

**THE BRITISH
HERPETOLOGICAL SOCIETY**

BULLETIN

No. 5 June 1982

BRITISH HERPETOLOGICAL SOCIETY

*c/o Zoological Society of London
Regent's park, London NW1 4RY*

Correspondence, membership applications, subscription renewals and purchase orders for the British Journal of Herpetology should be sent to the above address.

The British Herpetological Society was founded in 1947 with the broad aim of catering for all aspects of interest in reptiles and amphibians. Initiated by a small number of enthusiastic and well-known naturalists, including the first President and author of the standard textbook on British herpetofauna Dr. Malcolm Smith, the Society expanded rapidly and today enjoys national status with many international connections.

Activities of members range over a number of interrelated fields. In many cases the prime interest is in maintaining, breeding and observing various species in captivity and the Society acts as a forum for the interchange of experiences in this area. Others are concerned with the observation of animals in the wild state. There are active sub-committees which help to cater for these various tastes, notably the Captive Breeding Committee and the Conservation Committee. The former encourages the development of effective breeding techniques for captive specimens, thus providing animals for observation and study in vivaria, and for conservation purposes, while simultaneously reducing the need to take fresh stock from wild and possibly declining populations. The Conservation Committee is actively engaged in field study, conservation management and political lobbying with a view to improving the status and future prospects for our native British species. It is the accepted authority on reptile and amphibian conservation in the U.K. and has an advisory role to the Nature Conservancy Council (the statutory Government body). There are also professional scientists within the ranks of the Society engaged in increasing our understanding of all aspects of reptile and amphibian biology.

Publications

British Journal of Herpetology, published each June and December, contains papers or original research in herpetology.

British Herpetological Society Bulletin, also published each June and December, contains notices, news items, articles and original papers on all aspects of herpetology.

The Care and Breeding of Captive Reptiles, a new book containing a collection of papers on recent developments in breeding reptiles in captivity. This publication is not included in members' subscriptions, but is available to members at a price of £3.00. Applications to purchase should be made to the Chairman of the Captive Breeding Committee.

Meetings

About ten meetings covering a broad sphere of interests are held each year.

Subscriptions

Ordinary Members £10. Junior Members £3.00 (Junior Members do not receive the British Journal of Herpetology). Institution rate £17.

All subscriptions become due on the first day of January each year.

The Society does not, as a body, hold itself responsible for statements made or opinions expressed in the Bulletin; nor does the Editorial necessarily express the official opinion of the Society.

The Bulletin is edited and produced by
Simon Townson and John Pickett

Contributions and correspondence arising from the Bulletin should be sent to:
John Pickett, 84 Pyrles Lane, Loughton, Essex IG10 2NW

REMAINING EVENING MEETINGS 1982

All meetings start at 7.00 pm and are held in the Lecture Theatre of the Linnean Society of London, Burlington House, Piccadilly, London W1, unless otherwise indicated.

- SEPTEMBER 14th Special meeting in honour of Dr. Elkan. To be held at the Royal College of Surgeons, Lincoln's Inn Fields, London. (See below).
- SEPTEMBER 22nd Amphibians and reptiles of the New World. A discussion on care and breeding with the Captive Breeding Committee. Members are encouraged to bring live animals and slides.
- OCTOBER 26th Mr. R.A. Griffiths (Department of Zoology, Birkbeck College, University of London). Ecology and behaviour of populations of newts in a series of garden ponds.
- NOVEMBER 24th Dr. B. Groombridge (Species Conservation Monitoring Unit, Cambridge): The IUCN Amphibia — Reptilia Red Data Book.

MEETING ON HERPETOLOGY IN HONOUR OF DR. ELKAN

Herpetologists will all be familiar with the name of Dr. Edward Elkan. A pioneer in the study of diseases of lower vertebrates, he continues to be an internationally recognised authority on the subject.

This year the British Herpetological Society is planning to honour Dr. Elkan. The first phase will be the production of a bibliography of all his publications. This will be followed, on Tuesday 14th September, by a special meeting on the subject of reptiles and amphibians, with particular reference to their biology, diseases and pathology. The meeting will be held at the Royal College of Surgeons, London and following the programme of formal lectures there will be an opportunity for visitors to tour the Hunterian Museum. Material in this Museum covers many aspects of biology and includes several reptilian and amphibian specimens.

The meeting starts at 7.00 pm, and is expected to finish at about 9.30 pm. The Royal College of Surgeons is situated at Lincoln's Inn Fields; the nearest tube station is Holborn.

All herpetologists and others interested in the subject will be welcome to attend this meeting. Prior registration is not necessary.

JOINT MAMMAL SOCIETY/BRITISH HERPETOLOGICAL SOCIETY/FAUNA & FLORA PRESERVATION SOCIETY SYMPOSIUM ON INTRODUCTIONS

As announced in *BHS Bulletin* No. 3 (June 1981) the above joint symposium on introductions will take place at 10.00 am Saturday 27th November 1982, in the Lecture Hall, the Zoological Society of London, Regent's Park, London NW1. The new organiser is Mr. R.W. Vaughan. The programme will probably include the following speakers:—

From the Mammal Society:

Mr. M. Gosling: on coypu in Britain.

Dr. Paul Channing: on mink or interactions between mink and otter in Britain.

From the Fauna & Flora Preservation Society:

Sir Christopher Lever: general account of introductions to Britain (to be confirmed).

Jersey Wildlife Preservation Trust: on the fate of captive bred species reintroduced to the wild (speaker to be arranged).

From the BHS:

Dr. T.J.C. Beebee: "Green frogs and other Continental amphibians in Britain: undesirable aliens or faunal enrichment?"

Mr K.F. Corbett: on the reintroduction and translocation of rare species of herpetofauna in Britain.

Mr. R.E. Honegger (Zurich, Switzerland): on introduced amphibians and reptiles and their influence on native biota, with reference to *Bufo marinus*.

For further details, and final programme please contact Mr. R.W. Vaughan, Sea Mammal Research Unit, c/o British Antarctic Survey, Madingley Road, Cambridge CB3 0ET; tel: (0223) 311354.

J. D. ROMER (BHS Honorary Member 1958)

With great regret, we have to announce the death of Mr. John D. Romer from cancer on 15th March 1982. Mr. Romer was an active member of the BHS from its inception in 1947. For many years, until his retirement in 1980, he was the Senior Pest Control Officer in the Urban Services Department with the Hong Kong Government, and published several papers on Chinese reptiles and amphibians, including an 'Illustrated guide to the venomous snakes of Hong Kong' (1965). While retired, and living on the Isle of Wight, he had hoped to continue his work on the Hong Kong herpetofauna with the aid of his preserved collection. The Society expresses its condolences to his widow.

DONATION

Thanks are due to Mr. Peter W. Hopkins (Seville, Spain) for his donation of back issues of *British Journal of Herpetology* to the Society's Library for re-sale. Grateful thanks should also be expressed to him for including the British Herpetological Society in his will as a recipient of his book collection.

BHS Members, as often mentioned before, please remember that any back issues of the Journal and books of herpetological interest for which you have no further use are very much welcomed by the Librarian.

ERRATUM

In: Miscellaneous Remarks on some Captive Reptiles, by Piotr Sura, British Herpetological Society Bulletin No. 4, December 1981.

On page 30, the length of carapace of a *Geochelone carbonaria* reared by the author, at August 1981 was given as being 240mm. This is incorrect. The correct measurement is 209mm.

JOURNAL REPORT

The number of manuscripts received for consideration during 1981 increased to 37; this healthy situation is the reverse of the national trend for scientific journals, which has been for a reduction in submitted papers. (Nineteen manuscripts were received during the first four months of 1982 — this is an all-time record for BJH). The journal is clearly an attractive proposition for a wide variety of potential authors — 13 from the U.K., 3 from Europe, 16 from the Commonwealth and 5 from the rest of the world). 20 of these papers were accepted for publication. Publication times have now been substantially reduced, and papers relating to British herpetofauna (which receive precedence) are now usually published within less than twelve months of receipt.

Much of the credit for this satisfactory state of affairs is due to Malcolm Peaker. The Society owes him a considerable debt of gratitude for the hard work that he has devoted to the Journal. The system which I took over in March was extremely well thought-out, efficient and smooth-running, and the transfer of Editorship consequently presented far fewer problems than I had anticipated.

Future of the Journal: After careful deliberation, the Committee decided to recommend to the Society at the AGM on March 23rd not to go ahead with the proposed merger with Journal of Herpetology. The rapidly increasing cost of producing BJH remains a cause for concern, and the Editor and Committee are actively seeking ways of reducing costs without detriment to the quality of production.

R.A. Avery,
Editor

BHS EDUCATION OFFICER'S REPORT

Most of my activities over the last 12 months have centred around the organisation of the Junior Section, the production of the Junior Newsletter, and the answering of an average of about 10 letters a week which I receive either directly from members of the public or via the BHS Secretariat.

Nearly 200 Survey Forms have been sent out in connection with the J. Herps National Slow Worm Survey and it is hoped to be able to produce an initial report of results this autumn.

A task force of J. Herps from the Orpington area was recently mobilised to clear the reptiles from a doomed site which is due to be built on later this year. The initial phase of this exercise was filmed by a team from the BBC Natural History Unit at Bristol and is to feature on an edition of "Wildtrack" at which time also details of the J. Herps and the Slow Worm Survey will be given to the viewers. It is anticipated that this will generate a massive interest which will test to the full the administrative system which has evolved over the last two years.

If the response to the Wildtrack programme is too great then I may need to appeal for some clerical assistance from other interested members.

It is planned to hold the first ever meeting of J. Herps at Theobalds Field Study Centre on Saturday July 24th. Any members who are interested in helping out at this event, (which will run from 10 am to 4 pm), please contact me as soon as possible. I would be particularly interested to hear from members who might be able to bring some specimens with them.

Plans are also in hand for the mounting of an exhibit on the work of the Conservation Committee at an event being organised at the Queen Elizabeth Country Park on July 10th.

Two weeks ago I enrolled J. Herp membership number 100 but in fact this does not give a true indication of the membership size since, at any one time, one third or more of the members are likely to have expired subscriptions and I know also that some of the original 100 have outgrown the J. Herps and are now adult members of the BHS.

Some of the memberships are for schools rather than individuals and so there is no way of knowing the exact number of children who read the Newsletter. I plan to send out 75 copies of the May Newsletter, each of which consists of 11 A4 sheets. The production of this would be impossible without the generous help of Mr. Dudley Lucas (BHS Treasurer) to whom we owe a great debt of gratitude.

Over the last year (April 1981 to April 1982), the finances of the Junior Section can be summarised as follows:

Expenditure:

Postage	£55.90
Envelopes:	<u>10.20</u>
	£66.26

Income:

Cheques & P.O.s	£181.50
Cash	<u>£ 13.50</u>
	£195.00

The above expenditure does not include the cost of the *BHS Bulletins* which are sent to each J. Herp.

Vic Taylor,
April 19th 1982

CONSERVATION COMMITTEE ANNUAL REPORT, 1981

1. Reptile Management

Clearance tasks funded by the World Wildlife grant given to us in 1980 continued into the spring of 1981, involving as usual the employment of national and local conservation corps as well as active involvement of Conservation Committee members at heathland sites in Surrey, Hants and

Dorset. A further grant of £1000 was given by World Wildlife Fund in the autumn, and work has therefore continued on the basis of about 2 weekend tasks per month. Although some of our earliest sites are now at the stage where only "secondary clearance" is necessary (i.e. periodic pulling up of seedling pines, and renewal of overgrown sand patches), a considerable task of primary clearance is still outstanding in many places including a number of the larger (and hence most valuable) heathland blocks in Surrey and Dorset.

The programme of Asulox spraying to control bracken encroachment at key sites in Surrey and Dorset was continued in 1981, mainly being carried out during August. As long as weather conditions are favourable (i.e. dry for at least a day or two after spraying) the use of this highly selective herbicide produces excellent results.

The BHS "Dune vivarium" was completed during 1981 and is now stocked with sand lizards from the Merseyside coast. This is part of our joint programme with the Nature Conservancy Council to propagate a colony of these animals, ultimately for use in restocking sites back on Merseyside. Mike Preston is looking after this project.

The BHS now has a formal lease (at peppercorn rent) for one heathland site in Dorset, a management agreement over another and is negotiating a lease for a site in Surrey.

2. Amphibian Management

Work at the Hampshire natterjack site continued during 1981 with further scrub clearance, the spraying of a selective herbicide (Krenite) to control birch regeneration, carried out by courtesy of Dr. Arnold Cooke (NCC) and Dr. Robert Marrs (ITE) in the autumn, and the release of another 1000 toadlets reared up in captivity to 12-15mm length as the final part of a 3-year restocking programme. This programme has been organised and carried out by Keith Corbett, Jon Webster and Mike Preston with live food supplied by John Griffin and John Pickett — a most successful cooperative venture this year.

In Cumbria, Brian Banks organised the first round of scrub clearance necessary at a natterjack site in the far north of the county and has been involved in ongoing negotiations for pond excavation and fencing at a site at the southern end. Bad weather conditions prevented the pond digging this year, but it is hoped to go ahead in 1982. A strategy for natterjack toad conservation in Cumbria was agreed in May at a meeting between NCC, BHS and the Cumbria Trust for Nature Conservation. BHS is also negotiating the possibility of a BHS reserve for the natterjack colony at Windscale (BNFL works).

An introduction experiment was begun in 1982 using natterjack spawn from Merseyside at a suitable-looking pool and heath complex in the Midlands (Cannock Chase).

Scrub clearance continued at the Norfolk heathland natterjack site in conjunction with the Norfolk Trust. John Buckley also continued the introduction experiment at Sandy, by the further translocation of 2 spawn strings. With BHS advice, the Norfolk Trust is proceeding with plans for a natterjack introduction at one of their dune nature reserves; and the Trust has acquired a very interesting site near Thetford which has numerous ponds and (perhaps) the longest established colony of green frogs in the country.

3. Monitoring and research

Efforts are made every year to monitor as many sites containing rare species as possible, to gain impressions of numbers and breeding success. Sand Lizards seem to have had a bad year, with considerable losses of last year's (1980) young overwinter in vivaria and with rather poor hatch rates of 1981 progeny; in both cases this may have been due to unusually prolonged wet spells at unfortunate times. Geoff and Elizabeth Haslewood have located the best sites for sand lizards on the largest surviving heathland block in Surrey, and this will certainly facilitate conservation planning. Dave and Marion Dolton also carried out extensive monitoring and survey on the SW heathland sites of Dorset and Hampshire.

Brian Banks continued investigations into natterjack populations in Cumbria, paying special attention to some of the larger colonies about which breeding site information (and breeding success data) are urgently needed. John Buckley & Tom Langton looked at the East Anglia natterjacks, and Trevor Beebee started further research work in conjunction with the monitoring of the Hampshire natterjacks. 1981 was quite a good year for breeding success in many places,

though not on the Merseyside coast where numbers seemed unusually low for reasons that are unclear. The population structure at the Hampshire site is the healthiest we have known it over the past 10 years, with numerous juveniles being found.

The Conservation Committee decided to try and put more effort into investigating the status of our so-called "common" species. Members are encouraged to carry out systematic surveys in their home areas, especially of amphibian breeding sites in spring but also of reptiles and especially the grass snake. This work is also being pursued in liaison with the County Naturalists Trusts.

The Conservation Committee intensified its European connections during 1981. Keith Corbett was host to two Dutch herpetologists (Tom Stumpel & Henk Strijbosch) for a week in the spring, showing them round some of our British sites following Keith's trip to Holland in 1980. Also, Bert Langerwerf stayed with the Haslewoods on two occasions and imparted some of his extensive knowledge on captive breeding of lizards; this was put to good effect by Mike Preston, who has had great success this year in hatching out sand lizard eggs by artificial incubation.

Mike Preston has also installed (at his own expense) a cricket-rearing facility and put it into operation to supply live food to hatchling sand lizards and natterjack toadlets. This will prove a valuable addition to the generous supplies of crickets that have been made regularly over the last few years by John Griffin (Xenopus Ltd.).

4. Education

There was no Wildlife Fair at Marwell in 1981, but the Conservation Committee was represented by Jon Webster & Keith Corbett at a display at the Queen Elizabeth Park in the summer.

The Conservation Committee was also represented at the ASRA meeting in September, and Keith Corbett (again at his own expense) attended the first scientific meeting of the SEH in Vienna in the same month. This has resulted in the creation of a European Conservation Committee, with which Keith is closely involved.

John Buckley has completed his British Amphibians and Reptiles identification leaflet, and this is now available from him (price 35p + 15p for postage) at: 14 Burlington Road, Polygon, Southampton SO1 2FQ. Production was financed by a loan from the BHS, and it is aimed mainly at County Trust members and other interested naturalists.

The Vincent Wildlife Trust has also supported Conservation Committee activity in 1981 with a grant of £400 to finance the publication of two new leaflets; the first is one the use of garden ponds by amphibians, and the second on "being nice to snakes". Both of these are with the printers at the time of writing, and should certainly become available during 1982.

Keith Corbett, Tom Langton and Trevor Beebee attended the annual meeting of County Naturalists Trust Conservation Officers at Norwich in July with a view to promoting wider survey and interest in herpetofauna among the County Trusts. This was the start of a broader programme of liaison with the Trusts which we hope to pursue, including the production of articles for Trust publications etc.

5. Politics

The usual rounds of meetings continued in 1981. Relations with Cumbria Trust seem to have improved dramatically following a get-together in May, and there has been some improvement in Dorset although the situation is not really satisfactory there yet, at least from our point of view.

A new and very large colony of green frogs was discovered in Surrey this year, at a site not far from a well-known population. Unfortunately it came to our attention as a result of plans to fill the ponds in (!); we have made formal objections and the Nature Conservancy Council has done likewise, but have as yet no information on the outcome. Trevor Beebee chanced to witness a grass snake catch and eat a male edible frog at one of the spawning sites, and there is clearly important herpetological interest here apart from the alien frogs.

A Conservation Group was finally established in 1981 by the Ministry of Defence to look after the largest remaining heathland block in Surrey; The Conservation Committee is represented by Geoff Haslewood.

Following noises made by the Conservation Committee in autumn 1980, the Nature Conservancy Council agreed to a further meeting to discuss the National Policy for Herpetofauna Conservation (instigated in 1977 and left in abeyance for NCC for 2 years). This was held in February, and was felt by us to be quite unsatisfactory. Proceedings were not minuted, and essentially led to further delay so that the ecological data could be "updated". Promises of a further meeting within a few months came to nought, and this autumn we have started to pursue the affair at the level of Wildlife Link. This had already led to some progress subsequent to a Link/NCC meeting in November, but experience with NCC in this area over 5 years now (!) has made us sceptical of their true intentions and I have little confidence that this time next year we will not be making similar complaints. Every step forward has been painfully slow, and left us in little doubt that at least some people at NCC are terrified of having to commit more effort into conserving this small group of animals in our countryside.

