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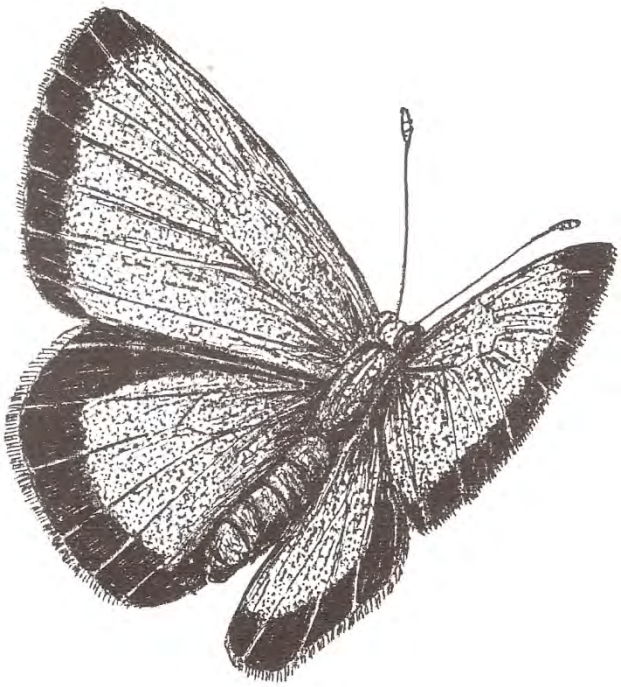

Orachrysops niobe (Lycaenidae) male
(Forewing length 20 – 21 mm)

LEPIDOPTERISTS' SOCIETY OF SOUTHERN AFRICA

The **aims** of the Lepidopterists' Society of Southern Africa are to promote the scientific study and conservation of Lepidoptera in Southern Africa; and to promote the publication of original scientific papers as well as articles of a less technical nature in the journal, *Metamorphosis,* or other publications of the Society.

Membership of the Society is open to all persons interested in the study of Lepidoptera. There is no geographical limit to membership.

There are three categories of membership:

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Membership fees are due on **1April**. Overseas rates are higher due to increased postage.

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Membership fees -	The Hon. Treasurer, P.O. Box 67317, Bryanston, 2021

All drawings, unless otherwise stated, are by S.F. Henning.

EDITORIAL

Metamorphosis is looking great! That is what I have been hearing from a wide variety of readers lately. Thanks goes to all the members who have been sending in their quality manuscripts over the past year. We received scientific papers reporting new discoveries, articles that inform us of what is happening in the world of Afrotropical Lepidoptera, articles that tell us how to do things and those aimed at entertaining us, and those that make us dream of visiting wild and exotic destinations. What more can an editorial team ask for.

Quarterly we strive to bring you just the right blend of the above types of articles, to keep you the reader stimulated and happy. To achieve this we do not necessarily publish articles in the sequence that we receive them. We may receive five descriptions of new species or three articles on Zimbabwe at the same time. Even though they may be of the best quality, would we not be doing our readership an injustice if we were to publish them all in a row? Of course there are those articles that **need**, for various reasons, to be published in the following issue. Authors should state clearly, and motivate their case, if they wish to have their articles published in the following issue.

Our "manuscript-editing machine" is now well-oiled and once a manuscript is received "it" has the necessary support system to make the transition to published article as smooth as possible. We believe that our system is unique in that it supports any prospective author in getting his or her article published regardless of his or her particular level of expertise. You really have no excuse. Send us your manuscript today, or else we may just publish those long and boring lists of geometrid moths that I have.

Our scientific editor, Mark Williams, is responsible for the proceedings at this years AGM in August. If you intend to present a paper at the conference please contact Mark at (012) 529-8053.

In this issue:

- We bring you up to date with the latest research on the endangered Brenton Blue (*Orachrysops niobe*).
- You will be brought one step closer towards the unravelling of the *Thestor* mystery.
- A long known *Aloeides* finally gets a name.
- A brand new *Dingana* is described, together with its early stages and some unique strategies it has probably evolved to survive.
- You will view for the first time certain butterfly larvae and pupae from Tanzania.
- We bring inside information on collecting in Côte D'ivoire (Ivory Coast).
- You will learn to heed warnings about lone mountain trips.
- Get to know the plight of *Poecilmitis lyncurium*.

and much more. Enjoy.

Hermann S Staude

COMMENT BY THE PRESIDENT

This year has got off to a great start for the Lepidopterists' Society. First of all there was a photography workshop at the Johannesburg College of Education, presented by Steve Woodhall. This was probably the most interesting and informative workshop that I have attended. We covered everything from making our own backgrounds using air brushes, to actually photographing larvae, pupae and adults in natural surroundings.

The Society has also been deeply involved in the preparation and staging of the "Yebo Gogga Show" held from the 19th to 25th February 1996 at the Johannesburg Zoo. The exhibition was staged jointly by the Lepidopterists' Society and the Zoology Department of the University of the Witwatersrand, with additional displays by the Spider Club and others. The whole aim of the project was to educate the public and try to inform them of the importance, interest and beauty of insects. Numerous school groups were conducted around the exhibition during the week. The general public was attracted during the weekend with additional attractions like an insect snack bar (mopani worms, termites and locusts being some of the insects on the menu). On behalf of the Society I would like to thank in particular my brother Graham and Lindsay Durham for their hard work in planning and organising the exibition, Peter Roos for helping to organise, and keeping an eye on, the stand during the week and looking after the live butterfly display. Thanks are also due to Nonah, André,Charl & Pierre Du Toit; Peter & Matthew Ward; Bennie & Andre Coetzer; Hermann Staude; John Joannou; Fergus Stewart, Keith & Johannah Roos; Mark Williams; Bill Steele; Dennis & Sheila Crocker; Martin Krüger and Rolf Oberprieler for adding to and help with the exibition.

Nominations for the next Council Election have also been received. As there were only six nominations, there will be no need for a ballot and they will make up the next Council of the Society. The new council who will run the affairs of the Society will be Graham Henning, Stephen Henning, Rolf Oberprieler, Hermann Staude, Bill Steele and Mark Williams. A ballot form will be sent out to members for the election of President, Secretary and Treasurer from the above councillors. The result of this ballot will be announced at the AGM in August 1996

The current Treasurer, Steve Woodhall, has not stood for renomination and I would like to thank him on behalf of the Society for his contribution over the past few years. He has put the financial position of the Society on a sound footing and he will be sorely missed. I hope when the pressure of work allows that he will again make himself available to serve on the Council.

Stephen Henning

REPORT ON RESEARCH FINDINGS CONCERNING THE LIFE HISTORY AND ECOLOGY OF THE BRENTON BLUE, *ORACHRYSOPS NIOBE* (TRIMEN) (LEPIDOPTERA: LYCAENIDAE)

By M. C. Williams
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Introduction

Orachrysops niobe was discovered in 1858, and described in 1862, by Roland Trimen, from three specimens taken by him at Knysna. The butterfly was not seen again for 119 years, when Jonathan Ball found a colony of the insect at Natures Valley, 60 km east of Knysna, in 1977. The colony at Natures Valley subsequently became extinct, but a new locality was discovered by Ernest Pringle at Brenton, near Knysna, in 1991.

This colony, the only population of the butterfly known at present, is threatened by housing development, and attempts to save it are being made. At the request of those involved in trying to preserve this locality, particularly David Edge, and in my capacity as a recognised expert on ant associated (myrmecophilous) lycaenid butterflies, I was asked to investigate this population of *O. niobe* with a view to elucidating some aspects of its biology. My brief was to establish exactly where the butterfly is breeding, the identity of the larval host plant, and the identity of the associated host ant. In addition to this the development and morphology of the early stages (egg, larva and pupa) required investigation. The research reported herein was carried out at the Brenton locality from the 4th to the 9th November, 1995. Martin Krüger, curator of Lepidoptera at the Transvaal Museum, and David Edge had been working at the Brenton locality for about 10 days prior to my arrival and had established more or less where the insect was flying. They had also tentatively identified the likely larval host plant and host ant.

Observations made

Male Brenton Blue butterflies were easily found because they were patrolling a metre wide path that had been cleared halfway up the hillside in order to place pegs demarcating property boundaries. The most likely areas, adjacent to where the males were flying, were worked in an attempt to locate ovipositing females (females showing egg laying behaviours). Females were found in areas within 20 to 75 m from the patrolling males. Females, as David Edge and Martin Krüger had surmised, were found to lay their eggs on a species of *Indigofera*, tentatively identified as *Indigofera porrecta* Eckl. & Zeyh. (Fabaceae).

The plant is a small, prostrate, leguminous herb with trifoliate leaves, each leaflet being 5 to 8 mm long. The plant bears individual, pinkish red flowers, about 10 mm in diameter. The larval host plant grows mainly in semi shade, at the base of bracken fern plants (*Pteridium aquilinum*).

The main breeding grounds of the butterfly appeared to include only about half a hectare of relatively steep bracken covered hillside, with sparsely scattered, small

trees. The host plant was found abundantly beneath the fairly dense cover of half to one metre high bracken, together with other small herbs and grasses.

Female butterflies searching for suitable oviposition sites flew just over the top of the stands of bracken, fluttering downwards among the fronds until individual plants of *Indigofera* were located. The plants were identified by females by means of both antennal palpation and "drumming" movements of the front pair of legs. Ants were rarely seen on the foodplants and their presence did not appear to constitute a necessary oviposition cue.

Having satisfactorily identified the plant as the correct one, females walked over the plant, curving the abdomen underneath a leaf, and depositing a single egg at a time. Frequently females would crawl over a particular plant and lay further eggs at distances varying from a few to 20 cm from the first egg. The largest number of eggs laid on a single plant was six but usually two or three eggs were laid at a time. Occasionally females alighted on, and investigated, a small-leaved species of *Oxalis* (Fabaceae), and on one occasion a species of *Hypericum* (Clusiaceae) was inspected. No eggs were seen to be laid on these plants. Of the 30 eggs that were seen to be deposited on *Indigofera* plants, 28 were laid on the underside of a leaflet, the remaining two were laid on the upper surface of a leaflet.

Unlike the closely related butterfly genus *Lepidochrysops*, in which eggs are almost invariably placed among the flower buds of the known host plants, *O. niobe* females were not observed to oviposit on the flowers of the larval host plant, even though they often alighted on them and fed on the nectar.

Following oviposition on an individual plant, females often rested for several to 15 minutes on a nearby piece of vegetation, or they fed from flowers. The longer rest intervals followed oviposition of three or more eggs on a particular plant. Resting perches were from a few centimetres to half a metre above the ground, in full sunshine. Initially the wings were held closed but were partially opened and oriented towards the sun just before take-off. Even though the butterflies do not possess tails on their hindwing margins, the characteristic vertical movement of the hindwings in opposite directions, so typical of lycaenid butterflies, was often observed in resting females. One female that was followed continuously for 45 minutes laid 10 eggs during the period of observation.

Both males and females were observed feeding from a variety of flowers. These included flowers with yellow and mauve coloured petals, as well as the pinkish-red flowers of the larval host plant.

Sexual appetitive behaviours in the males were not specifically studied. Casual observations showed that males did not choose specific territories to defend against other males, nor did they show typical perching behaviour. Instead males appeared to patrol rather rapidly along the cleared path in the habitat, or they flew over the tops of the bracken plants in a random manner. A female captured by Martin Krüger, which seemed to be unmated judging by her behaviour (she showed no inclination to feed from flowers or search for oviposition sites), was observed for an hour and a half. This female remained perched motionless on low vegetation for the whole of this time. A patrolling male that flew over her caused her to rapidly flick open her wings. The male appeared to have not detected this movement on

the part of the female, but on the third occasion that he passed overhead he responded to the wing-flick of the female by turning around abruptly, and landed on the vegetation a few centimetres from the perched female. Courtship took less than a minute and was characterised by rapid fluttering motions of the wings in both sexes, with the wings held in a nearly horizontal position. The male manoeuvred himself below the female, taking up a position that allowed him to copulate with her. The paired butterflies immediately became motionless and faced in opposite directions, with the hindwings of the male placed between those of the female. The pair remained *in copula* for just over an hour and a quarter, before separating.

Although individual butterflies were not tagged during this study a rough estimate could be made of the numbers present in the colony on any particular day. Probably no more than a dozen specimens, six of either sex, were present, judging by the activities of the more conspicuous males.

When freshly laid the eggs are pale blue. They are doughnut-shaped, about 0.6 mm in diameter and 0.3 mm high. The surface is sculptured in a ribbed pattern. It is intended to study further the development and morphology of the egg, various larval instars and the pupa, as these become available.

Work done by myself and others on species of *Orachrysops* other than *O. niobe* has shown that the larvae feed on the leaves of the host plant (i.e. are phytophagous) for the first three larval instars. From personal observations on *O. mijburghi*, in the Free State, the third instar larvae can remain alive for up to 28 days in this instar, but appear to feed only intermittently, and do not grow in length by more than a millimetre during this period (from 3 to 4 mm), before finally dying. It is presumed that, like species of the closely related genus *Lepidochrysops*, *Orachrysops,* larvae at this stage are found in the habitat by foraging ants and carried down by the ants into their subterranean nests.

A fairly thorough search for likely host-ant species was made in the area in which females were seen laying eggs. The only suitable ant, in terms of the size of ant required to carry third instar larvae (estimated to be 3 to 4 mm in length), was a species of sugar ant (*Camponotus* species). The particular species of sugar ant was very common in the area and was diurnal. Workers were very variable in size (from 4 to 10 mm in length), and there did not appear to be a soldier caste. A few species of *Camponotus* ants are known to be the host-ant for a number of *Lepidochrysops* species. I am familiar with the ant species so far associated with *Lepidochrysops* and am certain that the species of *Camponotus* at Brenton is not one of them. Hamish Robertson, at the South African Museum in Cape Town, will be asked if he can assist in identifying them. The ants at the study site made their nests in sandy soil, with one or more entrance holes, a few millimetres in diameter. Several colonies of ant were dug up, in an attempt to locate ant-brood, and so be able to establish a colony of the ants in a formicarium. This was achieved when a particular ant nest, containing a large number of ant pupae in silk cocoons, was found. About 100 worker ants and 60 cocoons were placed in a formicarium brought from Pretoria for the purpose. The ants soon settled into their new abode.

Further work, to be carried out in Knysna by David Edge, will consist in offering third stage butterfly caterpillars to the ants in the formicarium. The purpose will be

to determine if this species of *Camponotus* is indeed the host-ant. If the ant proves to be the host-ant of the butterfly, it will become possible to study further the development and morphology of the later larval instars, and the pupa of the butterfly.

The soil over much of this habitat was greyish and finely sandy to a depth of 25 to 30 cm. Below this it was admixed with clay to form a light, black-coloured loam which was rich in humus. There appeared to be very few stones, either on or below the surface of the soil.

