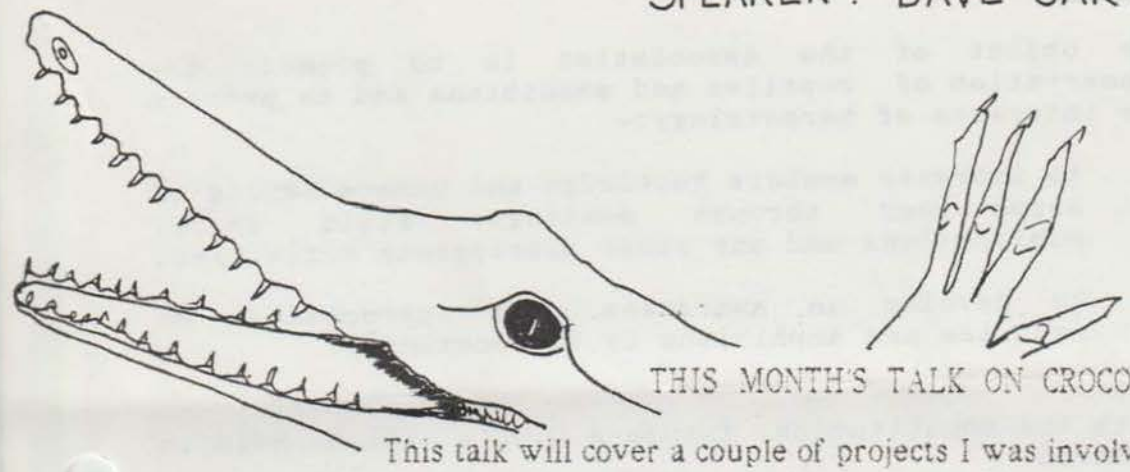
A.C.T. HERPETOLOGICAL ASSOCIATION 1989.

JULY NEWSLETTER

JULY MEETING

MONDAY JULY 17
7.30 p.m. A.N.U ZOOLOGY (downstairs)

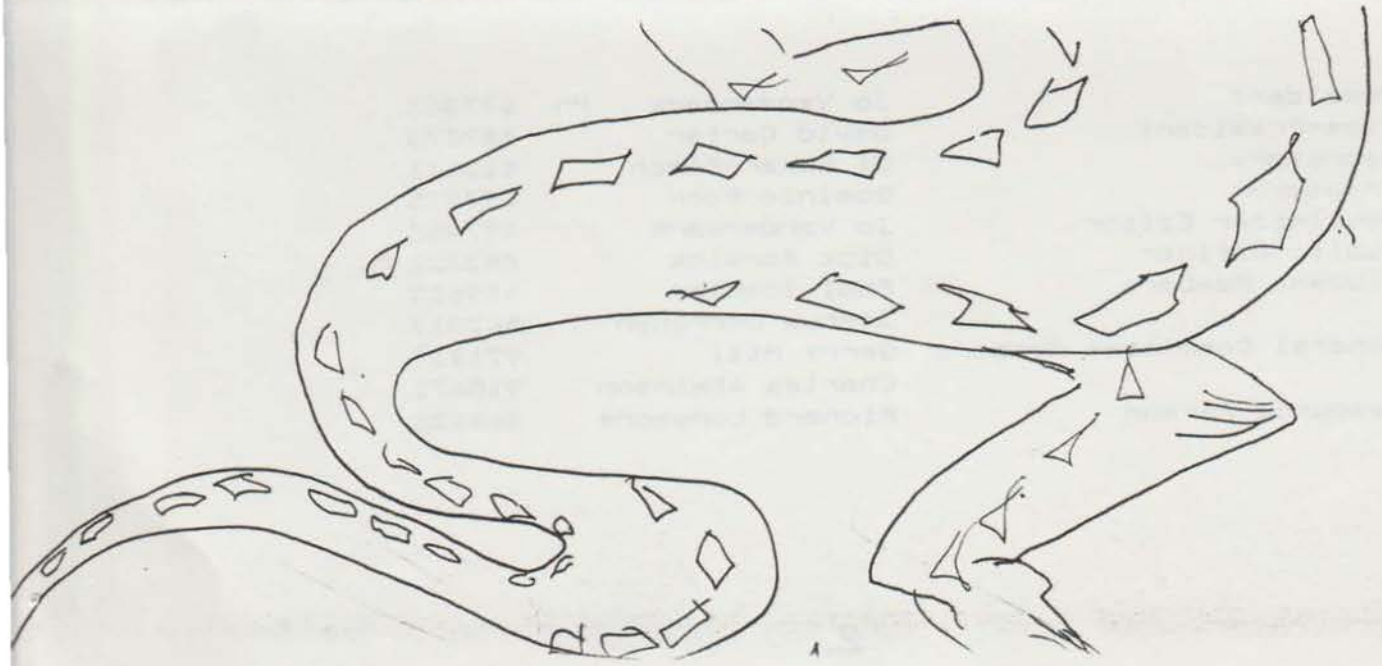
SPEAKER : DAVE CARTER.



THIS MONTH'S TALK ON CROCODILES

This talk will cover a couple of projects I was involved with in north Queensland - rather a long time ago now I realise as I look at myself in some of the photos! In two successive years, I joined the field team for Col Limpus' work on fresh water crocodiles while I was a student in Townsville. It was a study of a population of freshies in the Lynd River, to the west of the Atherton Tablelands, and we collected data on diet, movements, size, sex, breeding activities etc.

The second part of my talk deals with salt water crocodiles and will cover the work I did at the Edward River Crocodile Farm on the west coast of Cape York. This experimental farm (as it was then) was established by Applied Ecology P/L with a view to providing a local industry for the aboriginal community. The primary aim of the farm is to produce high quality skins but it also produces meat and, being the oldest crocodile farm in Australia, sells breeding animals to other farms. I did a range of jobs about the farm including a partly successful study of the social dominance and breeding behaviour of large crocodiles in an enormous breeding enclosure.



HISTORIC MEETING.

Thirty two members braved the bitter cold to participate in the June Annual General Meeting, an historic occasion because it saw the unanimous adoption of a constitution for the A.C.T. Herpetological Association.

OBJECTS

The object of the Association is to promote the conservation of reptiles and amphibians and to promote the interests of herpetology:-

to increase members knowledge and understanding of herpetology through meetings, field trips, publications and any other appropriate activities.

to develop an awareness and appreciation of reptiles and amphibians by the community.

In accord with the constitution, future A.G.M.'s will be held in the month of March.

If any members who were not able to attend the June meeting would like to peruse the constitution, copies will be available at the July meeting.

The decision to proceed with incorporation of the group was also unanimously recommended and the first step in this quite detailed and protracted process has been taken.