The Wildlife & Countryside Act became law in November 1981. The Conservation Committee amendment on introductions was not accepted, and it is now an offence to release any species of alien amphibian or reptile into the wild without a specific license to do so. Exactly what constitutes the "wild" is not yet clear, so whether garden ponds are included we do not know. However, the crested newt has now joined the sand lizard, smooth snake and natterjack on schedule V and all 4 of these species are protected from any form of collection or sale without a license. Also, our remaining species are "reverse-listed" which means that they cannot be sold commercially without a license although private collection is legal. Unfortunately most conservationists' main hope for this legislation — that it would make significant improvements to habitat protection — has not been realised, and since this is undoubtedly the key issue the time spent on the Bill seems largely to have been wasted.

6. Internal matters

We have all been greatly saddened in 1981 by the premature death of Don Street. Don was among the first Conservation Committee members and had a wide knowledge of European reptiles and their habitats, including especially the smooth snake in Britain. He will be badly missed.

Financial transactions are summarised below, excluding the grants obtained for specific purposes which were mentioned in earlier sections (in total, £1,400 in 1981). World Wildlife Fund has now set up an appeal specifically for amphibian and reptile conservation.

We received a gift of £100 from British Nuclear Fuels Ltd., in 1981, and £1000 from the main British Herpetological Society, for all of which we are grateful. Total income in 1981 therefore = £1000 + £100 = **£1100** (only 40p carried over from 1980).

Expenditure:

1.	Clearance work (paying Conservation Corps)	£472.61
2.	Repairs to power saw, blade sharpening, miscellaneous equipment expenses including petrol to run them	£54.60
3.	Purchase of krenite (birch spray)	£10.00
4.	Electricity for running cricket hatchery	£50.00
5.	Printing of headed notepaper	£17.83
6.	Donation to "Don Street Fund"*	£50.00
7.	Annual lease (Dorset site)	£25.00
8.	Subscription to Wildlife Link	£35
9.	Contribution towards Identification leaflet**	£125.00
10.	Set aside for fence around Cumbria natterjack breeding site affected by livestock***	£50.00
11.	Travel expenses paid out to members****	£182.66
	Total expenditure:	£1072.70
	Balance at start of 1982:	£27.30

●Goes towards the purchase of a heathland reserve in Dorset by the Dorset Naturalists Trust — one of Don's old haunts.

**A loan, which will eventually be repaid from sales. This may take a while, though, since repayment of the loan from the main society (£150) towards the leaflet will take priority.

***Not yet paid, but bill imminent.

****Conservation Committee members travelled more than 24,000 miles on Conservation business in 1981, and reimbursement is at the level of 0.75p per mile.

The Chairman of the Conservation Committee, on behalf of the BHS, wishes to thank the following volunteers who turned out, sometimes in appalling conditions, to help with clearance tasks on heathland in the season 1981-2: Maggie Beebee, Tony Braithwaite, Margaret Bray, John Buckley, Keith Corbett, Dave and Marion Doulton, Mary Ehrenzeller, Gerald Gardner, Jon Gaughan, Gordon Gowan, Richard Griffiths, Peter Hall, Beth and Geoff Haslewood, Howard Innes, Catherine Kapusi, Tom Langton, Doug Mackay, Keith Mellen, Mike Preston, Jane and Ruth Taylor, Edward Wade and Jonathan Webster.

Trevor Beebee,
January 1982

HELP REQUIRED BY CONSERVATION COMMITTEE

The Conservation Committee is in need of new members to give assistance, on the usual voluntary basis, with our work. We would be especially pleased to hear from people in Merseyside and Dorset, and further details will be sent to anyone interested upon request to:

Dr. T. Beebee, School of Biology, University of Sussex, Falmer, Brighton BN1 9QG.

CHANGES IN STATUS OF THE 'COMMONER' AMPHIBIANS AND REPTILES IN BRITAIN

Compared with the three rare species (Natterjack, Sand Lizard, Smooth Snake), our so-called commoner species of amphibians and reptiles have received little attention in recent years. In the early 1970s, surveys on changes in status were conducted for the Common Frog, Common Toad, Warty Newt and Grass Snake: these surveys tended to indicate general declines. Information collected by Biological Records Centre suggested that at least three of the other species (Palmate Newt, Adder, Slow Worm) declined during 1960-1973. Partly as a result of this information, all of the amphibians and reptiles were included in some form in Schedule 5 of the Wildlife and Countryside Act 1981. There is an urgent need for information in recent changes in status and on current problems in the conservation of these species.

In an attempt to gather the necessary information, herpetologists are being requested to complete a questionnaire on the nine common species. If you have some knowledge of the status and recent population trends of these species in your area, please write at once for a questionnaire and instructions.

Dr. A.S. Cooke,
Nature Conservancy Council, Godwin House, George Street, Huntingdon, Cambs.

REQUEST FOR INFORMATION ON GREAT CRESTED NEWT SITES

Information is urgently needed on *any* previous or current breeding sites for this species in an area to the south and south-east of London. That is an area bounded by the River Thames to the north; by Erith, Crayford, Swanley and Shoreham to the east; and by Epsom and Kingston to the west.

Current site detail will be treated as confidential. The purpose is to guide a site conservation strategy based on current survey work.

Information please to K.F. Corbett, 136 Estcourt Road, Woodside, London SE25 4SA.

AMPHIBIAN MEETING IN LEICESTER

A meeting of 19 biologists actively engaged in research on amphibian ecology and behaviour was held at Leicester Polytechnic on January 29th, 1982. The University of Sussex, Nature Conservancy Council, Institute of Terrestrial Ecology, University of Cambridge, UWIST, University of London, The Open University, Leicester Polytechnic and Liverpool Polytechnic

were represented. The group exchanged views and information on objectives, approach, methodology and results.

A second 2-day meeting, involving formal presentation of research papers is planned for the autumn of this year in mid-Wales. Anyone interested in contributing should contact Dr. Paul Gittins, Department of Applied Biology, UWIST, Cardiff CF1 3NK.

R.S. Oldham,
School of Life Sciences, Leicester Polytechnic, Leicester

AMPHIBIAN ECOLOGY SEMINAR

Powys, 29-31 October 1982

Following the success of the first meeting of the Amphibian Ecology Group at Leicester in January 1982, it has been decided to organise a further seminar in the autumn.

It is planned to hold this meeting from the evening of Friday, 29th October 1982 until the afternoon of Sunday, 31st October. The venue is the UWIST (the University of Wales Institute of Science and Technology) Field Centre, Newbridge-on-Wye, Powys (near Llandrindod Wells).

Dormitory accommodation is available for 20 or 30 people (at £1.50 per night) and a cooked breakfast, cold luncheon and cooked dinner will be provided. The total cost accommodation and food for the weekend will be no more than £18.00. The actual cost will depend on the numbers attending for cooking, costs remain the same for a small or large party. Thirteen people are attending to date (June 6th 1982).

For further information indicating whether you intend to attend, giving a provisional title of any talk you would like to give, please contact as soon as possible: Dr. S.P. Gittins, UWIST, Department of Applied Biology, Llysdyman Field Centre, Newbridge-on-Wye, Llandrindod Wells, Powys, Wales. Tel: Newbridge-on-Wye (059 789) 308.

ASSOCIATION FOR THE STUDY OF REPTILIA AND AMPHIBIA

Headquarters: The ASRA Rooms, Reptile House, Cotswold Wildlife Park, Burford, Oxon.

Asra Monthly Meetings for the last six months of 1982

Regular meetings are held in the ASRA Rooms above the Reptile House of the Cotswold Wildlife Park on the second Saturday of every month.

Saturday 10th July:

"*Podarcis hispanica*" by John E. Cortes, 8.00 pm.

Saturday 14th August

"Reptiles of the Greek Islands" by Chris Mattison, 8.00 pm.

Saturday 11th September

"Captive Breeding and Housing of Amphibians" by Anthony Millwood, 8.00 pm.

Saturday 9th October

A specially extended meeting, featuring three illustrated lectures and a range of refreshments. The programme will include:

"British Reptiles" by Don Reid

"Respiratory Diseases of Reptiles" by Nick Millichamp

Starts 5.30 pm.

Saturday 13th November

"A View of Reptiles in Captivity" by Terry Thatcher, 8.00 pm.

Saturday 11th December

"The Story So Far", an illustrated talk on the breeding of endangered herptiles by Patrick J. Wisniewski, 8.00 pm.

STATEMENT BY THE COUNCIL ON THE BERNE CONVENTION

The Council unanimously supports the Berne Convention in its general aims to conserve the wild flora and fauna of Europe and their natural habitats; there is disagreement on some details: on the status categorisation of reptiles and amphibians, and on the content of certain Articles of the Convention as they relate to the keeping of animals in captivity. The Council is attempting to clarify the meaning of some parts of the Convention and their practical implementation, and will give a full account in the December 1982 Bulletin.

SPAIN PROTECTS ITS REPTILES AND AMPHIBIANS

To meet its obligations under the Berne Convention, Spain has protected most of its fauna. The collection and keeping of all species of reptiles and amphibians is forbidden by Royal decree, except the following: Eyed Lizard, *Lacerta lepida*; all Vipers, *Vipera sp.*, the terrapins, *Mauremys caspica* and *Emys orbicularis*; the Fire Salamander, *Salamandra salamandra*; and the Common Toad, *Bufo bufo*.

IDENTIFICATION GUIDE

The Conservation Committee has published an illustrated guide to the identification of British reptiles and amphibians. It is available from the Librarian at a cost of £0.50 (35p + 15p postage). Price to members or orders of 10 or more copies £0.45 each.

CITES GUIDELINES FOR TRANSPORT OF WILD ANIMALS AND PLANTS

The Convention on International Trade in Endangered Species has published guidelines for the transport and preparation for shipment of live wild animals and plants. The "Guidelines" are available at a price of US \$13.00 plus 10% postage from: UNIPUB, 345 Park Avenue South, New York, N.Y. 10010, U.S.A.

PRACTICAL CONSERVATION WORK IN EPPING FOREST

Scrub clearance by BHS members to restore the habitat of reptiles in Epping Forest has continued through the winter. In recent decades the areas of open rough grassland and heath formerly inhabited by reptiles have almost gone, invaded by oak, thorn, and birch scrub, now in the final stages of forming closed-canopy woodland. Until the 1950's and early 60's, Adders, Grass Snakes, Slow-Worms and Viviparous Lizards were common or abundant on many of the open plains. Today, nearly all of the populations have gone, and those surviving are very small. Until members of the BHS obtained permission in 1981 from the Forest authorities to restore some of the open areas, the remaining small populations of reptiles had little chance of survival. Also badly affected have been birds, mammals, insects and plant life. Subsequent work benefits all of these.

As the number of volunteers and the available equipment were small, the two most important localities were chosen for emergency limited clearance to ensure survival of the almost extinct populations for the next two or three years at least. The intention was to then steadily enlarge the cleared/thinned areas and to extend the work to other "plains".

Habitat in Epping Forest is varied; some areas are on London Clay, and support a typical vegetation of oak woodland, thorn scrub and rough grassland on fertile soil. The highest parts of the Forest, on the main gravel ridge, support predominantly Beech woodland, with smaller areas of birch woodland and relict heath. The heath only occupies small patches, mixed with bracken and heath grasses; *Calluna* and *Erica* never form continuous cover as they do elsewhere in southern England. The two sites currently being worked on are quite different. One is a beautiful area of open birch-oak woodland and heath on the Forest ridge, the other is rough grassland, thorn and oak scrub on London Clay. Both, in the past, supported large populations of reptiles. The area on clay in particular held a very large colony of Adders; it was also a favourite habitat of many species of birds. Effort has been divided between the two areas during the winters of 1980/81 and 1981/82, and now appreciable progress has been made; the cleared areas have

already been reoccupied by reptiles, and now seem secure for some years to come. Work will continue on these sites for some time. Care is taken to make the areas suitable for all forms of wildlife, not just reptiles.

As most of Essex is intensively farmed, and much of south Essex is urbanised, with large industrial and port areas, Epping Forest is increasingly important as a reserve for wildlife. We are very pleased to have the opportunity to be actively involved in the practical management of the Forest.

The work has been carried out with the help of the Epping Forest Conservation Centre and the Epping Forest Conservation Volunteers, who undertake many practical work tasks in the Forest. BHS members taking part are: Graham Walters, Martin Johnson, John Pickett and Simon Townson. More helpers are badly needed. Anyone willing to use axe and saw on winter Sunday mornings please contact John Pickett, 84 Pyrles Lane, Loughton, Essex IG10 2NW, telephone 01-508 6624. Work will resume again this year in October.



Plate 1. Thinning-out birch woodland on the Forest ridge



Plate 2. A cleared area on the oak and thorn scrub on London clay.

Photos by S. Townson

1982 MEETING OF THE SOCIÉTÉ HERPÉTOLOGIQUE DE FRANCE

The 1982 meeting of the French Herpetological Society will take place in Clermont-Ferrand from Thursday 9th to Sunday 12th September. Residence in the Cité Universitaire des Cèzeaux, rue Roche Genès, 63170 AUBIERE, France.

Programme:

- 1st day: 'Viviparous lizard and viviparity'
- 2nd day: Rearing of reptiles and amphibians. (Dinner in evening).
- 3rd day: A.G.M. and excursion.

BHS members interested should contact the new Secretary of the SHF:

M. Claude-P. Guillaume,
Laboratoire de Biogéographie et Ecologie des Vertébrés,
Ecole Pratique des Hautes Etudes, 3e Section,
Université des Sciences et Techniques du Languedoc,
Place Eugène Bataillon,
F — 34060 Montpellier Cedex,
France.

INAUGURAL MEETING OF IUCN/SSC SNAKE SPECIALIST GROUP, MADRAS, INDIA

The Inaugural Meeting of the IUCN/Species Survival Commission Snake Specialist Group will be held at Madras, India, on 8th-12th November 1982.

The venue is the Madras Crocodile Bank and the meeting is open to all herpetologists. Field trips to see south Indian amphibians and reptiles will be arranged (see below).

IUCN will not be able to cover travel expenses, but inexpensive beachside accommodation is available nearby.

Accommodation:

Golden Beach	Single US \$ 7 Double US \$10
Fisherman's Cove	Single US \$28
Silversands	Single US \$11 Double US \$14
Temple Bay (recommended by organizers)	Single US \$14 Double US \$20

Food:

About US \$5 per day.

Field Trips:

1. Local herpetological sites (US \$10, a day trip, with food)
2. Western Ghats (US \$100, 5-day trip, with food)

Those wishing to attend should make their wish known by 31st July 1982.

Apply to:

Romulus Whitaker,
Chairman, IUCN/SSC Snake Specialist Group,
Madras Snake Park,
Guindy Deer Park,
Madras 600 022,
South India.

SYMPOSIUM ON CROCODILE CONSERVATION AND UTILIZATION AND THE SIXTH WORKING MEETING OF THE IUCN/SSC CROCODILE SPECIALIST GROUP

To be held at Victoria Falls, Zimbabwe, Africa, 19-30 September 1982

Papers at the Symposium will be presented on the conservation and utilization of crocodiles, crocodile farming and rearing, trade and marketing of crocodile products and biological problems in rearing and farming of crocodilians.

The Symposium (19th to 26th September) will be followed by the Sixth Working Meeting of the Crocodile Specialist Group, 27th to 30th September.

Venue:

Makasa Sun Hotel, Victoria Falls.

Attendance:

Those interested in attending should advise the co-ordinator by 31st May 1982, giving the following information:

- a) Names and number attending
- b) Accommodation required (hotel preference, if any)
- c) Method of travel and arrival date (give flight number if by air)
- d) Length of stay

Papers:

Those wishing to present papers for the Symposium/Workshop should submit titles and summaries by 31st May 1982.

Registration fee: Z\$10.00 (US \$14.00).

Tours: Tours are available during and after the meeting (to include Wankie National Park).

Attendance advice, booking requirements and requests for further information to be made to:

The Co-Ordinator,
Crocodile Symposium,
Department of National Parks and Wildlife Management,
P.O. Box 8365,
Causeway,
Salisbury,
Zimbabwe.

A notice will be issued giving details of papers to be presented as well as the final programme.

D.K. Blake,
Crocodile Research Unit,
Department of National Parks and Wildlife Management, Zimbabwe

INTERNATIONAL HERPETOLOGICAL CONGRESS 1981

The first International Herpetological Congress took place in the Department of Zoology and Experimental Psychology, University of Oxford, 1-9 October 1981. Integrated with the Congress were the Inaugural Meeting of the IUCN/Species Survival Commission Tortoise Group and 2nd European Chelonian Symposium. The main part of the Congress was split into three sections:—

1. Captive Breeding and Husbandry
2. European Conservation and Field Research
3. General Herpetology

Each of the sections was well represented with papers read by herpetologists from countries as far apart as Australia, Trinidad, Canada, USA and Israel, as well as Continental Europe, and covered a diverse range of subjects from Malagasy iguanids to European tree frogs and from breeding the Indian gharial to a review of colubrid snake bites.

The Congress can be considered very successful in relation to herpetologists attending, but the general turn-out was somewhat disappointing. In all, in excess of 100 people attended, but this

only averaged out at about 30 per day. This, of course, meant that finances were strained, particularly in relation to the cost of hiring the Lecture Theatre.

Various reasons can account for the poor turn-out. The timing of the Congress was possibly wrong since the University term had started and many people were involved with lecturing and research supervision. Moreover, the high cost of hotel accommodation and subsistence in Oxford may have deterred people. An average of 100 attending daily would have covered the costs of publishing the Proceedings independently. However, negotiations are underway at present through various organisations to finance and publish the Proceedings. The British Herpetological Society (BHS) will probably publish the section on European conservation and field research as part of or as a supplement to the *British Journal of Herpetology*, while the sections on captive breeding and husbandry and general herpetology will probably be published by the Association for the Study of Reptilia and Amphibia (ASRA).

Despite these problems, the Congress may be considered a valuable exercise and allowed many herpetologists to meet who would not otherwise have done so. The many new contacts made at home and abroad was certainly a good public relations exercise for British herpetology.

I would be pleased to answer any specific questions relating to the Congress and can be contacted at the address below.

Mr. John Coborn,
Director, Dudley & West Midlands Zoological Society Ltd.,
2 The Broadway, Dudley, West Midlands DY1 4QB.
Tel: Dudley (0384) 52401

AAHS CONVENTION

The fourth convention of the Australasian Affiliation of Herpetological Societies was held in Auckland, New Zealand, 24-26 October 1981.

Saturday 24 was a day of seminars. Four Australian delegates were present along with a good number of professional and amateur New Zealand herpetologists. The session began with overviews of New Zealand and Australian herpetofauna by Associate Professor J. Robb and Mr. H. Ehmann. This was followed after lunch by papers from Mr. D. Newman and Dr. M. Crawley, both from the New Zealand Wildlife Service. Dr. Crawley's address on Wildlife Service policy was particularly useful in relation to the recently introduced legislation for the protection of New Zealand lizards. Two further papers were given by Dr. B. Ball and Mr. B. Thomas on New Zealand Herpetology.

