

FURTHER NOTES ON THE EARLY STAGES OF
HETEROCERA BRED IN THE NAKURU DISTRICT.

By A. L. H. TOWNSEND.

SPHINGIDAE.

Hippotion eson, Cr.

FOODPLANTS.

Various Vitaceae.

LARVA.

When full fed is pale green, with darker linear spottings in the dorsal area. Faint darker dorsal and latero-dorsal lines. The lateral green is divided from the darker green of the latero-ventral area in a dentate line. The "eye-spot" is a dark green narrow ring, enclosing a yellow ring, which shades to darker yellow on its inner edge. It has a bright green centre, with five spots which are lighter green, dark ringed. The spot on the next segment is oval, buff-coloured, in a fine ring of green slightly darker than the ground colour.

There is a black V at the root of the "tail," which is rough, brown, white-tipped.

PUPA.

Is golden-brown, with conspicuous black spiracle spots, and a thin black ventral line. The whole case is sprinkled with fine dark spots, particularly on the wing-sheaths. Cremaster is a long fine central point, with fluted shank, and minute lateral teeth. Duration of pupal stage about two months.

Acherontia atropos, L.

This larva is too well known to need further description.

It is fairly plentiful in this district, its usual food being Sodom apple (*Solanum*). I have taken the larvae nearly full fed in January, March, April, and July. These larvae have always been the green or yellow forms. I have never seen the brown form frequently found in the English Fens.

Pupal stage lasts usually from two to three months.

Deilephila nerii.

This insect is apparently not common in this district, and though I have taken the imago flying I have not seen the larva at large. Those larvae that I have reared have been successfully fed on cultivated periwinkle (*Vinca*).

PUPA.

Is on earth-surface, in a large cell of dead leaves, etc., joined by large-meshed network. Its colour is light brown, much dusted and

speckled with black. Spiracle spots large, black. There is a black dorsal line on the thoracic segments, and a similar central line on the ventral side of abdomen. The terminal segment has on its dorsal side a short, stout, black cone, ending in two very short, slightly curved prongs. Pupal stage lasts from two to four months.

ARCTIIDAE.

Metarctia flavicincta, Auriv.

FOODPLANTS,

Various grasses, and a few low-growing weeds.

LARVA,

When full-fed is $2\frac{1}{4}$ " long, and stout. (A very large larva considering the size of the imago.) The thoracic segments are extensile to a very large degree. Colour, dark brown to black, with a pinkish tinge when extended. The body is clothed in fur, brown with a greyish tinge at the tips. The fur is long and silky, but sparse. It is mixed with shorter silvery hairs. It rises from prominent oval tubercles, set in transverse rings, the tubercles being slightly "staggered" in the rings. Head large, black and polished: the lobes slightly separated on crown. Ventral surface dark greyish-brown; with transverse black rings, emitting short bristles, on segments 5, 6, 11, 12, and 13. Legs long, black.

PUPA,

Is in a thin web cocoon. It is stout, black, shiny; with a reddish tinge where wing-sheaths meet abdomen. Terminal segment is a blunt dome with three patches of short separate light-brown hooklets on its dorsal side. There are also small patches of short spines, lateral and dorsal, on the abdominal segments.

NOTE.—The larvae live in hollows under stones, clods, etc. Since these homes contain cast skins and frass, they are presumably permanent habitations. The pupae are sometimes, but not often, spun up in them.

SATURNIIDAE.

Nudaurelia wahlbergi, Bsd.

FOODPLANTS,

Maerua (*muthigeo*) and pepper tree.

OVA.

Spherical, dirty-white with brown ring, laid in small batches.

LARVA,

When young, is rusty-red with short black spines. When full-fed it is 4" long. The head is black, semi-retractile, and has a few grey stubby bristles. There is a horny black plate on Seg. 2, also bristly,

with a row of short black spines on its forward edge. The whole dorsal area is thickly covered with small flat greenish-yellow plates or scales, of various shapes, fitted closely together. The lateral area has the same scaly appearance, but the scales are less closely fitted. Between the segments the skin is rusty-red; and more of this colour appears on the lateral and ventral surfaces. An interrupted black dorsal line, widening into a black patch on the front part of each segment, has, on all segments except the last but one, a short black line at right angles to it. At each end of this short black line is a sharply conical black spine, with branched tip, having white bristles springing from it. Every segment from 3 to 11 carries a transverse half-ring of six such spines. On Seg. 12 there is one less; the two in the dorsal area being replaced by one stouter central spine. Spiracles are rusty-red. Irregular black lateral markings almost amount to diagonal stripes. Legs and claspers black, with white bristles. A black horny plate above the anal claspers. The larva has a very obese and wrinkled appearance, and is very sluggish.

