

# THE BUTTERFLIES OF KENYA AND UGANDA.

By

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FAMILY NYMPHALIDAE.

SUB-FAMILY *Charaxidi*.

*Charaxes etheocles* (*sensu lat.*)

## INTRODUCTION.

As indicated in the previous part of this series, we have purposely held over the section dealing with *Charaxes etheocles* and *Ch. ethalion*, until now, in order that certain data might be subjected to critical examination. We are now publishing such information as is at our disposal, admittedly incomplete, with the idea of stimulating interest in this, the most complex and confusing problem that has confronted Lepidopterists for many a long year.

The systematics of the group of *Charaxes* called *ETHEOCLES* are in a state of extreme confusion. The name *etheocles* was first applied to a female, and has gradually come to be used for a group of *Charaxes* which appeared to have some relationship; a group composed of several named "varieties" of males, and several females. The relationship of each to the others has not been understood, nor has proof of relationship by breeding been established.

Professor Poulton gave an outline of the position as up to 1925 in the Report of the Third International Entomological Congress, July, 1925, Bd. 11, pp. 552-562.

The characters on which the female have been divided into distinct "variations" are, on the whole, clear cut and reliable; the same, unfortunately, cannot be said of the males.

In most groups of butterflies, where macroscopical examination is inconclusive, microscopical examination of the male genital armature is of the greatest assistance in forming a conclusion. This is not the case in the *etheocles* group; there is no constant type limited to any one form, and variation and intergradation runs throughout the named variations.

This combined variability in the males has given rise to such unsatisfactory identifications as "form *violacea*, more or less"; "intermediate between *chanleri* and *picta*"; "near *chanleri*," and so on.

We should state here that wherever we use a definite name to any male, this identification is given us by Dr. Jordan, who is the authority on the *Charaxidi*.

FRONTISPIECE.



O. F. Tassart pinx.

Poulton, Breeding experiments on *Charaxes etheocles*: Female forms (1-4) and the male form (5a, 5b) of *Charaxes etheocles* (l. s.) proved by breeding at Jinja, Uganda, to belong to the same species.

From the evidence before us it is quite obvious that no satisfactory solution to the problem will be obtained until a considerable amount of careful breeding of the group has been carried out throughout its distribution.

We have before us a very comprehensive series of bred families; material raised from found larvae; and an exceptionally large number of wild caught specimens, all from Uganda and Kenya.

We will deal first of all with families bred from known females. The female offspring offer little difficulty, except possibly in the matter of recognition of geographical races; but the correct identification of the males remains as before. The one forward step is that we are now able to say that four distinct males are definitely associated each with a certain type of female.

From the evidence of this bred material we are able to suggest (a) that there is certainly one main species with geographical representatives in Kenya and Uganda, (b) that there are two or more females with their respective males which are distinct from this species and from each other.

For purposes of convenience, and for the time being, we will refer to the species as Groups A, B, C, and will use the names which have been applied to these African "forms," subsequently giving what appears to us to be the correct nomenclature according to priority.

#### GROUP A.

This group is composed of certain named females and their associated males (as proved by breeding) which appear to be geographical representatives of one species. We divide them geographically as follows:—

1. Uganda to West Elgon:  
Female *vansomereni*, with *picta* male.
2. East Elgon to Nandi and Cherangani:  
Modified female *vansomereni* and *picta* male.
3. Kikuyu, Nairobi to Voi and Coast:  
Females *albifascia*, *kirki*, *rogersi* with *picta-chanleri* male.

The characteristics of the group are:—

All females with f.-w. bar composed of orange spots discal and post-discal, confluent from 1a-3-4-6. H.-w. with a bar crossing the disc and continuous with that of the f.-w. varying in colour from bluish-white, white, white with orange, to orange.

The males are characterised by the presence of marked greenish-grey or bluish-grey spots along the margin of the f.-w.; two or more post-discal spots; wings falcate. H.-w. margined by greenish-grey crescentic spots centred red, or mostly red, between veins 1b-7, internally bordered by a series of greenish-blue lunules. Underside

greyish-clay, more brownish distally and carrying a series of reddish lunules in both fore and hind-wings.

These males come within Rothschild and Jordan's Key A, Nos. 1 and 3 (*Monog. Charaxes*, *Nov. Zool.*, Vol. VII, p. 483).

We will now deal with these geographically:—

*Group A. 1.* Localities: Toro, Central Uganda, Mabira Chagwe, Jinja, Busoga, Mbale, West Elgon.

In the bred series both males and females are remarkably constant to type. The males vary only in the amount of red on the h.-w margin above the upper tails; the presence or absence of a p.d. submarginal series of blue-grey spots in f.-w. and the presence or absence of blue spots at sub-base of 2, 3, 4, continuous with two spots beyond the cell; and presence and number of wavy blue-green p.d. spots in h.-w.

The females vary in the intensity of the dark basal area of the f.-w. and dark submarginal bar; the variation is from dark black-brown to rufescent-brown; presence or absence of orange spot in the cell; coalescing of orange spots in 4-5-6. It is noticeable that in these specimens where coalescing takes place, the f.-w. bar is wider and the general tone of the f.-w. is rufescent and the distal portion of the wing is orange-rufescent.

An important variation is the white, not orange, colour of the f.-w. bar in 1a and part of 1b. This might be taken as indicating a transition to f.f. *etheocles*, which however, as we shall show later, has a distinct male.

An occasional and important variation (2 out of 80) is one in which the upper half of the h.-w. bar is strongly suffused with orange, with the remainder slightly tinged, though retaining a certain amount of bluish to greenish along the borders; such variations suggest a transitional phase to the f.f. *rogersi* which belongs to this group.

We wish to emphasize here that faded specimens of *vansomereni* at a first glance appear to resemble f.f. *etheocles*; the width of the fore-wing bar and the coalescing of the discal and p.d. spots, at once dispose of any suggestion of a transition to this form, because the Uganda-Nandi f.f. *etheocles* invariably has a narrow f.-w. bar—and a distinctive male.

*Group A. 2.* Localities: East Elgon to Nandi; Cherangani, Kitale, Kabras, Kakamega, Kaimosi.

The males from these localities are *PICTA*, and retain the characters of the nominate form.

The females are of the *VANSOMERENI* type, but the majority have very dark, almost black bases to the f.-w. and a strongly marked admarginal black band. The h.-w. black border is, on the whole, wider than in the typical form but the h.-w. white bar is *not* narrower and is bordered by a more intense blue. These differences are

apparent in the large series at our disposal and indicate a transitional phase, influenced by the presence of two models, viz. *Ch. epijasius* and *Ch. ansorgei ansorgei*. They do not constitute a distinct geographical race.

In a series of 22 bred specimens, one has the h.-w. bar of a creamy colour strongly tinged with orange and rufescent ochre; a rufescent f.-w. border and basal area; a transitional variety indicating an affinity to the *rogersi-kirki* form of Kenya (Nairobi to the coast).

One single specimen has a narrow h.-w. bar, strongly bordered with blue; f.-w. bar white in 1a and most of 1b, and the orange spots coalescent in 2 and 3, but with blackish-brown scaling in the centre, the remainder of the spots are small and discreet. Such a specimen shows an approximation to the *evansi* form of *etheocles*, and is doubtless the result of the influence of *Ch. ansorgei ansorgei*. It is such specimens as these which make it very difficult to define the characters and limitations of the species, as we now define them, but the males associated with any given female, by breeding, help to keep the species distinct.

Group A. 3. Nairobi-Voi-Coastal areas.

The males from these areas are a modified *PICTA!* They differ from the more northern form in being smaller, with the sub-apical spots of the f.-w. either pure white or ochreous, not bluish; with the marginal glaucous spots narrower, but very similar. There is some variation on both the upper and under surfaces, and this has given rise to the various identifications of this sex, "as near *picta*" "near *chanleri*"; "*chanleri*," "intermediate between *picta* and *chanleri*." Under our arrangement, we suggest that the name *CHANLERI* should be used for all these males.

The females bred along with these males are of the three forms: *albifascia*, *rogersi*, and *kirki*. This should be noted.

These three forms are of course variations of the one species, *kirki* being the intermediate variation.

In all these forms, the basal area of the f.-w. is rufescent and only slightly darker beyond the cell, and the h.-w. black band is wide, while the white or orange bar is narrow and tapers towards the anal angle. In all these examples before us, 20, the f.-w. orange bar is made up by the coalescing of the two rows of spots, this fusing taking place from 1a to 6; an orange spot in greater or less degree is present in the cell. In only two specimens are the spots of the outer series discreet in 3-7.

The variation in these females is from the pattern mimetic of *Ch. ansorgei* sb. sp.\* to the pattern mimetic of *Ch. saturnus*. In the extreme saturnus-like colouration the f.-w. bar consists of two

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\* This race is being described by Prof. Poulton.

rows of orange spots, the inner large, the outer small and extending from 2-7. This form is very like the female of *Ch. achemenes*.

These spots are mentioned here, because Rogers has bred the curious *aubyni* f.f. with a so-called *picta-chanleri* male. The colouration of *aubyni* is worth noting, because of its pattern which is like *etheocles* f.f. but the pale areas are creamy. We suggest that *aubyni* has nothing to do with what we call Group A and the male associated with it is neither *picta* nor the form *chanleri*.

We suggest that a reasonable grouping of the races we admit to Group A is as follows: In Kenya and Uganda we have a species which extends from western and north of Uganda to the coast of Kenya. The oldest name applicable to the race which extends into N.W. Uganda, appears to be *viola*, Butler, 1876, founded on a female. The species is represented through the rest of Uganda and N.W. Kenya by a geographical race first named *picta*, R. & J., a male, 1900, and the female *vansomereni*, Poulton, 1925. In the central Kenya area to the coast is a further geographical race first named *kirki*, Butler, 1881, applied to a female, the male being subsequently called *chanleri*, 1895.

The geographical races are:—

- (a) *Ch. viola viola*, type female, Btl., Senegal to N.W. Uganda.
- (b) *Ch. viola picta*, type male, R. & J., Uganda to Kitale-Nandi (associated with its female *vansomereni*, Poulton).
- (c) *Ch. viola kirki*, type female, Btl., Nairobi to coast (associated with its male *chanleri*, and variety f.fs. *albifascia* and *rogersi*, Poulton).

#### GROUP B.

This is composed of female forms and their associated males, as proved by breeding, which appear to be geographical races of one species, and distinct from those of Group A.

The females of this group are characterised by having all the pale markings of fore and hind-wings, white or bluish-white, with or without ochreous tinge to those of the fore-wings.

The geographical representatives are as follows:—

Group B. 1. Nairobi-Voi-Coastal belt.

In the first of these areas the *etheocles* form of female is rare. It is more often met with in the latter areas, but is not common.

In these areas *etheocles* has the f.-w. bar wide, the discal and post-discal spots being confluent from 1a to 2, or 1a to 6. The commonest form has confluent spots from 1a-3. The h.-w. bar is wide and has slight blue shading on the borders.

These females are associated with (but have not been bred) a male which is somewhat like *chanleri* above, but the underside is a silvery-white, though ornamented with the characteristic lines and spots of the group.

We also have in this area a form called *rosae*, with curved fore-wing bar, mimetic of *Ch. violetta*, female. It has not been bred with any type of male. This form should not be confused with the *rosae* female form of *Ch. ethalion*, which occurs and has been bred in the same area with *ethalion* males. (Vide post.)

Group B. 2. Elgon (East), Kabras, Kakamega, Nandi.

In these areas we meet with a form of female formerly called *etheocles*, which agrees with the form found in Uganda in two respects: that of pattern and of the type of male bred along with it, and associated with it in the wild state.

The f.-w. bar is composed of a double row or series of pale spots, discal and post-discal, *all discreet*, except those of 1a which are very seldom confluent. The general tone of these spots is an ochreous buff, *not white* or *bluish-white*; the hind-wing bar is narrow, the reduction being due to a widening of the black border and increase in the depth of the basal area. These females are associated in the wild state and in bred families with a male determined by Dr. Jordan as *VIOLACEA*.

These females are considerably larger than the *etheocles* f.f. of S.E. Kenya, and have a different male. We may thus be dealing with two distinct species. But this can only be proved by breeding the coastal forms in numbers. In this area we get a form intermediate to that of B.3.

Group B. 3. Sotik, Lumbwa, Mau, Molo.

In this region we find a remarkable form of female which belongs to this group, but one which is strongly modified in pattern and colour by its model, *Ch. ansorgei*. *Ch. epijasius* does not appear to occur in this region, and *Ch. ansorgei* has alone influenced the mimetic evolution.

The ground colour of the fore-wings is almost black, with only a slight brownish tinge, the pale markings however are reduced in size but are of a rich rufescent orange. The h.-w. bar is very reduced in width but is very strongly blue-bordered; the basal area is brownish-black, and the admarginal border black. This form is without a name, and we have pleasure in naming it after its discoverer, *Ch. etheocles f.f. evansi*, type Molo-Rongai, 1929. A second specimen of this form was taken by Canon Rogers at Lumbwa, and a third by Ruscoe in the same district.