Dr. Richard Barwick then took the chair for the election of the Executive Committee for 1988-89. After spirited policy speeches and fierce competition the following office-bearers were elected by the narrowest of margins - well actually it wasn't quite like that! Anticipating the adoption of the constitution, all nominations were in writing and were signed by the nominator, seconder and nominee. As the number of nominations corresponded to the number of Executive Committee positions defined in the constitution (with one exception) the Chairman was able to announce and congratulate the following members on their election.

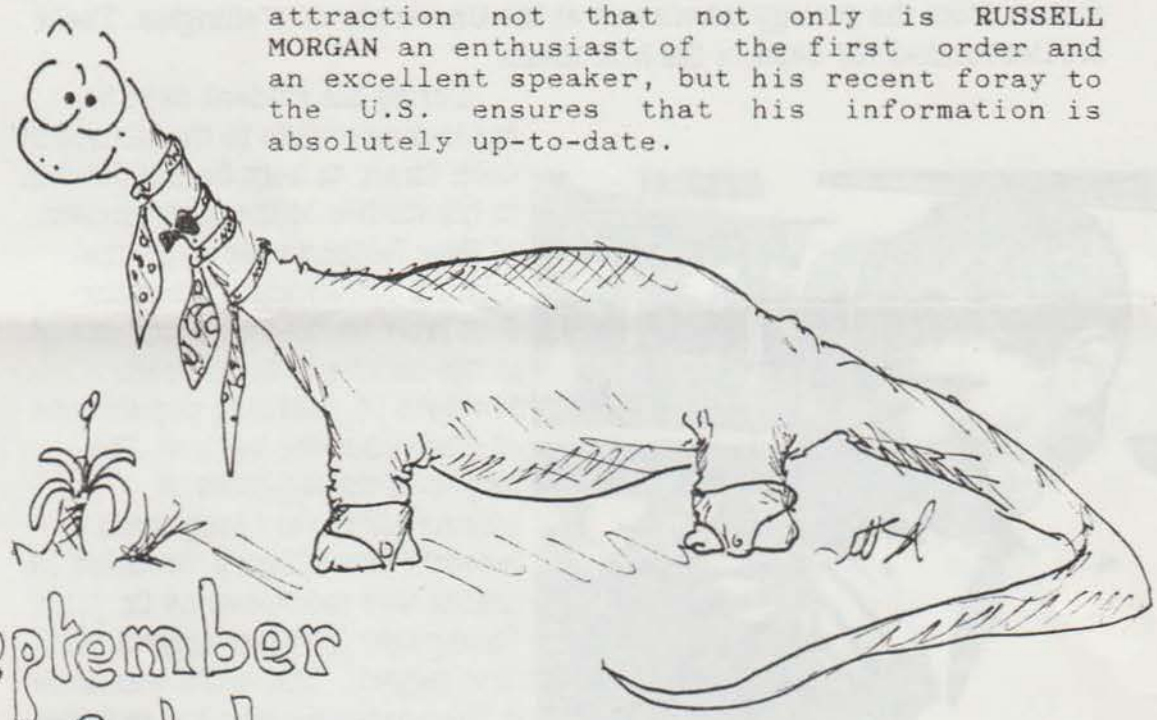
President	Jo Vandermark	Ph. 477963
Vice-President	David Carter	587378
Secretary	Di Baker-Finch	512411
Treasurer	Dominic Pook	477775
Newsletter Editor	Jo Vandermark	477963
Public Officer	Dick Barwick	862302
Student Members	Paul Scanlan	959610
	Joshua Dorrough	542015
General Committee Members	Gerry Hill	971819
	Charles Atkinson	910471
Resource Person	Richard Longmore	548328

More Marvellous Meetings

coming up soon.

August

It would be wise to arrive early to secure a seat for this perennially popular topic of DINOSAURS. Apart from the intrinsic interest of the subject matter, there is the added attraction not that not only is **RUSSELL MORGAN** an enthusiast of the first order and an excellent speaker, but his recent foray to the U.S. ensures that his information is absolutely up-to-date.



September

October

November

and on into the next decade....

From interstate

* HAL COGGER & MIKE TYLER Australia's leading herpetologists
* PETER HARLOW reporting on Water Dragons from his latest research.
* HARRY EHMANN - President of the Australasian Association of Herpetological Societies.

From the A.C.T.

* RICHARD BARWICK on Lungfish and the Evolution of Reptiles
* RICHARD LONGMORE on Snakes of the A.C.T.
* ROBERT JENKINS on Salt-water Crocodiles

We are also extremely fortunate that **DAVID CARTER** and **RICHARD LONGMORE** will be able to provide first-hand reports on the First World Congress of Herpetology.

?

WHAT'S IN A NAME? Unravelling the mysteries of scientific nomenclature has also been suggested as a topic for enlightenment at a future meeting.

PUBLIC OFFICER PROFILE.

The Public Officer for the society is Dr. Richard Barwick, Senior lecturer in Zoology at the Australian National University. 'Dick' Barwick has had an interest in fish, amphibians and reptiles since he first watched skinks chase each other and stalked introduced *Litoria aurea* in his native New Zealand. Following completion of a BSc degree he later studied a marked population of *Leiolepisma* skinks living in an old cemetary only 50 meters from the zoology laboratory at the University of Wellington. These studies formed the basis of his MSc thesis.

During his student days he made many visits to the islands in Cook Strait to help Dr. Bill Dawbin in his studies of the most ancient of New Zealand's reptiles - the Tuatata *Sphenodon punctatus*. Dick later worked on a tiny island in the middle of Cook Strait, Brothers Id., marking populations of *Hoplodactylus* geckos. The largest of these geckos *H. duvaucelli* is very long-lived, recently one of Dick's Brothers Id. lizards was recovered by Dr. John Thompson, 28 years after it was first tagged. This work was done in the winter months for, in three of the summers Dick was with Antarctic Expeditions on a wide variety of tasks: tractor driving, base-building, marine collecting, seal research, surveying and geological collecting.

After appointment as a lecturer in Canberra he made an extensive study of the ecology and life history of Cunningham's skink for his PhD degree. Later he spent time field-working in the deserts of Western USA while on sabbatical leave at the Museum of Vertebrate Zoology at the University of California, Berkeley. During this time he studied the newly developed techniques of radio-telemetry for tracking and transmitting information from animals.

In recent years Dick has been researching what is probably the vertebrate which has been the longest continuous inhabitant of Australia - lungfish. Lungfish have been held by some scientists to be the group from which four-limbed animals arose. So his work on fossil and living lungfish continues his interest in the origins of amphibia and reptiles. Recently discovered Australian fossils suggest a group of fishes the 'osteolepiforms,' distantly related to the lungfishes, may be ancestral to the amphibia.