The second day began with three papers by Australian delegates on various aspects of Australian herpetology with an especially interesting talk given by Mr. H. Ehmann on a "lost" species of skink, *Tiliqua adelaidensis*. In the afternoon a barbeque was held at Ti Point Wildlife Park some 50 miles north of Auckland City. Visitors wandered around the park and were especially interested in the fine collection of New Zealand and Australian lizards on display. Many thanks to the proprietor, Mr. I. Borich.

Monday 26 October began with a morning session on AAHS business, followed by a brief closed session for Australian delegates and NZHS Committee. The afternoon was taken up by a trip to view the collection of the NZHS President, Mr. R. Rowlands. The evening was filled by further New Zealand herpetological papers and a general discussion. This marked the close of the official part of the convention.

A field trip had been organised for Wednesday 28, to a Tuatara island off the east coast of North Island. Mr. D. Newman and Mr. I. McFadden lead the trip which consisted of a fifteen minute dinghy trip to the small, rocky island, followed by a couple of hours search for Tuataras. The weather was a little cool, so only a few specimens were found but, judging from the mileage of film exposed on these animals, everybody seemed fairly satisfied. Many thanks to the New Zealand Wildlife Service for their co-operation in making this trip possible.

All in attendance enjoyed the convention and we are eagerly awaiting the next, to be held in Sydney, Australia in 1983. We hope we may see herpetologists from other parts of the world, all would be very welcome.

Robert Porter,
New Zealand Herpetological Society

NEWS FROM AUSTRALIAN HERPETOLOGICAL SOCIETIES

AUSTRALIAN HERPETOLOGISTS' LEAGUE. The Australian Herpetologists' League has just published Volume I(1) of the Australian Journal of Herpetology. A copy has been sent to the BHS and is lodged with the Library. The Editor is Dr. R. Wells (University of New England, Armidale, New South Wales). The annual subscription is A \$10.

AUSTRALIAN SOCIETY OF HERPETOLOGISTS. The Secretary of the Australian Society or Herpetologists is Margaret Davies, Department of Zoology, Adelaide University, South Australia.

AUSTRALASIAN AFFILIATION OF HERPETOLOGICAL SOCIETIES. The following notice has been received from Chris Banks of the Melbourne Zoological Gardens, Zoological Board of Victoria, Parkville, Victoria 3052, who contributed to the International Herpetological Congress at Oxford, 1-7 October 1981.

Herpetofauna incorporates the *South Australian Herpetologist* and the *Bulletin of Herpetology* and is published twice yearly by the Australasian Affiliation of Herpetological Societies. The Affiliation started on an informal basis in 1974 and was formally established in 1977. It is the result of a formal agreement between member societies to participate in co-operative activities.

The Affiliation's objectives are to promote the scientific study of amphibians and reptiles and their conservation, to publish the journal *Herpetofauna*, to encourage liaison between member societies through Conventions, publications and field work, and to represent the interests of its member societies at the Regional level. It is not intended to be a separate society, nor is it to deplete member societies of their vital expertise and resources.

The five member societies are:—

AUSTRALIAN HERPETOLOGICAL SOCIETY

President: Glen Laycock.
Correspondence to: P.O. Box R79, Royal Exchange, Sydney, NSW 2000.

NEW ZEALAND HERPETOLOGICAL SOCIETY

President: Rod Rowlands Secretary: A.J. Harward
Correspondence to: 143 Manuka Road, Glenfield, Auckland 10, New Zealand.

SOUTH AUSTRALIAN HERPETOLOGY GROUP (INC.)

President: Chris Harvey Secretary: Brian Robert
Correspondence to: S.A.H.G. c/-S.A. Museum, North Tce., Adelaide, SA. 5000.

VICTORIAN HERPETOLOGICAL SOCIETY

President: Brian Barnett Secretary: Lani Barnett
Correspondence to: 16 Suspension Street, Ardeer, Victoria 3022.

WESTERN HERPETOLOGY GROUP

President: Greg Johnston.
Correspondence to: 16 McEwin Street, Whyalla Playford, SA. 5600.

Member Societies bulk subscribe to *Herpetofauna* on behalf of their members. Overseas and Australasian herpetologists who do not belong to one of the Affiliated Societies are invited to subscribe direct (a three year subscription is Aust. \$10 for addresses in Australasia and Aust. \$15 elsewhere including postage — please forward cheques, drafts etc., in Australian currency to the Editor. Overseas airmailed subscription is available at Aust. \$25 for three years).

Conventions are held for Affiliation society members and visitors about every two years in a field location or hosted by a member society in its home city.

Office Bearers:

Convenor: Harry Ehmann, School of Biological Sciences, Sydney Technical College, Broadway, N.S.W. 2007.

Editor: Gerry Swan, P.O. Box R307, Royal Exchange, Sydney 2000.

Councillors: AHS — Kim Kennerson
NZHS — Peter West
SAHG — Chris Harvey
VHS — Brian Barnett
WHG — Greg Johnston

Affiliation Diary — August 1981 to February 1982:

23-28 October 1981

Convention in New Zealand (see Regional News).

31 November 1981

Deadline for papers, articles, herp notes for next issue

14 January 1982

Deadline for Regional News reports

20 February 1982

Herpetofauna 13(2) publication date

Herpetofauna 12(2) was posted to Member Societies and individual subscribers in March 1981.

THE C.J.P. IONIDES MEMORIAL FUND

The C.J.P. Ionides Memorial Fund was launched in 1973 in order to erect a memorial in Nairobi to the late C.J.P. Ionides, the well known herpetologist and naturalist. Contributions were received from many parts of the world and it was hoped to use this money to build an Ionides Memorial Cage in the Nairobi Snake Park. This has not proved possible, mainly because of uncertainty over plans to modernise the Snake Park, and therefore an alternative form of memorial has been devised.

The first step in the new plan will be to erect a plaque in the gardens at the front of the Snake Park. These gardens were originally designed as a memorial to Ionides and it would seem appropriate to provide a public record of the fact.

A second and more ambitious plan is the establishment of an Ionides Memorial Library, to be housed within the National Museum. The Library will consist primarily of books and papers on reptiles and amphibians. It is intended that this should be available to Kenyans and others who are working in the field of herpetology.

The organisers would like to thank all those who contributed to this Fund. In addition, however, they wish to publicise the Ionides Memorial Library and to encourage authors and publishers to contribute relevant works to it. Further information is available from J.E. Cooper, Royal College of Surgeons of England, London WC2A 3PN, or R.E. Leakey, National Museums of Kenya, Box 40658, Nairobi.

THE GIBRALTAR ORNITHOLOGICAL AND NATURAL HISTORY SOCIETY

The Gibraltar Ornithological and Natural History Society was formed in February this year from the Gibraltar Ornithological Society. Its members include those interested in the study and conservation of the flora and fauna of Gibraltar and its hinterland in southern Spain.

The Society publishes four Newsletters a year as well as the annual report 'ALECTORIS' which includes original papers on the natural history of the region. Until this year Alectoris has been totally ornithological in content, but papers on other subjects, including herpetology, are now welcomed.

The Society wishes to establish contact with other societies, groups or individuals with an active interest in the region. The Society invites anyone working in the area to contact the Society at The Gibraltar Museum, 18-20 Bomb House Lane, Gibraltar; or the Secretary, John E. Cortes, c/o Animal Ecology Research Group, Department of Zoology, South Parks Road, Oxford.

FORMATION OF VENOMOUS ANIMALS SOCIETY

A Venomous Animals Society has been formed in Canada, but with an international membership.

Details are available from:

Scott Allen,
11 Knightsbridge Road, No. 1010,
Bramalea, Ontario L6T 3X4,
Canada.

SPECIES CONSERVATION IN EUROPE

The SOCIETAS EUROPAEA HERPETOLOGICA (SEH) is assessing the national and regional situation for:—

- (a) Species survey
- (b) IUCN Red Data list categorisation of species
- (c) Conservation measures for herpetofauna
- (d) Relevant habitat protection

At the important baseline level of field survey, there appear to be a number of regions for which reports are minimal or completely lacking. However, it is not clear whether these represent real gaps in data, or perhaps simply that survey results are latent and unpublished.

We therefore seek the cooperation of field workers in:—

- (i) bringing to our notice the results of previous surveys/recordings for these regions;
- (ii) taking any opportunities to visit and survey these regions starting 1982. The regions involved are:—
Albania, Bulgaria, Crete, Cyprus, mainland Greece, Malta, southern Italy, European Turkey and inland Yugoslavia.

Particular emphasis should be placed on species *status*: rare, frequent, common, etc., preferably in quantitative terms, rather than just occurrence, although for the most endangered or rare species, *any* data would be useful.

Please reply to Mr. H.R. Arnold, Biological Records Centre, Monks Wood Experimental Station, Abbots Ripton, Huntingdon PE17 2LS, England, or *via* The Secretary, British Herpetological Society, at the Society's address.

K.F. Corbett,
Chairman, SEH Conservation Committee

THE WILDLIFE & COUNTRYSIDE ACT (1981) GIVES LOCAL AUTHORITIES POWERS TO CONSERVE PONDS

There are still many aspects of the Wildlife and Countryside Act (1981) that remain to be tested in action. One of considerable interest to herpetologists is Section 39. Under the provisions of this Section, outside National Parks and the G.L.C. area (to which other rules apply) local planning authorities (i.e. district councils in rural England and Wales) may make management agreements with respect to any land which is both in the countryside and within their area, both (in the words of the Act) "for the purpose of conserving or enhancing the natural beauty or amenity" or for "promoting its enjoyment by the public". Such management agreements may contain considerable powers, in the following respects:

1. The person "having an interest in the land" (e.g. owner or occupier) may have restrictions imposed in respect of cultivation methods, use for agricultural purposes or the exercise of other rights, or alternatively may be obliged to undertake specified works of an agricultural, forestry or other nature;

2. The local authority may itself carry out works; and
3. The local authority may make such payments to the persons having interests in the land as appear to be "necessary or expedient for the purposes of the agreement". Moreover, such management agreements may be binding on successors to the title in the land.

The application of this section to the conservation of ponds that are important for their amphibian fauna is clarified in a letter to the President of B.H.S. from the Earl of Avon, Lord-in-Waiting and a spokesman for the Department of the Environment:

"You wrote seeking advice on the application of section 39 of the Wildlife and Countryside Act to the conservation of ponds and their margins.

Your suggestion that Section 39 might be available for this purpose is indeed correct. Sub-section (1) provides for management agreements to be made ... "for the purpose of conserving or enhancing the natural beauty or amenity of any land ..." The term 'natural beauty' is defined in section 52(3) of the Act as including flora, fauna and geological and physiographical features, and the term "land" is defined in section 114(1) of the National Parks and Access to the Countryside Act 1949 (applied to section 39 by section 52(4) of the 1981 Act) as including "land covered by water."

There would therefore be no bar to a local authority seeking to negotiate a management agreement under section 39 in respect of a pond and its margins, provided of course, that the land concerned lay in the countryside, and within that authority's area."

From Lord Avon's letter, it seems that the way is now open for B.H.S. members to work with the help of sympathetic District Councillors towards the establishment of a management scheme for ponds supporting important breeding populations of amphibians. Once the first successful scheme has been launched, it could very well provide a model for local conservation groups in many parts of the country.

ENDANGERED SPECIES (IMPORT AND EXPORT) ACT 1976 IMPORT LICENCES

The following letter has been received from the Department of the Environment Wildlife Conservation Licensing Section, detailing changes in Import Licensing procedures:

1. This letter is to inform you of a change to the conditions under which import licences for List B (vulnerable) species will be issued by the Department of the Environment from 1 April 1982.
2. Hitherto import licences for List B species (live animals, plants or parts and derivatives) have been valid for up to 9 months and for more than one consignment. All List B import licences issued after 1 April 1982 will be valid for up to 9 months, but for *one consignment only*. In other words the licence will always have to be surrendered to HM Customs and Excise upon entry, even if the quantity imported is less than that allowed by the licence. Subsequent imports will require a fresh licence.
3. This change has been introduced primarily to enable DOE to have an up-to-date record of actual imports, so that trade may be effectively monitored.
4. Import licences issued before 1 April 1982 which were made valid for more than one consignment may still be used, but they will have to be surrendered to Customs the first time they are used after 1 April. If any part of the surrendered licence has not been taken up a new import licence for this quantity may be applied for from DOE (the number of the old licence *must* be quoted on the application) and this will be granted automatically.

RAYMOND ROLLINAT: LA VIE DES REPTILES DE LA FRANCE CENTRALE

A facsimile reprint of a herpetological classic by the French Herpetological Society (SHF).

This book results from 50 years of patient observations and is regarded as a veritable 'Bible' of information, both for the amateur and professional alike, in France and elsewhere. It covers reproduction, feeding, activity cycles and other aspects of the natural history of the chelonians,

lizards and snakes of central France. Originally published in 1934, it was reprinted in 1980. Due to its continuing importance and demand, it is now out-of-print once again. A second run-off is therefore planned which will include 343 pages, 12 plates (in black and white), clothbound, with a new introduction.

Orders for single or multiple copies are now requested. A special pre-publication discount price of 120 French francs (plus 20 Ff postage) is offered, which is a substantially lower price than the future retail price. Should the project have to be cancelled through lack of support, payment will be returned.

To order: please give

your name and address

number of copies of R. Rollinat: LA VIE DES REPTILES DE LA FRANCE CENTRALE
required

enclose cash (International money orders and cheques drafted on a French bank are acceptable; postal cheques CCP can be made payable to the SHF account: 23-156-26-R PARIS).

Send to:

société herpétologique de France,
Dr. A. de Ricqlès,
Université Paris VII,
Laboratoire d'Anatomie comparée,
2 Place Jussieu,
75251 PARIS Cedex 05,
France.

This book is not only an excellent Natural History, but also a study of the annual cycle of activity, the sexual cycle and fecundity, post-embryonic development and the age of sexual maturity, numerous aspects of behaviour, and food and feeding activity of *Emys orbicularis*, *Lacerta viridis*, *L. agilis*, *Natrix natrix*, *N. maura*, *Coronella austriaca*, *Coluber viridiflavus*, *Vipera berus* and *V. aspis*. It is bound to be of interest to BHS members since all our British species also occur in France together with many more there, and it is hoped members will support this enterprise by our colleagues across the Channel, where so many of us spend our holidays, often observing herpetofauna in the wild.

The following was reprinted from the Marine Turtle Newsletter with kind permission of the Editor

CRYING "WOLF" AT LA ESCOBILLA

There is still confusion over the situation at La Escobilla, Mexico's last major arribada (massed turtle nesting) beach. In 1979 the IUCN Bulletin stated "There was no *arribada* in 1978," and my previous criticism of this statement (Frazier, J., 1981, Marine Turtle Newsletter, 18:4-5) was not sufficiently explicit, since some readers have asked for more details.

Apparently no Mexican specialist was consulted about arribadas in 1978 (Márquez, pers. comm.; Peñaflores, pers. comm.), and I have never seen corroboration of the IUCN's statement. To the contrary, there are data refuting the claim in the Bulletin. For example, Calderón and González (1981, Las Arribazones para Reproducción de la Tortuga Golfina—*Lepidochelys olivacea*—(Eschscholtz, 1829), en la Playa de la Escobilla, Oax., en el Pacífico, unpublished thesis, Universidad Nacional Autónoma de México, Iztacala, 63 pp + 8 figs.) reported on Escobilla from 1970 to 1980 showing that despite intense exploitation, there has not been a diminution in arribadas, but an increase:

Year of 1900:	70	71	72	73	74	75	76	77	78	79	80	81
No. of Arribadas:	3	?	?	3	3	3	2	2	3	3	4	5

Peñaflores, who has been monitoring this beach since 1974, confirmed these data and added the 1981 value (pers. comm.). This however, says nothing about the numbers of turtles nesting annually, and there is tremendous concern, among Mexicans and other nationals, that this last economically viable population is doomed to overexploitation.

The false statement in question not only discredits the article in which it appeared (which dealt

with the critical issue of overexploitation), but leaves biologists, particularly in Mexico, doubting the credibility of the organization responsible for the statement. Dramatization is an effective motivator, but this tactic alienates local people and those knowledgeable about the issues and, in the long run, it is counterproductive. I have elsewhere commented on another false claim regarding sea turtles (Frazier, J., 1980, *Environmental Conservation*, 7:239-240), and this is a common and serious problem in conservation of natural resources, not just marine turtles (see also Simon, J.L., 1980, *Science*, 208:1431-1437). Rational management of natural resources is best served by accurate rational statements.

J. Frazier,
Department of Zoological Research, National Zoological Park,
Smithsonian Institution, Washington, D.C. 20008, U.S.A.

NEWS ON THE BERNE CONVENTION: HOW IT WILL BE IMPLEMENTED IN BRITAIN

The Department of the Environment has clarified various points on the content and implementation of the Convention on the Conservation of European Wildlife and Natural Habitats, as this affects the keeping of reptiles and amphibians, and trade. This answers most of the points raised in the last issue of the Bulletin (No. 3, June 1981, see *New International Legislation: the Berne Convention*, p. 15-19).

The Wildlife and Countryside Act 1981 meets most if not all of the obligations imposed on Britain, as a signatory State, by the Convention. Any areas not covered by the Act will have to be subject to reservations under Article 22; this Article permits any State to make reservations regarding certain species at the time of ratification. No further legislation is planned, or is necessary, to enable ratification and implementation of the Convention to proceed.

International Transportation: Import and Export

The Convention will not apply to international movement of animals and trade: this will continue to be controlled by the Convention on International Trade in Endangered Species (CITES). The purpose of the Berne Convention will be to regulate internal commerce within the member States. Licences for import and export will continue to be obtained in the normal way (licencing in the U.K. is administered by the Endangered Species Import and Export Act, 1976, as amended by the Wildlife and Countryside Act, 1981).

Animals bred in captivity

Though the exemption of captive-bred animals is not specifically mentioned in the text of the Convention, the Explanatory Report on the Convention issued by the Council of Europe states that "the word 'wild' before 'flora and fauna' is meant to exclude animals or plants stemming from bred or cultivated stock". This is being interpreted by the D.O.E. as applying to second and subsequent generations bred from wild stock, but not to "wild animals currently held in captivity or first generation offspring". They agree that the Convention should make allowance for animals already held and bred in captivity, and have to raised this at a meeting of the Interim Committee which administers the Convention. It has been agreed that this will be covered by exceptions reported by the Government to the Convention, under Article 9. It is not clear yet exactly how this will work in practice.

Licensing of collection of Appendix II species

For native (British) species (the Crested Newt, Natterjack and Smooth Snake are the only British species on Appendix II) there is power to issue licences for various purposes under the Wildlife and Countryside Act. Other governments have the power to issue licences, under Article 9 of the Convention. This empowers them to make exceptions to the stringent obligations of Article 6. This answers one of the most important fears expressed in our original article. Exceptions can be made to both Appendices, the granting of exceptions being subject to the judgement of the governments of the respective member States.

More complete information on the Berne Convention will be given in the December 1982 issue of the Bulletin.

HERPETOLOGY IN AUSTRALIA

CHRIS B. BANKS

*Keeper-in-Charge (Reptiles), Royal Melbourne Zoo,
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As in Europe and the United States, herpetology in Australia has developed substantially in recent years. This is particularly evident in the greater involvement of workers in the areas of captive husbandry and study of wild populations. Perhaps it would be more accurate to say that their work has become more widely known as a result of an upsurge in publication of either short notes or more lengthy articles.

