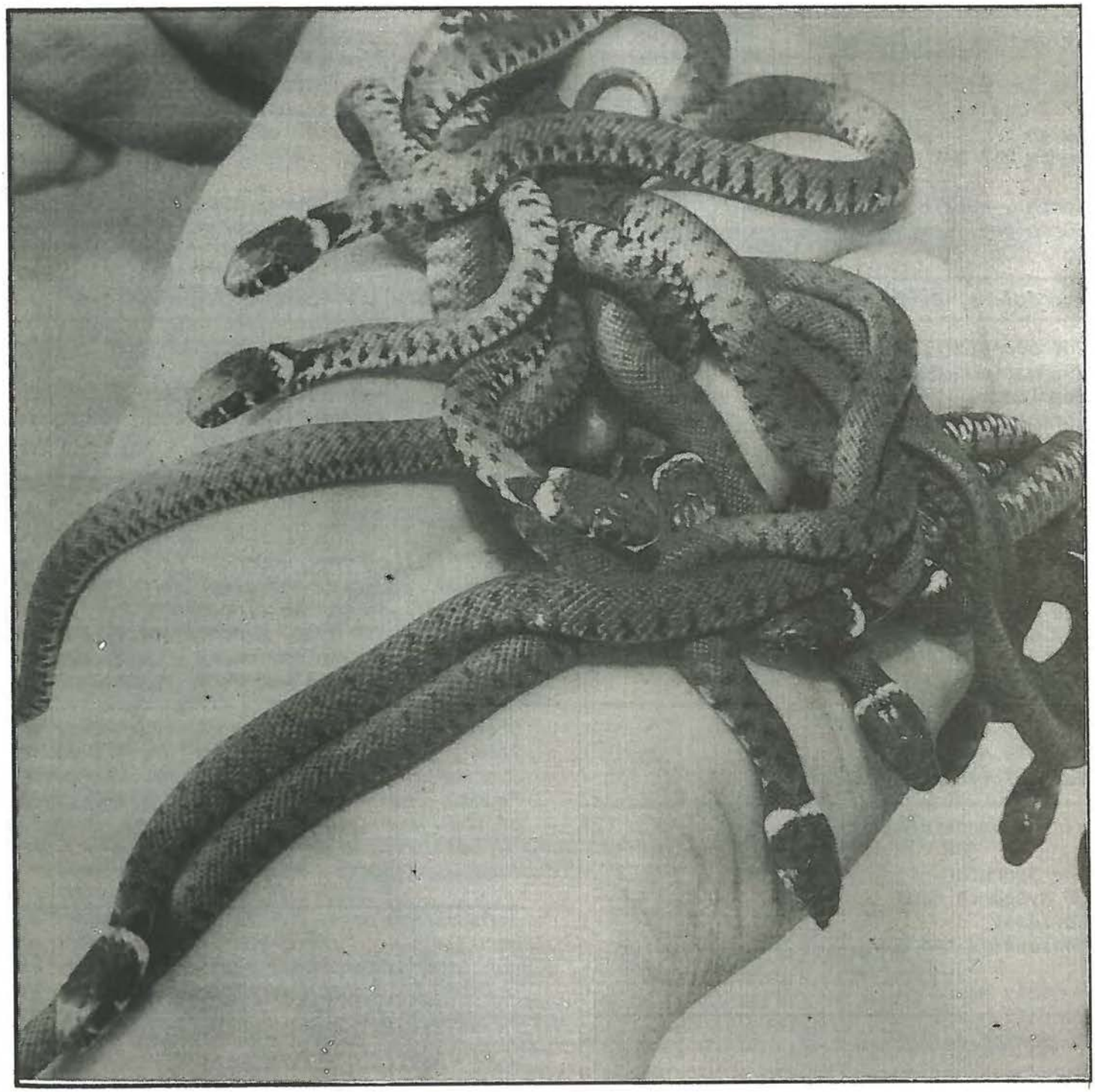
SNAKE KEEPER

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INFORMATION

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Bristol BS8 3HB

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The I.H.S. subscription rates for this year have been increased. This increase will enable the Society to publish a journal of quality superior to that being printed at present. The first printing with a new firm will commence in March. Colour will be introduced during 1988 and the I.H.S. hope to have colour plates in at least two issues of 'The Herptile' each year.

Overseas members must submit by cheque, postal order or paper money (sterling or foreign) but not coins. If you remit by cheque, draft or similar IT MUST BE CLEAR OF ALL BANK CHARGES OR COMMISSION. It is perhaps less expensive for overseas members to submit an international draft made out in sterling. The address of the Secretary/Treasurer (A.J. Mobbs) is 65, Broadstone Avenue, Walsall, West Midlands WS3 1JA.

S.W.H.S. Journal

The Editor of the Journal (formerly The Vipera) requires articles for the next issue. If you can help, contact Jon Flynn at 9, Sandpath Road, Kingsteignton, Newton Abbot, Devon. Jon obviously worked hard to produce no.1 which was very readable and contained papers on 'The Care and Breeding of the Oriental Fire-Bellied Toad', 'Activity Patterns in Captive Gunther's Gecko', 'Seychelles Herpeto-fauna', 'Notes on the Captive Reproduction of the New Guinea Blue-tongued Skink', 'Notes on the Afghan Tortoise' and 'Testudo Graeca - the Four Subspecies'.

Information page. Due to lack of space we were unable to print the second half of our information page last month. It is printed this month with our apologies. We are having the list typeset so that it will all fit on one page thereby giving us more room.

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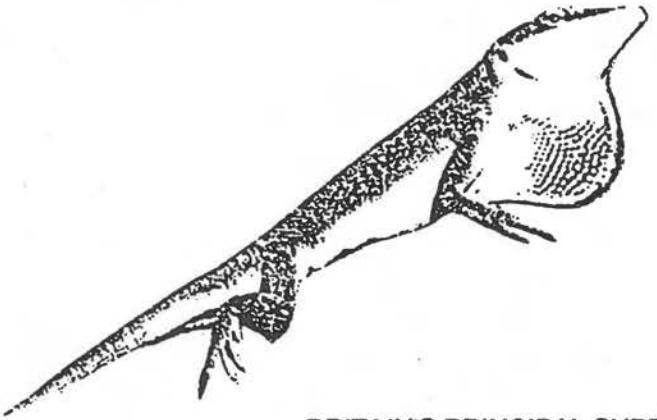
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Front cover: Captive-bred Grass Snakes (Natrix natrix) by Paul E. Hopwood.

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Asian Rat Snakes of the Elaphe Genus

Part I Elaphe rufodorsata

by Klaus-Dieter Schulz

This series of articles was originally published (beginning in 1985) in the magazine 'Sauria' and is reproduced here by kind permission of the author.

