, with a patch of reddish-brown hairs on either side, 6th and 7th rather larger and rounder, 8th small, 9th also short, terminating in a short obtuse point; on the ventral side the segments are comparatively flat.

The larvæ feed upon the stems of *Hakea acicularis*, growing in the neighbourhood of Sydney, a number always boring into the shrub at one place, causing the branches to wither and snap off; perhaps nearly a dozen grubs will feed in a single branch gnawing

out parallel chambers, but never breaking into each other's mine. The dying foliage is noticeable early in Jannary, their attacks causing the limb to become swollen and covered with exudations of gum. The beetles come forth in the first week in November; I have never taken the beetle at large, but it is evidently common on this shrub at certain seasons of the year, though very effectually concealed in the dense prickly foliage. The beetle is 10 lines to an inch in length, with very large prominent eyes and long slender antennæ; thorax^{*} finely rugose, produced into a stout blunt spine on either side; elytra rounded at the shoulders, of a uniform width to the tips, which are round, not quite covering the tip of the abdomen; the whole insect is of a uniform chestnut-brown, the central portion of the wing covers being much lighter than the edges, and the whole of them covered with close, fine, fawn-coloured down.

Hab.—The neighbourhood of Sydney.

STRONGYLURUS THORACICUS, Hope.

Larva dirty white, with rather large head, armed with stout black jaws, broad at the tips; body short and corrugated. Dorsal view: forehead large, flattened, projecting slightly in front, creamy-white with a large blotch of bright yellow on either side, covered with stout reddish hairs; thoracic segments narrower than the head; first four abdominal segments bearing two corrugated lobes on the summit; the 5th, 6th and 7th with two rounded tubercles divided in the centre; all the segments distinctly divided from each other at the apical margins; the last two segments rounded. Ventral view: thoracic segments much flattened, legs very small, short and ferruginous, the margins of all the segments fringed with fine hairs.

The larvæ attack the stems of the common garden Pittosporums (*P. revolutum* and *P. undulatum*) growing in suburban gardens. In the neighbourhood of Croydon, where most of my specimens were obtained, they completely disfigured a large shrub of the former species, large branches three and four inches in diameter being cut off; over a dozen of the lower limbs fell during last

season, while little streams of dust could be seen falling from the holes where they had gnawed through the bark; most of the fallen branches are hollowed out before they break off, but the larva nearly always remains behind in the stump of the branch feeding into the green wood, which dies down below where it pupates. They take some time to reach maturity, certainly not before the second year, as I have kept larvæ over that time without any sign of their pupating.

Mr. Geo. Masters tells me that at Elizabeth Bay, *Symphyletes nigro-virens* feeds upon the garden Pittosporums; while *Strongylurus thoracicus* confines its attacks to the white cedar (*Melia composita*), cutting off the branches in exactly the same manner.

The beetle is 10 lines in length, with dark brown head clothed with coarse brown hairs, an elongate spot of silvery white hairs between the eyes; antennæ toothed on the outer apical margin of each joint; thorax dark reddish-brown, deeply and coarsely punctured, with three large round patches of white hairs on either side, with another smaller one in front of the scutellum; elytra ferruginous on the shoulders, paler towards the tips, deeply punctured for about two-thirds of their length, but almost smooth towards the apex; a row of 4 small black spots across the shoulders, with an irregular black horseshoe-like band on either side; the tips of the wing covers and the apical margins black; the whole of the upper surface clothed with scattered grey down; underside clothed with greyish hairs, with a patch of white hairs forming an oval mark on the side of each segment.

The larvæ were most active in the early summer months after the new year, the beetles breeding out early in December.

ATERPUS CULTRATUS, Fabr.

Larva 5 lines in length, short, and obese, lying with its back arched and the tip of the abdomen curved towards the head; dull white, with dark chocolate-brown head, truncate at the base, mouth parts rather prominent, and with a median groove lightly impressed down the centre of the head; a dark brown transverse line in front of the first thoracic segment; on the dorsal surface

the segments are of uniform size, each forming a double fold at the apex, and divided into three distinct lumps or warts on either side, the ventral surface flat, with a fringe of long reddish hairs along the marginal folds of each segment.

The larvæ feed upon the stem of *Melaleuca stellatum*, commencing on the bark and then gnawing out an elongate oval cavity in the side of the branch underneath the loose bark; in this cavity they form a rough rounded cocoon of gnawed wood early in July. The infested stems were cut off, and in captivity the beetles bred out early in September. They were very plentiful at Rose Bay (Sydney).

Two years ago I bred a single specimen taken at Manly, which had formed a similar pupa case on the stem of *Eucalyptus corymbosa*. The beetle is generally found upon small gum trees, and often comes to the stump of a freshly cut down tree, probably for the exuded sap.