PUPA.

Subterranean; black, very hard and horny. Pupal stage normally about 2½ months; but sometimes much prolonged.

LASIOCAMPIDAE.

Pachypasa, sp. near *drucei*, B.-Baker.

FOODPLANT.

I have found the ova and young larvae on Acacia thorn, but have never been able to persuade them to eat it in captivity. They feed up very well on pepper tree.

OVA.

Laid in a conical pile on a twig, or on the bark of the trunk sometimes quite near the ground. They are stout barrel-shape, but the ends not quite flat. Colour white, irregularly spotted and splashed with bright brown. At the end, a black disc is surrounded by a white ring. Surface almost smooth, with very fine reticulation.

LARVA.

When full-fed is 3" long, stout, rather flattened. Ground colour brown with a yellow tinge, but in some cases the brown is almost purple. Dorsal line is lighter, and so are the other lines, but very faint. Dorsal area has complicated marblings of red-brown, and fine pale lines. Lateral area above claspers thickly clothed in dense but not very long fur, grey with a slight violet tinge. Segments 3 and 4 have transverse fringes of short yellow hair. When the larva moves, these segments disclose tawny-brown, or sometimes crimson cushions, which are normally sunk in transverse slits. The fringe on segment 3 has a short central extension at right angles to it, of the same hair. Each segment has interrupted irregular transverse bands of short

scanty hairs, pale yellow or white; and on a few segments these end in small pale violet tufts projecting horizontally from the latero-dorsal area. Other such tufts are on all segments on the spiracular line, above the longer fur of the latero-ventral area. There are distinct "lappets" over the legs, which are long and dark brown. Ventral area black with two orange lines. Head brown, furry. Claspers brown, black-stemmed. The larvae are gregarious.

PUPA,

Is in a thin but strong cocoon of harsh yellowish-brown silk; occasionally on a stem, but more usually in a thick bunch of leaves. Two or three are often spun up in one such bunch. Abdomen brown and black ringed, with short tawny fur on each segment. Wing-sheaths dull black. Rather longer fur on head. Terminal segment short and blunt. Cremaster, on the dorsal side, consists of a very large number of very short separate hooklets.

Duration of pupal stage is from two to three months. Complete life cycle five months.

Bombycopsis indecora, Walk.

FOODPLANTS,

Various low-growing plants, including "black-jack" and Vernonia.

OVA.

Laid in small patches of eight or nine. They are smooth, stout oval, pale pinkish-ochreous, much splashed and spotted with light and dark brown.

LARVA,

Is very furry, especially round the head and thoracic segments. There are conspicuous grey lappets over the legs; the first being black-spotted, the second having a thin black line, and the third a thick one. Head black, dorsal area dark grey with a narrow black central line. Lateral area much lighter grey with a pink tinge. The whole body is a mass of fine longitudinal lines, darker than the ground colour. Segments 3 and 4 have transverse slits, with red erectile cushions sunk in them. The slits have white crests on their hinder side. Latero-dorsal lines from head to second slit are pale buff. Along the latero-dorsal lines are ruby tubercles, each emitting a few dark bristles. The tubercles on 8, 10, and 11 are larger, and there is a blackish shade on the area from which they rise. A grey lateral tubercle on each segment emits fairly short grey fur. The fur pointing forward round the head is much longer. Legs yellow; claspers yellow as seen from below, grey from above. Ventral surface has a wide black central stripe. In the final instar the larva is usually umber brown, almost without markings. The fur is usually brown, sometimes grey. The white crests behind the thoracic slits persist, and there are indistinct dark grey latero-dorsal lines. The slit-cushions are crimson. Latero-dorsal



tubercles appear dark grey as seen from above, ruby-coloured from the side. Length about 3".

