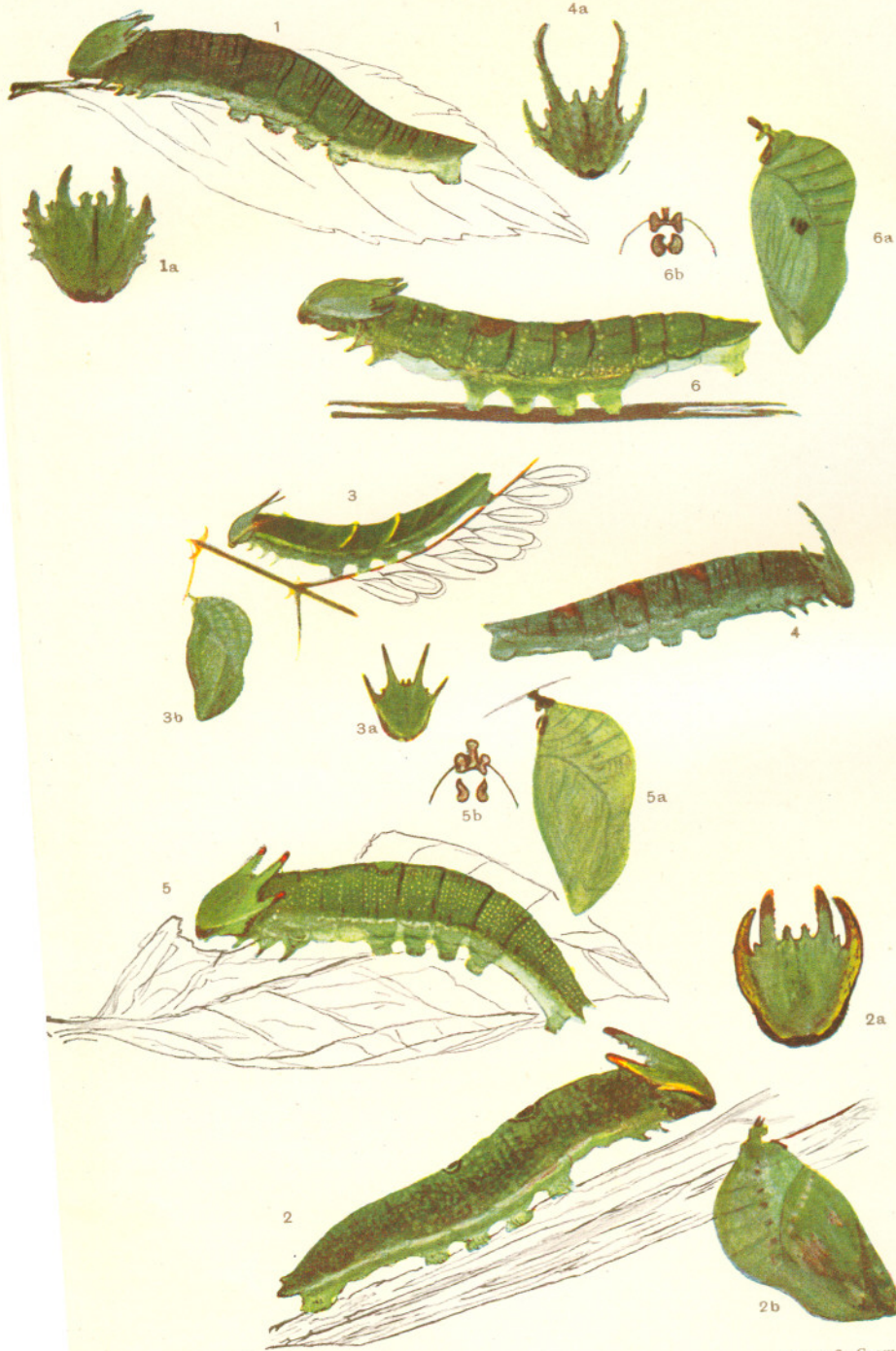


PLATE XLVII.

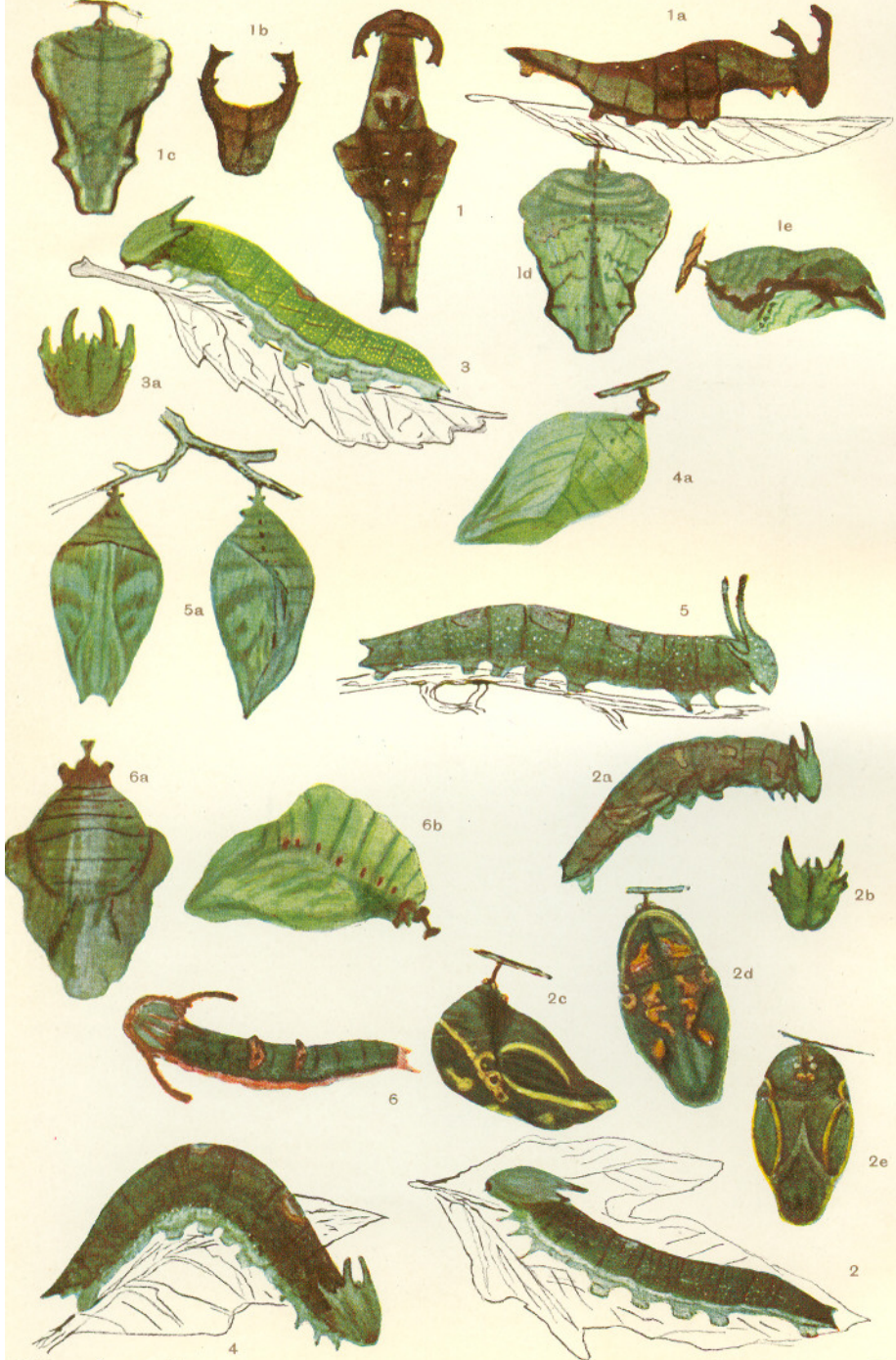


G. L. van Someren, pinx.

LARVAE AND PUPAE OF CHARAXES.
All the figures are of the natural size.

Vaus & Crampton, Ltd.

PLATE XLVIII.



G. L. van Someren, pinx.

Vaus & Crampton, Ltd.

LARVAE AND PUPAE OF CHARAXES, EUXANTHE AND PALLA.

PLATE XLVII.

Larvæ and pupæ of *Charaxes*.

- Fig. 1. *Charaxes brutus brutus*: 1, larva; 1a, head (Jinja).
2. „ *castor castor*: 2, larva; 2a, head; 2b, pupa (Jinja).
3. „ *baumanni*: 3, larva; 3a, head; 3b, pupa (Nairobi).
4. „ *varanes vologeses*: 4, larva; 4a, head (Jinja).
5. „ *jasius epijasius*: 5, larva; 5a, pupa; 5b, anal extremity (Jinja).
6. „ *numenes numenes*: 6, larva; 6a, pupa; 6b, anal extremity (Jinja).

PLATE XLVIII.

Larvæ and pupæ of *Charaxes*, *Palla*, and *Euzanthe*.

- Fig. 1. *Palla ussheri interposita*: 1 and 1a, larva; 1b, head; 1c, 1d and 1e, pupa (Jinja).
2. *Ch. etesipe etesipe*: 2, larva; 2a, larva, just before pupating; 2b, head; 2c, 2d and 2e, pupa (Jinja).
3. *Charaxes pollux pollux*: 3, larva; 3a, head (Nairobi).
4. „ *cithæron*: 4, larva; 4a, pupa (Nairobi).
5. „ *fulvescens monitor*: 5, larva; 5a, pupæ (Jinja).
N.B.—In figure 5 the dorsal spots should be on segments 6, 8 and 10, and not as depicted.
6. *Euzanthe ansellica*: 6, larva, immature; 6a, 6b, pupa (Jinja).

THE BUTTERFLIES OF KENYA AND UGANDA.

PART VII.

By

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

and

Rev. K. ST. A. ROGERS, M.A.; F.E.S.

SUB-FAMILY NYMPHALINÆ, (CONTD.)

CHARAXIDI.

INTRODUCTION:

The *Charaxidi* include some of the finest species in the country and are for the most part confined to woodlands and forests. There are three genera usually recognised, *i.e.*, *Charaxes*, which includes a very large number of species and extends into the Oriental region with one species in the southern part of the Palaearctic region; *Euxanthe*, and *Palla*, which are endemic.

(1) The species of *Charaxes* are generally large or medium sized butterflies and most of the species have an extremely powerful flight. They are much more numerous in West Africa than in East Africa and many species are confined to forests though a good number are found in woodlands even in dry districts.

They are addicted to settling on strong-smelling substances such as the droppings of animals particularly carnivora, but as a rule these are exclusively males; also on damp places near streams. They are also attracted by gummy exudations on a number of trees, and in this case both sexes are attracted.

They frequently settle on the bark of trees and also are very fond of basking in the sun, taking short rapid flights at frequent intervals in cold districts they will even settle on the corrugated iron roofs of houses and are so bold that they may sometimes be captured by hand in such positions. Many of the species have geographical races, the East African forms being readily separable from the Western types. Very few species have seasonal forms though *Ch. zoolina* is a remarkable exception. The dry form of this species was for many years regarded as a distinct species under the name of *Ch. neanthes*. In Tanganyika where there is one long dry season the *zoolina* form is almost entirely replaced by the *neanthes* form at the beginning of the dry season, but this is not the case to the same extent in Kenya.

A very remarkable species is *Ch. ethocles* which has a large number of female forms which resemble both sexes of larger and more powerful species of the same genus.

(2) The species of this genus have already been dealt with. Their flight is less powerful than those of *Charaxes*, but they are also very fond of settling on the trunks and branches of trees generally

head downwards. They are confined to the Ethiopian region and are not numerous in species (one is found in Madagascar). They are broad-winged insects with a rather sluggish flight and are mainly forest insects, though *E. wakefieldi* is found in open woodlands and is more abundant than most of the other species. They do not seem to be attracted by strong-smelling substances to any great extent. The males are met with far more frequently than the females, which is also the case with most of the species of *Charaxes*.

(3) The insects in the Genus *Palla* are entirely confined to forests. They are very like *Charaxes* but less robust. The genus is represented in Uganda by one species—a race of a West African insect.

We are indebted to the Entomological Society of London for permission to use the plates illustrating larvæ and eggs; and to Professor Poulton for presenting them to the Society.

GENUS *CHARAXES*.

HADRODONTIÆ. Costal margin of fore-wing coarsely serrate.

GROUP I. *VARANES, FULVESCENS*.

The species of *Charaxes* included in this group are characterised by the curious greenish veins, with vein 3 and 4 of the hind-wing not stalked. Vein 4 of the hind wing is produced to form a long rounded spatulate "tail," but between this and the anal angle the outline is almost straight though occasionally there is a slight indication of a tail at vein 2, but very rudimentary. The underside of the wings is curiously like a dead leaf, and is ornamented with "eye spots." The sexes are similar. The larvæ and pupæ conform to a common pattern which is however constantly modified in the species and races. The larvæ feed on a group of plants which is common to all.

CHARAXES VARANES VOLOGESES, Mab. Pl. XLIX., figs. 1-3.

Expanse: Male 85-92 mm. Female 90-100 mm. General colour orange-brown with white areas at bases of fore and hind wings. Sexes very alike.

F.-w.: Basal area of fore wing bluish-white, extending to the middle of the cell, the base of area 2, the basal half of 1b and the basal half of 1a. Beyond this is a triangular area of orange, the base of which occupies the mid-area of the costa, the apex reaching the mid-point of 1a; beyond this the wing is reddish-orange-brown, ornamented with two rows of intercellular orange spots; the sub-marginal row extending from area 1b to 7, following the contour of the wing; the inner row less regular, the spots in 4 and 5 being set out slightly from the rest. The two rows are joined by indistinct dark reddish-brown spots. This area is decorated with wavy red-brown sub-basal transverse lines in 2, 3, 4, 5, and 6. The costa is ochreous-white at the basal half shading to orange brown distally.

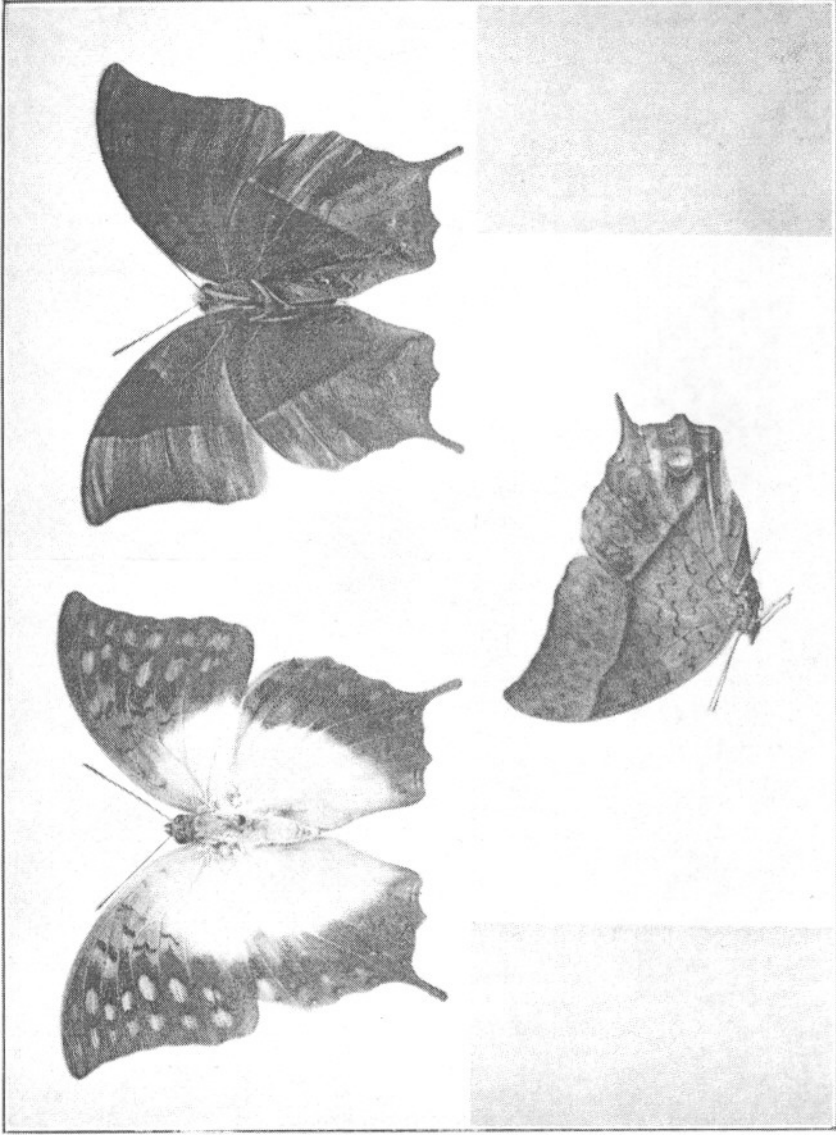


Photo: Dr. van Someren.

PLATE XLIX.

Charaxes varanes volageses.

Fig 1, ♂ upper-side. Fig 2, ♂ underside. Fig 3, ♀ underside.

H.-w. Basal area from mid point of costa to anal angle bluish-white; distal half of wing orange-red-brown with an indistinct row of darker brown internervular circular spots from 2-6. The anal angle is almost rectangular, while vein two is obtusely angled, and vein 4 is extended into a long somewhat spatulate tail. The sub-marginal internervular areas of 1c to 7 are ornamented with crescentic blackish lines outlined distally with whitish. The thorax and abdomen are white above.

Underside: Pl. XLIX., figs 2 & 3. This varies considerably from a rusty brown to a greyish-russet; the general appearance is somewhat "dead-leaf-like," either almost uniform or with "eye spots" mostly on the hind wing, but both forms have a transverse dark line outlined distally with grey crossing both wings. The basal areas of both wings are decorated with a series of broken wavy blackish lines running transverse to the cellule. The basal halves of the fore and hind wings are dull, whereas the distal have a curious sheen which accentuates the dividing line.

EARLY STAGES: Pl. LXXII., fig. I., Pl. LXXIV., fig. 6.

Charaxes varanes lays its eggs on three species of *Allophyllus* (*Sapindaceæ*)—*macrobotrys*, Gilg., a species near *subcoriaceus*, Bak., and an undetermined food-plant known to the Baganda as "Nkuzanyana". Of these small trees, which are commonly found in the forests round Nairobi, the first two are also the food-plants of *Ch. fulvescens* and the last that of *Ch. f.nr. acuminatus*.

At the coast *varanes* oviposits on a creeper (probably belonging to this same family) which abounds on the coral cliffs of Mombasa Island.

The eggs are white or yellowish when first deposited, but turn quite brown just before the larva emerges. The top is flat and slightly fluted. There is no apparent difference between the egg of this species and that of *fulvescens*.

The newly-emerged larva is dirty yellowish in colour and has a pair of long whitish tails and a black head with short white-tipped horns. These horns are mere tubercles when the larva has just emerged but they are gradually extruded within the first twelve hours.

The first meal is made off the egg-shell and green food is not touched until the evening of the day on which the larva hatches.

The head in the first two instars is blackish or brownish, but in the third instar when the body becomes green, the head also takes on this colour. The body-spots appear at this stage.

The mature larva, Pl. LXXIV., fig. 6. Pl. XLVII., fig. 4. 4a. is dull olive-green or grey-green, heavily papillated with white-tipped tubercles, so that the whole surface has a finely speckled appearance. The dorsal spots are present on the sixth, eight and tenth segments. In shape they are like those of *fulvescens*, and in colour they may be either greyish or brick-red. Sometimes only two spots are present.

The head, Pl. LXXVI., figs. 2 & 6. Pl. XLVII., fig. 4a., of the larva is characteristic, and it is noteworthy that the Nairobi and Coast form of *varanes* is in this respect quite distinct from the Uganda race. The chief points of difference are: (1) the horns of the eastern form are more slender and uniformly green in colour; (2) the lateral pair, seen from the front, form a nearly straight line with the lower half of the face, the corresponding contour being distinctly concave in the north-western form; (3) the central pair are first directed up, back, outwards and then inwards, while those of the Uganda insect project up, forwards outwards and then slightly forwards at the tips. Further the tips and the bases of the north-western form are blackish. There is therefore a marked difference between the head of the Nairobi *varanes* and that of *fulvescens* in Uganda, whereas, as we state later, we cannot separate the larvæ of the two species as they occur in Uganda. Cf. Pl. LXXVI., figs. 2, 5, 6, 14-17. The head is dull green with a greyish outline.

The pupa is a pale bluish-green, somewhat wedge-shaped both from in front and lateral view-points; with bluish-white streaks and spots, especially on the wing-cases and dorsum of the thorax. The abdominal segments are narrow and taper abruptly to the cremaster.

The head is bifid and forms an almost straight line with the wing-shields in front, and with the line of the thorax on the dorsum. The spiracles are indicated by blackish or brown spots.

DISTRIBUTION AND HABITS: *Varanes* is found in suitable localities from the coastal districts of Kenya inland to as far north as Marsabit, extending west through Elgon and into Uganda. The type of country frequented is the more open forests and "park land" and the less densely fringed river courses. They have a distinct liking for the vicinity of Acacias and Albizzias and indeed obtain a great deal of nourishment from the exudates from wounds in these trees. The flight, in comparison with other species of charaxes, is somewhat weak; one sometimes sees these insects flying in open sunny places but more often they keep fairly low, apparently preferring to settle on low scrub rather than high trees. Females are mostly taken round about the food plants of the larvæ, while males are taken at bait or when feeding on tree juices. At the Coast, one frequently takes them while feeding on the stalks of growing Maize or Mtama,

usually in association with Cetoniid Beetles, and ants. If a powerful species such as *cithæron* happens to come to a trickle of sap where *varanes* is feeding, the latter invariably gives way to its more virile opponent.

The species is on the whole remarkably constant in colouration; the most pronounced variation is one in which there is no white at the base of the fore-wing, the basal half of the wing being a pale orange yellow. Examples from the Coast frequently have the whole of the fore-wing cell uniform yellowish.

MIMETIC ASSOCIATIONS :

Vide post. under group.

CHARAXES FULVESCENS MONITOR, Rothsch. Pl. L., figs. 1-3.

Expanse: Male, 90-100 mm., female 95-110 mm. General colour reddish-orange-brown with whitish bases to both wings. Sexes alike.

F.-w.: The costa is strongly curved, greenish at the base but darkening towards the apex; the outer margin is almost straight forming practically a right-angle with the inner margin. The base of the wing is a delicate whitish yellow with a slight greenish tinge shading into a richer orange yellow at the middle of the wing and then into a dark orange-brown up to the margin and apex, the darkest area being at the margin. The dark marginal area is ornamented with two rows of orange spots; the submarginal row extending from area 1b to 7 and following the contour of the wing; the inner row following more or less the same line but with the spots in 4 and 5 set slightly nearer the outer row. Internal to this row are two spots (sometimes one) at mid-point of cellules 5 and 6. The intermediate orange-yellow zone is decorated with wavy transverse lines, dark brownish in colour, sub-basal in 2, 3 and 4, and often at apex of cell.

H.-w.: The basal triangle of the wing is whitish tinged with yellowish green, while the distal half of the wing is orange-brown, ornamented with a row of crescentic or triangular internervular blackish lines, submarginally, while internal to this is a row of darker brown somewhat diffuse large spots, internervularly in 3 to 7, those in the latter two areas sometimes with a light centre, that in 7 occasionally being white. The dark distal areas of the front and hind wings usually have a slight purple bloom which is frequently lost in worm specimens.

UNDERSIDE. Pl. L., figs. 2 and 3.

There are two extreme forms; one in which the wings are almost uniform greyish-russet, the other heavily scaled with dark olive-brown to blackish. Both forms have a dark bar which traverses both

wings from just internal to the anal angle of the hind-wing to not quite the end of the costa in the fore-wing. This line is accentuated on the outside by a greyish lustre which suffuses the outer area of both wings.

In the pale form certain marks are constant; area 7 has a circular dark spot with a whitish centre, and areas 1c and 2 each have a white submarginal spot outlined with blackish. In both forms there are wavy black lines running transverse to the cellules, sub-basally. The venation is always green.