I would like to conclude by making a few observations concerning the habitat of this colony of the Brenton Blue, but it should be borne in mind that I am not a professional ecologist. The habitat in which this colony of *O. niobe* occurs is strikingly different from the habitats in which the other nine species of the genus *Orachrysops* are found. These nine species are found in montane grassland in the vicinity of the eastern escarpment in the northern parts of South Africa, and in coastal grassland in southern KwaZulu-Natal and the Transkei. Only the locality of *O. ariadne*, near Karkloof in the KwaZulu-Natal Midlands, bears any similarity to the habitat of *O. niobe* at Brenton. The *O. ariadne* locality is also on a south-facing slope and has stands of bracken, at the base of which a soft-leaved species of *Indigofera*, similar to the one at Brenton, grows. Like *O. niobe*, *O. ariadne* also appears to be a marginal species, with very few known localities, each harbouring only small populations of the butterfly. The Brenton locality for *O. niobe* occupies an area of about half a hectare of bracken-covered southern slope, about one km from the sea. Most of the vegetation appears to be indigenous, but there is a minor invasion of exotics, especially species of pioneers belonging to the daisy family (Asteraceae). I would strongly recommend that a competent botanist be asked to identify the exotic plants present on the site as well as be asked to make recommendations for the management of the vegetational component of the locality.

Recommendations

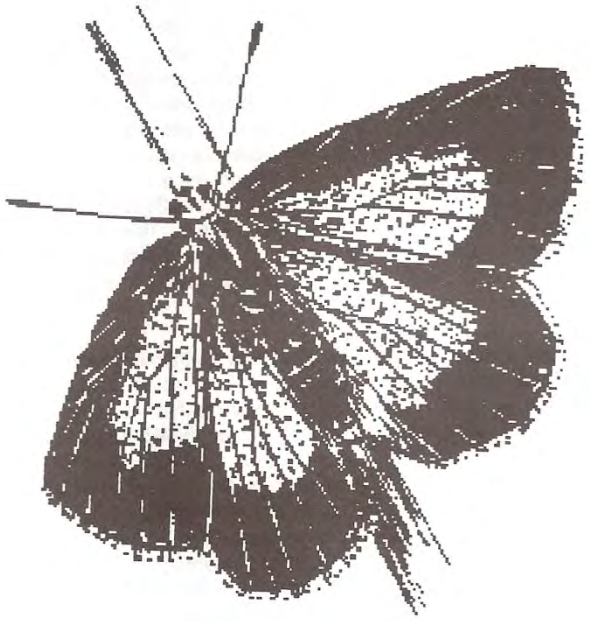
This study, albeit of short duration, has provided some solid data that allow a rational choice for the demarcated stands in Brenton Extension One that should be left undeveloped. The recommendations made below are based on certainty about the areas where females lay their eggs, and the presence of the known larval host plant. The presence of the (presumed) host-ant species was also considered.

The stands under consideration lie mainly between W K Grobler Drive to the north and Fynbosoord to the south. Oviposition by female butterflies was observed on stands 435, 436, 437, 438 and 447, thus making these five plots the most critical in terms of their conservation. Larval host plant and the (presumed) host-ant were also found on stands 442, 443, 444, 445 and 446, and these plots would also, almost certainly, provide suitable habitat for the butterfly. Stands 439 and 440 were not investigated by me, but if conserved would provide a continuous link between the stands noted above and the tract of land to the west, already earmarked as a butterfly reserve. There is little doubt that this two-plot "corridor" would ensure that the viability of the reserve would be significantly increased.

The uniqueness and exclusivity of a butterfly reserve in a developed area of such incomparable scenic beauty can, in the long run, only be of great economic and aesthetic value to the developers, property owners and residents of Brenton Extension One.

Once the life history of *O. niobe* has been more fully studied, it is intended that a paper describing the morphology and development of the early stages, be published in an appropriate scientific journal.

10 November 1995.



Orachrysops niobe female upperside

NOTES ON THE *ALOEIDES SIMPLEX* SPECIES GROUP (LEPIDOPTERA: LYCAENIDAE) WITH DESCRIPTION OF A NEW SPECIES

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Abstract: A review of the *Aloeides simplex* (Trimen) species group is given together with a description of a new species of *Aloeides* H↑bner (Lycaenidae), *A. mullini* sp.n., from Zimbabwe and notes on its distribution and behaviour.

Introduction

The *Aloeides simplex* group currently comprises seven species, two of which were undescribed when this group was characterized (Henning, 1993). Of these the species referred to as sp. 6 was subsequently described as *A. argenteus* (G.A. & S.F. Henning, 1994), while sp.7 has remained undescribed. This species is described here as *A. mullini* sp. n.. The *A. simplex* species group occurs in arid habitats on the western side of southern Africa from the Great Karoo and Namaqualand northwards through southern Namibia into southern Kaokoland, and inland across the sand dune areas through Botswana, and across the Northern Cape province to the borders of the North West province. The addition of this new species to the group from an apparently relict habitat at 2500 metres altitude in the Nyanga highlands of eastern Zimbabwe is remarkable. This species, as far as is known, only flies very early in the season, before the onset of rains. The habitat at this time of year is very arid with very little green vegetation, an interesting parallel to the habitats of the rest of the species in the group.

The species of the group and their respective distribution ranges and habitats may be summed up as follows:

A. simplex (Trimen) - Northern Cape, Botswana, north-eastern Namibia - Kalahari shrub bushveld, sand dunes.
A. tearei G.A. & S.F. Henning - Aus to Windhoek, Namibia - montane broken veld.
A. argenteus G.A. & S.F. Henning - southern Kaokoland, Namibia - arid scrubveld.
A. nollothi Tite & Dickson - Port Nolloth to Hondeklip Bay - west coast strandveld.
A. bamptoni Tite & Dickson - Little Namaqualand - Namaqualand broken veld.
A. vansoni Tite & Dickson - Great Karoo - western mountain karoo.
A. mullini sp. n. - Nyanga, eastern Zimbabwe - montane grassland.

KEY TO THE SPECIES OF THE *ALOEIDES SIMPLEX* GROUP

1. Cilia greyish-white 2
   Cilia brownish-black ..... *A. mullini*
2. Upperside dark apex and outer marginal band narrow 3
   Upperside dark apex and outer marginal band broad 4
3. Outer margin of forewing straight, hindwing underside markings small and distinct ..... *A. simplex*
   Outer margin of forewing curved, hindwing underside with markings larger and indistinct 5
4. Underside markings large and silvery-grey against a pale ochreous-brown ground colour ..... *A. argenteus*
   Underside markings brownish-grey against a blackish-brown ground colour ..... *A. tearei*
5. Underside of hindwing dark brownish-grey with indistinct markings 6
   Underside of hindwing light ochreous-brown with distinct spots ..... *A. nollothi*
6. Upperside with distinct dark apex and costa, wingshape not elongated ..... *A. vansoni*
   Upperside without distinct dark apex and costa, wingshape elongated ..... *A. bamptoni*

Aloeides mullini sp.n.
Aloeides species no. 407, Pringle, Henning & Ball, 1994:191, pl.134:407i-iii.
Figure 407i is of the holotype, figs 407ii-iii are of paratypes.

Description

Male. Forewing length: 12,0-17,2 mm, mean 15,1 mm (n=14); antenna-wing ratios: 0,48-0,50, mean 0,49 (n=14). Wings, upperside. Forewing: ground colour orange-red with narrow dark brownish-black outer marginal border and small apical patch which extends along costa as far as medial area. Cilia uniform dark brownish-black. Hindwing: orange-red with continuous, narrow, dark brownish-black costal and outer marginal band; anal fold ochreous. Underside. Forewing: orange-red, becoming ochreous towards inner margin, and with a broad dusky brown area along costa, apex and outer margin; three white-centred black spots in cell and a median series of five black spots, upper three bordered proximally with white, spots in area M_2 placed distally and that in M_1 slightly basally of the others; submarginal series of black spots largest in CuA_2, diminishing in size as they approach apex; upper four spots bordered proximally with silver-grey. Cilia dark greyish-brown. Hindwing: dusky brown with indistinct pattern of black and silvery-grey markings; three indistinct basal spots, round spot centrally in area $Sc+R_1$, indistinct irregular discoidal fascia, very irregular sinuate median series and a series of indistinct submarginal lunules. Cilia dark brown.

Female. Forewing length: 15,5-18 mm, mean 16,7 mm (n=10); antenna-wing ratio: 0,41-0,43, mean 0,42 (n=10). Wings. Similar to male but more rounded. Upperside. Forewing: orange with narrow blackish-brown outer marginal border, small apical patch as in male, continuing to middle costa. Hindwing: orange with a continuous, narrow blackish-brown costal and outer marginal band; anal fold ochreous. Cilia of both wings uniform dark brownish-black. Underside. Similar to that of male.

Material examined

Types. Holotype ♂, ZIMBABWE: Nyanga, 15.ix.1984, I. Mullin. Allotype ♀, same data but 1.ix.1985. Paratypes: 6 ♂ 1 ♀ Inyanga, 30.viii.1987, I. Bampton; 8 ♂ 5 ♀ same data but 11.ix.1986, I. Bampton; 1 ♂ same data but 1.ix.1985, I. Mullin; 1 ♂ same data but 30.ix.1984; 2 ♀ same data but 15.ix.1984; 1♀ Inyanga Downs, Nyanga, R. Pare; 3 ♂ 1 ♀ Rukotso, Nyanga North, 14.ix.1984, R. Pare. The holotype and allotype have been deposited in the Transvaal Museum, Pretoria and the paratypes are in the collections of W.H., S.F. & G.A. Henning and I. Mullin.

Remarks.

This species was discovered by I. Mullin of Harare, Zimbabwe, at Nyanga in Zimbabwe and is named after him. Its narrow borders and underside markings place it in the *A. simplex* species group (Henning, 1993). This group inhabits arid habitats, and the most northerly population, as previously known, was situated just to the south of the 19th parallel in Namibia. The discovery of *A. mullini* extends this limit as it occurs just south of the 18th parallel. It also represents the most northern species of the *Aloeides thyra* complex (Tite & Dickson, 1968) of which the *A. simplex* species group is a part.

In the male sex *Aloeides mullini* is most similar to *A. tearei* and *A. simplex* but differs from these in having the forewing apex more pointed and the distal margin slightly straighter, the cilia uniformly dark brownish-black and not chequered with white, the upperside deeper orange with a blackish-brown forewing apex extending further along costa and larger than in *A. simplex* (more like that of *A. tearei*), the hindwing with the outer marginal black border narrow but slightly broader apically than in *A. simplex* or *A. tearei* (more like *A. nollothi*), and the underside rich dusky brown, darker but otherwise similar to that of *A. tearei*.

In the female, *A. mullini* is most similar to *A. tearei* but has the forewing apex more pointed, the outer margin straighter and the cilia uniform dark brownish-black, the upperside with a deeper orange ground colour, the forewing with the apical area larger and extending further along the costal margin and the underside dusky brown, similar but richer than that of *A. tearei*.

Distribution and habits

A. mullini has only been recorded from the Nyanga area in Zimbabwe where it flies in montane grassland.

Mullin gives the following account of its habits: `It flies from late August to late September. A second brood is possible, but this is difficult to determine due to the

inaccessibility of the locality in the wet season. Males congregate around the high rocky ridges, where they establish territories on patches of bare ground and vigorously pursue intruders. Their flight is swift but they settle frequently, generally on the bare ground or small rocks. When settled they often lean over to one side, apparently to obtain maximum sunlight. On really hot, windless days the species can be very common. Both sexes feed on flowers. The females are found in the same areas but usually lower down the slopes and are more widespread, with a slower, more fluttering flight than the males. There is more than one colony in the area which is at an altitude of about 2500 metres'.

Acknowledgements
We thank Ian Mullin for allowing us to describe this species. We also acknowledge the contributions made by the late Rob Paré who, with I. Mullin and Dr.C.B. Cottrell, was involved in subsequent research on this new species.

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HENNING, G.A., 1993. Revisional notes on the genus *Aloeides* Hübner. *Metamorphosis* **4** (4):144-155.
TITE, G.E. & DICKSON, C.G.C., 1968. The *Aloeides thyra* complex (Lepidoptera: Lycaenidae). *Bulletin of the British Museum of Natural History (Entomology)* **21**(7):367-388.

Stephen Henning 1995. Drawn by Nohna du Toit.

OBSERVATIONS ON THE OVIPOSITION BEHAVIOUR AND LARVAE OF *THESTOR BASUTUS CAPENERI* DICKSON (LEPIDOPTERA: LYCAENIDAE: MILETINAE) IN SOUTH AFRICA

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and
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Abstract:

Oviposition and feeding behaviours of females, and larval behaviours, of *Thestor basutus capeneri* were studied in the field and the laboratory. Females, in the field, laid eggs singly, and very rapidly, on a variety of plants. Workers of *Anoplolepis custodiens* ants were invariably present at oviposition sites. The cue for oviposition appeared to be ant-derived rather than homopteran- or plant-derived. Females appeared not to be able to feed and were found to possess a rudimentary proboscis. Larvae, in the first three instars, fed on coccids (*Pulvinaria icyeri*) that were infesting grass. The coccids were invariably tended by workers of *A. custodiens*. Fourth stage larvae, placed in formicaria containing *A. custodiens* ants, and pieces of grass infested with coccids, were not seen to feed on either ant brood or coccids. The later larval instars of any species of *Thestor* appear to be undescribed. The taxonomic status of *T. basutus capeneri* needs to be more thoroughly investigated.

Introduction

Thestor Hübner is a genus of 28 species of butterflies, and is endemic to southern Africa (Henning & Henning 1993; Pringle *et al*. 1994). Very little information pertaining to the life histories of species of *Thestor* has been published (summarised in Clark & Dickson 1971). The first published observations on the life history of *T. basutus basutus* (Wallengren) comprise a short note on oviposition behaviour (Dickson 1954). Dickson noted that females, in a colony of the butterfly near Inchanga in Kwazulu-Natal, laid eggs singly, and generally rapidly, on a herbaceous plant, *Vernonia natalensis* Sch. Bip. (Asteraceae). Ants, of the species *Anoplolepis custodiens* Smith (Hymenoptera: Formicidae), were present on the plants on which oviposition occurred. Six years later Clark and Dickson published a more detailed paper on the life history of *T. basutus basutus*, based on further observations made at the Inchanga locality (Clark & Dickson 1960). They reported that the larvae, from the first to the third instars, were associated with homopteran insects of the family Jassidae (now Psyllidae). A second instar larva was seen feeding on one of the immature psyllids. A fourth instar larva, and a pupa, were discovered in nests of *A. custodiens* ants under rocks but the diet of the larva, while

in the nest, was not established. These authors have described and illustrated the egg, the first to fourth larval instars, and the pupa (Clark & Dickson 1960, 1971).

This paper reports on observations of *Thestor basutus capeneri* concerning oviposition behaviour and the absence of feeding in adult females, and on behaviours of the larvae.

Material and Methods

Field observations on a colony of *T. basutus capeneri* were made at Haakdoringboom (25.35S; 28.07E), about 15 km north-west of Pretoria, Gauteng Province, during the months of December and January, from 1990 to 1992. Additional studies were conducted on another colony of *T. b. capeneri* at the foot of Ysterberg (24.06S; 29.12E), between Potgietersrus and Pietersburg, Northern Transvaal Province, in November 1993. Behaviours of both sexes were observed; particular attention was paid to the oviposition behaviour of females. Several females, originating from both study sites, were captured, and were kept in small plastic containers in an attempt to obtain eggs from them.

Observations on the behaviours shown by the larvae in the first three instars were made in the field and on larvae in captivity. Captive larvae were housed in plastic boxes, together with a few workers of *A. custodiens*, and coccid-infested blades of grass. The behaviour of early fourth instar larvae was studied in formicaria in which colonies of *A. custodiens* adults, together with their brood, were housed. The type of formicarium used, and the care of the ants, have been described elsewhere (Woodhall *et al*. 1992). Early fourth instar larvae, together with coccids infesting pieces of grass, were placed in the arena of the formicarium and were observed at random intervals during the day and night.