It is 5 lines in length; head, legs, and apical portion of elytron chocolate-brown; thorax black, deeply and regularly punctured, with a stiff brush of black down on either side towards the head; the basal portion of the wing covers black, regularly and deeply striated, with the punctures in regular rows; carrying a double pair of tufts of black down on each shoulder, with a corresponding single one on either side towards the apex, where the elytron slopes down with deep regular striations towards the tip, and is ornamented with two much smaller black tufts.

This beetle has a wide range over Australia, and is a rather common weevil about Sydney.

EURHYNCHUS LÆVIOR, Kirby.

Larva 10 lines in length, slender and of uniform length, rounded on the dorsal surface; of a dull yellow colour; head almost spherical, flattened in front, deep reddish-brown, slightly rugose, fringed in front with a few scattered long hairs; jaws black, truncate at the tips, palpi very short, and the labrum very small and wedge-shaped; thorax with 1st segment ochreous-yellow, smooth and shining, 2nd and 3rd pale yellow, covered on the

summit with a patch of very fine reddish spines; on the ventral surface flattened and corrugated, each bearing a pair of very short conical legs: abdominal segments slightly smaller than the thorax, corrugated and clothed with similar fine spines as the thoracic segments.

The larvæ feed upon the stems of *Persoonia lanceolata*; entering through the bark a few inches above the surface of the ground, they bore holes towards the centre of the trunk, then turning upwards and hollowing out parallel chambers several inches long, and pupating at the end of the last chamber. I found one nearly perfect beetle, and several full-grown larvæ early in July, at Hornsby. The beetle is about 7 lines in length, of a general slender and very graceful form compared with most of the weevils; black, but having a greyish tint from the fine clothing of grey hairs covering both dorsal and ventral sides. The snout is long, slender, and smooth, the thorax rugose, the elytra also rugose, with close deeply punctured striæ.

It is not a very common beetle, but is generally found in pairs, about November, clinging to the twigs of small bushes.

AXIDES DORSALIS, Pascoe.

Larva pale yellow, about $3\frac{1}{2}$ lines in length when uncurled; when met with is nearly always lying with its back arched and the head nearly touching the tip of the abdomen; head oval, ferruginous, with two pale ochreous lines in the centre giving it a variegated appearance; jaws black, short, and angular; first thoracic segment small, 2nd and 3rd with the first seven abdominal segments of a uniform size; 8th and 9th forming a short broadly rounded tip.

The larvæ are very plentiful in May and June in the stems of *Astrotricha floccosa*; they bore from the surface into the soft pithy centre, forming short cylindrical burrows, sometimes only one or two being together, but oftener in little colonies of ten or a dozen; their attacks cause the limb to swell and exude a lot of sticky strongly smelling aromatic resin, which burns very readily;

this, together with the castings, forming irregular excrescences upon the branches.

The beetle is $2\frac{3}{4}$ lines in length, of a general creamy buff colour, due to a dense growth of fine hairs covering the dark chocolate coloured elytra, the natural colour visible only on the snout; the centre of the thorax and from the shoulders for about two-thirds of the back pale reddish-brown, thickly interspersed with fine black spines or bristles commencing on the thorax, and increasing in number towards the middle of the elytra, where they form a dark patch. The thorax is further ornamented with two pairs of small downy plumes on the sides, and the elytra are broadly impressed with coarsely punctured striae.

The beetle is found at large upon its food plant early in November; most of my specimens were obtained on a large patch of the bushes at the head of the Double Bay Valley.

DOTICUS PESTILENS, Olliff.

Larva 2 to $2\frac{1}{2}$ lines in length; pale yellow, with the apical portion of the abdomen slightly ferruginous; head small and orbicular, partly hidden by the thorax; jaws small, with the tips divided into two pointed teeth, with a larger and more angular one on the inner edge; segments rounded, the abdominal ones forming a double fold along the sides, the under fold smallest, tip of the abdomen curled inwards, and the whole larva clothed with long hairs.

The larvæ feed in the interior of lumpy reddish-brown galls, produced in the first instance, I think, by the attacks of lepidopterous larvæ, upon the tips of the branchlets of *Acacia decurrens*; the galls or rather after-growths upon the twigs become dead and dry up in February; and at this season nearly every gall is tenanted with a little grub, covered with woody dust.

The beetle, about 3 lines in length, dark brown in colour and covered with greyish down, was found in the box containing the galls about a week after they were collected. It has a peculiar way of jumping when touched.

The life-history of this beetle is of importance, as the insect is a well-known orchard pest. The species was described by Mr. A. Sidney Olliff from specimens received from Mr. C. French; they had attacked the apples near Melbourne, and by puncturing them caused them to shrivel up before they were ripe.