EARLY STAGES:

The eggs of this species are usually laid on the young shoots of two species of *Allophyllus*, *macrobotrys* and *subcoriaceus*, the former being the commoner food plant. When the egg is newly deposited it is pearly white, but as development proceeds the rim of the upper disc turns brown, and later on the whole egg becomes blackish-brown.

The newly emerged larva is olive with a black head, and white "tails" on the anal extremity. The first two instars are as in *varanes*. The fully mature larva is 6-6.5 cm. in length; the body is a dull sage-green colour, heavily papillated over with glistening white spines, simple in nature. There is no distinct body-line. Many specimens have three, others two, crescentic spots or rather blunt trident-shaped figures with the prongs pointing forwards on the dorsum of the sixth, eighth, and tenth, or sixth and eighth segments respectively. In some larvæ these marks are very distinct, in others evanescent, they may be either brick-red or grey in colour. Pl. LXXVI., fig. 5.

Pl. XLVIII., fig 5.

The head is most characteristic and resembles in front view a somewhat quadrilateral convex plate, dark-green, finely papillated, and surmounted at its upper corners by two very long 7 mm., horns which run outwards, upwards and at the tips are incurved towards the mid line. Each is cylindrical and heavily spined, and at its extremity is white with a black band immediately below. There are two other horns 4 mm. long, which arise from the sides and curve upwards and outwards; they are heavily spined and also sharp-pointed. There is no marginal border or face line. Pl. LXXVI., fig. 5.

The pupa is pale-green, with the spiracles indicated by reddish spots, as in *pollux*. The head-covering is markedly bifid, with at the base of each projection a white spot. The wing-scutæ are ornamented with greyish wavy lined, while the dorsum of the thorax is streaked with the same colour. The imago emerges in fourteen days.

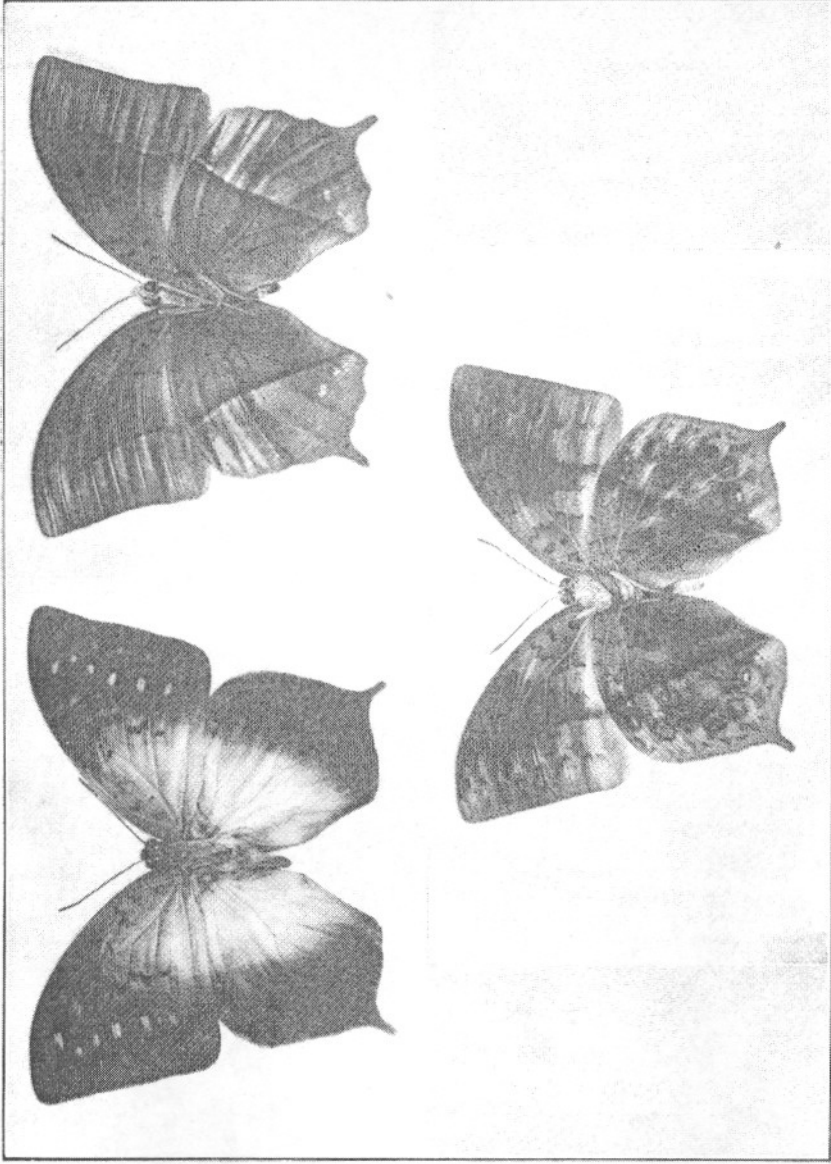


Photo: Dr. van Someren.

PLATE I.

Charaxes fulvescens monitor.

Fig. 1. ♂ upper side. Fig. 2. ♂ underside.

Fig. 3. ♀ underside.

These striking-looking larvæ are easily reared, as they feed voraciously, chiefly at night. During the day they will rest motionless on a particular leaf to which they return every morning. The surface of this resting place is spun over with silk and protected from the sun by one or two other leaves being attached and brought over with a few strands of silk. When the larva is distributed it stiffens itself into a straight line; the horns are laid on the back and the three terminal segments of the body are raised off the leaf or twig on which it is resting.

DISTRIBUTION AND HABITS:

This race of *fulvescens* inhabits the forest areas of Uganda from the Congo area to Busoga, but apparently intergrades with the form *acuminatus* in the Kigezi area of south-west Uganda, and in the Elgon area with a very distinct form which is un-named.

This species is much more confined to forests than is *varanes*, but like that species is usually found in the undergrowth and mid-zone of the forests rather than high up in the tall trees. Males are sometimes taken at bait but more frequently one captures the insects as they sit on some low bush or when feeding on some exudate from an injured tree. The undersurfaces of these insects certainly bear a strong cryptic resemblance to dead leaves, and even to the bark of trees when the insects settle on tree trunks, as they frequently do.

Very often males are seen flying about open forest glades and sunny paths but their flight is never sustained, and is rather weak.

CHARAXES FULVESCENS, *nr. ACUMINATUS*, Thureau. Pl. LI.,
figs. 1 & 2.

Expanse: Male, 88-99, females 95-112 mm. General colour blackish and orange with light whitish basal area. Sexes almost alike.

F.-w. Costa markedly curved especially at mid and distal third, with the outer margin strongly concave so that the apex of the wing is sharply pointed and tapering, while the posterior angle is produced backwards so that in shape it is less than a right-angle.

The basal area is a pale greenish-yellow shading to yellowish cream and then into orange, this area carrying large blackish-brown spots in cellules 2-6, and a streak at apex of cell. The distal area of the wing is a rich blackish-brown with a purply bloom, decorated with a sub-marginal row of smallish orange spots double in 1b and extending to 6 and parallel to the margin of the wing; internal to this row is another row from 1b-7 of much larger more triangular spots with that in 5 set slightly further out than the rest.

H.-w. Basal area bluish white distally tinged with greenish-yellow bordered distally by a band of rich reddish-orange which in turn shades to darker orange-brown at the margin. A submarginal row of rather indistinct triangular spots extends from area 1c to 7, and internal to this is a further row of larger blackish-brown spots equally indistinct, except those in 6 and 7. The distal half of the fold on the inner margin of the wing is shaded with ochreous, thus causing the basal pale area to be rather restricted. In general outline the hind-wing is rather rounded but there is a slight anal angle, while vein 4 is projected to form a rounded spatulate tail 7mm. long.

The general colour of the fore-wings is very like *Ch. candiopc*.

UNDERSIDE: Highly variable. Pl. LI., figs. 1 & 2:

Two extremes are figured. The more uniform variety has the general ground colour of a greyish-ochreous-olive with a dark brownish bar crossing both fore and hind wings. This line is edged distally with a lustrous grey which colour is present also on a series of indistinct, ocellate spots which run submarginally from the apex of the fore-wing to just internal to the anal angle of the hind-wing. In this latter the spot in area 7 is blackish, while those in 1c and 2 are white with black margins. In certain specimens there is a series of small silvery streaks in the mid-internervular margin.

There are certain persistent wavy blackish lines as follows: = F.-w. one crescentic at base of cell; followed by two transverse spots at proximal edge of mid-third, and a wavy zigzag line at the distal edge of this. Two wavy lines, sub-basal in 1b and 2; one each sub-basal in 3—7. H.-w. two sub-basal in 7 and 8; one each sub-basal in 6, 5, 4, and 2; two in 1b and 1c; a series of three in the cell. These lines are constant.

In the variety with an underside suffused with blackish-brown scales, the ground colour is more tawny, while the ocellate spots on both fore and hind wings are more distinct.

EARLY STAGES: Pl. LXXV., fig. 3. Pl. LXXVI., figs. 9 & 10.

This Alpine race of *fulvescens* selects as the food plant of the larvæ a small scrub allied to that known to the Baganda as "Nkuzanyana." We have also taken their eggs and larvæ on a further species of *Allophyllus*, as yet undetermined. The eggs are similar to those of the race *monitor* but are larger and rather yellower in colour when first laid. At the first instar the young larvæ are dull brownish-olive with a black head carrying white spines. The anal "tails" are pronounced and whitish. In the second stage the head and body become more greyish-green while the head horns are well developed and strongly divergent. At the end of this stage the larva is 15

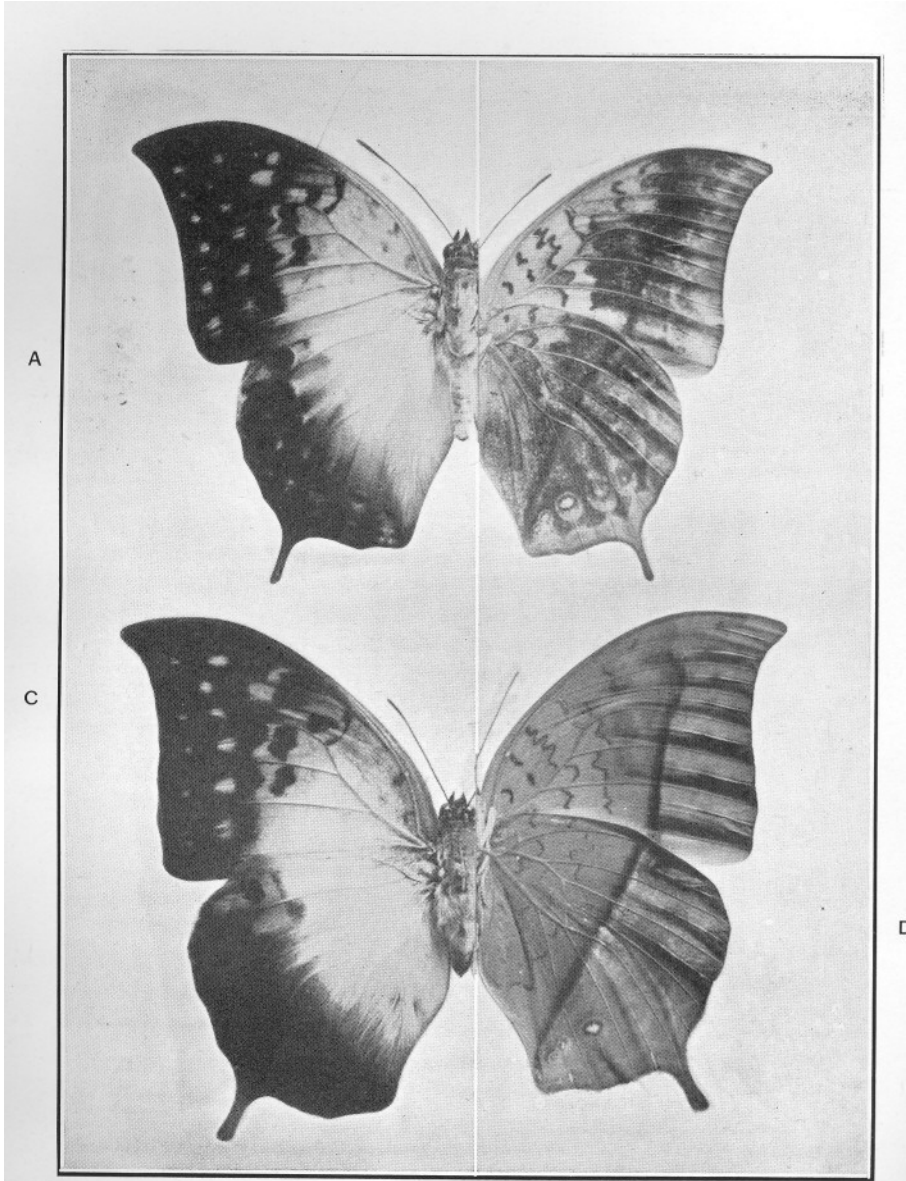


Photo: Dr. van Someren.

PLATE LI.

Charaxes fulvescens nr. *acuminatus*.

Fig. 1. a ♂ upperside. b ♂ underside.

Fig. 2. c ♀ upperside. d ♀ underside.

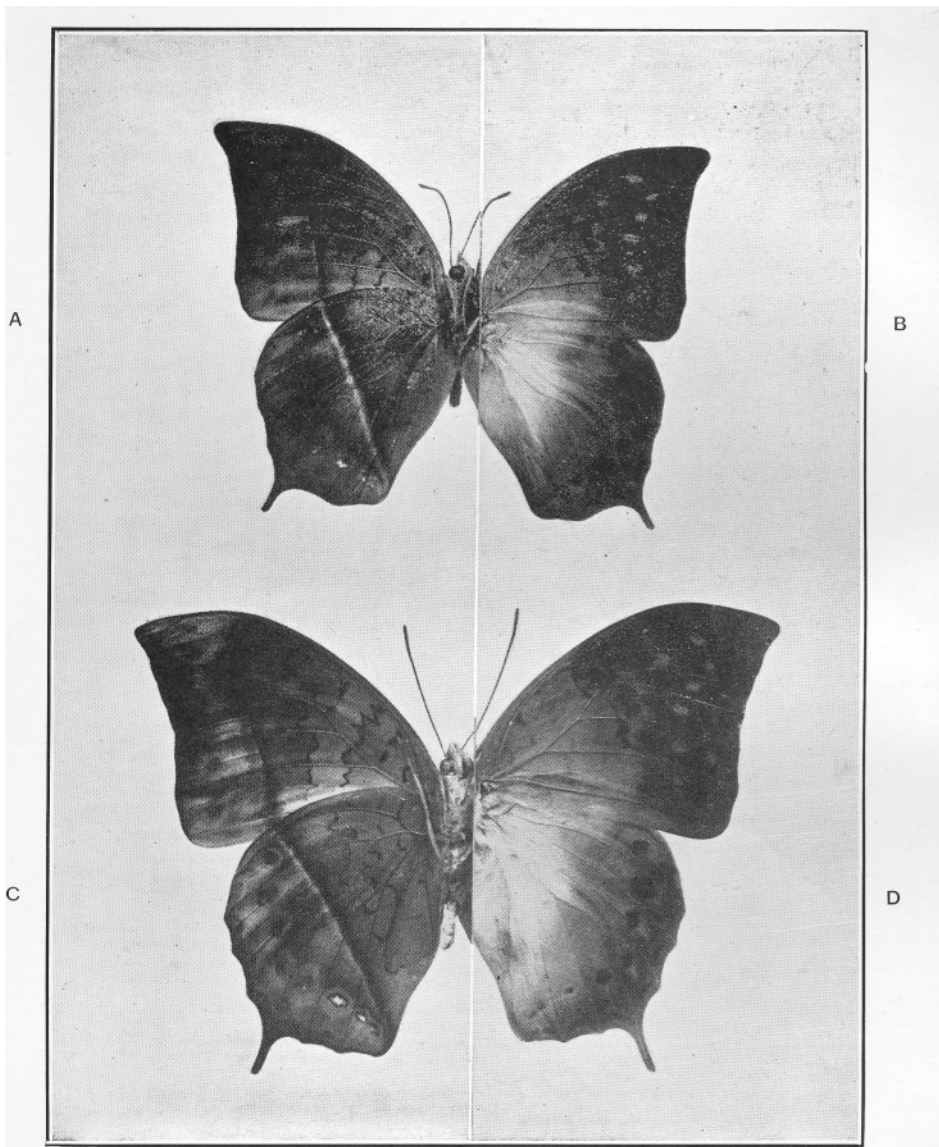


Photo: Dr. van Someren.

PLATE LII.

Charaxes fulvescens sb. sp.

Fig. 1. a ♂ underside. b ♂ upperside.

Fig. 2. c ♀ underside. d ♀ upperside.

mm. long and has one or two dorsal spots. The larva grows to about 30 mm. and then moults for the last time. The mature larva is very like that of *monitor* or even *varanes* but is much more ornamented with white-tipped papillæ on the body segments and possesses oblique segmental lines which reach the spiracular line which is greyish-white. The sixth, eighth, and tenth segments carry crescentic or trident-like marks which are either greyish with a bluish outline or reddish with a pale green margin. Just before pupating it measures 55 mm.

The pupa is like that of *monitor* in shape but is rather more ornamented with bluish-grey marks.

DISTRIBUTION AND HABITS.

The race *acuminatus* was described from Tanganyika Territory but we are unable to say with any certainty that the specimens referred to this form really belong to it. They agree with the description in that the angle of the apex is acute and in the concavity of the outer margin of the fore-wing, and in the darker marginal area of both fore and hind wings but these specimens differ in that the orange spotting in the fore wings is very distinct whereas Thureau describes his race as having very small indistinct orange spots. Until topotypical example are available this race must remain uncertain.

The specimens I have described range through the high forests of the Aberdares and the Kikuyu Escarpment and east to Meru and Mt. Kenya. The specimens from Kenya however differ somewhat and approach nearer to the race described later.

This race of *fulvescens* inhabits the forests and is not found in the more open country. We took it readily on bait and near its food plant. It occasionally comes to damp mud.

CHARAXES FULVESCENS *sb. sp.* Pl. LII., figs. 1 & 2.

Expanse: Male, 90-95, female 90-100 mm. This race is somewhat like *monitor* but differs constantly in having the dark outer margins of both wings much darker, though not so dark as in *acuminatus*; the orange submarginal spots are *indistinct* but the intermediate bright orange area between the whitish bases of the wings and the dark marginal border is considerably wider and thus more conspicuous than in any other race. It agrees however with *acuminatus* in having the margin of the outer side of the fore-wing concave with the apex produced to an acute angle.

The white area of the base of the fore-wing is limited to the base of area 1a and slightly into 1b.

I should not be at all surprised to find, when more material of true *acuminaus* is available, that the specimens described above belong to this form and that the Uplands specimens represent an entirely distinct race.

DISTRIBUTION: This type of insect is found in the forests round Mt. Elgon south to Nandi and Mau and eastwards to the Kericho and Sotik area.

GROUP 2. *CANDIOPE*.

Only one species of this group is represented in Kenya and Uganda. The sexes are similar and both possess two pairs of "tails" those in the female being more developed than in the male. The veins are greenish.

The basal half of both fore and hind wings is greenish-yellow.

The outer edge of the fore-wing is concave and the apex produced to an acute angle.

CHARAXES CANDIOPE CANDIOPE., Godt. Pl. LIII., figs. 1 & 2, a—d.

Expanse: Male 90-95, female 95-110 mm. General colour yellowish-green at base of wings with brown and black margins.

F.-w.: The basal half of the wing greenish-yellow up to a line with the apex of the cell; beyond this a reddish-orange zone extended outward in areas 5 and 6; distal half of wing blackish-brown ornamented with a marginal row of orange marks diminishing in size from the posterior angle to the apex, and a further row of 7 large sub-marginal orange spots following the contour of the outer margin up to area 5 and then curving inwards at 6 and 7. Beyond the apex of the cell are three confluent black spots and beyond these, two spots at the bases of 5 and 6.

H.-w.: Upper half of basal area greenish-yellow, shading to red-brown at the lower half, and distally bordered by orange-brown. The margin of the wing is paler orange and internal to this is a black band diminishing in width from the upper angle to area 2 where it tails off in a black spot. This black band is ornamented with orange internervular spots. The anal angle is produced into a blunt point carrying an olive-green mark in the centre of which are two black dots and edged above and below with white. Vein 2 is produced into a long outwardly-curved spatulate tail, and vein 4 into a narrow pointed tail; while veins 5 and 6 are also slightly produced. In the female both tails are long and spatulate, and of about equal length.

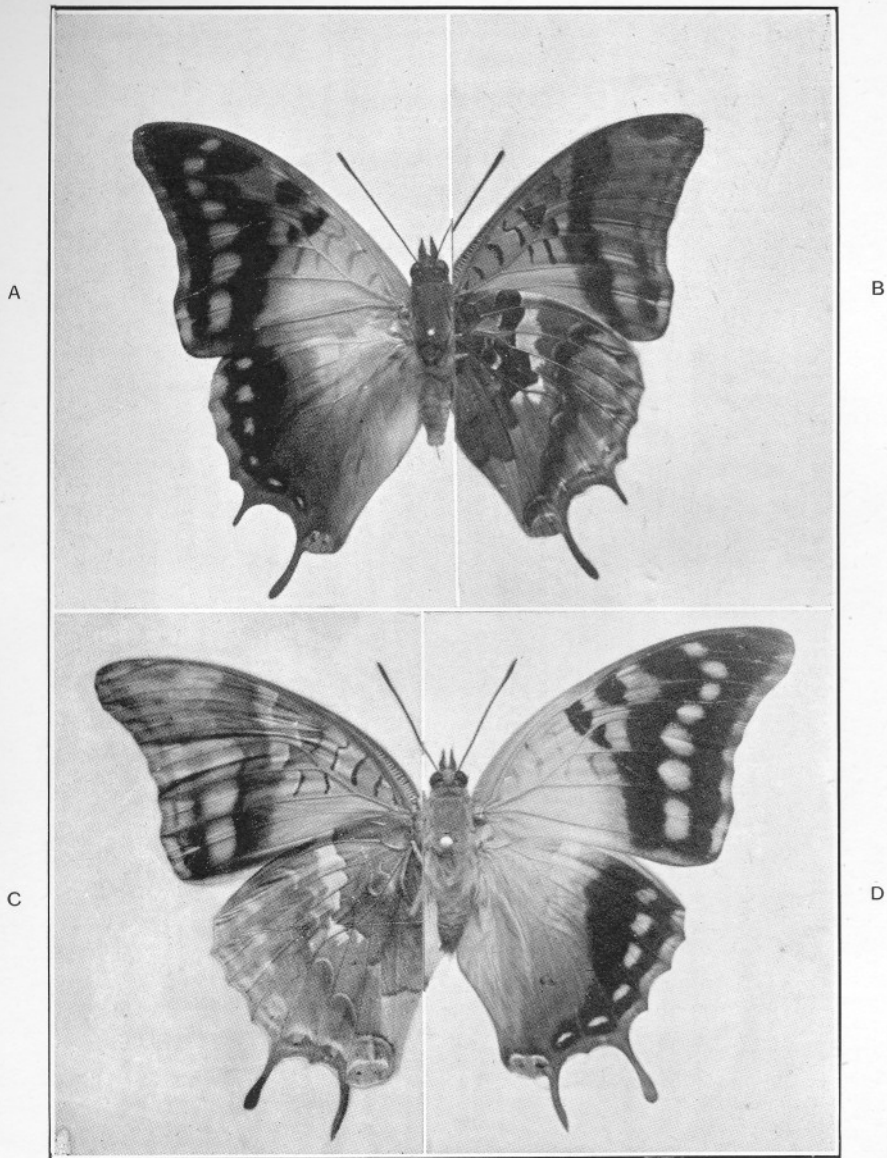


Photo: Dr. van Someren.

PLATE LIII.

Charaxes candiope candiope.

Fig. 1. a ♂ upperside. b ♂ underside.

Fig. 2. c ♀ underside. d ♀ upperside.

UNDERSIDE. Pl. LIII., b and c.

The green venation, especially that of the costa is marked. The pale area of above is represented below by a triangular basal area, greenish-ochreous in colour distally bordered by a greyish-brown bar which crosses the wing from the costa to the hind-margin. This bar is distally outlined and shaded with black in 1a to 3. Beyond this the wing is a paler greyish-brown paling to ochreous in 1b and 2, these areas ornamental with black spots, which are represented in the other cellules by faintly indicated double lines.