Translation from the original German by John Hackworth

Introduction

Herpetologists have long had the desire to have one of the many Asian snakes, especially those of the Elaphe genus, in their vivaria in the hope that they would eventually breed. Unfortunately, in most cases this wish is never fulfilled. Thus at the outset I was able to determine that these snakes, as described in most literature, could, in most cases, not be kept in captivity. However, one day as I received five young Elaphe bimaculata by pure coincidence I soon realised that this inability to be kept in vivaria is somewhat exaggerated. The young animals were from an imported gravid female which laid eggs at the dealer's premises. As soon as I received these 'beautiful little worms' they accepted food in the form of pink mice. It was very easy to rear them and they grew and gained weight rapidly. In the same year I obtained a young Elaphe taeniura ssp. which presented even fewer problems; this led me to ask myself the question "Why is there such a high death rate amongst imported snakes?" I already knew that snakes living in the wild carry a multitude of parasites. This I found out by having the faeces of wild specimens which I had caught myself microscopically examined. However after a long study of all the available literature I am now in a position to examine my snakes myself and I have arrived at the conclusion that almost every snake, irrespective of where it comes from, is usually infected with stomach, bowel and lung worms.

These so-called 'nematodes' do not appear to bother wild-living snakes but, in captivity, if they are not treated, they will lead to certain death. This is possibly because, in the wild, snakes excrete many worms and their eggs and never come into contact with their faeces again. In this way there is only a small chance of the organisms surviving.

What then are the reasons for the premature deaths of so many snakes in our vivaria? I am of the opinion that as a result of long and tedious transport the snakes are subject to a great deal of stress during their first year in captivity. This stress coupled with poor feeding and repeated contact with their faeces causes a rapid increase in the number of parasites and their effect on the snakes.

Because it is now well known that snakes coming from South East Asia have a long and hazardous journey to Europe and that, in addition, they are kept under the most appalling conditions without food or water for weeks or even months by their Asian captors, it is easy to understand why they are difficult to maintain in vivaria.

It has newly been reported that animals arriving here, especially from Hong Kong, reach us minus an organ. This is because of the stupidity or belief of some humans in 'wonder cures'. For example, in Asia, the gall bladder of a snake is highly prized as a fertility medium. Thus, with a small incision, this organ is removed from the snake before it is sent to European herpetologists. It is only a matter of time before we are able to determine that our animals do not have long to live.

What can now be done to obtain these beautiful 'Asians' without them promptly having to be stored in alcohol? I have been working on this question for quite some time. The easy solution is of course to travel there oneself to catch the snakes. This however is not always so easy since such journeys are also accompanied by severe financial burdens. There is also no guarantee that you catch a true pair. The purchase of a snake commercially can also not always be advised. However, because it is usually the only possibilty, some information should be gathered before the animal is bought. It is important to ask about the origin of the animal and how it was transported as well as the condition of the animal. It is best to

obtain young snakes because these are usually less infected with parasites and are usually more disease-resistant. An old adage should be born in mind here: "The more active the snake and the more it bites, the more healthy it is likely to be." It is better not to buy snakes imported from Thailand because these snakes are generally so weakened that it is usually impossible to rescue them. I usually look out for gravid females because, with a little luck, strong and healthy young can be expected later. These naturally present far fewer problems.

After purchasing a snake, no time should be wasted in worming it with a reliable preparation. In my case the preparation RINTAL (Bayer) has been proved to be especially effective. It is given to the snakes orally by placing a tube down their throats. The dosage is 50mg/kg of body weight. It can however be increased without any hesitation. The dosage I usually use is 0.5ml/100g body weight. The treatment should be carried out daily for a week. A faecal sample must however be sent to the relevant institute for tests. If lung worms of the genus Rhabidas are found, the preparation CITARIN (Bayer) will most certainly help. This preparation is injected once under the skin at an exact dosage of 50mg/kg body weight. If you are unable to carry out this process yourself it is much better to seek the assistance of a veterinary surgeon.

The great death rate of these snakes is certainly the greatest problem but it is certainly not the last problem. In most cases the dealer does not know where the animals originated and does not know the exact name of the species. Sometimes even a false name is given. The literature to which one can refer is extensive, mostly very old, biased and almost inevitably in a foreign language.

For some years now I have been working mainly with Asian Elaphe species and during that time I have gained considerable knowledge and experience regarding the origins, classification and maintenance of this genus. With this article and those that are to follow I shall attempt to give some information which will make these snakes more interesting.

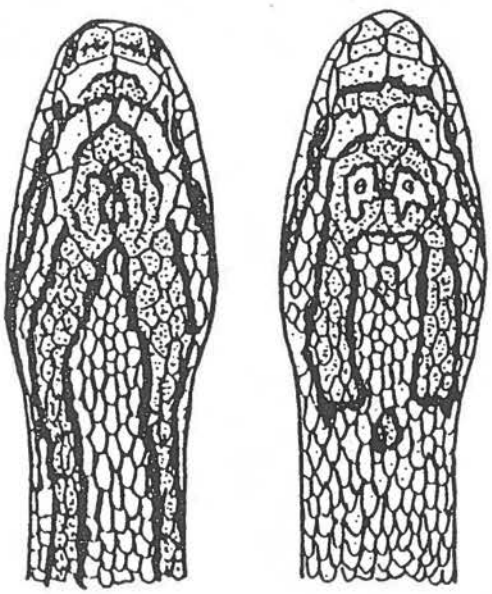
The distribution range of the Rat Snakes extends from Europe over the whole of Asia to North America but the majority of species are to be found in Asia. China alone is home to 14 members of this genus, and possibly even more. Above all, China is a country which herpetologically is very interesting because it is from here that the most beautiful Rat Snakes come to us. We only need to mention Elaphe porphyracae and Elaphe mandarina which, with their wonderful markings, can compete with any of the Lampropeltis species.

Most forms can easily be identified by special colouring and marking characteristics. It is only in the case of small Chinese Elaphe species that great confusion can occur. It often happens that you can be standing in front of a vivarium in a dealers' premises and, according to the information he gives, the vivarium contains Elaphe rufodorsata from China. At first glance the tangle of snakes all look the same but it is generally a case of three different forms, namely Elaphe dione, Elaphe bimaculata and Elaphe rufodorsata. With a more exact examination however, the latter species becomes more obvious. This small snake bears more resemblance to a water snake (Natrix) because its eyes are situated much higher in comparison to other Elaphe species. This is obviously a case of a Rat Snake which, in the course of its evolution, has strongly adapted to a life in the vicinity of water or even to a life in water. In its habits, this snake is not only an 'outsider' as far as other Rat Snakes are concerned, but it is the only one which produces live young.