The males associated with his female are very like *violacea* but the marginal glaucous spots of the f.-w. are present, though not as in *picta*. These males are returned as *hollandi*.

Group B. 4. Uganda, Toro to West Elgon.

In this region the *etheocles* f.f. are characterised by the comparative narrowness of the f.-w. bar, and the double series of discreet white, bluish-white discal and post-discal spots of the fore-wing bar. Out of 25 examples from Uganda, only six have any tendency for the

spots in 1b to be confluent. The other principal variation is the degree of bluish edging to the h.-w. bar.

Only two specimens show a slight ochreous tinge to the spots of the f.-w.; thus these resemble the females from East Elgon and Kitale.

The male associated with this female is that determined by Dr. Jordon as *violacea* (bred in same families). We consider Groups B 2, 3, and 4 to be the same species.

We must here draw attention to the fact that whereas in Uganda we have bred the primitive f.f. *carpenteri* along with the *etheocles* f.f. there appears to be no record of the *carpenteri* form from the Kitale-Nandi area. This omission does not, however, prove it is non-existent in these districts.

Although we have grouped the *etheocles* form geographically we must note the following:—

1. Coastal-Nairobi *etheocles* are associated with (but have not been bred) a chanleri-like male with a silvery underside. In the Teita country it flies with the cream-coloured f.f. *aubyni*, which has a ? *picta-chanleri* male.

2. Uganda *etheocles* are bred with *violacea* males, and f.f. *carpenteri*.

3. East Elgon-Kitale-Nandi *etheocles* are bred with *violacea* males.

4. The f.f. *rosae* occurs only with the coastal-Nairobi *etheocles* forms.

Typical female *etheocles* was described from Sierra Leone by Cramer, 1777. If we agree that the Uganda form is representative of this western race, then we must find a name for the race inhabiting the east Elgon-Kitale-Nandi area; the Mau-Sotik-Molo one we have named; the Nairobi-Voi-Coast race also requires a name.

The following names first applied to males are available: *violacea*, Rothschild and Jordan, for the Uganda race; *hollandi*, Butler, for the E. Elgon-Kitale-Nandi race; the Mau-Molo race can be known by the name *evansi*; while the coast race is still without a name.

As already indicated, we have proved by breeding that the f.f. *carpenteri*, Poulton, is co-specific with the Uganda f.f. *etheocles*; we refer to this type of female under the following:—

#### Group B.a.

Following a consideration of the *etheocles* form of female, we now examine the male-like form *carpenteri*, Poulton, which, by breeding, we know to be specifically the same as the Uganda *etheocles*.

This form has only been taken and bred in Uganda, north of Lake Victoria east to Kavirondo.

It is characterised by being blue, or purply-black with blue spots. There is some variation in the series before us, 60 odd, which can be divided into five classes as follows:—

- A. The predominant form is purply-brown-black, with in the f.-w. a series of bluish-white to blue post-discal spots extending from 1b to 7. Most have blue spots sub-basal in 2, 3, 5, 6. The h.-w. carries an ill-defined series of zig-zag blue or purply-blue spots, forming an irregular bar from 1b-5, followed by an admarginal series of white lunules from the anal angle -6. The margin is reddish from just above the lower "tail" -6.
- B. A colour variation of the above is one in which the bases of the h. and f.-w. are strongly blue-green; the spotting in the f.-w. is also blue-green while the h.-w. bar is wider and bluer-green, the spots being less angled and confluent. The margin of the hind-wing has no red, but is blue-green. Strongly resembles the *swynnertoni* female form of *ethalion*, when in flight.
- C. A form in which all the spots with the exception of the admarginal white ones of the h.-w. are only faintly discernable on a dark purply-blue-black ground. This var. is very male-like.
- D. A variation in which the fore-wing carries two series of spots, discal and post-discal, the former being quite distinct and extending from 1b to 3, 5, 6. The h.-w. also has a double row of purply spots, the outer as in var. A, the additional row extending from the sub-costal down through the apex of the cell and joining the other series in 1c, thus very like *allidinis*.
- E. A variation of A in which the ground colour is decidedly greenish.

Associated with the *carpenteri* form is the Uganda form of *etheocles* with their common male, *violacea*.

The range has already been given and should be noted, because of the association of this male with the intermediate form of *etheocles* in the Kitale-Kabras-Nandi areas. (Vide ante.)

#### GROUP C.

Female form *CEDREATIS* and *PROTOCEDREATIS*. Uganda, north of Lake Victoria to Busoga and Kavirondo North.

When Rothschild and Jordan wrote their Monograph of the Charaxes, this female form was known only from the West coast to

the Congo. It has now been taken and bred in large numbers in Uganda, especially in the Eastern province.

It is characterised by the h.-w. being, for the most part, tawny-olive, which colour extends over the base of the f.-w. the apical bar half being black, the two areas separated by a white bar extending from the apex of the cell, bases of 6, 5, 4 to just within the posterior angle at 1a. The apex also carries two white spots of varying size.

The most common variation from this typical colouration is one in which a certain amount of black extends to the proximal side of the f.-w. white bar, more particularly in the region of the cell.

Form *PROTOCEDREATIS*, Poulton.

Differs from the typical form in having the base of the f.-w. much darker, almost a purply-brown, and the base of the h.-w. also of this colour separated from the marginal black border by a tawny-olive bar, paler along the distal edge. This bar is continuous with the f.-w. bar which runs along from 1a, 1b, 2-5 and apex of cell, while the spots in 1a and 1b are wider than in the nominate form.

For detailed description see p. 166.

In both forms the h.-w. has a black border which extends to the costa, carrying a series of white lunules, followed by a red margin extending from between the tails to the upper angle.

Many specimens have a pale yellowish-tawny spot in the mid-point of the sub-costal region.

The males associated with, and bred in the same family, are of the form *LUTACEA*. These are remarkably constant as a whole in so far as the general facies is concerned. The main characters are: F.-w. not falcate, sub-costal spots not well marked, and variable in number; outer margin of wing with diffuse glaucous internervular spots not so marked as in the form *picta* though most marked in 1b. H.-w. with admarginal series of very conspicuous white lunules, with, sometimes internal to this, a wavy line of greenish extending from the anal angle to 7; margin of wing, above the base of the upper tail, very conspicuously red, below this, marginal line greenish.

A variation is sometimes met with in which the marginal red is suffused with greenish. The entire ground colour is a deep purply-brown-black with some greenish sheen at the base of the costa of the f.-w.

The Female Form *ROSAE*, Butlr.

We have already made reference to this form. It is not definitely associated by breeding with any male, but it flies with the *chanleri*-type of male with the silvery underside.

Having dealt with the various forms of females, and indicated their association with males, as ascertained by breeding, we are now able to set the fact out in tabular form as follow:—

FEMALE FORM.	ASSOCIATED MALE.		DISTRIBUTION.
	Bred.	Captured.	
<i>VANSOMERENI</i>	<i>PICTA</i>		Uganda to west Elgon.
<i>VANSOMERENI</i> (transitional)	<i>PICTA</i>		East Elgon to Nandi.
<i>KIRKI</i> , <i>ROGERSI</i> , <i>ALBIFASCIA</i> .	{ <i>PICTA</i> - <i>CHANLERI</i> <i>CHANLERI</i>		Nairobi-Voi-Coast.
<i>ETHEOCLES</i> (race)		Chanleri-like with silvery underside.	Coastal area.
<i>ETHEOCLES</i> and <i>CARPENTERI</i>	{ <i>VIOLACEA</i>		Uganda to west Elgon
<i>ETHEOCLES</i> (race)	<i>VIOLACEA</i>		E. Elgon-Kitale- Kabras-Nandi.
<i>ETHEOCLES</i> f.f. <i>EVANSI</i>		<i>HOLLANDI</i> .	Mau-Sotik-Lumbwa- Molo.
<i>ROSAE</i>		Chanleri-like with silvery underside.	Coastal zone.
<i>ROSAE</i>			Nairobi area.
<i>AUBYNI</i>	<i>CHANLERI</i> - <i>LIKE</i> .		Teita.
<i>CEDREATIS</i> <i>PROT</i> - <i>UEDREATIS</i>	<i>LUTACEA</i> .		Uganda.

Four distinctive types of males still remain unassociated by breeding with any form of female; these are:—

(a) *CYTILA*, (b) *LENIS*, (c) *CATACHROUS*, (d) form with silvery underside (coast). Vide page 167.

FOOD PLANTS AND EARLY STAGES OF BRED FORMS.

1. *VANSOMERENI* female: *PICTA* male. (Uganda.)  
The known food-plants are:—  
*Albizzia coriaria*, Welw. (LEGUMINOSAE).  
*Albizzia zygia*, McBd. (LEGUMINOSAE).  
*Entada abyssinica*, Std. (LEGUMINOSAE).
2. *VANSOMERENI* female: *PICTA* male. (Kitale-Kabras-Nandi-Elgon, east.)  
*Entada abyssinica*, Std. (LEGUMINOSAE).  
*Albizzia* nr. *sassa* (LEGUMINOSAE).  
reported to feed on "black wattle" (Jackson).
3. *ETHEOCLES* female: *VIOLACAE* male. (Uganda.)  
*Scutia commersoni*, Brog. (RHAMNACEAE).
4. *CARPENTERI* female: *VIOLACEA* male. (Uganda.)  
(bred with *etheocles*).  
*Scutia commersoni*, Brog. (RHAMNACEAE).
5. *ETHEOCLES* female: *VIOLACEA* male. (Elgon, east; Kitale, Kabras, Nandi.)  
*Scutia myrtina* (RHAMNACEAE).  
*Dalbergia lactea*, Vatke (LEGUMINOSAE).
6. *KIRKI*, *RORGESI*, *ALBIFASCIA* females:  
*PICTA-CHANLERI* males. (Nairobi.)  
*Albizzia sassa* (LEGUMINOSAE).  
*Albizzia* sp. *indet.* (LEGUMINOSAE).  
*Accacia mellifera*, Benth. (MIMOSACEAE).
7. *KIRKI*, *ROGERSI*, *ALBIFASCIA* females:  
*PICTA-CHANLERI* male (coast).  
*Albizzia sassa* (LEGUMINOSAE).
8. *CEDREATIS* female: *LUTACAE* male. (Uganda.)  
*Albizzia grandibracteata*, Taub. (LEGUMINOSAE).
9. *CHANLERI* male. (Nairobi.)  
*Scutia indica* (RHAMNACEAE).
10. *AUBYNI* female, nr. *Chanleri*.  
——— Teita (Rogers.)

We will now give a detailed account of the families which have been raised from known parents, and, in doing so, will maintain the same geographical grouping as previously adopted.

1. Parent: *VANSOMERENI*. (No. 4, Jinja, 1928.)  
 Food plant, *Albizzia coriaria*, Welw., previously det. as *fastigiata*. Luganda name MUGAVU.  
 OFFSPRING: 3 females *f. vansomereni*.  
           2 males, form *picta* (det. K. Jordan).  
           5 larvae died and preserved.  
 Larvae green, with two dorsal lines, one each on 6th and 8th segments. Heads with long fine horns as depicted in *Trans. Ent. Soc.*, 1926, pt. 11, pl. LXXVIII, fig. 24, with just the tips red-brown; marginal line yellow. Pl. CXa, fig. 1.
  
2. Parent: *VANSOMERENI*. (No. 8, Jinja, 1928.)  
 Food plant, *Albizzia coriaria*, Welw.  
 OFFSPRING: 3 females *vansomereni*.  
           1 male, form *picta* (det. K. Jordan).  
 Larvae identical with those of above. Heads constant and similar.
  
3. Parent: *VANSOMERENI*. (No. 9, Jinja, 1928.)  
 Food plant, *Albizzia coriaria*, Welw.  
 Larvae reared to third instar, and were transferred to Nairobi and placed on local *Albizzia*, det. as *fastigiata-sassa*, but refused to eat. All died. Colouration and heads identical with No. 4.8, 1928.
  
4. Parent: *VANSOMERENI*. (No. 2, 1930, Jinja.)  
 Food plant, *Albizzia coriaria*, Welw.  
 Four larvae matured, but three failed to pupate. All heads similar to those of No. 4.8, 1928.
  
5. Parent: *VANSOMERENI*. (No. 1, 1930-31, Jinja.)  
 Food plant, *Albizzia coriaria*, Welw.  
 OFFSPRING: 12 larvae, all heads typically long-horned, dark only at tips, marginal line yellow, 10 pupated.  
           5 females, *vansomereni*.  
           5 males, form *picta* (det. K. Jordan).  
 All males with marked marginal glaucous spots in f.w., with sub-marginal row of small spots from hind-angle to sub-apex; and three specimens with additional row of spots extending to the large sub-costal at base of 5 to 1b.

6. Parent: *VANSOMERENI*. (No. 32, 1930-31, Jinja.)

Food plant, *Albizzia coriaria*, Welw.

OFFSPRING: 4 females, *vansomereni*.

5 males, form *picta* (det. K. Jordan).

Heads of all the larvae uniform and similar to No. 4.8, 1928. Notes: One female with strong purple sheen on h.-w. bordering the white bar; rest bluish. This exception with dark margins to f.-w. and dark scaling in the central area of the f.-w. bar tending to split this up into discal and p.d. row of orange spots; proximal end of yellowish in 4, strongly dusky.

