

We left Argostoli on the evening of April 23rd, and did a couple of days at manœuvres, finally arriving at Nauplia. On the 27th I landed and walked out to Tiryns, where there are some very ancient ruins of immense size, and said to be pre-Hellenic. Here I found:—

*Hipparchia semele*.—One male; typical.

*Cænonympha pamphilus*.—Common and typical.

*Vanessa egea*.—One.

*Pyrameis cardui*.—Common.

*Polyommatus icarus*.—One male.

*Enrymus edusa* and *Pieris rapæ*.—Common.

*Euchloë belia*.—Common, and in very good condition. Easily distinguishable from *P. rapæ* on the wing, as it looks darker and the flight is swifter.

*Achæus machaon*.—One rather tattered specimen.

*Spilothyrus althææ* and *Pamphila thaumas*.—One of each on the ruins at Tiryns.

*Acontia luctuosa*.—Common.

*Ægeria apiformis*.—Common on poplar trunks on the road to Tiryns. I found about a score of empty pupa-cases sticking out of the trees, all low down on the north and east sides. A couple of females I took oviposited freely; the ova are not attached in any way, and in nature are probably dropped promiscuously into the crevices of the bark.

On April 29th we left Nauplia for the Gulf of Patras for another series of manœuvres, and then back to Malta. On May 1st, when about one hundred miles from Greece, a couple of *Deilephila livornica* were caught on board and brought to me; of course, they may have flown on board the night before, though we had all lights out, but it is quite possible that they may have been migrating.

(To be continued.)

## SOUTH AFRICAN COCCIDÆ.

BY T. D. A. COCKERELL.

THE Coccidæ here discussed form part of a collection sent to me by Mr. Claude Fuller, Government Entomologist of Natal. I had not meant to make any further study of African Coccidæ, except for purposes of comparison with American species, but I have not been able to resist investigating the interesting material sent unsolicited by Mr. Fuller, who, unfortunately, cannot find time to study it himself.

(1). *Monophlebus fulleri*, n. sp.—Maritzburg, Natal, on grass heads; uncommon.

♀. Length 7, breadth 3, height  $2\frac{1}{2}$  millim., without cottony covering, but secreting some loose white cotton beneath at maturity;

conspicuously hairy, with long pale ferruginous bristles; salmon-pink when alive (Fuller), when dry very dark greyish (red by transmitted light), with three longitudinal keels covered with granular yellowish white secretion; the thickened margins and the under side also covered with white secretion, which is in large granules, presenting a peculiar appearance.

Boiled in liquor potassæ, turns it yellow; the three "cicatrices" described in *Walkeriana* are present, all elongated; eyes conical, very large and dark, placed immediately below and contiguous to the antennæ; mouth-parts small; body very densely covered with short hairs, together with short and long blunt hairs; long ordinary hairs interspersed along the lateral margins; femur and trochanter 850  $\mu$  long, tibia 120, tarsus (without claw) 460; tarsal digitules represented by a pair of bristles; inner side of tarsus and tibia with a row of remarkable hyaline spear-head-shaped spines, the same also taking the place of the claw digitules; tarsus curved, with a constriction on the upper edge which gives it the appearance of being two-jointed; antennæ apparently 10-jointed (club broken off in the example studied), joint 1 broader than long; 2 and 3 cylindrical, longer than broad; 4 and 5 short cup-shaped; 6 and 7 long cup-shaped; 8 and 9 fusiform; measurements of joints in  $\mu$ :—(1) 90; (2) 120, and about 100 broad; (3) 114; (4) 80; (5) 80; (6) 80; (7) 90; (8) 100; (9) 100; (10) ?.

*Penultimate stage*.—Antennæ 8-jointed; 2 and 3 cylindrical as in the adult; last joint long and narrow, 165  $\mu$  long; body hairy like adult.

A distinct species, peculiar for the spear-head-like spines on the legs. Among the American species its nearest ally is *M. primitivus*.

(2). *Monophlebus fortis*, n. sp.—Richmond, Natal, under bark of *Eucalyptus*; only one found.

♀. Dark grey, distinctly segmented, mealy, posterior end covered with cottony secretion; sides with scattered long pale bristles; legs black. Length  $5\frac{1}{2}$ , breadth  $2\frac{1}{2}$  millim.

Boiled in liquor potassæ, does not stain it. Hairy skin just as in *M. fulleri*, also legs, with the same spear-shaped processes, which are even better developed on the tibia. "Cicatrices" as in *fulleri*. Length of tibia about 1100  $\mu$ , tarsus (without claw) about 580. Antennæ 11-jointed; measurements in  $\mu$ :—(1) 150; (2) 150; (3) 150; (4) 110; (5) 110; (6) 110; (7) 110; (8) 130; (9) 120; (10) 120; (11) 160.

