

### THE PREPARATORY STAGES OF DIACRISIA KASLOA, DYAR.

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In 1900 we received at Ottawa specimens of a reddish arctian which we placed under the name *Antarctia rufula*, Bdv. These were collected at Kaslo, B.C., by Mr. J. W. Cockle. Two years later (1902) Mr. Cockle sent us eggs of the moth, and notes were taken by me on the preparatory stages. In 1904 Dr. Dyar described the moth as new and gave it the specific name *kasloa*;<sup>\*</sup> one of the co-types was deposited in the Division collection. In the same year the same author described the egg and larval stages.<sup>†</sup>

As the notes which I made on the preparatory stages of the species are different in many respects from those published by Dr. Dyar, it seems advisable to present them. They are as follows:—

The eggs were received from Mr. Cockle on June 19th, 1902, probably laid on June 12th; hatched June 20th.

*Egg*.—0.8 mm. in diameter, 0.6 mm. high, shaped like that of *Thymelicus atna*, Scud.; semi-ovoid; at first pale creamy, changing to a dirty white before hatching; setae plainly visible at this time; shining, smooth, except under a microscope, when the surface appears slightly roughened.

*Larval Stage I*.—Length at first 2.2 mm., colour white, the tubercles giving the body the appearance of being striped transversely with black lines. After feeding the larvæ are pale green, the skin shining. Head 0.4 mm. wide, pale brown, ocelli black. Thoracic shield concolorous with head, paler in centre, 8-haired. Tubercles greyish-black, shining, i small, ii large and rounded, iii and iv smaller than ii and elongate, about same size, v slightly smaller than iv. Tubercle iii, 2-haired, others single. Setae long and slender. Between tubercles ii and iii and iv and v a series of reddish-brown blotches are present. Spiracles minute, black. Thoracic feet slightly darker than venter; prolegs smoky exteriorly.

The young larvæ were given sorrel, dock, dandelion, lamb's-quarters, timothy, and lupin, and fed on all of these.

*Stage II*.—Length 4 mm. Head 0.6 mm. wide, in some specimens wholly pale brown, others pale brown with a smoky patch near vertex of clypeus. Body pale green. The whole skin is now more or less splashed with crimson, quite intense in some specimens, the larger blotches in a line with tubercle ii. Tubercles black, shining, the dorsal series bearing mostly black bristles, and the lower lateral series silvery bristles. A very faint whitish dorsal stripe is present, dividing the thoracic shield, which is reddish in some larvæ and black in others. Feet all concolorous with venter, but bearing blackish plates.

*Stage III*.—Length 6.5 mm. Blackish larvæ, having a pale-brownish head, a pale-blue dorsal stripe, and bearing slender blackish bristles. Head 1 mm. wide. After one day's feeding the larvæ lose their blackish colour; under a lens the skin appears green, and the whole body is splashed and marked as before, but the blotches are not now so intense in colour, being more of a dark brownish-red, the larger blotches being near tubercle ii, as previously. Tubercles black, shining, i about one-fifth the size of ii, iii as long but not so wide as ii, iv and v smaller than iii. Spiracles very small, black, and immediately above the anterior edge of tubercle iv. Bristles as before, faintly barbed. Thoracic shield blackish. Thoracic feet concolorous with venter semi-translucent, bearing dark plates; prolegs dark smoky.

*Stage IV*.—Length 11 mm. Head 1.4 to 1.6 mm. wide; yellowish-brown, or yellowish-brown with a large dark-brown patch near apex of clypeus. Blackish larva with black bristles on dorsum and upper portion of sides, and yellowish or rust-red bristles along the lower portion of sides. Dorsal stripe yellowish, in some specimens faint. The ground colour of the skin is greyish-green, but the whole body

<sup>\*</sup> Proceedings of Entomological Society of Washington, VI., p. 18, January, 1904.