The pale basal area is traversed by blackish-brown wavy lines as follows: Three lines crossing the cell; two at the base of 2; two at the base of 3, while crossing the apex of the cell is a diffuse brown mark bordered distally by a brownish area. Towards the apex of the wing are two greyish marks below the costa.

H.-w.: Upper part of base greenish; the whole of the cell, the bases of 2, 4, 5, 6, and sub-basal in 7 and 8 dark brown, forming a bar; this bar is distally bordered by a cream bar of equal width. The rest of the wing is greyish-brown with a purple tinge traversed by a brownish bar composed of crescentic marks in each cellule, each mark proximally shaded with ochreous and the whole outlined in blackish.

The extreme margin of the wing is brown internally bordered by a series of ochreous crescentic marks in 4-8 and by greyish-olive in 1c, 2, 3, and 4, the first of these carrying two black dots, the latter one dot each. The under-surface of the tails is brown like the border. Areas 1b and 1c are traversed by dark grey lines, two in the former, three in the latter. The above description is of an average well marked example; the undersurface is however somewhat variable, many specimens being almost uniform greyish with a distinct sheen, but with the essential markings faintly indicated.

EARLY STAGES. Pl. LXXII., fig. 5.

This species lays its eggs on the upper or lower surface of the leaves of the "Brown Olive," *Croton megalocarpus*, Hutch. (*Elliotianus* Pax et Engl.) Euphorbiaceæ, a common tree of the highland forests of Kenya and known to the Kikuyu as "Makinduri" and at the Coast on *Croton dichogamus* Pax., a shrub which seldom grows to more than 6 feet and known to the Wanyika as "Mnyama." We do not know the food-plant in Uganda, but it is probably a species of *Croton* or a near ally. The eggs are deposited with great rapidity, not all on one leaf or even one tree, but the time between the actual settling and the deposition cannot be more than a second; and off the insect goes to another tree. When first laid the eggs are bright canary yellow, but they soon turn dull yellow with a brownish ring at the edge of the disc and in a day become bright brick-red.

This colour is highly cryptic, agreeing absolutely in tint with the numerous spots of fungus-burn to which the leaves of the *Croton* are especially liable. Just before the larva emerges, the egg turns black.

The egg stage lasts eight to ten days. The young larva (Pl. LXXIV, fig. 4) is at first dull olive-yellow, with black head, numerous very fine papillæ over the body segments and a pronounced bifid tail. At the first moult it becomes greener and the tail is reduced in length, but the horns on the head are well developed and very divergent. At the second moult the dorsal spots make their appearance on the sixth and eighth segments. At this stage the number of spots is not constant, but the usual number is three to each segment. The head is now green, with white papillæ and surmounted by greyish-brown strongly divergent horns. In the last stage the larva is leaf-green, with the under surface grey-green the whole finely papillated. A yellowish line runs the length of the body from the second segment to the tail, separating the green dorsum from the greyish under-surface. This body line subsequently becomes pink and each segment bears a row of pink or yellow spots along its anterior edge. The tails are ochreous in colour (Pl. LXXIV., fig. 1). The head is characteristic (Pl. LXXVI., fig. 21), being rather oval in outline but slightly pointed towards the mouth. The lower horns arise at about two-thirds up the side and are set well out and then curve slightly upwards. They are, as usual, separated from those of the inner pair by small spinous processes. The inner horns are almost straight and very divergent—more so than in any other *Charaxes* larva we have reared.

Two short spines arise, one on either side of the mid-line. The facial disc is green in colour with the horns and entire margin yellow-ochreous tinged with grey. The dorsal spots, situated on the sixth and eighth segments are also characteristic of the species. Each segment bears three spots set transversely, two small ones laterally with a large one in between; that on the sixth is larger and is composed of three contiguous parts, a long oval anteriorly, then a narrower but equally long section, at the rear of which follows a short oval. The central spot on the eighth segment is made up of two long, narrow, contiguous ovals with smaller ovals fore and aft. The lateral spots are almost circular. All the spots are ochreous in the centre and white outwardly. The tails on the last segment are fairly long and ochreous in colour. The larval stage lasts about twenty days in the Highlands, but the period depends largely on the freshness of the food-plant. Only mature leaves are eaten.

The pupa is very like that of *cithæron*, but is smaller, with a more marked thoracic ridge, and the bluish-white shading over the wing-scutæ and the thorax more in evidence. Furthermore the

cremaster is of a different shape. The insect emerges in fifteen to twenty days.

DISTRIBUTION AND HABITS:

Charaxes candiope is found from the Coast, throughout Kenya and practically over the whole of Uganda. It is a forest species which also frequents the more open "park-country" and bush-veldt where its food plant happens to be growing. It is the commonest species of *Charaxes* in the Nairobi district, and while the males come readily to evil-smelling baits and are to be seen flying and feeding, the females are only slightly less common though not nearly so much in evidence. These latter keep more to areas where the food-plant is plentiful and can usually be found feeding on the exudate from wounds in certain trees. These butterflies are particularly pugnacious towards others of their own kind and different species. They will fight with striking fierceness over some particularly attractive juice from a wound in a tree, or some unsavoury animal dropping, battering each other with their wings and sidling one another off the choicest tit-bits. One frequently comes upon an old male with denuded remnants of wings which have been so destroyed as to make flight well-nigh an impossibility. This species is particularly long-lived, and will survive in captivity for well over a month. They will feed well on over-ripe fruit, especially bananas, papaya and pineapple.

MIMETIC ASSOCIATIONS OF THE GROUPS:

Before proceeding to the next group it will be of interest to review what is known or rather suspected, regarding "mimicry" in these groups.

Professor Poulton has dealt at length with mimicry in the Genus *Charaxes* in his paper read before the International Entomological Congress, 1925. We cannot do better than quote certain passages from this address. "In the genus *Charaxes* we are introduced to a novel aspect in butterfly mimicry; for both models and mimics are regarded . . . as among the most palatable of insects. Yet there can be no doubt about the fact that the large species of this genus are mimicked by the smaller ones, and that some of the larger species mimic each other." "The species of *Charaxes* are strongly built and extremely powerful in flight, the thorax, containing the wing muscles, being specially capacious."

"When a *Charaxes* is seized its great strength enables it to struggle violently, and the effect is almost certainly intensified in the larger species, by the serrated costa of the fore-wing.

Swynnerton found that the chitinous exoskeleton is so tough that an insectivorous bird will often abandon a *Charaxes* after spending

perhaps twenty minutes in the vain attempt to remove the wings. Repeated observations have convinced him that with alertness and power of flight, "fighting weight," and toughness of integument. *Charaxes*, in spite of its palatability, gives to its smaller enemies such an unpleasant experience that they will avoid a repetition of it except under stress of hunger, and on this account the mimetic resemblance is advantageous."

"Mimicry in *Charaxes* is generally confined to the upper surface of the wings and is principally, although by no means exclusively manifested by the females. The fact that some of the larger species, which act as models for the smaller, are themselves mimics of other large species, and that one sex of a species may be a mimic while the other sex is a model, supply evidence that the resemblance is an advantageous advertisement of protective qualities held in common, although different degrees, by models and mimics."

In the *varanes-fulvescens* association we have a compact group of species all conforming to a common outline and presenting on the upper surface a somewhat similar scheme of colours.

The species comprising this association derive mutual benefit due to "the protective qualities held in common," a tough integument, power, and strong fighting tendencies.

Associated with these species are certain others belonging to other groups, such as *Ch. lactitinctus* (q.v.) female *Ch. azota*, *Ch. protoclea*, *Ch. candiope*, and *Ch. homeyeri*, and the female of *Palla ussheri interposita*, Joicy and Talbot, a species belonging to a genus closely allied to *Charaxes*.

In the more open and savannah forests we find *varanes*, *lactitinctus*, *azota*; in the thicker forests, *fulvescens*, *candiope*, and *Palla*.

GROUP 3. CYNTHIA GROUP.

CHARAXES PROTOCLEA NOTHODES, Jordan. Pl. LIV., fig. 1 and 2.

Expanse: Male 95-100 mm., female 100-110 mm. General colour black and orange-red. Sexes unlike.

F.-w.: Almost uniform velvety-black with a purply bloom, with the distal margins of 1a and 2 and slightly in 3 carrying an orange-red border. The fore part of the thorax covered with an orange-red pubescence. H.-w.: Base with a large triangular black area, rest of wing orange-red; veins 2 and 4 projecting to form short blunt tails; the ends of the remaining veins slightly produced forming obtuse serrations

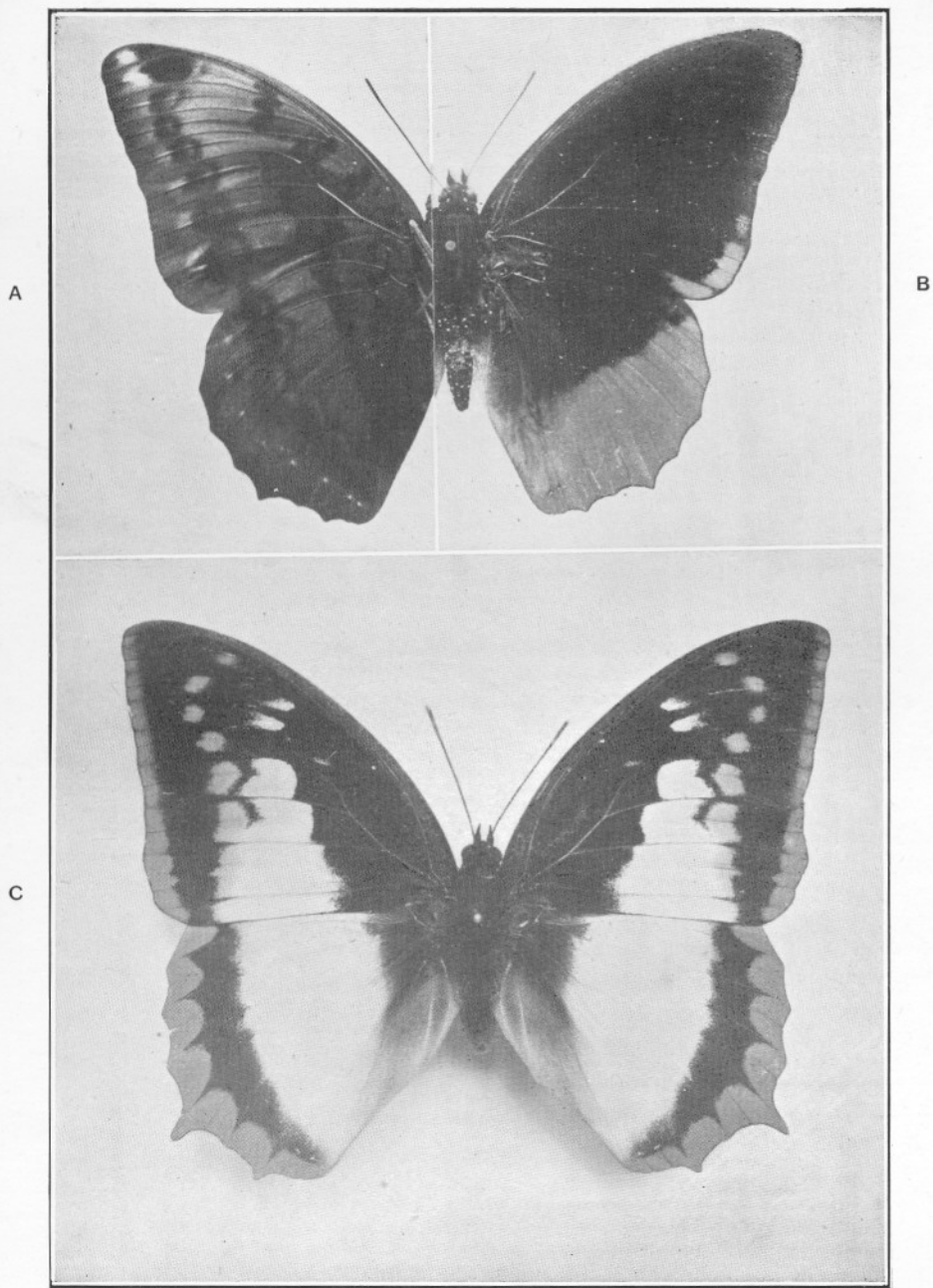


Photo: Dr. van Someren.
and Capt. Stoneham.

PLATE LIV.

Charaxes protoeclea nothodes.

Fig. 1. a ♂ underside. b ♂ upperside.

Fig. 2. c ♀ upperside.

round the margin. Fore and hind-wing with white scales, internervularly along the extreme margin. There is a black dot towards the border of 1c.

UNDERSIDE. Pl. LIV. A.

F.-w.: Dull chestnut, with rusty red markings as follows: A transverse mark almost at the base of the cell, followed by a dct. and at about the mid-point a wavy line extending across the cell: followed by another wavy line at the apex. Area 1b with a blackish U-shaped mark sub-basally, and the blackish mark shaded with grey towards the border bordered proximally and distally with orange or rusty red. Area 2 carries two rusty-brown marks, one at the base, one sub-basal; areas 3-7 each with a rusty transverse line towards the base. There is a series of ocellate rusty marks submarginally in areas 2-8. There are two whitish marks at the apex, in 7 and 8.

H.-w.: Dull chestnut, the basal triangle traversed by two wavy rusty lines; the inner line transverse to the bases of 6 and 7 and crossing the cell at about mid point where it bifurcates; the outer starting at about the mid-point of the costa cuts across areas 7, 6, and 5 and through the bases of 4, 3, and 2 to become diffuse in 1c. The series of ocellate spots of the fore-wing is carried on in the hind-wing but the spots are rusty-brown distally, bordered internally with lighter brown. The marginal border is rusty, and internal to this each internervular area carries a white dot, duplicated and outwardly black in 1c.

FEMALE. Pl. LIV., fig. 2.

F.-w.: Ground colour dark brownish-black, rufescent along the base of the costa. Margin of the wing with large coalescent orange spots forming a border; Ala bar broad and white in 1a and 1b, distally tinged with yellow; in 2 and 3 the bar is split, the inner spots are white and the outer yellowish-orange; the outer spots are continued as detached yellow-orange marks in 4-7 in a curve; there are two white spots towards the sub-base of 5 and 6.

H.-w.: Basal area blackish-brown; mid area with a very wide white patch very slightly tinged with yellowish distally, and bordered by a black band with very serrated outer margin, the serrations extending along the veins into the orange-yellow marginal border: margin of wing not serrate; vein 4 with a blunt stout tail, vein 2 with a very much shorter blunt tail. The anal angle with two white dots. with bluish tinge.

EARLY STAGES: Unknown to us.

DISTRIBUTION AND HABITS:

This species is limited to Uganda and does not appear to extend south-east of the Elgon area. It is not by any means plentiful. It is a forest species in which the males seem to predominate; the female being rare. No doubt, owing to their more retiring habits they are less evident.

MIMETIC ASSOCIATIONS:

Ch. Protoclea is a very powerful insect and acts as the model of a very small species *anticlea*. The female enters the *varanes* association.

CHARAXES PROTOCLEA AZOTA, Hew. Pl. LV., figs. 1 and 2.

Expanse: Male 86-92 mm., female 90-96 mm. Sexes unlike. General colour of male black with orange-red border. Female white with orange and black border.

F.-w.: Male. Outer margin of wing with a wide orange-red border, 7 mm. wide at the hind-angle at 1a-4, thence represented by two rows of spots, one marginal to the apex, the other in an inward curve to just below the costa. The orange in area 1b contains two black dots, 2-4, one each.

H.-w.: Basal triangle black, but not extending to the inner marginal-fold; rest of wing orange-red. The margin of the wing is slightly dentate at the nervures, veins 2, and more so 4, bearing short obtuse tails. Area 1c has two black and white dots sub-marginally; while the extreme margin of both wings is narrowly edged with black with white scaling at the mid-point in each area.

UNDERSIDE:

Fore and hind-wings dull chestnut with a lustre-like broad band which traverses the central line of both wings and turns upwards along the h.-w. inner marginal fold. This band is edged on both sides with rusty-brown, the distal edging on the hind-wing being as wide as the band. The hind-wing is narrowly margined with rusty-brown; while on the fore-wing the orange of the upperside is represented by rusty-red. A black U-shaped mark is present towards the base of 1b in the fore-wing and continuous with each arm of this mark a rusty-brown line the outer corresponding with the inner edging to the fore-wing bar, the inner arm crossing the cell just beyond its middle: within the cell and internal to this line are two other rusty lines, a

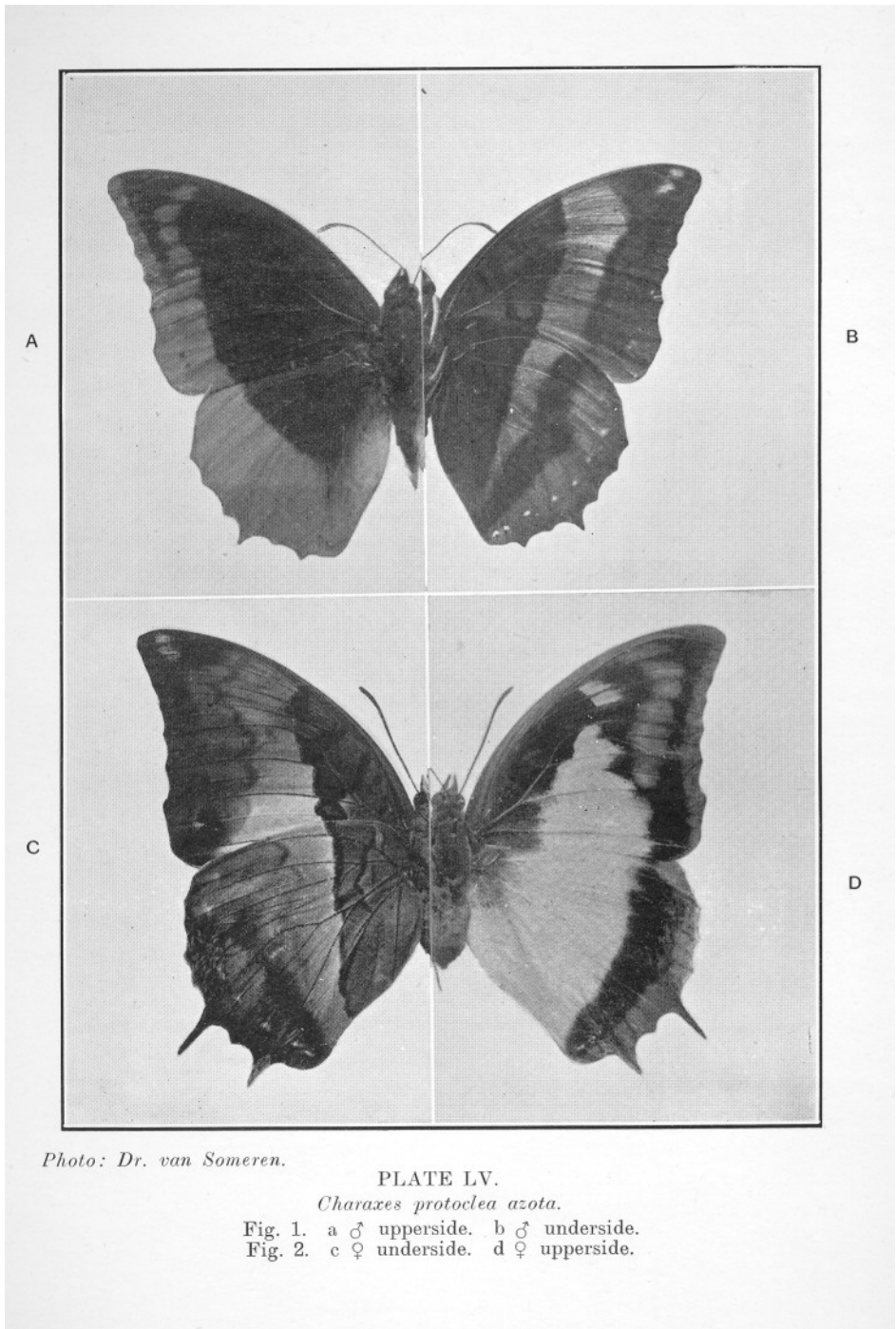


Photo: Dr. van Someren.

PLATE LV.

Charaxes protoctea azota.

Fig. 1. a ♂ upperside. b ♂ underside.

Fig. 2. c ♀ underside. d ♀ upperside.

fourth line crosses the apex of the cell. There are two purply-grey spots near the apex of the wing, and two sub-marginal in 1b. In the hind-wing there is a row of sub-marginal white dots set mid-way in the internervular spaces. The hind-angle is olive yellow with two black and white dots.

FEMALE. Pl. LV., fig 2.

F.-w.: Ground colour, brownish black. Costa and outer margin of wing orange-red; a broad submarginal bar of orange-red extending from upper half of 1b to below the costa in 7. A large irregular triangular white patch tinged with yellow at the apex, fills the mid-area of 1a, 1b, and the sub-basal areas of 2 and 3. Two yellow-ochreous rectangular marks are present just internal to the mid-point of 5 and 6.

H.-w.: Mostly white, with a slight brownish-black suffusion at the upper part of the base of wing. Margin with a wide border of orange-red, with the extreme edge outlined with black, this black line broken at the mid-internervular point with white scaling. Internal to the orange border is one of brownish-black of about the same width, edged on the inner side at its upper end with orange and carrying at the anal end two white dots outlined with black. Vein 4 is extended into a long tail, 10 mm., and vein two into one of almost the same length.

UNDERSIDE:

Basal thirds of fore and hind-wings greyish-brown, sharply demarcated from the mid third which is ochreous-yellow shading into ferruginous-yellow on the distal third. The basal area of the fore-wing is crossed by rusty-brown lines as follows: One sub-basal in the cell followed by two spots and at about the mid-line of the cell a transverse bar which is carried on through the base of 2 to join a black mark in 1b thence to pass up sub-basally into 2 and 3, and cross the apex of the cell and the base of 4. A further rusty bar crosses the sub-basal areas of 5-7. The black sub-marginal line on the upper surface of the wing is faintly indicated on the lower surface, commencing in two whitish spots near the apex and ending in a black mark with a white dot in area 1b. In the hind-wing the distal edge of the brownish area is outlined with rusty-red, while a second brown line crosses the sub-basal area of 7 and 8 and crosses the cell. The ferruginous-orange border is shaded along the mid-line with greyish scales which impart a lustre to this area, while the distal margin of this greyish zone carries triangular white spots placed centrally in each cellule. The anal angle carries two black dots outlined in white above.

EARLY STAGES:

We have not as yet completed the life-cycle of this *Charaxes* but have on many occasions detected the female depositing her eggs on the mature leaves of the "Mbambakofi," *Azalia cuanzensis*, Welw. (Leguminosæ). Owing to the difficulty of keeping up a supply of fresh leaves, at Nairobi, we have not taken the larvae beyond the second moult. Rogers however describes the mature larva as being of the usual *charaxes* shape, green in colour, with the head bordered with brown. The spiracular line is orange, the tubercles being more orange. The green of the body has a somewhat mottled appearance which changes before pupation into dull yellow, with a row of large lateral ill-defined brown spots. The dorsum of the sixth segment is ornamented with a large triangular orange-brown mark, the apex directed backwards. The pupa is pinkish with chocolate-brown markings.

DISTRIBUTION:

The race *azota* is found at the Coast and along the Tana River, but actually how far inland it extends we have no accurate knowledge.

It is a forest species and somewhat uncommon. We have taken the male at bait and leopard droppings.

MIMETIC ASSOCIATION:

As has already been mentioned, the female of *azota* comes within the *varanes* mimetic association; there being an undoubted superficial resemblance between the species when seen in flight.

CHARAXES BOUETI LASTI, Gr.-Sm. Pl. LVI., figs. 1 and 2. Pl. LXVII., fig. 1.

Expanse: Male, 72-75 mm., female 80-90 mm. Sexes unlike. General colour of male orange-red with black marginal markings; female orange with black markings and yellowish central wing-bar.

