

1906. S. 1—19). Dieser Verfasser weist unter anderen literarischen Zitaten darauf hin, dass die Stigmen bei den Larven der Bienen teilweise von Uljanin durchgesehen worden sind („Bemerkungen über die post-embryonale Entwicklung der Biene.“ Nachrichten der Kaiserlichen Gesellschaft der Naturwissenschaft-Liebhaber. Moskau, Russisch. Bd. X. 1872).

Unter den anderen Arbeiten muss ich auf Carlets kleine zeichnungslose Bemerkung hinweisen, die deshalb wenig zur Erklärung des Baues der Stigmen bei den Hymenopteren hilft, obgleich hier sogar von einem speziellen Muskel („*muscle trachéen*“) gesprochen wird. (Sur les stigmates des Hyménoptères. Compt. Rend. Ac. Sc. Paris. 1889. Tome 108. p. 862—863).

Bordas (Anatomie du système trachéen des larves d'Hyménoptères. Compt. Rend. Ac. Sc. Paris. 1894. Tome 118, p. 664—666) beschreibt ausnahmsweise die Einteilung der Tracheen-Röhren im Körper bei verschiedenen Arten *Vespa*.

Dasselbe muss von Seurats kleinen Bemerkungen gesagt werden. Uebrigens gibt der letzte Verfasser wenigstens die Zahl der Stigmen bei den durch ihn studierten Larven der Hymenopteren. Danach gibt es bei *Chrysis shanghaiensis* Smith. (Sur l'appareil respiratoire de la larve de la *Chrysis shanghaiensis* Smith. Bulletin de Muséum d'Hist. Natur. Paris. 1900. No. 5, p. 236—238) 10 Paar Stigmen (Prothorax, Metathorax und die ersten acht Abdomen-Segmente). Die runde, mit einem chitinösen Ring umringte Oeffnung führt in eine birnenförmige, mit den Tracheen verbundene Höhlung. — Die Larven *Bembex* (Seurat. Sur la morphologie de l'appareil respiratoire des larves de *Bembex*. Bulletin du Muséum d'Histoire Naturelle Paris. 1900. No. 7, p. 361—363) haben auch zehn Paar Stigmen mit eben solcher Verteilung wie bei *Chrysis*. Die Larve *Tryphon* (Seurat. Sur la morphologie de l'appareil respiratoire de la larve du *Tryphon vesparum* Ratzeburg. Bulletin du Muséum d'Hist. Nat. Paris. 1900. No. 6, p. 279—280) hat neun Stigmen, weil das Stigma auf dem Metathorax nicht gezeigt ist. (Schluss folgt.)

Some undescribed caterpillars.

By H. von Pelser-Berensberg, Durban, Natal.

Through the kindness of Mr. Leigh of Durban Natal who supplied me with egg, fullgrown caterpillar and pupa of *Pseudacraea tarquinia* Trim., I am able to give a description of the earlier stages of this beautiful butterfly. One day when out collecting the above named gentleman was so fortunate to watch a female of tarquinia depositing her eggs on a shrub in the bush, which borders Durban, and still more fortunate to find afterwards from 30 to 40 fertilized eggs. Being taken home they hatched in about from 6 to 10 days.

Egg: The egg is round, little more than $\frac{1}{2}$ mm, flattened on top, covered with regularly arranged short tubercles, which gives it the look of a minute sea-urchin, whose spines have been removed.

The caterpillar at first is light-brown with comparatively long horns (spines) on second and somewhat shorter ones on last somite; head black.

In the second stage the colour changes to bright green, but there are no distinct markings yet.

In the third stage the groundcolour is still green but the mar-

kings become now distinct. Groundcolour green, a violet spiracular line with sharply pronounced yellow margin above; underside and claspers greenish-white; in front of 5th., 6th., 7th., 8th., 9th. and 10th. segment a small lateral transverse brownishblack streak; head purplish with three darker purple vertical streaks on the face, above both exterior streaks a small blunted dark tubercle; head bordered by two rows of sharply-pointed spines, of which the dorsal and lateral of the first row are the longest; 4 or 5 minute purple tubercles across the top of the first somite; on second somite two about 11 mm long divergent green horns, covered with numerous black bristles, longer at base than at end of spines; on third somite a similar but straight pair of dorsal horns, length about 3 mm; on 4th., 5th., 6th., 7th., 8th., 9th. and 10th. segment each, a pair of subdorsal spines; on last somite a pair of horns, longer than the foregoing, but not so long as on 2nd & 3rd somite.

