Newsletter of the Lepidopterists' Society of Southern Africa
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From the Editor

At the 2nd Committee meeting, held in July, it was decided that an emblem for the Society should be designed. In order to get input from members a competition will be held for the best emblem. Entries must be submitted to the Secretary before the end of December 1984. The Committee will judge the entries (in consultation with unbiased third parties) and the winner will receive a specially bound, numbered copy of *Pennington's butterflies of southern Africa*, kindly donated for the purpose by Dr Douglas Kroon.

Some members have large, representative reference collections and the Committee thought it a good idea that these members could offer to do determinations for members with less extensive series. If you are interested in helping in this regard, please send your name to the Secretary. A list of these reference collections will then be drawn up and circulated in a future edition of *Metamorphosis*.

A short report on the first general meeting of the Society, held in Pretoria on 11 and 12 August 1984

Rudi Mijburgh

On being asked to write this report I have acceded with pleasure and will try to give a factual and objective account of the proceedings.

Firstly the good news that 51 members attended the conference. This is an outstanding turnout if it is taken into account that our members are spread all over southern Africa. They came from far and wide: there were three Zimbabweans (and what delightful people!) – Rob Paré and his wife Clare and Ian Mullin; then there was David Swanepoel, L.H. Visser and Frank Honiball from the far Northern Transvaal, Douglas Kroon from the O.F.S. and from Natal Andrew Currie, Philip Zwart and his wife Elaine, Deryck Whiteley, Ivor Migdoll, Kobus de Kock and Hugh Chittenden. We have heard that Victor and Ernest Pringle and Jonathan Ball seriously considered coming but were tied down by hectic programmes. We hope to see them next year!

In his opening address the President referred to the postal vote and thanked the members for the confidence placed in him …. Really a great honour, he said. He promised to take the Society's interests to heart and to use his talents to the best of his ability in promoting these interests. In conclusion he expressed the wish that the conference be kept as informal as possible and that participants should try to become maximally involved in the proceedings. This guidline contributed to the great success that the conference became. The reaction of members was delightfully spontaneous.

During the discussion sessions a number of issues were debated. Members were asked to submit recommendations to the Committee in regard to the drafting of a final constitution. These should be sent in writing to the

Secretary. Lively discussion was evoked by questions in regard to the issue of permits for collecting, conservation, ethical collecting behaviour, commercial exploitation of insects and the use of butterflies in the manufacture of ornaments. A number of viewpoints were expressed in regard to the issuing of permits and during this discussion an invited provincial official of the Department of Nature Conservation who was present responded to certain questions in his personal capacity.

Participants were informed by the President that the heads of Nature Conservation in all the States of southern Africa have been requested to discuss all proposed ordinances or legislation pertinent to Lepidoptera conservation with the Society. The Society is unquestionably interested in the conservation of endangered species and would like an orderly and scientific *modus operandi* implemented in such a way that member's activities in regard to collecting and research are not prejudiced. In fact, it is amateurs who have carried out most of the research on butterflies and moths during the last century, a fact to which all museums can attest.

To the Henning brothers and Mark Williams, who presented very interesting scientific papers, our grateful thanks. To Ivor Migdoll we owe thanks for the presentation of a slide-show on butterflies and moths of southern Africa, which was aesthetically satisfying, with photography of a professional standard. During the tea and lunch breaks there was much informal discussion and many new friendships were made. One particular participant was heard to remark: "Just listen – sounds like a lot of starlings in an avenue of fig trees doesn't it?"

At the conclusion of the conference a number of people were thanked for their efforts and special appreciation was expressed for the way in which the three Henning ladies and Lindsey Beveridge prepared and served refreshments and meals.

In conclusion, on behalf of all our members, I would like to take this opportunity of recording our gratitude to our President who has steered the Society from its beginning. Mark has made history by tackling something really worthwhile and by bringing together people who belong together. We are all aware that much effort and time was expended, something which has not gone unnoticed. With such a dynamic and enthusiastic leader we can expect a rosy future for our Society.

Pheromones in butterflies

S. F. Henning, Department of entomology, South African Institute for Medical Research, Johannesburg.

It has long been known that insects can influence the behaviour of other members of their species by means of chemical stimuli. The term pheromone was proposed to cover these chemical substances, which are secreted to the outside by animals and which, if passed to another individual of the same species, cause it to respond in a particular manner. Pheromones play a large part in both sexes during the mating of insects and serve both as attractants from a distance and as aphrodisiacs exciting the opposite sex to copulation. These pheromones are perceived as scents by olfactory receptors on the antennae of the recipient.

In some moth species virgin females are capable of attracting their specific males from distances of hundreds if not thousands of metres. Some males when they get close to the female release an aphrodisiac pheromone, which brings about mating. Amongst butterflies it is usually the male, instead of the female, that possesses scent or pheromone producing organs.

Male butterflies are often able to produce aphrodisiac scents from glands which are commonly associated with scales. These scales, known as androconia, often occur on the wings, and they may be either scattered or grouped together into sex brands. Scent scales often have an elongated form and terminate in a row of hair-like processes or fimbriae. Glandular cells in the wing membrane are presumed to connect with the base of the scale, but it is not clear how the scent is discharged from the scale.