Graduate and honours students under Dr. Barwick's supervision have worked on a wide variety of reptiles and amphibians, including: *Egernia cunninghami, E. saxatilis, E. whitii, Eremiascincus richardsoni,Ctenotus regius, Leiolopisma entecosteauxi, L. guichenoti, L. trilineata, L. delicata, l. metallicum, L. ocellatum, Lerista xanthura, L. punctatovittata, Sphenomorphus tympanum, Pseudemoia spenceri, Amnotis maccoyi, Morethia boulengeri, Amphibolurus diemensis, Gehyra variegata, Diplodactylus demeus, D. tessellatus, Heteronotia binoei, Varanus varius, Chelodina longicollis, Pseudophryne spp.*, and *Crinia spp.*. Other students have made studies on the thermal physiology and ecology of freshwater fish, marsupials and bats.

Part of the Incorporation process is the appointment of a Public Officer for a society.

The A.C.T. Herpetological Association is extremely fortunate that the eminent zoologist and long-standing herpetologist Dr. Richard Barwick has graciously agreed to be the Public Officer for the association. We would like to express our gratitude to Dick, who was a foundation member of the A.C.T. Herpetological Working Group.

Exploratory Excursions

WINTER WEEKEND AT ROSEDALE

Will the diamond pythons at the coast be indulging in winter basking or not? Well there is only one way to find out, and in any case, it is a good time of the year to flee the Canberra cold for the more temperate coastal regions.

Accommodation will be in two holiday houses in Miller Street - total number of beds 16. The suggested dates are, 4-6 August.

There are still a few beds not booked, so if you are interested phone 47 7963 or sign on at the July meeting.

Spring is definitely the time for

A WEEKEND IN THE DEUA: with the goannas and others.
Leader: DAVE CARTER

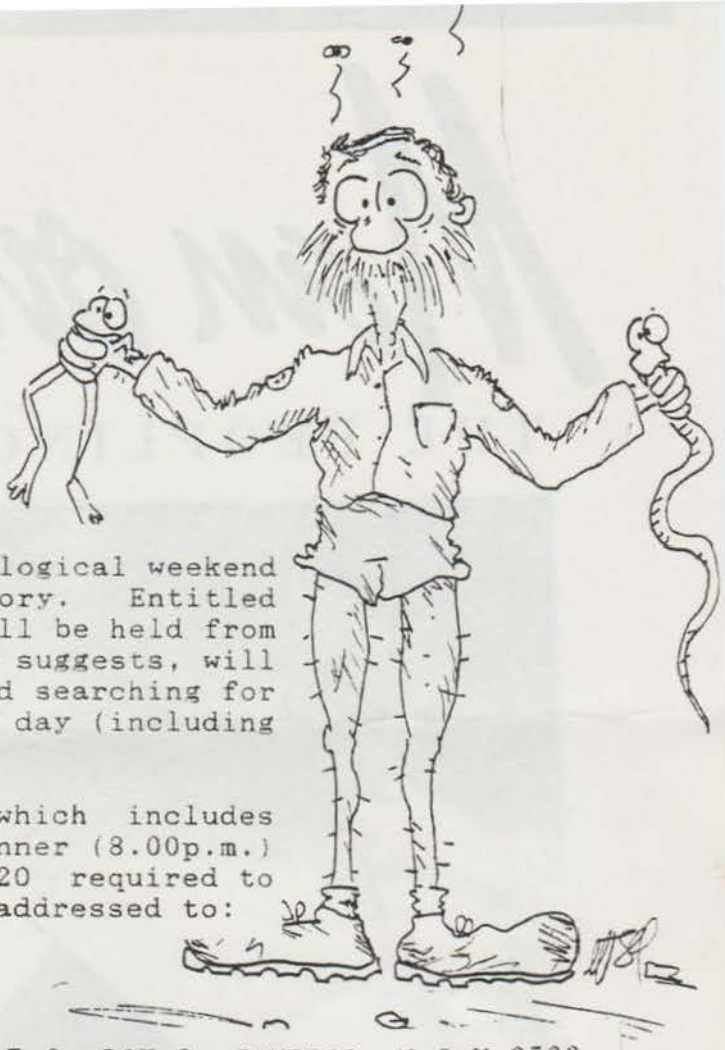
A SUNDAY AT BALLABA: A herpetological survey of the Gregory Property.
Leader: ROSS BENNETT

THE SEARCH FOR UNECHIS FLAGELLUM: Location - New South Wales
Leader: RICHARD LONGMORE

photo: R. Alder.

Fiona Brand tracking a goanna at the Deua . 7 May.

Members' News.



ROSS BENNETT is again leading a herpetological weekend at the Barren Grounds Bird Observatory. Entitled "SLITHERS BY DAY, CROAKS BY NIGHT" it will be held from 10-12 November, 1989, and, as the title suggests, will involve foraging for frogs by night and searching for reptilian residents of Barren Grounds by day (including diamond pythons).

The cost of the weekend is $96, which includes accommodation, all meals from Friday dinner (8.00p.m.) to Sunday lunch. The deposit of $20 required to reserve a place in the course should be addressed to:

BARREN GROUNDS BIRD OBSERVATORY, P.O. BOX 3, JAMEROO, N.S.W.2533

A new brochure detailing all Spring and Summer courses is available from the same address.