Males with strongly developed sub-marginal angle spots to f.-w.; cell spot very large; two spots beyond cell also very well marked. H.-w. with marked wavy blue-green line internal to the sub-marginal row of whitish lunules.

7. Parent: *VANSOMERENI*. (No. 10, 1928, Jinja.)

Food plant, *Entada abyssinica*, Std. (LEGUMINOSAE).

OFFSPRING: 3 females, *vansomereni*.

1 male, det. as *picta* but underside nr. *cytila*.

1 larva died before pupating.

Larvae and heads very similar to those given above, but the former with more dorsal ornamentation, usually with three well-marked white lines, curved posteriorly at ends, on 6-8, 10th often with smaller white lines on lateral aspects of other segments. Latter with central long horns only, dark tipped; outer one not. Face line yellow. (Cf. these heads with Nairobi specimens.)

8. Parent: *VANSOMERENI*. (Jinja, Mawakota.)

Food plant, *Entada abyssinica*, Std.

OFFSPRING: 2 females, *vansomereni*.

2 males, *picta* (but underside differs).

These males are similar to *picta* on the upper surface, but the underside is much more rusty, and recalls the tone of *cytila* but the bold markings of *lutacea*. A specimen has been placed by Dr. Jordan as *picta*.

The larva and heads are similar to those described above.

For reference to forms raised on *Entada abyssinica* in the Kitale area, by T. H. E. Jackson, see page 151.

9. Parent: *KIRKI*. (No. 1, Nairobi, 1928.)  
 Food plant, *Albizzia*, det. as *sassa*, but probably distinct.  
 OFFSPRING: 3 females, 1 *rogersi*, 1 *albifascia*, 1 *kirki*.  
 6 males nr. *picta*.  
 These males are smaller than *picta* and are intermediate to *chanleri*. The larvae are very similar to those of Uganda raised on *A. coriaria* but there is some difference in the dark tips to the horns, the mid-pair only being tipped. The general build is more robust. Pl. CXa, fig. 1b.
10. Parent *KIRKI*. (No. 2, Nairobi, 1928.)  
 Food plant, *Albizzia*, det. as *sassa*, probably distinct.  
 OFFSPRING: 2 females, *rogersi*.  
 2 males nr. *picta*.  
 1 pupa died.  
 The males agree with the previous family. Heads similar.
11. Parent unknown. (No. 3, Nairobi, March-April, 1927.)  
 Food plant, *Scutia indica* (RHAMNACEAE).  
 OFFSPRING: 1 male, very like *picta* above but determined as *chanleri* (det. K. Jordan).
12. Parent: *CARPENTERI*. (No. 11, Jinja, 1930-31.)  
 Food plant, *Scutia commersoni*, Brongn. (RHAMNACEAE).  
 Only one larva reared. This had a head identical with larva producing *etheocles* and *carpenteri*.
13. Parent: *CARPENTERI*. (No. 12, Jinja, 1930-31.)  
 Food plant, *Scutia commersoni*, Brongn. (RHAMNACEAE).  
 OFFSPRING: 1 female *carpenteri*.  
 3 males, *violacea* (det. K. Jordan).  
 The parent is a very dark specimen with very little evidence of a blue p.d. band in the hind-wing. The female offspring is very dark purple, with general bluish suffusion in h.-w. but like the parent, is without any distinct blue band.  
 The males are identical above and below with males of family 7, Jinja. The larval heads are typical of this form.
14. Parent: *CARPENTERI*. (No. 1, Jinja, Oct., 1929.)  
 Food plant, *Scutia commersoni*, Brongn. (RHAMNACEAE).  
 OFFSPRING: 2 females, *carpenteri*.  
 2 males, *violacea* (det. Jordan).  
 1 larva preserved.  
 All larvae without marked dorsal ornamentation. Larval heads green with bases of the "horns" yellowish; central pair brown at

distal half, with ochreous tips. Lateral horns, distal horns brownish, with an extension of this colour indicated along the facial margin, but the facial line not very marked-yellowish; and with four black contiguous spots on outer edge above the lower angle. Cf. these with heads of No. 5, Jinja, Oct.-Dec., 1928.

15. Parent: *CARPENTERI*? (Nos. 15, 17, 19, Jinja, 1930-31.)

Food plant, *Scutia commersoni*, Brongn.

OFFSPRING: Although large numbers of larvae were hatched none pupated. The heads, however, were uniform in type and agree with No. 1, Jinja, Oct., 1929.

16. Parent: *CARPENTERI*. (No. 22, Jinja, 1930-31.)

Food plant, *Scutia commersoni*, Brongn.

OFFSPRING: 1 female, *carpenteri*.

1 male, *violacea* (det. Jordan).

Larvae with heads typical of this form.

The female parent has the p.d. blue spots in f.-w. clearly defined on a blackish ground; the internal series obscured. The female offspring is unlike the parent in that the h.-w. series of blue spots is not distinct, and the whole is suffused with purply-blue; transitional toward f.f. *allidinis*.

17. Parent: *CARPENTERI*. (No. 25, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 1 female, *carpenteri*.

1 male, *violacea* (det. Jordan).

The female offspring is very dark purply-blue-black, with light spots almost entirely submerged in the ground colour except those beyond the cell and the two sub-apical. H.-w. marginal border grey-blue, not red as in typical *carpenteri*.

18. Parent: *CARPENTERI*. (No. 29, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 1 male only emerged, but all heads of larvae typical. Form *violacea* (det. Jordan).

19. Parent: *CARPENTERI*. (No. 30, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 3 males, *violacea* (det. Jordan). It is of great interest to note that of these three males, one was identified by Dr. Jordan as near *lutacea*, doubtless on account of the rich colour of the under-side; the upper surface is typical *violacea*.

20. Parent: *CARPENTERI*. (No. 34, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 2 females, *carpenteri*.

2 males, *violacea* (det. Jordan).

The females are very dark, but with very little purply sheen. H.-w. blue spots rather pale; but f.-w. spots, especially the inner row, conspicuous. They are not typical *carpenteri*.

21. Parent: *CARPENTERI*. (No. 35, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 2 females, *carpenteri*.

Both are very dark; one with very clear blue spots in f.-w. and h.-w., the other with all the pale areas hardly indicated at all, thus somewhat male-like. The sub-marginal white linear spots on h.-w., however, clearly defined.

22. Parent: *CARPENTERI*. (No. 38, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 2 females, *carpenteri*.

Thirty larvae were brought from Jinja and transferred to the local "Kirobo," *Scutia buxifolia*; only two pupated. The heads of all thirty larva are very constant and typical of this form.

23. Parent: *ETHEOCLES*. (No. 7, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 1 female, *etheocles*.

2 males, *violaceae* (det. Jordan).

The parent has all the pale markings of the f.-w. white, those in 1a and 1b confluent, internal and external rows equally developed and white. H.-w.: White areas rather restricted distally.

The female offspring is very like the parent, but the h.-w. white areas wider and more diffused with blue on proximal and distal borders. Larval heads similar to those of *carpenteri* and though somewhat like *cedreatis*, facial line is not marked. Pl. CXa, fig. 2 a and b.

24. Parent: *ETHEOCLES*. (No. 20, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 2 males, *violacea* (det. Jordan).

These two males agree above and below with males from *carpenteri* females, and are determined as above. All larval heads uniform and agreeing with *carpenteri* larvae.

25. Parent: *ETHEOCLES*. (No. 39, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

OFFSPRING: 2 females, one *carpenteri*, one *etheocles*.  
2 males, *violacea* (det. Jordan).

26. Parent: *ETHEOCLES*. (No. 40, Jinja, 1930-31.)

Food plant, *Scutia commersoni*.

Over 40 eggs obtained. Brought to Nairobi and put on *Scutia indica* and *S. buxifolia*. None survived to pupate. All larval heads similar to those of *carpenteri* and other *etheocles*.

27. Parent: *CEDREATIS*. (No. 1, Jinja, 1930-31.)

Food plant, *Albizzia grandibracteata*, Taub. (LEGUMINOSAE).

OFFSPRING: 5 females, *cedreatis*.  
10 males, *lutacea* (det. Jordan).

The females are similar to the parent, but none have a pale costal spot to h.-w.

All the males with one, two or three sub-costal greenish-blue spots in f.-w.; that at the upper part of the apex of the cell always present and may be doubled; margin of fore-wing with rather large glaucous spots, ill defined. H.-w. with row of clear white linear sub-marginal spots; marginal crescentic spots greenish from anal angle to lower tail, then brick-red to upper tail, in seven specimens; greenish in three. Five specimens with, five without, p.d. greenish crescentic marks. Under-surfaces of a rich reddish ochre, with strongly marked black lines at base of f.-w. and distinct sub-marginal black marks. H.-w. richly coloured, black lines clearly defined throughout, though narrow; distal portion of wing rather reddish.

The larval heads are green with a marked dark brown continuous marginal line, extending to the horns. Internal to this line is a yellowish one which runs through the bases of the horns. The horns are short and inwardly curved. The larvae have two dorsal spots on the 6th segment; more marked in some than others. Pl. CXa, figs. 3 a and b.

28. Parent: *CEDREATIS*. (No. 3, Jinja, 1930-31.)

Food plant, *Albizzia grandibracteata*, Taub.

OFFSPRING: 1 female, *cedreatis*, like parent.

Other larvae died but heads similar to family above.

29. Parent: *CEDREATIS*. (No. 6, Jinja, 1930-31.)

Food plant: *Albizzia grandibracteata*, Taub.

OFFSPRING: 13 females, *cedreatis*.

13 males, *lutacea* (det. Jordan).

All these females have a pale costal spot in the h.-w., most with a pale distal band to the h.-w. patch, accentuated just above the anal angle; some with this pale band shaded with dark scaling on the proximal edge. These show an approach to the form *protocedreatis*, Poulton.

The males are all of the form *lutacea*, Rothsch. as in the family above, but six males with double, blue, sub-apical spots; all with marked p.d. line of blue-green crescentic marks on h.-w. Submarginal row of linear white spots not so marked as in male of the family above, except in four specimens, but all, except two, with well-marked red on the margin of h.-w. Those with well-marked large spots in the f.-w. are almost *picta*-like, but they are of course not so falcate in the f.-w. and are larger.

30. Parent: *CEDREATIS-PROTOCEDREATIS*, Poulton.

No. 10, Jinja, 1930-31.)

Food plant, *Albizzia grandibracteata*, Taub.

OFFSPRING: 3 females, *cedreatis* and *protocedreatis*.

3 males, *lutacea* (det. Jordan).

Although this parent is not as full as the type of *protocedreatis* it is undoubtedly of this form and not *cedreatis*. One of the female offspring is similar to the parent, the other is a full *cedreatis*.

In addition to these actual bred families, we have the published record of a small family bred by Rogers at Dabida.

31. Parent: AUBYNI. (Rogers, Dabida.)

Food plant, *Albizzia* sp. ?

OFFSPRING: 2 *aubyni*.

1 male, nr. *chanleri*.

EVIDENCE FROM WILD CAUGHT LARVAE FEEDING ON ONE SPECIES OF FOOD PLANT:

*Albizzia coriaria*, Jinja: 13 females, *vansomereni*; 4 males, *picta*.

*Entada abyssinica*, Kitale: females, *vansomereni*; males, *picta*.

*Abizzia grandibracteata*, Jinja: females, *cedreatis* or *protocedreatis*.  
males, *lutacea*.

*Scutia myrtina*, Kitale: females, *etheocles*; males, *violacea*.

These breeding results would appear to be somewhat contrary to the results obtained by R. van Someren at Jinja and communicated to the International Entomological Congress, Zurich, July, 1925, by

Professor Poulton. The results are set out in tabular form and are taken from the Report, Band. 11.

No. of family.	Female parent with date of capture.	Female offspring with dates of emergence when available.			Male offspring	Notes.
		<i>vansom- ereni</i>	<i>cedreatis</i>	<i>carpenteri</i>		
1	<i>vansomereni</i> <sup>2</sup> June	2			2	The photograph sent by Dr. V. van Someren shews 3 <i>picta</i> males in this Fam.; also one female with narrower F. & H. W. bar than parent, one rather broader.
2	<i>vansomereni</i> 20 Sept. 1923  Ova hatched 1 Oct.	3 20 Nov.	1 11 Nov.		2 13 & 19 Nov.	F. and H. W. bars of <i>vansomereni</i> very constant, of medium breadth and rather narrower than parent. ♀ <i>cedreatis</i> shows ancestral tendency in paler tint of peripheral H. W. olive (p. 556).
3	<i>vansomereni</i> of later date than others <sup>2</sup> )	4			3	
4	<i>cedreatis</i> 18 May 1924	1 20 Jun.	2 12 & 15 June		2 10 & 15 June	Broad bar in F. & H. W. of <i>vansomereni</i> ; also orange spot in F. W. cell. The <i>cedreatis</i> female f. of 12th June is represented on pl. 15, fig. 3.
5	<i>carpenteri</i> May 1924	5			4	Gradual transition from a very narrow F. and H. W. bar (fig. 1) to a broad bar (fig. 2) in the five females. One with a bar of intermediate breadth has orange spot in F. W. cell. One of the males is represented on pl. 15, figs. 5 and 6.
6	<i>carpenteri</i> Dec. 1923	3			3	Much variation in the breadth of the female bars appears in the photograph.