F.-w.: Male, general ground colour orange-red slightly darker at the basal third; apex and outer margin with a broad blackish border, broken by a series of graduated orange spots largest in 1b and smallest at the tip of the apex. There is a sub-apical row of four orange spots arranged in a curve and continuous with an orange-red bar which traverses the wing to the hind-margin. Areas 2-6 are ornamented with blackish sub-basal lines and spots, with a further row of irregular black marks at the apex of the cell.

H.-w.: Orange-red, with a central ala bar of slightly lighter shade; extreme margin of the wing outlined in black, with white scaling in the internervular spaces. A sub-marginal series of graduated

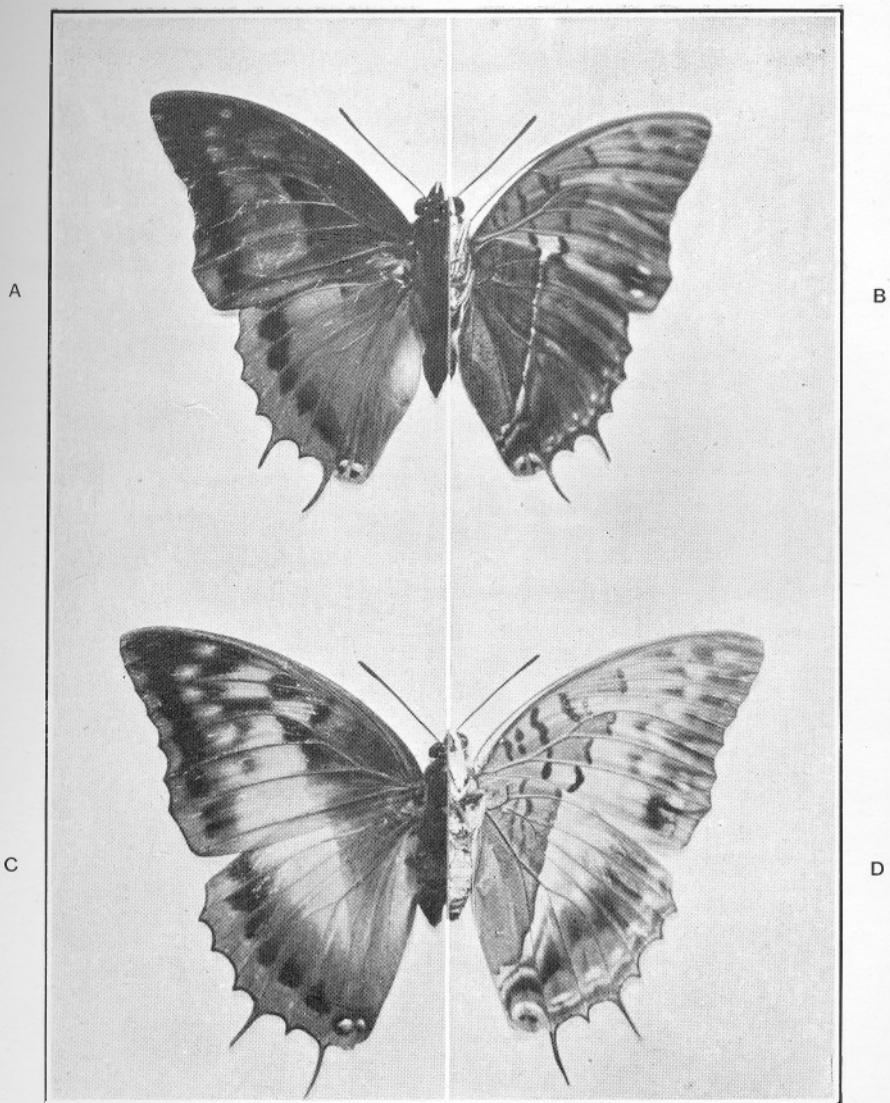


Photo: Dr. van Someren.

PLATE LVI.

Charaxes boueti lasti.

Fig. 1. a = ♂ upperside. b = ♂ underside.

Fig. 2. c = ♀ upperside. d = ♀ underside.

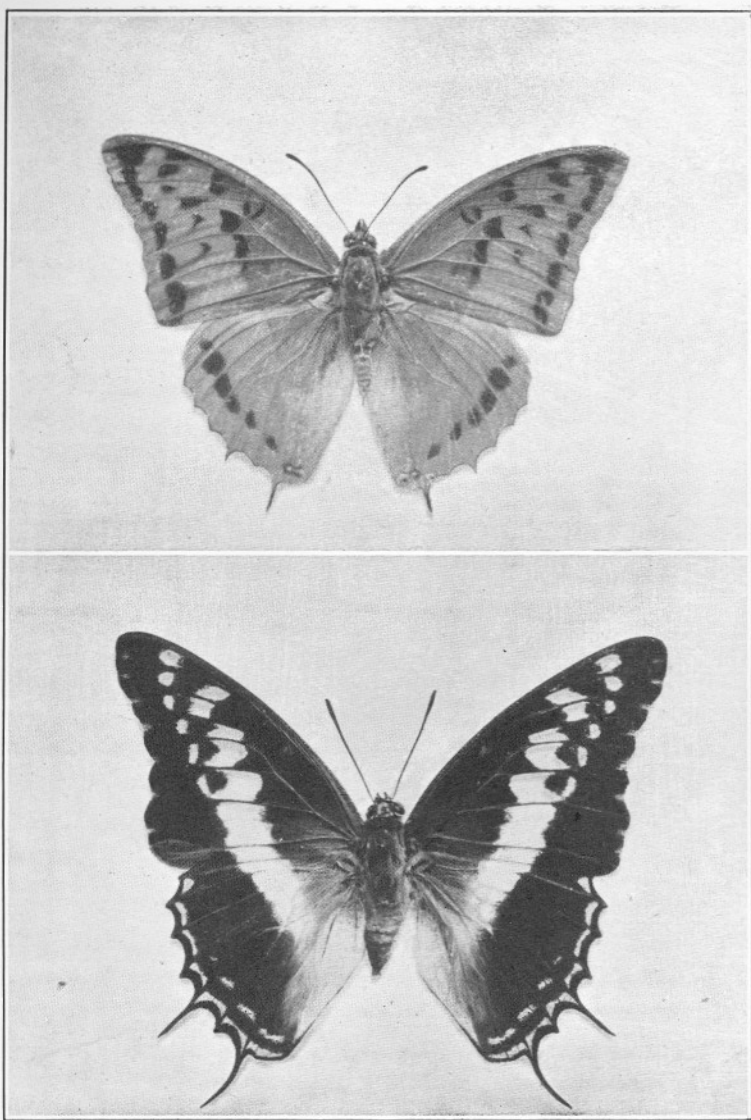


Photo: Dr. van Someren.

PLATE LXVII.

- Fig. 1. ♂ *Charaxes boueti lasti*, var., upperside.
Fig. 2. ♂ *Charaxes castor flavifasciatus*, upperside.

black spots largest at the upper angle extends to the anal angle. The anal angle is olive and carries two black dots accentuated with white above. The outline of the wing is serrate, with veins 2 and 4 extended into tails 4-6 mm. long respectively. The bases of areas 6 and 7 are sometimes dusted with blackish scales.

A not infrequent variety of male has the whole ground colour pale as in the female but lacks the central yellowish ala-bar. The spotting is so much more definite and the black on the outer margin of the fore-wing is reduced to a series of submarginal spots, vide Pl. LXVII., fig. 1.

UNDERSIDE:

Two types predominate, that with a pinkish-ochreous ground colour with the markings ill-defined and with the silvery-white line of the hind-wing narrow and interrupted; and the other in which the ground colour is greyish-ochreous with spots and lines as follows: The cell is traversed by a sub-basal crescentic line beyond which are two rectangular rusty spots followed by a wavy line just distal to the mid-point; at the apex of the cell is a hook-shaped line. In area 1b is a large bluish-grey mark proximally and distally bordered with black, and at the distal end of the area is a black mark distally intersected by three bluish-white marks in the form of a trident. Sub-basal in 2 is a rusty line continuous with the inner line of the inner spot in 1b, while in line with the outer black edge of this spot is a series of rusty lines crossing 2, 3, 5, and 6.

The hind-wing is divided by a pronounced silvery-white line which starts at about the mid-costa opposite the inner of the two spots in 1b of the fore-wing, and extends almost to the anal angle where it curves slightly inward to the fold of the wing. The base of the wing carries a looped line which passes through the base of 8 and 7 thence obliquely through the cell then curves abruptly upward, traverses the cell and crosses the base of 7. A further rusty line passes the apex of the cell and joins the rusty-brown line which borders the inner margin of the silvery ala line. The extreme margin of the wing is black, bordered inwardly with orange-red then bluish-white, while internal to this is a series of white spots in the mid-internervular line of each area. The anal angle is olive green with two black spots edged above with white. There are a few variable rusty-brown marks in the post-discal area of the wing.

FEMALE. Pl. LVI., fig. 2.

The distribution of the blackish spots is similar to that of the male, but the ground colour of both fore and hind-wings is lighter orange-red, while the marginal orange spots in the fore-wing are large and almost confluent. Both fore and hind-wings are traversed by a

broad yellow ala bar, widest at the costa of the fore-wing and tapering to a point at the middle of the inner margin of the hind-wing. The tails to the hind-wing are long and fine, usually 9-10 mm. in length.

UNDERSIDE:

As in the male, but the rusty markings are larger, and the yellow bar of the upper side is indicated on the lower, but is distally shaded with rufescent scaling. There is a variety with very large triangular black spots, which coalesce and form a submarginal bar to the hind-wing.

EARLY STAGES:

We have observed this species laying on *Afzelia cuanzensis*. "Mbambakofi," but so far have not succeeded in rearing the insect to the imago.

DISTRIBUTION AND HABITS:

The range of this insect appears to be the Coastal zone, and along the Tana River, but only in the forested areas. It is a common species and not very robust. It is less active than many *Charaxes* and spends a lot of time in basking in the sun or sailing about some sunlit forest clearing. The males come to bait readily and females are attracted by fermenting fruit-juices. These latter are almost as much in evidence as the males.

MIMETIC ASSOCIATIONS:

There are no very close mimetic associations connected with this species. The males bear a superficial resemblance to the very common *Euryphene senegalensis orientalis*.

CHARAXES CYNTHIA, Butlr. Pl. LVIII., figs. 1 and 2.

Expanse: Male 80-86 mm., female 98-100 mm. Sexes unlike. General colour of male black with orange-red markings; female black with yellow ala bar crossing both wings.

F.-w.: Basal half of costa and the whole of the cell and bases of 4, 5, and 6, orange-red, so also the bases of 1a and 1b and extreme base of 2. Rest of the wing black with a broad ala bar of contiguous orange-red spots commencing and widest at the mid-point of 1a and extending in diminishing size to 4. In areas 5, 6, and 7 the spots tail off, and between them and the basal spots are two rectangular orange spots, double in 1b.

H.-w.: Ground colour black, slightly shaded with brown at the base. The ala bar is continuous with that of the fore-wing and shades off into the wing-fold in 1c. The margin of the wing carries

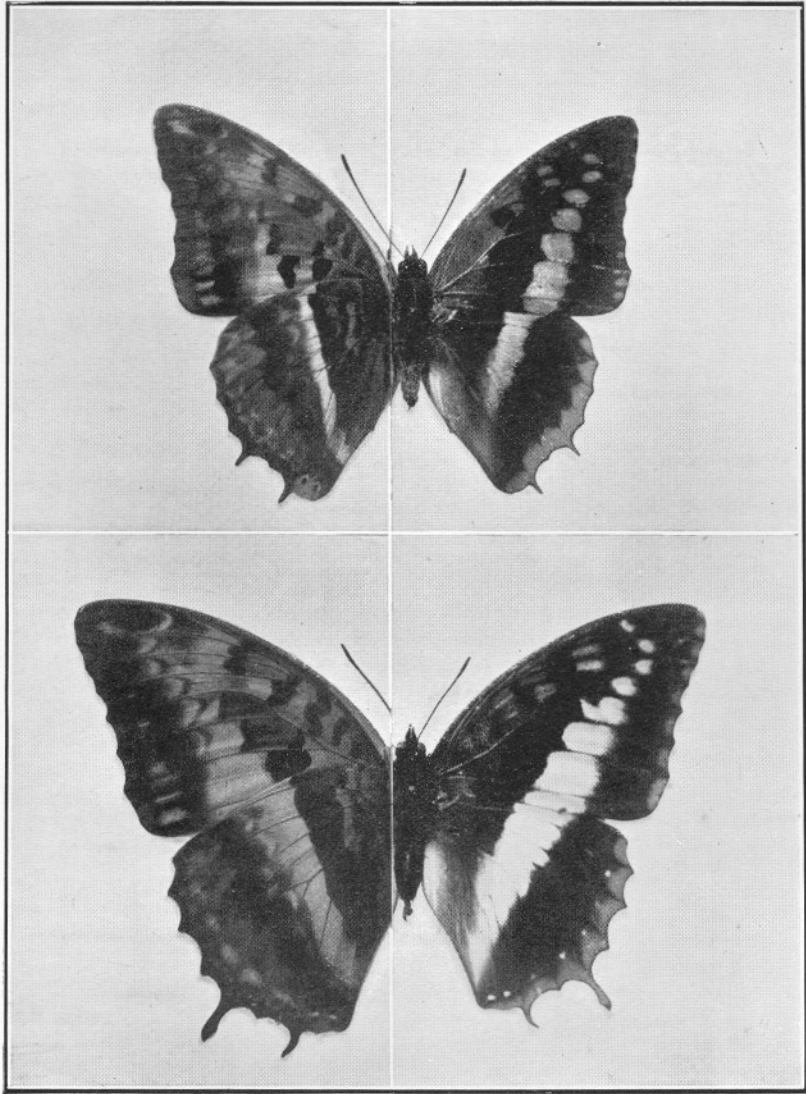


Photo: Dr. van Someren.

PLATE LVIII.

Charaxes cynthia.

Fig. 1. a = ♂ underside. b = ♂ upperside.

Fig. 2. c = ♀ underside. d = ♀ upperside.

a wide orange-red border, dentate on the inner edge, while the extreme edge of the wing is margined with black with white spots internervularly. The margin is slightly serrate, with veins 2 and 4 carrying short sharp tails 3-4 mm. in length.

UNDERSIDE:

The general tone of the underside is greyish-brown but in the cell and the line corresponding to the orange spots of above, the ground colour is shaded with ochreous, while most of areas 1a and 1b of the fore-wing are bluish-white with a purply tinge. The fore-wing markings are as follows: Three thick rusty-brown wavy transverse lines in the cell with a hook-shaped mark at its apex; a wavy line starts at the base of 7 and crosses 6 and 5; in 1b are two large black lines set at an angle, from the inner of which a line crosses the base of 2, while from the outer, the line crosses 2 and 3 just internal to the orange-ochreous ala bar; this bar is diffuse and is bordered internally by crescentic rufescent marks, and distally by spots of the same colour. The distal end of area 1b carries a large black spot lined externally with three purply-blue marks.

H.-w.: Traversed by a straight silvery-white ala bar which runs from the mid-point of the costa to just above the anal angle. This bar is bordered distally by a wavy chestnut line and then by one of grey, and, this in turn by a wide 3mm serrate bar of greyish-chestnut. The edging to the wing is very narrowly black with white in the mid-points, while the marginal border is orange—or ferruginous; the intervening area between this and the serrate bar is greyish-purply-brown bearing at the mid-point of each area an indistinct pinkish-white triangular spot. The basal triangle of the wing is greyish-brown with a light purply-grey line outlined with chestnut on either side, extending from the base of 8, 7, the cell, and into 1c and joining the ala bar before its end; a further wavy rusty line crosses area 9. The anal angle is olive, carrying two black and white dots.

FEMALE. Pl., fig. 2.

F.-w. Orange-red area similar to the male; marginal series of spots larger and more pronounced. Ala bar yellow-ochre, and wider otherwise as in the male.

H.-w.: Pattern as in male but ala bar ochreous yellow; and the orange marginal border inwardly bordered by a series of small white dots, double in 1c. Margin of wing serrate; vein 2 with a short 5 mm. outwardly curved tail; veil 4 with a long inwardly curved spatulate tail 8-10mm long.

UNDERSIDE:

The general ground colour is more purply-grey-brown than in the male but the actual distribution of the markings is the same with the

exception of the ala-bars on the fore and hind-wing; these bars are ochreous-yellow and though as broad as on the upper-surface are less defined distally, being shaded with irregular shaped rusty-brown marks.

EARLY STAGES:

We have not succeeded in breeding this species, and there appears to be no published description of the life history.

DISTRIBUTION AND HABITS:

This species is common in Uganda in forest areas. The males are much in evidence on any bits of mammal droppings and are readily attracted to bait.

We have taken *cynthia* in Western Uganda, eastward to the Nandi and Maragoli Hills. It appears to be a forest species and though males are to be seen in forest clearings and along roads which traverse forest, the female are much more retiring and usually keep to the more open undergrowth and forest edges.

Although the males are only of moderate size, they are very powerful and keep many other larger species from feeding on a particularly choice foul-smelling titbit; they use their wings with force by beating downwards and make great play with the serrated edge on the fore-wing costa. The females are very partial to the juice from banana flowers and to the sap from certain leguminous trees.

MIMETIC ASSOCIATIONS:

There is in the male a remarkable resemblance to *Ch. lucretius* and to two apparently undescribed species or forms which occupy the Elgon-Nandi area. The pattern and colouration in these insects is so close that one cannot with certainty "place them" except by looking at the under surfaces. The four species form a close mimetic group.

When we consider the females we find that there is a strong similarity between *cynthia* and *lucretius*, and I have no doubt that when the Elgon females are known they will prove to belong to this group. In West Africa a form of *Ch. etheocles* female *ochracea* enters the group.

It is highly probably also that the female colouration has been influenced somewhat by the presence of *Ch. catsor*.

GROUP 4. LUCRETIUS GROUP.

CHARAXES LUCRETIUS. Cram. Pl. LIX., fig. 1 & 2.

EXPANSE: 90-92mm, female 90-100 mm. Sexes unlike. General colour of male black with orange-red bar and border; female with a whitish bar.

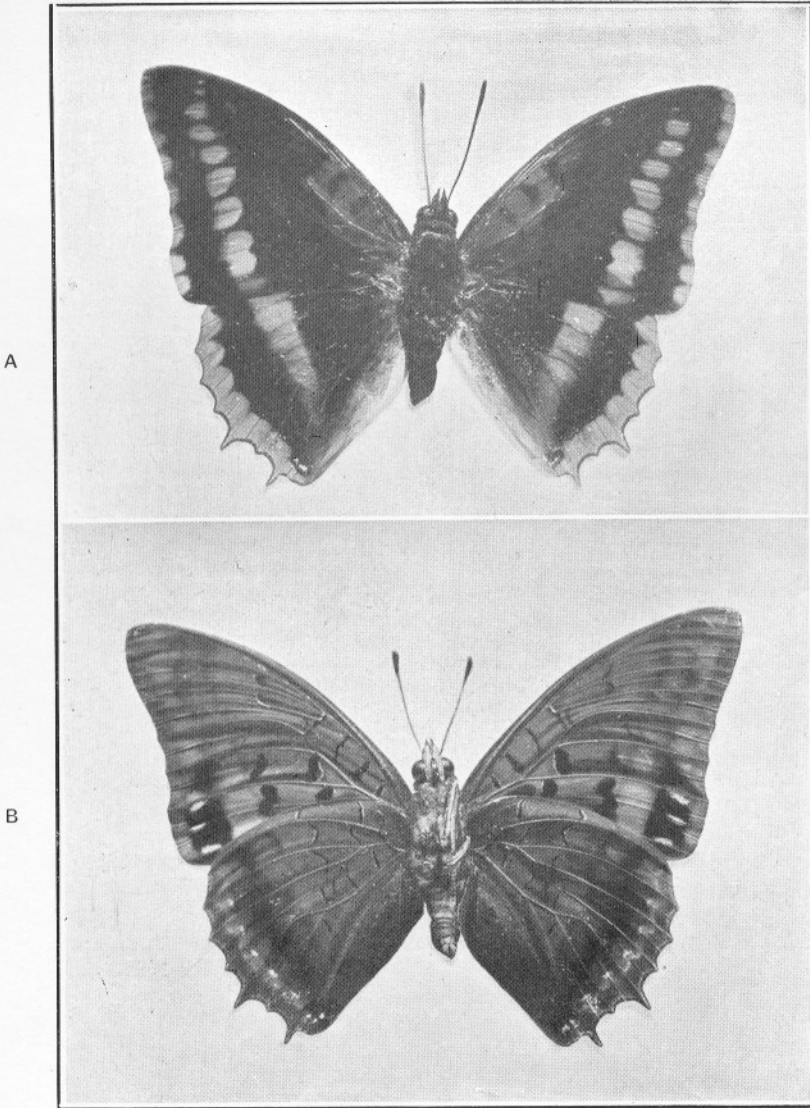


Photo: Dr. van Someren.

PLATE LIX.

Charaxes lucretius.

Fig. 1. ♂ upperside. Fig. 2 ♂ underside.

F.-w.: Male, ground colour purply-black, basal half of costa, the cell and the bases of 1a-2 and 5 and 6 rufescent-brown with violet tinge; the cell with two black bars outlining the mid-third. Outer margin of wing with a dentate orange-red border; an almost straight ala bar of orange-red spots crosses the wing from 1a-7.

H.-w.: Ground colour purply-black with a slight brownish tinge at the base; extreme margin with a narrow black border with white at mid internervular point, internal to which is a wide orange-red border tinged with violet and with inner margin indented by the black ground at the veins; an ala bar continuous with that of the fore-wing starts at the costa and runs towards the anal angle where it merges into the ground colour. The anal angle has an elongate black mark with two white dots bordered with purple. Outline of wing slightly serrate—veins 2 and 4 carrying tails 3-4 mm. long.

UNDERSIDE. Pl. LIX., fig. 2.

F.-w.: Ground colour yellowish-brown at the base shading to purply-brown towards the tip. Marginal and ala bar of upperside represented by indistinct orange-brown scaling. Black marks as follows: the cell is traversed by three lines, one sub-basal, two outlining the mid-third of the area. A broad black line crosses the sub-basal part of area 1b, while a wavy black line crosses at about mid-point; directly above these lines are others which cross area 2; these areas are further ornamented with black marks sub-marginally, that in 1b having three purply violet streaks on the distal edge. The hind-wing is purply-brown with darker brown scaling along the line of the ala bar. The marginal border is red-brown with a narrow black distal edge; and internal to this border, at each mid-internervular space is a small purply-pink spot, double at the anal angle and distally edged with black. The wing is traversed by narrow wavy black lines edged with white, the outer commencing at about the mid-point on the costa and passing to just above the anal angle when it curves inward to the wing-fold; a second line crosses the sub-basal areas of 8, 7, and the cell, this last area with a further line at midpoint.

FEMALE:

We have no female specimen and quote from Seitz. "In the female both wings above are smoke-brown with common whitish discal band, placed as in the male but much narrower; the marginal spots of the fore-wing very small or indistinct; the marginal band of the hind-wing much narrower than in the male and whitish with orange-yellow tinge; the base of the costa of the fore-wing only very narrowly red-brown; the under surface lighter than in the male and with a whitish discal band, which is broader than above."

EARLY STAGES :

Unknown.

DISTRIBUTION AND HABITS :

Ch. lucretius is wide-spread in the western parts of Africa but as it comes east it is certainly uncommon. We have taken it in Eastern Uganda and Uganda proper and at Masindi. It is nowhere common; it may be, that owing to its close resemblance to *Ch. cynthia*, it has been overlooked. It is a forest species which flies high, but can usually be attracted to baits of various kinds. The females are very retiring and keep to the forest undergrowth. Only once have we seen the insect as it slipped away in the dense bush.

MIMETIC ASSOCIATIONS :

These have been referred to under *Cynthia*. There is a close resemblance between the females as well as the males. The resemblance is limited to the upper surfaces, the undersides being quite different in the two species.

CHARAXES LACTETINCTUS, Karsch. Pl. LX., figs. 1 and 2.