Results

At the Haakdoringboom locality the small colony of *T. b. capeneri* was confined to an area of grassland, about 2 hectares in extent. The Ysterberg colony was much larger, occurring in an area of thornveld (grassland/savanna mixture) about 5 hectares in extent. The dominant tree in the latter locality was *Acacia karroo* Hayne. At both study sites there were extensive patches of bare, red earth, associated with many colonies of *A. custodiens* ants.

Male butterflies established and defended territories. Within their territories they showed a perching behaviour, using either a grass stem or the ground as perch sites. Females flew in a random manner, within the boundaries of the colony, among clumps of grass. They spent much of the time resting, either on blades of grass, or on the ground.

When searching for oviposition sites females had a slow, fluttering flight, from 50 to 300 mm above the ground. Clumps of grass were sequentially inspected for the presence of suitable oviposition sites. When the grass-clump was large, females fluttered around it and used their wings to disturb overhanging grass blades. The movement of the grass blades appeared to cause small workers of *A. custodiens*, if these were present at the base of the clump, to run up the grass blades. Females appeared to respond to this behaviour of the ants by flying into

the grass-clump, among the leaves, on which a single egg was then laid very rapidly. The ants often attacked the fluttering females as they attempted to lay their eggs, and oviposition was sometimes achieved while females were in flight. Immediately after having deposited an egg females flew out of the grass-clump and resumed their search at nearby grass-clumps, or rested for a variable length of time.

Eggs were laid only in grass-clumps inhabited by *A. custodiens* ants. On a few occasions females at the Ysterberg locality were also observed ovipositing on dicotyledonous plants, such as *Becium grandiflorum* Pichi-Serm. (Lamiaceae) and *Vigna* sp. (Fabaceae). Numerous workers of *A. custodiens* were present on these plants, harvesting nectar from the flowers. Closer inspection of grass-clumps, in which females had oviposited, revealed colonies of a species of grass-feeding coccid (Homoptera: Coccidae) at the base of the clumps, in both localities. The coccid colonies were invariably tended by numerous, small workers of *A. custodiens* ants. Although females often laid eggs close to the coccids this was not always the case; eggs were sometimes laid on grass blades 20 cm, or more, from the nearest coccids. Specimens of the coccids were identified as *Pulvinaria iceryi* (Signoret) by I.M. Millar of the Plant Protection Research Institute, Pretoria (National Insect Collection, Accession No. HC6333). Colonies of coccids or other Homoptera were not found on the dicotylenous plants on which females occasionally laid eggs.

Captive females laid eggs readily on the surfaces of the plastic containers in which they were kept, despite the absence of plant material, ants or coccids. Attempts to feed captive females on a honey-water solution failed because the proboscis was found to be rudimentary and was apparently non-functional. Despite the fact that females did not feed, some lived for as long as two weeks following capture.

In the first, second and third instars the larvae were found to be carnivorous, feeding on the coccids, including the white, popcorn-like egg packets laid by the female coccids. Larvae, in the first three instars, were found in the field living among the colonies of coccids on the grass blades and appeared to be completely ignored by the *A. custodiens* ants that were tending the coccids. By the end of the third instar the larvae were grass-green in colour and about six mm in length. Following the third moult the early fourth instar larvae were dark brown in colour. In captivity, fourth instar larvae refused to feed on the coccids on which they had fed in the previous three instars, and wandered off the grass stems. Independent observations by both authors showed that fourth stage larvae, when placed in the arena of a formicarium containing a colony of *A. custodiens*, appeared to seek the entrance to the ant nest. On finding the entrance, larvae crawled into the nest unhindered, and were ignored by the ants. Once inside the nest larvae appeared to elicit only cursory examinations from the ants, even when they were resting in close proximity to the ant brood in the nest chamber. Larvae were observed either wandering around the arena, or resting inside the ants' nest. There was no apparent temporal pattern regarding the location of the larvae; larvae were found both inside and outside the nest at different times of the day and night. We were

unable to ascertain the diet of the fourth stage larvae. They were not observed to feed on either ant brood inside the nest, or on coccids placed in the arena, and died within a few days of being introduced into the formicarium.

Discussion

A number of intriguing questions regarding the life history of *Thestor basutus* remain to be answered. What acts as the oviposition cue for females? From field observations that have been made by one of us (MCW) the plant itself appears to be unimportant. Eggs were seen to be laid on plants belonging to three families (Poaceae, Labiateae and Fabaceae) in the present study, and have also been recorded as being laid on a plant species belonging to the family Asteraceae (Dickson 1954). Since the larvae are carnivorous, at least in their early instars, this is not unexpected. Homopteran-derived oviposition cues would, on the other hand, be expected to be important but in the present study eggs were often laid some distance from the grass-feeding coccids and were also laid on plants on which no Homoptera could be found. Dickson (1953) observed females of *Thestor dicksoni* Riley ovipositing on dead plant material, near to the entrance holes of nests of *A. custodiens* ants, but did not mention the presence of homopterans. In the present study eggs were invariably laid on plants on which workers of *A. custodiens* were present, irrespective of whether homopterans were infesting these plants or not. Additionally there seemed to be a direct interaction between ovipositing females and the ants, the latter often attacking the females as they tried to oviposit. It would therefore appear that, under natural conditions, the presence of *A. custodiens* ants acts as the essential oviposition cue for females of *T. basutus* (and perhaps other species of *Thestor*) and that the species of plant, and the homopterans on which the larvae feed, are relatively unimportant. In genera of the subfamily Miletinae, other than *Thestor*, there is some evidence that oviposition cues are homopteran-derived (Cottrell 1984). If this is, in fact, the case for these genera then the ant-derived cues for oviposition in *Thestor* suggest an evolutionary advance from the homopteran-derived cues used by other genera.

Attempts to feed captive females in this study were unsuccessful because the proboscis was found to be rudimentary. Furthermore, there appear to be no substantiated field observations of adults of species of *Thestor* actually feeding. In the closely-related miletine genus *Lachnocnema* adults are known to imbibe honeydew from homopteran insects (Pringle *et al.* 1994). This type of feeding behaviour has not been observed in any species of *Thestor*. A captured female *T. basutus capeneri* survived for two weeks, without feeding, in the present study. It may be that if the diet of the larvae is rich in both protein and fat it is able to provide the imago with sufficient nutrients to make adult feeding unnecessary.

The nature of the diet of the later larval instar(s) is unknown. In our laboratory set-up, early fourth stage larvae did not feed on either coccids or ant brood. Further investigations are in progress in an attempt to answer this question.

Clark & Dickson (1960, 1971) described only four larval instars for *T. basutus basutus* and regarded the fourth instar to be the final one. At the beginning of the fourth instar the larva measures only about six mm in length. Judging by the

lengths attained by the final instar larvae of lycaenids of comparable size the larva of *T. basutus*, before pupation, would be expected to reach at least 20 mm in order to give rise to a full-sized imago. This would represent an increase in length of over 230% during the fourth instar (6 to 20 mm). In the preceding three instars the length of the larva increases by less than 100% between each moult (Williams, unpublished data). It is very likely, therefore, that there are normally at least five, perhaps even six, larval instars in all. If this is the case then all the early stages, for any species of *Thestor*, have not yet been described.

In earlier investigations of the life history (Clark & Dickson 1960), it was observed that females of *Thestor basutus basutus* oviposited on *Vernonia natalensis* and that larvae, in their early instars, preyed on Psyllidae. In the present study females of *T. basutus capeneri* were found to lay their eggs mainly on grasses, and the larvae fed on Coccidae. These differences may merely reflect ecological versatility within the species, or they may be an indication that the two subspecies of *T. basutus* are, in fact, distinct species. Comparative studies are necessary in order to settle this taxonomic problem.

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SOME EARLY STAGES OF BUTTERFLIES FROM WESTERN TANZANIA

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Abstract: Short behavioral notes on the early stages and host plants used by the butterflies: *Belenois rubrosignata kongwana, Appias sylvia nyasana, Euphaedra medon, Eupheadra phosphor, Athysanota ornata vestalis, Iolaus (Epamera) fontainei* and *Iolaus (Etesiolaus) catori cottoni,* from the Kasye forest (05.40.55S 29.55.34E), Tanzania, are reported for the first time. The larva and pupa of some of them are illustrated in colour. Host plant families used by *Iolaus* spp. are discussed.

Introduction

Kasye is a small (less than 20 km^2), mainly riverine forest on Ubendian Sandstone, just to the north of the Mahale Mountains National Park, and about 1 hour's walk inland from Lake Tanganyika. Altitude 850 - 1 000m. GPS location 05.40.55 S 29.55.34 E.

Rainfall in this part of Tanzania drains westward into Lake Tanganyika, and thence into the Congo (Zaire) River and the Atlantic ocean. Kasye therefore represents one of the easternmost outposts of the Central African Forest Block, separated from it by the width of the Lake, about 70km. The butterfly fauna has been well documented (Kielland, 1978, 1990). Much of it is of West African origin, and does not occur elsewhere in Tanzania.

In March 1994 we visited Kasye in company with two scientists from the Royal Botanic Gardens, Kew (S. Bidgood and K. Vollessen), and a botanist from the University of Dar es Salaam (F. Mmbaga). The forest flora had never been collected, and indications were that it differed considerably from that of the Mahale Mountains, which are crystalline formations.

The objectives of the 'butterfly' part of the expedition were to discover and record the life histories of as many of the West African species as possible, and in particular to sort out the complex of 'black' *Charaxes* species in the area. The botanists were of great assistance in giving on-the-spot identifications of host plants. As always on these occasions we were limited for time, and in fact were able to spend just under two weeks in the forest.

Results

The following host plants were established:

Butterfly	Host plant
Belenois rubrosignata kongwana	*Ritchiea* sp. (Capparaceae)
Appias sylvia nyasana	*Ritchiea* sp. (Capparaceae)
Euphaedra medon neustetteri	*Paullinia pinnata* (Sapindaceae)
Eupheadra phosphor	*Poliscias nr fulva* (Araliaceae)
Athysanota ornata vestalis	*Costus dubius* (Zingiberaceae)
Iolaus (Epamera) fontainei	*Tapinanthus erectotruncatus* (Loranthaceae)
Iolaus (Etesiolaus) catori cottoni	*Manilkara* sp. (Sapotaceae)

Females of the 'black' *Charaxes* were persuaded to lay on *Albizia grandibracteata*, but the larvae would not switch satisfactorily to alternatives after we left the forest.

Notes:

1. *Euphaedra medon neustetteri.* Larvae were found in the course of random searching of likely host plants. Subsequently females have been observed laying on *Paullinia pinnata* in Minziro forest, Kagera Region. The adults show slight differences between the two populations (Kielland, *pers. comm*.) Larva Plate 7 fig. 1, pupa Plate 7 fig. 2.

2. *Euphaedra phosphor*. The host plant could not be identified with certainty as no flowering material could be found. Larvae were on the undersides of the leaves of vigorous saplings. Larva Plate 7 fig. 3.

3. *Athysanota ornata vestalis.* As suspected by Kielland this species feeds on the inflorescence of *Costus dubius.* The inflorescence is protected by a coating of mucus, and the butterfly has some difficulty in finding a dry site for oviposition. The larva feeds on the expanding flower buds, and emerges to pupate. Pupa Plate 7 fig. 4.

4. *Iolaus (Epamera) fontainei.* The most common of the Iolaini at Kasye. The host plants was found growing abundantly on lemon trees in Kasye village on the Lake shore, but in the forest it was high in the canopy. Larva fig. 5, pupa fig. 6, and *Tapinanthus erectotruncatus* is also used by *Iolaus* (*Epamera) frater frater* (larva Plate 8 fig. 7, pupa Plate 8 fig. 8).

5. *Iolaus* (*Etesiolaus) catori cottoni.* Larva and pupa (Plate 8 figs 9,10) are all typical of *Epamera* although found on *Manilkara* sp. (Sapotaceae).

Discussion

The major surprise of the expedition was Ivan Bampton's discovery of the host plant of *E. cottoni.* As far as we know, this is the only certain record of any species of *Iolaus* (*sens. lat*.) outside of the related families of Loranthaceae, Viscaceae and Olacaceae. The exact identity of the host plant has not been established, as no flowering material has been found, but again the life history has been confirmed at Minziro, where *I. (E.) cottoni* has also been found on

Pachystela brevipes (Sapotaceae). In fact, *Pachystela* sp. would seem to be the preferred host plant of this butterfly. Larvae will walk off *Manilkara* sp and onto *Pachystela* sp. but may refuse to change back. The parchment colour of the larva simulates damaged *Pachystela* leaves, but is a poor match for *Manilkara.*

Fiedler (1991) in his comprehensive review of lycaenid host plant preferences comments, with regard to those of Iolaini, that all 64 species for which he had information live on Loranthaceae or Olacaceae. He notes single deviating records, e.g. *Tajuria diaeus* on Verbenaceae, but concludes that these most likely refer to the Loranthaceae host plants. In view of our finding, these records may need to be re-examined.

Acknowledgements

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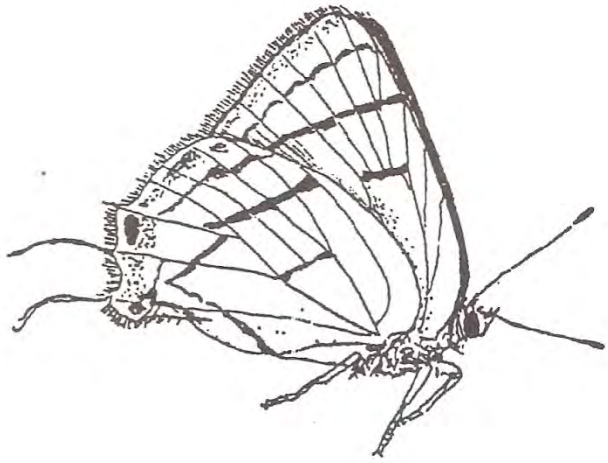

Iolaus lulua male underside

NOTES ON THE *DINGANA DINGANA* SPECIES GROUP (LEPIDOPTERA: NYMPHALIDAE: SATYRINAE), WITH DESCRIPTION OF A NEW SPECIES

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Abstract: A new species, *Dingana jerinae* sp.n. from the Northern Province, South Africa is described in the *Dingana dingana* species group (Nymphalidae: Satyrinae) with notes on its behaviour and early stages.

The genus *Dingana* van Son is endemic to South Africa and consists of two species groups, both of which occur in a similar montane area along the eastern side of South Africa, the *Dingana dingana* (Trimen) group from the Wolkberg in the Northern Province to the KwaZulu-Natal midlands; and the *Dingana bowkeri* (Trimen) group from Lydenburg in Mpumalanga to the Kammanassie Mountains in the Western Cape. The former group now consists of three species, the most western of which is here newly described. The other species are shortly diagnosed to facilitate their distinction from the new species. The genus was previously reviewed by G.A. & S.F. Henning, 1984.