PUPA,

Is in a tough cocoon, long oval, nearly transparent, among leaves. Pupa is light brown, with darker wing-cases, and black spiracles. Abdomen covered with short pale tawny fur, slightly longer on the head. Cremaster consists of a very large number of short hooklets massed together in a roughly circular patch on the dorsal side of the terminal segment. Duration of pupal stage from three to five weeks. I have taken the moth flying in March and December.

Trilocha ficicola.

FOODPLANT,

Fig.

LARVA,

When young, is white with brown markings. Sits openly on a leaf and closely resembles a bird-dropping. When full-fed it is more than 2" long, slender, rough-skinned, but without bristles except for a few short ones around the anal claspers. Ground colour is sulphur yellow, with pinkish-brown markings. The lateral area (except that of the thoracic segments) has a reddish-brown tinge, and there is a red spot above each spiracle. Collar red-brown, with a yellow central line. Head yellow, retractile. Segment 3 is swollen, with a transverse wrinkle bearing three red dots. Segment 5 is slightly swollen, with red latero-dorsal patches. There is a reddish transverse wrinkle above the third pair of claspers. There is a "tail" (like that of the Sphingidae); very short, reddish-yellow, curved backwards. Claspers are ground colour, legs brown.

PUPA,

Is in a closely woven pinkish cocoon in a rolled leaf. The moth is on the wing in May and November.

LYMANTRIIDAE.

Orgyia vetusta, Hmps.

FOODPLANTS,

Castor oil and black wattle.

OVA.

Greyish-white; spherical, but slightly "dished" at the top, this part being surrounded by a brownish ring. Almost smooth, with very fine shallow depressions. The ova are laid both inside and outside of the cocoon.

LARVA,

Length when full-fed $1\frac{1}{4}$ ". The usual four dorsal "brush-tufts" are, in early life, dark smoky grey; the back two turn later to dingy

white; and in the final instar all four are either dingy white or (less commonly) canary yellow. These "brush-tufts" are wide and closely pressed together like a mat except when the larva is walking, when the spaces between them are seen to be black. In front of them the dorsal area is white as far as the collar, which is scarlet on black. Behind the "brush-tufts" the central stripe is black, with a grey area on each side, crossed by transverse rings of small scarlet tubercles. There is a conspicuous central scarlet stud on each of the segments 10 and 11. On segment 12 a dorsal "pencil"-tuft of blackish hair points backwards. The lateral area is yellow, with scarlet tubercles emitting fur that is mostly silvery-white. But that projecting backwards over the anal claspers is dark grey, while two blackish "pencils" project forwards from the collar. Under brush-tuft No. 1 is a white horizontal pencil, and under brush-tuft No. 2 is a black pencil with a white one behind it. Near the rear end of the larva is a smaller white horizontal pencil. Ventral surface yellowish; legs and claspers red. Head reddish-brown, mouth yellow.

PUPA.

Very short and stumpy; buff, with many black spots and markings. The cremaster, situated at the extreme dorsal edge of the flattened terminal segment, consists of a long narrow cone, surrounded by and tipped with a large number of separate hooklets. The cocoon (on leaf, stem, or any adjacent object) is of greyish-yellow silk; very small and compact; almost pear-shaped.

Duration of pupal stage is from nine to fifteen days.

NOTE.—I have bred large quantities of these larvae, in many different batches, on castor oil, the plant on which they were found. I was never successful in obtaining a single male, the entire result of every batch being wingless females. Males, however, assembled to, and mated with, these females. Subsequently I found masses of the cocoons and ova on black wattle, and from these I reared many imagines of both sexes. While, however, the males appeared quite normal, the females were in every case about half the size of those reared on castor oil.

Naroma signifera, Wehr.

FOODPLANT.

Fig, both cultivated and indigenous.

LARVA.

When full-fed is $1\frac{1}{8}$ " long, furry, flattened, very broad for its length. Ground colour varies, in different specimens, from white, through various depths of ochreous to light brown. There are latero-dorsal lines composed of minute black or dark brown dots, with a small light-yellow wart on each segment. On the two segments between legs and claspers four dorsal tubercles stand in square forma-

tion. On segment 2 is a horny, naked triangular plate, pale ochreous or white, with reddish lateral tubercles emitting long forward-pointing pencils of black hair. From the base of each of these tubercles a short black line curves inwards and backwards to the central line. A row of lateral tubercles emits dense whiteish silvery fur, with a few black hairs in it. Below the spiracular line the colour is pale greenish. Head large, white or flesh colour, speckled with darker. Claspers are flesh-colour. The larva sits quite openly on a leaf, and is very conspicuous.

