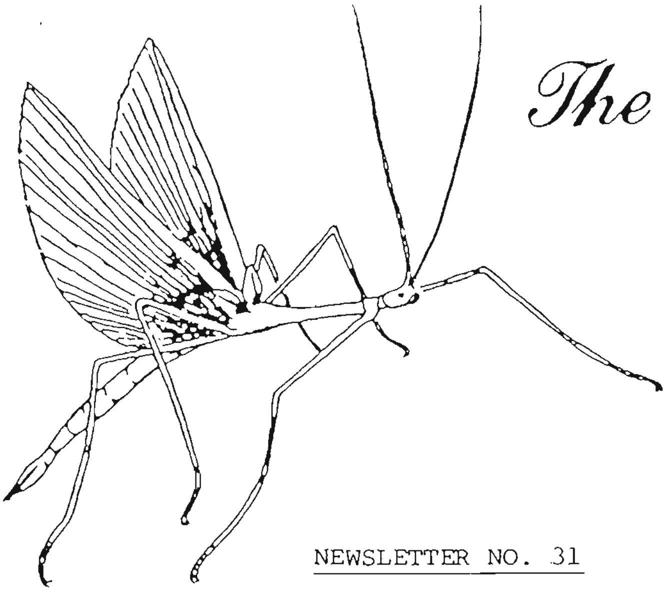

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The Phasmid Study Group

Chairman: Mrs Judith Marshall
Department of Entomology
British Museum (Natural History)
Cromwell Road, London SW7 5BD

Membership: Paul Brock (Phone 0753-79447)
"Papillon", 40 Thorndike Road
Slough, Berks SL2 1SR

NEWSLETTER NO. 31 June 1987

FORTHCOMING MEETINGS

The next PSG meeting will be at the Centre for Life Studies (near the London Zoo aviary in Prince Albert Road) on Saturday 18th July, starting at 10.30 a.m.

The Amateur Entomologists' Society Exhibition will be at the Hounslow Civic Centre in Lampton Road on Saturday 10th October, presumably from 11 a.m. to 5 p.m. as usual. The PSG has booked two tables. Paul Brock (No. 26) will give a special display on phasmids and a talk at about 3 p.m.

NINTH MIDLANDS ENTOMOLOGICAL FAIR by John Slater (No. 183)

Our very full display included species 1 (three males!), 2, 6, 18 and 26. Five members kindly helped out, which gave us all a chance to look at the rest of the show too. The venue was very spacious and although there were quite a lot of people it did not seem cramped. We made several new PSG acquaintances - rearing phasmids can be a bit solitary so it is always good to talk over problems (and solutions) with other like-minded individuals. We signed up four or five new members at the Fair and a lot of people took application forms. We had little to give away, but it all went!

MEMBERSHIP LIST AS AT JANUARY 1987 - AMENDMENTS

78 Adrian Durkin is a Committee member for 1987.
Please delete: 59 Jeremy Mortimore and 94 Steven Trewick.
Please add:
398 Jonathan Doughty, 36 Ladywood, Boyat Wood, Eastleigh, Hants SO5 4RW.
433 Derek A.D. Harvey, 52 Gourney Grove, Stifford Clays, nr Grays, Essex RM16 2DH (0375) 372880.

LIVESTOCK SUPPLIERS' PANEL

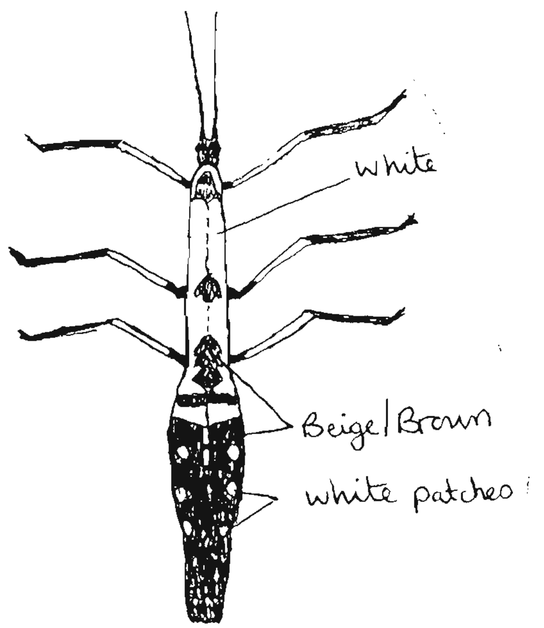
265 Julian Hume has resigned from this. Thanks for all his help.

WANTS AND SURPLUSES

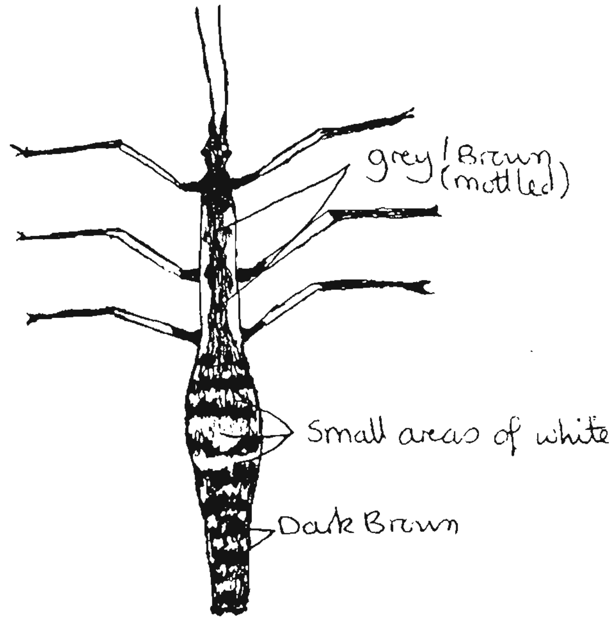
Chris Raper (No. 216) wants information about the flora and fauna (especially phasmids) of the Carribean/Windward Islands, in particular Dominica. Advice on good identification books and collecting tips will also be welcomed.
Phil Bragg (No. 445) wants eggs or nymphs of species 6 or 80. He has surplus nymphs and eggs of 1, 4, and 22 and surplus eggs of 5. His address is 8 Cornwall Avenue, Beeston Rylands, Nottingham NG9 1NL (phone 0602-222118).
Alain Deschandol (No. 238) wants *Phyllium* sp., *Acanthoxyla* sp. and species 84, and can offer in exchange eggs of 18 and 82.
Richard Wallis (No. 365) wants nymphs or eggs of species 5, 15, 35, 48, 52, 60, 84.