In the other two species an exact determination is somewhat more difficult because in their markings, colouring, body shape and habits, the Chinese Elaphe dione and Elaphe bimaculata exhibit great parallels. The one immediately obvious difference is in the markings on the head. On top of the head both species have a 'V' or 'U-shaped' mark, which, in the case of Elaphe dione ends at the neck, whilst that of Elaphe bimaculata extends much further and frequently joins up with the dorsal stripes. In Elaphe bimaculata the body spots are also more significantly joined by stripes. For this reason they are given the common name of Chinese Striped or Two Striped Rat Snake. A precise determination however can only be made after a comparison of scale counts.

In my experience each of these species is an ideal vivarium subject which can be easily maintained and bred in captivity.

Fig. 1 Comparison of head markings



Elaphe bimaculata Elaphe dione

Elaphe rufodorsata (Cantor, 1842)

Distribution and habitat

The distribution range begins at the Eastern Yangtse-Kiang (Changjiang) and extends over North-East China and Korea through Manchuria to the Eastern Amur. It has been proven that this species exists in the following Chinese regions; Shanghai, Hangzhou, Wuhu, Wuhan, Jinan, Qingdao, Bejing and Manchuria and can be found on the Zhoushan Islands. This snake is very common in Korea e.g. in Seoul, Pusan and Wonsan. The most northerly occurence has been given as the Ussuri and Amur regions at Chabarovsk (USSR). According to Boulenger (1894) E. rufodorsata has also been found on Hainan and Taiwan. However, because reports are so vague, I find it questionable whether the distribution range of this species extends so far south, especially because in China snakes are often part of the menu of the inhabitants and are often transported throughout the land.

The favoured habitats of E. rufodorsata are, as already mentioned, moist areas. In Korea they were found living in swampy areas and beside water courses heavily overgrown with grass. In China they are found in great numbers near ponds, paddy fields and flooded grasslands. They are most often encountered in early May. In these areas, E. rufodorsata hunts for frogs, fish and small mammals. Because of their lifestyle, this Rat Snake can be compared with our Grass Snakes. In Korea, the snakes hibernate between November and the end of April.

According to my information E. rufodorsata appears to be the most common snake in China and Korea. This is underlined by the frequent import of these snakes.

The character of E. rufodorsata is very variable. Most specimens are very belligerent and when held they discharge an evil-smelling fluid. When they are very angry they vibrate their tails rapidly.

Fig. 2 The distribution of E. rufodorsata



Description

This snake was first given its common name by Fritsche (Dresden). He called it the 'Red Bellied Rat Snake'. Because all snakes do not in fact have a reddish belly this common name is not entirely appropriate. The play on colours is very variable as a direct result of the relatively large range of distribution and can almost not be described in words. Greenish and reddish-brown tones do however predominate. The markings consist of four longitudinal stripes in which the

two dorsal stripes could better be described as a jointed chain pattern made up from elongated spots. However, here too there are innumerable variants, so that in determining certain animals, the head markings have to be relied upon. This consists of a forward-pointing 'V-shaped' marking, the legs of which join up with the dorsal stripes at the neck. From the eyes a dark band extends down the neck to join up with the dorsal stripes. Because I gave a short description of this snake in the introduction I shall not add to it and perhaps cause confusion, but shall let the photographs speak for themselves. (Editors note: Unfortunately we were unable to obtain copies of the photographs that accompany this article). The length of the animals varies between 60 and 80cm.

Maintenance and reproduction in the vivarium

Elaphe rufodorsata is an interesting charge which can be warmly recommended to lovers of small snakes. The vivarium itself can be fairly small but a large water container is essential and will often be used for bathing. The substrate can be of any suitable material which must be kept dry. The remaining furnishings are a few climbing branches and a hide box.

Although I keep these snakes I have not yet bred them. I would therefore like to make use of the data supplied to me by Kublenz (of Bremen). He has twice been lucky enough to breed Elaphe rufodorsata and he was kind enough to give me the following information:

The data refers to three animals, one male (50cm long, weight about 50g) and two females (80cm, weight about 100g). The snakes were kept in a relatively dry vivarum at temperatures of 24 - 30 degrees C with 12 hours of light. Although a large water container was provided it was almost never used. For most of the time the animals lay in their hiding places and their behaviour was always peaceful. They fed regularly every 3 - 4 weeks on a half-grown mouse. They would not take fish. For hibernation they were placed in a container of moist peat in a cellar at 15 degrees from 15th July - 9th October.

On 10th October they mated for the first time. To do this they lay quite still and tightly coiled together. They could not be disturbed even after being lifted after a seven hour copulation. After mating, the female continued to feed on a mouse each week until 2nd January. After 109 days gravidity, 16 young were born on 27th January. These had an average length of 17 - 20 cm and weighed about 2.4g. Before the birth the female weighed 195g and afterwards 110g. For the second clutch of young, the gestation period was 100 days and 12 young were born.

The young sloughed immediately after birth and after a week they were feeding voluntarily on small fish. Kublenz recommends that white fish are fed because these are preferred. The young Elaphe rufodorsata were kept quite moist and at 30 degrees C and four weeks old sloughed for the second time. When the young have grown a little they can be tried on pink mice. It should also be mentioned that Elaphe rufodorsata is a diurnal snake.

To improve and complement the following articles in this series I would appreciate maintenance and breeding data as well as good slides of other Asiatic species.

Asian Rat Snakes of the Elaphe Genus, Part II, Elaphe climacophora, will appear in next month's issue.

Readers of John Bennett's article, 'The Red-tailed Tree Racer', printed in last month's magazine, will be sorry to hear that his snake has died. Joe Hirst suggests that the bluish tinge, mentioned by John in his article, was possibly due to bruising. This colour apparently then deepens to black and disappears at the next slough.

This snake appears to be difficult to maintain in captivity; most animals seem to survive less than 12 months. If you have successfully kept this species please send us details of the methods used.

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Epicrates in Captivity

by John Hayward

The family of Epicrates consists of seven species and a variety of subspecies. Although not as readily available as some of the boids, they can be obtained through private breeders or, on occasion, be found on dealers' lists. To generalise they are not particularly large and fall into the medium-sized class of boa.

The Epicrates family has, in common with Corallus and Sanzinia, heat sensitive pits. These pits which are located along the upper jaw, between the scales, are specialised organs used during the snakes' nocturnal wanderings to detect prey.

The Epicrates family shows as much diversity as occurs in other snake families. Although some members of the genus can prove aggressive, much can be learnt from the keeping of the species in captivity. They are generally good feeders, breed when conditions are suitable and do well. Not as commonly kept as Boa Constrictors, Burmese Pythons, etc. they can prove equally tractable and rewarding under captive conditions.

The Rainbow Boa, Epicrates cenchria

The best known member of the family is the Rainbow Boa of which there are ten subspecies. The most common form of this snake is the Colombian species, Epicrates cenchria maurus. This snake is a brownish colour with faint irregular rings down its back. Its sides have dark areas surrounded by a lighter colouration.