***Dingana dingana dingana* (Trimen)**
Leptoneura dingana Trimen, 1873. *Trans. ent. Soc. Lond.* **1873**:102.

Diagnosis
Ground colour rich brown; subapical band variable and characters often restricted to individual populations, orange red to ochreous white.
Distribution
The subspecies occurs as three disjunct populations:
1. KwaZulu-Natal midlands to high hills between Mooi River and Estcourt (1300-1600 m.).
2. Mpumalanga Drakensberg to Swaziland, Nelshoogte, Barberton, Sabie to Mariepskop, Long Tom Pass to Mount Sheba (1300-1900 m.)
3. Steenkampsberge to Dullstroom and Verlorenvallei (2000 m.).

***Dingana dingana clara* (van Son)**
Dingana dingana clara van Son, 1940. *J. ent. Soc. sth. Afr.* **3**:57.

Diagnosis
Ground colour slaty brown, subapical band distinct and white.
Distribution
This taxon was described as the subspecies north of the Olifants River, in the Wolkberg.

***Dingana alaedeus* G.A. & S.F. Henning**
Dingana alaedeus G.A. & S.F. Henning, 1984. *Durban Mus. Novit.* **13**:149.

Diagnosis
Ground colour silky brown, subapical band developed in large rufous patch, median line of underside closer to the base than in the other species, and straighter.
Distribution
High-altitude mountains in Mpumalanga to the east of Wakkerstroom, on the mountain above Dirkiesdorp and in adjacent KwaZulu-Natal, at an altitude of 1800-2000m.

***Dingana jerinae* sp.n.**

Description
Male. (Plate 2, figs a-b) Forewing lengths: 31-34mm, mean 33mm (n=12); antenna-wing ratio: 0,34-0,35, mean 0,35 (n=12). Wings, upperside. Forewing: dark brown with a black, subapical, double white-pupilled ocellus in areas R_5 and M_1; three separate ochreous-yellow postdiscal spots decreasing in size from M_3 to CuA_1; continuous ochreous-yellow band along lower and inner edge of ocellus extending from M_2 to costa; outer edge of ocellus with two reddish spots in R_4 and R_5 and a single darker marginal line present. Hindwing: with a postdiscal series of black, white pupilled-ocelli encircled with orange-red rings in areas CuA_1-M_1. Underside. Forewing: subapical ocellate spot present and divided into two; postdiscal ochreous-yellow spots as on upperside. Hindwing: with a subbasal dark line edged outwardly with white and strongly excurved on veins, from costa to a little inwards from vein 2A and intersecting the cell just before origins of veins Rs and CuA_2; a broader dark discal line, faintly edged with white on inner side and acutely angled outwards in area M_2, from costa beyond middle to vein 2A at about one-fifth of that vein from wing margin; a series of small black ocelli with minute white pupils, much smaller than on upperside, without reddish rings but encircled with narrow dark concentric rings corresponding with the outer edge of black central part of ocelli above; marginal line treble, its innermost component being broadest, the other two linear.

Genitalia. Uncus less than half the length of the tegumen, arched distally, with a vertically forked tip; scaphium longer than uncus, distally truncate; falces short, subtriangular, larger than in *D. dingana*; valves almost three times length of the uncus, ascending distally, arched posteriorly and apex pointed, differs from *D.dingana* in being slightly longer, more curved and dorsally concave; aedeagus narrow and straight; saccus narrow and as long as valve.

Female. (Plate 3, figs c-d) Forewing lengths: 32-34mm, mean 33mm (n=3); antenna-wing ratio: 0,31-0,32, mean 0,32 (n=3). Wings slightly more rounded and elongated than in male. Wings, upperside. Markings as in male but with postdiscal spots broader and slightly paler. Ground colour slightly paler. Underside. Similar to

male but hindwing with slightly more extensive light markings and ground colour paler.

Material examined

Types. Holotype ♂, SOUTH AFRICA: Northern Province, Kransberg, 19.xi.1994, J. Coetzee. Paratypes 10 ♂ with same data; 1 ♂ with same data but 5.xi.1995, G.A. Henning; 16 ♂ 3 ♀ with same data but 26.xi.1995, A.I. Curle. Holotype in the Transvaal Museum, Pretoria. Paratypes in the collections of J. Coetzee; W.H., S.F. & G.A. Henning and A.I. & N.I. Curle.

Distribution and habits

D. jerinae has only been recorded from the Kransberg in the Northern Province of South Africa at an altitude of between 1850m and 2000m. Specimens were flying around large rocks on a steep south-easterly facing slope (Plate 1). The area inhabited is at the base of steep cliffs, it is well grassed with sporadic *Protea* trees, *Protea roupelliae* Meisn. and *Protea caffra* Meisn.. Other trees in the area included the yellowwood, *Podocarpus latifolius* (Thunb.) R. Br. ex Mirb. The butterflies were flying fairly swiftly up and down the steep grassy slopes and would often fly up rocky clefts. Specimens were seeking shelter from the heat at about 11:00. They settled under rocks and were even seen to conceal themselves in rocky fissures half-way up the vertical 60 metre cliff rising above their habitat.

Early stages

(Plate 6, figs a-c). Information supplied from the records of A.I. Curle.

Eggs: Laid in quantity; rounded dorsally with a flattened base, as high as they are wide, pale creamy-yellow when first laid darkening to pale yellow. The eggs hatched after about twelve days.

Larva: First instar: head dark brown; ground colour of body brownish-white; longitudinal stripes pale brown with dark brown along edge. Duration of first instar about 7 days. Second instar: head dark brown with dark lateral patch which corresponds with the end of the lateral stripe; body ground colour brownish-white with pale greenish shading dorsally; lateral stripe broad and dark reddish-brown, dorsal stripe broad reddish-brown but not as broad as lateral stripe, subdorsal stripe narrow and not as dark as the dorsal stripe. Duration of second instar about 7 days. Third instar: (Plate 6, fig a) head ochreous-brown with dark lateral patch; body ground colour pale beige; lateral stripe narrower than in previous instars and purplish-brown, dorsal stripe narrower and pale pinkish-brown. Duration of third instar about 10 days. Fourth instar: (Plate 6, figs b-c) headshield ochreous-brown with purplish-brown lateral patch and central lines; body ground colour pinkish-beige with purplish shading dorsally, lateral stripe and dorsal stripe darker than in previous instar and both purplish-brown. The fourth instar is as far as the larvae have progressed. The larvae are feeding on *Pannisetum clandestinum* Chiov. (Kikuyu grass). The grass is eaten along the edge in the earlier instars and then from the tip downwards at about a forty-five degree angle.

Remarks

This species was discovered by Jan Coetzee on the upper slopes of the Kransberg in the Northern Province, South Africa. This is by far the most westerly species of the genus *Dingana*. It is also the largest species in the genus. It is most similar to *Dingana dingana clara* from the Wolkberg in the Northern Province but differs in having the outer margin of the forewing straighter, the ground colour darker and more blackish-brown with bright ochreous postdiscal spots, the hindwing underside dark blackish-brown with the light markings faint, the black transverse lines more distal, the discal line irregular and dentate, nearly touching the postdiscal ocellus in M_2 and the antennal club not as flattened as *D. dingana*. This species is named after Jerine Coetzee, the wife of Jan Coetzee.

Acknowledgements

We thank Jan and Jerine Coetzee for allowing us to describe this new species. We thank Alf Curle for providing valuable information on habits and early stages. We also thank our father Bill Henning for his comments on the group.

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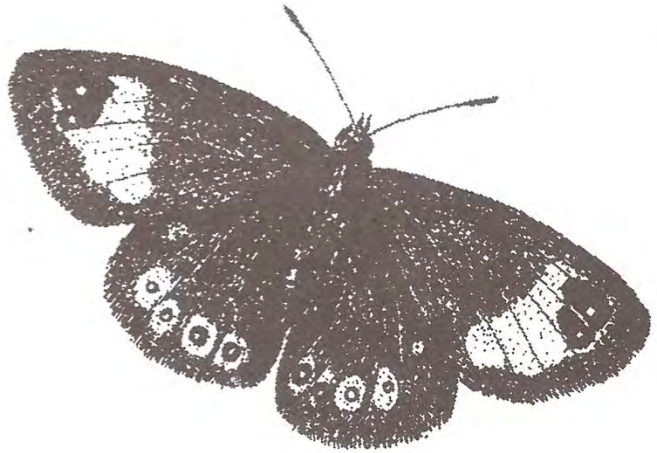

Dingana alaedeus male upperside

OBSERVATIONS ON APPARENT VERTEBRATE PREDATOR DAMAGE IN THE GENUS *DINGANA* (LEPIDOPTERA: NYMPHALIDAE: SATYRINAE)

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Abstract: Observations on species of the genus *Dingana* show a disproportionate incidence of apparent predator damage in *Dingana jerinae* G.A. & S.F. Henning in comparison to other species studied in the genus. Some possible explanations are proposed and details of the habits and habitat of *D. jerinae* are noted.

Key words: *Dingana*, temperature, bite marks, lizards, swifts.

Introduction

Research over the last few years on the genus *Dingana* has been undertaken by both authors culminating in the study of the isolated population of *D. jerinae* on the Kransberg, Northern Province. The study of *Dingana* populations was undertaken to determine the distribution and diversity of populations of the genus with the view to a future revision. Observations and the recording of the butterflies' behaviour in the field, over many days in different localities throughout the distribution range of the genus *Dingana,* has resulted in these notes.

Results

Of 19 specimens of *D. jerinae* recorded on 26th November 1995 by A.I. Curle, 16 were males, and of these 6 were damaged in a most unusual way. Sharp pieces had been removed from the wings suggesting bite marks, while the remainder of the wings of these specimens were in fresh condition. One specimen had apparent vertebrate predator damage over three wings, suggesting it was attacked while at rest. The remainder of the specimens were damaged on one wing only, suggesting an attack in flight. Comparable vertebrate predator damage has not been recorded in the other populations studied.

Discussion

Specimens of *D. jerinae* were recorded flying from about 09:00 to just after 11:00 in a restricted area of about half a square kilometre beneath a cliff face. The habitat is at an altitude of between 1850 and 2000 metres. They fly swiftly up and down the steep grassy, south-easterly facing slope between the rocks and along the base of the almost vertical sixty metre high cliff (Plate 1). The temperature during the middle of the day on the Kransberg is much higher than that found in the habitat of the other species of *Dingana,* which inhabit the mountains of the KwaZulu-Natal midlands and the eastern Drakensberg. This appears to effectively limit the daily

PLATE 1 Kransberg, Northern Province; type locality of *Dingana jerinae*.