LIBETHRA REGULARIS COLOUR CHANGE ON SPRAYING by Dawn Tudor (No. 363)

One of mine changes colour with increased humidity. I normally keep humidity at 70-80% but, shortly after spraying the foodplant, and so the phasmid, with warm water, she takes on a much paler appearance, developing white patches on the dorsal surface of her thorax and abdomen. This change may last until the next spraying (i.e. the next day) or she may revert to her normal dark brown appearance by that time. I wonder whether this is true of most of this species or if it is a peculiarity of this particular phasmid?



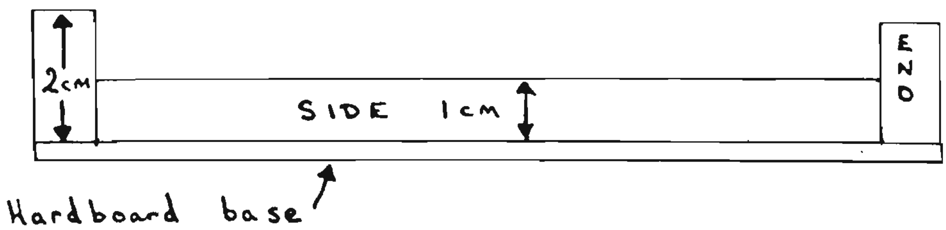
Appearance on spraying



Normal appearance

EGG TRAYS by Phil Bragg (No. 445)

Problems can occur with nymphs hatching in plastic boxes with a low roof or with no food available for several days if the owner is away. I get round these problems by keeping my eggs in open shallow trays in a humid cage containing a suitable foodplant. My trays are 10 x 15 cm with end heights of 2-2.5 cm and sides of only 1 cm.



The advantages are that:

1. Many eggs take up only a small surface as the trays can easily be stacked on top of each other.
2. The young insects can crawl out easily and find their way to food as soon as they hatch.

The only disadvantage I've found is that the cage they are in needs to be very moist to prevent the eggs becoming too dry.

A USE FOR OLD BIROS by Phil Bragg (No. 445)

Old biros with the inners removed and ends plugged with cotton wool are ideal for posting all but the larger eggs. (See also Newsletter 30, page 4 - Eds.)

STICK DEATHS by Eric van Gorkom (No. 250)

Deaths after food changing (see note in Newsletter 25, page 2) may be caused by the sudden change in moisture content of the food (from stale to fresh), so I do not put new food in a cage until at least the day after I have collected it.

EVERGREEN PLANTS FOR ADULT BULKY STICKS by Frances Holloway (No. 3)

I have been searching for evergreen and semi-evergreen plants to go with bramble for our adult Heteropteryx dilatata (PSG 18), Haaniella echinata (PSG 26) and Eurycantha sp. (PSG 44), particularly over the winter months. The following have been eaten, starting with the most popular:

Lucombe Oak (semi-evergreen), Holm Oak, Loquat, Cotoneaster salicifolius (semi-evergreen), Rhododendron, Cherry Laurel (PSG 18 only), Berberis (26 only), Spotted Laurel (44 only) and Mahonia aquifolium.

The two kinds of Laurel smell very pungent and are reputed to give off harmful fumes. So I take care with these and use them only in relatively small amounts in large, ventilated cages.

NATURAL FOODPLANTS FOR DIAPHEROMERA FEMORATA

Ulf Carlberg (No. 28) lists more than 26 plants, from nine papers by other authors, in "Culturing stick- and leaf-insects (Phasmida) - A Review" (Z. Versuchstierkd. 29 (1987) 39-63). These plants are: Acer spp., Amelanchier sp., Betula sp., Castanea sp., Carua sp., Carya sp., Corylus spp., Comptonia sp., Cornus sp., Gleditschia sp., Liquidambar sp., Nyssa sp., Pinus sp., Platanus sp., Populus spp., Prunus spp., Quercus spp., Rhus. spp., Robinia sp., Rosa sp., Rubus spp., Sassafras sp., Tilia sp., Ulmus sp., Vaccinium sp. and Vitis sp.

FOODPLANT FOR EURYCNEMA HERCULEANA by Nöel Mal (No. 395)

Mine appreciate Psidium goyavacum.

A NEW FOODPLANT FOR CARAUSIUS MOROSUS by Margaret Pickles (No. 400)

I have reared my C. morosus mainly on Ficus bengaminus. They have also been fed on raspberry and wild rose, but prefer the Ficus when given the choice.

QUERY from Margaret Pickles (No. 400)

Has anyone tried or found information on artificial diets for phasmids?

GIANT STICK INSECTS IN TANZANIA by Charlye Woolman (No. 2)

We always like the extreme forms, be it in size or in shape. One of the cherished objectives which I had in Tanzania was to find and bring into culture a giant species which the PSG did not yet have on its list. Unfortunately I did not achieve this goal. I did, however, receive a dead specimen of one of the giants and, unwittingly, collected a young nymph of one during a beating session on Acacia.