The Brazillian species, Epicrates cenchria cenchria is a much redder snake whose back is marked with black rings or chain-like patterns. Black markings can also be seen on the snake's head below and above each eye and centrally from nose tip to the back of the head. These markings are often present on the previously mentioned subspecies but are somewhat washed out. It is this, the nominate species, which shows, to the best advantage, the beautiful irridescence of the scales.

The snakes reach a length of around six feet and are quite stocky. Because of their temperament they are a popular candidate for captivity. However, their teeth are long and curved to handle a diet of birds, mice and rats, and capable of causing deep wounds to humans.

Captives have been bred and in Trutnau's 'Nonvenomous Snakes' hybrids from E.c. maurus x E.c. cenchria have been produced. Recommended temperatures in captivity are 27 to 32 degrees C (80 to 90 degrees F) during the day and 22 to 25 degrees C (72 to 78 degrees F) at night. A tall vivarium should be provided with climbing branches and a large water container in accordance with the size of the occupant.

The Cuban Boa, Epicrates angulfier

Another of the Epicrates boas sometimes available is the Cuban Boa. This snake is available from time to time and has a reputation regarding its tolerance of people or lack of it. However this fact should not act as a deterrent to any prospective keeper of this snake as exceptions to the rule can be found. Some authors have called this snake "ten feet of pure evil". However the same authors have made unfavourable comments about the Reticulated Python (Python reticulatus), a snake which I have kept (to a large size) and never suffered from their dentition.

The Cuban Boa is a yellowish-brown colour turning to grey near the tail. It has quite a mottled pattern of varying shades across the back and side. Altogether it is quite attractive and is one of the few snakes which include bats in their diet; these are sought out with the help of the heat sensitive pits. Luckily, in captivity they will accept mammals including rats and mice. Again the vivarium would benefit from being tall and the temperature should be similar to those mentioned for previous species.

Bahama or Fischer Boa, Epicrates striatus

This snake is more slender than most members of the family but it is still muscular. The body is a copper brown with irregular spots of lighter tan-white which are also present on the flanks though somewhat darker. The snake can attain a length of eight to ten feet. It is suited to climbing and spends a lot of time in the trees where it seeks out birds although, again, mice, rats and other mammals will be accepted in captivity. Captives should be kept at 22 to 28 degrees C (72 to 82 degrees F) with a drop at night to 18 to 20 degrees C (65 to 68 degrees F). The snake may also be

hibernated from December to January at a temperature of 5 to 7 degrees C (41 to 45 degrees F).

Other species of Epicrates include the Vine Boa, Epicrates gracilis and, sharing the same locality, the smaller (3') Ford's Boa, Epicrates fordii which feed on mammals and birds. These, and Epicrates cenchria alvarezi, are not commonly available and I know very little of them.

To sum up, members of the Epicrates family are good candidates for captivity but, as with all snakes, much is in the hands of the keeper as regards breeding and temperament. Certain members of the family such as Epicrates c. cenchria do not come cheap but neither do other snakes like Indian Pythons (Python molurus molurus) and Emerald Tree Boas (Corallus caninus) but all of us who keep snakes accept the financial implications that this entails.

LETTERS

Snake Keeper
159 Stanley Hill
Amersham
Bucks HP7 9EY

Dear Ed.,

Having been brought up on a farm and seeing many Grass Snakes (Natrix natrix), I felt now, in my 'middle years', that what I really wanted was a pet snake. After much reading and visiting zoos and pet shops my husband and I at last decided upon a Royal Python (Python regius). However this was not to be and we purchased, from a private home, our beautiful Indian Python.

Ayesha had been well handled and was about seven months old. She measured 110cm in length. We placed her in a large fish tank with a bowl of water and added a cornflakes box as a hide. She settled down very well and fed eagerly on dead chicks without any trouble.

We joined a local club - The Witham Snakes, Reptiles and Amphibians.Club - and we gleaned more and more information and received help. I find snake keepers are most helpful and always willing to pass on information.

Ayesha seemed to be growing rapidly and shedding her skin about every five weeks. We soon realised her tank was not big enough. Armed with saws, hammer, nails and Conti-board we set about building a vivarium in the bedroom. Although healthy, Ayesha did not seem to be sloughing properly. Her skin came off in bits and pieces with patches left on her eyes. Our knowledgeable friends said this was probably due to lack of vitamins and that she should really be feeding on mice and rats as chicks had no goodness in them. We tried her at the next feed on mice but she didn't want to know. We tried witholding food from her for a short time but she still refused to change her diet.

I started to panic, thinking that our snake was going to die. Then I hit upon the idea of sewing the dead chicks to the dead mice. My obliging veterinary surgeon sold me some dissolving catgut (the sort they use for internal stitching) and we stitched the chicks legs to the legs of the mice. Ayesha eagerly took the chick and of course the mouse had to follow.

We have adopted this procedure for ten months now and our snake is shedding cleanly. Ayesha is now 2.2m in length and I am pleased to relate that her last two meals were large rats taken without the chicks.

Of course it never ends with one pet snake, does it? My ever-helpful and totally-smitten-with-Ayesha husband has now built two more vivaria in the bedroom and we are now the proud owners of my longed-for Royal Python and a Boa Constrictor. We are looking for a larger house as, of course, the snakes have completely taken over and we feel that our bungalow is no longer big enough to house them. I used to keep horses and I'm sure I didn't have all this trouble!

Yours sincerely,

Anne Mowling, Essex.

P.S. Thank you for a very informative magazine.



Our New Vivarium Set-up

by L. Evans and N. Holbrook

Due to last year's egg failure with our Indian Pythons ('Our success and failure with Indian Pythons', Snake Keeper, Volume 1, No.6) we decided that this year we would build a completely new vivarium and add new equipment (for heating etc) within.

The construction of the vivarium

The new vivarium measures 1m x 1.8m x 90cm (height x width x depth). The vivarium is made from 1.3cm plywood lined with 2.5cm polystyrene insulation. The inside is finished with .6cm plywood.

Access

The vivarium has two outward opening doors. We had found the sliding doors on our old vivarium did not permit us to get to our snakes very well and it made us realise what a bad design this had been. We have found that our new doors (one at the front of the vivarium and one at the side) permit us to gain easy access to our snakes. Cage cleaning is made an awful lot easier with these doors. We have used double glazing as an extra means of conserving heat.

Heating and lighting

Light in our new vivarium is supplied by a 1.2m True-lite, controlled by a 24 hour timer. To ensure perfect heating, two 250 watt infra red heaters are used. They are placed in the centre of the cage and are approximately 60cm in from each end. The heaters are controlled by two thermostats which give a day-night differential by means of a 24 hour timer.