<sup>2</sup>) Information of this family received in a letter of 22 Sept. 1925.

III. Internationaler Entomologen-Kongress (Bd. II): Edward B. Poulton.

The points at variance are:—

- (a) A *vansomereni* female produced, one *cedreatis* female as well as females similar to herself, and *picta* males.
- (b) A *cedreatis* female produced offspring similar to herself and also *vansomereni*, and *picta* males.
- (c) A *carpenteri* female produced *vansomereni* females and *picta* males.
- (d) A further *carpenteri* female gave *vansomereni* females and *picta* males.

Recent results show that *picta* males are only associated with *vansomereni* females; *cedreatis* females only with *lutacea* males; *carpenteri* females with *violacea* males. Further contrary evidence is forthcoming in that the heads of the fully fed larvae are different. The food plants are different and the type of country inhabited by each is different though of course there are no barriers to prevent the one form of male or female straying into the habitat of the other.

The fact that the genitalia of the various males are indistinguishable one from the other, and thus there is no mechanical barrier to cross-fertilisation, lends possibility to the suggestion that all these insects are variations of the one species. Carrying this suggestion further, and considering the apparent conflicting results of the two series of breeding experiments, the theory put forward by Professor Poulton may well be considered as a possibility, i.e. that the *picta* male is a dominant form and at suitable times is the predominant male, pursuing the various females outside the territory of the *vansomereni* form. Field observation confirms the fact that *picta* is the commonest male, though most often found in open park-like country, rather than forest, and along timbered water courses. An analysis of wild caught males gives the following: PICTA 20, LUTACEA 65, VIOLACEA 219, LENIS 13, CATACHROUS 6, ? HOLLANDI 5, but in considering these figures one must remember that one naturally collects more in forest than one would in the open, and the captures may *not* be a true index to the predominance of any one form over another.

It must therefore be admitted that the present state of our knowledge regarding this perplexing question is very far from complete; in fact, we are only on the fringe of things. So far as the Jinja area is concerned, season has no influence on the proportionate abundance of one form over another.

We have written extensively on this problem in the hope that more people will take up this very intricate subject, and so help to elucidate the riddle.

PLATE CVIII.



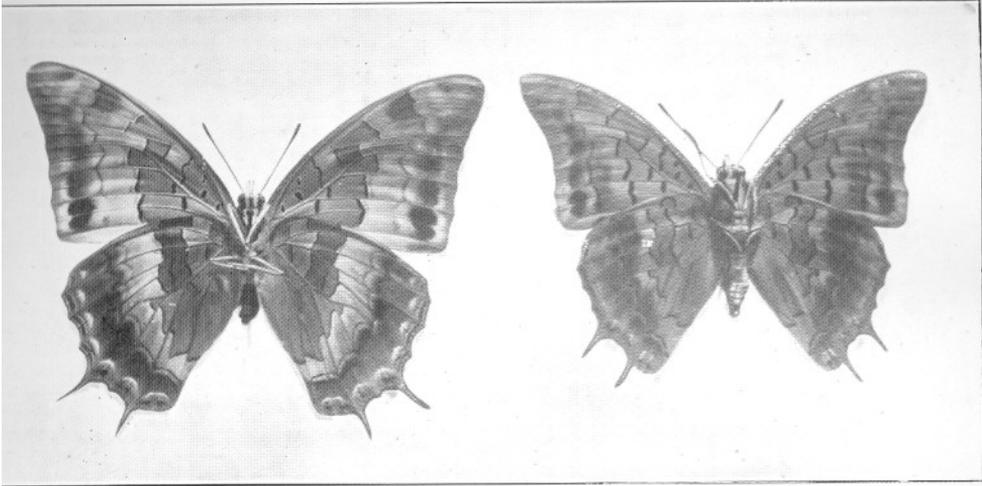
*Charaxes ethoopes*.  
Variations in the male form *PICTA*.

PLATE CIX.



*Charaxes ethiops*,  
Variations in the female from VANSONMERE.

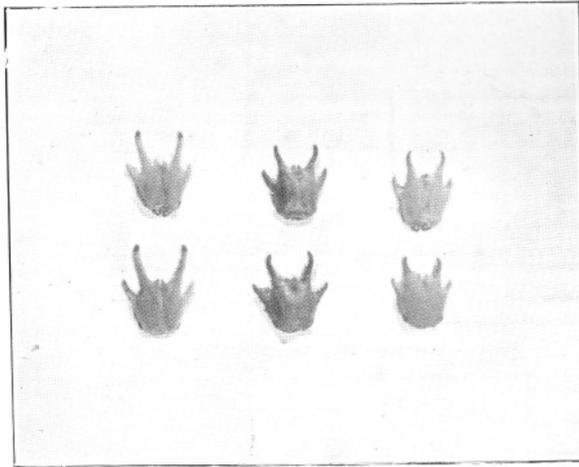
PLATE CX.



1 2  
*Charaxes etheocles*.  
 Undersurfaces of ♀ *f. vansomereni*; ♂ *f. picta*.

PLATE CXa.

1a 2a 3a



1b 2b 3b  
 Fig. 1a. *Ch. "etheocles" vansomereni*.  
 Fig. 1b. " " *kirki*.  
 Fig. 2a & b. " " *etheocles*.  
 Fig. 3a & b. " " *cedreatis*.

DESCRIPTION OF MALES AND ASSOCIATED FEMALES.

MALE FORM *PICTA*. Pl. CVIII, figs. 1-4. Pl. CX, fig. 2.

Expanse 62-70 mm. General colour blue-black, with a strong blue sheen in the base of the cell of f.-w. and with green reflections towards the margins of both wings. Frontispiece, fig. 5a and 5b.

F.-w. falcate, with wide outer glaucous border, greenish-blue-grey; a series of two or more postdiscal spots, large toward costa and tailing off in size; two or more blue spots sub-basal in 5-7; a large blue spot at upper part of apex of cell.

H.-w.: Inner border black; admarginal border in areas 4-6 greenish-grey with red centres, remainder of admarginal border from upper tail to anal angle, golden olive to olive; internal to this border is a series of submarginal whitish spots, double at the anal angle, strongly blue distally. A postdiscal row of greenish lunules is often strongly marked, or faintly indicated.

The above description is based on the average male. A variety is shown on Plate CVIII, fig. 1. This possesses a discal series of spots on the f.-w. Plate CVIII, fig. 2 shows a male with marked post-discal angular spots in both fore and hind-wing.

UNDERSIDE:

The general ground colour is a greyish-clay-brown with a variable sheen. The characteristic marks of the fore and hind-wings are depicted in the plates and need not be detailed here. There is some slight variation in the width and curvature of the lines but such can be found in members of the same bred family. The h.-w. disc has an irregular brown bar outlined in black; the postdiscal area is darker chestnut-brown and carries a series of lunules, red distally, green proximally internally accentuated with black. The admarginal border from 4-7 is red; golden-olive from the anal angle to 3, and internal to this is a series of whitish lunules distally shaded to bluish-purple and outwardly black in 3 to the anal angle where the black is represented by two dots.

FEMALE FORM *VANSOMERENI*. Pl. CIX, figs. 1-4. Pl. CX, fig. 1, and Frontispiece, figs. 1 and 2.

Expanse, 80-90 mm. The typical example of this form is depicted on Plate CIX, fig. 3.

F.-w.: Basal area blackish with a bluish-green to bluish purple tinge proximally; marginal border rusty-red, paler in 1b; admarginal band, brownish-black; an alar bar of yellow to tawny-orange, whitish in 1a and 1b internally, extends from the hind margin to area 5 where it often breaks up into discal and postdiscal spots either discreet or semi-confluent.

H.-w. : Basal area blackish; inner margin greyish. A wide discal bar traverses the wing from the costa to above the anal angle; this bar is tinged with blue proximally and more conspicuously so on the distal border from 2-4. The postdistal area is black, distally carrying a series of purplish-white linear or trident marks outwardly accentuated in black; admarginal zone red from 4-7, greenish or olive from the upper tail to the anal angle.

Variants: Pl. CIX, fig. 1, depicts a female in which the basal area of the f.-w. is purply black, this ground colour extending to the apex and outer margin, with only slight rusty marginal spots. The discal and postdiscal spots, orange in colour, are discreet in 3, after which they become confluent and become white. The basal area of the h.-w. is blackish, and this colour extends to the inner fold. The discal white bar is restricted, tinged internally with bluish, and distally in 2-3 with greenish-blue. The distal black area is wider than normal.

Pl. CIX, fig. 4 depicts a variant in which there is an orange spot in the cell. The alar bar is confluent and complete from the hind-border to the costa, while the distal area of the wing is rusty-brown with only slight indication of blackish at the posterior angle. The h.-w. discal bar is bordered internally and externally with greenish.

Pl. CIX, fig. 2, shows a female in which the basal area of the f.-w. is decidedly rusty-brown, while the apical area is very strongly orange-brown. The discal bar of the h.-w. is suffused with pinkish-buff, margined distally with bluish only, in 1c and 2.

#### MALE FORM CHANLERI. Pl. CXI., figs. 3 and 4.

As already indicated ante we associate this form with the species *picta*.

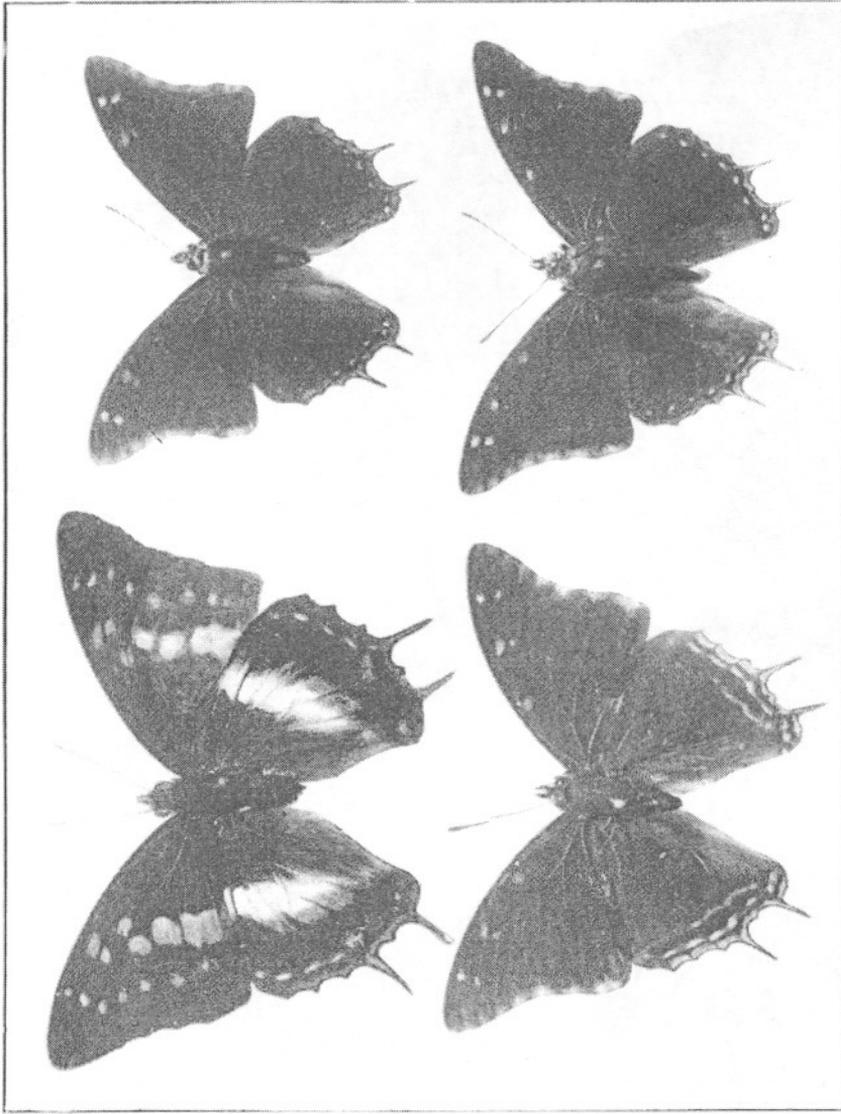
F.-w. : Strongly falcate; ground colour greenish or blue-black; marginal spots bluish-green in 1b, thence golden-olive to greenish. Two postdiscal spots, either whitish or ochreous; two spot sub-basal in 5 and 6; one at upper part of apex of cell. H.-w. ground colour as fore, paler at inner fold; admarginal border crimson to dark-red from 4-6, golden-olive to green from upper tail to anal angle, sub-marginal spots small, double at anal angle, blue to purply-blue. Marginal white fringe of f.-w. broken by veins.

Underside: Very similar to *picta* but sheen stronger more particularly in the discal zones; the red lunules more conspicuous and wider, strongly greenish at anal angle.