In order to narrow down my searches and increase my chance of success I first looked through the books and periodicals in the library at Dar es Salaam University. The references were rather thin on the ground, but I found two to Palophus species. Carpenter (1942) described a Palophus female, which he thought might be P. episcopalis (Kirby), as being 400 mm from the tip of her front legs to the tip of her hind legs. He said that the eggs resembled Lycaenid pupae, or perhaps a "warty excrescence". The lower wings were subdivided into two areas: a grey, bark-like anterior portion covering a black posterior portion. The upper wings were reduced and scale-like. The lower wings were used for display, accompanied by loud swishing and hissing. Carpenter gave no details as to where the insect was found other than to say that the captor was E. Burtt, an entomologist at Tinde laboratory, near Lohumbo in Tanganyika territory (now Tanzania).

Miller (1949) had a female Palophus tiaratum brought to him in the Odzi district of Southern Rhodesia (now Zimbabwe). (Some people have all the luck - he gets a live female, I get a dead male!) Miller described the female as 347 mm from the tip of her front legs to the tip of her hind legs, with a body length of 180 mm. He obtained eggs from her (see Fig. 1) which produced nymphs, but he was unsuccessful in raising these. They refused leaves of Terminalia, Bauhinia and Pterocarpus, though they did eat "half-heartedly" some Swartzia. He mentions that a male was taken at night during the rainy season.

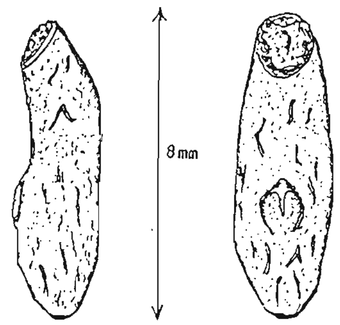


Fig. 1 Palophus tiaratum ova
(redrawn from Miller, 1949)

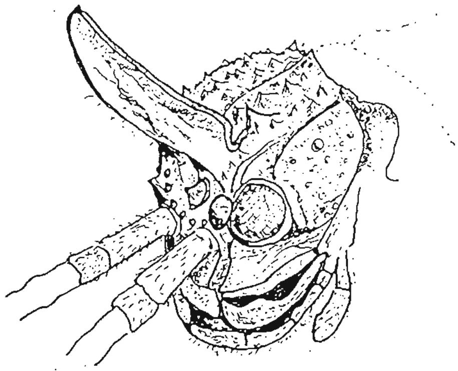


Fig. 2 Head of Palophus leopoldi
(redrawn from Pinhey, 1974)

Pinhey (1974) illustrated the eggs of P. reyi. These look just like the ones in Miller's paper on P. tiaratum. He also gave a full-size picture of a P. leopoldi, along with an inset showing details of the head (see Fig. 2). He described P. leopoldi as occurring on thorn trees (probably meaning Acacia) and said that the insect was over 400 mm from the tip of the front legs to the tip of the hind legs. Interestingly he also referred to sound production. He described how the female used her wings in self defence, raising them and flapping them "with a peculiar rustling sound like crumpling stiff paper".

On 3rd September 1981, whilst in Lake Manyara National Park (Tanzania), I went into the small museum which they have at the park entrance. There they had a specimen of a stick insect labelled Palophus reyi. It was a female and had a body length of approximately 200 mm. The rather rudimentary wings had a splash of white on them to look like a bird dropping; the rest of her body was a good imitation of greyish brown bark. The head had a few short spines on it. There were no data on the insect other than the name, but she was probably put there by A.M. Morgan-Davies, who set up the museum in the 1960s. The warden on duty told me that P. reyi feed on Acacia tortilis and are not uncommon in the park. Unfortunately the Acacias in the park had been browsed to a level higher than I could reach. I did some beating on Acacias outside the park but without success.

On 24th January 1982 I was collecting with a fellow entomologist, Jean-Pierre Lequeux, in the Pugu forest, just outside Dar es Salaam. These collecting trips always left me feeling like a "zombie" by the end of them, as we would sit around a mercury vapour light until three or four in the morning and then I would get up again at six to beat the vegetation before the sun got too fierce. It had been a good night with 10 species of hawk moths and myriads of other moths and general insect life coming to the light. I set off along the main path beating a variety of vegetation but concentrating mainly on Acacai (Acacia brevispica was the most common species there). I obtained a small nymph which was ruddy brown and well supplied with projections along its legs. It also had a knob on its head. I didn't get too excited about it as almost every collecting trip provided some nymphs which seemed "different" but which, after separate culture in ever-proliferating insect cages, proved to be the same few species when they reached the imago stage.

Perhaps if I'd realized exactly what the new nymph was I might have been more careful with it and it might have survived. As it was, it died after a few weeks

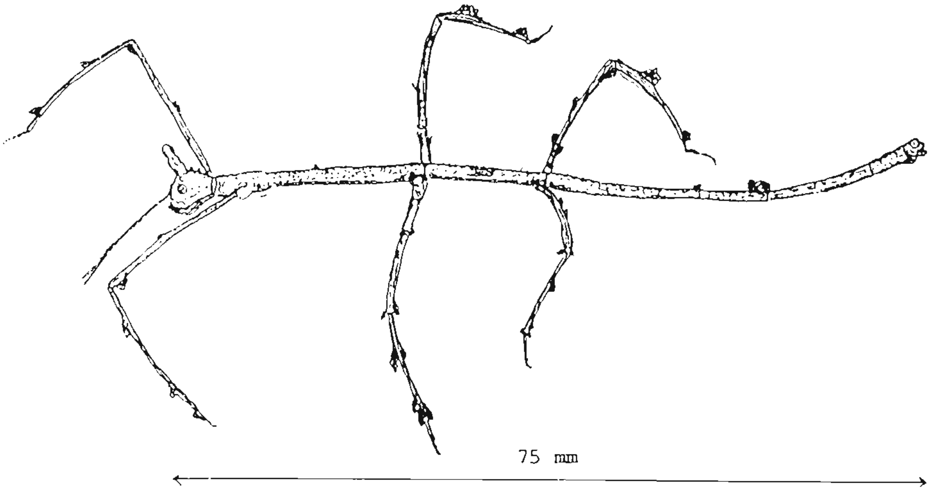


Fig. 3 Palophus (?) nymph from Pugu forest

and I put it in the freezer for later examination. Subsequently I visited the Natural History Museum in Nairobi, Kenya (formerly the Coryndon Museum). There I was able to inspect closely their giant Bactrododema stick insect specimens. They were very similar to the illustrations I have seen of Palophus and Paul Brock (No. 26) writes that these are related genera. Back in Dar es Salaam I got out my new nymph and, in drawing it (see Fig. 3), looked at it properly for the first time and realized what I had lost!