Conclusion

Since we installed our new equipment our snakes seem a lot happier. We hope to buy more items in the near future, when finances permit, for the hatching tank. The equipment mentioned in this article was recommended by Chris and Marcia Martin of Cheltenham (see Snake Keeper, Volume 1, No. 3) after we visited them for advice on breeding.

The Treatment of Mouthrot in a Red-tailed Tree Racer

by Michael Kelly

I recently purchased a Red-tailed Racer (Elaphe oxycephala) from someone who was selling off his reptile stock. The snake was examined before purchase and appeared to be in good health. However, a week after purchase I noticed a yellow, cheese-like matter at the corner of the snake's mouth. Upon further examination of the mouth I discovered the gums were becoming raw and inflamed and a coating of yellow matter was beginning to form.

The snake was immediately isolated from the rest of the collection. I began treating the mouthrot with hydrogen peroxide whilst I searched for a vet who would be able to treat the snake. As most readers will know, finding a vet who possesses sufficient knowledge and experience in the treatment of reptiles can be difficult. In my case I was lucky in finding a vet who had an interest in the diseases of reptiles. He immediately diagnosed an advanced state of mouth rot and told me that, although hydrogen peroxide may have been a useful treatment in the early stages of the disease, something more effective was now called for. I was told that the disease was bacillary in origin and that it attacks the mucous membranes of the mouth and gum tissue. This in turn causes a necrosis that can penetrate to the bone. It manifests itself primarily by accumulations of a cheese-like matter on the gums.

The recommended treatment for mouth rot was a 25% aqueous solution of sulphamethazine which was to be applied three times a day using an eye dropper or syringe. The snake was also given intramuscular injections of a vitamin mixture, mainly vitamins A and C.

I carried out the sulphamethazine treatment for ten days by which time the inflammation had cleared and the cheesy matter had gone.

The vet instructed me to carry on the treatment for a further week but reducing

to two applications a day. At the time of writing (five weeks later) the snake is fine and eating chicks and mice.

The sulphamethazine solution has a shelf life of approximately two years so it would be a useful item to have in a medicine cabinet should it be needed in a hurry. When applying it with a syringe or eye dropper make sure the inflammed areas around the gums are well saturated with the solution.

The vet said that he deals with a lot of cases of mouth rot which are made worse by the animal's owner removing the cheesy matter. He explained that the matter acts like a cushion covering the raw, inflamed tissue. By removing it completely, the owner causes more irritation and drives the infection deeper. During treatment, a lot of the matter will be washed away and to remove it completely will only make the situation worse.

"Cuddles", The Royal Python

by Angie Littler

I became 'hooked' on Royal Pythons, Python regius, after several visits by Boris, a very tame and gentle snake. Boris was very affectionate and used to lie with her head on my chest gazing up at me for hours on end. Tony (her owner) was convinced it was love at first sight (well, it definitely was on my part!). She (yes, I did say she - some owners have no sense of decorum!) was my first real encounter with a snake at very close quarters and I am sure everyone knows what comes next - yes, I have to have one of my own. So I did the 'sensible thing' and borrowed library books, bought books and, of course, bought Snake Keeper. Despite being told that Royal Pythons were not the easiest of snakes to start with, I was quite determined to have one.

I visited several shops to inspect the stock and finally decided I liked the look of The Vivarium stock. I ordered a baby Royal - due any time and awaited a call. Whilst visiting the shop I spotted an adult Royal Python which was about 2 - 3 years old. Then I made a big mistake - I picked her up (remember the love at first sight - it struck again!). Although I am obviously very biased I am told that she is a particularly pretty specimen. She has very long unbroken cream markings down her neck. She behaved beautifully, although she was obviously a little nervous. She seemed to want to make friends, apart from one brief moment when a large Indian Python was near by and she hid behind my back peeping over my shoulder. Her only 'defect' was a little bit missing from her tail. My romantic notion is that a wild animal bit it off in the jungle! I'll never forgive Tony for negotiating two pounds off - poor Cuddles! (Yes, I know it's a silly name but after Boris anything is an improvement.)

Well now, Cuddles was bought a very spacious wooden home and, after several different heating systems, I seem to have settled upon the one she prefers. The first few weeks were very traumatic; she seemed to be extremely nervous and not interested in eating at all. Having said that, she was without doubt, the fattest snake anyone had ever seen so I wasn't yet in a panic. I decided to check all was well and get some advice from someone more expert (this could have been anyone, as I am a complete novice) so I phoned Stuart Gray (Ken's owner - as featured in several issues of Snake Keeper). I received what now proves to be very good advice and felt a little better.

I didn't handle Cuddles much as I felt she needed to settle a bit. She seemed to be getting better and instead of flinching when I opened the door to her box, she now just looked to check that it was me. The only problem was the not-eating. Several months after purchase dead or live mice and rats were still ignored. Well, I say ignored; she has a strange little habit of laying her head on anything remotely like a pillow eg. a bump on the log, a ruck on the newspaper substrate. When I presented her with nice soft dead mice she decided they also made perfect pillows and promptly rested her head on them and fell asleep. Playing with her food, I called it.

Again, I thought expert help was in order and I contacted Chris and Marcia Martin for advice. They told me that it was possible for Royal Pythons to starve themselves to death. This made me even more determined that she was going to eat. I'm no expert but I wasn't going to watch her starve!

cont

My own last attempt was to try her with a live brown mouse. My theory was that she didn't recognize white mice which I had tried previously. So, off to the shop once again for a brown mouse. When I returned she was investigating around her box and seemed quite lively so I decided I would try her with the mouse. I had also got a dead mouse ready just in case. In went the mouse and, lo and behold, Cuddles was taking a great interest in it. After she had been watching it for a couple of minutes she seemed to drop onto the floor in a very strange position - I was convinced that I had given her a heart attack.

I pulled the door open and she didn't move. I moved the log she was lying on and she still didn't move. I touched her... she looked at me as if to say "clear off and mind your own business, I'm only pretending!" Was she faking death to fool the mouse? Do they do this? Do I have a potential TV star on my hands? Anyway a couple of seconds after that, the mouse was no more. Cuddles' fast had ended and I felt such relief. I decided to put the dead mouse in the vivarium just in case. Yes, you've guessed correctly - it went later that evening. So now Cuddles and I live happily together and I feel safe in the knowledge that she isn't going to try to starve herself to death.

I would like to hear from any other 'snake fans' in London, particularly any Royal Python owners. My next ambition is to see the hatching of Royal Python eggs so if anyone has any about to hatch and needs a 'midwife' please shout.

The Rainbow Water Snake

by Carol Hindley

The Rainbow Water Snake (Enhydris enhydris) is a small back-fanged colubrid of the sub-family Homalopsinae. It comes from South-east Asia where it lives in slow moving streams and mangrove swamps.