#### FEMALE FORM KIRKI. Pl. CXII, fig. 4.

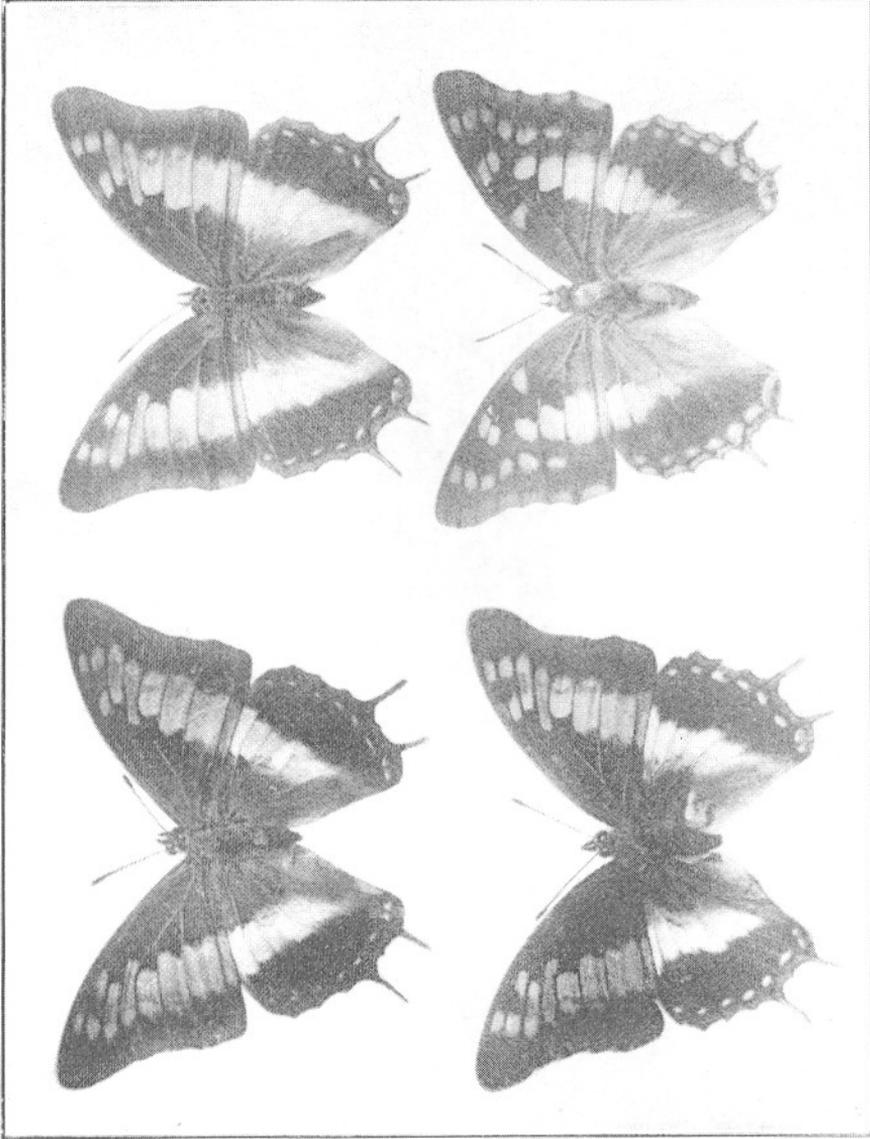
Expanse 75-80 mm. Ground colour of f.-w. black-brown, shading to rusty-brown at the base and to rusty-orange on the outer margin.

PLATE CXI.



*Charaxes echeocles*.  
1. ♂, NOV. EVANSI.  
2. male *f. chanteri*-*picta*,  
associated with *f. aubyni*, vide Pl. CXVIII, fig. 3.  
3. male *f. chanteri*.  
4. male *f. chanteri*,  
vide Pl. CXVIII, fig. 3.

PLATE CXII.

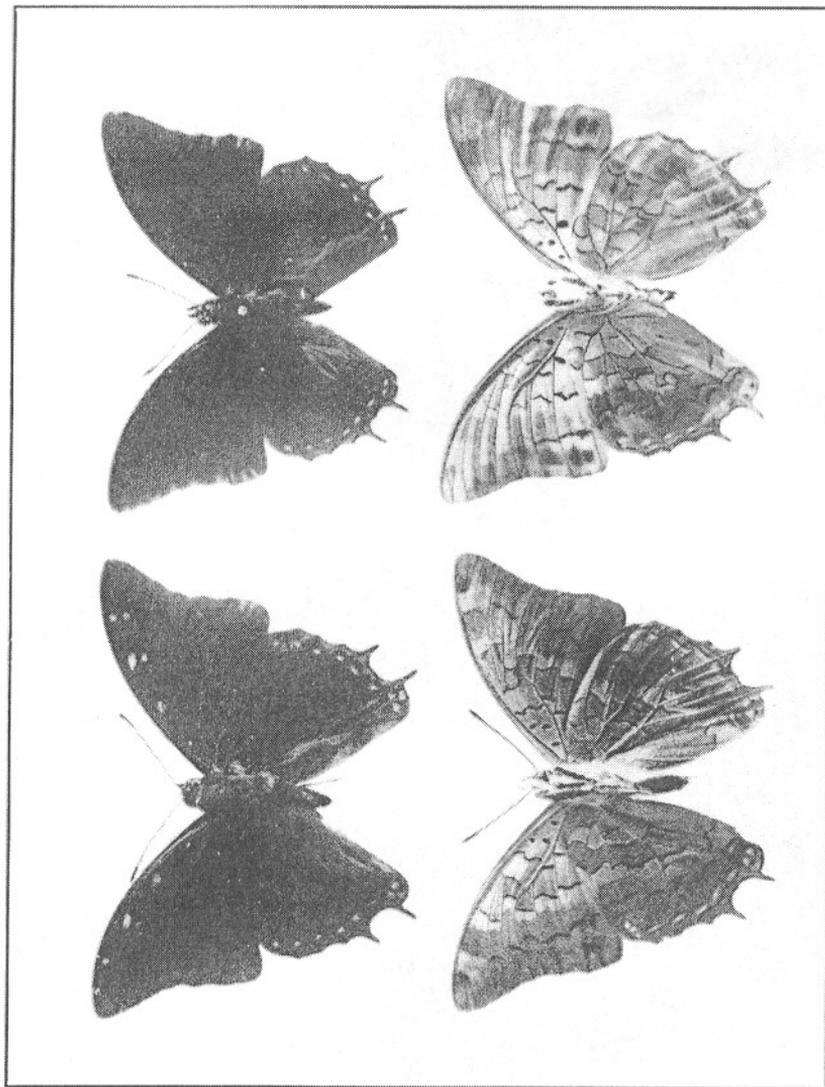


*Chonura aethropes*.  
Variations in the female forms *rogersi* (fig. 1), *abifascia* (fig. 2), intermediate *kirki* (fig. 3), Full *kirki* (fig. 4).

1

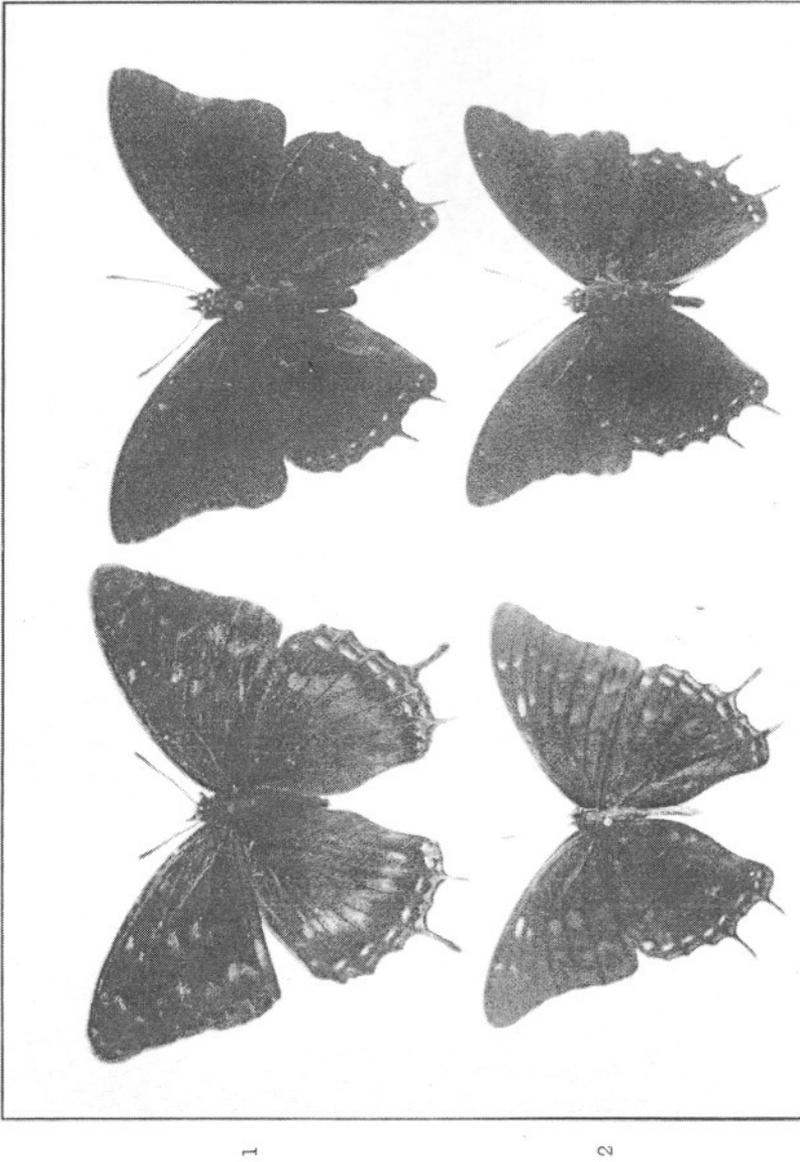
2

PLATE CXIII.



*Charaxes ethioides*,  
Figs. 1 and 3. Upper surfaces male *f. VIOLACEA*.  
Figs. 2 and 4. Under surfaces male *f. VIOLACEA*.

PLATE CXIV.



*Charaxes ethiops*.  
Figs. 1 and 2. Female *f. carpenteri*, vars.  
Figs. 3 and 4. Male forms *VIOLACEA*.

Cell with tawny spot at apex; postdiscal spots tawny-orange, extending from 2-7; discal bar from mid-hind border to 3, thence in 5 to costa.

H.-w.: Basal area tawny slightly darker at costa; discal bar tawny orange, lessening in width toward inner fold; distal portion of wing brown-black; admarginal lunules orange from 4-7, below upper tail to angle, blue-green with olive centre; sub-marginal series of spots bluish-purple with white internally, black distally. The whole colouration reminiscent of *Ch. saturnus*.

FEMALE FORM *ROGERSI*. Pl. CXII, fig. 1.

General colour of f.-w. similar to *kirki* but the discal and post-discal spots confluent except in 6-7. H.-w.: basal area blackish; discal bar white, with an orange tinge in 5-6; distal dark areas blacker; sub-marginal spots smaller and whiter; admarginal border red above upper tails, olive green below.

FEMALE FORM *ALBIFASCIA*. CXII, fig. 2.

Somewhat like *rogersi* but basal area and distal zone blacker-brown; base of h.-w. blacker, and discal band white, with slight purple to bluish tinge proximally, distal dark area purple-black.

Underside: Very similar to that of *vansomereni*, but the black marks rather more bold. The pale discal bar of the f.-w. is represented below by a buffy zone; the h.-w. bar, by a whitish zone. The postdiscal series of reddish lunules is not so prominent. Otherwise they are very similar. The undersides of the three forms vary from one another in accordance with the degree of paleness of the upper side.

MALE FORM *VIOLACEA*. Pl. CXIII, figs. 1-4; CXIV, figs. 3 and 4.

Expanse 65-75 mm. Ground colour violet blue-black with a greenish tinge along the costa, and a bluish tinge at margins. F.-w. less falcate than in *picta*; marginal spots if present, slightly greenish; sub-costal spots not always present; if present, represented by one or two post-discal, sometimes one beyond cell, occasionally one in cell. White marginal fringe broken by veins. (*Cf. ethalion.*)

H.-w.: Ground colour as fore; a slight indication of greenish admarginal lunules may be present; submarginal spots white or with a violet tinge, double at angle, outlined in black.

Underside: Very dark greyish-clay; black lines and dots much as in *picta* and *hollandi*, but those of the h.-w. less clear; the sheen on the distal border of the discal dark bar rather more obvious; the post-discal series of lunules not so reddish, more greenish and less conspicuous. Pl. CXIII, figs. 2 and 4.

**FEMALE FORM *ETHEOCLES*. Pl. CXV, figs. 1-4.**

Expanse 80-84 mm. Ground colour blackish, with a purply tinge to the basal area. F.-w. sometimes with a white spot in the cell, often missing. A postdiscal series of three white spots arranged transverse to the apex, thence following the contour of the wing to 1b where the spots are tinged with purplish or bluish; a discal series of spots sometimes discreet, often confluent in 1b, cross the wing to the subcosta. These spots are sometimes tinged with ochreous, an approach to the *evansi* form described later.