A typical example of aphrodisiac pheromone at work is found among the satyrid butterflies. Here the androconia of the male often form an elongated patch across the centre of the fore wing. These scent glands emit a pheromone which excites the female to accept the courting male. During an elaborate courtship it has been observed in several species that the knobs of the antennae of the female come to touch the patches of scent glands – then mating immediately follows.

In the males of some species the scent-secreting zone is separated from the dispersing zone. The male of *Amauris niavius dominicanus* Trimen has a small scent patch on each of the hind wings. The pheromone from these scent patches is dispersed by a pair of scent brushes associated with the genitalia. Each brush consists of a group of long hairs arising from the bottom of a sac which can be everted by haemolymph pressure so that the hairs project as a tuft. In order to disperse the scent the insect lands with its wings spread, everting the scent brush as it does so. The scent organs are brushed with the hairs, which presumably raise the covering scales and come into contact with the scent cup. The scent is then dispersed from the expanded brush and the movement is repeated. In *Danaus* the scent-brushes themselves produce a scent, but it is enhanced after the brushes have made contact with the glands on the wing. In some species the scent-brushes are covered with fine, dust-like particles, which shower forth as a rain of scented particles when the scent-brushes shoot out. Pheromones are characteristic for each species so that the butterflies can tell their own species from all others. Some of the pheromones can even be detected by the human nose.

A good example showing the function of scent-brushes (or hair-pencils) during courtship is given by *Danaus chrysippus* (Linnaeus) as recorded by Stride (1958) (*Anim. Behav.* **6**: 224-230). He found that while the female normally flies in a leisurely, unhurried manner, during courtship she adopts a rapid, rather jerky flight. On overtaking the female the male flies above, hair-pencilling the front part of the female every time an opportunity presents itself. Within a short time, the female settles with the male beside her, facing in the same direction. Then the male bends his abdomen sideways to reach the female and join with her. Once the genitalia have joined they adopt the normal end to end position found in butterflies.

Zophopetes dysmephila dysmephila (Trimen). A skipper recently discovered in the extreme south western Cape

A.J. M. Claassens

Due to its crepuscular habits and the fact that it bears a superficial resemblance to a moth and, moreover tends to be attracted to light like a moth, this butterfly has escaped the notice of local butterfly collectors until fairly recently. The species was first discovered and identified with certainty in the Western Cape by Mrs Karen Gallon in Claremont, a suburb of Cape Town, on 10th September, 1980. Subsequent observations by Mr G.J. Howard of Lakeside, prompted by Mr C.G.C. Dickson, revealed that the early stages of the butterfly occurred locally on date palms (*Phoenix dactylifera* L.). This discovery of the species in the extreme western Cape was soon followed by the capture of adults and records of early stages on date palms by others, in a number of localities in and near Cape Town. Claassens and Dickson found the early stages on the palm *Phoenix reclinata* Jack. at Kirstenbosch on 24.5.81. Mr C.W. Wykeham quite frequently sees this butterfly flying, just before or at dusk, in his garden in the Oranjezicht district of Cape Town. It breeds on the two celebrated date palms, in Long Street, Cape Town, and even in Mr Dickson's garden!!

Claassens found the early stages on *P. caneriensis* and another palm, probably *Chrysalidocarpus (Areca) lutescens* (the butterfly palm) in nurseries in Hout Bay and Constantia. These nurseries obtain their palms from nurseries in the Transvaal. No doubt *dysmephila* was introduced into the extreme south western Cape and probably other areas on palms bought elsewhere. The first specimens must have arrived many years ago. At Kirstenbosch, Claremont and a number of other places the species has established itself well and probably for good.

Messers V.L. and E.L. Pringle of Bedford, Cape, maintain that the specimens from Port Elizabeth (previously the butterfly's most western known limit) are darker than those from other localities and that, in their opinion, they represent at least another race.

A full report on *Z. d. dysmephila* is being prepared for publication elsewhere.

Acknowledgement
Sincere thanks are expressed to Mr C.G.C. Dickson for his generous assistance and his never failing interest.

The effects of drought on some South African butterflies

Ernest Pringle

It is not news that the summer rainfall areas have experienced widespread and catastrophic climatic conditions over the last few years. The Eastern Cape was also affected – although it must at the same time be added that this part of the country is no stranger to such conditions. In fact, it has been the author's misfortune to observe a number of dry years, as well as two such major droughts, since he began collecting butterflies in the eastern Cape.

It is the effect of these droughts on butterfly life in the eastern Cape, with particular reference to our farm "Huntly Glen" in the Bedford district, which I shall attempt to analyse hereunder. I should be most interested to hear the comments and observations of other butterfly collectors on this subject, so I hope this article will prompt some response.