Expanse: Male 88-90 mm., female unknown to us. General colour white and black with rusty tips.

F.-w. : Basal triangle except costa bluish-white, with the distal half of 1a-3, black, intersected by an orange ala bar which starts below the costa at 7 and ends in the upper part of 1b. Marginal border orange-red as also the base of 4, and sub-bases of 5 and 6; costa, upper part of cell and rest of apex of wing, rufescent-brown shading into the black of 3.

H.-w. : Basal half bluish-white shading to orange-red at midpoint in 6-7 and along the fold on the inner margin; remainder of wing, black with a marginal border of orange-red as far as vein 3, this narrowly edged on distal side with black; the anal angle, and 2 and 4 with oblong purply-blue submarginal marks; margin of anal angle olive-green; vein 2 carries a long slender tail 7 mm. long and vein 4 one of 5 mm.; margin of wing not very serrate.

UNDERSIDE :

F.-w. : Rusty brown with slight indication of the ala and marginal orange of upper side. A wide silvery white line crosses areas 5-7 sub-basally; a similarly coloured line crosses the cell at the distal end of the mid-third and passes across the sub-basal area of 2 where it is accentuated distally by a black line. The cell is further crossed by black lines distally edged with white at the inner edge of the mid-third and sub-basally. There is a sub-basal spot in 1b, and a series of black lines along the inner margin of the ala bar, crossing 1b-3; areas 1b and 2 carry submarginal black spots distally outlined in purply white.

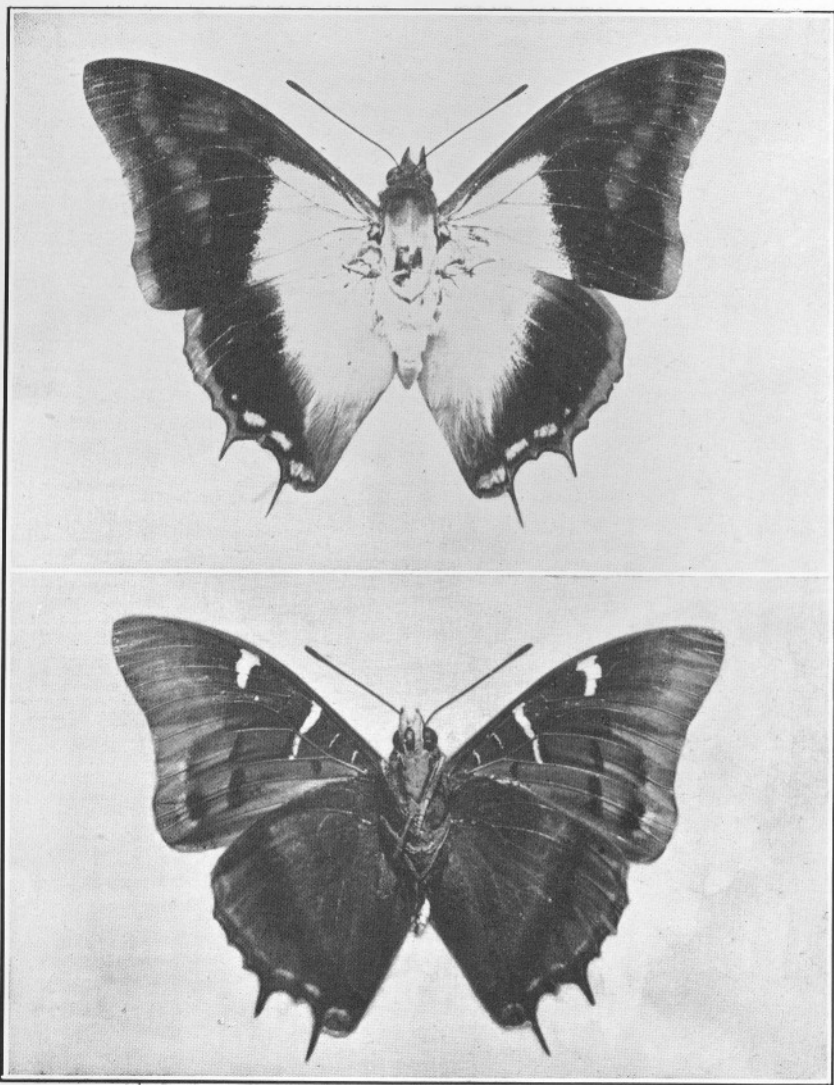


Photo: Dr. van Someren.

PLATE LX.

Charaxes lactetinctus.

Fig. 1. ♂ upperside. Fig. 2. ♂ underside.

H.-w. : The hind-wing is almost unicolourous purply-brown; there is an ill-defined bar of deeper brown crossing the wing from the mid-point of the costa to just above the anal angle; this bar is edged internally with bluish-grey scales, especially at the anal angle. The marginal border is along its upper half rufescent, but from the tail at vein 4 to the angle it is olive-green inwardly margined with pinkish-blue and distally outlined with black and white; the anal angle has two black dots, areas 2 and 3, one each.

FEMALE:

Unknown to us, nor is it described in "Seitz."

EARLY STAGES:

Unknown.

DISTRIBUTION AND HABITS:

Lactetinctus is apparently a rare species which, within the regions dealt with in this paper, is limited to the northern districts of Uganda and to the eastward as far as Lake Rudolf.

It is an inhabitant of the acacia and thorn-bush country, and not a forest species. One usually sees the males flying high up or settled at the top of some particularly nasty thorn-tree, in both cases making capture rather difficult. The species is one of the finest of the group, is powerful of flight and extremely wary. More than once I have had to actually shoot the insects with a reduced charge from a .410 gun, they would not come within reasonable distance of the net, but kept twenty or more feet above the ground, sailing leisurely about or flirting with any other species of butterfly which happened to come within their territory. They undoubtedly keep to one particular area and can be seen within that sphere for days on end but always out of reach. Carpenter writes: "I saw about eight *lactetinctus* and nearly broke my neck by gazing at them! They would settle out of reach, or, if within reach would not allow me to strike at them. . . . They are most wonderful fliers: even among *Charaxes* they are *primi inter pares*! Two will go soaring away into the blue sky, buzzing round and round each other, till lost to view."

MIMETIC ASSOCIATION:

I have already dealt with this under the *varanes* group, q.v.

GROUP 5. *JASIUS* GROUP.

CHARAXES JASIUS EPIJASIUS, Reiche. Pl. LXI., figs. 1 and 2.

Expanse: Males, 80-95 mm., females 95-102 mm. General colour black with ochreous border.

F.-w. : Male, almost entirely deep blackish-brown with slight purply tinge; with at the margin of the wing a wide ochreous-yellow border, widest at the posterior angle and extending up to the apex in gradually decreasing width, the border being reduced to spots from 5-8. The veins are black. Many examples have a sub-marginal line of indistinct orange spots, mostly in evidence in areas 3-7. One not infrequently obtains a male in which the ochreous border is heavily dusted over with brown scales, with the veins widely scaled with the same colour and the extreme ends with triangular black marks.

H.-w. : Basal half brownish-black with a blue area filling most of areas 1c-4 and extending to 5 and 6 as blue spots. Areas 6 and 7 sometimes have an ochreous bar at about the mid-point. The wing carries a wide ochreous-yellow border, tinged with greenish in 2 and almost entirely green in 1c at the anal angle. This marginal border is outlined outwardly and inwardly with black. The extreme margin of the wing is serrate and edged with white. Vein 2 carries a long outwardly-curved tail 10-12 mm. long, while at vein 4 the tail is 7 mm. long and curves inwardly.

UNDERSIDE :

The lower surface is highly ornate. F.-w. : At the base of the wing the ground colour is reddish-chestnut shading to orange-ochreous towards the apex. The marginal ochreous of the upper-side is represented by a rather pale ochreous border, gradually deepening in shade towards the apex; the internervular areas are blackish at the margin. The row of indistinct orange spots of above is represented by a continuous series of orange spots on a grey ground, each spot inwardly and outwardly accentuated by a black spot, that in 1c being doubled; internal to this is a white bar slightly tinged with ochreous, passing through areas 1a to 3, and carried into 4, 5, 6, and 7 as orange marks. Internal to this whitish bar is one of black outlined with white, the mark in 4 being set more inward than the rest. The chestnut area of the wing carries black bars outlined with white, as follows: Cell with three, one basal, one at mid-point, one sub-apical; and one just beyond the cell; one each across the sub-bases of 1b and 2.

H.-w. : Ground colour chestnut, the distal part of which is traversed by a white bar which extends from just outside the mid-point to the inner margin above the anal angle; this bar is widest at the costa and gradually thins out until area 1b where it expands to the fold. The extreme margin is narrowly black with white between the veins. Internal to this is a wide marginal border widest at the upper angle, of pale ochreous-yellow, bounded on the inner side by angular marks of blue-grey, that in 2 heavily edged with black outwardly. The anal angle carries an ocellate spot ochre-yellow above olive-green below, with a central brown oval area outlined in black

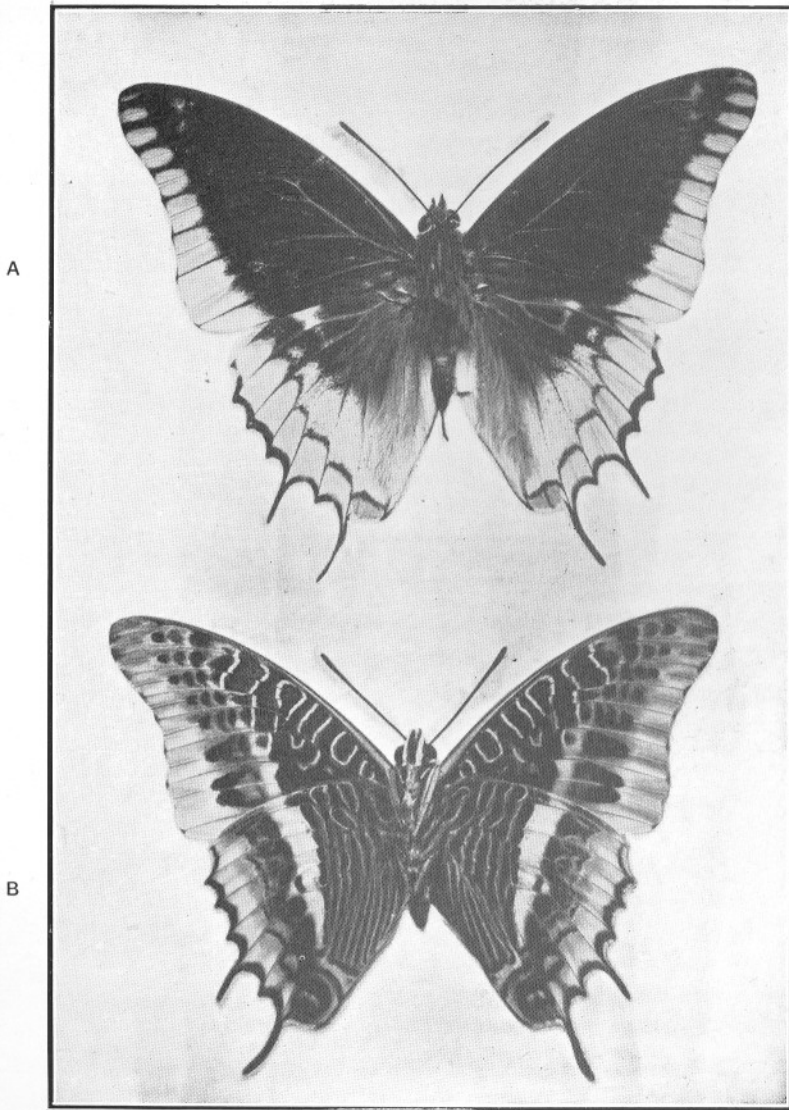


Photo: Dr. van Someren

PLATE LXI.

Charaxes jasius epijasius.
Fig. 1. ♂ upperside. Fig. 2. ♂ underside.

bearing two bluish-white streaks. The upper part of the basal chestnut is ornamented with broad black marks outlined with white, as follows: Two in 8, one in 9, two in 7, one sub-basal in 6, three in the cell; in the lower part of the brown area a series of five almost parallel lines in areas 1a, 1b, 1c.

FEMALE:

Very similar to the male but the marginal ochreous border rather paler, and the blue area of the hind-wing more restricted.

EARLY STAGES. Pl. XLVII., figs. 5, 5a, 5b.

The eggs of this species are canary yellow when first laid and measure 1.25 mm. in diameter. They are almost spherical, the top being only slightly flattened and ornamented with shallow fluting. They are deposited on the leaves and stems of a species of *Sorghum* known to the Baganda as Mwemba, and to the Kavirondo as "Matama." The egg stage lasts seven to ten days.

The young larva proceeds to devour the egg-shell as soon as it has emerged, and in the first instar it is hardly to be distinguished from the young larva of *Ch. c. castor*. Growth is very rapid, and the colour changes from yellowish-olive to bright grass-green at the second moult.

Although in many ways this larva resembles that of *castor*, it can be recognised by its more emerald-green colour and finer papillation. The dorsal spots are quite distinct, occurring on the 6th and 8th segments; they are oval in outline and of a greyish colour, bordered with black. The hind spot is not always well defined and is frequently spindle-shaped. The lateral body-line is canary-yellow and extends from the second segment to the tail. The larva becomes full-fed between the fourteenth and eighteenth days. When ready to pupate the colour changes somewhat and the body becomes slightly translucent.

Pl. LXXVI., fig. 18.

The head resembles that of *castor*, but is less robust; it carries four long, pointed, pink-tipped horns, the inner pair being separated by two short spines, while a similar pair projects between each lateral and inner horn. A yellow line, edged with black, runs from the outer side of the lateral horns to the mouth-parts. The mandibles are black or dark brown. The pupa is somewhat like that of *pollux*, in that the lateral aspect of the abdominal segments is decorated with reddish spiracular spots. The distal edges of the wing-cases are outlined by a white streak. The head is thick-set and truncate. The pupal stage lasts 10 days to even four weeks according to temperature and humidity; emergence is delayed if the weather is cold and dry. The pupa is usually attached to the leaves of the food-plant and as the red spiracular spots are very like the red spots so frequently seen

on Matama leaves, and the general colour is similar, it is difficult to detect unless the leaf is viewed laterally.

DISTRIBUTION AND HABITS :

Ch. j. epijasius appears to have a somewhat restricted distribution; we have taken it in the northern districts of Uganda and east to Busoga, and in the Kavirondo country, but usually in the vicinity of native cultivations where *Sorghum* is grown. It is an insect of the open bush country and as it hangs around the Matama fields, seldom travelling very far therefrom, one can always count on seeing males and females in fair numbers, and in about equal proportions. The imago feeds on the juices which exude from the stems of *Sorghum* plants which have become infected with "borers," either coleopterous or heterocerous, larvæ.

This species is powerful and rapid in flight and very active; it is however easily captured when feeding on the fermenting juices which seem to intoxicate it.

MIMETIC ASSOCIATIONS :

Professor Poulton has put forward the suggestion that *Ch. j. epijasius* acts as the model for the smaller and less robust female forms of *Ch. etheocles* known as *viola* and *vansomereni*. There is an undoubted superficial resemblance which when the insects are in flight is greatly enhanced. The geographical distribution and association coincides and there is evidence to show that the resemblance is of service to the mimics.

Poulton quotes Col. Wilson who wrote of his experience of the two species in the Nuba Mountains of the Sudan: "The *viola* form of *etheocles* flies with *epijasius*, and is almost indistinguishable from it on the wing except for its smaller size. I was out with Capt. Kent-Lemon . . . when I took my first specimen of the former butterfly, and we both thought it was an *epijasius*, until it was netted. . . . We both took several *epijasius* round the same tree that day and later on several occasions took them together. The tree particularly favoured was *Albizzia amara*, Boirin. Neave wrote: "I only took the *viola* (*vansomereni*) form in the open country in Northern Uganda. It occurs on both sides of the Victoria Nile, but chiefly on the east. In that region apparently nothing but this form occurs, and it is more or less all open country. *Ch. j. epijasius* is common there"

CHARAXES PELIAS SATURNUS, Butlr. Pl. LXII., figs. 1 and 2.
Pl. LXIII., fig. 1.

FOOT NOTE.—For figures of female *etheocles*, see subsequent Journal.

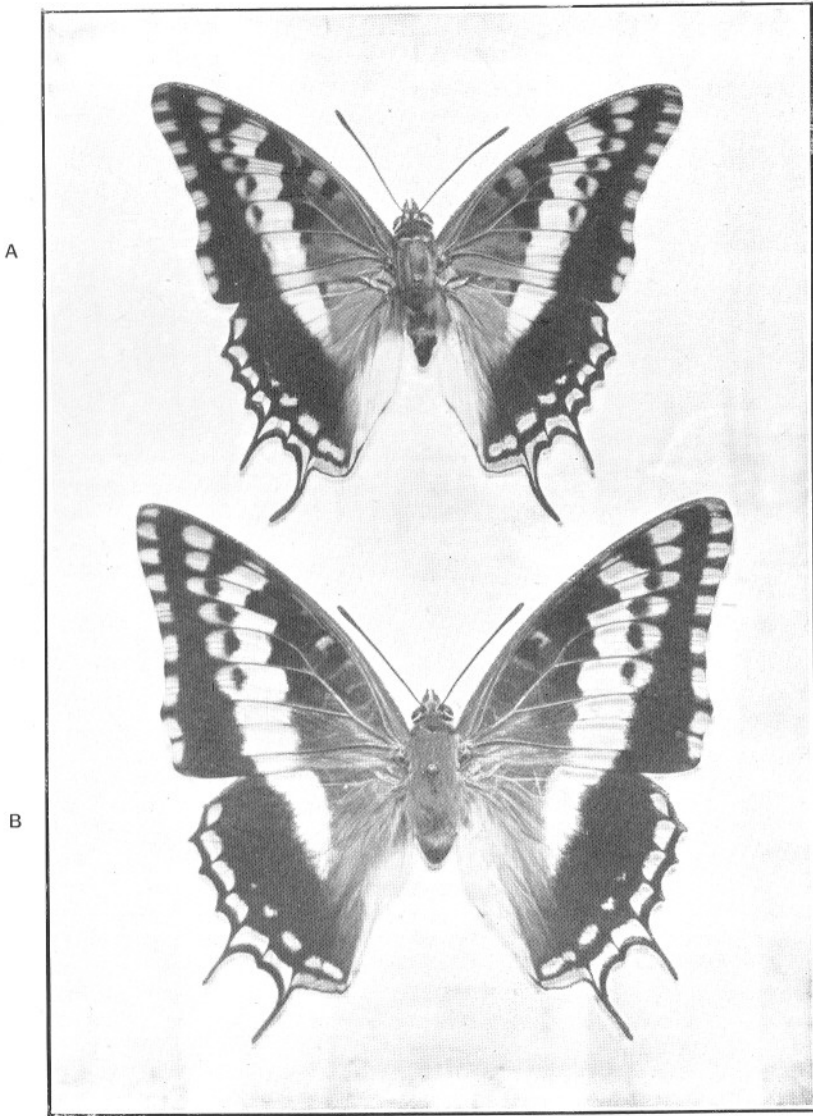


Photo: Dr. van Someren.

PLATE LXII.
Charaxes pelias saturnus.

Fig. 1. a ♂ upperside. Fig. 2. b ♀ upperside.

Expanse: Male 84-90 mm., females 96-102 mm. General colour in both sexes orange-brown and black.

F.-w.: Male, ground-colour mostly black shading to rufescent-chestnut at the basal triangle. Cell with a black spot towards the upper part of the apex. Margin ornamented with a series of large orange spots, double in 1b, extending from this area up to the apex. The wing is traversed by a broad ala bar of orange-ochreous confluent marks which extend from the mid-area of 1a up to the sub-basal area of 4, then continued by three oblong spots set at an angle to the rest, in 5-7. Just external to this bar is a series of arrow-shaped orange-ochreous spots extending in an almost straight line from 2-7. In some specimens the ground colour is tinged with brown.

H.-w.: Basal triangle rufescent-brown, followed by a wide bar, widest at the costa and extending through the apex of the cell to the base of 3; pale ochreous at the costa and deepening to orange at the cell; the remainder of the wing blue-black, decorated at the extreme edge with white, and with a sub-marginal row of elongate spots extending from the anal angle to 7, olive green at the anal end, white in 2 and 3, and shading to orange-ochreous at the upper angle. Internal to these are four or five blue or purple-blue elongate marks, largest at the anal angle and decreasing in size up to area 4 or 5; the spot at the angle sometimes shaded centrally with pink. Vein 2 carries a long outwardly curved tail 10 mm. long; and vein 4 one of 7 mm. almost straight.

FEMALE:

The female resembles the male but is larger and paler and carries much longer tails; that on 2 being 14 mm. and on 4, 10 mm. long.

UNDERSIDE. Pl. LXIII, fig. I.

F.-w.: The basal area is chestnut-purple traversed with grey bars outlined first with black then white as follows: three cross the cell that in the middle being almost oval; a further bar crosses the apex of the cell; the outer margin of the basal area carries a series of similar marks from area 1b-7. Distal to this series is a wide white ala bar extending from the costa to the hind-margin, this bar is outwardly shaded with orange triangular marks, with near the bases of each a black circular spot, and at the apex a further series of black marks double and largest in 1b and extending to 8. The remainder of the wing is blue-grey decorated on the margin with triangular orange spots, bases inward, and double in 1b.

H.-w.: Ground colour purply-chestnut, traversed by a white ala bar widest at the costa and passing to just above the anal angle where it turns inward to the marginal fold. Distal to the chestnut area, the wing is proximally grey, deeply serrate and indenting the chestnut and almost touching the white bar; distally bordered by an orange sub-marginal line, which towards, and at the anal angle, is tinged with olive; this line is inwardly edged with black and distally touches the marginal black border, which is edged with white. The greyish zone is shaded with olive along the veins and in areas 1c-3 is almost entirely olive carrying purply-blue spots, double in 1b. The chestnut basal area is ornamented with grey bars outlined with black then white as follows: one in 9, two in 8, the outer continuous with a series which borders on the inner edge of the white ala bar to as far as the base of 2, one sub-basal in 6, two in the cell, these continuous with the outer two of the five longitudinal lines of 1a-1b.

EARLY STAGES:

Ch. p. saturnus lays its eggs on two species of trees belonging to the order *Leguminosae*, *Azalia cuanzensis*, Welw., and a species of *Brachystegia*. The eggs are large, measuring 2 mm. in diameter, creamy or yellow in colour, slightly flattened on top and radially fluted. As with most *charaxes* eggs, signs of development are first apparent along the upper rim of the egg; this turns brown and within a week the entire egg becomes black. The young larva first feeds on the egg-shell and after resting for about 12 hours starts to feed on the leaves, young and old foliage being taken with equal avidity. They are voracious feeders, but eat mostly at night. During the day they lie up on some sheltered leaf which has been prepared by having an area, sufficiently large to accommodate the growing insect, spun over with silk. The young larva is at first yellowish-olive with a blackish-brown head carrying short tubercles; the body finely papillated, and the anal segment carrying two whitish tails. After the second moult the body becomes green with a slightly indicated body-line. The head is now green with well developed horns with brown tips, and a lateral facial line of the same colour. The dorsal spots are faintly indicated. The full grown larva measures 55 mm, is bright leaf-green in colour, with very fine papillated surface and a yellowish body-line above which the spiracles appear as small blue spots, that on the first segment being the largest. The undersurface is yellowish-green, the true legs brownish, the suctorial ones pinkish at the edges. The dorsal spots are well developed and are present on the sixth and eighth segments; they are oval, set transverse to the segment and nearer the anterior edge; in colour brownish with a bluish centre and black outline.