These snakes are not very colourful. They are a muddy brown with three, sometimes four, very faint black lines running from the neck to the tail. The ventral colour is white with a chocolate brown line running down the centre of its scales. The eyes are gold in colour and are placed high on the head as are the nostrils. This positioning enables the snake to lie buried in the mud with just its eyes and nostrils showing.



Photograph - Carol Hindley

The snake's favourite food is mud-skippers but it will eat any other fish that it can catch and also small frogs.

The venom is just strong enough to kill its food and is harmless to man.

Not much is known about the Rainbow Water Snakes' breeding habits except that they are ovoviviparous.

In captivity the snake is not bad-tempered like other Enhydris species. It can become very tame and never tries to bite.

The ideal temperature is between 27 and 30 degrees C (80 and 85 degrees F). A large water dish must be included in the vivarium furnishings.

I have a male and female but they don't seem to like each other. The female sleeps in the hide box and the male sleeps behind the water dish. I am hoping that they might breed next year.

Dead or Alive?

by Cassandra Oakes

There will, in the course of snake keeping, come a time when a keeper has to answer two questions - "What do you feed it on?" and "Dead or alive?" The answers to both questions often cause the same reaction - abhorrence! Many people set traps for mice but understandably can't tolerate the thought of a furry animal being fed to a scaly one - dead or alive. This is why most pet shops feed their snakes after hours. Snakes can create a lot of fear and are much maligned, which is partly why we are accused of being cruel when a furry animal is killed for the sake of a snake. The argument is that of the scaly versus the furry; there isn't, though, such a reaction when worms and fish are the food items. We would also be accused of being cruel if we let an expensive, long-lived, slow-breeding, specialised and often endangered animal starve at the expense of an extremely cheap, quick-breeding 'pest' such as a rat or mouse, which could result in prosecution by the R.S.P.C.A. for starving a captive animal.

I would imagine that serious snake keepers could fully justify themselves in the selective use of live food. Obviously there will be people who use it regardless of necessity and the needs of the snake. It would not be fair to give a sluggish or very sick snake live food. The risk of injury is too great with these snakes. There is of course the lesser evil of the extra fear caused to the food animal should the snake miss it. My one year old Red-tail Boa was initially fed on live food and frequently missed its food, suffering a broken tooth on one of these occasions. I have a suspicion that its failings in this area helped in its weaning onto dead food. It is now one of my best feeders and, if necessary, can be fed out of the cage and handled immediately afterwards. My other one year old Boa has only just started to occasionally accept dead food. This snake has always been an efficient killer, but very tame. He has previously only accepted dead food after I had harrassed him enough with the food item. I felt that feeding time shouldn't have to be as stressful as this as well as time consuming, so I kept him on live food, occasionally trying out dead food in various ways. To make the kill quick, sure and as safe as possible I partitioned the cage and removed all cage decorations. In the beginning this was to avoid a 'free for all'. I soon found that making the cage smaller and bare at feeding time meant that the need for stalking was eliminated so the mouse was taken literally as soon as it was in the cage without it knowing what was going on. Because of the lack of cage decorations the mouse couldn't run away and hide in or behind them and the snake couldn't hit itself when striking. This Boa, as yet, has not had any trouble with this method and has remained unharmed.

There are many reasons for using live food. All of them are valid except for two - ignorance and morbid voyeurism. To give a snake a live rodent to kill without knowing its needs and capabilties and to treat it all as a joke is to be frowned upon. Most of us know or will have heard of someone who does this. These few people give herpetology a bad name as they are frequently reported by the press.

A useful use of live food is in bringing a snake out of a fast. Whilst some of these fasts are necessary for the snake, there are times when it is not. Sometimes,

preferably after consulting a reputable vet, trying out dead food and, as a last resort, live food in carefully controlled conditions can help trigger off the feeding mechanism. I have had a lot of trouble with a 1.2m Indian Python (*Python molurus bivittatus*) who developed a twitch in his head and then refused all dead food. After treating the python, the vet urged me to get some food into him. The snake, happily, had as many live rodents as I wanted to give him. It turned out that the python's problems were behavioural rather than medical, although the cause of the twitching and other behavioural changes is still unknown. The vet and I both agree that, had the problems been medical, the vitamins from the food in a complete, warm package with none destroyed by defrosting etc. would have been essential since sick snakes rapidly lose vital vitamins that are necessary for them to recover their health - as with humans.

Live food can often help in getting baby snakes such as King and Corn Snakes to feed. These snakes are becoming notorious for their bad feeding habits when newly hatched. Trying out a non-feeding baby snake with live or dead pink mice when it is big enough to accept them is far preferable to force-feeding it for the rest of its life.

Another form of live food that is rarely considered, but used frequently, is water and semi-aquatic snakes' diet of worms, tadpoles, frogs and various types of fish. Whilst Garter Snakes can often be weaned onto strips of plaice etc, live goldfish are regularly to be seen in water dishes. My female Garter Snake shows no interest at all in dead goldfish but five live goldfish will vanish immediately! These snakes' diet doesn't seem to cause the same reaction as that of a rodent eater, unless you are talking to a fish fancier! This is probably because the food is smaller and is wet or slimy rather than furry. Personally I find my Garter Snakes diet rather distasteful - I cannot bear to touch any of their food. I am occasionally given dead goldfish but there is usually little interest in these as my snakes prefer to have their fish flapping on the floor of the cage. This is a cruel way for a fish to die but my primary concern is for the snake.

In a recent conversation with a fellow keeper about the pros and cons of live food, we found a few important problems with dead food. Whilst a live rodent can seriously harm a snake, pre-killed food can also be harmful. A food animal that isn't defrosted properly or has gone off after being left in a cage too long can often cause digestive problems. Some snakes seem able to consume a properly thawed mouse that isn't warmed up and suffer no ill effects. A more sensitive individual may suffer internal problems or not accept it at all. Here another problem arises. How does one successfully heat up a defrosted rat, mouse or gerbil and avoid the stench from a slightly cooked rodent - its awful! Microwave cookers don't carry instructions for this type of cooking. With regard to a semi-aquatic snakes' diet, live or even dead goldfish are a relatively cheap food that is totally safe for these snakes and are best served cold. Sea fish, such as whitebait, can cause epileptic fits and death through a vitamin deficiency. The Thiaminase in the raw fish destroys the vitamin B1 in the snake and will make the snake very ill. If caught early enough then veterinary treatment will cure it. A way to avoid this is to put the fish in water at 80 degrees C for five to ten minutes. Take the fish out and add vitamin supplement. Some snakes will not accept fish treated in this way and will only accept raw whitebait or plaice. This should be avoided.