Since the weather is the villain of this piece, I shall begin by summarising the broad weather patterns which have occurred in our area over the past fifteen years, starting in 1968. (only farmers keep such good records! – Ed.). The spring of 1969 saw the end of a disastrous drought cycle, lasting some four years. This was followed by a succession of wet years, lasting until 1977, and reaching a peak in 1974, when rainfall was double the average. After this, from 1978 to 1984, another dry period ensued. Within this last period rainfall below average was recorded in 1978, 1979 and 1980, while 1981 provided some relief, showing normal rainfall. After 1981 the drought reached crisis proportions with exceptionally low rainfall during 1982 and the first half of 1983. Good rains were experienced during spring 1983 and lasted until December. This was then followed by a reversion to drought conditions during January and February 1984, until rain finally fell again at the end of March 1984.

The first noted effect of drought conditions on butterfly life was upon the hatching times of certain individual species. For instance, two species which are normally very consistent in their dates of emergence are *Trimenia argyroplaga* and *Dira clytus eurina*. *T. argyroplaga* is normally one of the first spring butterflies to emerge in our area, emerging in mid-September, while *clytus* is normally punctually recorded in mid-February. Both butterflies delayed their dates of emergence by approximately three weeks during the past season. In the case of *argyroplaga* this could possibly be explained by the fact that the advent of spring was delayed by a heavy, cold rain which fell during late July 1983. Similarly, the case of *clytus* could also be explained by the fact that hot, dry conditions in February 1984 possibly delayed the advent of autumn. Whatever the reasons, one thing is clear: it takes truly exceptional weather patterns to affect the hatching periods of butterflies such as these. Most dry years did not affect them in the least but the exceptional drought of 1982-83 most definitely left its mark.

This brings me to the second noted effect of drought on our butterflies, namely fluctuations in population densities of colonies. Probably no butterflies are totally drought resistant although some species, such as *Phasis braueri*, certainly do have a high degree of drought tolerance. During the height of the drought in 1982/83 most species became noticeably more scarce. For example, all the '*Loranthus*-breeders' (i.e. the genus *Iolaus*) became virtually impossible to find. However, when reasonable rainfall was recorded once more in the spring and early summer of 1983, there was a dramatic upsurge in the populations of all local butterflies. Suddenly, for example, vast numbers of eggs, larvae and adults of all the *Loranthus*-breeders could be found without any difficulty. Most of the local Pieridae, too, could be seen in their myriads. In short, late 1983 became a swarm year for all the local spring and summer butterflies.

A similar swarm year was last recorded in the spring of 1969 – also after the termination of a severe drought during the previous few years. Recovery of butterfly populations following droughts is therefore likely to be dramatic – a point which collectors could keep in mind when planning trips to far-off areas.

My third and final observation concerning drought and butterflies is probably the most contentious. It concerns population destruction by drought. The first instance of this was the case of *Lepidochrysops southeyae*. This interesting little species was first recorded on our farm "Huntly Glen" in 1973 and was subsequently seen in numbers in successive years between 1973 and 1976. The fact that we had not recorded this localised species in our area prior to 1973 was at the time put down to oversight on our part. However, the advent of dry years caused a rapid decline in the known colonies and the last recorded specimen was taken in 1977. *L. southeyae* has since not been seen on our farm again.

The second instance was that of *Actizera stellata*. This little butterfly amazed us in 1976 by appearing in great numbers in a small area on our farm – like *southeyae* it had also not been seen there previously. Again, we attributed this to oversight on our part – after all *stellata* is not a conspicuously large insect! At the time, large numbers of eggs and larvae were found on its foodplant, the red clover (*Trifolium africanum*). However, a reversion to drought conditions has greatly reduced the amount of foodplant growing in the area and, to our dismay, has eradicated our colony of *stellata*. The last specimens were seen in 1977, just before the first of the dry years.

In the case of *southeyae* I at first thought that the insect was delaying emergence until such time as a general improvement of conditions took place. After all, *southeyae* is probably an ant-associated insect and could, therefore, easily remain dormant underground. However, the case of *stellata*, as well as the passing of many seasons, has convinced me that this is not the case. Like *stellata*, *southeyae* has undoubtedly disappeared from our immediate vicinity.

Now, looking back at the extraordinary saga of these two insects, it has struck me that it was probably not mere coincidence that they should both have been sighted on our farm for the first time during a cycle of wet years. And then, that they should apparently vanish as quickly as they appeared when that wet cycle was over. Instead, it seems to me that collectors should revise the long-held theory that all butterfly colonies (and in particular lycaenid butterflies) are static i.e. that a particular butterfly will be found in a certain area year after year. This may certainly apply to most species – but apparently not to all.

In the case of *stellata* and *southeyae* it seems likely that certain areas harbour 'nucleus' colonies, where the butterfly may indeed be found year after year. When conditions are favourable, however, these colonies will expand rapidly to adjoining areas where other breeding colonies will be established. A resumption of unfavourable conditions, however, depopulates these habitat extensions and causes the populations to shrink back to the nucleus colonies. Thus a permanent state of flux exists and a collector who collects such species in a favourable year may well be misled as to their true distribution.

A close corollary to this process is that of butterfly migration, except that the latter is a far more obvious process and takes place in concerted movements. Collectors should keep the above points in mind when conducting searches for other 'problem' insects such as *Lepidochrysops penningtoni* and *L. jamesi claassensi*.