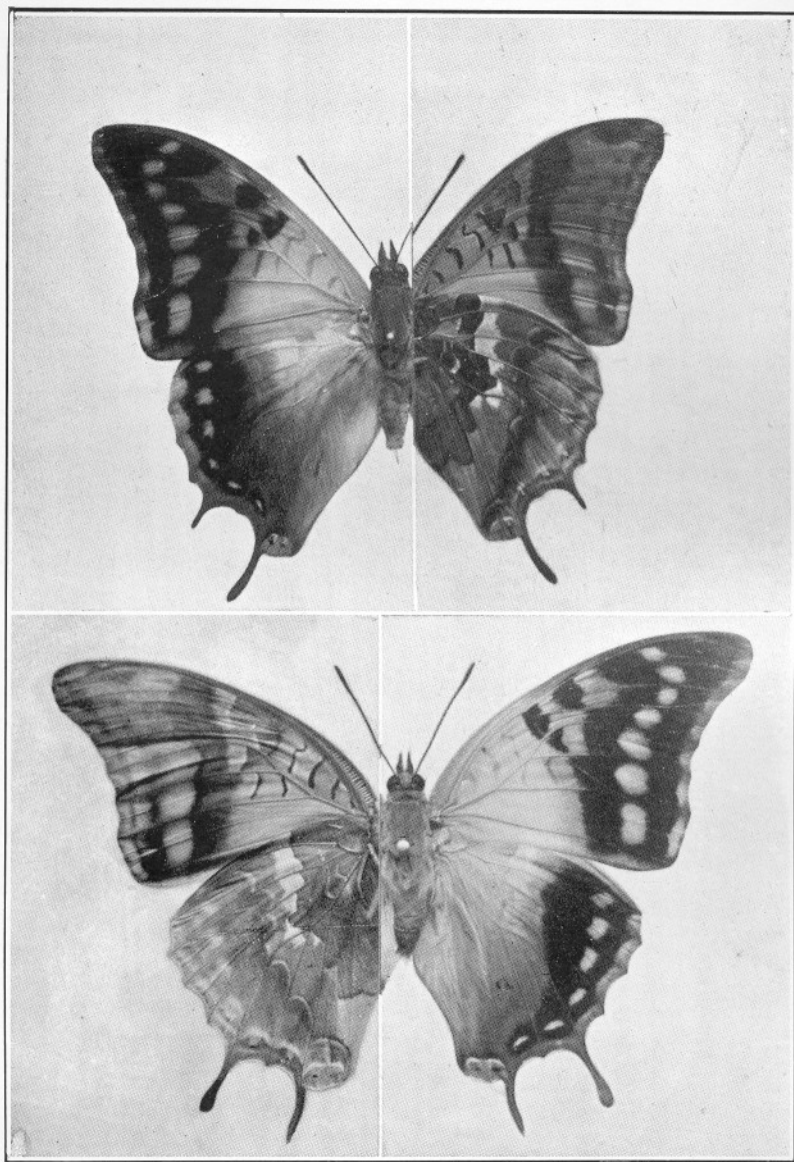


Photo: Dr. van Someren.

PLATE LIII.

Charaxes candiope candiope.

Fig. 1. a ♂ upperside. b ♂ underside.

Fig. 2. c ♀ underside. d ♀ upperside.

The anal segment has two short tails. The head is intermediate in shape between that of *castor* and *epijasius*. It resembles the former in having a yellow outer margin, but the horns are more slender and the outer ones less incurved; whilst compared with the latter, the horns are not so divergent. The tips are reddish. The lower edge of the facial disc is rather square and the posterior aspect of the sides carry a series of well developed spines. The posterior aspect of the outer pair of horns is strongly spined; and both pairs are heavily papillated.

The pupa is large, averaging 28 mm, pale green in colour with white marbling on the thorax; white linear marks on the wing-scutæ; and a series of white dots along the line of the antennæ. The angle of the wings is indicated by a pinkish spot as are also the spiracles. The cremaster is well developed and consists of two lateral short pedicles each carrying two ventrally inclined knobs, and from between the pedicles a strong stalk with clawed end. Anterior to the pedicles on the ventral side are two kidney-shaped excrescences, pelves inward. The pupal stage lasts 12-20 days.

DISTRIBUTION AND HABITS :

Ch. p. saturnus extends from the coast region to the Mau where it intergrades with a form named by Miss Sharpe as *harrisoni*, type locality Kamagombo, S. Kavirondo. This race occupies the territory around Baringo to Suk and the Sotik, thence into Eastern Uganda, and appearing again S.E. of Mt. Ruwenzori. *Saturnus* is common at the Coast and the Teita-Taveta region. It is occasionally met with in the Nairobi area but being an insect which frequents the more open park-like country it does not occur at high altitudes. In the Forthall district and along the Tana it is common.

CHARAXES PELIAS HARRISONI. E. M. Sharpe, not figured.

This race, the distribution of which is given under *saturnus*, is characterised by the darkening of the brown to almost black; a marked paling and increase in size of the marginal spots and a considerable increase in the blue areas in the hind-wing.

This brings us to a consideration of the *Mimetic associations of the species*.

In the coastal districts *saturnus* is mimicked by the *rogersi* form of female *etheocles*, the female of *guderiana*, and that of *achæmenes*, with the female of *boueti* as an outlying member of the group. When we come to the race *harrisoni*, we find that it in turn is influenced by the presence of *Ch. j. epijasius*.

Foot note:—For a full description of this association, refer to Poulton International Entomological Congress, July, 1925, p. 527—532.

CHARAXES HANSALI BARINGANA, Rothsch, Pl. LXIV., fig. 1 &
2. Pl. LXV., fig. 1.

Expanse: Males 90-100 mm, females 100-110 mm. General colour of both sexes black with yellowish-white bar.

F.-w.: Male. Ground colour of wing brownish-black shading to olive at the basal third; apex of cell black with an olive spot. Margin of wing with a series of yellowish-white spots placed internervularly, double in 1b and extending to the apex; an ala bar of contiguous almost rectangular yellowish-cream spots crosses the wing from the mid-area in 1a to the sub-base of 4 and then at a slight angle in 5-7. In these areas, a series of three spots are present, the largest in 7, arranged parallel to the outer margin.

H.-w.: Basal area olive inclining to black at the costa; rest of wing black but separated from the basal triangle by a creamy-yellow bar continuous with that of the fore-wing, extending from the costa to the base of 2. Extreme edge of wing black with white scaling in inter-spaces; internal to this a series of crescentic spots, olive at the anal angle and gradually shading to creamy-yellow in 4-7; the anal angle with a double bluish spot, areas 2, 4 one each. Veins 2 and 4 carry tails, that on 2 being 10 mm. long, on 4, 7 mm.

FEMALE:

Very like the male but larger, and with paler and larger light spots and bars.

UNDERSIDE: Pl. LXV., fig. 1.

F.-w.: Cell and bases of 1b-3 and 5 and 6 chestnut distally bounded by black as far as the creamy-yellow ala bar. This bar is similar to that of the upperside; and is bordered on the distal side by a greyish ground colour to as far as the wing margin; the proximal side of this area bears a triple row of spots, a central row of chestnut spots bordered on either side by black ones, that in 1b being large, with the inner one in this area obsolete or entirely wanting. The margin of the wing bears alternate ochreous and black spots. The chestnut area at the base is traversed by broad olive-grey bars outlined in black then white as follows: One at base of cell, one circular spot at its midpoint, one at the distal end of the mid-third and one at the apex; one at the sub-base of 2 and one in 1b.

H.-w.: Basal area chestnut bordered by the creamy-white ala bar which is continuous with that in the fore-wing, and bending inwards towards the inner fold at 1b. Beyond the bar is a series of long triangular chestnut marks with black apices interdigitating with a series of olive triangular marks with black bases. This is followed by an ochreous marginal border, distally bounded by a narrow black edge

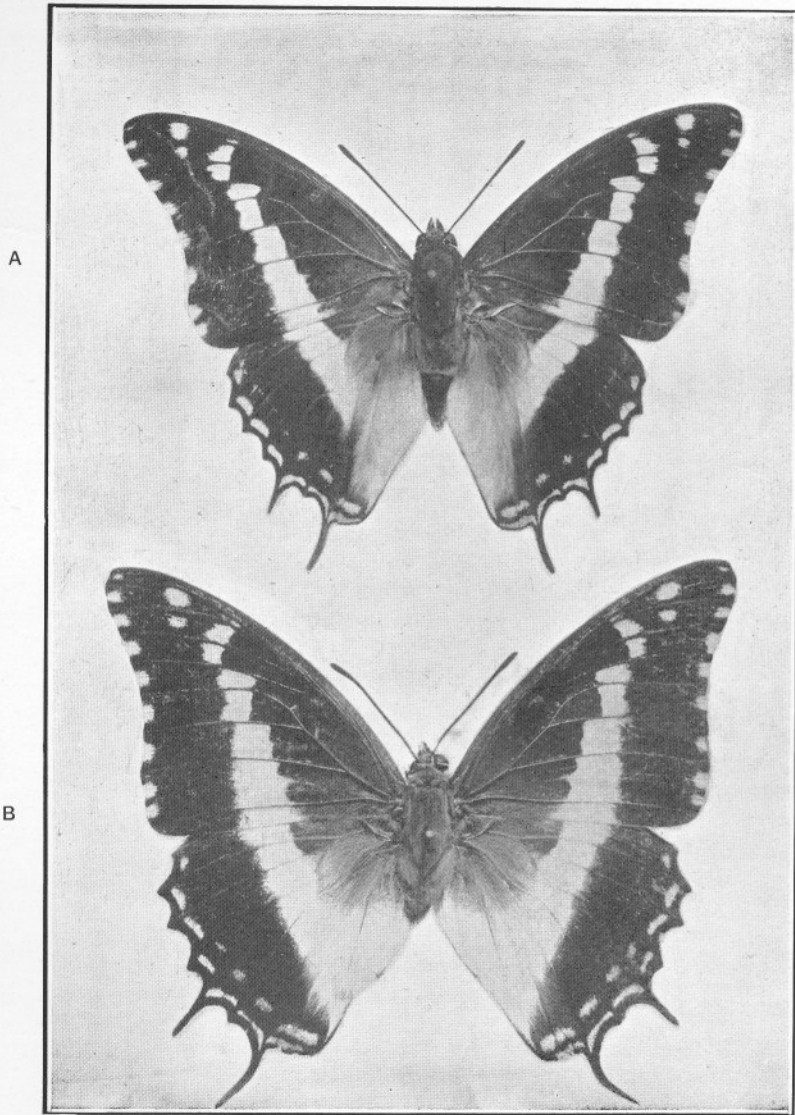


Photo: Dr. van Someren.

PLATE LXIV.

Charaxes hansali baringana.

Fig. 1. a ♂ upperside. Fig. 2. b ♀ upperside.

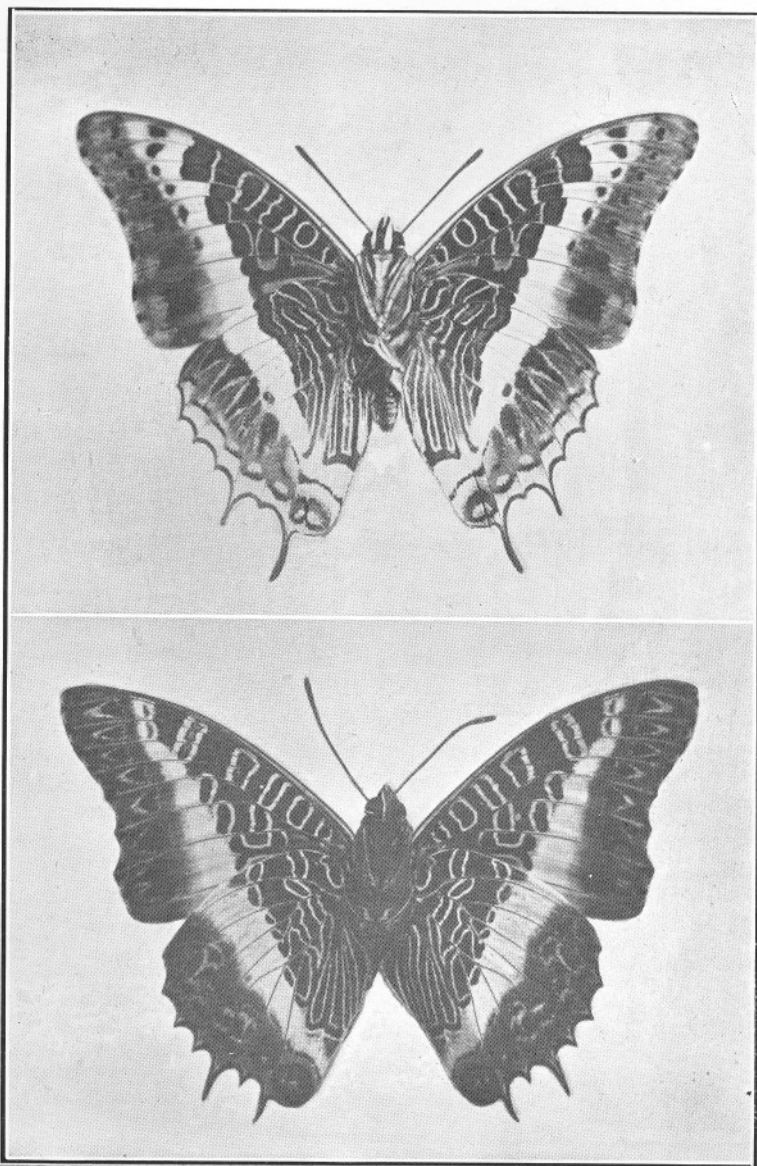


Photo: Dr. van Someren.

PLATE LXV.

Fig. 1. *Charaxes hansali baringana*, underside.

Fig. 2. *Charaxes brutus brutus*, underside.

with white between the veins. Areas 1c, 2—4 bear sub-marginal blue spots, double in the first and diminishing in size. Areas 9, 8 and 7 carry olive bars outlined with black and white, while the cell is traversed by three such bars. Areas 1a to c with five longitudinal blackish-olive lines.

EARLY STAGES: Unknown.

DISTRIBUTION AND HABITS:

This interesting species is found in the open park-like country of the Coast, Teita and Ukambani, and in similar type of country through the Northern Guasso Nyiro to Baringo. It has also been recorded from N. Uganda. It is apparently rather rare in collections but is no doubt not uncommon within its distribution.

MIMETIC ASSOCIATION:

As has already been noted, this species is associated with *Ch. brutus*, and would appear to be associated with the south-eastern form of *castor*. It probably acts as a model for the *aubyni* form of female *etheocles*, with which in life it associates.

CHARAXES CASTOR, Cram. Pl. LXVI., fig. 1 & 2. Pl. LXIII., fig. 2.

Expanse: Males 100-106, females 120-150mm. General colour of both sexes black with orange-yellow bar.

F.-w.: Ground colour blue-black, tinged with olive at the base. An orange-yellow bar starting at about the mid-point in 1a passes up the wing to the base of 4, the spots in 2 and 3 are rounded on the inner side and invaded on the outer by black, sometimes completely separating off part of the yellow. Beyond this bar is a series of six orange spots arranged in a V, with the apex in 4. The inter-spaces at the extreme margin are white-scaled.

H.-w. Blue-black with the base and the inner margin tinged with olive. The margin of the wing is serrate with white sealing between the veins. There is a sub-marginal series of linear spots, continuous and of a blue colour in 1b to 3, interrupted and shading to orange in 4—7. There is an additional series of blue spots double at the anal angle and extending to 4.

FEMALE:

Very like the male but larger, and yellow areas paler.

UNDERSIDE: Pl. LXIII., fig. 2:

F.-w.: Ground colour black with the outer edge olive-grey. The wing is crossed by a creamy bar suffused with orange scaling especially in areas 4-7. An orange bar runs alongside the whitish one to as far as area 5, when it continues parallel to the outer margin up to 7. This orange bar is bordered on either side with black spots,

those on the inner side smallest in 2 and gradually increasing in size up to 7; the outer series starts in 8 in increasing size up to 1b. The extreme edge of the wing is narrowly margined with black, while along the sub-marginal zone is a faint black line from the hand angle to the apex. The basal area is traversed by pairs of white lines as follows: one at the base of the cell, an oval towards its centre, a widely separated pair sub-apical, and at the apex a divergent pair. Distal to these is a widely separated pair crossing 5-7. The sub-basal area of 1b, 2,-4 each carries a pair set irregularly.

H.-w.: Basal area black, bounded by a white band widest at the costa and diminishing in breadth to vein 2 when it inclines inward to above the anal angle. This bar is bordered distally by a large chestnut area, in 2-7; this in turn is bounded by an olive-grey zone bearing triangular black marks, and in 2-4 rounded purply-blue spots distally edged with black. The anal angle carries a purply spot on an olive ground, surrounded by a yellow-orange zone; this last continuous with a submarginal border which extends along the margin of the wing up to 8. The edge of the wing is black, narrowly white between the ends of the veins. There is always a black spot on the outer side of the white bar, in area 4. The basal black is ornamented with parallel white lines as follows: one pair in 9, two in 8 and 7 one in 6. Three in the cell, and five in 1a-1c; these being joined at the ends and forming loops.

EARLY STAGES:

The egg of *Castor* is spherical, 2 mm. in diameter, pearly-yellow in colour and slightly cupped and fluted on the top. It is laid singly on the leaves of the food-plants, principally a *Sorghum* with the native name of Mwemba (Luganda) Matama, (Kiswahili) probably *Sorghum roxburghii* Stapf.; also on *Gymnosporia senegalensis* Loes. (*Celastraceæ*); a creeper, *Tragia cordifolia*, Vahl. (*Euphorbiaceæ*), and on Mbambakofi (Kiswahili) *Afzelia cuanzensis* Welw. (*Leguminosæ*). A brown ring appears round the depression as the germ develops, and the whole egg turns a dark-brown, then black just before the larva emerges. Pl. LXXIII., fig. 2. The larva emerges in from eight to ten days and at once devours the egg shell. It is at first olive-yellow, very finely papillated, and carries on the anal segment two blunt fleshy spines with ochreous papillæ. The head is black with short tubercles on the upper quadrant. It is a voracious feeder and is easily reared. It assumes a greener tint with each successive moult, and the dorsal spots appear at the third instar, whilst the degree of papillation is continually increased also. The adult larva (Pl. XLVII., fig 2, 2a.) is a most conspicuous object, as it is about 9 cm. long, with a grass-green body covered with coarse closely-set irrorations or papillæ. The tip of each papilla is light yellow in colour, giving to the larva

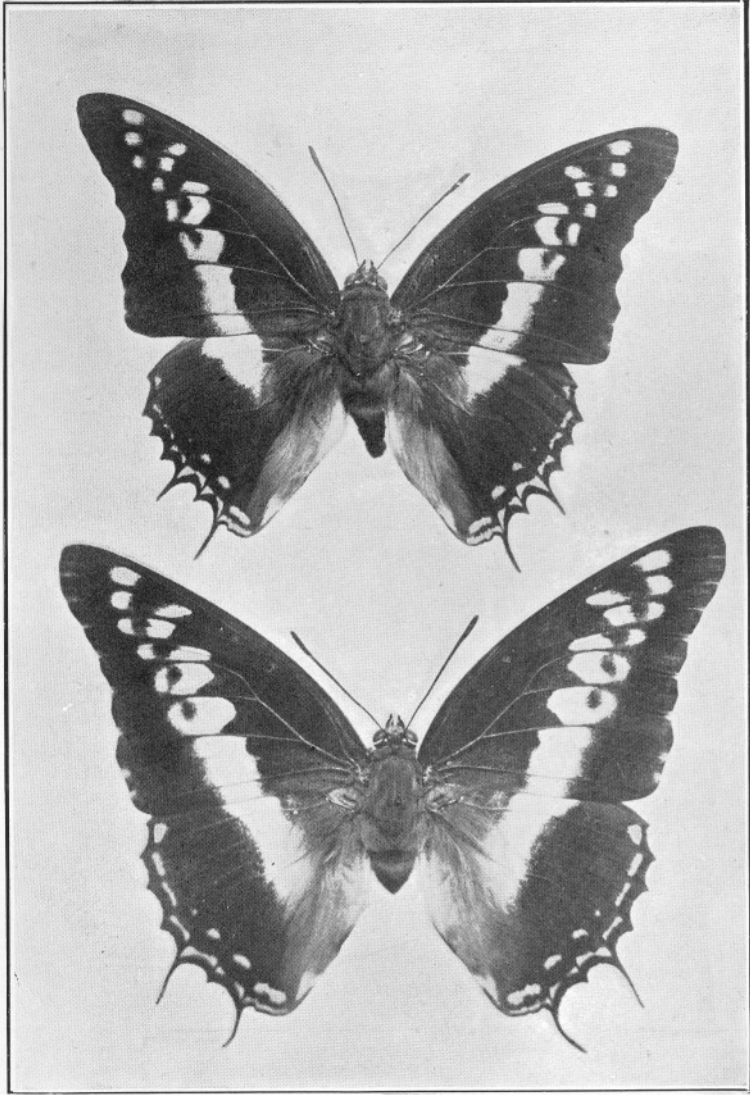


Photo: Dr. van Someren.

PLATE LXVI.

Fig. 1. ♂ *Charaxes castor*. Fig. 2. ♀ *Charaxes castor*.

a speckled appearance and also showing off the papillæ as a series of vertical bands. The body-line is formed by a series of cream-coloured papillæ, forming a spiracular line extending from the second segment to the tail. Most larvæ have two dorsal spots, although some only possess one.

They are placed on the sixth, and eighth segments, and each forms a conspicuous black oval, set nearer to the front of a smooth green oval area having its long axis parallel with that of the body.

The number of these spots bears no relation, to sex or to any other characteristic, so far as has been observed. (Pl. XLVII., fig. 2a). The head of the adult larva has the form of a hexagonal plate (Pl. LXXVI., fig. 1) with its two lower sides elongated. The disc which bears fine dark-green papillæ, is divided by a vertical central groove, expanding into a smooth green area above the mouth-parts. Two stout side horns arise as the prolongation of the angle between the two lateral sides of the hexagon, and thus are set outwards, but afterwards curve slightly inwards, especially at the tips.

Each horn is six mm long, very serrated and coloured dark maroon on the inner aspect. From the upper angles of the plate arise two similar finely serrated horns, with their tips a deep maroon or red colour, slightly curving inwards. (Length 5mm.) A yellow face-line starts from the tips of the lateral horns and runs downwards along the outer aspect of the face to the mouth-parts; it is bordered along the outer and lower edge by a conspicuous black line which starts from the base of the lateral horns and reaches the mouth. This larva is one of the most striking in the group.

The pupa is large, Pl. XLVII., fig. 2b., of the usual *charaxes* form, and opaque light-green in colour; it is almost immaculate when the larval skin has just been shed but on the second day certain characteristic white patches appear on the wing-scuta and also on the dorsum of the thorax.

The whole transformation from egg to imago can be completed in six weeks, as the larva is a most voracious feeder and growth is extremely rapid.

DISTRIBUTION AND HABITS:

The habitat of *castor* is governed by the distribution of its food-plant, but as it has a more than usual range of food it is not surprising to find it occupying types of country quite dissimilar. Thus in the Jinja districts one finds it in the open cultivated areas where the Sorghum is grown; at the same time one sees them on the outskirts of forests, or even in the forest; along the coast and at Teita they frequent the more open type of park-country. It occurs from the Coastal belt through Kenya and throughout Uganda but we have no records of it having been taken in the Highlands over 6000 ft.

Females are usually taken near their food-plant but males are readily trapped in the open along forest paths and roads, with any kind of animal or fowl-droppings. Leopard excreta and fish entrails form a most attractive bait to most male *Charaxes*.

This species is one of the largest of the group, is plentiful where it occurs, is a conspicuous insect and very powerful.

MIMETIC ASSOCIATIONS: In Uganda where the species is very plentiful it would appear to have undoubtedly influenced the colouration of one female form of *Ch. etespie*, recently described by Prof. Poulton as *castoroides*. In this form the ala bars are orange-ochreous as in the model. When we compare the insect as it occurs in the southern and eastern portion of Kenya we find it rather paler than the typical form and flying in association with *Ch. hansali baringana*; there would thus appear to be a mutual modification of colour to a common tone.

CHARAXES CASTOR FLAVIFASCIATUS. Butlr. Pl. LXVII., fig. 2.

The form of *castor* found south of Nairobi, especially in the Teita country and the Coastal zone is sufficiently distinct to require recognition. The main points of difference are: The general ground colour is not so black, more tinged with olive; the fore and hind wing bar is not orange but ochreous as are also the sub-apical series of spots and the upper submarginal lines in the hind-wing. The under-surface is also much paler. It therefore is very like *Ch. hansali baringana* in general type of colouration, and indeed is always in close association with that species.