In March 1984 a friend of mine (Dr Peter Merrett) brought me a dead specimen of a male Palophus/Bactrododema from Kilosa, Tanzania (see Fig. 4). The insect

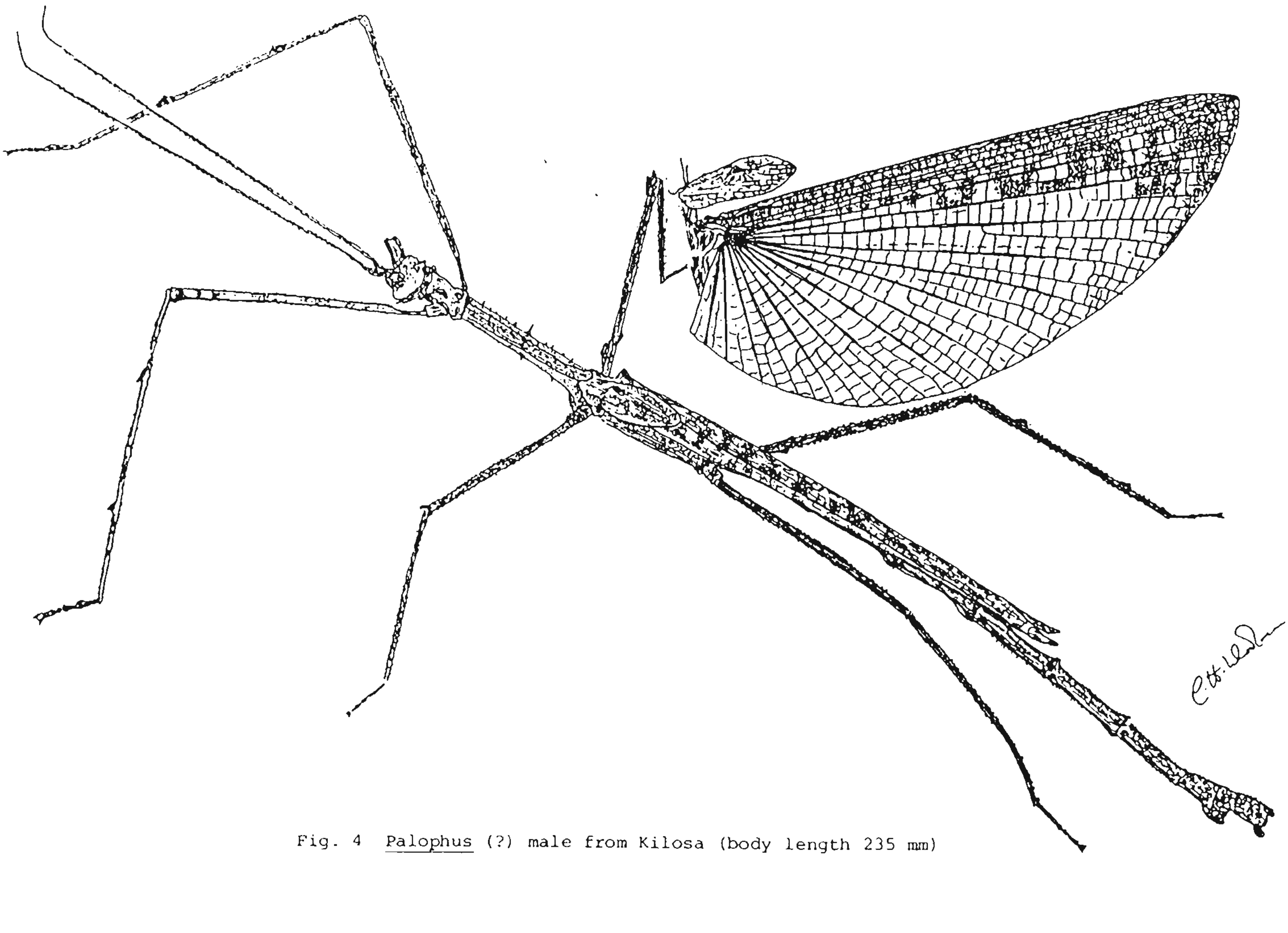


Fig. 4 Palophus (?) male from Kilosa (body length 235 mm)

was 235 mm in body length and had a generally greyish bark-like colouration. The fore wings were rudimentary and cryptically covered, but the hind wings were large and functional. Indeed, the insect had flown into a mercury vapour light, which is how he was caught. If you compare the detailed profile of the head (Fig. 5a) with that of the nymph from the Pugu forest (Fig. 5b), the similarity will be evident. I have also included a drawing of the underside of the abdomen tip (Fig. 6) of the male from Kilosa, as I have found that these features are useful in identification.