H.-w.: Ground colour blackish; a discal white bar crosses the wing from the costa to just above the anal angle; this bar is strongly bordered proximally and distally with blue or violet-blue. The width varies, cf. figs. 1-4, Pl. CXV. The f.-w. spots are often discreet; cf. The admarginal lunules are red above the upper tail, sometimes from the lower tail, and greenish at the anal angle. The sub-marginal row of spots are conspicuous, white or slightly tinged with violet, and linear.

Underside: Ground colour somewhat similar to the male, but rather browner; light areas vary according to pale areas of above. H.-w.: Red lunules less reddish and less well marked than in the female *vansomereni*.

**FEMALE FORM *EVANSI*, f. NOV. Pl. CXI, fig. 1.**

Ground colour of fore and hind wing deep brown-black, with slightly browner tinge at base of f.-w. Postdiscal series of spots arranged transverse to apex of wing thence following the contour to 1b where the spot is double, all orange yellow; discal spots orange-yellow large in 1a, thence decreasing in size to base of 4, then increasing at sub-base 5 and 6. H.-w. discal bar narrow; only slightly tinged with blue proximally, more widely blue distally. Admarginal border red to base of upper tail, then olive green to angle; sub-marginal series of spots linear, and violet.

Underside: Ground colour clay-brown, red and pale areas show up more strongly than in *etheocles*, owing to darker ground.

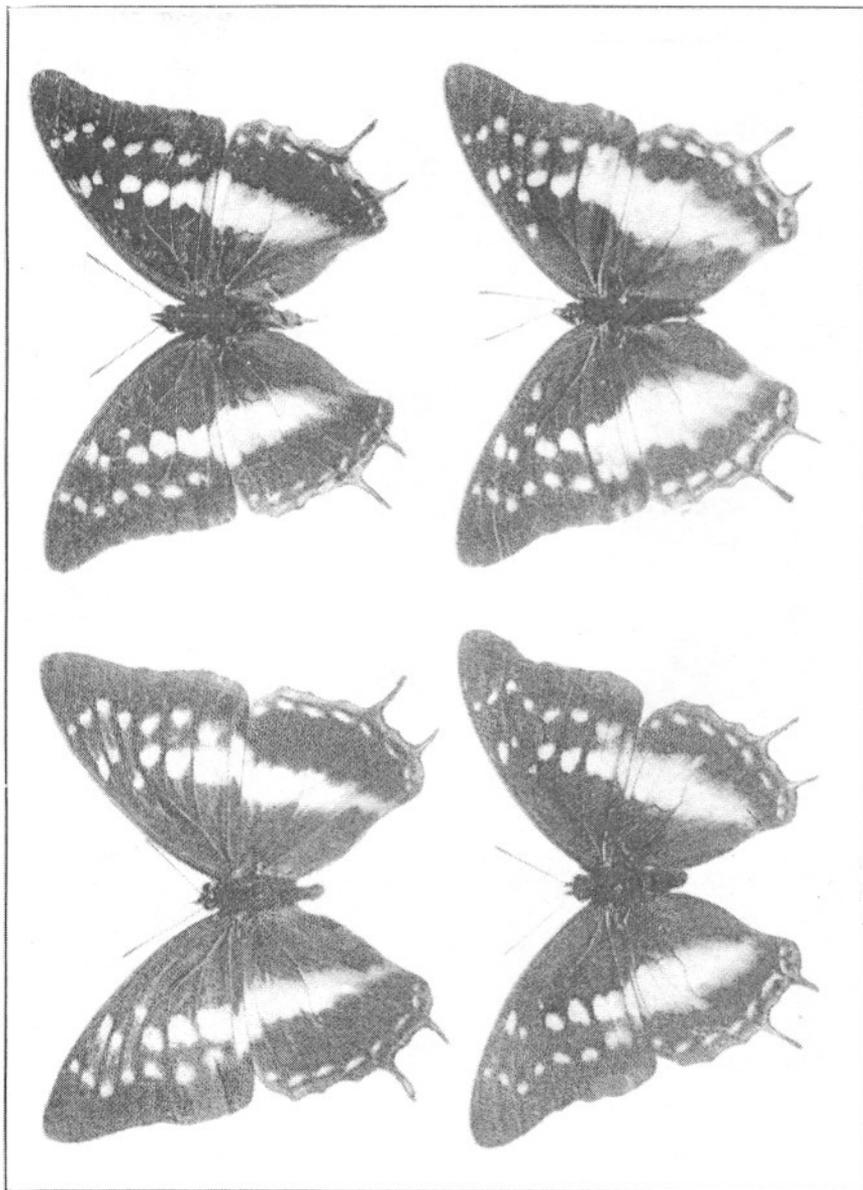
It is suggested that this female may eventually be associated with a hollandi-like male. It is an advanced mimic of *Ch. ansorgei ansorgei*.

**FEMALE FORM *CARPENTERI*. Pl. CXIV, figs. 1 and 2.**

Pl. CXVI, figs. 1-4.

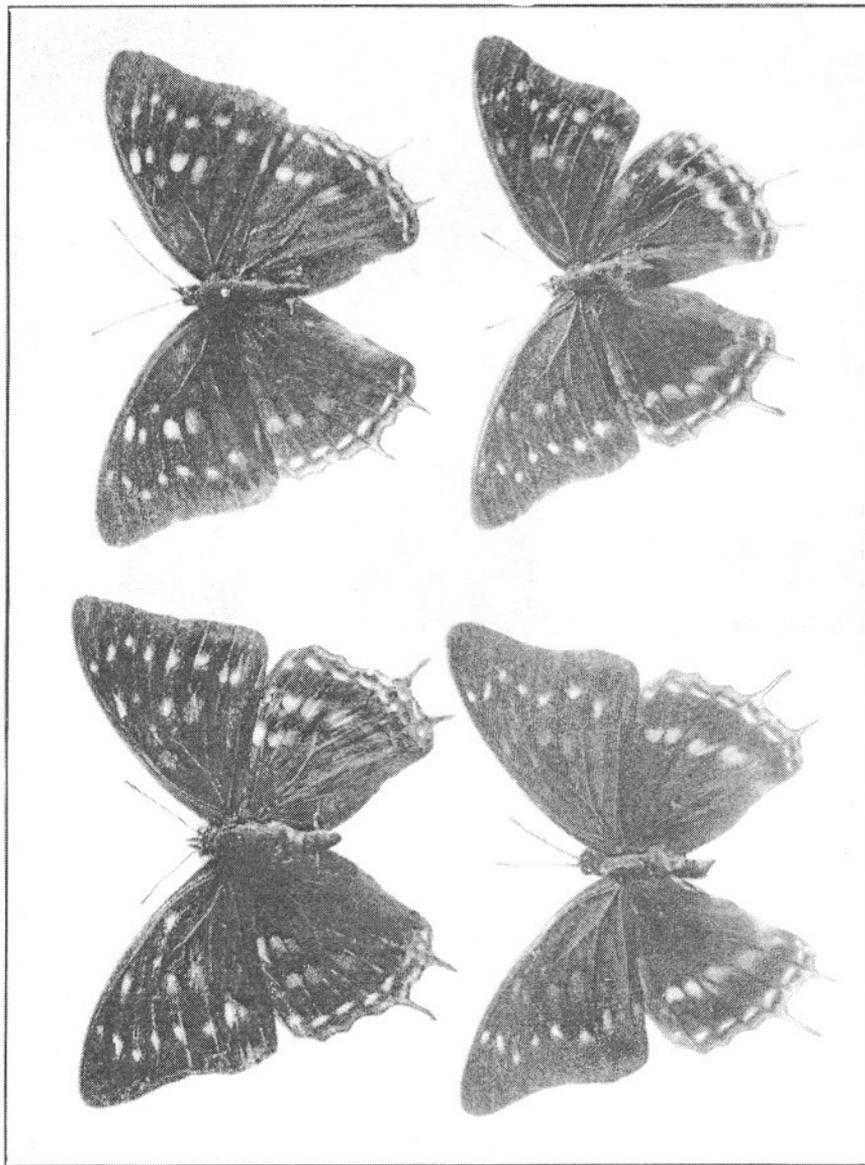
Ground colour, dark brown-black with a strong purple tinge to the base of the fore-wing, and a greenish sheen to that of the h.-w. F.-w. with a series of postdiscal whitish spots transverse to the apex, continued downward, following the contour of the wing to the hind-margin. Distal to the four lower spots, each has a black diffuse spot

PLATE CXV.



*Charaxes ethioides*.  
Variations in female *f.* *ETHIOIDES*. Uganda to Nandi.

PLATE CXVI.

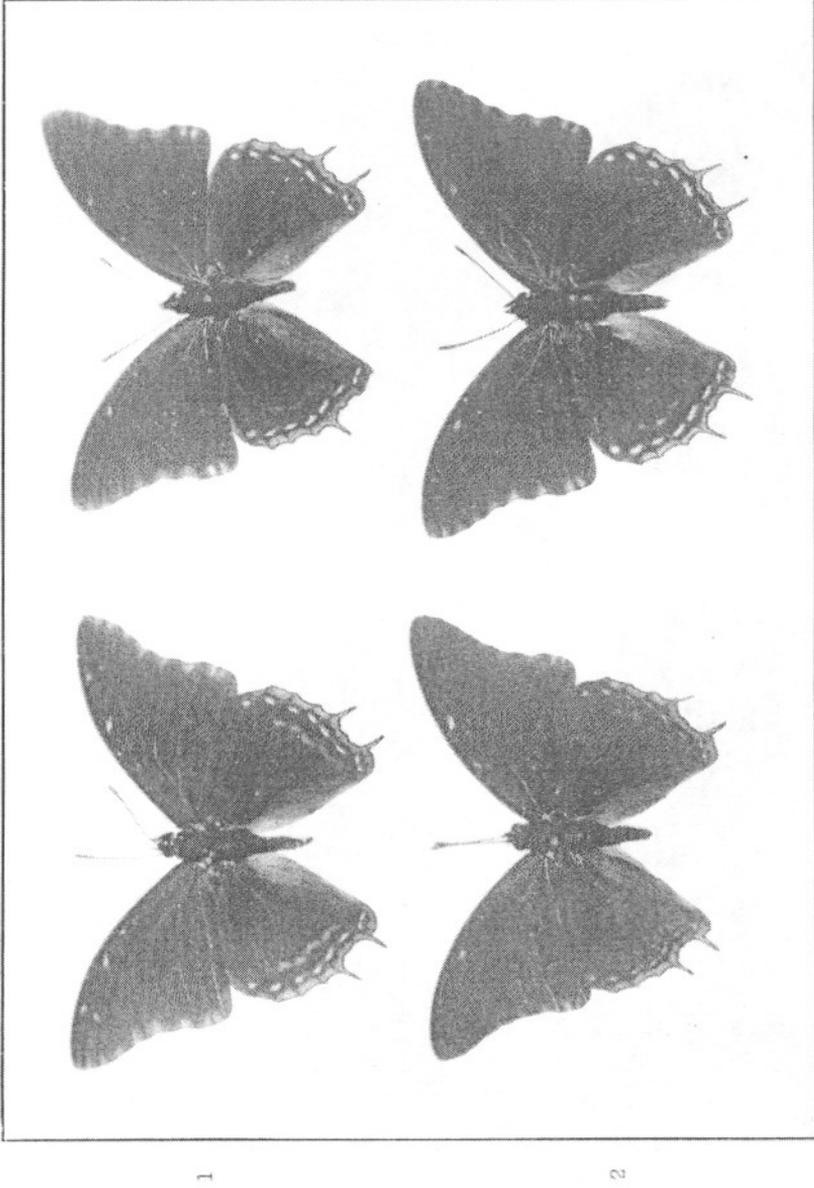


*Charaxes ethioides*.  
Variations in the female *f. carpenteri*. Vide also Pl. CXIV, figs. 1 and 2.