A BAT BAND

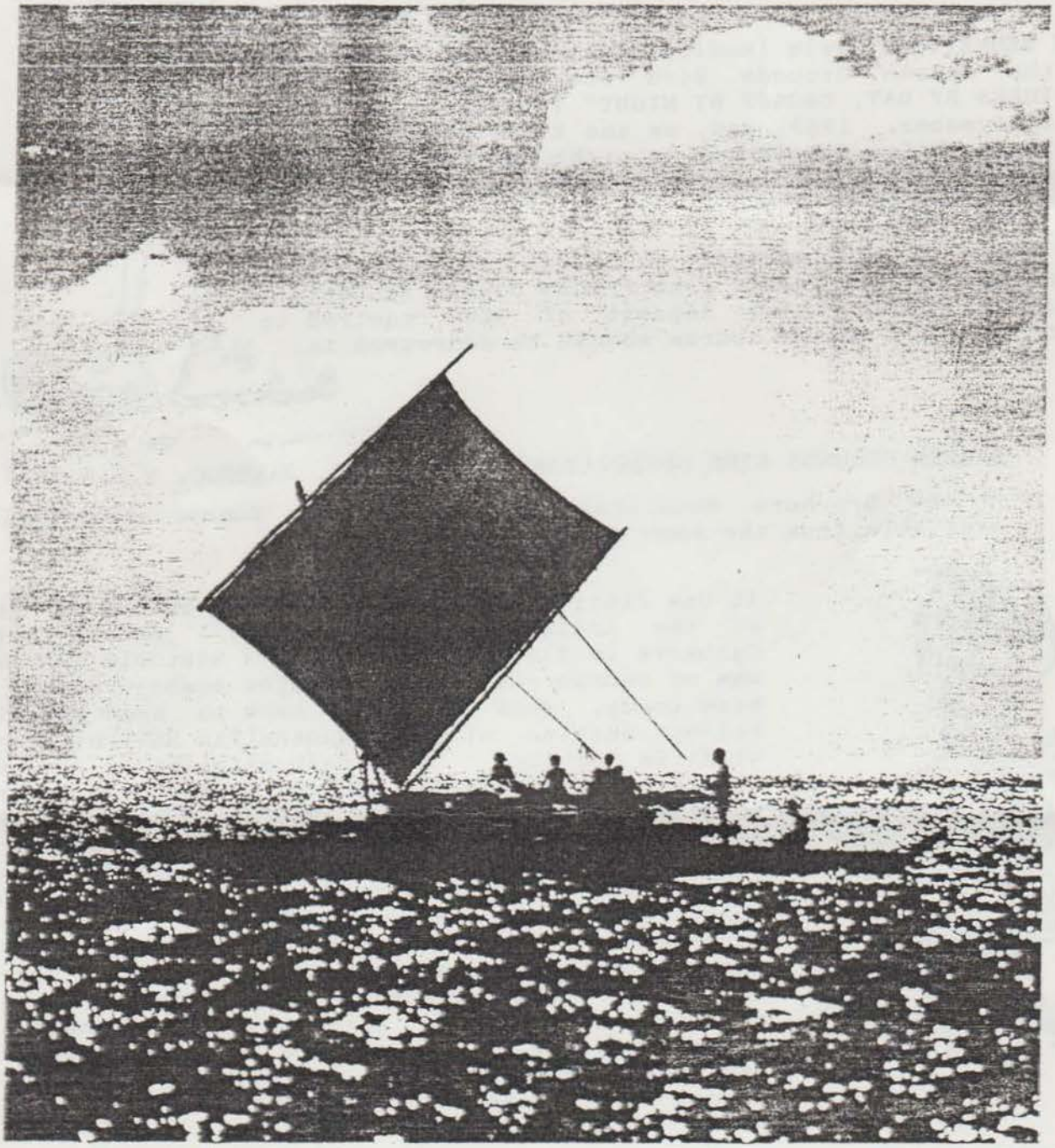
It was fitting that **ROBERT JENKINS** (author of "Reptiles of the Australian High Country") should return to Canberra in time for last month's historic AGM, as Hank was of course one of the founding members of the A.C.T. herp group. Hank has come back to head the Wildlife Policy Section of the Australian National Parks and Wildlife Service. His responsibilities include the Australian Bird and Bat Banding Scheme plus Australia's involvement in a number of international treaties such as C.I.T.E.S.,(The Convention on International Trade in Endangered Species of Wild Fauna and Flora) the International Wetlands Convention, the Japanese-Australian and Chinese-Australian Migratory Bird Agreements and the International Whaling Commission. Although he won't exactly have time hanging heavily on his hands, Hank has agreed to speak to the Association to bring us to date with crocodile management and research in the N.T. Meanwhile the rest of the Jenkins family is wintering over in Darwin to see out the school year before returning south.

ANNA NATHAN is preparing a sketch design for an A.C.T. Herpetological Association T-shirt, featuring of course, Physignathus leseurii, hopefully to be displayed at the July meeting.

TIM DEVESON has silk-screening contacts, so it should be a fruitful co-operation.

Man on the Rim

THE PEOPLING OF THE PACIFIC



Alan Thorne & Robert Raymond

The book of the ABC TV series

ABC

MAN ON THE RIM

The eleven-part television series "Man on the Rim: The peopling of the Pacific", currently showing on Thursday nights on ABC TV, is the work of one of our members. Alan Thorne, who presents the films, also co-wrote the scripts with Director Robert Raymond. The series is about the human colonisation of the Pacific Basin, from the first arrival of humans in Asia a million years ago, down to the final spread of the Polynesians only 1000 years ago. The only reptiles in the series are Komodo Dragons which Alan and his party filmed in 1987. Alan says he didn't try to catch a Komodo but did catch many reptiles in different places while he was filming, including a pair of vipers living on the permafrost in central Siberia.

The series is relevant to herpetology because of the long-term relationship between humans and environments all round and across the Pacific Ocean. The prehistory of the Pacific is an important background to any understanding of the distribution and ecology of reptiles in the Pacific half of the world. In Asia humans, animals and environments have evolved together for more than a million years. Human presence in the Americas for more than 40,000 years has strongly influenced those continents environments and faunas. In Australia the regular burning of all parts of the country by Aborigines and their ancestors for thousands of years has influenced the diversity and richness of specific regions, with implications for the fauna, including reptiles and frogs. Even more important today in Australia is the cessation of that burning in the last 200 years. The policy of prevention of fires in national parks and other bushland is causing major changes to these environments and thus a reduction of reptile diversity and numbers.

The television series continues through July and August with films on China and Japan and later on Central and South America, ending with the Polynesian migrations to Hawaii and Easter Island, with the disastrous effects on animal populations that resulted from those colonisations. There is a book of the series and cassette tapes of the films are available from the ABC Shop.

GHARIAL VIDEO

As predicted by Dave Carter, who provided the commentary and answered questions, the German video film on Gharials included some outstanding and fascinating photography by HEINZ SIELMAN, particulary of egg-laying and hatching and subsequent parental care. Interesting points of comparison with Australian crocodiles were made in the discussion, the possible danger in conservation methods being identified as the effect of artificial incubation on the sex ratios of hatchlings.

As the quality of the video was so good it was decided to investigate the possibility of showing further herpetological films from this source.

Not all the news is good ....

HERPETOLOGICAL TECHNIQUES COURSE

.. OFF .... ON .... OFF .... ?

Just when it appeared all difficulties had been overcome there was a further hitch in the form of finance for technical back-up, a question of who could find another $400 .....?

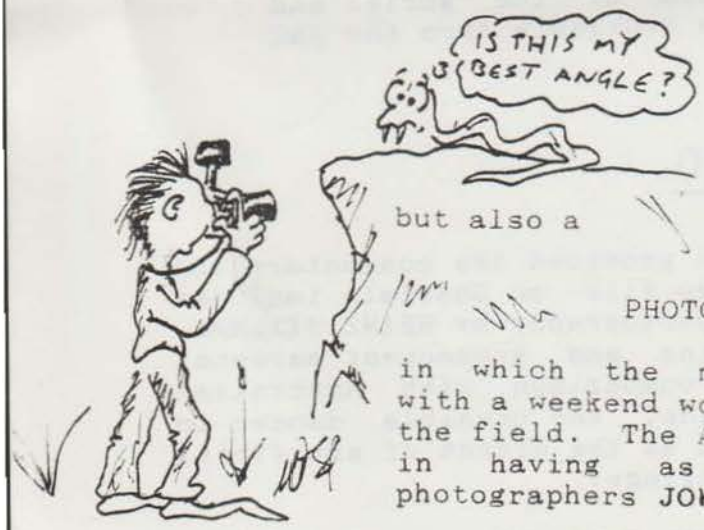
It has to be admitted that the prospects for the cause being offered this spring do not look good. Hoover nil desperandum! The latest proposal from Harry Ehmann is for a course in first term 1990, with an intensive weekend of theory in Sydney to be followed by weekend field-trips at venues between Canberra and Sydney. What do you think? (currently there are twenty names on the list of prospective participants).