The fourth or final stage differs in nothing from the third one, except that the horns on the the 2nd somite have become dark-green, and that the yellow border of the purple spiracular line has become more indistinct. The length of the fullgrown caterpillar is from 44—59 mm. When turning to pupa the caterpillar attaching itself to the midrib of the underside of the leaf, hangs up by the tail, head downwards.

The chrysalis is bright-green with darker spiracles. The head has an acute projection in front. Thorax laterally expanded with sharp edges; dorsal line elevated and angulated; the pupa is curved inwards (crescentlike). Length from 38 to 44 mm.

In the case of the pupae resulting from the eggs found by Mr. Leigh, it is noticeable that some of them gave not properly developed butterflies but freaks. One of these freaks, a female, mated in the breedingbox and laid 5 eggs, three of which produced healthy caterpillars and absolutely normal imagos.

I suppose³⁷ the cause of the freaks in this first brood has to be attributed to the fact that the pupae were removed from one box to another and laid down on sand instead of being hung up as it would be the case when they pupate in natural condition.

Hamanumida Daedalus Fabr.

Three caterpillars which proved later to be the larvae of this species were captured by Mr. Harold Millar of Malvern in his garden on a shrub, named U-bondwe by the natives of Natal.

Being new to him he decided to breed two of them to see to which butterfly they belonged; the other was blown and presented to the Durban Museum as a type. These caterpillars were in the last stage, so I can but give a description of this and the pupa.

Caterpillar last stage: Caterpillar was remarkable by its lateral branchlike appendages, resembling so closely a patch of moss that it was difficult at first to detect it, when at rest on the upperside of the leaf.

Colour moss-green; on each segment, except head and anal one, a pair of sub-dorsal green appendages about 12 mm in length, wide at the base and tapering off from there to the end into a sharp point. These flatlying appendages are covered with a great number of lateral smaller and thinner spines, giving it the appearance of a fern leaf. They are arranged as follows: the first pair points forward to the head, the last one backwards to the tail, and the intermediate pairs fill up the

space in the form of a regular ovate star. When the caterpillar is moving these appendages are lifted up and down in an angle of about 40° to their original position at rest. Close above these appendages are minute black spots. From head to tail goes a white or yellowish-white dorsal line; on 4th., 5th., 6th., 7th., 8th., 9th. and 10th. segment a small black longitudinal streak near to median line; head green; underside and claspers whitish-green

The caterpillar (so far as Mr. Harold Millar's observations go) feeds but at nighttime, in daytime it remains motionless on the upper-side of the leaf.

Photos which were taken in this position hardly show the caterpillar, so perfectly larva and leaf blend together. When going to pupate the caterpillar spins a web of fine silk to the underside of the leaf and attaches itself by the tail to the midrib, head downwards.

Pupa: The pupa is bright-green with a dorsal, white line; rounded and blunted similarly to the pupa of a Danaid but slightly smaller.

The butterfly emerged after about 3 weeks and proved to be, *Hamanumida daedalus*. I hope to be able, to describe the earlier stages at a date not too far distant.

Pieris Gidicu God.

Caterpillar last stage: the caterpillar is elongated, shortly pubescent, slightly attenuated at both extremities; head small, green; colour of body dirty-green dorsally and laterally; underside and claspers whitish-green; somite near head with two white dots covered with small hairs; body covered equally with few short white hairs; two oblique rows of minute yellow spots on each segment, spots of frontrow slightly larger than those of hindrow. Length 40 mm.

Pupa: pupa is rather slender, much attenuated posteriorly with a more or less elevated ridge along middle-line of back and another on each side of first three segments of abdomen; an acute projection in front of head and a prominent black-edged tubercle at middle of dorso-thoracic ridge and on each lateral abdominal ridge on 2nd. segment. Colour same green as caterpillar, but transparent with 4 dorsal rows of minute yellow spots and a number of much smaller spots between these rows. Spiracles white. Between head and first segment six yellow spots in a transversal line, three on each side. Length from 20 to 25 mm.

The caterpillar was caught on a thorny climber and pupated on the 10th. of September. The pupa was attached by the anal extremity and a thoracic girdle to a web to one of the sides of the breedingbox; head upwards.

Having not seen any description of this caterpillar I thought it useful to communicate this one.

Deudoryx diocles Hewitz.

This caterpillar was found in the pods of a camelfooted acacia feeding on the seeds, at Malvern by my friend H. Millar. It must have been nearly fullfed because it left the shell a few days afterwards and pupated in a corner of the breeding box.