Very close to the last, but smaller, though certainly adult, and without the longitudinal white keels.

(3). *Dactylopius filamentosus*, Ckll., small variety.—On leaves of grass, Tongaat, Natal.

Antennal formula 732 (146) 5; joints in  $\mu$ :—(1) 30; (2) 33; (3) 36; (4) 30; (5) 24; (6) 30; (7) 66. Tibia 90  $\mu$ , tarsus 60.

Tinsley has reported this species from Richmond, Natal.

(4). *Pollinia ovoides*, n. sp.—Durban; gregarious on the branches of some tree.

♀. Scale a rounded conical object much like a lepidopterous egg, about  $1\frac{1}{2}$  millim. diam., roughened radiately, pale brown with four longitudinal stripes of white secretion converging to the top of the scale, which is usually reddish.

♂. Scale elongated, about  $\frac{2}{3}$  millim. long, roughened, yellowish or pink, with an oblique terminal cap.

♀. Scales soaked in liquor potassæ, give a deep orange-brown colour, and the insects themselves turn deep crimson; ♀ adult globose; skin with many simple round glands and tubular glands, and some figure-of-8 glands; anal ring with numerous hairs; caudal lobes prominent, conical, about  $45\ \mu$  long, with a few small spines, and ending in stout bristles about  $90\ \mu$  long; mouth-parts well developed, but small; labium short and broad, dimerous, the last joint with bristles on its margin; antennæ represented by small rounded tubercles about  $15\ \mu$  long, with a little terminal prominence which appears to represent a second joint, and about six stout bristles about  $18\ \mu$  long; spiracles small but distinct; legs wanting.

*Embryonic larva* with a row of figure-of-8 glands down each side, and dorsal and subdorsal rows of small round glands, the latter failing caudad, the last five glands of the dorsal rows being absent in the subdorsal; labium very short and broad, cup-shaped; form of insect elongate-pyriform; antennæ thick, 6-jointed, last joint not very greatly longer than the one before, and notched as in *P. pollini*.

A very distinct species.

(5). *Diaspis crawii*, Ckll., var. *fulleri*, n. var.—On twigs of *Melia azedarach* (called "syringa" in Natal), Maritzburg, Natal.

♀. Scale white, circular, 3 millim. diam., as in *crawii*, but exuviae conspicuous, pale ochreous to dark brown.

♀. Agreeing with *crawii* in the lobes, circumgenital and other glands, and other particulars, except that (1) the median lobes have the inner slope long, straight nearly to the base (in *crawii* obtusely angled about the middle), and conspicuously though minutely crenulate; and (2) the margin beyond the lobes is furnished with one, and then after an interval a group of seven very large spine-like squames. All the spine-like squames are very large. Circumgenital glands; median about 27, cephalolaterals about 57, caudolaterals about 31.

This appears to be only a variety of the Asiatic *D. crawii*. It is easily known from *D. pentagona* and *D. auranticolor* by the inequilateral median lobes, with a long inner slope.

(6). *Diaspis pentagona*, Targioni.—Pietermaritzburg, Natal; on peach.

(7). *Chrysomphalus rossi* (Maskell).—Durban, Natal; on presumed *Eucalyptus*.

(8). *Chrysomphalus phenax*, n. sp.

♀. Scale dark grey, resembling an oyster, with the sublateral exuviae shining black. ♀. No circumgenital glands; anal orifice

small, about  $9\ \mu$  long, oval, about  $63\ \mu$  from bases of median lobes; lobes four, crenulate, shaped as in *C. mimosæ*, but the median lobes are broader, angular instead of sloping on the outer side; margin beyond the lobes denticulate and finely crenulate; club-shaped thickenings at inner bases of median lobes, about twice length of lobes; a pair of thickenings between first and second lobes, as in *mimosæ*: three thickenings between second and third lobes, the middle one longest; two at interval between third and fourth lobes, the middle one being absent; one or two beyond the fourth.

*Hab.* On bark of branches of *Mimosa*, Verulam, Natal (*Fuller*, No. 9). With *Lophococcus mirabilis*. This, in its scale and other characters, is so very like the Mexican *C. mimosæ*, Comstock, that I was not perfectly sure it was distinct. I sent some to the Department of Agriculture at Washington, and Mr. Kotinsky kindly compared them with Comstock's types of *mimosæ*; he found the differences to be constant, and the species clearly distinct.