MIKE TYLER responded with his usual promptness and efficiency. The suggested October arrangement clashes with the monthly meeting of the Board of the SA Museum, but he remains enthusiastic about either speaking or assisting with a frog workshop some time this spring.

But

Latest suggestions include not only a

SPRING FROG WORKSHOP



but also a

PHOTOGRAPHY WORKSHOP

in which the monthly talk would be followed up with a weekend workshop photographing reptiles in the field. The Association is extremely fortunate in having as members outstanding wildlife photographers **JOHN WOMBEY** and **ROB JENKINS.**

Attention students!

SCHOOLS' SCIENCE FAIR

To encourage a greater awareness of and interest in herpetology in schools, it was decided at our last committee meeting to offer book prizes at both the primary and secondary level for the best entries with a herpetological component in the Science Fair.

Judging will take place on the 3rd and 4th of August and all entries will be displayed in Woden Plaza during the week of August 7-11.

As our sponsorship was too late to be included in the Science Fair literature circulated to schools, it is unlikely that there will be much response this year. However it is hoped there will be seeding effect which may influence students in their selection of topics for research next year.

Please continue to contribute your comments and suggestions for speakers, topics, excursions and workshops for YOUR Association...

.... And while on the subject of contributions, it is great to have book reviews, general articles, member news and last but by no means least, illustrations and cartoons from members. We would like to build up a bank of illustrations which can be drawn upon (sorry about the pun) when the newsletter is being assembled. So, don't wait to be asked. If you would like to design the cover one month, review a book, write an article or if you have anything at all to contribute, please let me know!

CORRECTION: The application submitted to the PETER RANKIN TRUST FUND FOR HERPETOLOGY to study water dragons is actually a joint submission from JOSHUA DORROUGH and NICK THORNE, not solely from Josh as reported in the June newsletter, so, apologies to Nick, and good luck to both of you in your enterprising project.

Stop Press!

Joshua and Nick have just been notified that their application has been successful - CONGRATULATIONS!

reviews

AUSTRALIA'S REPTILES: A PHOTOGRAPHIC REFERENCE TO THE TERRESTRIAL REPTILES OF AUSTRALIA
by Stephen K. Wilson and David G. Knowles. Collins, Australia, 1988, 447pp., $75

Reptiles abound in Australia. With over 700 species representing 16 families, this diversity is matched by few areas on the globe. The authors of this superb book have, for reasons known only to themselves, decided to omit all completely aquatic reptiles, i.e. turtles, crocodiles and sea snakes, and have concentrated their efforts only on terrestrial forms. Included, however, are all of the aquatic colubrid snakes and the two species of aquatic file snakes. This approach reduces the value of the book as a definitive work on Australia's reptiles.

What the authors do present is simply the finest photographic record of Australia's terrestrial reptiles that I have seen. For herpetologists to be keen photographers of their subjects is not unusual. After all, who else would be prepared, nay, willing, to crouch on all fours to get a close-up head shot of a taipan or death adder from 20cms! Stephen Wilson and David Knowles have taken this a step further, indeed several steps further, by producing such exquisite living photographs of almost every terrestrial Australian reptile so far described that I wanted to have enlargements of all of them festooning my office walls! Wilson and Knowles produced the majority of the photographs themselves; several equally excellent shots taken by colleagues are acknowledged.

As Jeanette Conacewich, Senior Curator (Reptiles) Queensland Museum, says in the foreword to the book, Stephen Wilson and David Knowles are outstanding self-taught naturalists, as was the first major observer of Australia's reptiles, John White, in 1790. We have come a long way since then, despite having relatively few herpetologists to study, describe and document a herpetofauna as large as those of Europe and North America combined!

The book is basically arranged in two sections, lizards and snakes. Families are described in turn, with a brief introduction containing excellent line drawings depicting certain diagnostic features, followed by individual treatment of all included species within the family, arranged alphabetically by genus. This individual treatment takes the form of a description, comments on preferred habitat and microhabitat and a concluding section covering any specific comments of interest for the species concerned. I found the comments, although necessarily brief, far from superficial and generally most helpful. In particular, the information contained under 'microhabitat' is especially valuable to those workers not familiar with a particular species.

Centered in the book is the photographic section, which covers in the following sequence the dragon lizards (*Agamidae*), geckos (*Gekkoridae*), legless lizards (*Pygopodidae*), skinks (*Scincidae*), goannas (*Varanidae*), file snakes (*Acrochordidae*), pythons (*Boidae*), colubrid snakes (*Colubridae*), elapid snakes (*Elapidae*) and the blind snakes (*Typhlopidae*). Not only is almost every species represented (I counted only 21 of the 632 Australian terrestrial species not included), various colour varieties and morphs are also depicted, including certain sexually dismorphic species. The average size of the photographs, 5 x 8cms, is a little small, but because of the excellent quality of the prints, the sharpness, the contrast and the particular pose of the specimens, nothing is lost. At the bottom of the photograph of each species is a map of Australia indicating, with the

We would like to express our appreciation to the Editor of "Bogong" magazine for permission to reprint Richard Longmore's book review. "Bogong" is available from the Environment Centre for $2.70.

familiar 'block ink blot' technique, an approximate distribution for the species. The maps are too small to provide any but a very rough guide to the distribution and as such should be used with some caution. Because of this limitation in size it is impossible to gauge fine distribution boundaries.

The two main sections of the book are prefaced by small sections entitled 'How To Use This book' and 'The Australian Habitats'.

A colour map of Australia indicates approximate boundaries to climatic zones and a series of superb colour photographs which illustrate examples of Australian habitat complete the habitats section.

Following the main sections are appendices on (a) first aid treatment of snakebite (oddly out of place in this book) and (b) a checklist of australian lizards and non-marine snakes (providing the reader with a useful list of scientific names). This checklist refrains from using common names, though such common names, where entrenched in the literature or reasonablly well accepted, are used in the main sections. The use of common names is a vexing question, an issue often debated.

