



THE BLACK ROSE CHAFER.

(*Diplognatha silacea*, Macl.). Nat. size.
Stages in the life-history.

NOTES ON THE LIFE HISTORY OF
THE BLACK ROSE CHAFER (*Diplognatha silacea*, Macl.)

by

V. G. L. VAN SOMEREN, F.E.S.,

and

J. WESLEY HUNT, F.E.S.

(*Illustrated.*)

This is perhaps the commonest of all the Rose-beetles in Nairobi and vicinity. It is a member of the great family Scarabeidae and belongs to the sub-family Cetoninae.

The fully mature insect is a beautiful glossy black all over, and although varying considerably in size, may be considered a fairly large insect (average 30 x 15 mm.) (*vide plate.*)

They do a vast amount of damage to roses, eating the young shoots and flowers, particularly the half-formed buds.

They are also of economic importance, in that they suck the juices of fruit trees, such as Apple, Plum, and Peach, selecting such spots on the bark as have become injured through abrasion or bites of other insects. Although the extraction of small quantities of the juices does not necessarily endanger the life of the tree, yet such a wound almost invariably becomes the focus of infection by other coleoptera or flies which deposit their eggs in the damaged tissues. Such an area frequently sloughs out, or leaves a wound which forms a suitable site for fungoid infection. Ripening fruits are also attacked.

The indigenous trees or shrubs on which we have found the adult beetle feeding are: *Croton elliotanus*, *Warburgia ugandensis*, various species of *Solanum*, *Hibiscus*, *Abutilon* (on stems and flowers), and on various *Albizzia*.

These insects are sluggish in their movements and do not readily take flight, but when actually disturbed they drop straight down, and when within a few inches of the ground they then take wing.

The breeding grounds of these beetles, though sought for on many occasions, remained undiscovered until quite by accident a large breeding colony was found. The site was an old grass thatch placed on the top of a corrugated-iron roof. This thatch had been in position for about a year and as a result of the recent rains had become sodden

and much delapidated. It was during the process of "trimming" that adult Cetonids were noticed emerging from between the grass bundles. On investigation, a very large number of eggs, larvae in various stages, and pupae were found in the layers of the thatch.

A section of the thatch was removed layer by layer, and the conditions under which the insects lived, carefully noted.

Observation showed that the eggs are deposited under the more decomposed layers of the grass, and that the larvae, when hatched, penetrate to the deeper layers, where they feed on the sodden grass.

During the process of feeding, a large amount of excreta is passed and collects under the grass. It was noted that within these masses of excrement there were numerous tunnels, and when these were opened up, larvae were found resting in a terminal chamber. It is suggested that these tunnels are used as retreats during the intervals of feeding.

The excreta is elongate and very like that of rats, and observation of such droppings in a thatch might suggest the presence of rats in these situations. (*Verb sap.*)

The fact that larvae in all stages of growth were found at one time would indicate that the breeding season extends over a prolonged period, and that the whole life cycle takes a considerable time for completion. A captive female has been observed to lay over a period of a month, and during this time to have been impregnated by the same male on several occasions.

The various stages in the metamorphosis of these insects are illustrated in the accompanying plate, and are detailed below.

Egg.—Oval, cream white, with a uniform matt surface, and strong integument. Eggs under observation hatched in 12-16 days.

Larva.—When newly emerged the larva is 3.5 mm. long, translucent greyish in colour, and fairly active. Twelve well marked segments are present. Growth is rapid, but the colour does not change until the later instars are reached. Except when actually walking, the larva adopts a curled up attitude.

In appearance the adult larvae are clumsy, fleshy grubs, more or less cylindrical in shape, except towards the anal end which gradually becomes thickened. In this stage the colour is creamy white except at the eleventh and twelfth segments, which present a blackish appearance owing to the excrement in the alimentary canal.