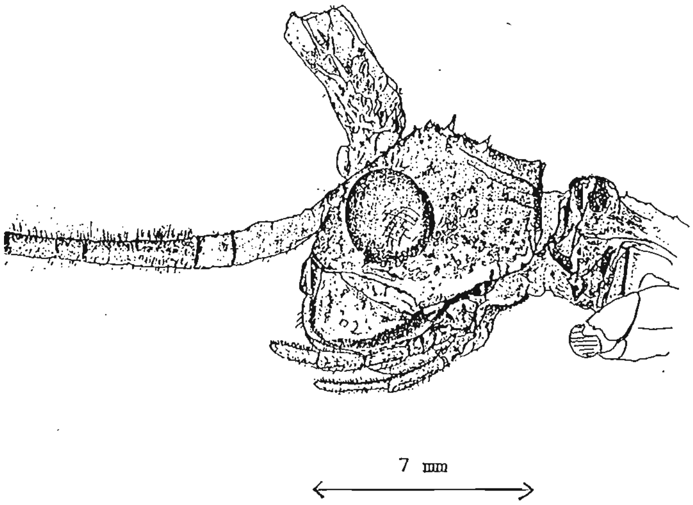


Fig. 5a Palophus (?) male from Kilosa: profile of head showing part of antenna

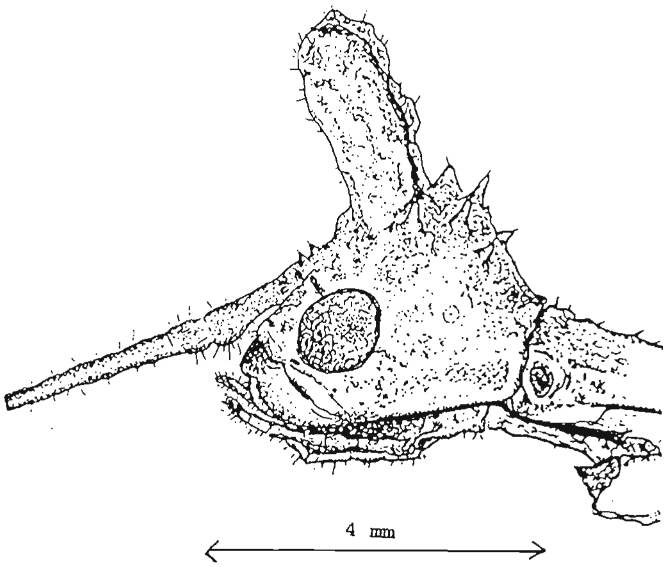


Fig. 5b Palophus (?) nymph from Pugu forest: profile of head showing part of antenna

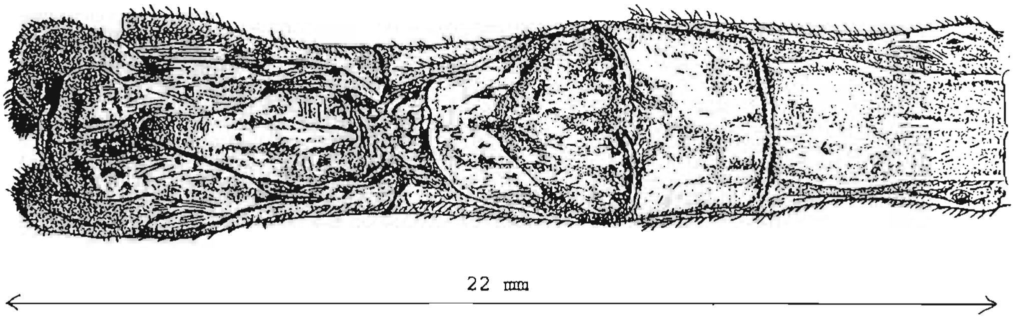


Fig. 6 Palophus (?) male from Kilosa: ventral tip of abdomen

It is a pity that I did not manage to get Palophus into culture, not least because it would be nice to have it now as a memento of my time in Tanzania. Perhaps someone else will be more successful in obtaining livestock of it in the future, particularly if they go to Nairobi where I am informed that they are not uncommon.

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Carpenter, G.D.H., 1942: Notes by E. Burtt on a species of Palophus (probably episcopalis, Kirby) a giant phasmid from Tanganyika territory, Proc. R. Ent. Soc. Lond. (A), 17, 75-6.

Miller, N.C.E., 1949: A note on Palophus tiaratum St. from Southern Rhodesia, Proc. R. Ent. Soc. Lond. (A), 24, 11-3.

Pinhey, E., 1974: A guide to the insects of Africa, Hamlyn, London.

"STICK INSECTS - PHYLOGENY AND REPRODUCTION" - A summary by John Sellick (No. 48)

This book, subtitled "Proceedings of the 1st International Symposium on Stick Insects, Siena, Italy, September 30th - October 2nd 1986", has now appeared. It is an attractive hardback which will cost anyone who would like it in his or her library 60,000 lire (about £30). If anyone is interested in obtaining a copy I can supply details.

The book contains 24 symposium papers and runs to 222 pages. A very brief summary of each of the papers is given below, in the order in which they are published.

Papers 1-8 are concerned with the problems of gamete production, and particularly of the origin of yolk.

1. Endocrine control of insect vitellogenesis: is the stick insect exceptional? by James T. Bradley (Auburn U.) and Franco Giorgi (Pisa U.)

Vitellogenesis is the production of yolk for the insect egg. In other known insects this production is under the control of JH (juvenile hormone) produced by a pair of glands, the corporata allata, attached to the brain. In Carausius morosus there is evidence that yolk production is under some other form of control. This is one of many pieces of evidence that phasmids are very distinct from the main mass of insects.

2. An overview of ovarian growth in stick insects by Franco Giorgi (Pisa U.) and Massimo Mazzini (Siena U.)

Two distinct vitellins (yolk proteins) are identifiable, composed of 3 and 2 polypeptides respectively, originating in the fat body. Only one follicle per ovariole (an ovary subdivision) matures at a time.

3. Ultrastructural observations of corporata allata in adult female of Bacillus rossius by M.G. Maurizii (Siena U.)

An electron microscope study of these brain glands. They appear to be inactive, judging by their ultrastructure, reinforcing the conclusions from paper 1.

4. The secretory pathway in the fat body of stick insects by Massimo Mazzini (Siena U.) and Franco Giorgi (Pisa U.)

An electron microscope study of vitellogenin secretion from the fat body. B. rossius is specially useful because, unlike other insects studied, it does not have its activity obscured by large lipid droplets.