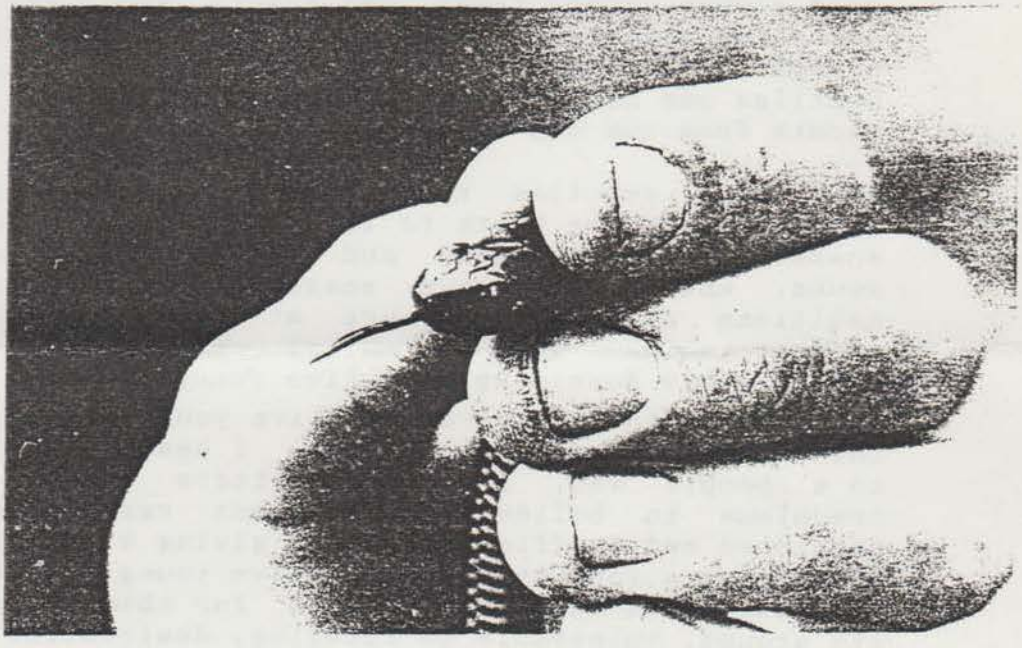
A detailed glossary and a very useful selected bibliography for both general references and specialised references for individual taxa complete the book.

The nomenclature, or scientific names, adopted in the book requires some comment, although I do not wish to enter into the current major debate on this matter in this review. Where taxonomists differ in their interpretation of nomenclature, the authors have made their own assessments.

The cost of producing high quality works enriched with colour plates continues to rise alarmingly. Publishers must always weigh the need to keep costs down against the desire to achieve the finest end product. For a price of around $75.00 I think they have achieved this fine balance, however I fear that they may still have scared off certain potential purchasers, particularly students. The thought of using this expensive book as a 'field guide', as suggested in the inside dust-jacket, would be daunting to many, unless of course they had two copies, for field and library!

My criticisms of this book are small and are easily outweighed by my overall impression that this book has achieved what it set out to do, and achieved it splendidly, with an excellent, professional final product. It is, without doubt, the best photographic reference to Australia's terrestrial reptiles and will, I would imagine, remain so for many years. I'm sure the authors won't rest on their laurels, however, and future editions will see the very few missing photographs gradually added.

Richard Longmore



Beautiful juvenile Red-bellied black snake

Deua excursion, 7·5·89

photo: R. Alder.

STILL AVAILABLE FOR PURCHASE, both at the discount price of $3, "THERE'S A FROG IN MY STOMACH" by Mike Tyler and "HERPETOFAUNA", the twice-yearly magazine of the Australasian Association of Herpetological Societies.

BUSH CAPITAL by 'INDIGOFERA'

It is encouraging to note that IAN WARDEN reads his herpetological newsletter. Ian acted upon the note about Hemiergis maccoyi in Member's News last month, phoned Richard Longmore, then explored the question raised in "BUSH CAPITAL" (Canberra Times, Wed. June 21). Thanks Ian for writing this up with your customary flair for communicating detailed information in such an entertaining, provocative and brilliantly descriptive style.

Here is a reprint for those who missed it.

Canberra herpetologist Richard Longmore looked under and then inside a log in the Brindabellas on one recent, chilly day and had considerable success, discovering three tiny skinks huddled together in their winter torpor. They were as dormant as public servants when he picked them up, but, energised by the warmth of his hand, soon got a wriggle on.

These skins were specimens of Hemiergis maccoyi, a beautiful and petite species with a pointed snout, minute ear openings and five fingers and toes. They are a rich, shiny brown and there is a relative chubbiness about their long tails.

Hermiergis maccoyi is particularly interesting, Richard explained to me, because in spite of the fact that it occurs in places like the Brindabellas, which are fiendishly cold and frost-ravaged and even snow covered (I pride myself that in a long career I have never called a mountain "snow-clad") for some part of the year, they are egg-laying. Egg-laying is an ancient and not very sophisticated reproductive strategy, and makes even less sense in cold places where frost can freeze and destroy the eggs. Very generally speaking, reptiles do not like the cold, and for example there are no geckos or goannas in really chilly places. Reptiles can not generate any warmth of their own and need some warmth from the sun to enable them to strut their stuff.

But those reptiles that do occur in cold places usually are species that give birth to live young. The ACT's two mountain snakes, the copperhead and the white-lipped snake, have live young, while the brown snake, which has no mountaineering ambitions and never occurs at great altitudes, lays eggs. Another skink, Egernia whitti whitti, which is found at inhospitable Kosciusko, has live young.

The ability to give birth to live young is a sophistication of the techniques of reproduction. I hesitate to mention evolution to a people who, from the letters to my editor, seem too credulous to believe in it, but egg-laying seems to be old-fashioned and inefficient, while giving birth to live young is an evolutionary sophistication. Live young are better able to gird up their loins and start fending for themselves while eggs just lie around, vulnerable to freezing, desiccation and predation.

Richard thinks it is amazing that Hemiergis maccoyi has done so well in the Brindabellas. They appear to be living dangerously because our summers are so short and because some eggs and perhaps some young are surely destroyed by sudden, unseasonal frosts. He thinks that they may be egg-layers rather than bearers of live young because they may be relics of an ancient time when our region in general and the Brindabellas in particular had a balmier climate.

In case anyone missed it, we also include a reprint of Dave's excellent "Letter to the Editor."