<sup>†</sup> Proceedings of Entomological Society of United States National Museum, XXVII., p. 794.

is mottled and marked with black. Tubercles i and ii wholly black, iii, iv, and v black with a whitish centre, others black. Tubercle iii is widely circled with the ground colour of the body, and in most specimens on the posterior four or five segments. This is tinted with orange. Bristles from tubercles i and ii mostly black, from iii and lower tubercles nearly all yellowish or reddish. Spiracles light yellow ringed with black. Thoracic feet black at apex, reddish towards base; prolegs outside upper two-thirds black, shining, lower third pale, setae on feet pale reddish.

*Stage V.*—Length 16 mm. Larvæ in general appearance much as in previous stage. Head 2 mm. wide, same colour and marked as in Stage IV. Under the lens the skin of body is greyish-green, varying in intensity of these colours, marked with splashes or blotches of black, principally on dorsum. Dorsal stripe yellowish or whitish and faint. Tubercles i and ii black, shining; other tubercles whitish. Bristles faintly but distinctly barbed, from i and ii mostly black, remaining ones yellowish or rust-red. Bristles from iii and lower tubercles yellowish or rust-red and black, the reddish ones greatly predominating. Spiracles yellowish, rimmed with black, close to upper anterior edge of iv. Tubercle iii on four posterior segments is rather widely margined anteriorly with orange. Many of the tubercles also bear long, slender, silvery bristles. Thoracic feet pale reddish.

*Stage VI.*—Length 24 mm. Head 2.5 mm. wide, somewhat quadrate, slightly indented at vertex, flattened in front; yellowish-brown excepting front, which is dark reddish, almost blackish in some specimens, shining; anteclypeus, labrum and antennae yellowish-white, mandibles dark reddish, setae yellowish, long and slender. Skin of body almost wholly black, i.e., greyish-green ground colour densely blotched and marked with velvety black, or very dark purple. The dorsal stripe has disappeared in most specimens, in some it is only present on anterior segments. Tubercles large (i about one-third the size of ii), in some individuals all whitish, but in most specimens tubercles i and ii are black, the remaining ones whitish. In some larvæ tubercles iii, iv, v, vi, vii, and viii are black at base, whitish at summit; in others tubercles vii and viii are wholly black. The bristles from the tubercles of most specimens are as in Stage V., but in a few examples all of the bristles from all tubercles are of a pale rust-red colour. Spiracles pale yellowish, black-rimmed. On segments 6 to 13, inclusive, a red patch occurs before tubercle iii, very conspicuous in some specimens, particularly on posterior segments. Thoracic feet reddish, prolegs also reddish, but paler, darkened exteriorly.

On July 18th one larva began to spin its cocoon, and by July 21st had changed to pupa. The cocoon, which is thin, was spun between the leaves in the bottom of the breeding-jar, the pupa being plainly discernible.

*Pupa.*—Length 15 mm., width at widest part 6 mm., dull reddish-brown; abdomen coarsely punctured; wing-cases and thorax wrinkled; spiracles pale yellow, black-rimmed; cremaster short, blunt, bearing 12 short, capitate bristles of varying lengths.

#### SNOW-INSECTS.

By J. WILLIAM COCKLE, KASLO, B.C.

The collecting of entomological specimens is usually associated with the warm months of summer, when the ever-changing hues of gorgeous butterflies, the whirl of beetles, the singing of the mosquito, and the hum of bees and flies presents an ever-changing scene before the collector's eye. But allow me to draw your attention for a few minutes to what may be found on a winter day, when the thermometer is down to near freezing-point and the snow lies thick on the ground.

First let me introduce to your notice the snow-fleas of the genus *Aphorura*. Passing over the common black species of this genus, which may be seen in abundance on the melting snows in the spring, and which frequent water-holes and other damp places during the summer months, breeding in soft humus, we next come to one species which is only known to exist at Kaslo. Dr. Folsom has given this species, which is closely allied to *A. siberica*, the name of *A. cocklii*. It is a beautiful