CHARAXES POLLUX POLLUX. Cram. Pl. LXVIII., figs. 1 & 2.
Pl. LXIV., fig. 1.

Expanse: Males, 80-90 mm; females, 90-100 mm. General colour of both sexes, orange-yellow with black border.

F.-w.: Basal third of wing orange-brown bordered distally by a wide orange-yellow bar not very sharply defined proximally, extending from the mid area in 1a and gradually lessening in width and represented as spots in 6 and 7; the outer margin conforming to the contour of the wing. Beyond this bar the wing is black with a slight brown tinge, bearing on its margin small orange-brown spots at the mid-point in each area; there is a double spot in 1b. There is a black spot at the apex of the cell, one just beyond, followed by two large marks below the costa and one at the base of 3.

H.-w.: Basal area light orange-brown bordered by an orange bar, palest in 6-8, and not reaching the inner marginal fold. Rest of wing brown-black with a blue spot at the anal angle and often an orange spot in 7. The margin of the wing is strongly serrate. Each vein carrying tails, that on 2 being as long as that on 4 (7 mm).

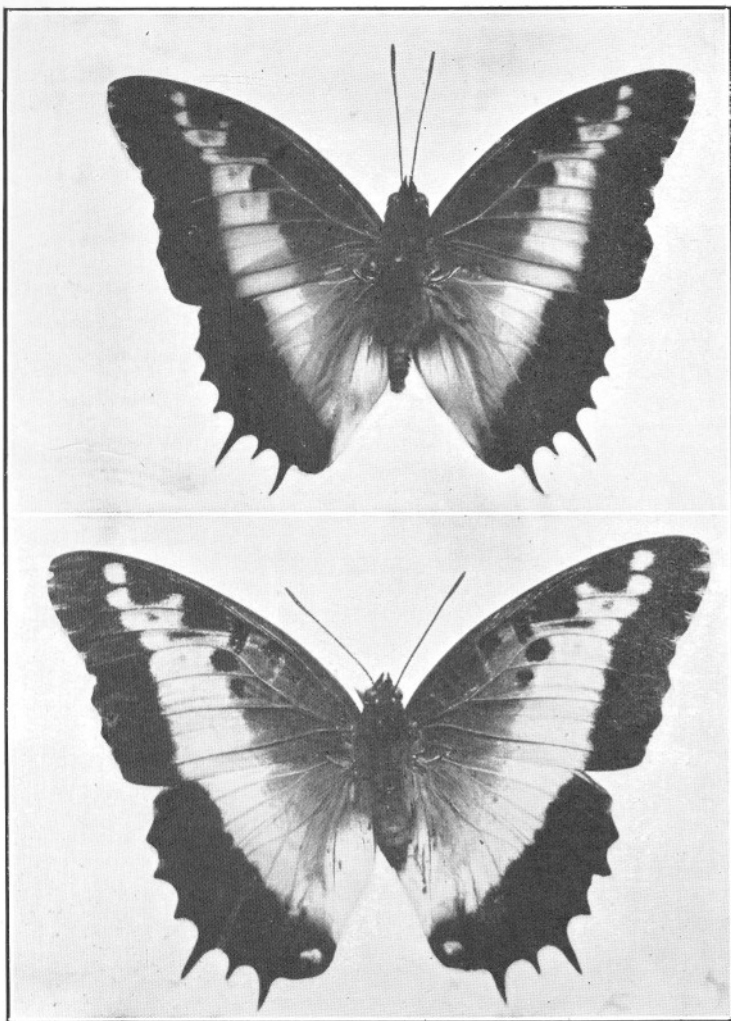


Photo: Dr. van Someren.

PLATE LXVIII.

Charaxes pollux pollux.

Fig. 1. ♂ upperside. Fig. 2. ♀ upperside.

FEMALE:

Resembles the male but is larger and with the markings wider.

UNDERSIDE: Pl. LXIV., fig. 1.

Ground colour reddish-chestnut; the bar of above is present below, but is creamy, distally bordered by orange scaling; this border carries on its distal edge triangular black marks, bases inward, double in 1b, all except the last mentioned outlined with silvery-grey, the apices of all reaching the marginal border which is ochreous-brown with black marks at the end of each vein. The basal chestnut area is ornamented with black lines broadly bordered with silvery-white and arranged as follows: Three set equidistant and transverse in the cell, with one at its apex; one crossing the sub-bases of 4-7, with a series set at an angle to them and forming a V; one at sub-base of 3; a double one towards the base of 2; and a large black mark in 1b.

H.-w.: Basal area reddish-chestnut bordered distally by a narrow silvery-creamy bar corresponding to the inner part of the bar on the upperside. Remainder of the wing ochreous-brown, with an olive tinge towards the anal angle, and with an orange tinge proximally in 5-7. This area carries a series of chestnut-red marks outlined proximally and distally with black crescentic or trident marks, edged with white, with a few silvery white scales scattered over the chestnut. The spot at the anal angle is ocellate consisting of a lustre olive-brown ground surrounded with black and bearing in the centre two purple-blue spots. The extreme margin of the wing is black, with white edging between the veins and small silvery streaks indicating the tips of the veins.

The basal area carries black marks outlined with silvery-white as follows: One in 9; two confluent in 8; two in 7; one each, very small in 4-6; one sub-basal and one apical in the cell; while 1c has two cross bars connected by a longitudinal line; and 1a and 1b, three looped lines.

EARLY STAGES:

The eggs are laid on the young leaves of two food-plants—a species of *Sorindeia* (*Anacardiaceæ*), known to the Baganda as “Muziru”; also on *Bersama abyssinica*, Fresen. (*Melanthaceæ*).

The eggs are laid with great rapidity, so much so that the insect will not even trouble to shift the position of the ovipositor, with the result that very often two or more eggs are piled one on top of another. They are of the usual *Charaxes* form, a sphere with a saucer-like fluted depression on the top, pearly white in colour and 1mm in diameter. At an early stage of development, three radiating lines appear on the surface giving the egg a marbled appearance. When the egg is mature it turns dark-brown to black.

The young larva (Pl. LXXIII., fig. 3) hatches in from seven to ten days and at once eats the egg-shell, then after a while commences on the young shoots and descending as it grows consumes the more mature leaves. Very shortly after emerging it spins a pad of silk on some sheltered leaf and returns to this spot every morning after its nightly feed. The shelter is changed from time to time as the larva grows. The larva is at first uniform pale olive with a black head; the colour then changes with each successive moult to a translucent green which is almost smooth and immaculate until after the third moult, when one or two dorsal spots appear on the sixth and eighth segments respectively. The adult larva (Pl. LXXVIII., fig. 3 and 3a) is about 6 cm. in length, has a bright-green almost smooth-skinned body, the papillation being very fine, with one or two circular rusty-red spots on a white ground, enclosed by a fine brown line. In some larvæ the rusty-red tint later changes to a bright blood-red. When only one spot appears it is invariably on the sixth segment, the second if present being on the eighth. There is no definite body-line and the spiracles are obscure; the under-surface is greyish-white. When at rest the larva lies along the mid-rib of the prepared leaf, with its head and tail raised. As a rule one finds only a single larva to each leaf.

Pl. LXVIII., fig. 3a. Pl. LXXVI., fig. 7: The head is characteristic of the species, being in front view somewhat quadrate in outline and having two pairs of very spiny horns—a central, straight pair arising on either side of the mid-line, the lateral pair arising from just below the upper angles and curving slightly backwards and inwards. There are two short sharp-pointed spines between the central pair and one on either side of the lateral horns. The general colour of the head is a uniform bluish-green. No facial line is present, but the lateral tubercles and the spines on the horns are strongly developed. The larval stage lasts eighteen days.

The pupa is of the usual *charaxes* shape, smooth and with a light-green colour on the thorax and wing-cases becoming more bluish-white towards the dorsum of the abdominal segments. There is only a slight concavity between the thorax and the abdomen on the dorsum; practically no projection of the shoulders of the wing-scutae but the head is bifid. There are white patches on each wing-case, while the abdominal spiracles are represented by a row of six reddish-brown spots. The pupal period extends to ten days as a rule but is often longer.

DISTRIBUTION AND HABITS:

This species occurs throughout Uganda and Kenya in the typical form to about the region of Nairobi; south of this it intergrades with the eastern and southern form *geminus*. It would appear to have a preference for the more open park-like country rather than the forest.

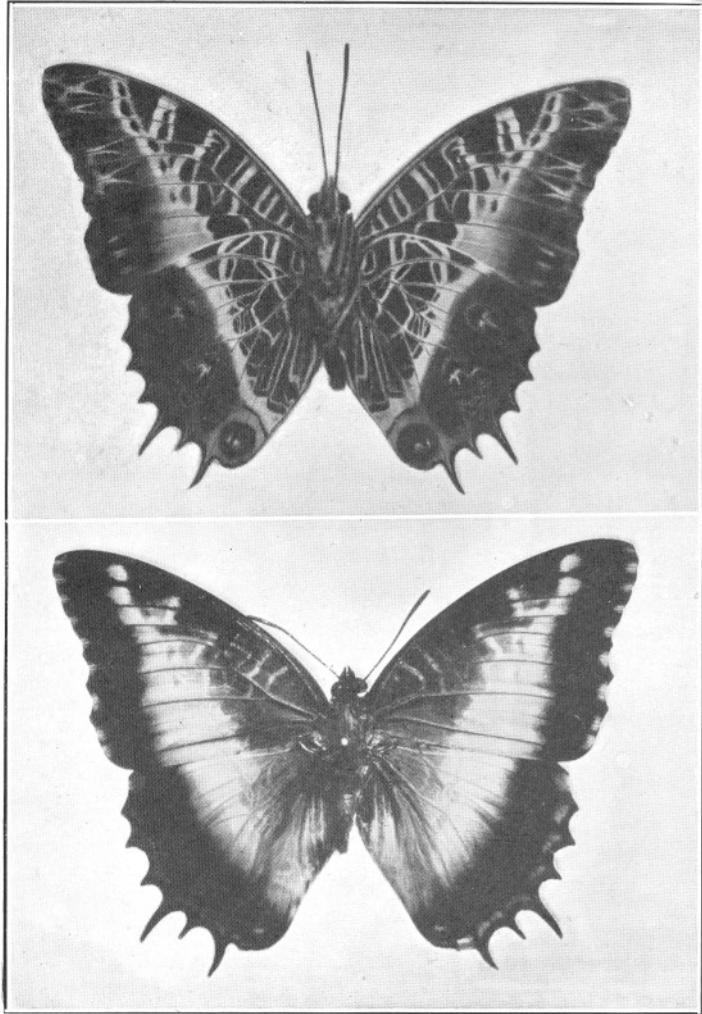


Photo: Dr. van Someren.

PLATE LXIX.

- Fig. 1. ♂ *Charaxes pollux pollux*, underside.
Fig. 2. *Charaxes pollux geminus*, upperside.

but when found in the latter, is usually on the outskirts. Although a common species it is more frequently captured when feeding on droppings, or when sucking the exudate from a wounded tree. This exudate when fermented renders the insect intoxicated and easy to capture by hand. As with most *charaxes*, males are more in evidence than females, these latter being more retiring in their habits. The species would appear to have no definite or limited breeding-season, as fresh eggs and larvæ in all stages are found throughout the year.

MIMETIC ASSOCIATIONS:

Although a common species with a very distinctive type of colouration, this insect does not seem to bear any close resemblance to any other in the group or other genus.

CHARAXES POLLUX GEMINUS. Rothsch. Pl. LXIV., fig. 2.

This race differs from *pollux pollux* in having the orange bar of both fore and hind-wings wider and paler, and in the marginal spots of the fore-wings being larger while those in the hind-wing are present as submarginal streaks extending from 2-7.

UNDERSIDE:

As in the typical form but the marginal orange-ochreous border, is wider.

EARLY STAGES:

As for the parent races.

DISTRIBUTION:

This race occurs along the Coastal belt through the Teita country to Kilimanjaro, and through the thorn-bush country in Ukambani to the Northern Guasso Nyiro; in the higher altitudes it grades rapidly into the parent form. In habits it is not dissimilar.

CHARAXES BRUTUS BRUTUS, Cram. Pl. LXX., figs. 1 and 2. Pl. LXV., fig. 2:

Expanse: Males 62-90 mm.; females 98-104 mm. General colour of both sexes black with a white ala bar.

F.-w.: Male. Ground colour black with a marked bottle-green sheen at the basal triangle. It is crossed by a pronounced creamy-white ala bar running from the hind margin just out of the mid-point, first with contiguous spots then detached and diminishing in size up to the mid-point in 7. The hind-wing has a similar ground colour but the white bar is broadest at the costa and gradually narrowing to 1c and not reaching the inner margin. This bar is often narrowly bordered with greenish scaling. The margin is strongly serrate and between the projections the edge is white. Veins 2 and 4 carry tails, sharply pointed, 5 and 7 mm. in length. The male figured has no sub-marginal

ornamentation except that the anal angle carries two purply-white spots; many specimens however have purple dots in 2-4, and slight white lines running up the tips of the veins. This latter is characteristic of the southern race, *natalensis*.

UNDERSIDE: Pl. LXV., fig. 2:

F.-w.: The white bar is represented on the under-surface but the spots are contiguous; internal to the bar the ground colour of the wing is reddish-chestnut, distally it is orange-brown. This latter is ornamented with triangular black marks in each area, double in 1b, each mark outlined with silvery-grey; the veins are scaled with this colour, and at their extreme ends there is a blackish mark. The basal area carries the following greyish bars outlined in black and then white: one quadrate at the base of the cell, one ovoid at about the middle, one oblong sub-apical, followed by an oblong at the apex; a long confluent oblong crossing 5-7; one ovoid at sub-base of 3, two ovoid in 2; one double-ended long line in 1b.

H.-w.: Basally reddish-chestnut bordered by the white bar as above, but continuous to the inner margin just above the anal angle. The ground colour of the remainder of the wing to the margin is ochreous-brown; with, in areas 3-7 a chestnut zone outlined distally with silvery-grey and black and carrying on its inner border black trident-like marks with silvery-grey outline, the central projection extending into the brown area. The anal angle and the sub-marginal end of 2 are ornamented with ocellate marks outwardly black, with two and one purply spot on an olive-brown ground. The chestnut basal area is crossed by silvery-grey marks outlined with black then silvery-white as follows: one in 9, two in 8 and 7, one small dot in 6 and 5, three in the cell, one in 4. Areas 1a-1c with four looped lines, that in 1c bifid towards the base.

FEMALE: Pl. LXX., fig. 2:

The female resembles the male, but is larger, with more pronounced marginal spots and wider ala bars.

EARLY STAGES: Pl. LXXII., fig. 2.

We have observed this species laying on several food-plants of widely different appearance, and to us at least different smell and taste. In Uganda, it lays on a tree with broad lanceolate leaves, known to the Baganda as "Kiujamata"; on a species of *Grewia* (*Tiliaceae*) "Lukandwa" in Luganda. At the Coast it lays on a tree named by the natives of Rabai, "Munyamazi."

A point of interest is that this *Charaxes* has taken to laying its eggs on the leaves of an imported plant commonly known as the Cape Lilac, *Melia azedarach* Linn. *Meliaceae*. Both in Kenya and Uganda has this been observed, but we have never been able to rear young

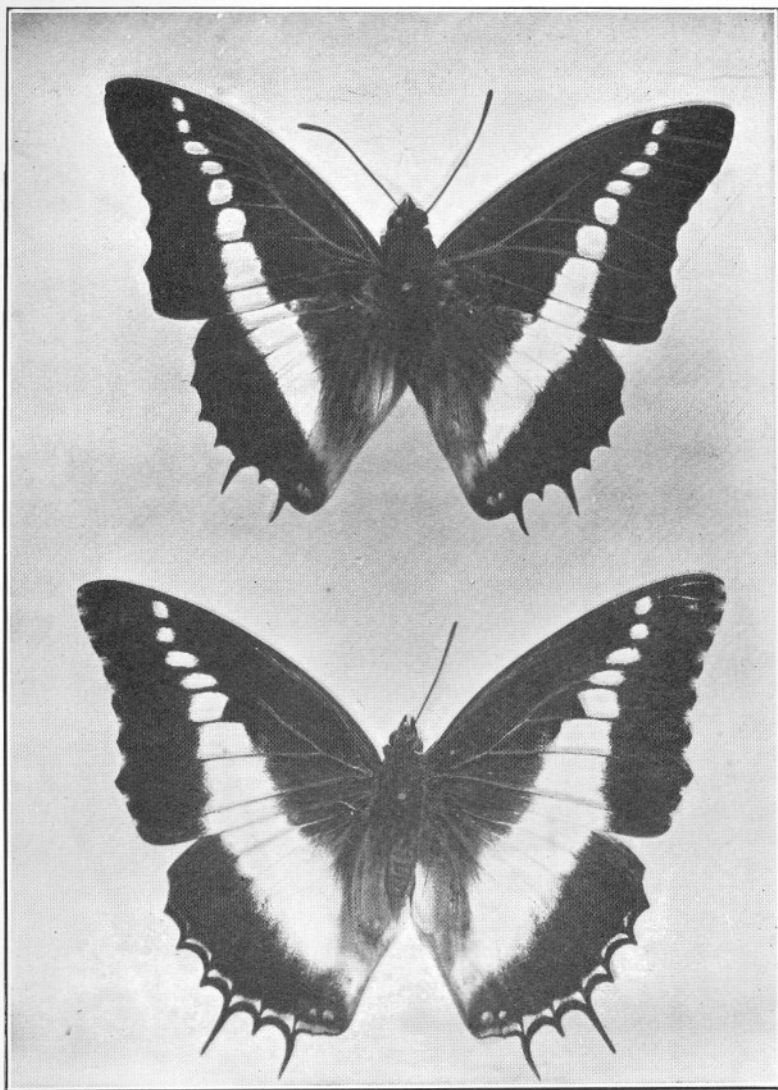


Photo: Dr. van Someren.

PLATE LXX.

Charaxes brutus brutus.

Fig 1. ♂ upperside. Fig. 2. ♀ upperside.

larvæ on this plant at any time, nor taken a wild larva on it. Platt however, in his *Food-plants of African Lepidopterous Larvæ*, mentions this tree as one of the foods of the species, but whether or not this statement is based on successful rearing of the insect on it, or the finding of full grown larvæ thereon, we are unable to say.

The eggs are pearly white, and 2 mm. in diameter. It is of the usual spherical form, but the cupped fluting is not marked at all; development first shows at the rim as a brown mark which spreads to the entire surface, becoming dark-brown when mature. The egg hatches in eight to twelve days. The young larva (Pl. LXXIII., fig. 6) is at first dull olive-brown, with a black head, but changes to greenish at the first moult. The head is shed, but the cast skin is frequently eaten. In captivity these larvæ appear fastidious feeders and unless the food is of a suitable degree of freshness, they refuse to eat, with resulting high mortality. The mature larva (Pl. XLVII., fig. 1, & 1a) is 55 mm. long; body dark emerald-green with fine papillæ over the dorsum and lateral surfaces. There is no body-line but just above the very light green of the underparts there is on each segment a faint-shaped mark. In the young larva, after the third moult, the dorsal spot appears as a white dot; as the larva matures this is variable; sometimes oval and reddish-brown on a light-grey ground, sharply marked off from the body colour by a fine brown line: sometimes a bright red oval on a dull-green area; or it may be represented by a grey heart-shaped area with its point directed backwards and having a crimson centre.

Pl. LXXVI., fig. 8. Pl. XLVII., fig. 1a.

The head is somewhat oblong, square-cut at the mouth, with these parts shewing up clearly as jet black. The head has a distinctive bluish tinge and is divided vertically by a central groove and is covered with fine papillæ. Two somewhat thick horns, 4mm, arise from the lateral aspect of the upper third of the face, curve upwards and slightly outwards, while the two 3 mm., inner ones, project from the upperside and curve slightly backwards. All are finely papillated.

Between the central pair of horns are two spinous processes, and one between each central and lateral horn.

There is a yellow line which, starting from the base of the outer horns, extends round the edge of the face and meets over the mouth-parts.

The pupa is very much like that of *pollux*, pale green in colour with a row of six red spiracular abdominal spots. The keeling on the margin of the wing cases and on the thorax is more marked, and the whitish marbling on these two areas is more restricted. The imago emerges in fourteen days.

DISTRIBUTION AND HABITS:

This species ranges over the greater part of Uganda and Kenya, though nowhere is it quite like the parental form; even in Uganda, the fore-wing bar is wider and not pure white as in true *brutus*; then when we compare the specimens from Kilimanjaro area and the Coast we find they are much nearer to the Southern form *natalensis*. It is a species which frequents forest and park-like country, is very plentiful and easily baited. Nearly every collection of leopard-droppings on a roadside near a forest will have one or more specimens of this species feeding on it. The females are attracted by fermenting fruit juices and exudates from trees. When the females are ovipositing, they do so very rapidly, as we have counted four eggs laid in quick succession within five minutes, but not all on one leaf.

MIMETIC ASSOCIATIONS:

The marked colouration of this species seems to have had an influence on several species of *Charaxes*, and possibly other *Nymphalids* and *Papilios*. Amongst the *Charaxes* we find that the *etheocles* form of female *etheocles*, and the *ethalion* form of *ethalion*, the female of *ansorgei*, the black and white female form of *etesipe*, both sexes of *hansali baringana*, the female of *Ch. baumanni*, and others to a less marked degree, all possess a colouration remarkably similar and a distribution which coincides with this very powerful species.

Amongst other *Nymphalids* one finds certain species of that strong association of *Neptis*, and *Eurytela hiarbas*; and the *Zenobia* group of *Popilios* bearing a marked resemblance to *Ch. brutus* in its several geographical forms.*

CHARAXES BRUTUS NATALENSIS. Stgr. Not figured.

Expanse: Slightly larger than *brutus brutus*, with a wider and more creamy-yellowish bar especially in 1a and 1b; with distinct marginal ochreous spots in the mid-internervular spaces; and with a sub-marginal row of double triangular spots directed towards the tips of each vein up to 7.

The colour and distribution of marks on the underside is as in the typical form, but the markings are slightly larger.

FEMALE:

Follows the general description of that of *brutus*, but the pale markings on the upperside are more pronounced and larger.

EARLY STAGES:

As in the type form.

* FOOT NOTE.—For a full account, see Poulton op. cit.

DISTRIBUTION :

This form is found from the Coast to Kilimanjaro and inland to the Highlands where it intergrades with the western form.

MIMETIC ASSOCIATIONS :

See notes under *brutus*.

CHARAXES ANSORGEI. Rothsch. Pl. LXXI., fig. 1—3.

Expanse: Males 80-86, females 86-100 mm. Sexes unlike. General colour of male brown and black with a white bar, in hind-wing. General colour of female brown and black with white bar in both wings.

F.-w.: Male. Basal third rich reddish-chestnut, remainder brownish-black. An orange bar shaded distally with rufous-brown with black spots in each area extends from the mid-area of 1a to 3, and is then continued to the costa as four small spots which follow the contour of the wing. Two other spots set at an angle to these four, in 5 and 6, form a V. The bases of 4, 5 and 6, the middle of area 7, each carry a linear orange mark. The cell has a black spot towards the upper part of the apex, and another one at the apex. The margin of the wing is ornamented with orange spots, double in 1b, set at the mid-point between the veins.

H.-w.: Extreme base brownish-grey, with the inner fold of the wing covered in long greyish hair-like scales; mid-area with a large bluish-white patch more bluish along the outer margin with slight purple scaling towards the costa, and with a white central line; rest of the wing to the margin, black, with a submarginal row of orange spots, small in 2 and increasing in size up to 7. The anal angle with two bluish spots frequently underlined with olive.

FEMALE: Pl. LXXI., fig. 1:

Forewing pattern very much as in the male, but the ala bar is white in 1a and 1b, yellowish in 2 and 3 and with an invasion of the ground colour into the spots in these areas cutting off the distal portions which remain as detached orange spots and are continuous with the four smaller spots which run up to the costa. The ground colour at the base of the wing is dull, deep chestnut, while that of the rest of the wing is brownish-black with a strong ochreous suffusion. The hind-wing is much as in the male but with considerable increase in the submarginal spots which are here dull ochreous-orange.