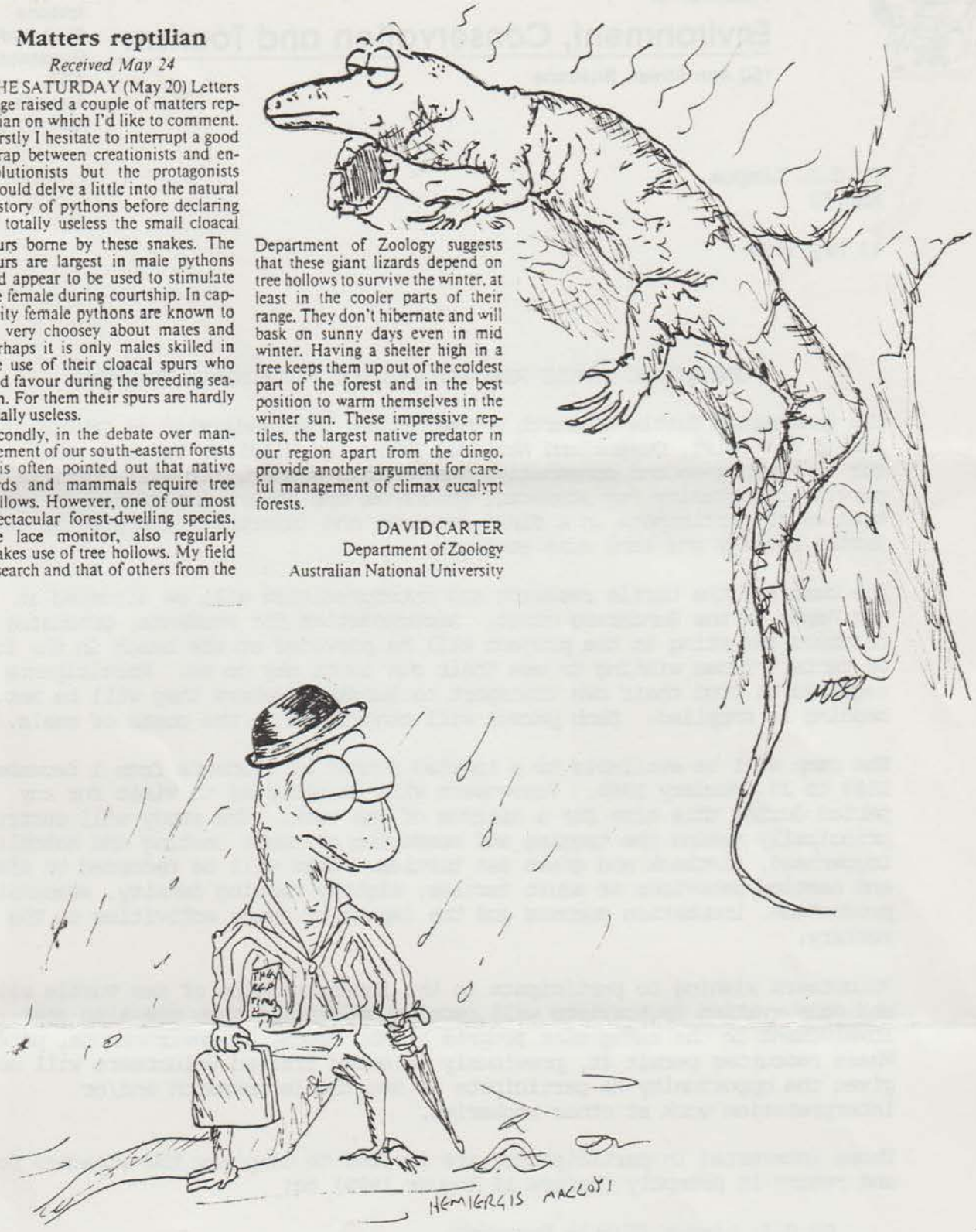
Matters reptilian

Received May 24

THE SATURDAY (May 20) Letters page raised a couple of matters reptilian on which I'd like to comment. Firstly I hesitate to interrupt a good scrap between creationists and evolutionists but the protagonists should delve a little into the natural history of pythons before declaring as totally useless the small cloacal spurs borne by these snakes. The spurs are largest in male pythons and appear to be used to stimulate the female during courtship. In captivity female pythons are known to be very choosey about mates and perhaps it is only males skilled in the use of their cloacal spurs who find favour during the breeding season. For them their spurs are hardly totally useless.

Secondly, in the debate over management of our south-eastern forests it is often pointed out that native birds and mammals require tree hollows. However, one of our most spectacular forest-dwelling species, the lace monitor, also regularly makes use of tree hollows. My field research and that of others from the Department of Zoology suggests that these giant lizards depend on tree hollows to survive the winter, at least in the cooler parts of their range. They don't hibernate and will bask on sunny days even in mid winter. Having a shelter high in a tree keeps them up out of the coldest part of the forest and in the best position to warm themselves in the winter sun. These impressive reptiles, the largest native predator in our region apart from the dingo, provide another argument for careful management of climax eucalypt forests.

DAVID CARTER
Department of Zoology
Australian National University



COMMITTEE MEETING:

The first meeting of the newly elected Executive Committee will be held at 7.30 pm on Monday July 31 (before Dave and Rick disappear overseas) at 248 Dryandra Street. Any member who wishes to suggest agenda items, please phone the Secretary, Di Baker-Finch on 512411.

Department of
Environment, Conservation and Tourism
160 Ann Street, Brisbane

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North Quay
Queensland,
4002
Australia.
Fax: (07) 229 1535

Dr C.J. Limpus
Ext 52

22 May 1989

QUEENSLAND TURTLE RESEARCH PROJECT - VOLUNTEER TRAINING

The Queensland Turtle Research Project under the leadership of Dr C.J. Limpus, Senior Zoologist, Queensland National Parks and Wildlife Service, will operate for its twenty-second consecutive season this summer. It will continue to provide opportunity for students, graduates and others interested in sea turtles to participate in a field research and interpretation program on s turtle biology and sand dune ecology.

The base for the turtle research and interpretation will be situated at Mon Repos on the Bundaberg coast. Accommodation for students, graduates and teachers assisting in the project will be provided at the beach in the form of tents. Those wishing to use their own tents may do so. Participants are required to find their own transport to Bundaberg where they will be met. No bedding is supplied. Each person will contribute to the costs of meals.