1

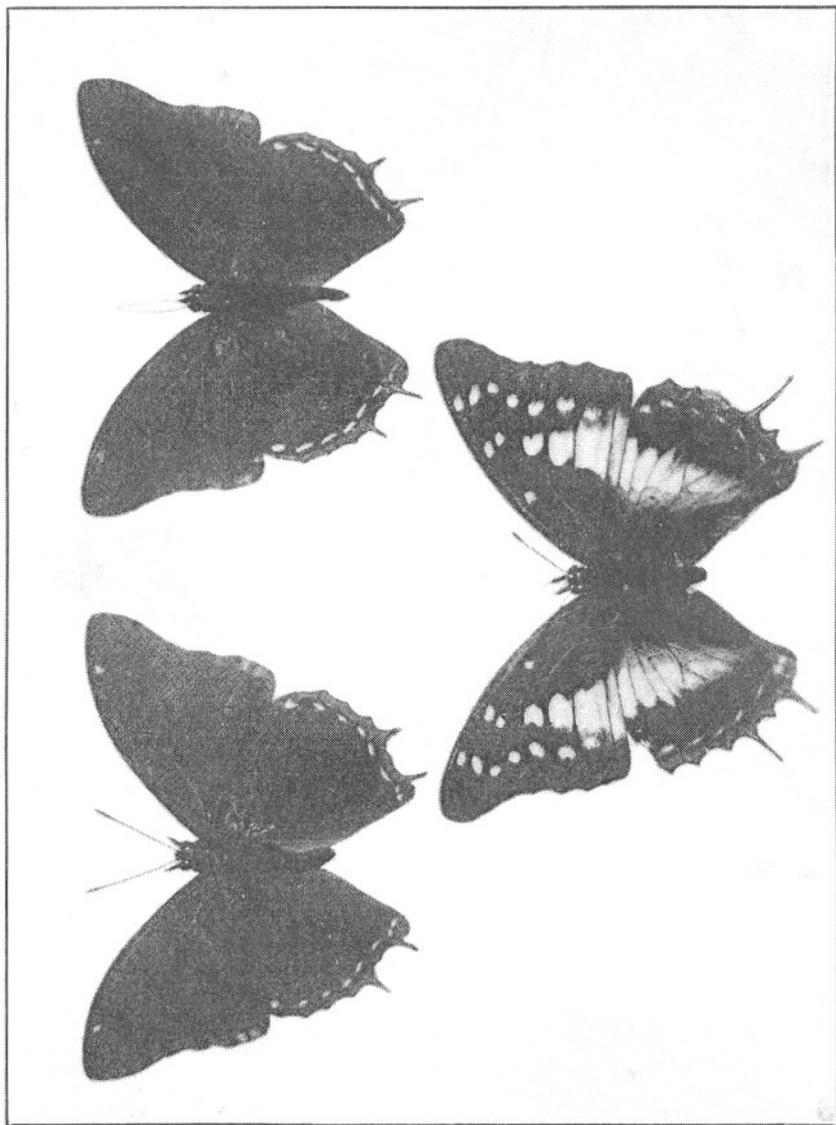
2

PLATE CXVII.



*Charaxes theocles*.  
Variations in the male *J. L.T.M.C.E.A.* Figs. 1 and 2 from bred family No. 8;  
figs. 3 and 4 from bred family No. 1.

PLATE CXVIII.



1

2

3

*Charaxes ethioides*.  
Figs 1 and 2, male f. *LUTACEA* (wild caught). Fig. 3 female f. *aubyni*.

which accentuates the posterior angle. The discal spots are represented sub-basal in 2 and 3, 5, 6. N.B.: A retention of the outer series and submergence of the discal, thus the reverse of *etheocles* q.v. H.-w. with a series of distinct blue postdiscal spots extending from 6 to the inner margin above the anal angle.

The admarginal border is red from the upper side of the lower tail; the anal angle green. In some specimens the admarginal border is mostly green with a slight red. (Type, see frontispiece, fig. 4.)

#### VARIANTS:

Pl. CXIV, fig. 1. This depicts a form in which the spots of the f.-w. are all green, while the postdiscal spots are confluent and the inner border not defined, but merging into the green sheen of the base of the wing. The admarginal border is green, without any red.

Pl. CXVI, fig. 2, shows a variety in which the ground colour is purply-brown-black, with a strong purply sheen. The f.-w. spots are white toward the apex, but purple on the rest; those of the h.-w. being wholly purple.

Pl. CXVI, fig. 3, depicts a variety in which the discal spots are very strongly developed on a purply colour in the f.-w. and only a slight development of the postdiscal series in the h.-w.

Pl. CXVI, fig. 1, shows an interesting variation very near the form *allidinis*. This has the fore-wing postdiscal spots whitish, strongly developed discal spots, on a purplish ground, while in addition to the postdiscal purply-blue spots on the hind-wing there is a series of discal spots. There is also a purply spot in the f.-w. cell.

Pl. CXIV, fig. 2 is typical of a few examples which occur in bred families. The general ground colour is a strong purply-blue-black, with practically all the fore and hind-wing spots very ill defined.

Underside: General tone of the ground colour similar to *etheocles* but rather browner, less distinctly black lined, and lacking the pale areas, due to the generally darker upper surface.

MALE FORM *LUTACEA*. Pl. CXVII, figs. 1-4; CXVIII, figs. 1 and 2.

Expanse 80-88 mm. Ground colour purply-black. Wings not very falcate. There is a slight tinge of greenish at the base of the f.-w. and over the h.-w. F.-w. with a spot in the cell; one midway between this and the white postdiscal sub-costal spot. The outer margin of the wing is slightly glaucous, more particularly toward the hind-angle.

H.-w. with a very marked red admarginal border, extending from the upper angle to above the lower tail; posteriorly the border is olive. The sub-marginal series of spots is very conspicuously white, linear marks edged black distally and with a centro-distal blue dot.

Variants: From the same family one obtains individuals which have quite well-marked blue-grey marginal spots to the f.-w. though non-coalescent; with only one spot subcostal beyond the cell; and having in the h.-w. a series of greenish lunules internal to the sub-marginal white linear marks, and the admarginal border mostly greenish with a very little red centrally.

Underside: The general ground colour is a rich brownish-clay; with strongly marked sheeny areas between the discal and postdiscal well marked black lines; and with strongly brown sub-marginal brown spots double and darker at the hind angle. The h.-w. red postdiscal series of lunules is marked and of a strong colour and is accentuated by dark-brown inner border beyond the olive. The black lines on the h.-w. are however not very conspicuous. Pl. CXXI, fig. 1.

FEMALE FORM *CEDREATIS*. Pl. CXIX, figs. 1-4, and frontispiece, fig. 3.

Expanse 80-88 mm.

Basal area of forewing tawny olive; apical half brown-black with two conspicuous white postdiscal spots in 5 and 6, and a curved bar of whitish spots extending from hind-margin in 1a, where slightly obsolete, through 1b, thence obliquely through 2, basal in 3 and 4, and extending to the upper part of the apex of the cell. This bar is sometimes tinged with ochreous, particularly subcostally. H.-w.: Greater part tawny olive, rather paler than the forewing; marginal band black carrying a conspicuous series of white linear marks, double at the anal angle and slightly suffused with lilac. The admarginal border is reddish-orange to the base of the upper tail, slightly more olive to the under tail and olive along the hind angle.

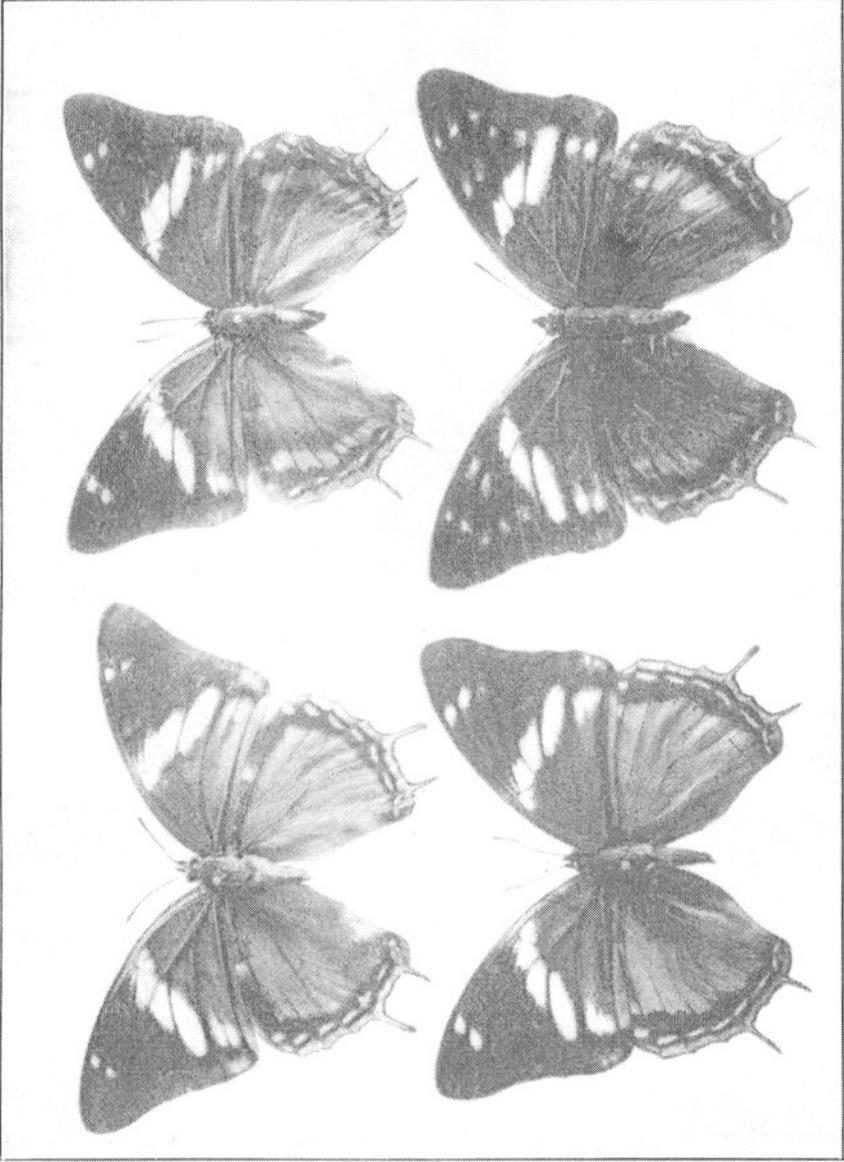
Variants: Pl. CXIX, fig. 1, depicts a variation in which there is a pale spot in the discal area at the costa and an indication of spots in 5.

Pl. CXIX, fig. 2, shows a form in which the forewing tawny olive is darker than usual; the costal area of the h.-w. is darker olive-tawny and this dark colour extends down through the distal side of the disc producing a distinct pale tawny-olive postdiscal row of contiguous spots.

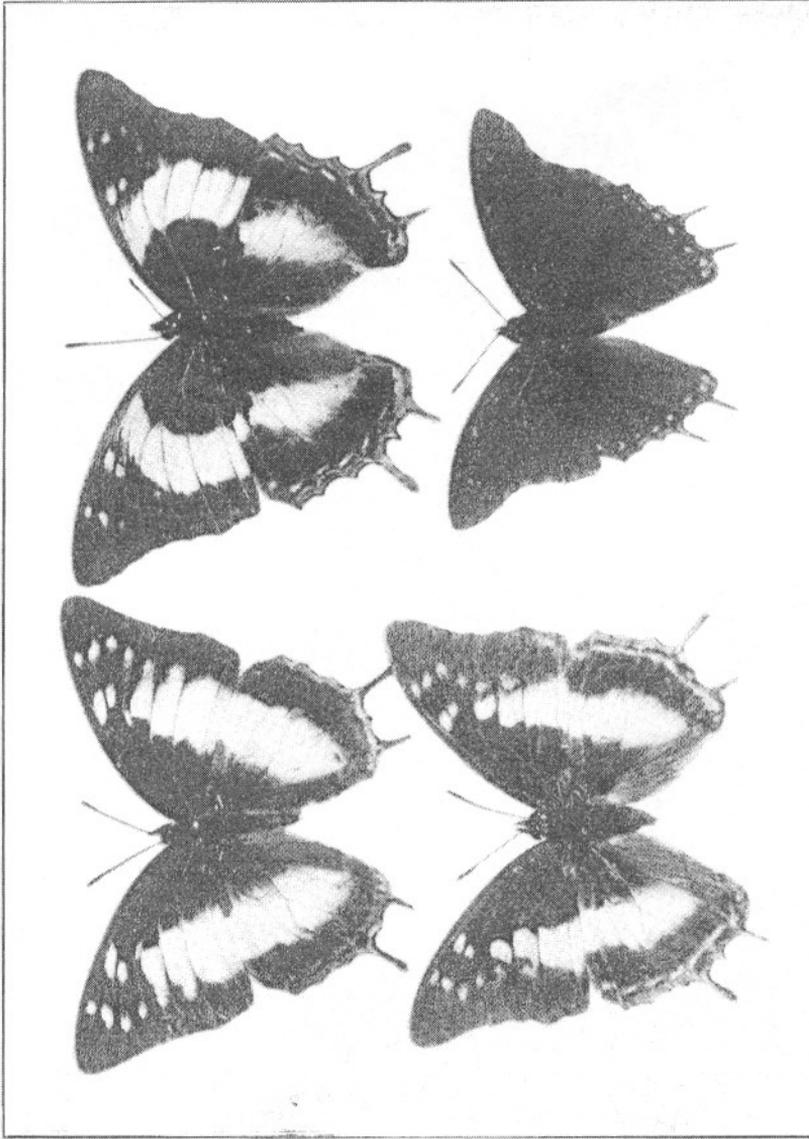
FEMALE FORM *PROTOCEDREATIS*. Pl. CXIX, fig. 4 & Frontispiece.

This is a form in which both the fore and hind-wing basal areas are brown tawny-olive, darkest in the f.-w. cell and sub-costal area of h.-w. The sub-apical black area of the forewing is traversed by three white spots set transversely and continued down by two post-discal spots to the f.-w. bar. There are in addition two discal white spots sub-basal in 5 and 6; and sometimes two whitish spots at the hind angle. A marked postdiscal series of pale golden-olive spots

PLATE CXIX.