Caterpillar: caterpillar elongated, depressed; reddish-brown with yellow dorsal markings; head black; on first segment a design of 6 black spots, two close together in middle of front. two similar on hind-part of segment, two further spots between these four but more to the sides of

the somite, the whole of the spots enclosed by a light brown line; two indistinct brown median lines joining the first and third pair of dots; furthermore two sub-dorsal but smaller dots in same alignment as second pair. On second segment near front margin two black dots connected by a crescent-shaped black line (opening forward). First and second segments reddish-brown; 3rd. to 10th. segment included greenish laterally, but from 3d. to 8th. segment included, more reddish-brown dorsally; on 4th., 5th., 6th., 7th. and 8th., segment an 8-shaped greenish dorsal line; on 9th. and 10th. segment the green more distinct, on 11th. segment 4 sub-dorsal black dots, and on 12th. segment one median black dot. Whole body sparsely covered with stiff short black hairs, those on the two last segments being the longest.

The caterpillar left the pod and suspended itself nearly horizontally in a corner of the box, attached by the tail and a thoracical girth.

Pupa: pupa blunt, thick, rounded, tail considerably incurved, brown with yellow dorsal marks.

Length of caterpillar 13 mm, of pupa about 8 mm. Imago was a female. Time of change about 3 weeks.

Ptegryospidea mokezi Wllgrn.

I am indebted for the knowledge of this caterpillar to the kindness of Mr. E. Clark, Smithstreet Durban, who, having found it near Congella on the plant vulgarly called buckweed (*Justicia Woodii* Clarke) presented this single specimen to me.

The caterpillar had tied the outer edges of a leaf together and formed a tube which served as shelter when not feeding, this was done by means of a few strong silken threads from the middle of one half to the other half of the leaf.

Caterpillar: The larva is rather thick, smooth; body thickest in middle and attenuated to both ends, but more so to the tail, where it forms almost a sharp point; head being very large and first somite rather thin the head looks, as if separated from the body by a deep constriction. Furthermore the head is provided on top with two prominent lobes, its colour is dark-purple, in great contrast to the body which is of a transparent green colour; two dorsal purple spots on first segment; a longitudinal double line of thin white streaks from head to tail and similar single but wider streaks above true legs and claspers; joints between segments slightly lighter green. Length from 32—38 mm.

The larva attached itself in the same tube by the tail and by a throacical girth fixed above on the leaf, but the underside resting on the midrib of it. This happened on the 6th. of November, but it shed its larval skin on the 9th. of the same month.

Pupa: The pupa is bright transparent green like the caterpillar; oblong with a small blunt projection in front of the square head; two black minute spots above eyes, two larger black spots at beginning of the wing sheaths, and black spiracles on 5th., 6th., 7th., 8th., 9th. and 10th. segment; a minute sub-dorsal black streak above each. From the abdominal end of wingsheaths rotracts a fine thorn longer than abdomen and parallel to it with point slightly pinkish; point of last segment equally pinkish. Length of pupa 32 mm.

A peculiarity of the chrysalis is that the attachment of the tail is

by a dorsal stalk, the thoracical girth is stalked dorsally as well so that the pupa is hung up abdomen downwards.

The butterfly emerged on the 23rd. of November and was a female. Pupa-stage 14 days.

Rhopalocampta keithloa Wllgrn.

Two full-grown caterpillars of this species were caught in the Park at Durban in November 07. At first look I mistook them for the larvae of *Rhopal. forestan* Cram. but the markings of the head not agreeing with the description of *R. Trimen*, I thought it better to describe the caterpillar and to breed the specimens for surety's sake.

Caterpillar: The larva is elongated, contracted on first segment; head large, heart-shaped, rounded inferiorly; the depression in the middle of its upperedge forming a slight groove down the middle of the face; colour orange with two horizontal rows of purplish-brown spots, 4 in the superior and 5 in the inferior one. Ground-colour of body yellow, first somite entirely brown, the others with a wide transverse purplish-brown band in front and with one narrower one in 2nd. and 3rd. somite but with two in all the rest, a dorsal orange blot on these narrow bands of the 4th. and following spaces between the somites yellow. These purplish-brown bands extend laterally to a bright red spiracular line from 2nd. to 12th. segment including the 12th. segment ones and are marked by a dorsal transverse yellow streak, further above the spiracles by an ovate yellow spot on both sides. True legs bright-red with yellow claws; claspers of the same bright-red, underside of body yellow. This yellow ground-colour appears green when caterpillar is feeding, the green inside shines through the transparent skin. Length about 30 mm.

Pupa: The pupa is thick, rounded; head with short frontal projection; prothorax bumped posteriorly; colour greenish at the beginning, becoming yellow afterwards and almost reddish, when butterfly has emerged; covered with a chalky white bloom; spiracles black; anal prominence long, black, ends in two short points.