Much of Australia's herpetofauna is unique and as such is highly prized in other countries. However, with Australia's very strict import/export laws, the numbers of native reptiles and amphibians that leave these Antipodean shores are very small. As a result, information on almost any level relating to these animals is eagerly seized and devoured by our overseas counterparts. Until recent times, as in any country, many of the so-called common species have been taken for granted and their study shamefully neglected. Species such as the Eastern long-necked tortoise (*Chelodina longicollis*), Blue-tongued skinks (*Tiliqua* spp.), Stump-tailed lizards (*Trachydosaurus rugosus*) and Carpet python (*Morelia spilotes variegata*) were poorly documented. This was not because they had not been widely kept and studied, but rather that their keepers did not consider that they possessed the capabilities to publish their observations. With the advent and growth of the amateur herpetological societies and the involvement in such groups of experienced herpetologists, this situation is changing — to the benefit of herpetology in general. Our knowledge of these 'common' species has been further augmented by the attention of university researchers, three examples being Bull and Satrawaha's work on activity patterns of the Stump-tailed lizard, Chessman's comprehensive, ecological study of south-east Australia's freshwater tortoises and Shine's work on many Australian elapids.

Australia's junior herpetologists usually commence with one of the afore-mentioned species or perhaps the small dragons (*Amphibolurus* sp.), the so called Grass skinks (*Leiopisma* sp. or *Morethia* sp.) and sometimes a Green tree frog (*Litoria caerulea*). The more adventurous may try the geckoes, in particular *Underwoodisaurus milii*, some of the medium-sized skinks (*Egernia* sp. or *Sphenomorphus* sp.) or even a Common tree snake (*Dendrelaphis punctulatus*). The tortoises, Blue-tongues and Stump-tails are often family pets whereas the others will be the responsibility of one or more boys, and occasionally girls, in their early teens. These are often members of one of the amateur herpetological societies of which there are currently five in Australia. Not surprisingly these tend to be concentrated in the more heavily populated south-east. Within these groups they are able to compare notes, gain help and encouragement from the more experienced members and, hopefully, publish items of interest in the societies' newsletters or in the twice yearly journal, 'Herpetofauna'.

The societies are also performing a number of other valuable functions including working within the general community to increase public awareness and appreciation of reptiles. Field studies have been undertaken in many areas either by individual societies or by a number of members with their society's backing. Lectures and displays have been presented by society members to local community groups and senior members of the societies have assisted with specimen and tissue collecting at state museums and other institutions. All Australian states have laws and regulations covering reptiles and amphibians and most societies are actively involved in preparing submissions to the relevant authorities which aim to ease sometimes overly restrictive regulations that adversely affect the *bona fide* activities of members. Indeed in some instances it would appear that the regulations have been formed with ease of enforcement as the primary aim.

Australasia's amateur herpetologists are represented at the national level by the Australasian Affiliation of Herpetological Societies (A.A.H.S.). Also encompassing the New Zealand

Herpetological Society, the Affiliation's councillors, one from each Society, have as their main aim the promotion of liaison between the member Societies and between individuals through field work, conventions, the publication and distribution of 'Herpetofauna' and the distribution of other information. Other objectives include the scientific study and conservation of reptiles and amphibians and their habitats. At the present time, 'Herpetofauna' is the main outlet for herpetological material in Australia, containing as it does a range of articles and short notes as well as news from the member Societies.

The Australian Society of Herpetologists (A.S.H.) has, as the bulk of its membership, those working with reptiles or amphibians in a professional capacity or those individuals whose interests are of a more scientific nature than those of members belonging to the aforementioned groups. A small newsletter is published biannually and contains book reviews; lists of recent herpetological papers, theses, etc.; A.G.M minutes and other items of interest.

A further organisation is the Australian Herpetologist's League which was formed early in 1981. A number of initial teething troubles now appear to have been overcome and their publication, 'Australian Journal of Herpetology', should provide a valuable additional outlet for those wishing to publish in Australia.

Researchers in many Australian universities have chosen reptiles or amphibians as subjects for their studies. Frogs of many taxa, Stump-tailed lizards, the smaller skinks (e.g.: *Leiopisma* sp.) and fresh-water tortoises have figured strongly in this area. Amphibians have received particularly intensive research with Australian frog workers contributing enormously to both local and world herpetology. Although many people have been, and still are, involved those worthy of mention include Mike Tyler, Bert Main, Murray Littlejohn and Angus Martin. Valuable chromosomal work, involving many species, is being undertaken at the Australian National University with a number of papers coming from Max King and Greg Mengden. Australian sea turtles and crocodiles have been, and still are, the subjects of comprehensive research involving specimens under both wild and captive conditions. Prime examples of this work are Harry Messel's extensive survey of the Estuarine crocodile (*Crocodylus porosus*) and Graham Webb's current studies of the freshwater crocodile (*Crocodylus johnstoni*). Workers from National Parks and Wildlife Services, and universities, are collaborating on sea turtle research, in particular the Green and Loggerhead turtles (*Chelonia mydas* and *Caretta caretta*). Recent attempts to set up 'rural' industries in northern Australia based on sea turtles and involving aboriginal and island communities appear to have failed due to withdrawal of government funds. Visiting workers have also contributed greatly to our knowledge of Australian species with prime examples being John Legler's studies of Australia's chelid tortoises and Kluge's extensive revisions of Australia's geckos and legless lizards.

As well as the National Parks' involvement previously mentioned, further studies involve distribution of desert and rainforest reptiles, numerous taxonomic reassessments and many ecological studies. Similar work is being carried out by various museum herpetological staff including Hal Cogger and Allen Greer at the Australian Museum, Graema Gow at the Northern Territory Museum, Jeanette Covacevich at the Queensland Museum, Glen Storr at the Western Australian Museum, Terry Schwaner at the South Australian Museum and John Coventry at the Victorian Museum. We have also seen an increase in the extent and number of herpetofaunal surveys, particularly in some of the more remote areas of the continent. For the most part these have been brought about by new environmental laws in most States, as well as by major new developments especially involving the mining sector. Apart from Eric Worrell's 'Reptiles of Australia', very little material has been published by herpetologists employed in Australia's zoos until recently. However, in the last five years a number of papers have appeared covering Australia's crocodiles and tortoises, native and exotic pythons, and more general observations relating to captive individuals. Australia cannot boast very large collections such as those possessed by some North American zoos. However, we do have three, comprehensive, medium-sized collections of 70-100 species at Melbourne and Taronga Zoos, and the Australian Reptile Park at Gosford near Sydney. Smaller collections are displayed at Perth Zoo, Western Australia; Whyalla and Renmark, South Australia; Warrnambool, Victoria and Beerwah in Queensland. There are also many private herpetologists many of whom are supplying valuable information on captive breeding and husbandry. Two instances of how zoos can collaborate with other

institutions have involved Melbourne Zoo in the last two years. In September, 1980, 11 zoo-bred Estuarine crocodiles were despatched to the Queensland National Parks and Wildlife Service's Northern Research Centre at Pallarenda near Townsville. From there they were taken to suitable habitat, marked and released as part of a long-term study of this species. The second venture involved a total of 13 zoo-bred Taipans (*Oxyuranus scutellatus*) which were sent to Mr. Charles Tanner at Cooktown in northern Queensland where they have been incorporated into a venom collection programme. Mr. Tanner is an important supplier of Taipan venom to the Commonwealth Serum Laboratories at Melbourne for use in antivenom production.

Melbourne and Taronga Zoo's have done well in the field of captive breeding including such notable species as *C. johnstoni*, *C. porosus*, *Geochelone elegans*, *G. elongata*, *G. gigantea*, *Clemmys guttata*, *Basiliscus plumifrons*, *Cyclura cornuta*, *Iguana iguana* (multiple generation), *Python reticulatus*, *P. sebae*, *Liasis amethystinus* and *Bitis gabonica*. Many other species are bred on a regula basis with native forms including *Chelodina longicollis*, *Emydura krefftii*, *E. macquarii*, *Amphibolurus vitticeps*, *Tiliqua scincoides*, *Liasis childreni* and *O. scutellatus*. Some of the smaller collections have also achieved some important success, the most recent being what is probably a world first for the Woma (*Aspidites ramsayi*) at Bredl's Reptile Park, Renmark. Other breedings of note include *Alligator mississippiensis* at the Australian Reptile Park, *Pseudemydura umbrina* at Perth Zoo (with only limited rearing success) and *Acanthophis antarcticus* at the Whyalla Fauna Park (on a regular and continuing basis).

With Australia having the rather dubious distinction of possession a higher percentage of venomous than non-venomous land snakes it is not surprising that extensive studies have been and continued to be undertaken on Australia's dangerous species and their venom. Foremost in this field is Dr. Struan Sutherland of the Commonwealth Serum Laboratories (C.S.L.) in Melbourne. Together with his colleagues, Dr. Sutherland has developed such vitally important techniques as the 'pressure/immobilization' type of first aid and the Venom Detection Kit, the former totally eliminating the trauma of slashing and sucking and the latter enabling rapid identification of the venom injected. Their work is not restricted to snake venoms as is evidenced by the recent development of an antivenom for the Funnel-web spider (*Atrax robustus*). A number of smaller 'reptile parks' have a 'snake-milking display' as part of their presentation. While some not listed here tend to be bordering on the sensational, others relating to Australia's dangerous snakes, their venom, case-histories of bites, etc., are constantly appearing both in the popular press and scientific literature. Recent work at the C.S.L. indicates that Australian species hold the top 10 places in a listing of the world's 'deadliest' land snakes on the basis of venom toxicity. With this in mind it is therefore quite pleasing to note the gradual shift in public reaction in recent years away from a snake, any snake, being something that is only fit for killing and hanging over a road-side fence. Perhaps this change is simply an extension of the increase in public awareness for wildlife in general.

To meet the demand created by the upsurge of interest in, and study of, Australia's herpetofauna, a number of publications have been released in recent years. The following are of significance in their particular fields:

- Tortoises of Australia (1978) John Cann
- Snakes of Australia (1976) Graeme Gow
- Lizards of Australia (1976) Stephen Swanson
- A Field Guide to Australian Frogs (1977) John Barker and Gordon Grigg, Rigby Ltd., Sydney.
- A Field Guide to Reptiles of the Australian High Country (1980) Robert Jenkins and Roger Bartell. Inkata Press, Melbourne.
- Keeping Reptiles and Amphibians as Pets (1980) Chris Banks, Thomas Nelson. Australia Pty. Ltd., Melbourne.
- Reptile Ecology (1976) Harold Heatwole, University of Queensland Press, St. Lucia, Queensland.
- Frogs; revised edition (1982) Michael Tyler, Collins, Sydney.
- Dangerous Snakes of Australia (1982) Peter Mirtschin and Richard Davis, Rigby Ltd., Sydney.
- Reptiles and Amphibians of Australia; revised edition (1979) Harold Cogger, A.H. & A.W. Reed, Sydney.

Angus & Robertson, Sydney

— Proceedings of the Melbourne Herpetological Symposium (edited by Chris Banks and Angus Martin) (1980) Zoological Board of Victoria, Melbourne.

The last-mentioned title is the published version of the highly-successful Melbourne Herpetological Symposium. Organised by the staff of the Reptile Department, Royal Melbourne Zoo, under the auspices of the Zoological Board of Victoria, this event was an attempt by the organisers to bring together herpetologists from all levels and areas of involvement. As one of those responsible, I am delighted that we were so successful. Further meetings of this type are anticipated for other centres in Australia, the next being planned for Sydney during January, 1984. Annual meetings are held by all the societies, but Australia's widespread and relatively small population is probably the main factor in preventing a large, broadly-based, annual gathering. This is not to say that Australian herpetologists are ill-informed, as the word-of-mouth method of transmitting information appears to be most efficient. Further, as well as receiving local news, many subscribe to at least one overseas herpetological publication.

On the surface, it may appear to some overseas readers that little of herpetological value is happening in Australia. This is probably due to our distance from other centres and our lack of a quarterly journal along the lines of those published by British and North American societies. However, once contact has been established with herpetologists in this country, one can see that herpetology in Australia is thriving. Knowledge of our herpetofauna is continually being broadened on all levels and the many contacts that most of us in Australia have developed will continue to be of great value to herpetology around the globe.

ACKNOWLEDGEMENTS

Many people supplied numerous comments on drafts of this article. They are too numerous to mention here but I thank them all for their suggestions, many of which I had overlooked.

Initial drafts were typed by Di Cardwell and Meg Braden.

Some readers may question the scientific names I have used. While there have been a number of recent taxonomic reassessments involving Australian species, I have followed 'Reptiles and Amphibians of Australia' (Cogger, 1979) as a standard text.

HERPSEARCHING IN NORTHERN FRANCE

TREVOR BEEBEE

The parts of Europe closest to our own shores seem to have received relatively little attention from herpetologists, unlike the more distant and warmer southern end of France with its well-known diversity of amphibian and reptile species. Northern France should however be interesting in relation to how our English species may have come to Britain, and to the habitats they occupy in the land closest to us. Visits were made in August 1981 to the nearest bit of coastline to Britain, around Boulogne, and in May 1982 to Brittany at the other (western) end of the north French coast.

Around Boulogne green frogs seemed to be scarce, although a little way inland and south of the town we did find a pond with a few animals in it. The most interesting places were on the extensive sand dune systems which occur both north and south of Boulogne. These have large amounts of scrub (buckthorn) cover and usually rather little marram grass, so they do not look too much like typical British dunes. Other outstanding features are concrete gun emplacements and tracks (all over the place) laid down in the last war, and great numbers of used shotgun cartridges left by the equally great numbers of local hunters. Rabbits and pheasants are numerous on these dunes, and the latter may explain the scarcity of reptiles; only a very few common lizards *Lacerta vivipara* were seen during the trip despite extensive searching. The amphibian situation, though, was more interesting. The dunes had some natural "slacks", small artificial pools dug as watering places for pheasants, and in one case some ponds in the remains of an old sand quarry. Natterjack toads *Bufo calamita* were quite widespread and we also came across parsley frogs *Pelodytes punctatus* (the very northern edge of their range), common toads *Bufo bufo*, midwife toads *Alytes obstetricans*, tree frogs *Hyla arborea*, smooth and great crested newts *Triturus vulgaris* and *T. cristatus*. Midwife toads were locally very abundant on the dunes, with large tadpoles in many ponds. It was particularly interesting to find tree frog tadpoles, always in ponds partly surrounded by buckthorn in which the adults lived. The success of midwife toads and tree frogs after introduction to England becomes more understandable when it is realised they are doing so well only a few kilometres away across the Channel.

Brittany was rather different. Green frogs were widespread and abundant, and in one shallow lake (which must have been several hectares in extent) near Lorient we came across an enormous breeding colony which must have run into many thousands. The noise was like a small airport, and seven herons were feeding on the frogs as we arrived. Agile frogs *Rana dalmatina* were widespread from dunes to hilly uplands, and we came across natterjacks and midwife toads (the latter in large numbers), again on dunes, near Lorient. Unfortunately the ponds at the best site were being infilled with rubbish — these problems seem to be universal! Newts were very thin on the ground, and I only came across a few palmates *T. helveticus* which was disappointing since marbled newts *T. marmoratus* apparently occur in Brittany. A surprising find was a large number of common toad tadpoles in a salmon river! — shoaling just behind a weir, surely a most unusual habitat.

Brittany is known as a land of gorse and broom, and it is evident that much of the countryside must once have been heathland. Very few sizeable areas of heath now remain, mainly near the coast, but those that do were of special interest because of their reputation for harbouring green lizards *Lacerta viridis*. This reputation turned out to be well justified. We first found them on a heather-covered hill sloping down to the sea on the north coast near Erquy, living in dense heather or in mixtures of heather, gorse and bracken. Later we came across them inland on similar habitat, and in long grass on rocky bits of the south Brittany coast. I only saw one green lizard on dunes, but the species certainly gives the impression of being the dominant — usually the only — lizard in most of the habitats suitable for reptiles. No common or sand lizards were seen, in habitats apparently identical to those occupied in Britain by these two species. It is indeed puzzling that sand lizards do not seem to have been recorded anywhere in northern France according to the recent (1978) distribution maps of French herpetofauna, and certainly I

have not seen them north of the Loire Valley. We did find a few wall lizards *Podarcis muralis* at coastal sites (mainly dunes), on one occasion on a wall within a few metres of the high tide line, but they were evidently not abundant even on the south coast of Brittany. Occasional grass snakes *Natrix natrix* were also found, including one exposed out in a large flat area of dunes without any cover for many metres around it.

I am sure there is a lot more to find in northern France; many of these observations are quite distant from the nearest officially reported sites in the 1978 atlas, and the whole area seems poorly recorded. Perhaps other BHS members can provide more information?

A NEST OF THE MONTPELLIER SNAKE

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Little information is available on the breeding ecology of the Montpellier snake (*Malpolon monspessulanus*). Several authors (Boulenger 1913, Hellmich 1962, Hvass 1972) pass on the observation of Werner (in Boulenger 1913) that clutch size is 4 to 12 eggs, hatching in October. Steward (1971) gives a clutch of 4 to 20, usually below 12, hatching in September or October in western Europe, earlier in the east.

Several of these snakes were seen in the oak-chestnut woodland of the Massif des Maures, Provence, France, usually in clearings, during August 1981. Seventeen adult cast skins, identified by head scalation, were found in one olive grove alone (fig. 1). On 28 August 1981 five skins of juveniles were found around a hole at the edge of a terrace which had partly collapsed (Plate 1); they had not been there the previous day. These skins were removed, and on the following three days 7, 3 and 4 more skins appeared, respectively. No more were found, although the site was visited for two weeks thereafter. In total 19 juvenile skins were thus found around this hole, the furthest being five metres away. Size and scalation of the complete skins is given in table 1.

At midday on the 29 August 1981 a small snake was seen moving along the terrace ten metres from the hole, and after sunset two juvenile Montpellier snakes were found under stones a few metres from the hole. Their size is given in table 2, together with that of another captured at a different site in the forest, on 31 August 1981. A juvenile of similar size was seen at a third site on 24 August 1981.

At least 19 juveniles thus emerged from this hole over a four day period, sloughed in the immediate vicinity, and probably dispersed. The nest may have been a considerable distance below ground, in the crevices of the buried stone wall. There were signs of disturbance around the hole as though caused by a large animal trying to dig out the eggs; wild boars have been seen in the area. In view of the short period of emergence and small variation between the skins it seems likely that it was a clutch from a single female. It is not known whether emergence and sloughing occurred immediately after hatching or after some time in the nest.

Montpellier snakes do well in captivity, feeding readily on mice. I would be grateful if any readers having captive specimens of this species would send me sloughed skins and details of the snout-vent and tail lengths of the snakes at the time of sloughing, and the origin of the snake if known.