PUPA,

Is among a few threads in a partly curled leaf. The same general colouration as the larva; very hairy, with a long double crest at head. Duration of pupal stage is about a fortnight. I have taken the moth in May, August, and December.

NOCTUIDAE.

Phytometra orichalcea, Fabr.

FOODPLANTS,

Very many low growing plants.

LARVA,

When full-fed is almost $1\frac{1}{2}$ " long, tapering considerably in front. Ventral claspers 2 pairs. Ground colour bright green. Dorsal stripe very dark green, with a narrow line of ground colour on each side. Outside this is, first, a rather irregular, fairly wide white line, and then a much narrower white line. Lateral line is yellow, with a very dark green upper edge shading off to ground colour. Ventral surface deep velvety green. There are sparsely scattered short white bristles over the body, rising from small pale warts. Legs black. Head shiny, green with black cheeks. A pale triangular plate over anal claspers.

PUPA,

Is in a fine silken cocoon among leaves. It is black, with a few yellow marks on abdomen. The tip of the leg-sheath is just detached from the body casing. Terminal segment short, with a short wrinkled protuberance on the dorsal side. This carries two short, stout points without hooks. Duration of pupal stage is about 15 days.

Achaea catella, Guen.

FOODPLANT,

Euphorbia crotonoides.

LARVA,

Until the last instar the larva is light grey, covered with a kind of bloom. It is minutely and thickly spotted with black. Head black, with [Λ] pattern in white; a white, almost circular patch on each cheek; and four white dots on crown. A few black dots in centre of back: twin black spikes on Seg. 12, each ending in a short bristle; and a black

spot above each spiracle. Legs black, ventral claspers brown, white-spotted. When the larva is looped, segment 6 discloses a black transverse band with four white spots in it. Ventral surface ground colour with a few black spots. A few short bristles occur over the anal claspers: otherwise the larva is smooth. Ventral claspers three pairs, but the front pair little used. After its last moult the larva completely changes its appearance. When full-fed it is $2\frac{1}{4}$ " long, greenish-brown, minutely dotted with black. A row of conspicuous black lateral spots above the spiracles, which are orange, ringed with black and white. Head brown, with large circular lemon-yellow patches on cheeks, and four pale dots on crown. On the face is a pinkish A outlined in white, with a white vertical line on each side. The first few segments have a faint dark dorsal line. The division between segments 5 and 6 has an orange shade, and when the larva loops a vivid crossbar of black and orange is disclosed. Behind this there is a faint dorsal pattern of black marks in an orange shade. This extends to Seg. 12, where are twin red-brown dorsal tubercles, ending in black bristles, and rising from a dorsal swelling. Anal claspers long, pale. Ventrals very fleshy, pale with many black dots, and a black oval ring, white-centred, on each. Legs red. Ventral surface paler, stained with orange, and with conspicuous black spots.

PUPA,

Two larvae spun harsh silk spindle-shaped cocoons among the leaves. The others were all in similar cocoons, but covered with particles of earth, attached to stems at ground surface. The pupa is dark brown, finely granulated, covered with a greyish-white bloom that is thicker at the head end. Terminal segment is blunt, finely fluted, having a short cone on its dorsal side furnished with a number of stout, separate hooks. Duration of pupal stage is five weeks.

Prodenia litura.

FOODPLANTS,

Various low-growing plants, and cultivated tomato.

LARVA,

When full-fed is $1\frac{1}{2}$ " long, stout, smooth. Ground colour is greyish- or greenish-ochreous. There is a chrome yellow dorsal line, and latero-dorsal lines of the same colour. Just above the latero-dorsal lines each segment has a pair of vivid black marks, the first three pairs and the last being larger than the others. The dorsal area between these marks is shaded with grey. The same grey appears in the lateral area. Spiracles are black, with a whiteish spot in front of, and just above, each. There is an indistinct orange spiracular line. Head small, brown, with a yellow Λ . Below the spiracular line is a band of ground colour, and the ventral surface is greenish grey of a darker shade. Segment 2 has a brown plate, which is crossed by the three yellow longitudinal lines.