The head is reddish brown. The shield is semi-circular, with a triangular mark, on the median part, composed of depressed lines. The apex of this triangle is deeply depressed. There are twelve deeply depressed punctures, the largest of which are situated immediately above the base of the antennae; two smaller ones between these and the

sides of the triangle and six within the triangle, four running along the base and two across the median part. The antennae which are red-brown in colour are five jointed (including the basal socket). The fourth joint has an angular projection on the lower surface.

The thorax consists of three segments, the first of which has an elongate orange-brown chitinous patch, at the apex of which, there is a white spot bearing a single hair. Within this patch is an oval depression. This chitinous plate occurs on the anterior lateral surface and a single spiracle on the posterior lateral surface of this segment. Segments two and three have no spiracles. Each segment carries a pair of light orange-brown legs.

The abdomen consists of nine segments, the first eight of which have a single spiracle on the lateral surfaces. These spiracles are surrounded by an orange-brown chitinous disc, indented on the anterior edge, slightly raised in the centre, and thickened on the posterior edge.

There is a fairly broad compressed subspiracular ridge running along the lateral surface from the first to the twelfth segments and joining with the anal aperture. This ridge is folded at the extremity of each segment, giving to the whole a wavy appearance.

The whole of the thorax and abdomen are sparsely covered with short brown hairs.

Average length of adult larva, 51.7 mm.; width of head, 6mm.; greatest width of thoracic segments, 7.5 mm.; greatest width of abdomen, 15 mm.

When the larva is full fed, it proceeds to construct its cocoon, which consists of short bits of grass cemented together with excreta. The cocoon is lined with excreta passed by the insect during the process of constructing its cell. This passage of excreta causes a general contraction of the entire insect with a resultant increase in opacity. The process of lining the cell was observed in the following manner: a fully fed larva was secured and placed in an empty cocoon which had both ends cut away. The larva adopted the cell readily and proceeded to repair and seal up the broken ends. Excreta was passed inside the cell towards one of the openings, the larva then turned round and commenced to press and consolidate the mass with its head, and reversing its position smoothed the lining with its truncate tail-end. The process of defecation and pressing of the excreta was repeated until the openings were entirely sealed.

A further experiment was tried: a suitable larva was secured and placed in a box. Unfortunately the receptacle was knocked over and the larva found its way into a cloth lying on the table. The whereabouts of the larva was not at first known, and it was not until

a day or two after, that using the cloth, one discovered the insect within its folds. A complete cocoon had been made, constructed entirely of excreta passed by the insect.

Prior to casting the larval skin, just before pupation, the larva becomes more contracted and assumes a pinkish colouration; the anal end becomes markedly crenated. The length of the larva in this stage is only 23 mm.

Pupa.—When the larval skin is cast, the pupa is at first white, subsequently turning to a light orange-brown. The pupa shows the outline of the perfect insect. The wing and elytra cases are curled over the lateral and on to the ventral surface of the abdomen, and are supported along the upper and lower edges by the mid and posterior pairs of legs. The head is depressed ventrally and supported on either side by the anterior pair of legs. The antennae, which are remarkably short, are curved downwards. Length of pupa, 25 mm.; width, 16.7 m.m.

The pupal stage of insects kept under observation, at room temperature, lasted six weeks. When the beetle first emerges it is light orange brown on the upper surface and orange yellow on the venter of the abdomen. The elytra remained soft for twenty-four hours, and did not change to a jet black colour until two days later. The thoracic integument remains brown for another 48 hours.

THE ORIGINS OF THE GALLA AND SOMALI TRIBES.

By JUXON BARTON, M.A.

The origin, language, customs, characteristics, and habits of the Galla and the Somali present so many points of similarity that an attempt to give a historical account of the origins of one necessitates some detail of the other.

The Galla, probably one of the most ancient of races now existing, may be regarded as the parent of the Somali tribe, and as such first come under consideration.

THE GALLA.

“ On taking a general survey of the racial history of Africa,” says Dr. Haddon, “ it is manifest that the critical area is the North-Eastern region which abuts on Southern Arabia,” geologically but a short time has elapsed since Africa and Asia were joined, paleolithic