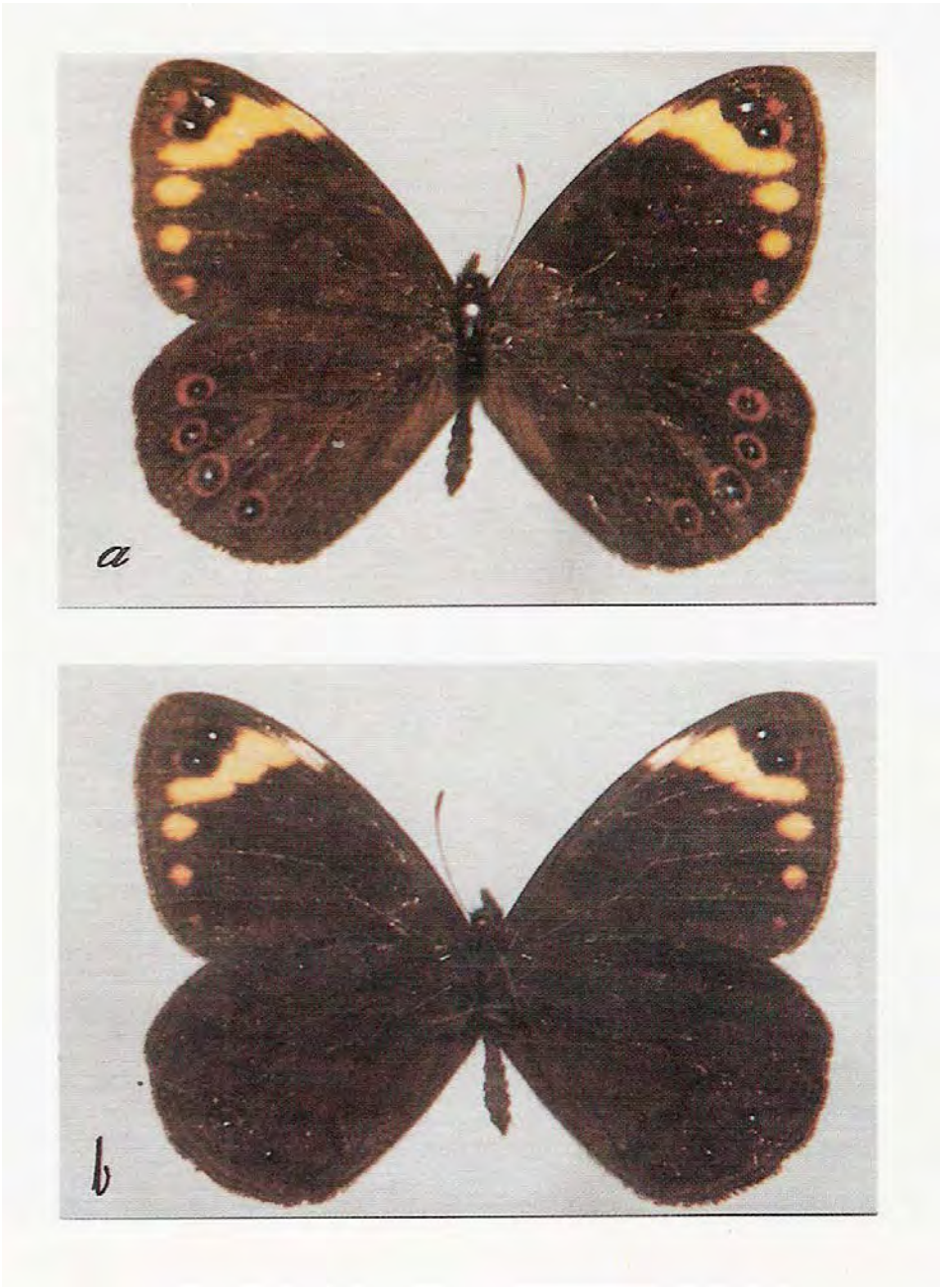

PLATE 2 *Dingana jerinae*, holotype, male; a. upperside; b, underside

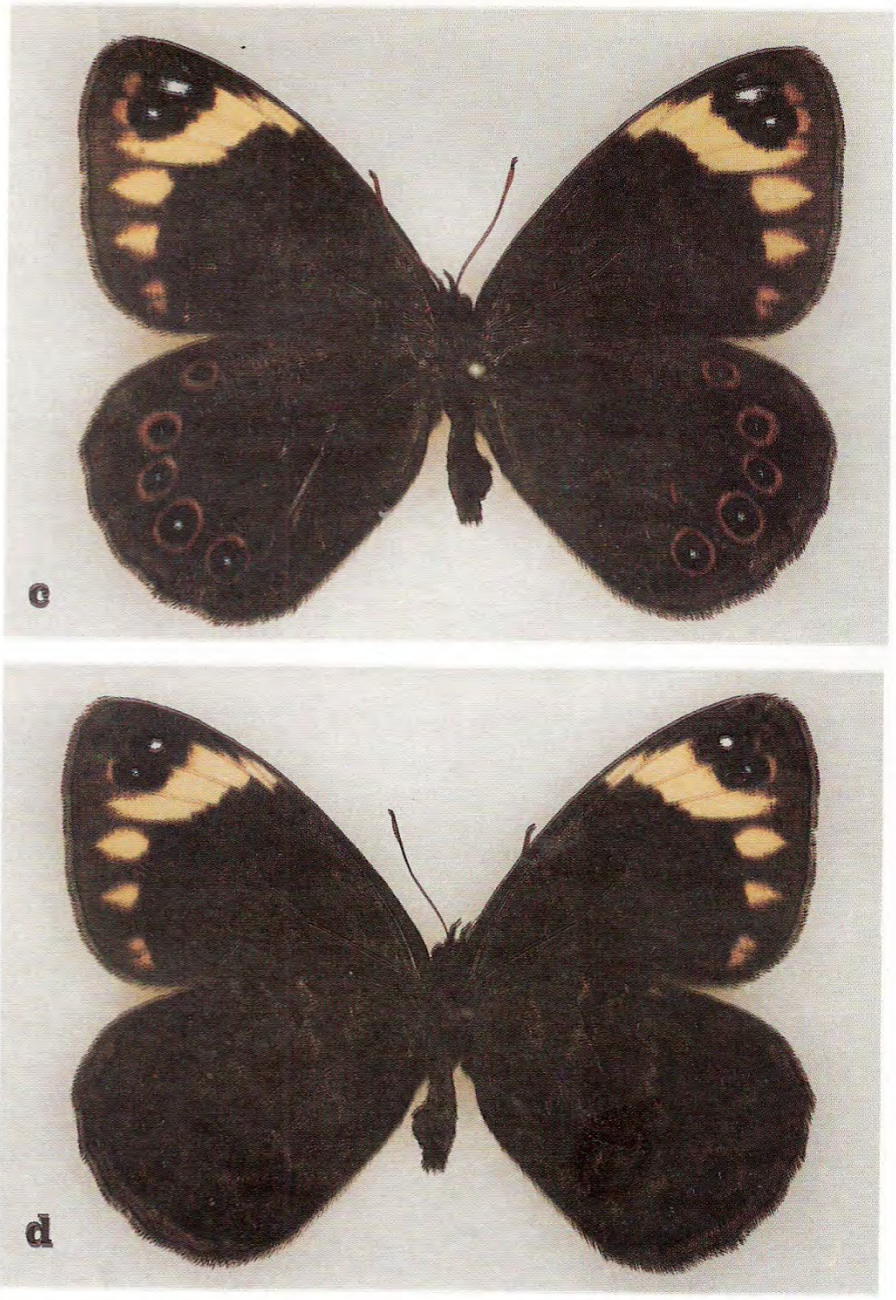

PLATE 3 *Dingana jerinae*, paratype, female; c. upperside; d. underside

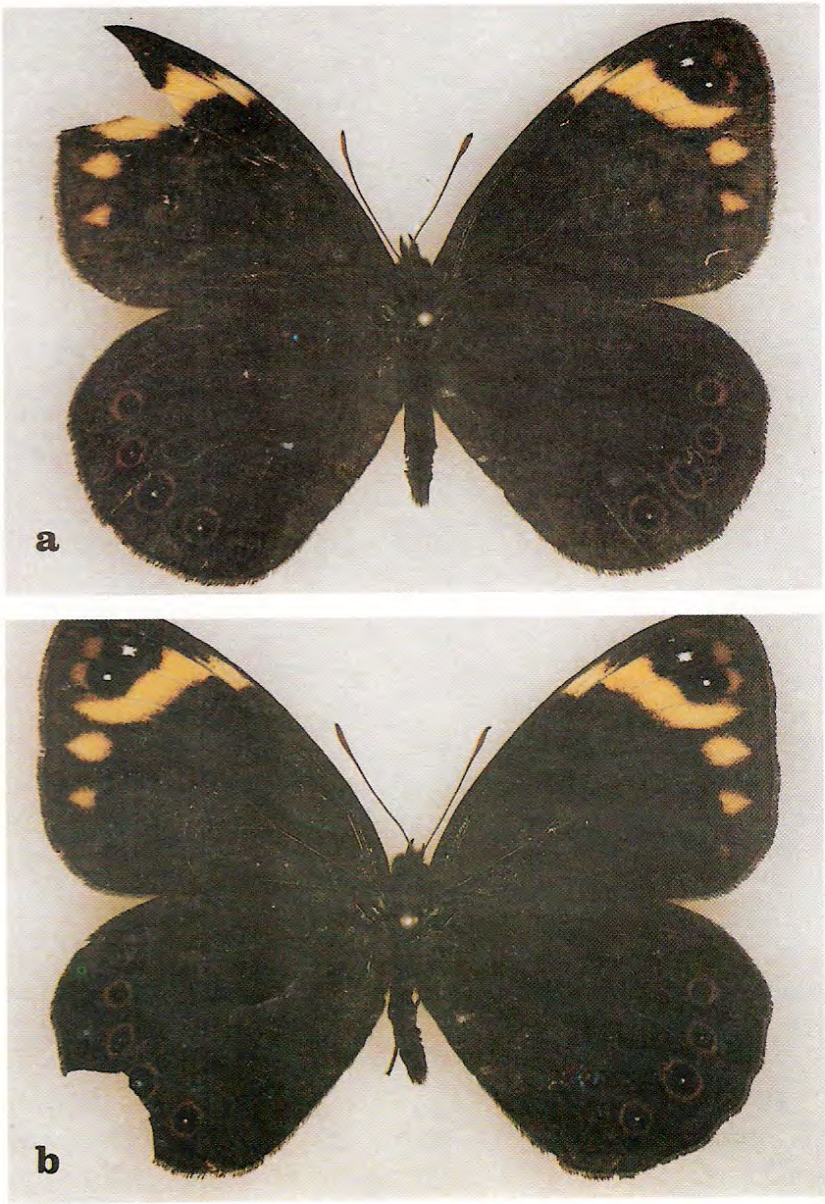

PLATE 4 *Dingana jerinae*, male upperside with apparent predator damage;

a. forewing band with apparent beak mark;
b. hindwing occelate spots with apparent bite mark.

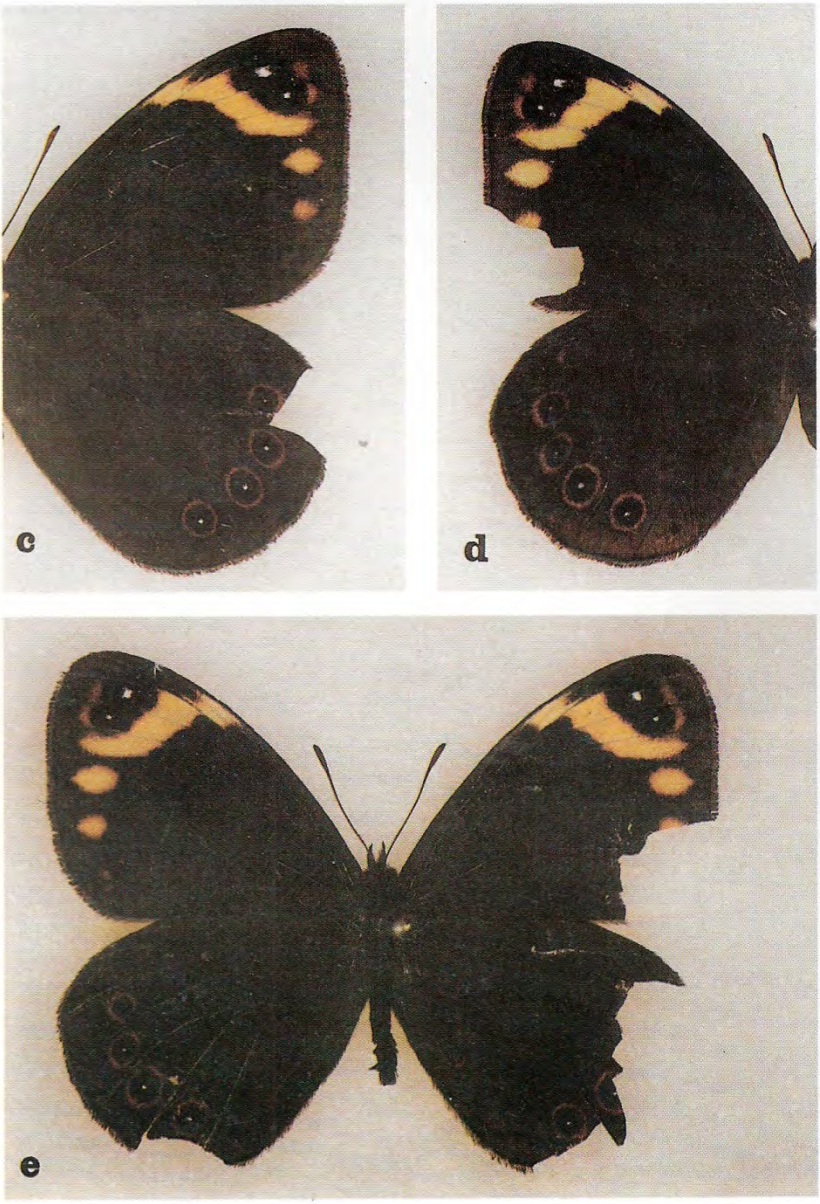

PLATE 5 *Dingana jerinae*, male uppersides with apparent predator damage;

c. hindwing ocellate spots with apparent beak mark;
d. forewing with apparent bite mark made in flight;
e. forewing and hindwings with apparent bite damage mad while at rest.

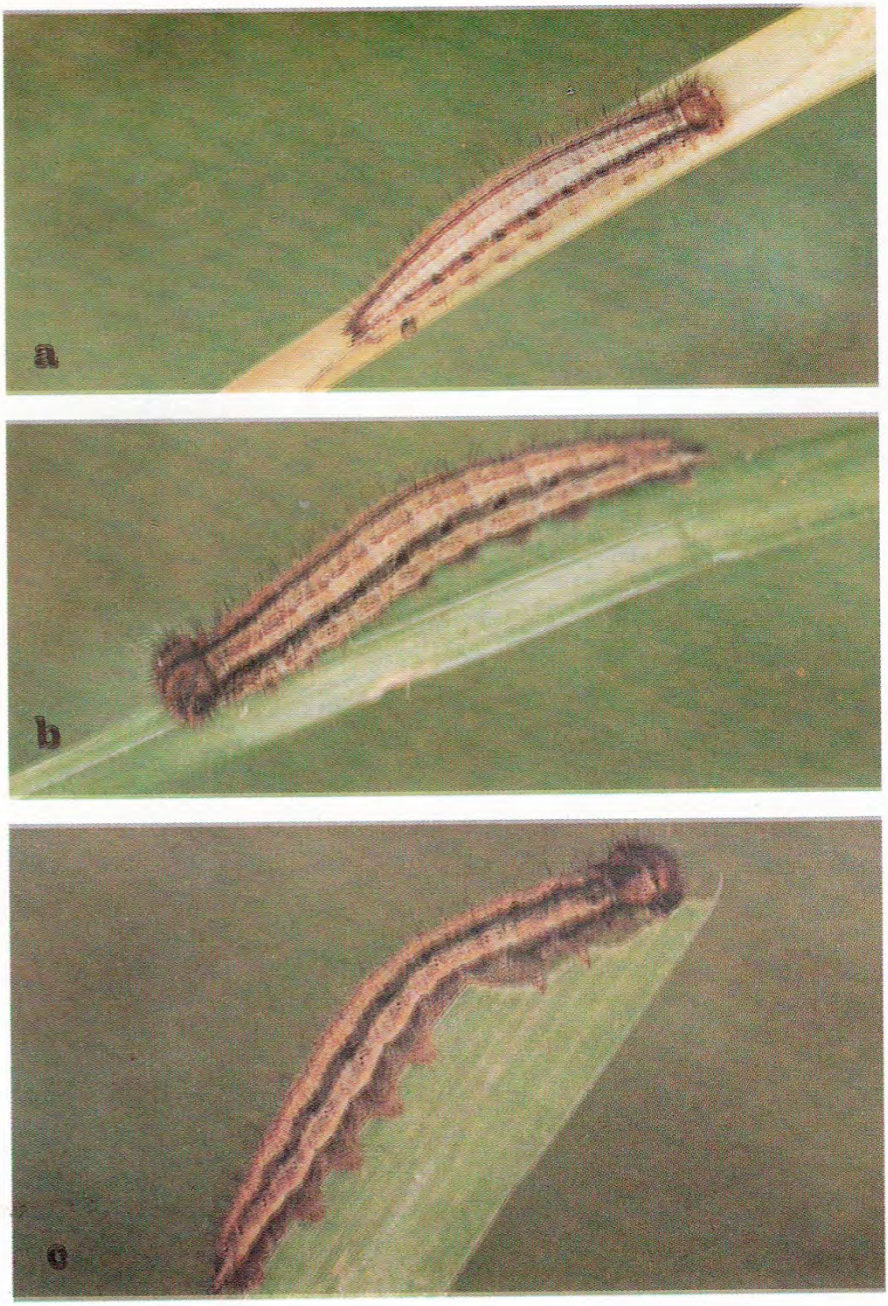

PLATE 6 *Dingana jerinae* larvae: a. third instar; b & c fourth instar

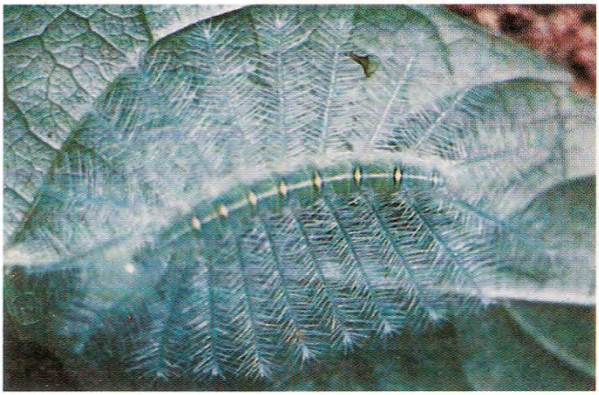

PLATE 7 Tanzanian butterfly early stages:
Euphaedra medon neustetteri, 1. larva, 2. pupa;
Euphaedra phosphor, 3. larva;
Athysanota ornate vestalis 4. pupa.

PLATE 8 Tanzanian butterfly early stages:
Iolaus (Epamera) fontainei 5. larva; 6 pupa;
Iolaus (Epamera) frater frater 7. larva; 8. pupa;
Iolaus (Etesiolaus) catori cottoni, 9. larva, 10. pupa.

flight time to a couple of hours in the morning on hot and sunny days. All the specimens recorded were seen during this limited time period.

One of the specimens studied was damaged over both hindwings and one forewing, suggesting that the specimen had been bitten while at rest (Plate 5, fig e.). The size and roundness of the bite mark indicates that this was possibly made by a lizard. Several Drakensberg Crag Lizards (*Pseudocordylus melanotus transvaalensis*) were seen in the area. Specimens of *D. jerinae* were seen to hide under rocks from before mid-day and none were seen for the remainder of the observation periods which continued until about 16:00. During this time lizards are actively searching for food under and around the rocks, and would probably encounter *D. jerinae* regularly. *Dingana dingana* (Trimen) and *Dingana alaedeus* G.A. Henning & S.F. Henning, which are found along the more temperate eastern mountains, fly for most of the warmer hours of the day and would possibly not be preyed upon by lizards to the same extent. Of hundreds of specimens of these two species studied, little evidence of such damage was recorded.