*Charaxes ethooides*.  
Figs. 1 and 2, variations in female form *CEDREATIS*. Fig. 3, a transition to  
*PROTOCEDREATIS*. Fig. 4, a full *PROTOCEDREATIS*.



*Charaxes etheocles*.  
Figs. 1 and 2 show variations in the coast form of female *ETHEOCLES*. Fig. 3, female f. ROSAE.  
Fig. 4, a male with silvery underside taken along with these females.

PLATE CXXI.



Fig. 1, underside male *f. latacea*; fig. 2, male *f. cythia*; fig. 3, male *f. levis*; fig. 4, male *f. NOV. SUBARGENTEA*.  
*Charaxes ethioides*.

traverses the hind-wing from just above the anal angle, to end as a whitish spot sub-costal in 7.

Underside: Somewhat as in the males, but with less strongly marked black lines and with the whitish areas of above indicated by pale areas below.

MALE FORM *SUBARGENTEA* g. NOV. Pl. CXXI, fig. 4 (underside).  
Pl. CXX, fig. 4.

Fore-wings very falcate; glaucous marginal spots small and not very distinct. Sub-costal spots: one in cell, one sub-basal in 6, two postdiscal. Ground colour blue-black with slight green tinge. H.-w.: Ground colour as fore, but with more greenish reflections; postdiscal greenish marks hardly indicated; sub-marginal row of bluish-white spots small; admarginal border reddish-olive above upper tail, greenish to anal angle.

Underside: Ground colour silvery white with usual black lines well marked; postdiscal zone of fore and hind-wing brownish, the h.-w. carrying a conspicuous series of greyish-green lunules, reddish distally and margined with black proximally; sub-marginal spots whitish-lilac, blue centred. Red on admargin very narrow.

FEMALES TAKEN IN THE AREA OF ABOVE MALE, BUT NOT BRED WITH IT:  
FEMALE FORM ? *ETHEOCLES*.

Expanse 80-86 mm. Pl. CXX, figs. 1 and 2.

F.-w.: Ground colour brown-black with a strong purple sheen to base of wing. Alar bar in 1a-3 wide, with discal and postdiscal spots coalescing; discal spots at base 4, and sub-basal in 5 and 6; postdiscal spots 4-7. All spots white, with a slight bluish tinge in 1a and 1b.

H.-w.: Ground colour as f.-w., discal white bar broad and extending from costa to above anal angle. Sub-marginal row of pale spots indistinct; admarginal border red above upper tails olive to angle.

Underside: Silvery white as in the male we associate with it; with all black marks, with the exception of those at base of f.-w. not well defined; with a marked brownish bar internal to the pale discal zone of above.

Variant: (a) Similar in general pattern to the above, but with the h.-w. discal and postdiscal spots discreet from 3 onwards. Spot in cell of f.-w. may or may not be present. Pl. CXX, fig. 2.

(b) A var. in which discal and postdiscal spots all coalesce from costa to h.-margin.

FEMALE FORM *ROSÆ*.

Expanse 84-86 mm. Pl. CXX, fig. 3.

General ground colour brown-black with purple tinge. F.-w. with a curved white bar extending from the hind-margin to the costa;

two discal spots sub-basal in 5 and 6; postdiscal spots in 4-8, upper ones white. H.-w.: Ground colour as f.-w., discal white bar wide at mid-point but tapering towards the costa, strongly suffused with purple on the outer margin; two postdiscal spots in 4 and 5. Sub-marginal row of whitish linear spots, accentuated by black distally. Admarginal border red above upper tails; green to anal angle where ornamented with two violet spots.

Underside as in the form *etheocles* above, but pale area representing the white bar above, very restricted, and the series of lunules distal to this, mostly grey-green with brown distal spots not conspicuous; admarginal border red above upper tails, broadly green below this to anal angle, and ornamented with strong lilac spots, black distally.

MALE FORM *CHANLERI-PICTA*. (An unsatisfactory determination).

Expanse, 70-76 mm. Ground colour brown-black with a distinct olive tinge to the basal angle of f.-w. Marginal spots discreet and of a grey-green, and small. Sub-apical postdiscal spots (two) large and white followed by three indistinct ones. Discal spots sub-basal in 5-6 large and greenish-white; one spot in cell. H.-w.: Ground colour as f.-w., sub-marginal spots small and greenish-white, anal ones with lilac outwardly; admarginal border red from outer tail to 4-6, green to anal angle.

Underside: Very much as in *picta*, but f.-w. black marks bolder; h.-w. admarginal border wider; the green from outer tail to anal angle wider and less olive; the postdiscal series of lunules much larger and more olive green than in *picta* or *chanleri* and the red colour a maroon; lunules strongly outlined in black.

FEMALE FORM *AUBYNI*. Pl. CXVIII, fig. 3.

This female has been bred with the male described above. Expanse 84-88 mm. Ground colour brown-black with strong green tinge to basal area. A cream spot towards apex of cell; f.-w. bar composed of two series of spots discal and postdiscal, coalescing in 1a and 1b, but separated beyond; all cream coloured. H.-w. ground colour as f.-w.; discal bar cream with a strong greenish tinge at outer border. Sub-marginal spots white with blue dot centro-distally; admarginal border very wide and red above outer tail, olive green to angle.

Underside: This is very similar to that of the male; the general ground colour is rather more brownish, and the pale areas of above are reproduced clearly below. The series of lunules at the distal border of the discal bar are correspondingly wide in this sex as in the male, and appears to be a feature of importance.

MALE FORM *LENIS*. Pl. CXXI, fig. 3 (underside).

Expanse 60-64 mm. F.-w. not falcate.

General ground colour a rich purply-blue-black, more blue at the base of the f.-w. A spot towards apex of the cell; one, sometimes two discal spots sub-basal in 5 and 6, the latter larger, all spots violet-blue. Margin of wing with diffuse glaucous spots. H.-w.: Ground colour as f.-w., admarginal border red from vein 2 to 6, anal angle only, greenish; sub-marginal row of spots lilac to blue, seldom white.

Underside: Base of f.-w. clay-brown shading to purply-chestnut towards margin, basal black lines only distinct. H.-w. purply chestnut with only slightly paler discal line; black marks hardly showing; distal lunules of disc very slightly olive, red hardly visible; admarginal border red as above; anal angle only slightly olive with violet and black spots. No female is associated with this male.

An occasional variant has four discal spots to the f.-w.; the extra spots are angular and situated sub-basal in 2 and 3. The h.-w. occasionally has a series of bluish lunules internal to the sub-marginal spots.

MALE FORM nr. *CYTILA* (det. Jordan). F.-w. not falcate.

Pl. CXXI, fig. 2.

This form is strongly blue-black in ground colour, and in the f.-w. there is one spot toward the apex of the cell and one large spot sub-basal in 6, with only slight indication of a spot in 5. H.-w. blue-black; admarginal border greyish-green with only slight trace of red; sub-marginal spots greenish-white with violet tinge. Under-surface dark clayish-chocolate, slightly more chestnut at margins; black marks only developed at base of f.-w. H.-w. with red and olive lunules marked. Pl. CXXI, fig. 2.

No female has so far been associated with this male in Uganda, though the form is associated with females in Nyassaland which do not occur in our territories.

MALE FORM *CATOCHROUS* (not figured).

General ground colour black; three small blue spots along costa; marginal spots small, bluish. H.-w. with admarginal border all green, without red; sub-marginal row of spots very small and greenish-white.

Underside: Basal half of f.-w. whitish, distal half greyish-brown; h.-w. with marked sheeny lines sub-basal and discal; row of red and olive lunules pronounced.

No females are associated with this male by breeding.

*CHARAXES ETHALION*, Boisd. (not figured).

Expanse: Male, 64-76 mm. Female, 66-80 mm. Sexes unlike; female variable.

**MALE :**

General colour deep purple to blue-black. F.-w. non-falcate; immaculate or with one discal spot at costa, occasionally two post-discal. Outer margin of wing with a *distinct white fringe hardly or at all broken by the veins*, in fresh specimens. H.-w. : Ground colour as fore; sub-marginal spots very small, sometimes obsolete; admarginal border either all greenish, or olive up to outer tail, thence dark red or red-orange for two spaces.

Underside: Very dark; either a dark clay-brown or grey-brown with a strong purple flush; black lines as in *etheocles*, sometimes marked, at others rather obscured by the vinaceous flush. The ground colour is sometimes very dark greyish with a strong sheen. Admarginal border red above, olive from upper tail to anal angle. Row of lunules dark red and olive in those with the grey ground, with only slight olive in those with a more uniform brown ground.

**FEMALE :**

Form A. *ETHALION*.

Very like the *etheocles* f.f. of *etheocles* (Uganda type). Ground colour brown-black; a discal and postdiscal series of white spots, increasing in size from the costa to the hind-margin, all widely separated except sometimes those in 1b. Spots in 1a and 1b often with a bluish tinge. Mid sub-apical spot sometimes large and whiter than rest. No spot in cell.

H.-w. : Ground colour as fore, a wide whitish alar bar, often reaching the costa in the discal zone but not postdiscal; inner and outer borders suffused with blue. Sub-marginal row of whitish or bluish spots; admarginal border red above outer tail, olive below to anal angle.

Underside: Often as in the male, either a brown or grey ground colour flushed with vinaceous. Some indication below of pale marks of above.

Form B. *SWYNNERTONI*.

Somewhat like the *ethalion* form in type of pattern but all the spots, with the exception of the upper discal and two upper postdiscal suffused with purple-blue; the patch in the h.-w. whitish at centre but strongly purple-blue marginally. Very often all spots in f.-w. completely discreet, sometimes very small. Hindwing patch often entirely blue, with little or no paling centrally. No spot in cell of f.-w.

Form C. *ROSA*.

Very like the *rosae* form of *etheocles*, but smaller. F.-w. with five postdiscal spots, subapical; two discal spots in 5 and 6; a wide curved discal bar extending from the hind-border to the apex of the cell. H.-w. with a somewhat narrow white bar extending from the costa to above the anal angle, but not to the inner margin. The internal border of the bar strongly flushed with purple-blue, the blue

area sharply defined distally owing to the edge of the brown wing bar of below being visible above.

The remainder of the h.-w. is as in *swynnertoni*.

Underside: As in the *ethalion* form, i.e. brownish or dark greyish in ground colour with the pale areas of above, showing through below.

#### EARLY STAGES:

The eggs are of the typical *Charaxes* form and are hardly distinguishable from those of *etheocles*, if anything they are less cupped, and more finely fluted above. The eggs stage lasts 8-10 days. The young larva eats the shell as soon as it emerges, and then selects a base on which to spin its sleeping quarters. In the Nairobi area, *ethalion* feeds on *Scutia indica* and *Scutia buxifolia*, RHAMNACEAE, but on the coast belt the food plant is *Parkia fillicoides* and *Albizia sassa*.

In the first instar, the larva is dark olive, with black head. The body and head turn green with the first moult; no ornamentation is present until the third instar, when a lateral spiracle yellowish line appears, the line being broken and each segment oblique. The sixth segment then has a dorsal mark, angular and yellowish in colour, with small blue dots on the anterior border, apex directed backwards. This colouration is maintained, though in a brighter shade until the time of suspension before pupating. The head is very similar to the *etheocles picta* or *kirki* larvae, but the lateral facial line is not present. The pupa is unicolourous pale green, except for a slight greyish striation on the wing scutae, and brownish spiracles. The pupal stage lasts three weeks to a month, and depends on humidity and warmth for duration.

#### DISTRIBUTION AND HABITS:

The range of this insect covers most of the country occupied by *etheocles*, and because of its great similarity to this species, more particularly in the male sex, and to a lesser degree in some of its female variations, it is often confused with that species. The position is further complicated by the fact that the food plant of the larva is in many instances similar in both; further the larvae are confusingly alike. The problem of the two species is thus extremely complicated. *Ethalion* occurs at the Kenya coast belt, extends through Voi and Teita country up through the game country to Nairobi, where it is as common as *etheocles* and in lessening numbers ranges into the eastern parts of Uganda. This is the distribution as we know it.

Males come readily to bait, but females are seldom seen. One occasionally finds them at wounded trees along with other *Charaxes* or observes them ovipositing. On the whole it cannot be called a very common insect. We have noticed that males are often partial to the damp charred earth of an old charcoal burning mound. What it is that attracts them has not been ascertained.

#### MIMETIC ASSOCIATIONS:

The males of this species resemble members of the composite group of black *Charaxes* lumped together as *etheocles*. The females on the other hand, whilst resembling certain forms of females of *etheocles*, are mimetic of the models common to both; thus the *ethalion* female form is mimetic of *Ch. brutus*; the *swynnertoni* form resembles the male of *Ch. cithaeron* and *Ch. violetta*; the *rosa* form is mimetic of the female of *violetta* and female *cithaeron*. In the coast area the *swynnertoni* and *ethalion* females fly in the same district as *Ch. blanda kenyae*, both male and females which they resemble; further, they are also associated with the two sexes of *Ch. baumanni*.