PUPA,

Is subterranean. Duration of pupal stage about one month. The moth flies in October.

Tathorrhyncus homogyna.

FOODPLANT,

Indigophora.

LARVA,

Ventral claspers two pairs complete, one rudimentary. Length nearly $1\frac{1}{2}$ " , slightly tapering at rear end. Ground colour buff, with black lines and markings in the dorsal area which vary considerably in different specimens, and sometimes have an almost "hieroglyphic" appearance. In the latero-dorsal area is a grey stripe, composed of many fine dark lines: the lateral stripe below it is white, with a pink line inside it: below this is a dark velvety-brown stripe which shades off into the greyish buff of the ventral surface. The grey claspers have black spots. Head is large, buff, with sometimes a pink flush on crown. Face nearly white. But the various longitudinal lines of the body are faintly visible on the head and face.

This larva is larger and less tapered than that of *T. exsiccata*, and the head is larger. Otherwise, in their early stages they are very similar.

PUPA,

Is in a flimsy cocoon, covered with particles of earth. The cocoon is usually attached to a stem or twig on the ground surface. Pupal stage lasts about twenty-five days.

GEOMETRIDAE.

Psilocerea pulverosa, Warr.

FOODPLANT,

Clematis grata.

LARVA,

When full-fed $1\frac{1}{3}$ " long, stout, drab; sometimes with a faint pink tinge. A small double hump on Seg. 12, with a dark area and two black spots on its hinder surface; and a pair of small dorsal tubercles on each of the segments in front of this as far as Seg. 5. The pair on Seg. 6 are larger. These tubercles are very dark grey in front, lighter behind. From the head to Seg. 6 there is an indistinct latero-dorsal chain pattern in dark grey: on Segs. 7 and 8 this is also very faintly discernible. From this point to the hind hump the dorsal area is paler than the ground colour. There are slight "bulges" on the spiracular line, which is dark; and a black lateral dash on Segs. 2 to 4. A dark latero-ventral line is carried down the ventral pair of claspers, and behind them is a black spot. Ventral area ground colour with dark lines. Small dark warts all over the body, scattered, emitting very fine short sparse bristles. Skin generally rather rough and wrinkled.

Head grey, with two dark lines that extend over Seg. 2. The larva feeds by night.

PUPA.

Same general colours as larva. The terminal segment, which appears almost as if gilt, is pointed, and flattened dorsally and ventrally. Cremaster is of eight hooklets, two at the extremity being much longer and stouter than the others, which are arranged, three on each side, farther up the segment.

The pupa is among dead leaves, etc., on the ground surface, with no cocoon.

Colocleora simulatrix crenifera, Prout.

FOODPLANTS.

Castor oil and *Clematis grata*.

OVA.

Are laid in large flat patches on leaf surface. Almost true oval, but inclined to be more pointed at one end. Colour is a beautiful transparent green, with a slight blue tinge. Surface very smooth and shiny, no markings or sculpture visible.

LARVA.

The young larva is gregarious: dark chocolate brown, with five white transverse rings, and a thin white collar. During the day time it is very active, ascending and descending perpendicular threads stretched between two leaves; but it appears to feed only at night. When half fed there is a light brown dorsal patch over head and legs, and another over ventral and anal claspers. Those segments not having these patches exhibit the same colour laterally. Ventral area very dark, with a lighter central stripe of irregular width. When full-fed, the larva is $1\frac{1}{2}$ " long, fairly stout and fleshy. Skin rough, covered with small dark pustules. Head square, slightly lighter than ground colour, with a double white irregular vertical line. It is rather withdrawn into Seg. 2. The ground colour varies considerably in different specimens. Some are quite light grey, most exhibit different shades of brown, while some are almost black. The darker ones show practically no markings; but in most specimens lighter latero-dorsal lines are discernible, and faint darker dorsal patches, lozenge-shaped. There is a paler dorsal area on the last three segments, with two very small dark tubercles at its forward end. A pronounced lateral wrinkle, with one, or sometimes two white or yellow marks a little behind the legs.

PUPA.