Mr. French has given an account of this pest and its ravages, with a plate containing figures of it in all stages, in his *Hand-book of the Destructive Insects of Victoria** under the name of *Doticus pestilens*, the apple beetle.

Hab.—Heathcote.

MÆCHIDIUS RUGOSUS.

The description of the larva of the previous species will serve also for this, except that it is slightly larger when full grown. The larvæ live in the thick bark of *Eucalyptus robusta*, where they pupate; the beetle comes out in September and October, and will be found in crevices, or under loose bark on the trunks of the trees.

This beetle is slightly larger than *M. tibialis*, having the same uniform coloration; the flanges in front of the head more angular, with the edges curved upward, and the back of the head and thorax very finely and closely punctured, so that the outer edges have a fine serrate appearance; the elytra covered with fine close deeply punctured parallel striæ; the whole of the dorsal surface covered with very minute scale-like hairs scattered over the head and thorax; on the elytra forming regular lines along the ridges of the parallel striæ.

Hab.—Botany, N.S.W.

MÆCHIDIUS TIBIALIS, Blackburn.

Larva dirty white, rather long and slender, the head pale yellow, with short ochreous-yellow labrum, and stout short jaws of the same colour; thoracic segment more constricted than the first abdominal segments; legs short, covered with short golden

* Part I. Chap. xiii. p. 83.

yellow hairs, which are also sparsely scattered along the sides of the body; tarsal claw black, small and sharply pointed; all the segments along the dorsal surface except the last two covered along the summit with short brownish spines.

The larvæ, together with the perfect beetles, were found in the nests of the large mound-building Termite; they were very numerous in several nests opened, most of the larvæ being in the outer walls, but others were in the interior of the nest, while the beetles were crawling about all parts of the termitarium, the swarming hosts of white ants seeming to take no notice of them.

The beetle is $4\frac{1}{2}$ lines in length, dark brownish-black, with the head produced into two shell-like flanges in front of the eyes; thorax finely punctured; elytra traversed with deeply and closely punctured parallel striæ.

Hab.—Shoalhaven, N.S.W.

MELOBASIS IRIDESCENS, L. & G.

Larva white, slender and flattened on the underside; jaws small; head globular, much broader than the thoracic segments; pale yellow, with two ferruginous lines crossing the head and coming to a point at the forehead; first and second thoracic segments rounded and narrow; third thoracic and the first six abdominal segments rounded on the margins, but square at the apex, which projects over the following segment on either side; seventh and eighth much smaller, while the anal segment is produced in a curious forked tail, divided into a rounded lobe at the base, terminating in a slender tail on either side.

The larva feeding between the bark and sapwood forms a series of parallel wavy tunnels in wood that is just beginning to wither; when nearly full grown it bores in the sapwood to pupate.

The beetle is about 4 lines in length, of a bright metallic green colour, with the head and thorax very finely punctured; elytra irregularly striated, with the striæ bearing punctures; with the ridges between them also punctured; apical edges of the wing covers very finely toothed. Bred from infested branches of *Acacia longifolia* obtained at Rose Bay.

M. iridescens is given in Masters' Catalogue as a variety of *M. cupriceps*, but it is very distinct both in form and habits from the beetles determined by Mr. Blackburn as the latter.

M. cupriceps is nearly a third longer, of a more delicate pale green colour, with decided golden tints upon the shoulders, and it is more boat-shaped upon the back, with the serrate edges of the elytra very deep and slender. The abdominal striæ are very fine and regular, and sparingly punctured, while the spaces between them are perfectly smooth.

This beetle is rather common about Sydney, feeding upon the foliage of *Viminaria denudata* early in the year; but I have never taken *M. cupriceps* on an *Acacia*.

MELOBASIS SPLENDIDA, DONOV.

I have not been able to identify the larva of this beautiful little Buprestid; but in chopping the dead stems of *Acacia longifolia* I have come upon several fully developed in an irregular chamber at the end of a tunnel leading from under the bark into the sapwood; and have bred as many more from infested wood kept in boxes.

The beetle is 4 lines in length, bright metallic-green, with two parallel bands of dark purple across the thorax; and a brilliant fiery coppery-red pattern formed by two bands commencing behind the thoracic bands, leaving a bright green patch round the pronotum and joining just below, occupying all the centre of the back, and after projecting out on either side into two sharp angles, runs round the tip of the wing covers, and forms a narrow stripe along the apical part of the margins not quite up to the hind legs; all the underside is bright green.

Hab.—Rose Bay, N.S.W.

CISSEIS MACULATA, L. & G.