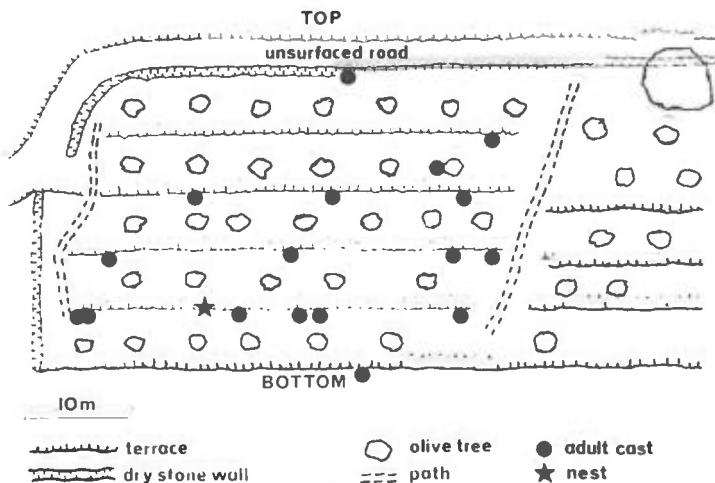


Fig. 1. Map of Olive Grove



Plate 1. Nest Entrance (centre)

Table 1. Characteristics of complete juvenile skins

	n	range	mean	standard deviation
snout-vent length, mm	9	297-323	308.3	8.1
tail length, mm	7	89-100	94.7	4.2
no. of ventrals	9	173-179	175.1	2.2
no. of caudals	8	83-89	87.0	2.4

Table 2. Size of juveniles

	neonates		other juvenile
snout-vent length, mm	243	246	256
tail length, mm	72	74	78
weight, g	7.0	6.9	7.7

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A NOTE ON THE MAINTENANCE OF THE RED-SPOTTED NEWT IN CAPTIVITY

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The red-spotted newt, *Notophthalmus viridescens*, is a common salamandrid urodele of the eastern states of North America, and intensive research has been focused on its ecology (Gill, 1978), sexual behaviour (Arnold, 1972; Verrell, in press) and endocrine physiology (Zimmer & Dent, 1981 and references therein). The physiologists such as Dent and his co-workers have reported that within a few weeks of their introduction into the laboratory, male newts lose their secondary sexual characteristics and also their willingness to court females. I here describe a regimen which has enabled me to maintain newts in breeding condition in the laboratory for up to eight months.

Two groups of animals were captured in ponds in Tennessee, USA, and were sent to England by aeroplane in February, 1979 and November, 1980. The newts were already in breeding condition when caught, and when they arrived at my laboratory, were separated by sex and placed in aquaria measuring 122 x 38 x 38cm, with not more than 20 same-sex individuals per tank. The water in these tanks was aged tap-water and was not aerated. Its temperature was held more or less constant at 10C. Water weeds were planted when available, and the newts were given a liberal diet of chopped-up earthworms, *Daphnia* and *Tubifex*. The animals were kept under a photo-period schedule of 16 hours light: 8 hours dark (lights on at 0600 hours) to mimic spring; the illumination was provided by 'Truelite' fluorescent tubes, which produce the same mix of wavelengths as is found in natural sunlight.

Under these conditions, the two groups of newts were observed to court until July, 1980 and July, 1981 respectively. The two most obvious secondary sexual characteristics of the male, the tail fin and hindlimb nuptial pads, showed sporadic regression but this was easily reversed by supplying more food. In all, 80 females were inseminated at least once, and many of these were found to contain ovulated eggs in their oviducts upon dissection. However, few eggs were deposited in the vegetation in the tanks, and of the very few larvae produced, none survived beyond a couple of days.

This maintenance regimen differs from others that have been published in several potentially important respects. First, my newts were kept at 10C, compared with the 20-22C used by other workers. Secondly, my newts were fed live prey, whereas fortified ground, lean beef has been used elsewhere. In common with many other species of newt, the red-spotted newt only takes moving prey. Thirdly, the density of animals in each tank was probably low enough to avoid any detrimental effects of social stress, such as competition for food.

In summary, my regimen maintains red-spotted newts in breeding condition for long periods. Perhaps with some modification, it may be of use in the induction of successful reproduction in captivity in this species.

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NEWTS, NEWTS, NEWTS (AND HOW NOT TO GET RID OF THEM)

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From May 1980 I have been giving away newts to reduce their numbers. As a consequence of this I now have more newts than before. If this sounds curious, read on! In the garden at the rear of my house I have 3 medium sized ponds in which the 3 native species of newt i.e. smooth, palmate, and great crested (*Triturus vulgaris*, *Triturus helveticus* and *Triturus cristatus cristatus*, respectively) breed.

Also breeding in the ponds are common frog, common toad, and European tree frog. The numbers of newts (especially palmate and common) became very high. The point was reached when their numbers seemed no longer to increase. It appeared that a dynamic balance had been reached between the numbers of newts in the pond, and the amount of pond available. As a result of this high density of newts very few frog or toad tadpoles survived to full metamorphosis owing to the degree of predation. Normally adult newts could be found in the water from spring (late February in common newt) up till autumn. I decided it would be a sensible measure and good for conservation to advertise the newts "free to pond owners" in the local paper. As a result of the advert the journalists became curious and wrote a small article entitled "Homes for Newts Plea!" Following this many pond owners came and collected newts from me. It was then late May 1980, the female newts having not completed egg laying. It seemed a good idea to give them away, still in egg, as they would immediately resume egg laying in their new environment which would not have been overspanned as far as the number of newts was concerned, as was the pond they left. I restricted each person to a half dozen of one species, e.g. one person would be given half a dozen palmate newts consisting of 3 males, 3 females. The next person would be given a similar quota of smooth newts. Far fewer great crested newts in relation to the smooth and palmate existed in the pond, so far fewer were distributed. In 1980 a total of 230 newts plus, were given away. When I had reached my target of a dozen visible members of each species in the ponds, further applicants for newts were given eggs attached to weeds. I noted the applicants names and addresses and there are now, presumably, scattered colonies of newts within a 15 mile radius of my home. In the autumn of 1980 exploration of the ponds at night revealed very large numbers of young newts of the season all three species relative to previous years. In previous years a long night-time search in the weed was necessary in order to find one newt tadpole. In late summer-autumn 1980 very many were easy to find in the warmer surface waters with a torch. These were swimming freely in gaps in the weed making no attempt to remain continuously hidden in weed as in previous years. Thus there appeared to be a change in behaviour as well as numbers.

The ponds themselves average about 7ft x 5½ft in size, and are easy to investigate with a powerful torch by walking around the banks. The large numbers of large newts seemed to reflect the approximate ratio of the original adults. That is to say, about 1:1 for smooth/palmate populations and a population of crested newts 1:20 of total numbers.

This experiment in giving away newts was repeated in May 1981. This time 160 adults were given away and hundreds of eggs. In the autumn once again the large number of young newts was conspicuous. Looking under debris, e.g. stones, rocks, near the ponds in the late autumn, revealed a greater number of individuals than pre-1980! (The average age was however, now much younger). So, if you ever want NOT to get rid of newts ...!

This spring (1982) the newts are as numerous as ever in the pond and I will restrict myself to giving away common and palmate newts as a conservation measure (by wider distribution) so as not to contravene the new Wildlife & Countryside Act, 1981. However, as can be seen from the foregoing this may eventually lead to fewer newts and of course they will not get the chance of being spread more widely afield, which seems to me at least a valuable conservation tactic, i.e. to get them to newtless ponds, where they can expand in numbers.

I think the mechanism leading to greater numbers of young may work as follows:—

- (i) reducing the numbers of adults makes available more food for the young.
- (ii) more importantly, without the efficient predation by adults, the young can survive in far greater numbers. The frogs and toads also showed an increase in numbers judging by the numbers of fully developed young leaving the pond following the newt reductions.

The previously described phenomenon would have great implications in the field of conservation *if* the phenomena is repeatable in other ponds. The procedure could be carried out in conservation ponds; possibly removing adults temporarily to another site and leaving the eggs to hatch and larvae to grow, unhindered. This should boost numbers so that the newly emerging young in larger numbers could be reintroduced to other areas. This could of course only be applied to newts as native British frogs do not feed beneath the water surface, and so do not feed on amphibian larvae. It may also not work where newts are not the main predators of the young (e.g. where fish are present). However, the observed phenomenon also occurred in the largest of my garden ponds which also contains common carp up to 14" long. It must be added that these fish do not in fact attempt to eat the adult newts (possibly they have learnt from past experience that they are distasteful/toxic and this may protect the young newts from fish predation). If the young newts are not taken to other areas when they leave the pond it would seem to follow that subsequent recruitment to the adult stock could become far higher (if the environment will allow). This will mean a greater number of breeding newts in later years. As I said earlier, a dynamic balance seemed to exist in the pond between the numbers of adults that the pond could hold and the numbers of young that were able to mature. This mechanism must, it would seem to follow, apply in nature when the adults take to water to breed and fall prey to other creatures (e.g. herons etc.). This removal could, if my observations are applicable to the wild, eventually lead to greater numbers of young. Heavy predation on the resulting greater numbers of returning adults in subsequent years could then be sustainable in the wild. This kind of ecological balance contrasts to the situation pertaining to my garden which originally had negligible predation on adults and large predation on the young, presumably by the adult newts. Taking adults out presumably mimics predation in the wild. Aquarium experiments could easily be set up to follow this mechanism through and give more precise numerical data. Further implications from these results, if repeatable, would be that taking adult newts from the wild by the pet trade abroad could be controlled by a closed season during early spring: collection after this time would possibly have less effect on future numbers. This may be a fruitful field for research, and the many other factors that operate in the wild (such as varied forms of predation) would give added interest.

It must be added that, from common observation, no two ponds, even if adjacent, are alike. Even so, I feel sure the foregoing paradoxical way to increase newt numbers (in garden ponds at least) raises some interesting or controversial points.

TIMOTHY TORTOISE OF SELBORNE

JUNE CHATFIELD

Gilbert White Museum, Selborne, Hampshire

The famous eighteenth century naturalist, the Reverend Gilbert White, had a great interest in tortoises. This was stimulated by observations on Timothy the tortoise who originally belonged to his aunt, Rebecca Snook, of Ringmer, Sussex. Gilbert White made regular visits to his aunt (often recorded in his personal correspondence and in *The Naturalist's Journal*) to inspect the tortoise before and after hibernation, and this involved a trip to the local general store to weigh Timothy on the shop scales. In 1780, on the death of his aunt, the tortoise became the property of Gilbert White whereupon he dug it out of hibernation in the Sussex garden and brought it back in a post chaise to Selborne. With the tortoise in his own garden at The Wakes, White undertook further observations and did experiments on the tortoise. He was particularly fascinated by hibernation in animals and all aspects of this phenomenon in the tortoise were regularly documented in his journals. Timothy tortoise lived in the spacious 5 acre garden at The Wakes, feeding liberally on the abundant produce of fruit and vegetables, for the rest of Gilbert White's life. Timothy remained at Selborne and died in 1794, the year following White's own death. The carapace to the original Timothy is now in the British Museum (Natural History) and when it was presented to the museum in 1853, it was discovered that Timothy was a female — a fact which White, curiously enough, did not discover.

A collection of Gilbert White's writings on Timothy tortoise was assembled by Sylvia Townsend Warner and published in 1946 under the title *The Portrait of a Tortoise*. This book has now been re-issued by Virago Press at £3.50. After a full and amusing introduction by the compiler, we are presented with extracts from Gilbert White's entries in *The Naturalist's Journal* (1771-1793), some letters to the Hon. Daines Barrington from White's famous classic *The Natural History of Selborne* which feature the tortoise, together with some explanatory notes, White's supplement to *The Antiquities of Selborne* "More particulars respecting The Old Family tortoise" and appendices with a chart of Timothy's weight from 1775 until 1793.

After Gilbert White's death his house, The Wakes, went to his brother Benjamin, then to his niece Mary White and it was sold, and passed out of the family, after Mary died in 1839. The next occupant, Professor Thomas Bell, was a most appropriate person to live there for he was a keen scholar of White's work and in 1877 published a much annotated two volume edition of *The Natural History and Antiquities of Selborne*. Like Gilbert White, Thomas Bell was very interested in tortoises and before coming to Selborne he had published some parts of a monograph on these animals. Professor Bell (in a foot note to the 1877 edition of *The Natural History and Antiquities of Selborne*) originally identified White's Timothy as *Testudo marginata*, but he later named it as a separate species *T. whitei*.

Gilbert White's house is now a museum and continues the tortoise tradition but having a large present-day Timothy which is *Testudo graeca*; a closely related species and, like Gilbert White's tortoise, a female. The current Timothy has been at the museum since 1970, she measures 8½ ins (22cm) and weighs 4lb 5oz (1.96kg) (9.3.1982).

In September 1981 the museum Timothy caught a cold — she had long mucus strings hanging from her nose, exhibited difficulty in breathing with much wheezing and, at night, snoring. She was taken to the veterinary surgeon who prescribed antibiotics and recommended that she be kept warm indoors. In addition we also dissolved some Vick Vapour Rub in boiling water in a deep cup and placed her head over this to inhale the fumes. Fortunately Timothy proved co-operative and mostly kept her head out of the shell so she was able to receive this treatment two or three times a day, and it did seem to make her breathing easier. The cold symptoms persisted, though in diminishing severity throughout the winter; it was possibly a virus infection as the antibiotics would have had an effect had it been due to a bacterium. During the autumn and early winter the tortoise lost weight, dropped to 3lbs 12oz.

Timothy adapted well to life indoors in her box of straw and was allowed to walk around indoors for exercise. Keeping a tortoise active throughout the winter posed various problems — adequate temperature, feeding and house training. Timothy was regularly taken home at the end of the day (the museum building being too cold). At night the tortoise box was kept on the top of a gas-fired central-heating boiler and with just the pilot light in action thus preventing too great a drop in temperature during the coldest part of the 24 hour cycle. In the day time the box was placed in any warm location, in front of a coal fire, close to radiators, and occasionally the airing cupboard. The temperature achieved was not adequate for full metabolism and from mid September onwards, the tortoise lost all inclination to feed and therefore force-feeding was necessary, but this was accomplished without resistance from the animal. The tortoise's mouth was opened and small pieces of food put in, and when the first piece was chewed and swallowed it was usually possible to introduce the next piece into the naturally opened mouth. A range of food was given and each day's rations included some fruit (apple, orange, grape, tomato or soft banana), some starchy food (thinly sliced carrot, swede and cooked rice or porridge) and some green food (land or water cress, lettuce, dandelion leaves). Land cress grown in the garden proved a most satisfactory winter supply of green leaves. Vitamin supplement was given in powder form twice a week.

An associated problem with an indoor tortoise is the large volume of urine expelled in jet-like fashion. After feeding the tortoise was placed on thick sheets of newspaper and usually within an hour the urine and faeces are expelled and the tortoise can then be allowed to wander and exercise freely without risk of accidents. Although antibiotics are often said to cause constipation, the museum tortoise performed its bodily functions regularly (at more or less daily intervals) during six months on antibiotics.

Timothy tortoise has now recovered from her infection. Her weight has gone up, the eyes are black and bright, and there is no further discharge from the nose nor indications of breathing difficulties. Antibiotics and Vick treatment have been discontinued, but she will continue to be kept indoors until May when the outdoor temperature rises and it will probably be necessary even then to bring her indoors at night.

This summer Timothy tortoise of Selborne will be back in her pen in the garden at The Wakes and may be seen during museum opening times. The Oates Memorial Library and Museum and The Gilbert White Museum is open from March — October from 12.00 to 5.30 but is closed on Mondays, with the exception of Bank Holidays.

NOTES ON THE CAPTIVE BREEDING OF THE DESERT ROSY BOA (*LICHANURA TRIVIRGATA GRACIA*)

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There are three subspecies of the rosy boa: the coastal rosy boa (*Lichanura trivirgata roseofusca*) which occurs in the foothills on the coastal side of the mountain ranges of southern California from Los Angeles and San Bernardino counties to northern Baja California; the desert rosy boa (*Lichanura trivirgata gracia*) is found in the desert regions of south east California and south west Arizona; and the Mexican rosy boa (*Lichanura trivirgata trivirgata*) is found from southern Arizona (Organ Pipe Cactus National Monument) to Guaymas, Sonora, Mexico.

I obtained a pair of desert rosy boas (*L. trivirgata gracia*) in March 1979. They bred in 1981. At the time of mating the female measured approximately 26 inches and the male 24 inches. They were kept together, and were not separated prior to mating.

The vivarium in which the snakes are kept measures 36" x 15" x 15". It is made of wood, with a sliding glass front. There is a fixed hide box on the outside end of the vivarium, with access to the main vivarium by means of a hole bored in the end wall. The hide box has a sliding door through which it can be inspected and cleaned from the outside. At the opposite end to the hide box is a 5-8 watt night light bulb.

There are two branches for climbing (which they like to do) and a few pieces of cork oak bark on the floor under which the boas like to hide, as well as using the hide box. Wood shavings are used as a substrate and a small water bowl is always in the vivarium.

The rosy boas usually eat two half-grown dead mice each about every ten days. They can (and sometimes do) take adult mice but seem to prefer half-grown ones.

My reptile room is heated and controlled by thermostats. From the end of November until the end of February the boas were kept at a temperature of 75°F during the day and dropped to 70°F at night, with a photoperiod of 10 hours light and 14 hours dark. From the beginning of March the light period is increased by one half-hour weekly until a 16 hour daily light period is reached. This is maintained until the end of November. During this period the temperature is gradually increased to 85°F daytime and dropped to 80°F at night.

The first sexual activity was noticed on 4.7.81 when the male was seen pursuing the female around the vivarium. The female did not respond. During the next six days the same activity (in varying degrees) was seen but there was still no response from the female.

On the evening of 11.7.81, when I went to check them, the female was lying quietly with the male lying alongside using his spurs rapidly on the rear of her body to stimulate her. The female eventually raised her tail, moved it over to the right, and allowed the male to bring his cloaca to hers and copulation then took place. They remained in this position for almost forty minutes. This may not have been the first mating but was the first one I observed, although sexual activity and mating was seen several times afterwards until 20.7.81.

The female was offered food but refused to eat until 15.8.81 when she ate one half-grown dead mouse and had a long drink of water. When I thought the female was gravid I removed the male from the vivarium. She was offered one half-grown mouse on: 22.8.81, refused; 13.9.81, eaten; 23.9.81, refused. Shed skin complete on 2.10.81. She was offered one half-grown mouse on: 3.10.81, refused; 20.10.81, eaten; 26.10.81, eaten. She was now looking quite plump towards the rear and not offered anymore food. She gave birth to four healthy babies on 22.11.81 and had a long drink of water after the event. If the female conceived on the first mating I witnessed, the gestation period was 134 days.

On the 24.11.81 she first ate again, taking two half-grown mice.

The young measured 11" to 12" in length at birth and were more brightly coloured, with stripes more distinct, than the parents.

The babies were removed from the vivarium on the day they were born and each one placed in a small vivarium on its own. The 'vivs' are numbered 1 to 4 so that an accurate record can be kept of feeding, sloughing, growth, etc. Paper towels are used as substrate, cork bark for hiding; there is a small water pot, and a small rough stone to assist shedding.