Is underground, in a very flimsy case. It is light brown, stout. The terminal segment is dark brown, rather flattened, with roughly granulated surface; having on its dorsal edge a narrow cone terminating in two fine, sharp, diverging prongs. The pupal stage lasts for about three weeks: the complete life cycle from egg to egg averages just over three months.

Scopula nigrinotata, Warr.

FOODPLANT,

Oxygonum atriplicifolium.

OVA.

Nearly oval, but flattened at the end. Lemon-yellow, with raised longitudinal ridges that run the complete length of the egg, and project at the flattened end, forming a crenellated circle. Between them are minute cross-ridges. After a short time the ova turn to a bright carmine, and become dark grey just before hatching.

LARVA,

The young larva is very slender, grey or greenish, with a dark brown dorsal stripe. When full-fed, its length is 1" or slightly more. Tapers slightly from back to front. Skin minutely corrugated (transversely). Ground colour is green, grey or ochreous: very variable. Two extreme forms are as follows: (a) Pale green, with very faint dark dorsal line that becomes conspicuous on the last two or three segments. Head yellowish; spiracles black. No other markings. (b) ochreous to light brown. Dorsal line continuous, darker than ground colour, with a short dark dash on each side of it at the segment-joints. Round the head and legs the ground colour is lighter. There is a dark streak on the ventral pair of claspers.

PUPA,

Is in a slight web among leaves, or in a fragile cocoon among débris on the ground surface. It is bright yellow-brown. The terminal segment is swollen, and this swelling is darker than the rest of the abdomen. On the dorsal side it is prolonged into a stout cone, from the point of which proceed two long tapering prongs, slightly diverging. Separate hooklets, slighter and shorter than these prongs, spring from various points on the surface of the cone.

Duration of pupal stage is from 10 to 20 days. From egg to egg 80 to 90 days.

Semiothisa brongosaria, Walk.

FOODPLANT,

Acacia thorn tree.

OVA.

Blunt oval, pale green, covered with small hexagonal reticulation. Laid in thick clusters on leaflets and leaf-buds.

LARVA,

The young larva is green, with no obvious markings. When full-fed, it is 1" to 1¼" in length, slender, smooth-skinned. Ground colour is greyish- or greenish-ochreous, the lateral area nearly white: the whole body thickly powdered with black spots. There is a bright yellow lateral splash on each segment. Ventral area pinkish. Head

grey, spotted with black, with a thin yellow collar behind it. Legs black, spotted with white.

PUPA,

Is in a flimsy cell under ground. It is slender, red-brown. Cremaster is very long and slender, polished, fluted. It terminates in two double-hooked diverging points.

Pupal stage lasts from 10 to 15 days.

Xylopteryx albimaculata, Warr.

FOODPLANTS,

Maerua (" muthigeo ") and *Gymnosporia*.

LARVA,

When full-fed is 1½" long, stoutish, brown-drab. Head pale, with black spots, and a thin black collar. A fairly conspicuous dorsal pattern of diamond-shaped patches, one on each segment, lighter than the ground colour but with darker edges. These patches are more conspicuous on the first few and last few segments. A similar diamond pattern, but fainter, is in the lateral area. In this area also there are many small dark pustules. A pair of very small dorsal tubercles occur on segment 6, and larger ones on 12. There are a few short bristles scattered over the body. Ventral surface greyish, speckled with darker. Legs and ventral claspers pale, anal claspers of ground colour.

PUPA,

In a loose cocoon on ground surface, or between two leaves, is dark brown. Terminal segment pointed; cremaster on a long shank, terminating in a double hooklet with curved diverging points.

Epigynopteryx flavedinaria, Guen.

FOODPLANTS,

Castor oil, and many low-growing plants.

OVA.

Pale lemon-yellow, covered with hexagonal reticulation, and with very shallow longitudinal grooves. In small batches.

LARVA,

The young larva is bright green, rather polished. It tapers slightly from back to front. Lateral and ventral surfaces generally are paler than the dorsal. There is a white or yellow lateral mark above the legs: segment divisions are whiteish. A white streak, with black hinder edge, on the ventral pair of claspers. Legs dark, head pale, with black smudges on the cheeks. When full fed the larva is a rather greyish green; 1½" long; no longer polished, but rough, with tiny transverse corrugations. Two pairs of black latero-dorsal spots are on each segment. The last segment but one has a dorsal patch,

greyish-ochreous, roughly oval. An irregular brown central **stripe** on ventral surface. A few specimens have white dotted latero-dorsal lines, with a paler area between them. The larvae began to **spin** about six weeks after hatching.