*Pseudaonidia clavigera*, n. sp.

♀. Scale,  $2\frac{1}{2}$  mm. diam., moderately convex, blackish, entirely covered by the epidermis of the twig, except the small shining sub-lateral orange-ferruginous exuviae.

♀. No circumgenital glands, even when full of embryos. Similar to *P. tesserata*, but the median lobes are scarcely notched on the inner side; the second and third lobes are narrower (width of second lobe  $8\ \mu$  in *clavigera*, 18 in *tesserata*); margin beyond fourth lobe serrate as if with many small lobes; two large round spaces below the incisions laterad of the median lobes, which, properly focussed, give the appearance (with the incisions) of the club-shaped processes of *Howardia biclavis*; anal orifice further from hind end, being 111 to  $129\ \mu$  distant from the tips of the median lobes (in *tesserata*  $84\ \mu$ ).

*Hab.* Durban, Natal, on twigs of camellia in the Botanic Gardens (*Fuller*, No. 1). The appearance of the scales, covered by the bark, and the club-shaped processes, strongly suggest the genus *Howardia*. There is also some evident affinity with *Aspidiotus moorei*, Green. The genus *Pseudaonidia* seems to be sufficiently distinct, including the following forms described under *Aspidiotus*:—*P. theæ* (Maskell); *P. theæ rhododendri* (Green); *P. duplex* (Ckll.); *P. pæoniæ* (Ckll. as var. of *duplex*); *P. trilobitiformis* (Green); *P. tesserata* (De Charmoy).

*Hemichionaspis cyanogena*, n. sp.

♀. Scale about or hardly 2 millim. long, slightly convex, white; narrow, with much the outline of *H. theæ*; exuviae orange, varying to pale yellowish.

♂. Scale of the usual form, not carinate.

♀. Differs from *H. minor* as follows:—Lateral margins of segments not produced; median lobes not so produced, shaped more as in *H. mussænda*, the two lobes together  $27\ \mu$  broad and  $12\ \mu$  long; spine-like squames more numerous, the formula (following the method

of Cooley) 1, 2 or 3, 2, 2, 2; first two rows of dorsal glands not wholly absent, but represented by one to three glands, third and fourth rows with posterior groups numbering about five. After boiling in liquor potassæ the insect exhibits a very fine blue pigment; median lobes remain yellow after boiling; genital and anal orifices opposite; outer edge of median lobes with three large crenulations; second lobe represented by two small rounded lobules, third by a rather large low lobule, or practically wanting; antennæ represented by a strong bristle on a small tubercle. Embryos in female very large, 231  $\mu$  long; eyes blue. Eggs about 300  $\mu$ .

*Hab.* On small branches of a plant not identified, Durban, Natal (Fuller, No. 17).

*Lophococcus*, n. g.

A genus of Monophlebinae Coccidæ, allied to *Monophlebus*, which becomes fixed in the adult female state, with a strongly chitinous skin, and has a large erect spine in the middle of the back, this spine originating as an elevated fold of the skin. No ovisac. Type, *L. mirabilis*.

(To be continued.)

NOTES AND OBSERVATIONS.

ON REARING *ACHERONTIA ATROPOS*.—The uncertainty of the emerging of the perfect insect from the pupa of *A. atropos* is well known, and various methods of treatment are from time to time advocated as likely to produce a satisfactory result. This uncertainty exists no doubt in a state of nature, as well as when the insect is bred in confinement, and what it is that causes or regulates it is, so far as I know, unknown. The following data may be perhaps of interest:—Early in August last (1900) I had three full-grown caterpillars brought to me from different localities in this district; all three were supplied with earth, and “went down” almost immediately. About the end of September I carefully raised the pupæ to the surface of the earth, where they remained uncovered. One very soon showed its failure by becoming mouldy, and another came out a cripple some time in October; the third remained until the 11th of this month (July, 1901), when it emerged in perfect condition, a very fine and large specimen, measuring just under five inches in the expanse of the wings. There was not at any time any application of moisture to the pupæ, nor special exposure to any higher temperature than that of the room, heated with an ordinary fireplace. I attribute the “failure” of one of the above pupæ to an evident injury received by the caterpillar before it was brought to me; the “cripple” was probably owing to there not being in the cage anything for the freshly emerged moth to climb upon (a necessity, I fancy, for the perfect expansion of the wings); this was provided for in respect to the third and successful emergence. — (Rev.) O. PICKARD-CAMBRIDGE; Bloxworth Rectory, July 16th, 1901.