Baby No. 1. Ate one 5 day old dead mouse on the 23.11.81 (day after birth) and first sloughed on 8.12.81, complete.

Baby No. 2. First sloughed, complete, on 4.12.81 and ate first meal (3 dead pink mice) on 6.12.81.

Baby No. 3. Shed skin complete on 3.12.81 and again on 14.1.82 but could not be induced to feed until 5.2.82 (75 days after birth) when it ate 1 dead pink mouse.

Baby No. 4. Sloughed complete on 4.12.81 and ate first meal (4 dead pink mice) on 12.12.81.

All babies have since fed regularly and are growing fast.

At the beginning of March baby no. 3 was having trouble trying to slough, so was placed in a glass toffee jar ($\frac{1}{8}$ " diameter air holes in screw on lid) with one inch of water at snake room temperature, and left to soak for 12 hours. The skin came off completely.

The babies were very aggressive at first and would strike at the slightest movement but have since quietened down considerably.

I believe that this successful breeding of the Rosy Boa is the first time that the species has been bred in captivity in Britain.

NOTES ON THE MARGINATED TORTOISE (*TESTUDO MARGINATA*) IN GREECE AND IN CAPTIVITY

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INTRODUCTION

A field trip was planned and conducted in the Peloponnese, at Tolon, a small hillside coastal village in south eastern Greece, and Tolon Island, during the months of May and June, 1980. The main objectives of this venture were:

- 1) To collect a small number of Marginated Tortoises (*Testudo marginata*) for a captive breeding project.
- 2) To study the natural habitat in order to further the management of this species and its preservation in the wild.
- 3) To supply captive bred tortoises, in conjunction with the Greek authorities, for reintroduction to the wild if ever the need should occur.
- 4) To supply captive bred tortoises to other herpetologists and institutions for further study.

After departing from Gatwick airport late in the evening of Wednesday 21st May, 1980, we arrived at Athens airport in the early hours of the following morning. A meeting with the Minister Director General of Agriculture followed and, after a helpful discussion, we proceeded on a 160km journey overland, by coach, to our destination of Tolon, arriving at approximately 14.30. After making a few tentative enquiries in Greek, a local man came to our rescue, bundled us into his car and sped along the dusty village road before depositing us at the door of our future hillside villa apartment, overlooking the sea. As we strolled through the village that evening in search of some local gastronomic delight, we saw three tortoises in private gardens by the sea front. They were, to our great pleasure, *Testudo marginata*. All three were of medium size i.e. 15-20cm carapace length, in good condition and at liberty to roam throughout the gardens.

DESCRIPTION OF HABITAT

It was decided that the main study area would be the middle region of the surrounding hillside, an area of approximately 6km² easily accessible from the rear of the villa, and that the secondary study area would be on Tolon Island extending to an area of approximately 1km². The island was approximately 1km from the mainland. The hillside habitat consisted mainly of dry, stony ground with occasional belts of rocky projections, dry grass and low scrub. The secondary habitat was cultivated olive groves, again with stony ground but with the dry grass concentrated around the bases of the trees. The basic habitat of the uncultivated Tolon Island was the same as on the mainland but with the addition of dense, low bush growth. The only evidence of past human activity were the remains of stone terracing and derelict goat pens and shelters.

DESCRIPTION OF TORTOISES

Juvenile: Body colouring is of varying shades of beige with black markings to head and limbs. Carapace: Round, lacking flare to rear of shell.

Carapace colouring: Centre of costals, vertebrals and marginals is beige with black edging. Plastron: Round and flat.

Plastron colouring: Basically beige with four pairs of brown to black triangular markings on the pectoral, abdominal, femoral and anal plates.

Head: Small, usually with darker mask-like markings to face and a marking on top of the head between the eyes.

Limbs: Front, black-faced edge. Rear, black-faced edge to feet.

Young Adults: Similar to juveniles. Carapace elongated. Flare visible to rear of shell in males, plus deep concave in plastron.

Colouring: Generally a shade darker than juveniles.

Mature Adults: Carapace generally elongated, but not necessarily so in females which only have a slight flare to the rear of the carapace. In the male the carapace is elongated with strongly serrated flare to the rear, deep concave in plastron and hooked jaw. In both sexes: Colouring: Of body and limbs and carapace is dark brown to black. Plastron colouring: Dark beige with black triangular markings.

FIELDWORK

Fieldwork was conducted daily between the hours of 07.00 and 13.00. On the first morning we sighted a *marginata* on the hillside. It was an adult female of medium size, dark brown to black in colour with a worn, smooth, rounded edge to the carapace and plastron. Later that morning a true pair of adult specimens were sighted in the nearby olive groves, and from then on tortoises were seen frequently.

Information was collected on each tortoise by observing, photographing, numbering, weighing, measuring the maximum carapace straight length, noting the sex and the condition of the specimen, the time of day found and the ground level temperature. A few tortoises were placed in collecting bags and taken back to the villa. There they were washed in an antiseptic solution and de-ticked before being placed in open pens which had been constructed beside the veranda. The tortoises that were not collected were immediately released after the recording procedure.

The weather for most of the time was clear, dry and sunny. The wild tortoises were usually found out and about during the mornings, with the ground surface temperature varying from 18-31°C depending on the time. First thing in the morning most tortoises were observed sunbathing either in or outside their nightly place of retreat in thick, dry grass or low bush growth, before feeding commenced. The main activities observed were walking, sunbathing and feeding. Tortoises were seen to eat Sowthistle, Chamomile, and a plant called *Medicago orbicularis*. No fighting, attempts at mating, egg-laying or drinking were seen. All the tortoises observed and collected on the mainland were mature adults, whilst those on the island were predominantly younger adults and juveniles, the exception being the largest adult female examined, No. 10, which had a carapace length of 25cm and weighed 2.8kg. (See Table 1).

Table 1. Data collected from wild tortoises during the period 24th May - 1st June 1980

Specimen	Sex	Size CSL	Weight (kg)	Location	Condition
1	*	OMF 24 cm	2.030	Mainland Hills	Carapace worn smooth
2		OMM 24.5cm	2.030	Mainland Hills	Normal
3		OMF 24.5cm	2.275	Mainland Hills	Normal
4		YMF 22 cm	1.800	Mainland Hills	Normal
5		OMM 25 cm	2.375	Mainland Hills	Normal
6		OMF 23.5cm	2.275	Mainland Hills	Damage to carapace
7		YMM 21.5cm	1.250	Tolon Island	Normal
8		YMM 21.5cm	1.250	Tolon Island	Normal
9		J 12.5cm	0.332	Tolon Island	Disfigurement to carapace
10		OMF 25 cm	2.800	Tolon Island	Normal. Largest female (mature)
11		OMF 23.5cm	1.525	Tolon Island	Normal
12		J 7.5cm	0.070	Tolon Island	Normal
13	*	OMF 25 cm	2.500	Mainland Hills	Disfigurement to carapace
14	*	OMM 29 cm	3.175	Mainland Hills	Normal
15		YMF 21.5cm	1.575	Mainland Hills	Chip to lamina of carapace
16		OMF 26.5cm	2.725	Mainland Hills	Rear left leg scarred 1st & 2nd digits fused
17		OMM 24.5cm	2.150	Mainland Hills	Normal
18		YMF 20.5cm	1.700	Mainland Hills	Normal
19		OMF 24.5cm	2.275	Mainland Hills	Normal
20		OMM 27.5cm	2.600	Mainland Hills	Top front of carapace badly damaged. Old wound
21	*	OMM 27 cm	3.500	Mainland Hills	Normal
22		YMF 22.5cm	1.800	Mainland Hills	Normal
23	*	OMF 24 cm	2.150	Mainland Hills	Normal
24		YMF 18.5cm	1.250	Mainland Hills	Normal

J=Juvenile. YMF=Young Mature Female. YMM=Young Mature Male.

OMF=Older Mature Female. OMM=Older Mature Male. CSL=Maximum carapace straight length.

*=Tortoises taken to England.

At the villa the tortoises settled in well together with early morning activity dependent upon temperature and weather conditions. All fed well on a natural diet, but not so well on substitute foods. Males tended to shy away, but attempts at mating were observed. Faeces were inspected for worms resulting in a number of confirmed cases. Of the six tortoises taken back to England, worm infections were cleared within a period of two weeks by chemotherapy.

MAINTENANCE AND BREEDING IN ENGLAND

Housing

Housing consists of an indoor unit of open plan design covering an area of 2.75m². Underfloor heating is provided by means of tubular heaters at night with additional overhead heating and lighting by day. This maintains a thermostatically controlled temperature gradient with a range of 20°C to 40°C.

Floor covering consists of hay with a tub of sand set flush to the floor for nest digging if required. During the summer months there is access via a hinged door flap to an outdoor grass covered area of 36m².

Feeding

Items of food offered and eaten by tortoises in captivity in England include: dandelion, clover, grass, prickly and smooth sowthistle, parsley, chamomile, thyme, bedding hay, cabbage, lettuce, parsnip, carrot, apple, pear, banana with skin, Winalot dogmeal, vitamin and mineral supplement containing vitamin D3. Prepared food is given twice weekly. Weather permitting, natural food is obtained each day by browsing in outdoor units. Water is available both in outdoor and indoor units.

Hibernation

Table 2. Pre- and post-hibernation weights

Specimens	Sex	Placed into hibernation 22.10.80 Weight (kg)	Taken out of hibernation 14.5.81 Weight (kg)	Weight Loss (kg)
1	F	2.062	1.800	0.242
12 not hibernated	J	0.162	0.162	—
13	F	2.012	1.800	0.212
14 not hibernated	M	2.950	2.950	—
21	M	2.725	2.500	0.225
23	F	2.500	2.037	0.463

Juvenile No. 12 was not hibernated because of its size and weight but was allowed to go through a period of torpor brought about by a reduction in temperature and lighting. The adult male, No. 14, was not hibernated because it had not gained a satisfactory weight increase. This, we believe, was because this specimen was rather unsettled and preoccupied with mating attempts rather than feeding.

MATING, EGG-LAYING AND INCUBATION

All tortoises soon settled into their new accommodation after hibernation. The males were no longer so shy and were very active. Aggressive attempts at mating occurred regularly with preliminaries of chasing, butting of shell and biting of the head and limbs of females. When mating, a guttural noise is made by the male and the female reacts with deliberate head movements from side to side.

On 30.7.81 one of the three female tortoises started to excavate a nest in the soft soil of the outdoor unit during the late, warm afternoon. Using her rear legs alternately a small hole was soon excavated, which was about 10cm deep. After a brief rest the first egg appeared from the cloaca and then dropped into the nest. The use of her rear legs and alternate foot movements resulted in the eggs being pushed inside the nest and packed firmly together. A total of six, variably sized, eggs were laid before the nest was finally re-filled and the soil trampled down. By the 13.8.81 all three female tortoises had laid a total of 23 eggs (see Table 3).

All the eggs were collected, washed, measured and weighed before being placed in the incubator.

Table 3. Nesting and egg-laying

Female	Date	Start of Nesting	Start of Egg-laying	Completion of Egg-laying	Ground Temp.	Weather	Soil	No. of Eggs
1	30.7.81	18.00	18.45	19.15	18°C	Warm)	Moist	10
23	2.8.81	10.15	11.15	11.40	21°C	Dry &)	"	6
13	13.8.81	17.15		18.15	20°C	Sunny)	"	7

Eggs varied in weight from 15.07-20.85g, and measured from 3.1-3.7cm in length by 2.7-3.5cm in width.

Table 4. Incubation details

	Specimen	Date of Egg-laying	Days	Temp. Range	Relative Humidity	No. of Eggs	
Batch 1	1	30.7.81	99	26-32°C	65-95%	10	9 eggs infertile 1 egg fertile, dead on inspection. Incubation terminated 6.11.81.
Batch 2	23	2.8.81	70	26-32°C	65-95%	6	6 eggs fertile. All hatched. Incubation terminated 11.10.81.
Batch 3	13	13.8.81	80	26-31°C	65-95%	7	4 eggs fertile, 3 infertile. 4 hatchlings. Incubation terminated 1.11.81.

HATCHLINGS

Hatchlings were removed from the incubator after the eggsack had been completely reabsorbed and placed in a dry, open plan unit with a floor covering of hay. The unit is well lit with a temperature gradient of 18°C to 23°C at night and 23°C to 45°C during the day. Attempts at eating were observed on the first day, and by the second day eating was regular. Water is provided and drinking often observed. To date all 10 hatchlings are doing well.

DISCUSSION

Much concern has been voiced about the ill-treatment and death of imported tortoises resulting from collecting methods, conditions of confinement and lack of general provision. However valid these points may be, I feel that these issues should not be generalised to such an extent that the total ban of all tortoise importations is justified.

All the specimens examined during the field trip were in reasonable condition, and despite their confinement and the twenty-one hours spent travelling to England they have settled into their new environment well, and successfully reproduced. This all goes to show that these tortoises are hardy and adaptable creatures that do well in captivity if properly catered for. The availability of tortoises should not be denied to those who can provide suitable facilities, as this will provide valuable knowledge and understanding of the biology of these animals, and may contribute to their future preservation in the wild.

ACKNOWLEDGEMENTS

I would like to express my gratitude for the assistance given by staff of the Greek Embassy in London, and to the Director-General Minister of Agriculture in Athens, Greece, for his co-operation and support.

OBSERVATIONS ON *TESTUDO MARGINATA* IN CAPTIVITY

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We bought our first two *Testudo marginata*, a male and a female, in 1970, newly imported, at a pet shop in Crawley, Sussex. We already owned two small *Testudo graeca* and one *Testudo hermanni* and we were attracted by the appearance of the *marginata*. The female looked very much older than the male as her shell was almost smooth and her splayed margin not as pronounced as his, which was beautifully formed and his shell clearly marked with growth rings. The adult *marginata* are readily identified by the elongate carapace, the rear marginals of which are splayed out to form a flat, plate-like area. They are the largest members of the genus in Europe and can exceed a foot in carapace length. Ours were both almost unrelieved black in colour. Both were suffering from an infestation of ticks in their armpits and in a short time their droppings revealed the presence of nematode worms. These problems we dealt with promptly.

The female had been laying eggs in the yard of the shop and indeed we saw evidence of this. *Marginata* eggs are almost complete spheres.

In 1971 we bought another *marginata* male from the same shop. It had been brought to the shop as an unwanted pet, very light in weight for its size although much smaller than the other two. Its colouring also was lighter, having large areas of yellowish colour.

Unfortunately the larger male died during hibernation in the winter of 1972/73 although having appeared perfectly healthy.

To begin with the tortoises were kept in a breeze block enclosure, one and a half bricks high, about 8 x 8 ft with a box for shelter and large stones to climb over, but the large male found escape from this quite easy by choosing a corner where another tortoise was resting, then climbing on its back and levering himself over the edge. We have never seen the female make any attempt to escape, either then or since.

More space was then provided for them and about half the length of one side of the garden was wire netted and bricked off, an area about 20 x 40 ft. A shelter was situated for them in a spot that was sunny in the evening. It is obvious that the larger the area provided for them, the more contented the tortoises are to graze over the whole area and do not spend their time patrolling the perimeter.

On moving house and having many more tortoises, all *graeca* and *hermanni*, we were fortunate to be able to provide them with the freedom of the whole garden, which is mainly lawn with shrubby borders, rockeries, concrete and gravel areas, a large compost heap which many love, plus a long open-sided barn for shelter from the sun or rain or to sleep at night if they choose to ignore the house arranged for them. This is a four brick high frame 8ft x 3ft, with a movable corrugated plastic roof projecting over the front for protection from rain. It is kept filled with straw, frequently changed when soiling occurs. This shelter is again situated in a position that is sunny during late afternoon and evening.

The *marginata* eat large amounts of food, although we have noticed that the female appears restless and hardly touches food when she is close to egg-laying time. Their diet is composed of cabbage and other brassicas, lettuce, clover, dandelion, plantain, watercress, milk thistle, cucumber, tomato, apple, pear, banana (including skin occasionally), strawberries, runner beans, courgette, melon, grapes, yellow flowers (dandelion and buttercups) and magnolia flowers. They also like the sedums and sempervivums on the rockery and were last year seen enjoying the petunias. Tinned cat food is appreciated now and again, especially by the babies.

We give them a small feed in the morning when they have warmed up, then they browse over the garden for the rest of the day until about 4 pm when we gather them together

for a large feed closer to their sleeping quarters, to which they retire shortly afterwards.

A shallow pool has been cemented into the garden for them to walk into for drinking and bathing. It needs to be very frequently brushed out and refilled as it is nearly always soiled when being used. The tortoises sometimes drink for several minutes at a time (we have recorded twenty minutes) and the young ones drink very often.

The female and her first mate were sexually very active from the time we first had them. In fact the vigorous courtship displayed by the male quite alarmed us at first as, apart from the ritual dance and leg and head biting, he would turn the female over and attack her when she was more vulnerably exposed. Copulation was seen to take place, but she did not attempt to dig a nest for the first few years except on one occasion when they had been moved to another garden while we were on holiday and she tried unsuccessfully to dig at the foot of an apple tree. Each year eggs were dropped at random over the garden, 3 in 1972, 11 in 1973, another 11 on 3 June 1974, but 5 in a nest on the 24 June. All these eggs were unsuccessful as we then had no idea of looking after them properly. In the summer of 1973 our second male took over as the female's mate. Mating takes place daily in fine weather from the time they come out of hibernation to when they go to sleep. Some days repeated mating occurs, often one act immediately following another. The *marginata* males have never shown any interest in other mature female *graeca* or *hermanni*, although smaller *graeca* males have attempted copulation with the female, which always appears unsuccessful as the sizes are so ill-matched and she is generally unco-operative. We have observed our seven year old male (?) attempting to mate with his sister (?), but the courtship display is singularly lacking and the episode brief. We are not certain of the sex of these seven year olds.

In 1975 we decided it was time to obtain some knowledge of the incubation of tortoise eggs and bought the Foyles Handbook by Ivor and Audrey Noel-Hume. So, in preparation for the arrival of eggs, we constructed an incubator from a small Stewarts plastic plant propagator, an aquarium thermostat and a 40 watt blue electric light bulb. This was to be placed in the airing cupboard and connected to a plug there. It was also thought better to provide a more suitable spot for the female to dig as she was seen to try scraping at the lawn without making any impression. A wooden wine bottle box 18" sq was filled with sand and placed near the base of a tree. That summer each time we saw her trying to dig we lifted her onto the sand box. At first she did not care for it, but we persisted and she became used to the feel of the soft, warm sand. A few days later she began in earnest to dig her nest. It was about midday and leaning her front legs on the raised edge of the box she began to scrape with first one hind foot, then the other. Digging took about half an hour until the hole was approximately 4" deep. Seven eggs were laid, taking 23 minutes. When they had been covered and the female had climbed down, apparently quite tired, we uncovered the eggs, pencilled a spot on the top of each to keep them upright and transferred them to margarine pots of sand in the incubator. The temperature was set at around 75°F.