A score of specimens of this beetle have been bred, in October, from dead branches of *Acacia longifolia* collected at Rose Bay, and kept in closed boxes; others were obtained in November and December, feeding on the leaves of the same *Acacia* at Manly.

The beetle is about 3 lines in length, the front of the head bright green, the thorax and shoulders bright metallic-bronze, the centre of the wing covers black with metallic reflections, and the tips fiery red colour. Underside of thorax and legs green, with the abdominal segments bronzy-red.

CISSEIS SEMI-SCABROSA, L. & G.

Larva very pale yellow, with small mouth parts and jaws; head large and globular; 1st and 2nd thoracic segments small, rounded on the edges; the 3rd thoracic and the first six abdominal segments more or less rounded on their extremities, the last three tapering to a small rounded tip.

It feeds in a very similar manner to that of *Melobasis iridescens*; at first under the bark, but finally pupating in the sapwood beneath.

The beetle is $4\frac{1}{2}$ lines in length, the head and thorax bright metallic-green; the elytra fiery coppery-red and finely granulated, all the underside green.

This is not a common species; I have bred three individuals from infested branches of *Acacia longifolia* obtained at Rose Bay.

CADMUS FLAVOCINCTUS, Saund., Trans. Ent. Soc. 1846.

Larva 4 lines in length, pale yellow, with a cylindrical black rugose head, truncate and perfectly flat in front, with short 3-jointed antennæ projecting on either side and the jaws almost hidden; 1st thoracic segment covered on the dorsal side with a dark brown coriaceous plate slightly curved in front; legs very long, slender, armed with a sharp tarsal claw; the rest of the segments of uniform size, pale yellow, clothed on the sides with long scattered hairs, thickest towards the tip of the abdomen, the legs also covered with long hairs.

The larva constructs an elongate oval cocoon with a jug-like neck, of a stout woody nature, smooth, hard, and dark brown; the grub by protruding its head and fore legs can crawl about on the ground, or among the loose bits of dead bark at the butts of the gum trees in a similar manner to the case moths; but from the

remarkable resemblance of these cocoons, when in a quiescent state, to the castings of some of the large wood-eating lamellicorn beetles, they are very easily passed over.

When the larva is full grown it forms a concave lid over the top of the opening, and remains on the ground generally under logs or fallen timber until it is ready to emerge.

Like nearly all the members of this genus the beetles feed upon the foliage of the young Eucalypts.

The beetle is about 4 lines in length, reddish chocolate-brown, with irregular black blotches upon the thorax and upper half of the elytra; thorax and wing cases very rugose, the former very finely punctured; the latter deeply ribbed with parallel striae, closely and finely punctured.

Hab.—Not common in the neighbourhood of Sydney, but plentiful in the Shoalhaven District.

EPILACHNA 26-PUNCTATA, Dejean.

Eggs pale yellow, placed in patches of thirty or forty upon the underside of the leaves; elongated and pointed at the apex; having a beautiful granulated appearance under the lens. The larva on emergence and after each moult pale yellow.

Larva short and stout, 5 lines in length and 3 in breadth, pale yellow. Dorsal view: head completely hidden by the folds of the thorax; 1st thoracic segment covered with a blackish patch from which spring up four black spines, each of them with several finer radiating spines growing from their sides; white at the tips; 2nd and third thoracic segments with a blackish patch on either side, with two similar feathery spines springing out from them; with another black patch on either side just above the legs out of which a single feathered spine grows; the following six abdominal segments have a double feathered spine in the patch on the centre of the back, with two smaller blotches on either side, each producing a spine, 7th abdominal segment bearing 4 spines, the 8th and anal one two.

Ventral side: pale yellow; head small, black and rounded behind, elongated towards the jaws, which are short and toothed;

palpi long and drooping; legs stout, long and mottled with black; the inner edge of the tarsi fringed with fine white hairs; tarsal claws ferruginous, the central ridge of the abdominal segments marked with a line of small blackish brown spots.

The larva attaches itself to the underside of the leaf, when the larval skin splits and turns down over the pupa, remaining in this position about ten days.

This is one of the commonest ladybirds about Sydney. Both beetle and larva feed upon the leaves of Solanaceous plants, gnawing the epidermis off in little wavy lines, causing dead patches all over the leaves. They were also very plentiful upon the leaves of *Datura stramonium*, on the seashore at Botany; a number that I took home were let out of the box, and a few days later they were busy at work eating the leaves of the tomato plants.

It is a handsome little beetle of a deep yellow colour mottled with irregular black spots; all the members of this genus, unlike others of the family, are phytophagous.

In "Insect Life," 1891, Vol. iii. *Epilachna corrupta* is stated to have destroyed fully half the bean crop of New Mexico.

An African species, *E. hirta*, is very destructive to potatoes and tomatoes.



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