The pupa is attached at the tail by a silken girth stalked over the middle of the back and a silken sling round thorax, which is stalked at the back and both of which are fixed to the leaf. My caterpillar when pupating had left its shelter and walked to a plant with smaller leaves, drawing 5 leaves together to form a tube for changing into a chrysalis.

Mr. J. P. Mansel Weale states that his caterpillars pupated in a loose irregular web in curled leaf. My caterpillar made no web at all but put the leaves together by very few strong silken threads. The butterfly emerged at the end of November.

Pomphila.

Four caterpillars, 3 fullgrown and 1 in second skin were found on the Phoenix palm (*Phoenix reclinata*). They had eaten the leaves, leaving only the stem. Their appearance not quite agreeing with the description given by *R. Trimen* I let follow mine here.

The young larva died after a few days, one of the full-grown was preserved for my collection.

Young stage: larva about 13 mm long; thickest in middle at unuated to both ends; head brown, unproportionally large, O-shaped; hind-claspers very long. Colour greenish-yellow with a brown dorsal and two whitish sub-dorsal lines.

Full-grown stage: caterpillar thickest in middle, attenuated to both ends; head larger than first segment, O-shaped; hind-claspers large and flattened; colour of head yellowish with three vertical central black stripes; eyes yellow with darker edging outside; spiracular line thin and whitish; one caterpillar had a dark-green dorsal line and a yellowish-white sub-dorsal line parallel to it; the others were almost plain green, the longitudinal lines not being distinct; legs and claspers whitish and drawn under the body when not walking.

The caterpillar had made a tube by joining the sides of the leaf together with a few strong threads in which it remained when not feeding, and in which it also pupated. (25th. of January 08.) Length 45 mm.

Pupa: pupa is cylindrical, back purplish, underside and wing-sheaths yellow; head square and blunt; last segment ending in a sharp short thorn by which it is attached to the leaf; pupa and inside of leaf covered with a fine bluish-white bloom.

Both butterflies which emerged on the 11th. of February, were females but one which was not able to free itself from the leaf became a freak.

Zur Biologie der Rubusbewohner.

Von Hans Höppner in Krefeld.

(Mit Abbildungen.)

(Schluss aus Heft 5.)

Im unteren Teile des Ganges legte es zwei Zellen an. In den Zellen erkennen wir den typischen, orangefarbenen *Crabro*-Cocon (a), welcher mit seinem unteren Teile in einer aus Futterresten (Dipteren) gebildeten Schicht steht (b). Die Exkremente liegen zusammengerollt im unteren Teile des Cocons. Die Wirtslarven haben sich also soweit entwickelt, dass sie den Cocon noch spinnen konnten. Zwischen den Zellen befindet sich eine Isolierschicht aus zernagtem Mark.

Nur zeigen beide Cocons ein sehr kleines Schlupfloch, das für *Crabro* viel zu klein ist. Daraus können wir schon erkennen, dass die *Crabro*-Larven sich nicht zu vollkommenen Imagines entwickelten, sondern dass beide Zellen von einem Schmarotzer befallen sind. Es ist ein kleiner, lebhaft goldgrün gefärbter Chalcidier, *Diomorus colcaratus* Nees, den J. Giraud in Frankreich bei einem andern Rubusbewohner, *Stigmus pendulus*, beobachtete. Aus jeder Zelle schlüpfte am 11. 6. '01 ein ♀. Ueber das Verhältnis dieses Schmarotzers zu seinem Wirte wissen wir noch nichts; auch J. Giraud erwähnt nichts Näheres hierüber; er beschreibt nur das ♂ und ♀. Sicher ist, dass das *Diomorus* ♀ mit seinem kurzen und schwachen Legebohrer nicht imstande ist, Rinde, Holz und Mark zu durchbohren, um so von aussen das Ei in die Zelle zu bringen. Wohl aber ist es möglich, dass es, während der Wirt auf Jagd nach Larvenfutter ist, in die Röhre schlüpft, mit dem Bohrer die weiche Querwand der Zelle durchbohrt und auf diese Weise das Ei in die Zelle schmuggelt. Bisher hatte ich noch keine Gelegenheit, die Verhältnisse genauer zu untersuchen, da dieser Schmarotzer sowohl an der Unterweser als auch am Niederrhein nur selten bei Rubusbewohnern angetroffen wird. —

Die beiden Zellen nehmen einen Raum von 2,1 cm ein. Ueber der letzten Zelle ist der Gang auf einer Strecke von 3 cm mit Mulm angefüllt, welcher unten lose liegt, in den oberen zwei Dritteln aber fest zusammengepresst ist.

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