In September, eleven weeks after being laid, our first two babies hatched. We later found that of the remaining five eggs there was one dead baby and four infertile eggs. The babies were transferred to a larger size propagator with a light bulb and thermostat, chicken gravel, stones and newspaper on the floor and small cardboard boxes for shelter. We later dispensed with the gravel as it was difficult to keep clean, using larger flatter stones instead. The second baby started eating chopped lettuce within 10-15 minutes after hatching and only then did the first one take food also, although arriving twenty four hours earlier.

Small plastic lids are ideal for food and water containers, being easily cleaned and renewable. At first we always chopped food for them but now it does not seem necessary: the babies appear quite capable of tearing leafy food and learning to grip it whilst eating. Harder foods like apples we crush or grate. They do seem to like eggshell, especially when very young, and this we provide by pounding chicken eggshells to a fine gritty texture and placing it in small heaps with their food. Water is much appreciated both for drinking and sitting in, especially as it gets warm.

It was not until a week or two after the hatching when we were trying to find out all we

Table 1. Egg Laying and Incubation

Year	No. Laid	No. Hatching	Place Laid	Date	Time Taken	Date of Hatching
1972	3	0	on garden			
1973	11	0	on garden			
1974	11	0	on garden	3 June		
"	5	0	nest	24 June		
1975	7	2	sand box nest	25 June	egg laying time 12.15 - 12.38	1 5 Sept 2 6 Sept (1 baby dead, 4 yolks)
1976	9	6	sand box nest	24 June	digging & laying 12.05 - 13.20	1/2 27 Sept 3 1 Oct 4 2 Oct 5 3 Oct 6 9 Oct
"	9	0	sand box nest	11 July	digging & laying 17.00 - 18.40	
1977	7	7	sand box nest	3 June	digging & laying 12.10 - 13.40	1 12 Aug 2 13 Aug 3/4 14 Aug 5/6 15 Aug 7 18 Aug (opened)
"	10	4	sand box nest	7 July	digging & laying 16.20 - 17.40	1 27 Sept 2 29 Sept 3 1 Oct 4 2 Oct
1978	7	2	rockery nest	8 June	laying time 16.14 - 17.05	1 19 Aug 2 26 Aug
"	10	1	sand box nest	20 Aug	digging & laying 10.45 - 12.30	1 8 Jan '79 (opened eggs, several dead)
1979	7	5	sand box nest	23 June	digging & last egg 11.10 - 12.34	1 31 Aug 2 2 Sept 3 7 Sept 4 8 Sept 5 11 Sept
"	9	9	sand box nest	25 July	digging time 15.00 - 16.20 laying time 16.34 - 17.55	1/2 7 Oct 3 9 Oct 4/5 10 Oct 6/7/8 11 Oct 9 12 Oct
1980	11	6	sand box nest	4 June	digging & laying 12.10 - 13.15	1 12 Aug 2/3 14 Aug 4 15 Aug 5/6 23 Aug (eggs opened, 4 yolks)

could about the care of the young ones that we had the opportunity of talking to someone who had also been successful but had later suffered disappointment by losing babies with "soft shell". This, we realised, was a serious problem and we then sought advice from a colleague who was warden at the I.L.E.A. Teachers Centre at Regent's Park. He recommended the use of the "Truelite" strip lights and gave us the address to contact. These lights have been very successful and easy to fit, so we use them all the year round, except for the short time we have hibernated the young ones in the last three or four years. Since joining the British Chelonia Group and reading of hibernating very young tortoises, we have for the past two years hibernated all the young over a year old for a period of between six to nine weeks. During the coldest weather the youngest group of babies are put in a shoebox or similar in the airing cupboard for the night.

We have hatched *marginata* now for the last seven years, though unfortunately none last year. The female showed no signs of egg-laying although mating took place so we are wondering if perhaps she is now too old. The female has only once been seen to urinate on the nest when digging. We try to dampen the sand slightly when she shows signs of using it, so that the sides do not keep slipping in.

With the warmer weather and sunny days, the babies are put outside in small pens on patches of clover. They are given extra food, water and shelter and stay outside 'til about 5-6 o'clock when the garden becomes too shady and cool, when they are brought inside to their vivarium. If the weather is cold and/or wet they stay inside with their heater and ultra violet, the temperature being around 70°F, and their food is replenished when eaten during the day. We have three vivariums now so that the different year groups can be separated and a stronger one or two seem to develop faster in each group. It also gives the younger ones a chance of feeding without being pushed aside by the voracious older ones. Two of the vivariums are home-made, approximately 2ft 6in square, constructed of glass with wooden bases and removable tops. They are fitted with tubular heaters thermostatically controlled, plus a 2ft 40 watt "Truelite" strip. The third vivarium is a "Camplex" plant propagator 18in x 15in with a heated base, also fitted with a smaller "Truelite". The lights are between 4in and 8in from the floor and switched on from 9 am to 4 or 5 pm each day. The 5½ and 6½ year old youngsters live outside freely with the other tortoises. All the remainder are kept in pens when outside, in case they get lost in the garden when there is a particular cold or wet spell.

Experience has shown us that it was unwise to use a fine sand in which to bury the eggs, especially as we dampened it. The result of that was to compact the sand into a hard mass which prevented the movement of the eggs towards the surface at hatching time. We now use a coarse, gritty sand and leave it dry.

From 1975 to date eggs laid	96
Live tortoises hatched	42
Young sold to breeders	15
Deaths since hatching	5
Remaining with us	22

Five of the babies have died, showing loss of appetite and general deterioration, in spite of vitamin injections from the vet. The most recent one, a three year old, occurred this year quite suddenly two days after waking from its short hibernation.

For hibernation the babies are put into cardboard boxes, packed with crumpled newspaper and placed in a cold bedroom away from any heating. Regular checks are made to see if they are alright.

The *marginata* do not show any of the aggressive behaviour that our *hermanni* do. They have not succumbed to the runny nose that many of the *graeca* seem to be prone to. The hatchlings' shells have developed more normally than some other captive bred tortoises we have seen. Growth in some of the *marginata* is very rapid. Our second male grew from 2lb 13oz in May 1972 to 3lb 15oz in September of that year and in five years was 6lb 14oz. The first two babies, Alpha and Beta, have grown far more quickly than any of the other babies since.

Table 2. Weight Chart

Date	Male Simon	Female Victoria	Alpha b: 5.9.75	Beta b: 6.9.75	Gamma b: 27.9.76	Delta b: 27.9.76	Epsilon b: 1.10.76	Zeta b: 2.10.76
19. 3.72	2lb 13 oz	6lb 2oz						
25. 4.72	3 5½	6 9						
21. 5.72	3 6½	—						
13. 6.72	3 10	6 13						
12. 7.72	3 14	6 10						
19. 9.72	3 15	6 13						
20. 5.73	4 0	6 14						
30. 7.73	4 9	6 14						
26. 5.74	5 0	7 4						
23. 6.74	5 6	6 11						
5. 8.74	5 7	7 6						
5. 4.75	5 0	6 8						
27. 6.75	6 0	7 0						
27. 8.75	6 0	7 1						
13. 4.76	5 10	6 12						
4. 6.76	6 6	7 2						
11. 8.76	6 14	7 2½	0 7	0 5½				
13. 3.77	6 4	6 8	0 10	0 8				
9. 7.77	7 6	7 0	0 14	0 10½				
5. 9.77	7 4	7 1	0 15½	0 11½				
30. 3.78	6 12	6 14½	1 4	0 15½				
9. 5.78	7 6	7 11	1 4½	1 0				
30. 5.78	7 6	7 7	1 5½	1 0				
9. 7.78	8 0	7 8	1 9	0 15½				
20. 8.78	7 12	6 14	1 10	1 1				
11. 4.79	7 4½	6 15	1 10	0 14				
1. 6.79	7 14	7 6	1 12	1 1				
24. 6.79	8 1½	7 4	1 15	1 1½				
21. 8.79	8 5	7 8	2 5½	1 5				
— 4.80	7 0	6 11	2 3	1 3				
18. 5.80	8 1	7 4	2 8	1 6				
12. 6.80	8 4	7 4	2 8	1 6½	0 12	0 10½	0 8	—
19. 7.80	8 9	7 4½	2 10	1 7	0 11½	0 11½	0 8½	0 7½
26. 8.80	8 1½	7 6½	2 13	1 9	0 14	0 13	0 10	0 9
26.10.80	7 12	7 3	2 12	1 7	—	—	—	—
27. 3.81	7 8½	6 14	2 9	1 7	—	—	—	—
11. 5.81	7 14	7 4	2 12	1 8	0 12	0 13½	0 9½	0 9½
6. 6.81	8 7	7 0	2 15	1 10	0 14½	0 13	0 9½	0 9
11. 7.81	8 13	7 8	3 0	1 12	0 15½	0 14	0 10	0 9½
2. 9.81	8 3	7 5	3 6	1 14	1 1½	0 15	0 10½	0 11
19. 4.82	8 4	7 6	3 4	1 15	1 3	1 0	0 12	0 12
Carapace Length May 1982	12 in	11 in	8 in	6¾ in	5½ in	5½ in	4¾ in	4¾ in

We have found it impossible to sex the young ones, the shells all look alike, similarly their tails.

All the tortoises, with the exception of the smaller babies, are weighed as regularly as we can at one or two monthly intervals throughout their waking period.

The following article first appeared in 'The Guardian', June 10th 1982, and has been reprinted with kind permission of the Editors.

THE IGUANA'S GUT REACTION

JEREMY CHERFAS

Animals that eat plants face one overwhelming problem. Although there is a great deal of vegetative matter about for the taking, much of the energy in plants is locked up in large tough molecules like cellulose, and most animals lack the digestive enzymes needed to break cellulose down into components that can be used.

The solution is generally some form of symbiosis. The animal provides other organisms, usually bacteria and protozoans, with a safe home a plentiful supply of food. The bacteria, which can digest cellulose, do so, and the animal reaps the rewards either directly or as by-products of the bacterial metabolism or indirectly by digesting dead bacteria.

The bacterial fermenter may be a complex and specialised organ, like the many-chambered forestomach of ruminants, or it may be simply an enlarged gut, but the principle is the same. Animals use other organisms to release much of the energy in plants.

A problem arises when a new fermenter comes into being. How is it to be inoculated with the much-needed microflora. For young mammals, the solution is simple. Close contact between mother and young ensures that opportunities for benign infection will arise whether via the ingestion of faeces or, in the case of ruminants, eructate from the forestomach. That this route of transmission is important can be shown by rearing young calves in complete isolation; they do not grow very well, presumably because they lack digestive microbes and hence cannot extract energy and nutrients as efficiently from plant food.

Consider then the common iguana, *Iguana iguana*. It is a herbivore all its life, but the young do not spend time with adults. If they depend on microbes, which they do, how do they acquire them? Katherine Troyer, a Californian zoologist, found the answer at the Smithsonian Tropical Research Institute in Panama (Science, volume 216, page 540-542).

Troyer's first move was to grow hatchlings in captivity from the egg. They did not grow as fast as wild hatchlings, and lacked some microscopic inhabitants of the elaborate hindgut, notably a species of bacteria and a large ciliated protozoan. Troyer took samples of soil from around the nests, reasoning that the mother might leave faeces around the eggs and thereby provide the microbes, but she found no evidence of the special protozoan around the eggs.

Furthermore, iguanas that hatched in natural nests grew no better than those hatched in the laboratory. Nor were the bacteria and protozoa present in the general environment, for hatchlings caged in the open near other iguanas did not grow well either.

The most obvious source of the digestive microbes is the lizards themselves, and young common iguanas are unusually gregarious. So Troyer raised captive hatchlings with wild-born ones. The captive animals developed the micro-flora, which shows that hatchlings can transfer the microbes among themselves, but it doesn't say how the wild-caught animals get them in the first place. They could, like some mammals, infect themselves by eating fresh faeces, and when Troyer deliberately fed them faecal pellets from an adult iguana they did indeed develop the customary gut flora.

So a hatchling iguana must eat fresh faeces from an already inoculated animal to obtain its gut microflora. But the adults desert the nests and tend to live far from the nesting areas in places where young iguanas are not often found. Troyer searched the trees at the edge of Gatun Lake, starting before hatching and continuing for a couple of months. Adults are generally to be found quite high in the trees. Older hatchlings, those over four weeks, were indeed found in low vegetation, as the books said they should be. But Troyer discovered very young hatchlings up in the canopy with the adults; indeed, they were closer to the adults than would be expected by

chance. In the stomach of some of these young hatchlings she found faecal pellets, which closes the case.

Iguanas depend on microbes for almost a third of their daily energy needs. To get those microbes, they must eat adult iguana faeces, and to do that, they have to seek out adults, in a habitat unlike that preferred by slightly older hatchlings.

Indeed, it may be that the need to inoculate themselves with the all important microflora is the reason behind the unusual gregariousness of iguanas, compared with other lizards, and Troyer speculates that the need for each generation to make contact with the preceding one may have been a stimulus to the growth of society among reptiles. Dinosaur footprints, young and old, have been discovered walking side by side. Might the young ones have been after digestive gut microbes?

Editor's note: Direct access to faecal bacteria may be important for other herbivorous reptiles such as tortoises, particularly captive bred specimens which are unlikely to pick up the bacteria from their environment unless they are housed with adults.

REORGANIZATION OF THE LIBRARY

After long delay, the library is being reorganized. In recent years the library has been administered by the Linnean Society Librarian, to allow access to members during normal weekday office hours. However, because of the open location of the collection there have been serious problems of security, and several books have disappeared, presumed stolen. An additional problem has been the failure of members to return books; this is made more difficult by a transient membership and changes of address. As an emergency measure, to stop the drain on books until a better system can be worked out, the library has been moved to the locked galleries of the main Linnean Society Library, and is, for the time being *reference only*. Members can use the library from Monday-Friday 10am-5pm (closed for lunch), on request to the Linnean Society Librarian, who will unlock the gallery where the book collection is held. (*Linnean Society Library, Burlington House, Piccadilly, London W1*).

NEW LIBRARY LISTS AND SERVICES

Journals and other publications received from foreign societies and institutes.

a) Publications devoted wholly to herpetology, with contents of issues recently received.

Photocopies of papers can be obtained from the Librarian at a cost of 5p per page plus 30p postage and packing per paper. Delivery may take up to one month.

Lacerta

Journal of the Dutch Society for herpetology and vivarium keeping (Nederlandse vereniging voor herpetologie en terrariumkunde). Published monthly.

A beautifully produced Journal, well illustrated, often with colour photographs. The majority of papers concern the keeping and breeding of reptiles and amphibians in captivity. There are also monthly reports on society news, local group activities, advertisements, etc. In Dutch, usually with brief English summaries.

Contents of last issue received, April, 1982:

Ervaringen bij het houden en kweken van Boa constrictor. Ron Kivit. 5 pages. The breeding of a pair of Boa constrictors.

Herpetologische waarnemingen in Joegoslavië. J. Bank, B. Kruyntjens, P. Paulissen. 6 pages. Notes on the herpetofauna of part of the Dalmatian coast of Yugoslavia and adjacent islands.

Een echtgenote vertelt (IV). G. Blaauwjansen. 1 page.

Een australische wandelende tak (Extatosoma tiaratum) als terrariumdier. Wim Ferwerda. 1 page.

Kleinbeeldfilm – doosje als kalk-en vitaminenvoederbakje. F.R. Van Leeuwen. 1 page.

Tillandsias. Eric Gouda. 2 pages.

Overleven in gevangenschap. E.H.Th. Van Eijnden. 3 pages.

Wasmottenweek. M.Th. Meeuwes. 1 page.

Notes from Noah

The newsletter of the Northern Ohio Association of Herpetologists. Monthly.

An excellent informal and informative collection of news items, articles on keeping animals in captivity, advertisements, etc. Invaluable for keeping in touch with herpetological events in North America.

Contents of last issue received, June 2, 1982:

Save the Species Act. News item calling for extension of U.S. Endangered Species Act. 3 pages.

Further Notes on the Bimini Dwarf Boa, Tropidophus canus curtus. R.D. Bartlett. 2 pages.

Poachers, The Game's Up. Don Timmous. News item. 2 pages.

Spring in Michigan's Upper Peninsula. Terry Cox. 2 pages.

A teleconverter for close-up photos. Paul Hollander. 2 pages.

Better Snake Bite Treatment is studied. Anon, reprint. 2 pages.

Jacobson's Organ. Norm Damm. 2 pages.

Plus various sundry small announcements, advertisements, etc. Total number of pages in newsletter: 25.

Bulletin de la Societe Herpetologique de France

Quarterly. An excellent publication with papers on all aspects of herpetology, news items, reports, announcements.

Contents of last issue received, No. 20, 1982:

Protection: Halte aux importations de tortues. M. Dumont. 6 pages.

Pathologie: Polyarthrite purulente de l'iguana: Iguana iguana L. G. Chauvier. 2 pages.

Repartition: Remarques biogeographiques sur l'herpetofauna du Nord-Est de la France. G.H. Parent. 9 pages.

Mise au Point Bibliographique. G.H. Parent. 3 pages.

Tribune Libre: Il Etait une Fois ... Jaca. L. Sautereau. 2 pages.

Bibliographie: Les tortues de Guyane de J. Fretey-Analyse J. Lesuire. 1 page. *Je reconnais les Amphibiens de G. Baumgart — Analyse J. Lesuire.* 1 page.

Il y a Cinquante ans ... Rollinat: Bibliographie Rollinat. J. Lesuire. 7 pages. Collection herpetologique de R. Rollinat: liste des exemplaires du Museum. F. Jullien and M. Thireau. 4 pages.

Bulletin of the Maryland Herpetological Society

A fairly substantial quarterly publication, usually containing one or two major papers, and news notes, book reviews, etc.

Contents of last issue received, March, 1982, Vol. 18 No. 1:

Single VS Multiple Predatory Strikes by Prairie Rattlesnakes (Crotalus viridis). Barbara O'Connell, David Chiszar and Hobart M. Smith. 6 pages.

The Enigma of Anolis cooperi Baird: a Taxonomic Opinion Regarding its Status and Usage. Thomas Vance. 5 pages.

Regeneration of a Limb in the Spotted Salamander. (Ambystoma maculatum). John Donald Cochran. 1 page.

Plus several book reviews, news items, letters, occupying 19 pages.

Bulletin of the Chicago Herpetological Society

Another interesting and substantial local American publication containing papers, notes, news items on all aspects of herpetology. Quarterly.

Contents of last issue received, Vol. 17 No. 1, 1982:

Venomous Colubrid Snakes. Harold F. De Lisle. 15 pages.

Modification of Aquaria for Arboreal Species. Michael J. Miller. 4 pages.

Notes on the Climbing Ability of a Captive Timber Rattlesnake, (Crotalus horridus). John H. Muir. 2 pages.

Burrowing Behaviour in a California Kingsnake. Gary C. Wong. 2 pages.

Journey to Mexico. Richard Berry. 4 pages.

Bringing up Baby (Raising an Indigo Snake). Holly Beardsley. 1 page.

Voice of the Turtle

Monthly newsletter of the San Diego Turtle and Tortoise Society.