The other damaged individuals had pieces apparently bitten from single wings, suggesting that they were in flight or moving at the time of the attack. While the possibility exists that some of this damage could also have been inflicted by lizards on specimens fleeing from beneath the rocks, it would appear that some of this damage could have been caused by bird predation, beak-like damage being evident on some specimens, e.g. Plate 4, fig a. A number of swifts were recorded along the mountain-side and these may well be the cause of the damage to the other butterflies (Plates 4 and 5, figs a-d). There were some very large swifts probably Alpine Swifts (*Apus melba*). Swifts of this size could take prey of the size of *Dingana*, although *D. jerinae* is a particularly robust insect. This may well account for the number of survivors, a third of the males recorded having survived apparent attacks from predators. No actual attacks by swifts were observed.

Satyrines have previously been recorded as prey of swifts in mountain conditions (Pringle, 1983) but these were of the smaller genus *Pseudonympha*. Other records of swifts feeding on butterflies in South Africa are of the lycaenid genera *Thestor* (H.C. Ficq *pers. comm.*) and *Lepidochrysops* (I.A. Coetzer *pers. comm.*). These instances were also in grassy mountain terrain and in all instances the butterflies preyed upon were flying plentifully. Previous authors commenting on bird predation apparently agree that for a butterfly to be included in the search image of a predatory bird, it should be abundant enough to be exploitable (Dempster, 1984). Below a certain density of prey, the search image could be more profitably used on some other organism. *D. jerinae,* when discovered by Jan Coetzee in November 1994, was flying in numbers, some sixty or seventy specimens being visible at one time. The locality is fairly restricted and specimens fly for only a short time in the morning and are particularly active during this time. It may be that the number of individuals coupled with the restricted habitat, vigorous activity and restricted flight time makes it profitable enough for the swifts to use this time of day to prey on *D. jerinae*. The other species of the genus, while also flying

in numbers, do not have a restricted flight time, are not as active nor do they have a very restricted habitat.

The males of *D. jerinae* have a somewhat erratic flight, and when disturbed, close their wings and drop straight down for about a metre before flying off swiftly. Similar action in the satyrine genus *Pseudonympha* has been recorded by Pringle (1983), who concluded that this action appeared to be a defensive strategy against air-borne predators.

The bright yellow postdiscal band of the forewing upperside in *D. jerinae* is equally developed on the underside, unlike the other species of *Dingana,* which have the underside markings less developed. The ocellate spots of the hindwing are conspicuous on the upperside but less so beneath. These bright areas are situated well away from the body of the insect, apparently serving to attract the attention of the predator to the less vulnerable wing margins. In the specimens studied this factor appears to have worked well to the benefit of the butterflies (Plates 4 and 5), in approximately equal proportions for forewing and hindwing. Why *D. jerinae* has developed a particularly dark ground colour with a well developed forewing patch on the underside is a matter of conjecture. Perhaps these factors have developed due to the temperature enforced time that the species spends under the rocks during the daylight hours, the dark colour concealing the butterfly and the forewing patch distracting the predator if the butterfly is found. Its larger size may assist the butterfly to escape.

Conclusion

The evolution of this isolated species in an environment different from that of the majority of the populations of the genus has perhaps had repercussions on the predation pattern. Evidence indicates that it may be more heavily preyed on by vertebrate predators than the other species in the genus, due to the factors outlined above. It has evolved a larger size, a darker ground colour and a more conspicuous postdiscal forewing patch on the upperside and underside in an effort to survive in this environment.

Acknowledgements

We thank Jan Coetzee for his observations, Chris Ficq and Izak Coetzer for their records, and Neville Curle, Stephen Henning and Bill Henning for their comments on this topic.

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CÔTE D'IVOIRE ADVENTURE

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CÔTE OF MANY COLOURS - this was the descriptive heading of a newspaper article we read of this country before our planned holiday; and the Ivory Coast proved to be just that! Palm fringed lagoons, magnificent tropical rain forests, friendly people, and a fascinating variety of colourful butterflies. Some people we spoke to said we would find it a very Third World place, yet you see plenty of expensive modern cars (mostly French makes) on the road and tall modern buildings in the Plateau region of Abidjan. Their road network is said to be the best in West Africa and they are better off than most of their neighbouring states. However, you also get glimpses of squalid slums on the outskirts of Abidjan.

The holiday was carefully planned from early in the year and we had many fax exchanges with a Côte d'Ivoire tour company, recommended by their air carrier, Air Afrique. The time of the year that we went (December/early January) was governed by my work, being the longest time I could be away from office. Also, from a rainfall map in one of the children's old school atlases, there should have been rain up to near the time of our holiday. Being north of the Equator, it was in actual fact their "winter" time, yet still hotter and more humid than Durban in mid-summer! We told the tour company we wanted to collect near the coast, in the centre of the country and in their mountainous area near Man. They came back with a suggested itinerary which, to our delight, included staying at various forest research stations. Eventually arrangements were finalised and apart from the payment of the final instalment of the tour cost, all we had to do was wait for the eagerly awaited departure date and get ourselves as knowledgeable with the French language as possible. We did not need to be highly fluent in the language because we were being supplied with an interpreter in addition to a chauffeur and a guide named Sema, who was on loan to us from their Department of Forestry and Environment and had previously assisted lepidopterists and has a good knowledge of the local butterfly population. He does some collecting himself.

The morning of 16th December saw us winging our way to Côte d'Ivoire on an Air Afrique flight. There was a stopover at Brazzaville of about one hour to change crew, pick up passengers, etc. Meals on board the Air Afrique plane were very good, as was the service by the crew. We arrived at Abidjan airport in the late afternoon/early evening to a warm welcome fit for a diplomat from four of the tour company staff headed by the boss/owner. They had a welcome sign with their company name and our name on it so that we could identify them. The tour company boss (a French lady with a lot of character and influence) took our passports and arrival forms to be processed while we waited for our luggage. She was so quick in getting our documentation done for us that our

luggage was still coming off the plane by the time she rejoined us. She hustled her staff in loading our luggage on to baggage trolleys and it was wheeled straight out of the building without even being checked! Brian's case however had been put on the wrong conveyor by the airport staff and we had an anxious wait outside in the tour vehicle until it was found.

Our first stop that night was the Orstom Research Station some 30km. from Abidjan. (Our guide, Sema, whom we had still to meet, is based here). After a restful night in oldish, high-ceilinged but air-conditioned rooms, Antonio (a French speaking Spanish man from the tour office) arrived and introduced us to the guide and the interpreter. Orstom is situated on an offshoot of the still extensive Banco forest outside Abidjan. We were told it is the only safe area there to collect, being guarded and fenced. The rest of the Banco forest is said to be used as a hide-out by bandits and thieves who are often armed and dangerous.

Although overcast with a morning mist over the tropical rain forest, butterflies in the tropics fly undeterred and we were soon excitedly swiping at innumerable "prime experiences". Traps were hurriedly put up and soon began to draw in the Charaxinae. Our guide had obtained a bucketful of very over ripe bananas which had been left in their skins. Unlike us, he did use not dishes. He splits the bananas down one side and lays two or three on each trap floor with the opened sides up. It is very effective. Maybe the skin being left on keeps them juicy and makes them more attractive to the *Charaxes*. He chooses a longish variety of banana and looks for ones whose skins have gone all black with over-ripeness.

While the high placed traps yielded very good catches, those at lower levels also took fair numbers. We caught so many butterflies most days that time only permitted setting a small percentage and we had to put the rest in envelopes and store them in boxes brought with us. By the end of the first day we already had our first ever specimens of *Palla* (something I had been looking forward to), besides many other exciting catches. We also saw *Palla* on the wing besides two caught in the traps. Just before 3.00pm. we packed up ready to move to Agboville. Before leaving Abidjan however, we needed to go to a bank to cash some traveller's cheques. Because it so hot in the middle of the day, they have very long lunch breaks, and businesses stay open until dusk. It was when we went to the bank that we were really grateful for a chauffeur. Not only does Côte d'Ivoire follow the continental way of driving on the right, but the business area of Abidjan, Plateau, is a seething mass of humanity, cars and buses all fighting to get somewhere. There are a lot of informal traders at the side of the roads and everywhere they can squeeze a stall in. It is here that one becomes very aware of modern buildings rubbing shoulders with Third World structures and habits. Our stay in Agboville was at the Hotel La Kavi; a very comfortable quite modern hotel, again with air conditioned rooms. We were grateful for the comfort of the air conditioners after the heat of the day! Our collecting there was done in the Yapo Forest next morning. It is a lush exciting-looking forest;

however we did not catch as much as at Orstom. Because we were moving to Lamto after lunch on that same day, we tried collecting early (starting at about 8.30am.) but it seemed too cool and damp for the first couple of hours. Things then started to appear as the day warmed, but it would soon be time to leave.

A memorable sight here were numerous diaphanous, white, gossamer-like *Pseudopontia paradoxa*, feebly flopping about in shade at the forest edge. They are strange primitive-looking rounded wing butterflies with no easily discernible "clubs" on their short antennae. At Lamto, we stayed on a research station. The Research Officer in charge was a very pleasant and helpful Frenchman who ensured we got comfortably settled. Although very dry here (the rain must have ended by early November) we managed to get some good species. In the riverine bush near the station, I netted a very beautiful giant skipper, *Pyrrochalcia iphis*. I nearly ignored it as it flew weakly overhead in a manner reminiscent of the dark metallic blue moths one frequently sees. However, once disturbed they are as swift as any typical skipper. Brian and I searched and managed to get a few more by chasing after them in the difficult dense undergrowth near the river and ended up with 4 specimens. We found large brightly marked caterpillars which the Research Officer confirmed were the *P. iphis* larvae and identified their food plant as *Acridocarpus smeathmannii* (Molighiaceae). He said we should have come while the rains were still on as there is much more flying then. Lamto reserve is mostly a dry woodland area dotted with palm trees that had become degraded from bad agricultural practices. The veld is now being rested to rejuvenate natural vegetation. Everywhere, invader plants have largely taken over. There is a lot of *Chromalena odorata* growing in Côte d'Ivoire - alongside the roads and in the savannah areas, etc. Being a tropical climate, the plants grow much bigger than in South Africa. They have tried burning the *Chromalena* at Lamto, but, because the burning destroys natural indigenous plants, the *Chromalena* regrows thicker than ever, so they are now trying other approaches to the problem. There is plenty of delicious fruit available and of course it grows very big in the tropical climate. The paw paws available here have a very nice tasting red flesh, which is better than we mostly get at home.

Our next stop entailed a long journey, largely on dirt road, to the Comoe National Park at Kakpin, in the North East corner of Côte d'Ivoire on the edge of the savannah area. A rather tragic sight is the number of timber trucks taking huge logs to the harbour to export overseas. While it will bring in some foreign currency to the country, the loss of such beautiful old forest giants for the sake of making furniture is distressing, and of course in their place the invader plants take advantage. We had a close shave with one such timber truck which came belting around a corner right in the middle of the narrow dirt road. The truck driver had no hope avoiding us, but fortunately our ever alert chauffeur swung our vehicle out of the way a bit into the bush, from which we had to reverse after the truck had gone. A little distance on we came to the Comoe River, which had to be crossed by means of a pont. This was manually winched over along

cables strung across the river. The river here is quite wide and placid. Our minibus had a bit of difficulty in getting on to the pont because of the steep ramps and we wondered whether it would land up in the drink when the pont moved slightly as the vehicle started up the ramp. About 10kms. further on is the Comoe Park with its rustic hutted accommodation. Our rondavel had a shower and toilet (only cold water shower which is all one needs in that hot climate). The electricity and water supply relied on a generator, which was only switched on for short periods in the morning and evening. By pre-arrangement, we picked up a game guide on our way to the Comoe hutted camp. He would accompany us around to ensure our safety as there are apparently some lion in the Park. (We didn't see any thank goodness!) I cannot imagine a butterfly net being much defence against an attacking lion! The only wildlife we saw were a number of hippo in the Comoe River, and some antelope and baboons. On our first day of collecting at Kakpin, we drove to a spot further up the Comoe River, after setting up some traps near the camp. The rest of the traps were taken with us and put up near the river where we wandered round with our hand nets. Although the veld was very dry here, the traps yielded some good *Charaxes*, including C. *lactetinctus, C. jasius epijasius, C. imperialis* and *C. pythodoris*. On the second day at Kakpin, Pam stayed in the camp to avoid the blood hungry tsetse flies in the bush as her legs looked like a bad attack of chickenpox, leaving Brian and me to get on with the collecting. As one walks through the long grass, one hears the loud buzzing from behind one of the flies in hot pursuit. Instead of an intended 4.00 a.m. early start to Gouessesso on the third day, we only got away at 6.00 a.m., largely because the generator was not started early enough to supply water and lights. It was a relief to get back on to tar road at Katiola after the long dirt road from Comoe. We stopped for a picnic lunch at the side of the road not far from a man selling palm wine, some of which we bought to add to the bait as we had heard it is very effective. After further stops for fuel and liquid refreshment, we arrived at the Hotel les Lianes at Gouessesso just before 9.00 pm. on 22nd December. In that one day we had travelled from near the Eastern side right over to the Western side of Côte d'Ivoire. Gouessesso is in quite high hilly country to the north of Man. We enjoyed a most welcome dinner, had a shower and fell into bed. The rooms were neat and comfortable, and stayed cool during the day despite there being no air conditioners, because of the thick thatched roofs and the adjustable wooden louver windows. Air conditioners were not so necessary here because of the higher altitude.

A local resident was assigned to accompany us around Gouessesso, as our guide from Orstom was not familiar with this area. There was a patch of dense forest not far from the hotel, to which this new guide led us. Here again, *Chromalena* was very much in evidence along the path leading to the forest, though some attempt was being made to eradicate it. Our first day collecting at Gouessesso was very rewarding with so much on the wing around one. Most of the traps were hung in a broad sunny clearing where we did most of our

collecting. There were also some good things to be caught along the path through the forest, such as large Satyrinae of the *Elymniopsis* group (their undersides are striated reminding one of their small cousins, *Physcaeneura panda* and *P. pione*). At Gouessesso we made up an experimental palm wine and banana mix. The reaction, assisted by the heat of the day, was quite astounding. Our "witch's brew" would have bubbled all over the bedroom floor if we had not laid newspaper under the bait pot. This stay at Gouessesso was one of the longer spells at any one spot on the trip. This gave us time to relax and enjoy the place, though we did find it handy to keep everything in our cases instead of wasting time unpacking and repacking.

Christmas Eve dawned and we went for a drive towards Sipolilo Ranch some 15km away, in search of some different forest habitats, as the traps had not been yielding much at Gouessesso, and also we had pretty well exhausted the variety in the small patch of dense forest near the hotel. This excursion yielded some quite good things, but there was insufficient moisture to sustain much variety and we returned to the hotel for lunch. After lunch, we went back to the forest near the hotel. The contents of the traps at Gouessesso were disappointing with hardly any Charaxes, but myriads of small brown Satyrinae. (The traps at Gouessesso though, did procure two beautiful *Kallima rumia*.) For some time we had had the feeling that our interpreter cum tour guide was being rather obstructive as to where we could go. At Gouessesso, particularly, it seemed he did not see fit to go far from the hotel. On Christmas Day I told him that we had had enough of just collecting locally and that we had an agreement with the tour company to explore high ground near Man. He said he would phone the tour company for confirmation. Any way, a firm stand with him got us the much needed trip to Man. It was a pity though that we had not gone there earlier as the area near the Man waterfall had probably the greatest concentration and variety of butterflies we saw on the whole trip. By the time we eventually won the concession, it was too late to arrange a picnic lunch which would have enabled us to stay there the whole day.