Another problem with frozen food is that valuable vitamins can be lost in the killing, freezing and thawing process. Vitamin supplements can be added to either the food or water if the owner thinks it necessary but the measurements must be accurate as too many vitamins can be as harmful as too little.

Along with other problems mentioned, there is the lesser one of wastage. If a snake refuses some or all of its food, a sometimes hard-to-come-by meal will be wasted. It would be an unwise person who re-froze the food because the supply was short. Live unwanted food can be retrieved and saved for another time.

There seem to be two schools of thought as to which method of feeding is more practical and faster for both owner and snake. An owner may find it quicker to put the dead food in the cage and leave it unattended. Here the food may be left uneaten for a considerable time. I must admit I usually end up watching a snake feed rather than leave it as I find it a

continually fascinating experience.

A Boa Constrictor has the ability to kill and devour its food very quickly but, for safety's sake, the owner should be present to rescue one or the other if necessary and also to put the food item in the cage individually. If many snakes are kept this would take a long time as it is not fair to the snake or rodent to have more than one food item in the cage at a time. It would be a very alarming experience for a mouse to watch its friend being killed by a snake. This accidentally happened with my Boa Constrictors before I had found a more suitable method of feeding two snakes. This was always a very harrowing experience to watch! I remember on one occasion seeing the Boa kill one mouse and simultaneously catching, at mid-body, the mouse that the Red-tail Boa had missed, virtually killing two mice at once. On reflection this shouldn't have been allowed to happen but it was lucky and very impressive. There could have been a chance of the loose mouse harming the snakes for self-protection's sake. With this in mind and the fact that mice quickly lose their snake-fear and that rats can be very nasty creatures, rodents should never be left in a vivarium overnight; snakes have died or have been badly hurt from this.

If an owner thinks their snake will only accept live food they should frequently try it with dead food. With all the expertise and knowledge of snakes and their feeding habits available today there is no real reason why a popular pet species should be permanently on live food regardless. With persistence, the use of live food is, or should be, temporary, unless, of course, you have the occasional awkward individual. There doesn't seem to be anything to be gained from giving a snake live food when it was reared on dead. In my experience this does nothing for the snake's temperament. My python has always been moody, especially when sloughing. His aggression seems to have increased with his new diet despite every attempt to calm him down. A snakes temperament seems to be a lot calmer if the frenzy from the kill is avoided. My python now behaves as if he was wild and, although he has vitamin rich food in him, he has not otherwise benefitted from live food. Some people would quite rightly say that a tame pet snake permanently on what in the wild would be carrion, has lost its true 'snakiness'. For most people though this is a plus. Of course to balance that there are keepers who keep the more aggressive species and prefer 'pet' snakes to be no different from their wild counterparts. This is admirable but, for the rest of us, scary.

Since food is such an important part of a snake's life, how they get it, especially in vivarium conditions, must be important; a well fed, calm snake is usually a happy snake. It would be interesting to know if other keepers have noticed a change in temperament when live food has been used for some time with usually tame species such as boas or pythons.

What and how to feed a snake is a very controversial issue for the keepers as well as for friends and neighbours, especially when they have to live with or next to potentially repulsive creatures.

As our snakes aren't in captivity out of choice, we must do everything to make their lives in a cage a happy one. As long as the rules of feeding are adhered to, live food can be as safe as dead remembering that dead food can be as dangerous as live. It must be said that ferral rodents and birds etc, live or dead, should never be used as these often carry parasites that will be harmful to a snake.

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The Sand Snake, Psammophis schokari, in Captivity

by Kevin J. Hingley

Introduction

I was given two of these snakes roughly twelve months ago. This was to be my first experience with a species of the genus Psammophis, although not the first time I had maintained rear-fanged snakes under captive conditions as I had previously owned a large, relatively tame Mangrove Snake, Boiga dendrophila.

Being a fervent reader of any material relating to herpetology, I had a good idea of the basic requirements of these snakes, as well as a fair amount of literature to fall back on for reference should I encounter any difficulties regarding their captive husbandry. Having read that members of this genus are alert, nervous and fast moving snakes I chose to treat them in the same manner that I had applied to various Racers (genus Coluber) that I had kept in the past. All this involved was a small glass aquarium with a secure fitting wooden lid to house the snakes and this was placed in a large vivarium heated to between 26 to 30 degrees C. Newspaper was used as a substrate and a small dish of drinking water and a ceramic 'igloo' for a hiding place were also provided. Once the snakes had been housed, I could only sit back and wait for them to slough before offering them any food; a task I was dreading in case they refused to feed on small mice: I did not wish to feed them on lizards.

Description

Both of the snakes I was given were similar in appearance having a dorsal colour of dark fawn anteriorly, lightening to light fawn posteriorly. The top of the head was quite intricately marked with light fawn in a symmetrical pattern, and a dark stripe extended from the tip of the snout to the front of the eye, and continued from the rear of the eye to the back of the mouth. The labials, both upper and lower, (supra- and infralabials), were white in colour with a vertical dark marking on each scale. The chin and throat scales were also white with a black spot in the centre of each scale. The edges of the ventral scales were white with a broken black line running the length of the ventral surface, whilst the middle of the venter was grey suffused with fawn, and vaguely edged with black. The eye was reddish-orange in colour with a black pupil completely encircled with white. The smaller of the two specimens also exhibited a broken vertebral stripe which was lighter in colour than the ground colour of the body. Length is around 100 - 120cm and the body is comparatively slender, as is the head.

Husbandry

As I mentioned earlier, both snakes were placed in a small aquarium with a tight fitting wooden lid. Newspaper covered the base of the tank and the only furnishings were a small bowl of drinking water and a ceramic igloo for shelter.

The temperature was initially maintained at between 26 and 30 degrees C but this was later reduced to a maximum of 26 degrees C, higher temperatures being considered unnecessary. Both snakes were sloughing when received so I could do little more than wait for them to complete the process. Once sloughing was completed food was offered in the form of large mouse pinkies or small rat pinkies. Both snakes refused to feed initially and it soon became obvious that the larger specimen was deteriorating rapidly so I attempted to assist-feed it with a small pinkie. This was accepted but further attempts were unsuccessful and the snake became very lethargic. I did what I thought was the kindest thing and euthanased the snake by placing it in the freezer.

The smaller specimen commenced feeding voluntarily shortly after the sloughing process was completed. To date, December 1987, it has continued to feed voluntarily on small rat pups and small mice. These are usually offered dead but the snake still treats them in the same manner that it would treat live prey. This entails rushing up to the prey animal and poising above it with the neck curved and the head pointing downward. This position is held for a short while and then the snake strikes down with the mouth open. Once a grip is obtained the snake chews for all it is worth in order to inject its venom into the mouse or rat pup. This process may last for several minutes before the prey is released, examined and then

swallowed, usually head first. Digestion takes only two or three days at a temperature of 26 degrees C, no doubt due partially to the action of the venom. Newly captured individuals may be reluctant to feed on freshly killed mice and, with such specimens, it is often possible to see constriction being applied in addition to the injection of venom in order to overpower relatively large prey items.