Publishes news and notes on tortoises and terrapins, their care in captivity, conservation etc. 6 pages.

Journal of the Herpetological Association of Africa

Publishes papers, notes, news items, etc., on all aspects of herpetology, chiefly relating to African species. Publication irregular.

Contents of last issue received, December, 1981, No. 26:

Analysis of Berg Adder (Bitis atropos) venom. I. La Rivers and H.F. Koenig. 2 pages.

Bufotoxins and Bufogenins – their effectivity in protecting their producer and their potential as aversive conditioning agents. C.T. Stuart. 4 pages.

Case History of Snouted Night Adder Bite. Johan Marais. 2 pages.

Some Ethological Notes concerning Platysaurus guttatus guttatus. Richard Newberry. 3 pages.

Notes on Clutch and Egg sizes of some Squamata (Reptilia) observed in the Transvaal Snake Park. Johan Marais. 2 pages.

Recent African Herpetological Literature 2. Bill Branch. 6 pages.

Plus book reviews and news notes.

Japanese Journal of Herpetology

Published by the Herpetological Society of Japan. A formal scientific journal with an emphasis on Japanese fauna.

Contents of the last issue received, December, 1981, Vol. 9 No. 2:

Histochemical analysis of the skeletal muscle fibers in five species of Japanese reptiles. Noboru Manabe, Eimei Sato, Kazugo Maruyama and Takehiko Ishibashi. 13 pages.

Maturity and other reproductive traits of the kanahebi lizard Takydromus tachydromoides (Sauria, Lacertidae) in Mito. Sen Takenada. 8 pages.

Notes on the herpetofauna of Hateruma Island, Ryuku Archipelago. Hidetoshi Ota. 7 pages.

Report on the 20th annual meeting of the Herpetological Society of Japan, November, 1981. 12 pages.

Obituary: Wataru Kimura 1922-1981. Hajime Fukada. 2 pages.

The Snake

Journal of the Japan Snake Institute. A formal scientific journal with an emphasis on the snake fauna of Japan, plus notes, news, book reviews, etc.

Contents of the last issue received, June 1981, Vol. 13 No. 1:

Experimental Transmission of Entamoeba invadens from Tortoise to the Venomous Snake Habu, Trimeresurus flavoviridis. A. Ishi, M. Owhashi, E. Kawaguchi, K. Hayashi, H. Makai. 5 pages.

Electronmicroscopy of the Scale of Two Japanese Snakes, 1. Trimeresurus flavoviridis flavoviridis and T. okinavensis. S. Kikuchi, Y. Sawai, S. Toshioka, K. Saito and Y. Okuyama. 10 pages.

Mouse Foot Pad Test for the Determination of Antiedemaforming and Antihemorrhagic Potency of Snake Antivenom, 1. Cross neutralization test of Habu (T. flavoviridis) and Sakishima Habu (T. elegans) venom with its antivenoms. M. Yamakawa. 9 pages.

Two examples of Unusual Feeding of Rhabdophis t. tigrinus (Boie) in captivity. H. Moriguchi. 2 pages.

Study on Experimental Envenomation by the Sakishima-habu (Trimeresurus elegans). Z. Hokama, T. Kamura and M. Nozaki. 5 pages.

The Non-Precipitability Character of Non-Precipitating Antibody to Cobrotoxin. C.C. Yang, L.Y. Chuang and C.C. Chang. 6 pages.

Effect of Microbial Venom Proteinase Inhibitory Substance (ISV) on Some Enzymes of Snake Venoms. J.H. Sen and Y. Sawai. 4 pages.

Reptiles of the Silent Valley and New Amarambalam Area, Kerala. T.S.N. Murthy. 11 pages.

Temperature relations of Some Sea Snakes. H. Heatwole. 5 pages.

Observations on Egg-Laying in the Hundred-Pace Viper, Deinagkistrodon acutus (Gunther). M. Toriba, A. Sakai and H. Miyata. 3 pages.

Longevity of Habu (Trimeresurus flavoviridis) Breeded in a Hungry Condition. E. Nakamoto, H. Fukushima and Y. Sawai. 2 pages.

Report on the International Seminar on Epidemiology and Medical Treatment of Snakebites. 5 pages.

Plus Institute News, Herpetological Activity in Japan, Book Reviews, and Abstracts. (Total 10 pages).

Massachusetts Herpetological Society Newsletter

A small informal newsletter containing news, notes, etc. of general herpetological interest.

b) Non-Herpetological Journals, Overseas

Many of these journals frequently publish articles/papers on herpetology; these will be listed when they appear.

INDIA

Zoologiana. Published by the Zoological Survey of India. Contains general papers on zoology, including applied zoology and conservation. Received irregularly.

Bulletin of the Zoological Survey of India. A general, scientific zoological journal.

Records of the Zoological Survey of India. "A Journal of Indian Zoology". Occasional herpetological papers. About 2 issues per year.

MALAYSIA

Sarawak Museum Journal. A substantial journal containing papers on a wide range of subjects: Natural History, Language, Archaeology, Social Science. 1 or 2 issues per year; occasional herpetological papers.

SPAIN

Vida Silvestre. Published by the Instituto Nacional para la Conservacion de la Naturaleza (ICONA). A magnificently produced journal of general public interest on all aspects of Spanish Natural History and conservation. Beautifully illustrated with colour photographs. Quarterly.

Boletin de la Estacion Central de Ecologia. Published by ICONA. A beautifully produced scientific journal, publishing material on the Natural History of Spain. Colour photographs. Semi-annual.

Miscel-lania Zoologica. Published by the Museu de Zoologia, Barcelona. A scientific journal with papers on Spanish Zoology.

Treballs del Museu de Zoologia. Published by the Museu de Zoologia, Barcelona. A series of monographs on Spanish Zoology.

ITALY

Il Naturalista Siciliano. Published by the Società Siciliana di Scienze Naturali. Publishes papers on the Natural History of Sicily.

FINLAND

Annales Zoologici Fennici. Published jointly by the Finnish Academy of Sciences, Societas Scientiarum Fennica, Societas pro Fauna et Flora Fennica and Societas Biologica Fennica Vanamo. A scientific journal containing papers on all aspects of Finnish Zoology. English language.

EAST GERMANY

Aquarien Terrarien. A monthly fish-keeping magazine, usually with articles on reptiles and amphibians.

ABSTRACTS OF LECTURES GIVEN AT BHS EVENING MEETINGS

STEPHEN SPAWLS

23 February 1982

1) Structure and Ecology of a savanna population of snakes in northern Ghana.

Between September 1979 and September 1981 the speaker was resident in Wa, in the Guinea savanna of northern Ghana. During this time a collection of nearly 500 snakes, of 37 species, was made. A representative collection of the other reptiles and the amphibians of the area was also made. The lecture (illustrated by slides) covered the following topics:

- (a) description of the area
- (b) structure of the snake population, according to the sample obtained
- (c) methods of collection. How the apparent structure of the population varies according to the methods used, and hence whether the sample obtained is representative of the population as a whole
- (d) daily and seasonal activity cycles of the snake population, and their controlling factors
- (e) examination of the niches occupied by various species, in terms of preferred habitat, thermal ecology, activity patterns and predator/prey relationships.
- (f) seasonal variation in population structure, including some information on wild and captive breeding of various species
- (g) effects of man on the snake population and the snake population on man

DR. H.R. BUSTARD

23 March 1982

2) Conservation of the Indian Gharial (*Gavialis gangeticus*)

In the early 1970's the gharial was considered to be one of the most endangered of living crocodilians but — as with a number of other crocodilian species — 'hard' scientific data were lacking. The Government of India, acting through the United Nations Development Programme and FAO, invited Dr Bustard to advise on the status and conservation requirements of the gharial and India's other species of crocodiles in 1974. Bustard's report, which stated that although the gharial was on the verge of extinction, under scientific management it could be saved, was accepted by the Government of India and Bustard was invited to return to assist in the implementation of the programme which he had proposed.

From 1975 until mid 1981 Bustard lived in India as FAO Adviser to the Government of India on crocodilian conservation and assisted in the setting up of a large-scale, India-wide, crocodile conservation programme, covering all three species of Indian crocodilians. This work is continuing under staff and students trained by Bustard.

The talk described (and illustrated) gharial habitat and the problems faced by the species prior to initiation of the programme, at the present time and in the future. It also described the techniques used to save the gharial from extinction — basically the setting up of special management areas (sanctuaries) in ideal gharial habitat and extending over large areas, where the gharial would be safe from all forms of disturbance, combined with management of the remnant populations. This management has involved collection of all wild-laid eggs for captive incubation and rearing of the resultant young to a safe size (1.20m) before releasing them back into the specially-gazetted sanctuaries. Training at all levels has been important — training both in wild life management concepts at an ecological level and at the specialised crocodilian level. Bustard has supervised seven Indian Ph.D.'s. The project has also created a Government of India Institute — the Central Crocodile Breeding & Management Training Institute — to centralise the training effort.

The Project has been successful in preventing the extinction of the gharial which is now increasing in numbers. It has been responsible for the creation of very large sanctuaries in India which benefit all wild life not just crocodiles. Furthermore, the Project has pioneered an approach to wild life conservation at the species level which can readily be applied to other wild life critically endangered at the present time.

The activities of the Project have been pure conservation. There is at the present time no commercial utilisation of crocodiles permitted under the Government of India legislation so there has been no vested interest. It may be that after the species have fully recovered that the techniques used in rehabilitation may be turned to farming. This will only be done, however, if this can be carried out without in any way threatening the survival of the species in the wild.

LETTERS TO THE EDITORS

HOW TO CONFUSE THE COMMON TOAD

Dear Sirs,

Some time ago I obtained five Oriental Fire-bellied toads (*Bombina orientalis*). I placed them in an outside vivarium. Two nights later the vivarium contained five *orientalis* and three common toads. Investigation at night to see how this occurred with the help of a torch revealed more common toads making their way in, and another at the top of a shrub which would have enabled it, had it fallen, to gain entrance to the vivarium. Further observation seemed to indicate that it was the calling of the *Bombina orientalis* which attracted the common toads. This was mid to late summer when common toads would not normally be calling. Such a phenomenon in the wild could possibly have a detrimental effect on the seasonal habits and ecology of the common toad I would be interested in any other information from members regarding similar phenomena with other alien species.

Charles A. Snell,
76 Birdbrook Road, London SE3

SIGHTING OF ANOTHER NEW SPECIES?

(Interim name suggestion: *Rana suburbia arborea*?!)

Dear Sirs,

Readers may recall sightings both sides of the Atlantic of a species new to science: "the popeyed frog", *Rana magnaocularis*. I now ask myself if I have been the first to observe a new British species.

Upon returning home one evening and parking my motorcycle, the headlights picked out blobs in an 8ft hedge. Close investigation revealed three common frogs above headlights!

A clue to this untypical behaviour lies in the fact that the hedge was in the front garden in a row of terraced houses, and the ponds with calling male frogs were situated in the back gardens. These intrepid frogs were trying to make it the way the crow flies, there being no sign-posted detours. The author gave the inventive individuals an unsophisticated assisted passage through the house in a bucket.

Charles A. Snell,
76 Birdbrook Road, London SE3

TREE FROG COLONY

Dear Sirs,

The tree frog colony (referred to in *Letters to the Editors* in a previous *Bulletin*) sited in London SE3 has fared very well through this winter. I counted 17 individuals in one small corner of wasteland, today (4 April 1982) assuming that many others exist on land not examined the total

numbers could be much higher. Certainly it would seem to rival the largest known colony in Britain (12-20 individuals estimated in the New Forest Colony. See *Bulletin* 1 June 1980; article by Sir Christopher Lever).

In spite of the weather the number of last year's froglets emerging from hibernation is high, and adult males are already calling beside a garden pond (10 April 1982).

Charles A. Snell,
76 Birdbrook Road, London SE3

RECORD SPAWNING FOR AXOLOTL?

Dear Sirs,

Referring to the letter in Bulletin No. 4 from David Billings, I cannot rival the Slow-Worm litter size, but can anyone give me an advance on 1460 for a single Axolotl spawn batch? The female followed this eight weeks later with a more normal 337!

Mrs. Sue Cooper,
Malt House, 21 Lower Street, Pulborough, West Sussex RH20 2BH.

BOOK REVIEWS

FRIEDERICH, U., and VOLLAND, W., (1981). *Futtertierzucht*. E. Ulmer pub. Stuttgart. pp.168. 56 Illustr. in b. & w. Price D.M. 32 — Hardback.

The awe inspiring title of this book means: "Breeding food animals" and refers exclusively to ways and means allowing herpetologists and even ornithologists to supply their animals with the live food they require if they are to be kept in optimal condition. The book therefore is an addition to Wyniger's "*Insektenzucht*" issued by the same publishers in 1974. The present volume however does not limit itself to insects, but includes crustaceans, worms, molluscs, mice and rats. It will be most useful for readers living in or near Stuttgart who could make use of the many addresses listed at the end. They would also understand many of the local dialect words, which might even be unintelligible to Northern Germans. The book presents an excellent mixture of science and everyday experience, is very readable, well illustrated and should be of great help to anyone wanting to start breeding food animals to support a herpetological collection. It might be a good idea to translate this esoteric text into English for the use of similarly interested Anglo-Americans.

E. Elkan

WEBB, J.E., WALLWORK, J.A., and ELGOOD, J.H. (1981). *Guide to Living Amphibians*. Macmillan Press. £4.50. Paperback pp.144. 16 half-tone plates. Many line drawings.

WEBB, J.E., WALLWORK, J.A., and ELGOOD, J.H. (1978). *Guide to Living Reptiles*. Macmillan Press. Price £3.95. Paperback. pp.172. Many line drawings.

Prices of comprehensive herpetological textbooks have soared to a level above what a newcomer to the subject can afford. Thanks therefore to Messrs MacMillan for having managed to present the essentials in two slim volumes and at very reasonable prices. Reptiles, perhaps beating the Amphibia by a short length in popularity, the reptilian volume was published first, the amphibian in 1981. Both volumes are printed in very clear typeset and profusely illustrated by well executed line drawings. The amphibian volume presents in addition a collection of 16 plates in half-tone. Glossaries explaining scientific terms are an absolute necessity in a book of this kind. Whether the decision to omit indices, was a wise one is debatable. Both volumes are essentially taxonomic and will be most useful for anyone who wants some structural herpetological details in a hurry. For the facts of physiology and the husbandry of amphibians and reptiles the larger textbooks must be consulted.

E. Elkan

SMYTH, J.D., and SMYTH, M.M., (1980). *Frogs as Host - Parasite Systems I*, Macmillan Press. Paperback. pp.112. Price £5.95.

Parasitology is an indispensable branch of herpetology. Amphibians and reptiles, living in environments most suitable for the dispersion and transmission of all kinds of parasites, are inevitably infested, frequently even in the larval stage, and they display the effects of such an infestation either when they die of its effects or when they are used for histo-pathological or classroom studies. Any book written for new entrants into this field is therefore only too welcome, particularly if it is offered at a price the student can afford to pay. The book under review certainly fulfills most of the requirements of the beginning parasitologist even if it sometimes strays far beyond what the beginner may encounter. The black & white line drawings, made with great care, are idealistic, as they usually are in textbooks. In reality parasites rarely display themselves so clearly. All too often we encounter them in sections, and although Chitwood & Lichtenfels (1972) have tried to help us to identify sectioned and stained parasites, very much remains to be done in that field. Another desideratum which neither the present nor any other text on herpetological parasitology has, is a table — or several tables — with parasite eggs in colour. Too often the presence of parasites is first suspected by the appearance of their eggs in faecal samples. It would help if we were given pictorial tables to assist us in tracking down the producers of these eggs. A few blemishes have been overlooked: *Lucilia* (not '*Lucilla*') p.3 and p.107, and *Trypanosoma canadensis* (not '*canadenis*') p.111). The list of references is most helpful.

A helminthological glossary, including the Greek and Latin roots used for naming the parasites mentioned in the book, might increase its usefulness, which is not limited to frogs alone but extends to the whole field of herpetological parasitology.

E. Elkan

MEMBERS ADVERTISEMENTS

- * **Home Wanted** for tortoise, sex and species unknown, found wandering in the streets of Torquay 15 years ago.
A.E. Gardener, 35 Parkhurst Road, Torre, Torquay TQ1 4EW. Tel: (0803) 38701.
- * **Contact wanted** with members in the north of England with a view to forming a Northern branch of the BHS with local meetings, etc.
Nigel Coldrick, 9 Orchard Road, Altrincham, Cheshire WA15 8EY.
- * **Wanted: Female Great Plains Rat Snake.**
John Smith, 14 Lister Green, Mandeville Estate, Aylesbury, Bucks. HP21 8PZ.
- * **Wanted: Captive bred geckos and amphibians, and correspondence with members breeding the same.**
Dave Garthwaite, 5 Green Oaks, Luton, Beds LU2 7TH. Tel: Luton 415548.
- * **Wanted: Slow-Worms, true pair or male only.**
David Fieldsend, The Vicarage, 42 Eric Lock Road West, Bayston Hill, Shrewsbury, Salop SY3 0HQ. Tel: (074 372) 2164.
- * **Wanted: Captive bred baby Green Iguana.**
Deborah Maizels, 45 Briton Hill Road, Sanderstead, Surrey.
- * **Wanted: European Tree Frogs.**
John Knowles, The Animal Shelter, Fox Warren Park, Redhill Road, Cobham, Surrey.
- * **For Sale: Axolotl tadpoles, black cross albino.**
Mrs. S. Cooper, Malt House, 21 Lower Street, Pulborough RH20 2BH, West Sussex. Tel: Graffham (07986) 574 (working hours).
- * **For Sale or Exchange: Male *Geochelone carbonaria*, yellow phase, 18cm carapace.**
Will exchange for female *G. carbonaria*; other species of tortoise or terrapin considered.
M.L. Hine, Chelonia Herpetoculture, York Lodge, Stowlangtoft, Suffolk.
Tel: Pakenham 31609.
- * **For Sale: Mice, all ages.**
S.A.E. to K.R.G. Welch, 6 Almond Close, Worle, Avon BS22 0RR.
Tel: Weston Super Mare 21820.
- * **For Sale: Adult male Green Iguanas £60.**
Colin Tunstall, 'Rivendell', 8 Coopers Avenue, Abbey Meadows, Heybridge, Maldon, Essex CM9 7YY.
- * **For Sale: Sculptures of 'Mediterranean' tortoise.**
Details from John Thorpe, 4 George Street, Morcambe, Lancs LA4 5SU.
- * **For Sale: Second generation captive bred hatchling Indian Pythons *P.m. bivittatus*.**
Also newborn captive bred Yellow Anacondas (*Eunectes notaeus*).
Mice of all ages available at low cost.
Simon Townson. Tel: 01-989 9570.
- * **For Sale: The following captive bred babies: Northern Pines, Florida Indigos, California Kings (striped and desert banded), Chain Kings, Sinaloa Milks, Honduran Milks, Leopard Geckos.**
Mike Nolan. Tel: 01-942 0177.

This new paperback volume contains 100 pages, 22 photographs and numerous figures and tables.

H. R. Bustard

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