Our collecting stop near Man was by a stream running down a forested gully alongside the road towards the waterfall, about ½km further down. (The waterfall itself is a great tourist attraction and has a little tea-room nearby. The waterfall area is fenced off and the gate guard would not let us collect there as it is a nature reserve.) For the short time beyond the falls we literally filled our boots. Brian and Pam enjoyed themselves catching a variety of Nymphalids. They also found a number of *Charaxes* on some animal dung not far from where we stopped. Among the more special butterflies we caught were a yellow *Cymothoe egesta*, some red *Cymothoe* and the beautiful blue *Salamis cytora*. I found a very productive area on the other side of the stream where there were a number of beautiful big brown *Euphaedra* which look as though they have been stamped with a blue "V" across their upper side. Another fascinating sight there was seeing a spectacular *Salamis cytora* having a playful aerial battle with an exquisite blue *Hypolimnas salmacis*. Although our tour guide was agitating to

get back to the hotel for lunch, we managed a brief visit to the falls to take some video shots before leaving.

The day after our trip to Man we made an early start on the journey to Tai Forest, where we would be staying at the research station. The road passed through Tai village where we were to stop for lunch and get permits for collecting in Tai Forest. Tai village is only 5kms. from the Liberian border where there is a full scale civil war going on. We were told that one sometimes hears gun fire in the distance. We had to endure numerous army and police roadblocks and near forest areas there were also Department of Forestry officials. There were also customs roadblocks near the border with Liberia. The road after Guiglo becomes dirt of a fair standard, while the final road into the Tai forest was pretty bad in parts. The "middle mannetjie" was often too high for our bus to keep in the tracks, so the driver had to straddle one side while trying to dodge overhanging bush. One could imagine the road becoming impassable at the height of the rains. The accommodation at Tai Forest was very basic. At one time the research station had been sponsored by UNESCO. The place had been wired for electricity run off of two generators, but with more pressing needs of a quite poor country, it had become too costly for them to buy fuel and parts to keep the generators running. One of the senior men of the tour company turned up with a chef in another of their vehicles. We had also picked up two fellows in Tai village on the way to the forest who would pump water for us. The dining and lounge area was a large rustic thatched structure with open sides. There were plenty of comfortable chairs to relax in. The gas refrigerator was very dilapidated and contrary, with the result that most of the meat went off. Some replacement meat had to be got from Tai village and our enterprising shopping party came back with some "on the hoof" in the form of two hens.

Each day the earlier mornings were overcast with low misty clouds; this being from all the moisture in the forest. Everywhere the foliage was at first dripping wet. By mid-morning, the mist cleared, but mist or no mist, it did not deter the local butterfly population from flying.

While we caught quite a large number of specimens, it would probably have been better at the height of the rains. Among all the traps of both Sema's and ours, we took a good number and variety of *Charaxes*. Among the prized catches taken by hand net at Tai was a *Papilio zalmoxis* caught by Brian right near our bungalow. I had gone off tramping for miles in the hopes of netting one, but in vain. When Brian showed me what he had caught I could hardly believe our luck. The *P.zalmoxis* was very carefully packed in a container on its own surrounded by layers of tissues to avoid damage, being so precious. Sema said he had only seen and caught one once, some three years earlier.

Our holiday was now nearing its end and we made an early start on the 30th December for Grande Bassam back at the coast not far from Abidjan. We stopped at Yamoussoukro for lunch where the tour company had proposed we visit the Basilica of our Lady of Peace; a very beautiful huge domed cathedral largely built of marble. It is of a size and grandeur one would not expect in the

middle of Africa. We were to have gone inside to look round, but they have a very strict dress code, and we had arrived in casual wear covered in dust from the journey from Tai. The Basilica closes at 12 Noon and there was not enough time to clean up and change. We had to satisfy ourselves with some video footage of this very impressive structure's exterior.

It was bliss to reach the Hotel Madrague at Grande Bassam late that afternoon, and wash off our travel stains under a very welcome shower. After dinner, our beds beckoned and we crashed for some much needed sleep, having had such an early start to the day.

New Year's Eve and our last day of collecting in Côte d'Ivoire. We made another trip to Orstom. Brian succeeded in netting a *Papilio horribilis* that had been flying high up tantalising us, and also the elusive electric blue skipper, *Coliades chalybe*. Other good specimens of the day were more *Euxanthe* and *Palla* which came to our traps. We think some frustrated lepidopterist must have given *P.horribilis* its name - their habit is to normally cruise high overhead well out of reach! The hotel fronts right onto the beach and with its lights illuminating the Atlantic surf, we noticed some huge logs washing about, presumably having become untethered off a ship's deck. The trees from which these now waterlogged and wasted logs had come, were cut in vain. An impression one got travelling past the vast plantations of cocoa, rubber, coffee and bananas was the sad sight of isolated fantastically high trees throughout the region reaching for the sky like skeletal rib cages of the once mighty equatorial forest that had covered most of the central to coastal areas. I pictured in my mind their clawing for light to the roof of the forest canopy, now sadly gone. It is fortunate that one can still see remnants of this forest at Banco, Yapo and Tai.

After dining at the hotel that evening we were taken to the airport to await our flight home. A senior staff member of the tour company accompanied us right to the departure lounge to help with the exit formalities. Our flight was due to take off at ll.35 pm., but long after midnight there was still no sign of it. It was supposed to be arriving from Dakar, but for some reason was delayed. Eventually another plane was prepared and manned by a relief crew rounded up in Abidjan. Despite being so tired from the long wait at Abidjan airport, we did not manage to sleep on the plane. Some security staff at Johannesburg airport spied our light weight polystyrene butterfly setting boxes and insisted we wait for a veterinary section official to inspect them. As our flight from Côte d'Ivoire was delayed, we missed our connecting domestic flight to Durban. SAA staff were very helpful in putting us on a later plane and allowed us to phone our daughter from the Business Class lounge to advise her of the delay and new time of arrival. From our enjoyable holiday adventure we have some wonderful memories, both of places we went, and people we met, not forgetting a fantastic variety of butterfly specimens (±1000 specimens in 12 days of collecting). This will keep us very busy for some months completing the setting, even with the assistance of a fellow collector friend. We hope to give a full check list later when we have finalised the identifications.

THE PLIGHT OF *POECILMITIS LYNCURIUM* (TRIMEN, 1868)

By S. E. Woodhall
10 Bay Close, Bloubosrand ext.9, Randburg, South Africa

Introduction

Poecilmitis lyncurium (Trimen, 1868) was discovered by Bowker, in what became Transkei, in December 1864. There were two localities, both near the Tsomo River. The insects are described as having been "flitting about stunted bushes growing between rocks, upon a lofty hill ridge" (Pringle *et al*.1994). In 1933, Pennington rediscovered *P.lyncurium* near the Mbulu Forest near Tsomo. In 1963, Swanepoel revisited the area and found another colony of the butterfly in the same vicinity, on a ridge. According to JC McMaster (*pers.comm*), these are probably the same colonies discovered earlier. Swanepoel (1953) comments that Colonel Bowker' failure to find it elsewhere in the area, an area he explored very intensively, indicates a very restricted range. Since then, specimens have reported as having been takenin the Kokstad area (one only) and at Bushmans Nek in the Mzimkulwana Nature Reserve (Henning & Henning, 1989). Some doubt has been cast on the identity of these specimens. SG Joubert (*pers.comm*), who knows this colony, feels it possible that they are actually *Poecilmitis lycegenes* (Trimen, 1874). The South African Red Data Book - Butterflies lists *P.lyncurium* as "Rare". The probable type locality is under threat from invasion by exotic vegetation, and over-grazing; a situation described in this article.

Observations

JC McMaster and DA Edge visited the area in December 1993, finding *P.lyncurium* in reasonable numbers. I re-visited the spot on 30 December 1994 with JC McMaster.

There are two localities, on either side of the road leading from Bolo to Tsomo. Fig.1 shows the locality that appears to be in the better condition. This is on the western side of the road, very near a Xhosa village and is picked over by goats, cattle and horses. At the time of our visit, we could only find two worn specimens in this area. This is probably the spot found by Swanepoel. The other spot is on the eastern side of the road, above the Mbulu Forest, which is badly overgrown with black wattle (*Acacia mearnsii*) and blackwood (*Acacia melanoxylon*). This is a more extensive locality, and is not heavily grazed. It appears to be in better ecological health than the other locality, as indicated by the presence of a large, strong colony of *Durbania amakosa amakosa* (Trimen, 1862) frequenting lichen-covered rocks. However, as can be seen in fig.2, it is heavily overgrown by young saplings of black wattle. The *Diospyros* species resembling *D.austro-africana* De Winter, which grows between the rocks (the putative host plant, used by the closely related *P. lycegenes*) will be shaded to death soon if the wattle is not controlled. Approximately twelve specimens were

seen flying; great circumspection was taken in the number of specimens taken. These were all in the small area shown around the rocks in fig.2; none were seen in other rocky outcrops very close to this one. Some of the outcrops were totally overgrown with wattle so that little or no indigenous vegetation remained, but others were at the same stage of invasion as the one pictured. In fact the area in which the butterflies were flying was the least overgrown outcrop on the hillside. JC McMaster commented, at the time, that matters were much worse than they had been even only a year ago, and that this Red Data Book species is under severe threat in what is probably its type locality.

In November 1995 I visited the locality for *P. lyncurium* at Bushman's Nek. I could find no sign of the butterfly; moreover, the locality is at a much higher elevation than the Mbulu area, and is more reminiscent of the type of country inhabited by *P. lycegenes*.

Discussion

The area of the Eastern Cape province once known as Transkei is known for its extreme human poverty and lack of resources. This, and the isolation of these colonies of insects, has led to the neglect of their habitat. From the limited observations detailed above, it would appear that urgent action is required to halt the colonies' decline by removal of the wattle saplings in the overgrown area, and restricting grazing in the other.

It is important that the other suspected populations of *P. lyncurium* be evaluated to determine whether they are indeed this species or *P. lycegenes*. Even if they are *P. lyncurium*, this does not remove the seriousness of the plight of the type population; the loss of these two colonies would remove half of the known localities. Of the other two, the Kokstad population requires research, as does the Bushman's nek record which is in a Nature Reserve. A rare species would become vulnerable.

Recommendations

An in-depth study needs to be carried out to establish the strength and locality of the remaining populations of *P. lyncurium*. However, this will take time and urgent action is needed to halt the decline of the Tsomo colonies. The wattle saplings need to be dug out and new ones eradicated on an ongoing basis. The level of grazing needs to be kept low enough to avoid damage to the larval host plants and the adults' nectar plants. Banning grazing would not be advisable as this probably keeps moribund grasses to low levels. In keeping with the new realities in South Africa, this action could easily be taken by employing local people to clear the wattle and police the grazing activity on the sites. This would require education and funds, both of which could be come by through the right channels. Nothing can happen without the action of local government, even though the funds would probably have to be raised separately. It will not be as easy to persuade individuals to support the conservation of a butterfly living in

the depths of rural ex-Transkei as it might be in a beautiful coastal resort (e.g. the Brenton Blue project). However, a start needs to be made.

A copy of this issue of *Metamorphosis* will be sent to the office of the Deputy Minister of Environmental Affairs, Bantu Holomisa, with a letter reminding him that this butterfly lives in his home country, giving him a double responsibility for its continued well-being. He will thus be made aware of the situation. Copies will also be sent to the media, and other conservation-oriented organisations.

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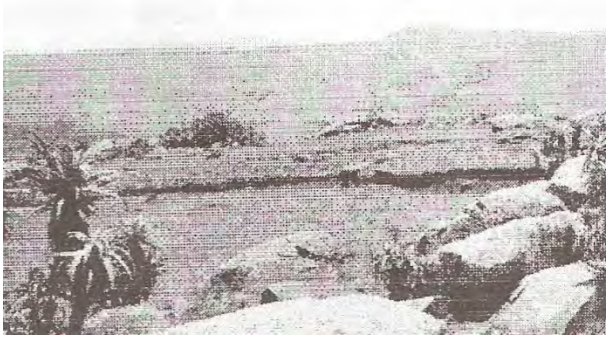


figure 1 *Poecilmitis lyncurium* locality on the western side of the road.

figure 2 *Poecilmitis lyncurium* locality on the eastern side of the road.

DRAMA ON THE KAMANASSIE

By Alan Heath ,
209 Ringwood Drive, Pinelands7405, South Africa

I am sitting looking through the window at a beautiful sunny day whilst various butterflies pause to peer through the window and smile at me. The mountains of the Cape are now teeming with all the species that were prevented from flying during the bad weather we experienced during the latter part of 1995. I have my leg elevated and in plaster and by the time you read this I may be learning to use my right leg again if I'm lucky but in the meantime I'm dependant upon crutches, wheelchair and someone to see to my many needs.

On the 19th December I was on the Kamanassie mountain with a friend who enjoys scenic photography. The weather had been fairly cloudy and ideal for dramatic mountain scenes but not much fun for butterfly collectors. That morning there promised to be some breaks in the clouds and whilst my friend walked off in search of scenic beauty, I walked in the opposite direction, looking for *P.daphne*. I was about 800m from my vehicle and about 120m above the 4x4 track when the sun peeped through, spurring me on; it was about 9.30am and in my haste I lost my balance and my foot slipped on a wet rock. As I landed on my behind, my left leg came crashing down on my right with considerable impact. I awoke with a strange feeling in my right ankle. As I glanced down at the unnatural position of my foot I realised that I had broken my leg just above the ankle and I'm sure I passed out quite a few times with the pain.

I've slipped and fallen several times during my lifetime of butterflying with some bad grazes being experienced on occasion (haven't we all?) but I did not think it possible to break a limb in such a simple fall. At the age of 62 I found out just how easy it is to do. I also had some naive idea that if I ever did break a leg, I could crawl slowly to safety. I discovered that when the heavy boot dangles from the end of the shattered leg in an uncontrolled way, the pain is unbearable. The foot also swells up quickly which prevents the boot being removed.

What to do? I had not brought extra clothing, nor any drink because I had not intended being away long. I realised that if I were to sit and wait I might never be found and anyway the clouds were returning, some of them looked threatening. I found it impossible to move in the direction I had come so I decided to try and make for the 4x4 track below. First I placed my butterfly net in an upright position and wedged some loose stones around it for support. This was a very wise move it turned out later. The journey 120m down to the track must have taken two or three hours, possibly more. I had to pause every few cm in order to recover from the pain, especially when encountering rocks and bushes.

When I reached the 4x4 track, I found it necessary to lower myself 2m to the ground whilst trusting to handsful of grass to steady myself. Just prior to lowering myself, I tied two white plastic bags which had been in my back pocket,

to a prominent dead stem above where I was to finally rest. As I sat supporting my right leg and waiting to be found the sun came out a few times but so did the rain and the wind. I made a little flag from a stick and my handkerchief in case I needed to attract attention.