5. The synaptonemal complexes in oocytes and spermatocytes of the parthenogenetic Carausius morosus by Laas Pijnacker and Margriet Ferwerda (Groningen U.)

A synaptonemal complex is the structure which holds chromosome pairs together during the early stages of gamete formation. C. morosus keeps its chromosome number by having an extra chromosome duplication during egg production, and the complexes are formed only after this second duplication (thus guaranteeing no genetic variation).

6. Oogenesis and spermatogenesis of the parthenogenetic Carausius morosus Br. (Phasmatodea) by Laas Pijnacker (Groningen U.) and Paul Koch (Marburg U.)

Detail is given of chromosome stages in egg production. There are two possible courses of sperm production, one of which produces mostly aberrant sperm - the other resembles the course of egg production.

7. Preliminary characterisation of the egg yolk and hemolymph of Carausius morosus by Ole Arne Schjeide and Paul Schmidt (Northern Illinois U.)

A study of the components of yolk.

8. Protein synthesis and secretion by in vitro cultured ovarian follicles in Carausius morosus by Isabella Spinetti (Pisa U.)

As well as absorbing a yolk precursor from the fat body via the haemolymph, the egg-producing follicles can make and secrete several polypeptides.

Papers 9-13 are concerned with behaviour and physiology.

9. Mutual constraints during evolution of catalepsy and rocking movements in phasmids by Ulrich Bassler (Kaiserlautern U.)
Undisturbed phasmids under daylight conditions either show catalepsy of the legs or show rocking movements. Catalepsy follows movement of a joint and is controlled by a feedback loop. Rocking is a rhythmic side to side movement involving synchronisation of leg movements. The evolution of these two behaviours is considered in terms of control loop gains.

10. Coordination of middle and hind legs of a walking stick insect by H. Cruse, A. Knauth and W. Schwarze (Bielefeld U.)
The effect of interrupting movement of the legs was examined by a special video technique. Three different coordinating mechanisms are described. These involve inhibition and excitation of the middle leg by the rear leg, and excitation of the rear leg by the middle leg.

11. Presence, isolation, structure elucidation and mode of action of metabolically active neuropeptides from stick insects by Gerd Gäde (Düsseldorf U.)
The main source of active substances is the corpus cardiacum (CC) in the head. The substances are hypertrehalosemic hormones (HTHs) and adipokinetic hormones (AKHs), mobilising carbohydrates and lipids respectively. AKHs are normally used in flight, and there is a problem over their role in the flightless C. morosus.

12. Hypertrehalosemic factors from the stick insect Sipyloidea sipylus by Ulrich Lechtape-Grüter, Volker Pöhl and Gerd Gäde (Düsseldorf U.)
A further consideration of these hormones, this time in a winged species.

13. Sensory control during active movements by Gabi Weiland (Kaiserlautern U.)
An experimental set-up was produced in which false data were fed into the limb control loops.

Papers 14-20 cover ideas on taxonomy (classification).

14. Spermatozoa and stick insects phylogeny by Baccio Baccetti (Siena U.)
The sperm of stick insects is unique in the animal kingdom, lacking mitochondria but having two enormous accessory bodies. Sperm is generally 0.2-0.3 mm long. Detailed studies in 8 genera indicate that the conventional subdivisions of phasmids are not likely to represent their true relationships.

15. A third New Zealand stick insect (Phasmatodea) established in the British Isles, with notes on the other species, and a correction by Paul Brock
Acanthoxyla geisovii (previously thought to be A. prasina) has been recorded from Tresco, Torquay, Paignton and St Mawes. Clitarchus hookeri has also been recorded from Tresco and doubtfully from some other localities. Acanthoxyla inermis is new to Britain. It was found in Falmouth in 1981. Descriptions and keys to the 3 species are given.

16. The micropylar plate of the eggs of Phasmatodea, and its taxonomic significance by John Sellick
From examining eggs of 119 species it is concluded that the micropylar plate is a diagnostic feature of phasmids (found in all phasmids but nowhere else). There is evidence that, as well as marking the site of sperm entry, it also has a role in obtaining gas for respiration. Two types of plate, open and closed, are defined and their distribution is related to the existing classification of the order.

17. The eggs of three Acanthoxyla species by Barbara Mantovani and Valerio Scali (Bologna U.)
A comparative study of A. geisovii, A. inermis and A. prasina. Dimensions and scanning electron micrographs are displayed.

18. A comparative analysis of vitellins in stick insects by M. Masetti (Pisa U.)
The egg proteins of 20 species of phasmid were compared by electrophoresis. These included 8 species of the genus Bacillus. The study confirms evidence from

other sources of the relationships of the species of this genus, so this approach is likely to be valid for other relationships within the order.

19. Ootaxonomy of stick insects (Phasmatodea) by Valerio Scali (Bologna U.) and Massimo Mazzini (Siena U.)
This article gives particular emphasis to the Bacillus complex and in particular the 8 subspecies of B. rossius. Consideration is also given to Ramulus and the apparent need to split this genus.

20. The micropylar plate and its possible role in the eggs of Phasmatodea by Renata Viscuso and Gugliemo Longo (Catania U.)
Another consideration of this plate, suggesting that the role is entry of oxygen into the egg, which as well as being respiratory also removes a block to further development.

Papers 21-24 cover genetics and evolution.

21. Speciation by hybridisation in stick insects (Insecta, Phasmatodea) by Luciano Bullini and Guiseppi Nascetti (Rome U.)
Genetic differences between species are used to investigate their possible hybridisation. It now seems well established that Bacillus whitei originated by hybridisation between B. rossius and B. grandii; B. lynceorum in turn appears to be a hybrid of B. whitei and B. grandii. A hybrid Leptynia form is also identified (provisionally called L. hispanica D). A suggestion is also made that C. morosus itself is hybrid.