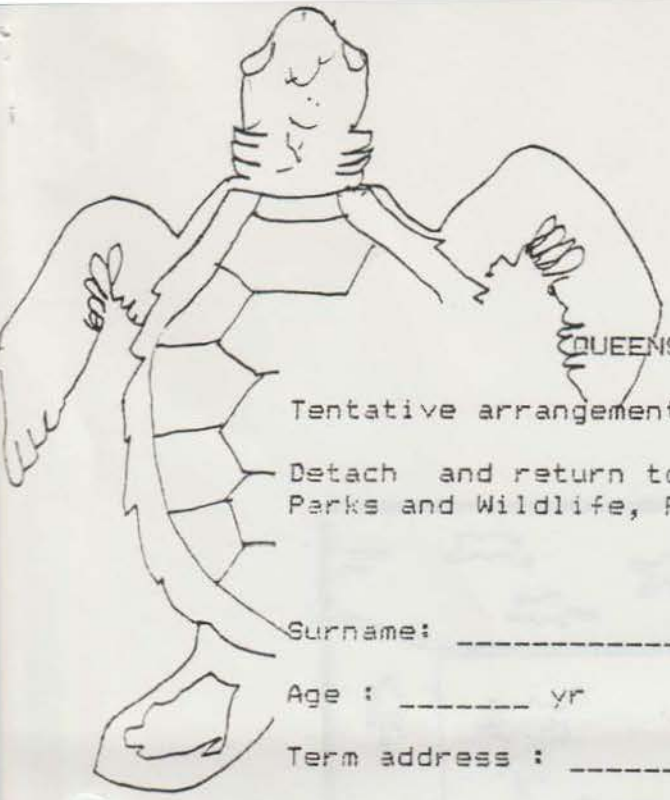
The camp will be available to a limited number of students from 1 December 1989 to 28 February 1989. Volunteers will be accepted to visit for any period during this time for a minimum of one week. The study will centre principally around the tagging and measuring of adult nesting and hatchling loggerhead, flatback and green sea turtles. Data will be recorded on size and nesting behaviour of adult turtles, nightly nesting density, seasonal egg production, incubation success and the impact of human activities on the rookery.

Volunteers wishing to participate in the interpretation of sea turtle biolo and conservation to tourists will receive guidance. They may also seek involvement in the management program at Mon Repos, an environmental park. Where resources permit it, previously selected trained volunteers will be given the opportunity to participate in sea turtle research and/or interpretation work at other rookeries.

Those interested in participating are invited to complete the attached form and return it promptly (before 15 August 1989) to:

Dr C.J. Limpus (Turtle Research)
Northern Regional Centre
Qld National Parks and Wildlife Service
P.O. Box 5391
TOWNSVILLE MAIL CENTRE, Qld 4810

N. Dawson
A/DIRECTOR RECREATION AND PLANNING



QUEENSLAND TURTLE RESEARCH PROJECT

Tentative arrangements for participation:

Detach and return to Dr. C.J.Limpus, Division of Conservation, Parks and Wildlife, P.O. Box 5391, Townsville, 4810, Australia.

Surname: _____ Other name : _____

Age : _____ yr Current work/study :_____

Term address : _____

_____ Phone: _____

Vacation address : _____

_____ Phone: _____

Tentative dates for assisting:
From : _____ To : _____

Transport : car, own ...O
car, other..O
motorbike ..O
hitching ...O
train .....O
bus .....O
plane .....O

I require to be met : yes ...O
no ....O

Arrival date : ___/___/___

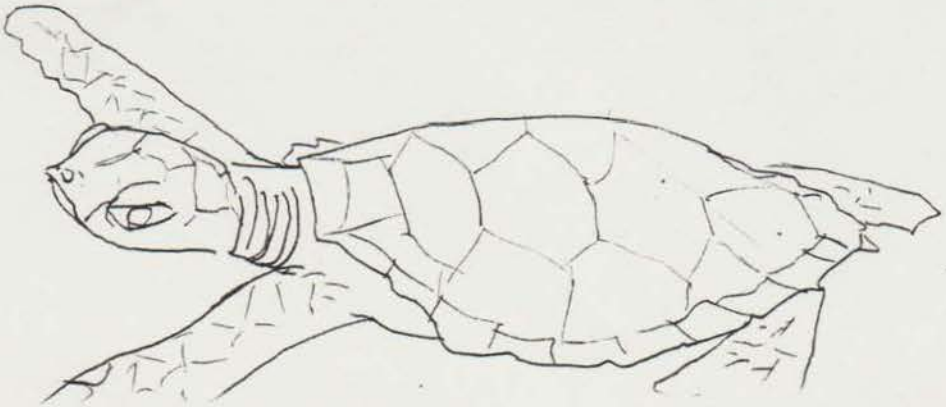
time : _____

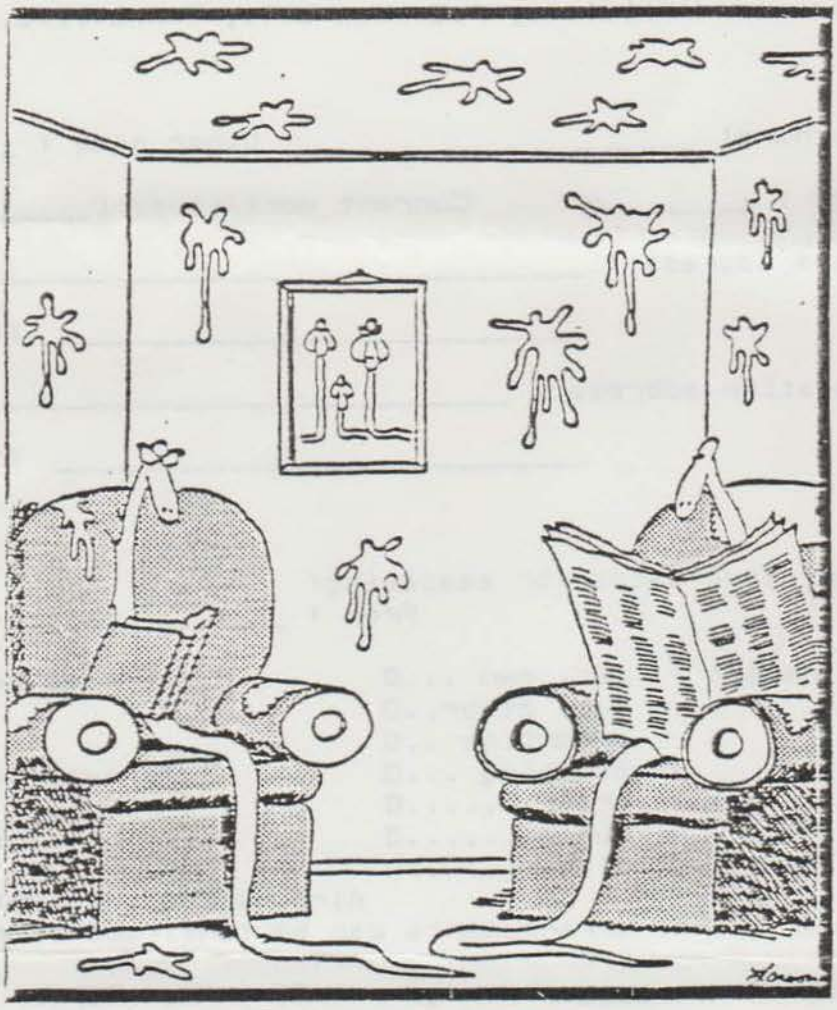
Airline/bus company: _____

Final travel arrangements can be confirmed if necessary.

I can take ____ passengers : TO Mon Repos
: FROM

Closing date for applications : 31 August





The spitting cobras at home