There is little to tell about the hours I sat there waiting, feeling thoroughly miserable; the uncertainty was far worse than the pain and the cold. It is amazing too, how one's life thoughts pass before one. It must have been about 3.30 or 4.00pm when I started to grow concerned as to whether my friend would find me before nightfall. I uttered a short but very earnest prayer that he would appear and before two minutes had elapsed, I heard him calling my name from where I had slipped and left my butterfly net. On his return from his morning trip he had noticed my waterbottle in the vehicle and reasoned that I had not intended to travel far but when he saw it again later that day still untouched he knew something was wrong. With the aid of binoculars and a keen pair of eyes he spotted my upright net and I was duly discovered.

We were soon travelling back along the 4x4 track and by the time the vehicle had reached a public road, the Kamanassie was totally covered in dark rain clouds - what a close shave it had been. As we headed west towards Oudtshoorn we managed to stall the vehicle in the middle of a drift which was just over knee deep. My friend scrambled into the engine compartment and dried all the electrical bits and pieces whilst the muddy water swirled round the vehicle. Another moment of total helplessness, anyway the engine eventually came to life again and we were again on our way although we almost ran out of fuel before reaching Oudtshoorn. We proceeded to the hospital where I was X-rayed and splinted-up and given a painkiller by doctor on duty. I managed to get a look at my X-ray and realised what a mess my leg was in. There were several very sharp pieces of bone, any one of which could have penetrated the skin or an artery. I was made relatively comfortable lying down in the back of the vehicle for our trip to Cape Town where I later had the operation to put the leg together with plate and screws.

The orthopaedic surgeon was excellent and instilled confidence, he likened my fragmented bones to a bowl of 'Post-toasties'.

Anyway here I am gazing longingly out the window reflecting on the many times I had been to the Kamanassie and other remote areas in SA and Zambia. I wince at the many times I had scrambled over peaks alone and realise all the potential risks there were and just how foolish it was. In future I intend to make sure someone knows where I'm going, even locally and as for remote areas, I plan never to go alone ever again. Don't mistake this short article to be seeking sympathy, it's intended to make us all think about the risks we sometimes take and to advocate better safety measures, e.g.always to be accompanied, to take adequate clothing and drinking water, even on short sorties. This experience gave me food for thought and I will certainly exercise more caution in future.

REGIONAL ROUNDUP

The past few months have been beset by "bad" weather. The rainy weather is actually very good and the much needed rain augers well for the coming season. I am looking forward to seeing the drought stricken localities after these heavy rains. The cloudy weather strangely seems to intensify over weekends and has put a damper on many a collecting trip. Steve Woodhall and Alf Curle have managed to get in a few trips and so has Izak Coetzer. They have all been concentrating on browns. This is in part due to the second volume of "Living Butterflies of Southern Africa" which is in preparation. Anyone with particularly interesting browns, acraeas or nymphalids are welcome to contact me. Mark Williams, Martin Kruger and Dave Edge worked hard in November to unravel the mysteries of *Orachrysops niobe*. Our congratulations to them all for a job well done. Butterflies have been featured on TV with six programmes of "Lets Go" and good coverage on "50/50". Who says Lepidopterist's are not photogenic! The Brenton Blue Project has also featured in "African Wildlife" and "Getaway" magazines. The raffle for a prestigious stand next to the "Brenton Blue Butterfly Reserve" at Brenton on Sea has also sparked a lot of interest. For a week in February we had a joint exhibition at the Johannesburg Zoo "Yebbo Gogga" culminating in an insect braai. We produced it jointly with the "Friends of the Zoo", the Wits Zoology Department and the Spider Club. The Brenton Blue Project was prominently featured. We will continue to raise funds for the Brenton Blue Project and should anyone have ideas or suggestions they are most welcome to contact me at home on (011) 768-1949 or during working hours on (011) 474-1466, we need your support.

I would now like to comment on the necessity and standard of the referees used by the Society on the scientific and other papers for Metamorphosis. It was with some trepidation that I received back recent papers from the referees which were covered with comments and changes. In all honesty it was with the greatest of pleasure that these changes were made and the comments heeded and acted upon. The referees had put in a considerable amount of time and effort in order that my papers should be as acceptable as possible. I take my hat off to these gentlemen who, without any benefit or acknowledgement, are willing to spend their precious time correcting and improving other peoples work! They have contributed greatly to the standard of my papers, both recently and over many years, and to the standard of our journal. Authors tend to get so involved with the content of their papers that they often overlook scientific procedure, the referee will ensure that the content is understandable and that the paper conforms with accepted scientific practice. It is unfortunate that some authors feel that referees are judgmental and that their interference is unwarranted. I prefer to think that they are friends who are checking my papers for errors and then advising me of what to do to correct them. To all our referees who make such an admirable effort, I thank you, and I hope you will continue to avail us of your considerable expertise.

Graham Henning

PHOTOGRAPHERS' CORNER NO.9

It has now been some time since we had a photographers' corner - not much has been happening on this front. However, there are now a couple of issues relevant to photographers in the society, so here goes.

First of all there is the photographic competition and the very poor response we got at the AGM/Conference. This may have had something to do with the timing - AGFA was running their Wildlife Photographer of the Year and the Council agreed on my recommendation, to put entry forms for this into June's *Metamorphosis*. This was as a "thank-you" to AGFA for the help they give us with prizes. I know of at least one member who made the understandable mistake of thinking this was the same competition as ours! I spoke to the AGFA people and they did not notice a large increase in the numbers of entries for the insects section of their competition, so perhaps this wasn't a major factor.

Another factor was that I usually contact all potential entrants by 'phone prior to the conference and cajole, bully or beg them to put something in. This year, I was so busy with writing books, the Treasurer's job, and my own career that I quite frankly lacked the inclination to spend my non-existent spare time and run up my 'phone bill doing this. For pity's sake, was my reasoning, we are after all giving away nearly R1000-worth of film, if our membership can't bestir themselves to try to win this, I'm not going to beg them!

We discussed the photographic competition and its future at the AGM and at the latest Council meeting. The approach of having prizes and external judging seems not to have worked. A common comment on the judges was that they do not use lepidoptera-valid criteria in their judging - simply put, this means what looks good to the judges is not necessarily a good butterfly (or moth) shot. Some would-be participants also felt that there is a small core of professional level workers who always win the prizes, and this discourages less experienced photographers from entering as they feel that they have little chance of winning, so why bother? Experienced photographers replied that they only enter to keep the event alive and are embarrassed at always winning.

Using professional photographers (or picture editors) as judges was a move to try and introduce standards in keeping with commercial photography and other photographic competitions. Before, we had relied upon the services of members experienced in photography to act as judges. The problem with this approach was, that we were becoming isolated from what non-lepidopterists saw as being excellent, and the judges had to recuse themselves from entering, which reduced the field still further and reduced the standard of entry.

To refuse to enter a contest because one is unwilling to see one's efforts compared unfavourably with those of more experienced contestants always struck me as being somewhat defeatist. If you don't try you'll never improve, was my feeling. But on reflection this is a little harsh and maybe we should try ways of recognising emerging talent for what it is, and not force it to fight the big guns before it has learned to shoot, to mix military metaphors.

Three suggestions from the floor at the conference were: Why not do the judging during the conference instead of requiring members to mess about posting or delivering slides? Why not use peer judging as we do for quizzes at the conference? Why not have classes - beginners, journeymen and experts?

The first suggestion has its merits - the only reason for asking for slides to be sent in beforehand is to facilitate pre-conference judging. If we were to go for judging during the conference, the photos would still have to be available on the first day so judging could take place on the Saturday evening. If we carried on with external judging it could be embarrassing if no entries turned up! Someone will still have to chase entries (and it won't be me - we have already approached a member to concentrate on doing this).

Peer judging is an interesting idea. Members at the conference could vote for what they like. Winners would win because they have produced work that fellow lepidopterists find to their taste. The demerits are that we would not be keeping high externally judged standards, it would be difficult to split entries into classes, and if no entries are brought along on the day we would still not have a competition!

The idea of classes is not new - the Scientific category was brought in as recognition of the fact that the most valuable and difficult-to-obtain shots were seldom going to be camera club material. I like the idea of beginners' and masters' classes. To have more will make things too complicated and difficult to control. The reason for having a photographic competition in the first place is to nurture talent, and this would allow new talent to be recognised and the competition would be a good venue for constructive criticism. There would have to be a simple rule of the nature of: anyone placed in the top three of the beginners' class for three years running becomes a master. Also, how do we decide who is a beginner and who is a master the first time we do it this way? What criteria will be used and who will have the final say? These questions need answers before we decide to take this route.

These issues are being debated right now in Council. There WILL be a photographic competition at the 1996 conference. The rules will be published in *Metamorphosis* as soon as we have decided on what the new format will be. In the meantime, will any member with new suggestions or criticisms of the above options please 'phone me on 011 452 2543 (W) 011 462 3789 (H) or 082 444 9331 (Cell).

And now to turn to something of more general interest to insect photographers. A few of you will remember my writing some time ago about the NIKON SB21B macrolight and how it could revolutionise our efforts to catch insects on film. I remember reflecting that not many of us could afford to buy one of these tools, me being one of these unfortunates!

At the time I was using the COKIN creative flash, which was wonderful for indoor use but once used outdoors with varying subject distance and background lighting, gave variable results. I had to get my equipment valued for insurance purposes and was told by a couple of dealers that this piece of

equipment was obsolete, the new version has TTL capability like the SB21B but was not being imported into SA. OK, I thought, now is the time to dig deep into the pockets and finally get the real thing. The first snag I hit was the total lack of stock of NIKON SB21B units in SA, with a three month wait at least. The second was the price - R5000 for the last one that was in stock and the new stock will be “at least 10% higher”! GULP! I asked if there was any chance of getting the new COKIN unit, unsupported as it would be. The nice man at FotoCats promised to find out.

He phoned me back a week later with some good news. SUNPAK had brought out an aftermarket TTL ringflash, a genuine macrolight (as opposed to the COKIN unit which is really a conventional flashgun with variable light output, mounted on the lens). The other good news was the price, an affordable R2000 (this was last November). I flashed my credit card and she was mine!

The SUNPAK AUTO DX 12R is a proper ringflash unlike the COKIN or NIKON units, which have four or two separate flash heads surrounding the lens front element. This makes it more flexible than the NIKON, because full ringflash can be used if desired, and segments of the ring can be taped off with ND filter or black tape to give sidelighting. Like the NIKON, the flash head cord is detachable from the power pack, a definite advantage over COKIN’s awkward cord which was always twisting and breaking. The power pack cannot be used alone, a dedicated interface for the camera must be purchased as well (part of the above R2000). In the case of NIKON this is the NE-2D for hot shoe mounts. They make interfaces for all cameras which have TTL flash capability, and the flash has a manual setting too. Like the NIKON it has an auto test light that tells you if your exposure was correct, a QD fitting to the fitting ring (which screws into the lens filter ring), and a focusing light, all of which were irritating omissions on the COKIN. So how well does it work, I hear you asking?

The answer is - brilliantly. No more guesswork, I have found that underexposing by half a stop (using the camera’s override) gives the best results indoors or outdoors. I routinely cover 1/4 of the ringflash with ND2 filter film attached using PRESTIK (it doesn’t look pretty but I’m taking photos, not wearing jewellery). When shooting white butterflies against dark backgrounds, I find it necessary to black out half of the ringflash and to put some diffusing filter over the other half (one ply of two-ply toilet paper is perfect for this). This gives a lovely soft, natural sidelit effect. The masking media can be carried in a bank envelope and attached and detached quickly in the field. The TTL flash control makes it totally unnecessary to mess around with exposure settings. The aperture ring on the lens will only affect the depth of field - I shot off a whole set of exposures from f/32 to f/2.8 and the exposure was identical on all of them. In practice I use between f/5.6 for large butterflies and f/11-f/16 for small ones. It’s a good idea not to stop down too far as this causes unnatural-looking black backgrounds. Once your masking is how you like it, all you have to do is choose a lens/extension, get the subject in focus and press the tit!

Because the unit is so light and easy to use, it has changed my attitude to field photography. I used to rely heavily on bringing specimens home, cooling them off and setting up perches with controlled backgrounds. Then I could shoot off three or four exposures, bracketing them to ensure at least one good one. Now all I have to do is remember to take my camera on collecting trips!

Steve Woodhall

LETTERS TO THE EDITOR

Conservation of the name *Cyrestis camillus* Fabricius.

The revised version of *Pennington's Butterflies* (Pringle *et al.* 1994) refers to the well-known *Cyrestis camillus* (Fabricius, 1781) as *C. pantheus.* This species was originally described as *Papilio camillus*, but it was correctly renamed by Ko[illegible]ak (1983) as *pantheus*. The name *camillus* is a junior primary homonym of *Papilio camillus* Cramer,1780 and thus invalid.

However Cramer's name has never been used since, as it was immediately clear that it referred to the species now known as *Azanus isis* (Drury,1773). Ever since Boisduval described the genus *Cyrestis* in 1832, the combination *Cyrestis camillus* has been used consistently and unambiguously.

There can be few cases where the cause of stability can be better served than by the suppression of the name *Papilio camillus* Cramer by the International Commission of Zoological Nomenclature under its plenary powers.

I am preparing an application for this. Given the facts of the case, I have no doubt that the application will be upheld. The combination *Cyrestis camillus* should be continued to be used until the Commission has ruled otherwise, a conclusion I consider most unlikely.

Torben B. Larsen
358 Coldharbour Lane, London SW9 8PL, UK

A note on *Charaxas karkloof trimeni* Rydon

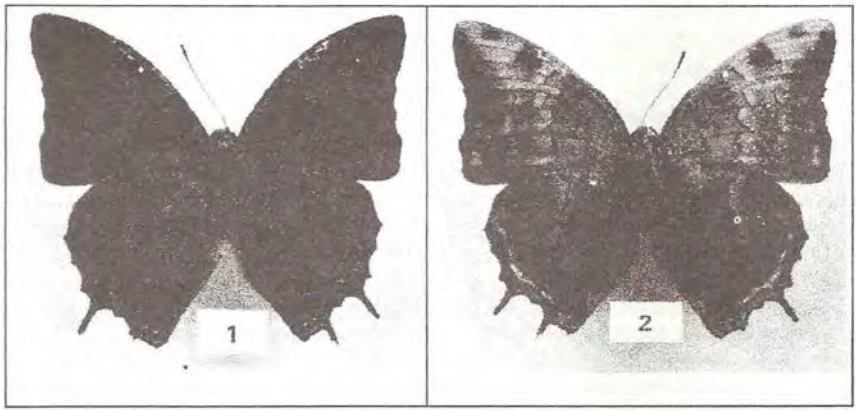
I refer to the article "letter from Knysna" by Dave & Esmé Edge, which appeared in the June 1995 issue of *Metamorphosis,* and would like to respond as follows:

The subspecies was not based on only two specimens from the Hoogekraal Pass. The type series is holotype & allotype from Saasveld; 1 male 2 females

from Hoogekraal Pass. Perhaps there is some confusion because the specimen illustrated in *Pennington's Butterflies* (2nd. edition) is a paratype from the Hoogekraal Pass and differs slightly from the holotype. I include a photograph of the holotype.

A. H. B. Rydon
3 Roeheath, North Chailey, East Sussex, U. K. BN8 4HR.

(Letter substantially shortened. The holotype male is here illustrated. Ed.)



Charaxes karkloof trimeni Rydon

Holotype male. C. P., Saasveld, 09 04 1970, (Rydon). In collection A.H.B. Rydon.

To be deposited in the Natural History Museum London.

fig1: Upperside. fig. 2: Underside.

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