22. Preliminary data on electrophoretic multilocus analysis of eastern taxa of the genus Bacillus (Phasmatodea, Bacillidae) by G. Gaspieri and A. Malacrida (Pavia U.), B. Mantovani and V. Scali (Bologna U.)
More studies of 6 species of Bacillus from the genetic point of view, showing a marked difference between B. rossius and the more eastern species.

23. The parthenogenesis and cytogenetics of Carausius morosus by Laas Pijnacker (Groningen U.)
A further suggestion of C. morosus as being of hybrid origin. A consequence of the parthenogenetic doubling of chromosomes is that mutations can accumulate, leading to genetic differences between laboratory stocks.

24. Karyology and cytotaxonomy of Phasmatodea by Valerio Scali and O. Marescalchi (Bologna U.)
Karyology is the study of chromosomes. Didymuria violescens is known to have at least 10 different chromosomal types, with chromosome numbers ranging from 26 to 40. Other species are beginning to yield similar results.

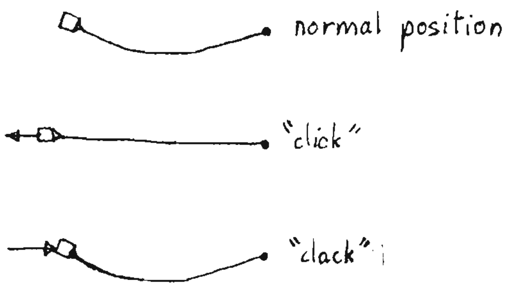
Sadly, the book is provided with only an author index. I have constructed a genus index in which the numbers refer to the papers in the above listing.

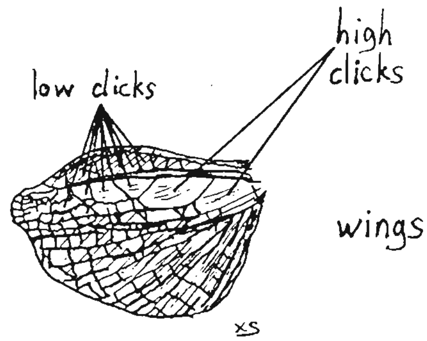
HETEROPTERYX DILATATA NOISES by Xavier Singy (No. 359)

In the adult female, the first noise system is produced by the wings as they are opened. Normally the wing is crumpled and the individual cells are curved. As the wings are opened the cells extend to flat surfaces and produce "click" noises: the larger cells produce higher pitched clicks and the smaller cells produce lower pitched clicks. As the wings are closed the cells produce "clack" noises. The second noise system is produced by the wings rubbing the elytra as they are opened: this produces a "pssit" noise. These observations were made on a freshly dead specimen.

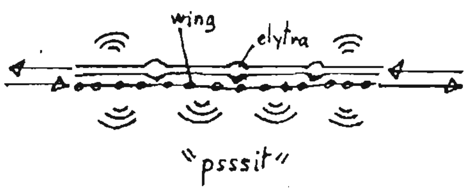
First noise system

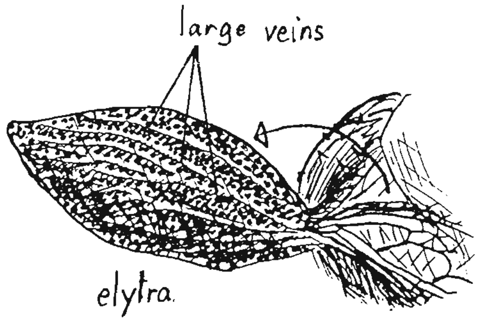
Section of a wing cell





Second noise system





HETEROPTERYX OSTRICHES! by Michael and Frances (No. 3)

Heteropteryx dilatata seem to exhibit the ostrich's "head in the sand" behaviour more than most sticks. For example, we recently had a young adult female living for several days in the same place at the front of her cage. In the morning, when the night-time curtain was lifted, she would be facing outwards. But in a few minutes she would turn her body through 180° to face inwards, often also hiding her head (only) behind a leaf.

HETEROPTERYX DILATATA EGG LAYING by Alain Deschandol (No. 238)

I have a friend who has two adult females. When he sprays water into his cage these females go down to the ground and begin to lay in the peat! (Mine do not show this behaviour.)

VISION AND SMELL IN HETEROPTERYX DILATATA by Michael and Frances (No. 3)

One of our newly adult females showed a definite reaction to a moving human over 4 feet away!

And an adult male appeared to produce an unpleasant sickly smell when firmly held (to unfold the end of one of his outer wing cases).

PSG No. 79: BACTERIA SPECIES by Paul D. Brock (No. 26)

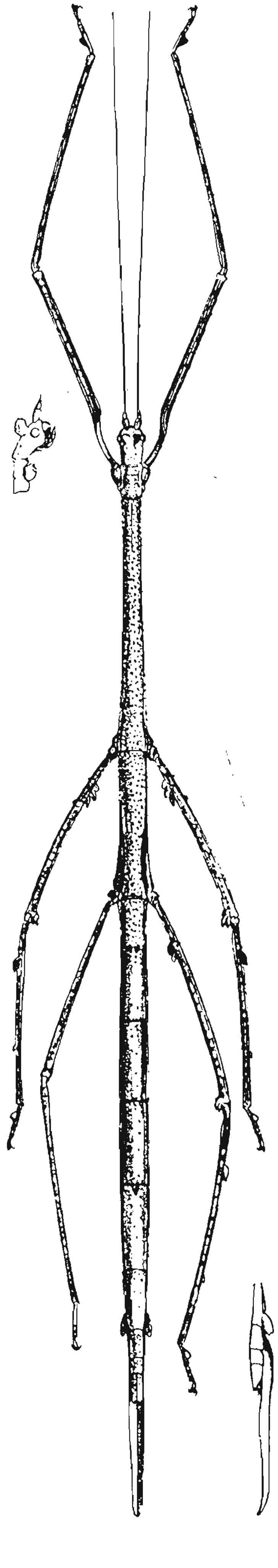
Origin: Eggs were originally kindly forwarded to me by Steve Prchal (No. 228) in 1984. He obtained adults 3 miles south of Alamos, Sonora, Northern Mexico, in August 1983. Dead adults were also forwarded to me for possible identification.