PUPA,

Is either in a rolled-up leaf, or among loose débris, dead leaves, etc., on the ground. It is grey or buff-coloured: the first few abdominal segments, between the wing-sheaths, having a strong greenish tinge. It is smooth and rather transparent. The abdomen is thickly sprinkled with dark dots, particularly the first few segments. The terminal segment is rather long, red-brown, pointed; flattened on the dorsal and ventral surfaces, with a distinct lateral ridge. It is very much wrinkled, and has a bunch of four long stalked hooklets proceeding from its extreme tip, and two other separate hooklets on either side, further up the segment. Pupal stage lasts about 15 days: complete cycle from egg to egg is nine weeks.

HYPENINAE.

Hypena jussalis.

FOODPLANT,

Lantana.

LARVA,

Length 1", ground colour transparent apple-green. Very much indented between segments, the divisions between which are of a lighter green than the ground colour. There are faint light latero-dorsal lines. Larva tapers considerably to either end. Head and body freely sprinkled with black dots emitting short pale bristles. Ventral claspers three pairs only. The larva lies extended, usually along the mid-rib of a leaf, and is very difficult to see. It wriggles furiously when disturbed, and falls without a thread.

PUPA,

In a folded leaf. Shiny brown with dark green wing cases.
Duration of pupal stage is 18 days.

Hapalia ablactalis, Walk

FOODPLANT,

Buddleia.

LARVA,

A very transparent-looking larva, tapering to both ends. When full-fed it is $1\frac{1}{16}$ " long. Rather yellowish, but the upper part of the body is dull, pale green, the dorsal part darker. Head very small, yellowish-brown, minutely spotted with black. Segment 2 similarly spotted. All the other segments have a half-ring of four delicately

drawn black circles, with a black dot in the centre of each : and behind these are two similar circles, one on each side of the dorsal line. The last segment and the anal claspers are not green above, but of the same yellowish colour as the lower half of the body. Ventral claspers (four pairs) very small, almost white.

The larvae eat holes all over the leaves, and lie along the midrib : or sometimes in a slight web among the flowers.

PUPA.

Slender, light brown ; in a very flimsy web in a folded leaf. Pupal stage lasts one month.

Osericana gigantalis, Hmps.

FOODPLANTS.

Grasses and many low-growing weeds.

LARVA.

When full fed is $1\frac{3}{4}$ " long, stout, smooth skinned, but with rings of short, stout pale spines rising from small black warts. Ground colour is dull black, without markings. Head black, rather shiny. The larvae live, often several together, under loose stones. They appear to make permanent homes, going out for food.

PUPA.

Is in a loose web-cocoon covered with bits of chopped grass, particles of earth, frass, etc., in the larval home. The pupa is black. The terminal segment has a short straight row of six separate hooklets set across its extremity near the dorsal side. Near the foot of this row are grouped a few other hooklets. There are short, fine, single spikes spaced out round each abdominal segment. Duration of pupal stage is from 15 to 20 days.

The following are supplementary notes concerning five of the species dealt with in the last issue of this journal.

Leipoxais compsotes, Tams.

The larvae feed also on pepper tree, kei-apple, and Maerua.

Ova.

Are laid side by side in long single lines on twigs. They are true oval, smooth, and shining. Colour bright mahogany, with a paler ring round the micropylar area.

Epizygaena xanthosoma, Jord.

The ground colour of the larva is very variable, ranging through every shade of grey. The stripes, in a full-fed larva, are sometimes hardly visible.

Amphicallia solai, Druce.

Alternative food—pepper tree.

OVA.

Laid in large patches on leaves. Pale butter-yellow, semi-spherical, with very finely reticulated surface.

Polymona modesta, Wkr.

OVA.

Are deposited in twos and threes on the leaves. Spherical, but slightly hollow at the top. In colour they are a dull greyish mauve, with a finely granulated surface.

Zamarada ochrata, Warr.

OVA.

Almost oval, but rather tapered to one end. Dull green, covered with close rows of tiny oval depressions. Laid singly on the edges of leaves.