UNDERSIDE: Both sexes. Pl. LXXI., fig. 3:

Cell, bases of 2-7, reddish-chestnut; base of wing blackish; a white bar borders the basal brown, extending from 1a-5; this is bordered distally by a series of black marks, double in 1b, arranged parallel to the contour of the wing, and reaching 7; adjacent to these spots is a series

of orange triangles, bases inwards, following a similar contour; the ground colour to the edge of the wing is ochreous-brown carrying black triangular marks bases inward, and outwardly edged with silvery-white; the ends of the veins carrying diffuse black spots with in between them orange streaks. The base of the wing is crossed by black lines widely bordered with silvery-white, as follows: Three cross the cell and two its apex; a broad bar passes across areas 5-7 just about their mid-point; a curved lined sub-basal in 3; and two in 2; an anchor-shaped mark is present in 1b.

H.-w.: Basal area reddish-chestnut, bordered by a narrow central bar of silvery-white, widest at the costa and at the inner margin. Distal to this, the ground colour is olive-brown shaded with brown at the costal end and bearing a row of large black spots edged with silvery-white; in 1c and 2 the black marks are semicircular and form with submarginal black lines ocellate spots with bluish dots at the distal side. Between the submarginal black lines and the black marginal border there is an olive-orange zone.

The basal triangle is marked very much as in *pollux*, but the lines are wider. There is one in 9, two in 8, forming an inverted V, two in 7, one each in 6-3, the cell with one at the base and two near the apex in contact above; and areas 1a-1c carry 4 longitudinal looped lines.

EARLY STAGES: Pl. LXXV., figs. 4 & 5:

The egg is smooth and spherical, with a slight concavity on top. Numerous fine furrows radiate to the margin of the disc from a central point where they are coalescent. When freshly laid the egg is pale yellow or creamy, changing to pinkish-brown with the upper third purple-brown. They are deposited either on the upper or lower surfaces, principally the latter, of the young or old leaves of *Bersama abyssinica* Fresen. (*Melanthaceæ*). This tree is usually quite short, and when a sapling carries all its leaves at the top. It occasionally reaches to 40 ft. It is common in the more open parts of the Highland forests from Kikuyu to Mau and on Elgon; this distribution coinciding with that of *Ch. ansorgei*. The leaves are coarse, pointed and slightly serrate, six to eight pairs of leaflets form the leaf-spray. The flowers grow on a long spike and are white or pinkish. The ripe seeds are pubescent and red in colour. The Kikuyu name is *Musandi*.

We have watched *Ch. ansorgei* ovipositing on many occasions; a certain amount of discretion seems to be exercised in the matter of selection of suitable leaves. The insect will settle for a moment and pass her ovipositor over the surface of a leaf but will not always deposit her egg; she may do this to a dozen leaves before she selects one which appears suitable. We have noted that several plants may



Photo by Dr. van Someren.

PLATE LXXI.

Charaxes ansorgei.

Fig. 1. ♀ upperside. Fig. 2. ♂ upperside.

Fig. 3. ♂ underside.

Fig. 4. Pupa.

be tested and passed over and eventually one deemed suitable, on this as many as 8 eggs will be deposited.

The young larva emerges in about ten days and is at first a dingy yellowish colour, turning in 48 hours to apple-green. The first meal is made off the egg-shell. The head which is blackish bears on the top, divergent inwardly curving horns in the plane of the face, and a minute pair between the inner horns. The anal segment carries two horn-like processes of about the same length as the head-horns. They are divergent then curve inwards.

The surface of the head has a few pale tubercles. The horns are bluntly spiny with whitish tubercles, each bearing a minute pale hair on the tip. A few hairs are scattered over the body. Length on hatching 8mm.; before first moult 7 mm. When ready for the first moult the new head is visible under the skin of the first segment as a circular pinkish-brown patch. The colour of the larva in the second stage is very similar to that of the first, but the body is covered with numerous small hair-bearing pale tubercles and each segment shows a fine lateral oblique line of white papillæ, slanting from above forwards. There is a white spiracular line dividing the green of the dorsum from the pale whitish-green of the under surface.

A pair of white dorsal spots is present on each segment; length before second moult 12mm. In the third stage the upper half of the head is maroon with the horns brown while the lower half is yellowish-green with a few pale tubercles. The maroon colour is frequently retained up to the time of pupating; occasionally it disappears after the final moult. The colour of the body remains as in the second stage with the addition of a dorsal spot, roundish in outline bordered with a black line on the sixth segment. The spot is more pronounced in some individuals than in others. In a position of rest, the head and the first three segments as also the terminal ones are raised above the surface of the leaf.

In the fourth and fifth stages there is little difference. The body is pea-green, thickly covered with yellow papillæ. The oblique lateral lines are pronounced. The subspiracular line which is whitish is carried round the anal spines, becoming yellowish in this region. The almost circular spot on the dorsum of the sixth segment is brownish surrounded by a paler area and outlined in black and very often a second spot appears on the eighth segment.

The anal processes are short, broad, pointed and flattened horizontally. Length 53 mm. The larval stage lasts three to four weeks.

When the larva has curled prior to pupating, it loses most of its spots and becomes translucent.

The head of the mature larva (Pl. LXXVI., fig. 11-13) is pale green with a large purplish patch over the upper half of the face, and the tips of the horns are violet-blue. The length of the horns in comparison with the size of the head is relatively shorter at this stage than previously. The whole of the head is coarsely punctate with scattered whitish tubercles and covered with rather long silvery pubescence.

The pupa is stout, widest at the third abdominal segment, thence tapering abruptly to the cremaster; anteriorly it narrows slightly to the fore end of the wing-case and then more abruptly to the front extremity, where it terminates in a slightly indented emarginate ridge. The ventral surface of the thorax is straight; the dorsal strongly convex. A lateral ridge on each side of the thorax starting from the head projections, and extending along the wing cases, ends at the front of the abdomen, where it becomes obsolescent. The base of the cremaster is transversely bilobed, and two excrescences are placed anteriorly to it on the ventral surface. The colour is a light-green with chalky pink marks on the points of the head-cover, also irregularly placed along the lateral ridges and scattered on the under surface of the thorax. The spiracles appear as dark-brown spots on a chalky-pink base. On either side of the proboscis is a conspicuous round white spots. The cremaster and adjacent excrescences are yellowish. Length 25 mm.; breadth 11 mm. The complete metamorphosis extends over ten weeks. The imago emerges in 16 days.

DISTRIBUTION AND HABITS:

The distribution of this species as has already been indicated, coincides with that of the food-plant. It has always been considered a rare species but we have now bred it through in large numbers, and are able to obtain specimens from its known haunts. The southern limits of its distribution appear to be the Kikuyu Scarp from whence it extends through the Aberdares, across the Mau to Nandi and Elgon. We have no records of the species in Uganda, except in the South-west districts. This distribution is curious and worth noting.

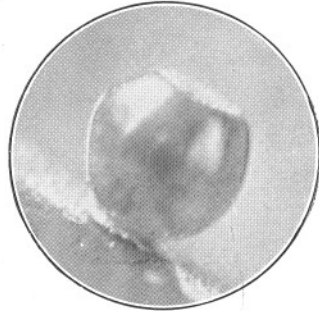
It is a forest species which is met with in the more open parts and along the forest fringes. The males are fond of sunning themselves, with wings slightly open or with the hind-wings partly depressed, while the upper ones are kept in contact.

They come to bait but not as readily as some species. One usually finds the female somewhere near the food-plant and when she is intent on laying is not difficult to capture.

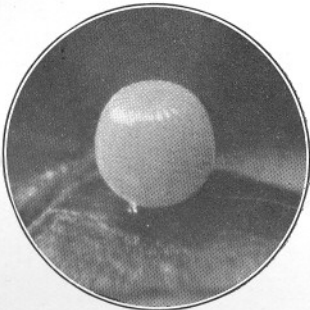
PLATE LXXII.



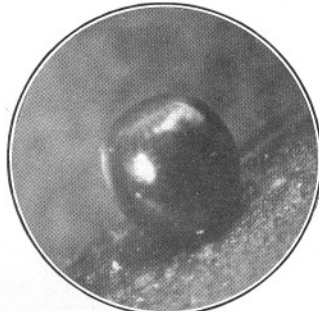
1. varanes.



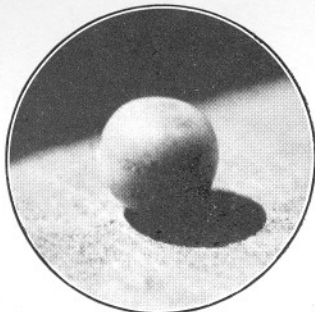
4. cithaeron.



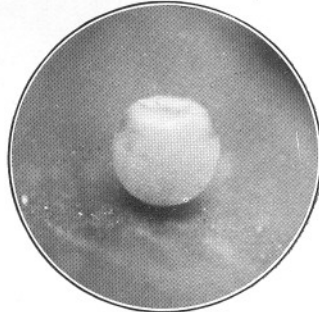
2. brutus.



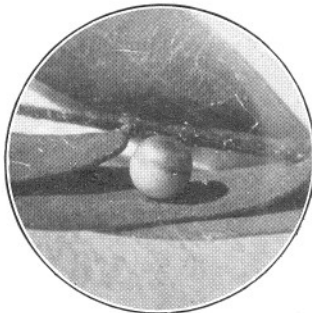
5. candiope.



3. anticlea.

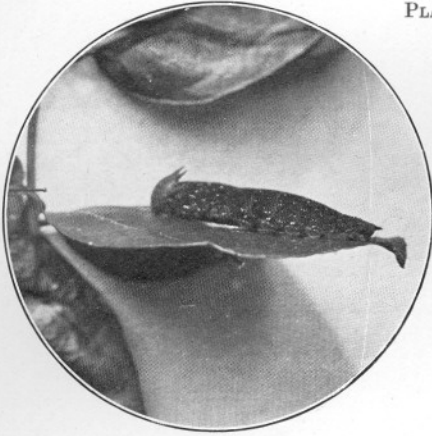


6. etheocles.

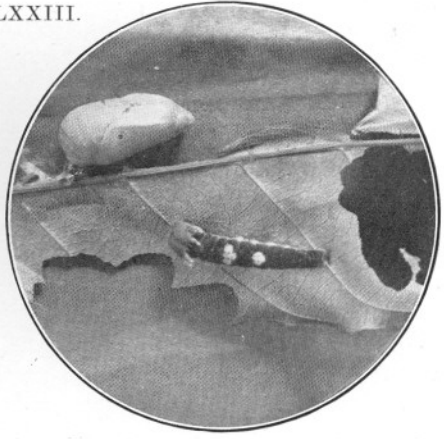


7. baumanni.

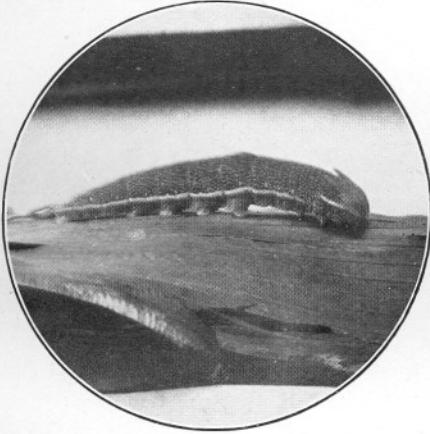
PLATE LXXIII.



1. numenes.



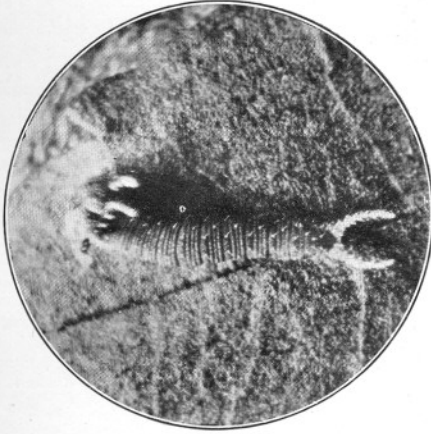
4. tiridates.



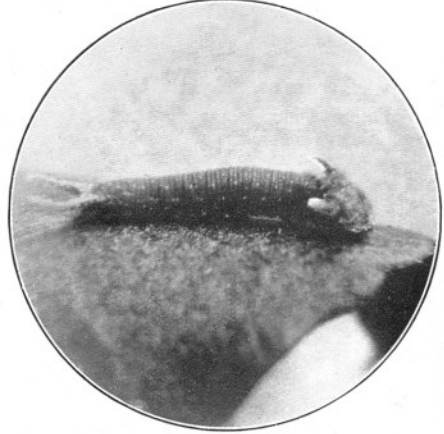
2. castor.



5. etesipe.

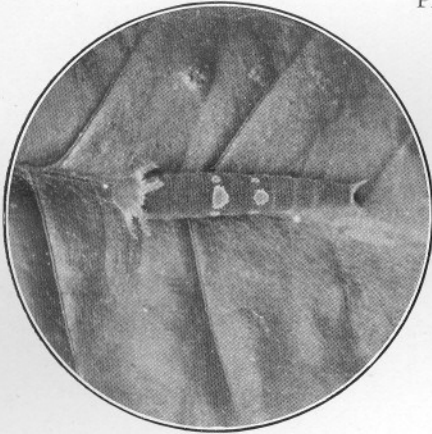


3. pollux.

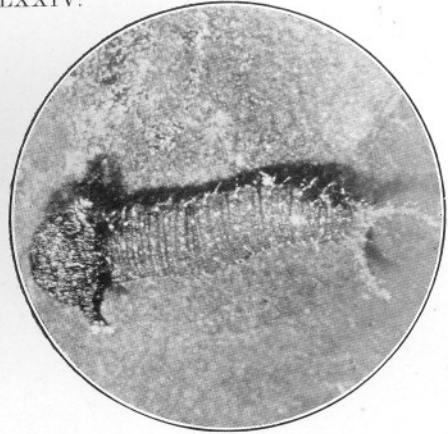


6. brutus.

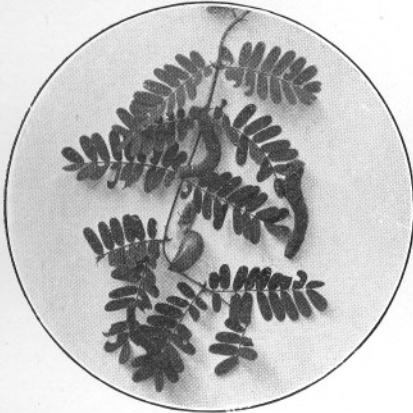
PLATE LXXIV.



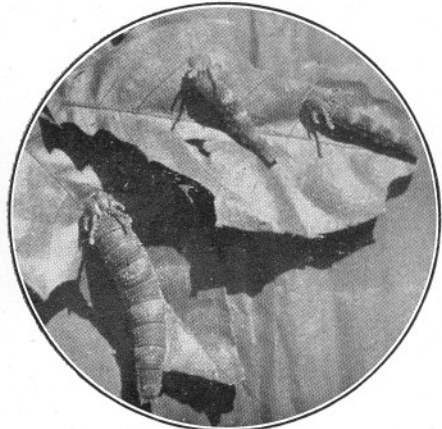
1. *C. candiope*.



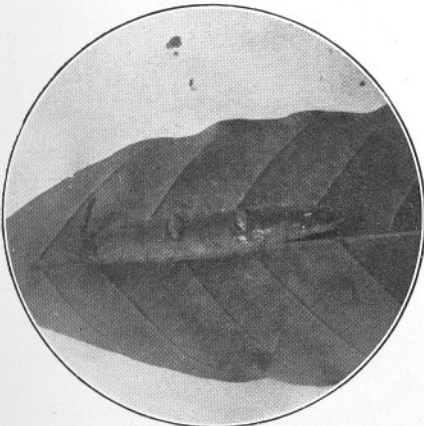
4. *C. candiope* (newly hatched).



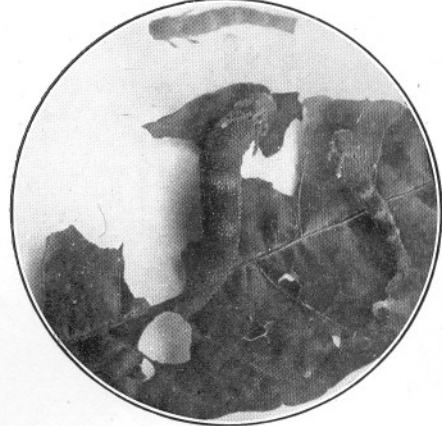
2. *C. baumanni*.



5. *C. fulvescens* monitor.



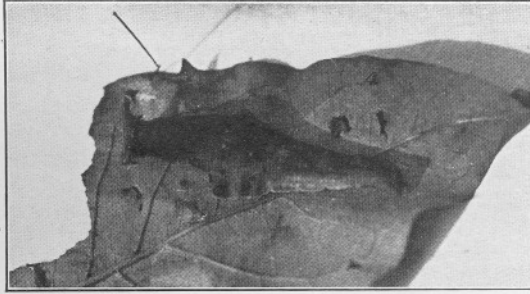
3. *E. ansellica*.



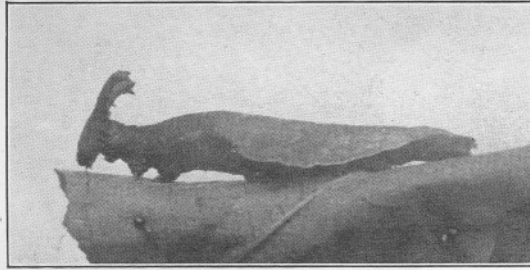
6. *C. varanes*.

PLATE LXXV.

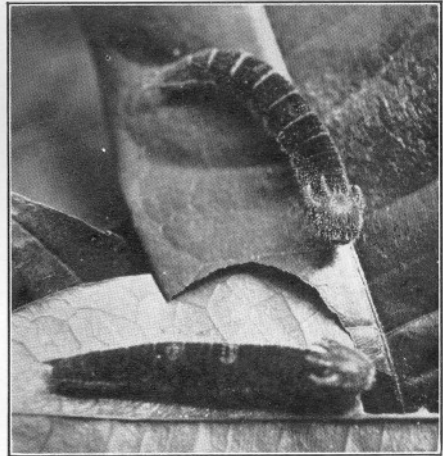
1.
Palla
ussheri



2.
Palla
ussheri.



3. *Ch. fulvescens.*



4. *Ch. ansorgei.*

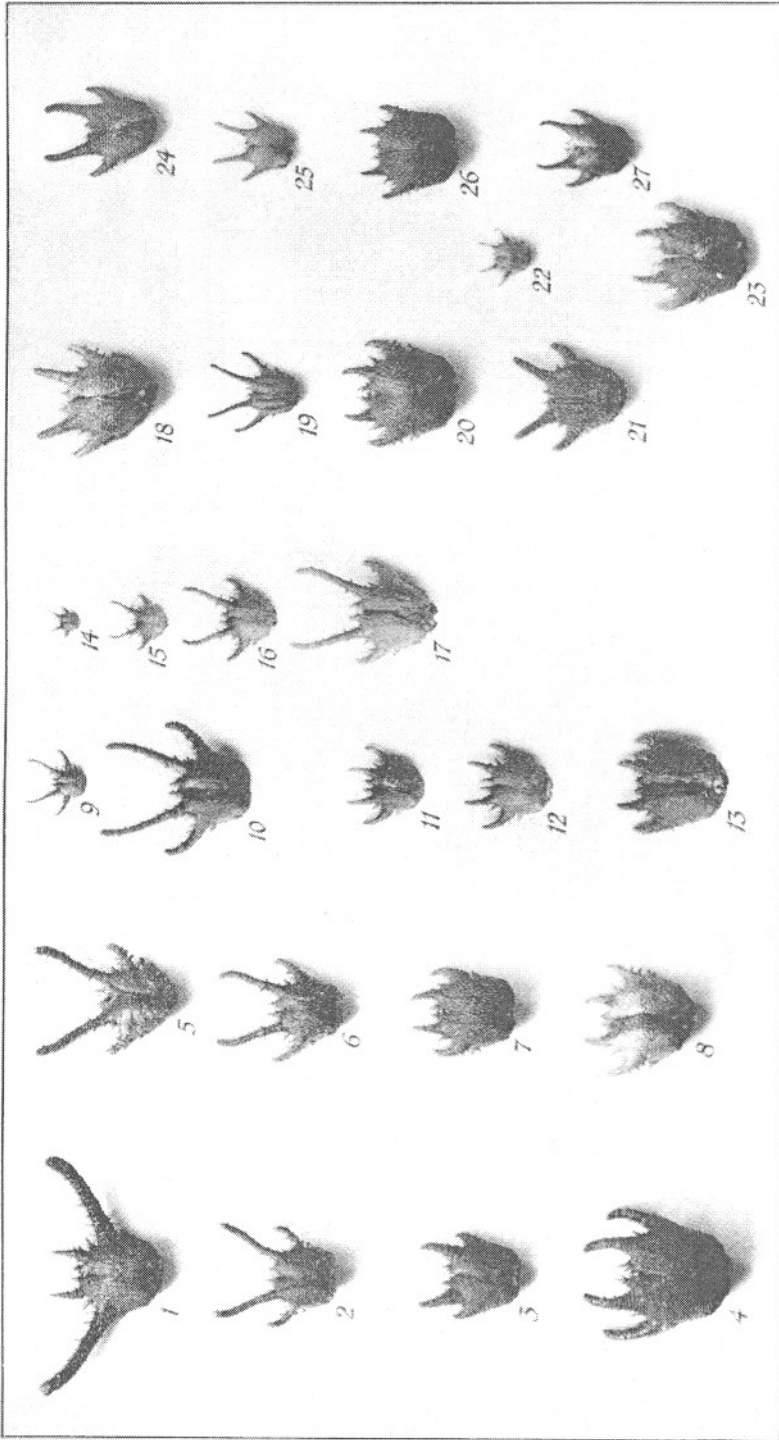


5. *Ch. ansorgei.*

V. G. L. van Someren, photo.

Vaus & Crampton, Ltd.

PLATE LXXVI.



V. G. L. van Sonzen, photo.

CAST HEADS OF EUXANTHIE (Fig. 1) AND CHARAXES.
Figures 1-8 natural size, all others slightly enlarged.

Faus & Crampion, Ltd.

EXPLANATION OF PLATES LXXII—LXXVI.

PLATE LXXII.

Eggs of *Charaxes*.

- Fig. 1. Egg of *Charaxes varanes* (Nairobi).
2. " " *brutus brutus* (Nairobi).
3. " " *anticlea adusta* (Jinja).
4. " " *cithaeron* (Nairobi).
5. " " *candiope candiope* (Nairobi).
6. " " *etheocles etheocles* (Nairobi).
7. " " *baumanni* (Nairobi).

PLATE LXXIII.

Larvae of *Charaxes*.

- Fig. 1. Larva of *Charaxes numenes numenes* (Jinja).
2. " " *catsor castor* (Jinja).
3. " " *pollux pollux*, newly hatched (Nairobi).
4. " " *tiridates tiridates* (Jinja).
5. " " *etesipe etesipe* (Jinja).
6. " " *brutus brutus*, newly hatched (Nairobi).

PLATE LXXIV.

Larvae of *Charaxes* and *Euxanthe*.

- Fig. 1. Larva of *Charaxes candiope candiope* (Nairobi).
2. " " *baumanni* (Nairobi).
3. " *Euxanthe ansellica* (Jinja).
4. " *Charaxes candiope candiope*, newly hatched (Nairobi).
5. " " *fulvescens monitor* (Jinja).
6. " " *varanes vologeses* (Jinja).

PLATE LXXV.

Larvae of *Palla* and *Charaxes*.

- Figs. 1 & 2. Larva of *Palla ussheri interposita* (Jinja).
3. " *Charaxes fulvescens? acuminatus* (Kikuyu Escarpment).
4. " *Charaxes ansorgei*—red-spotted variety—above, and
ochreous-spotted variety—below (Kikuyu Escarpment).
5. " *Charaxes ansorgei*—white-spotted variety (Kikuyu Escarpment).