Classification: I consider this species belongs to the genus *Bacteria* Latreille, which has a number of Central and South American species, including several from Mexico. I have so far been unable to determine this Sonoran desert insect to species level, although consider that it is close to *Bacteria aetola* Westwood.

Adults: Females are very long and slender, the length from head to tip of abdomen being in the region of 200 mm (the three dead specimens I have are 208 mm, 196 mm and 185 mm, the last reared by me). They are brown with yellowish shading on the abdomen, and have two prominent horn-like processes on the head, along with two small spines. There are numerous tubercles, particularly on the thorax, but a lesser number on all the abdominal segments. The operculum is long, and the front legs are simple without lobes.

Males are also long and slender, being approximately 135 mm from head to tip of abdomen, and are light brownish green. The head has darker areas around the eyes, and also a whitish stripe, and the edge of the meso-thorax just before the first abdominal segment has whitish partial side stripes. The legs, particularly the mid legs, are mottled in a lighter shade.

The species is very close to *Bacteria aetola* Westwood, described from a female: Westwood's sketch of *aetola* (from Mexico) is shown here. The three female *Bacteria* species I have are all somewhat different from each other in respect of the ornamentation and lobes on the femora and tibiae, but they all have simple tarsi, i.e. lack the lobes shown on *aetola*, and they all lack the ornamentation on *aetola*'s sixth abdominal segment.



Ova: These are approximately 3 mm x 2 mm and generally rough in appearance. They are pale brownish grey with a yellowish brown operculum.

Nymphs: Newly hatched nymphs are yellowish in colour and approximately 15 mm long from head to tip of abdomen, with brown antennae 10 mm long. There are dark brown bands on the mid and hind legs. The thorax has a brown dusting, and alongside the eyes there are brown stripes which continue, partially broken, along the thorax. The fore legs are 14 mm long, mid legs 12 mm, and hind legs 14 mm.

The nymphs I reared became various shades of green or brown, the males being usually green.

Foodplants: Unfortunately, eggs laid between 13th and 20th June 1984 hatched (at an average 75°F) in September/ October, an awkward time of the year for foodplants. I was already aware from Steve that *Acacia constricta* and

Acacia smallii could be used, and in later instars the insects could be transferred to Pyracantha. I started mine on various species of Robinia including R. pseudo-acacia, after many plants were refused. Later on I used Acacia dealbata and Acacia baileyana before, in the depths of winter, I had finally to resort to Pyracantha. The changeover was not taken well, and several medium-sized nymphs died soon afterwards. The few survivors gradually died except for one female, who slowly reached maturity still feeding on Pyracantha. She laid eggs, but these failed to hatch.

Note that, as Acacia and Robinia belong to the Pea family, it is a little surprising that Pyracantha (Rose family) is used as an alternative foodplant.

Rearing: I decided to keep the young nymphs in a plastic propagator with the top replaced by netting. From third instar I used a glass aquarium with a small area of netting in the plastic lid. The foodplant was sprayed occasionally to help provide some humidity: Steve mentioned that a humid atmosphere was needed. It seemed at one stage that I would rear about five pairs, but that was when I had a good supply of Robinia and Acacia! Given a reasonable supply of one of these foodplants, I believe this species would be easy to rear at, say, 70°-80°F.

It was very unfortunate for Steve that a permit to rear this species at the prestigious Arizona Sonora Desert Museum was turned down by the authorities. I thank him for the chance to rear the species, and for information provided at the outset.

C. chani [misidentification]

BRIEF NOTES ON CARAUSIUS SANGUINEOLIGATUS (PSG 27) by Michael and Frances (No. 3)

For naming problems see Newsletter 7, page 3. This species was originally collected by Allan Harman (No. 189) in Sabah.

Adult females have a body length of 105 mm, colour green, long feelers, small "horns" on their head and "half plates" at the ends and middle of their front legs. Adult males have a body length of 65 mm, colour bright green but with pale joints, long feelers and a "bulb" at the end of their tail. Both sexes are thin and stick-like. Eggs are smaller than 1 mm, oval, fawn and capped.

Nymphs need warmth and often suffer from "egg leg jam". The generations overlap. If disturbed, adult males arch their back and fall about.

NYMPHS DOUBLE SIZE IN 30 MINUTES! by Paul Watts (ex No. 19)

refers to C. chani

When first hatched the Carausius sanguineoligatus (PSG 27) body is about 7 mm long and has two black rings - one between fore and middle legs, the other between middle and hind legs. However, after checking less than 30 minutes later these nymphs have actually doubled in size to 15 mm body length and the black rings have completely disappeared - amazing! (We have noticed two different sizes in our hatching boxes for PSG 27, 2, 17, 19 - Eds.)

SPECIES REPORT ON CARAUSIUS SANGUINEOLIGATUS (PSG 27) - This has run into identification problems, but we hope to replace it by one on Carausius sp. (PSG 66) in a later issue.

FORTHCOMING SPECIES REPORTS

Our grateful thanks to those who have agreed to write the following:

Raphiderus scabrosus(?) (PSG 82) by Alain Deschandol (No. 238) for December 1987
Dyme raraspinosa(?) (PSG 86) by Mel Herbert (No. 232) for March 1988
Lonchodes hosei (PSG 29) by Xavier Singy (No. 359) for June 1988
Pharnacia acanthopus (PSG 25) by Mel Herbert (No. 232) for September 1988

NEXT SPECIES REPORT - Phenacephorus cornucervi (PSG 73). Please send all your information (especially on the different morphs, or forms) by 1st August to Michael Lazenby and Frances Holloway at 9 Oaklands Court, Nicoll Road, London NW10 9AU.

NEXT NEWSLETTER - Please send all other contributions by 15th August also to Michael and Frances (address above).