Most members of the genus Psammophis are small to moderately sized snakes with a slender body form; mice are a relatively large and powerful prey for smaller specimens to tackle, hence the additional use of constriction. In the wild the diet of these snakes includes other snakes, lizards, nestlings and small birds, and, seasonally, amphibians as well as rodents. Sand snakes are diurnal in habit, being active during the morning and afternoon and retreating to shelter during the heat of midday. I have found that keeping my specimen at a constant temperature has had no adverse effects on its feeding behaviour or frequency of sloughing.

Handling and disturbance are kept to a minimum as, in keeping with other members of the genus, the snake is apt to bite when handled. To avoid the risk of envenomation through a bite I always wear a pair of thick suede gloves which are supple enough to allow me to 'feel' the snake through them and check its movement. Recently the snake has stopped attempting to bite when handled for cage cleaning but this habit has been replaced by defecation;this leaves me wondering which is the more unpleasant. Although the snake has access to water I have never seen it drink. No doubt this species is able to go without water for exceptionally lengthy periods in its natural environment, the dry steppe country of N.E. Africa and the Middle East.

Breeding

Having only a single specimen I am highly unlikely to breed this species. Other species are being bred, typically Psammophis subtaeniatus and P. sibilans. All members of the genus are egg-layers and their natural breeding cycle usually coincides with the rainy season, a point worth remembering if anyone is hoping to successfully breed this species or its relatives under captive conditions. The eggs should be incubated in a similar manner to those of other colubrid snakes.

One of the reasons why Sand Snakes are not commonly bred is probably because they are difficult to sex. They are slender snakes with relatively long, thin tails, and probing them to define the sexes is seemingly quite dangerous as the sexing probe needs to be rather fine. Steehouder (1986) suggests that there may be possible external differences between the sexes of Psammophis subtaeniatus sudanensis that may serve as a guide to distinguishing between male and female. Apparently there is very little difference between the tail bases of either sex but overall size and body weight of mature specimens may act as a guide; the males are larger and heavier than the females. Steehouder also suggests that the shape of the males' head is different to that of the females, being more blunt and having a 'bump' on the snout. His paper goes on to say that this possible method of sexing Psammophis subtaeniatus sudanensis may also be plausible with other members of the genus.

Handling

There are a number of factors which lead me to recommend that Sand Snakes are handled as little as possible. The first is an obvious one - they are mildly venomous. This is something which most authorities tend to treat lightly and, in many cases, don't even suggest a course of action, or even treatment to follow should the handler be bitten. The use of gloves when handling is necessary for such duties as cage cleaning or examination prior to removing external parasites, old sloughed skins, sex determination or the administration of medicines; gloves should prevent the handler from envenomation should the snake attempt to bite. If you haven't been bitten by any form of venomous snake then you cannot say what your reaction would be to a particular type of venom and prevention is surely better than a cure.

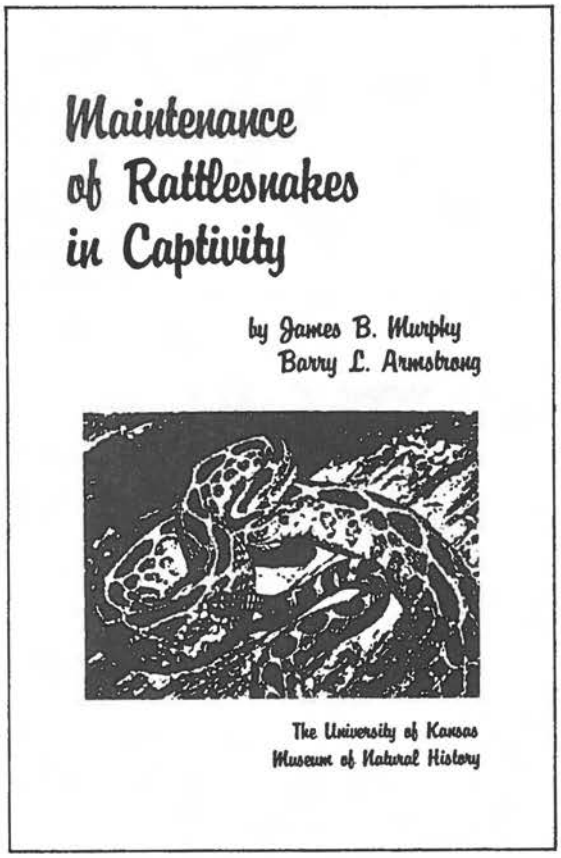
The second reason is the fact that these snakes are nervous and the less disturbance and handling that they are subjected to will increase the chances of successfully maintaining and possibly breeding them under captive conditions.

The term 'rear-fanged' is something of a misnomer when applied to Sand Snakes as in most cases the venom conducting fangs are positioned beneath the eye. This means

they are 'mid-fanged' rather than rear-fanged and the mouth has a fairly wide gape so envenomation is quite likely from an adult individual of most forms, should one happen to be bitten. It is not clear what the principal action of the venom is but it would appear to be chiefly neurotoxic in its primary effect as small rodents usually succumb to a bite within 30 seconds, although this time is shortened if constriction is also applied. The information I have relating to human victims ranges from little or no symptoms to severe pain and swelling accompanied by nausea and cold, 'feverish' shivering which may persist for several days. The severity of the bite appears to depend upon the size of the individual snake and the most severe bites appear to be inflicted by the larger species such as P. sibilans and the closely related P. phillipsii, both of which can attain lengths of 180cm.

References
Steehouder, A.M. (1986) Possible external differences of sex in Psammophis subtaeniatus sudanensis. Litteratura Serpentium. Vol.6 No.4 pp127 - 130. Journal of the Dutch Snake Society - English ed.

BOOK REVIEW



'The Maintenance of Rattlesnakes in Captivity'
by James B. Murphy & Barry L. Armstrong
University of Kansas Publications
Museum of Natural History, Lawrence, Kan.
ISBN 0-89338-006-7 1978
Card cover (colour photo) 40 pages +

If, like me, you cannot envisage a time in the future when you might actually own a Rattlesnake but, nevertheless, you are fascinated and awed by such creatures, then consider a copy of this book for your shelf. If you already keep these animals then you undoubtedly have a copy already.

This book resulted from Murphy and Armstrong's study of, and caring for, some 125 individual Rattlesnakes at Dallas Zoo, Texas.

As well as the two main sections, the book includes a bibliography, an appendix listing the products mentioned in the text (eg. 'Flagyl (Searle) Metronidazole') an index to scientific names and finally some blank pages for notes and comments.

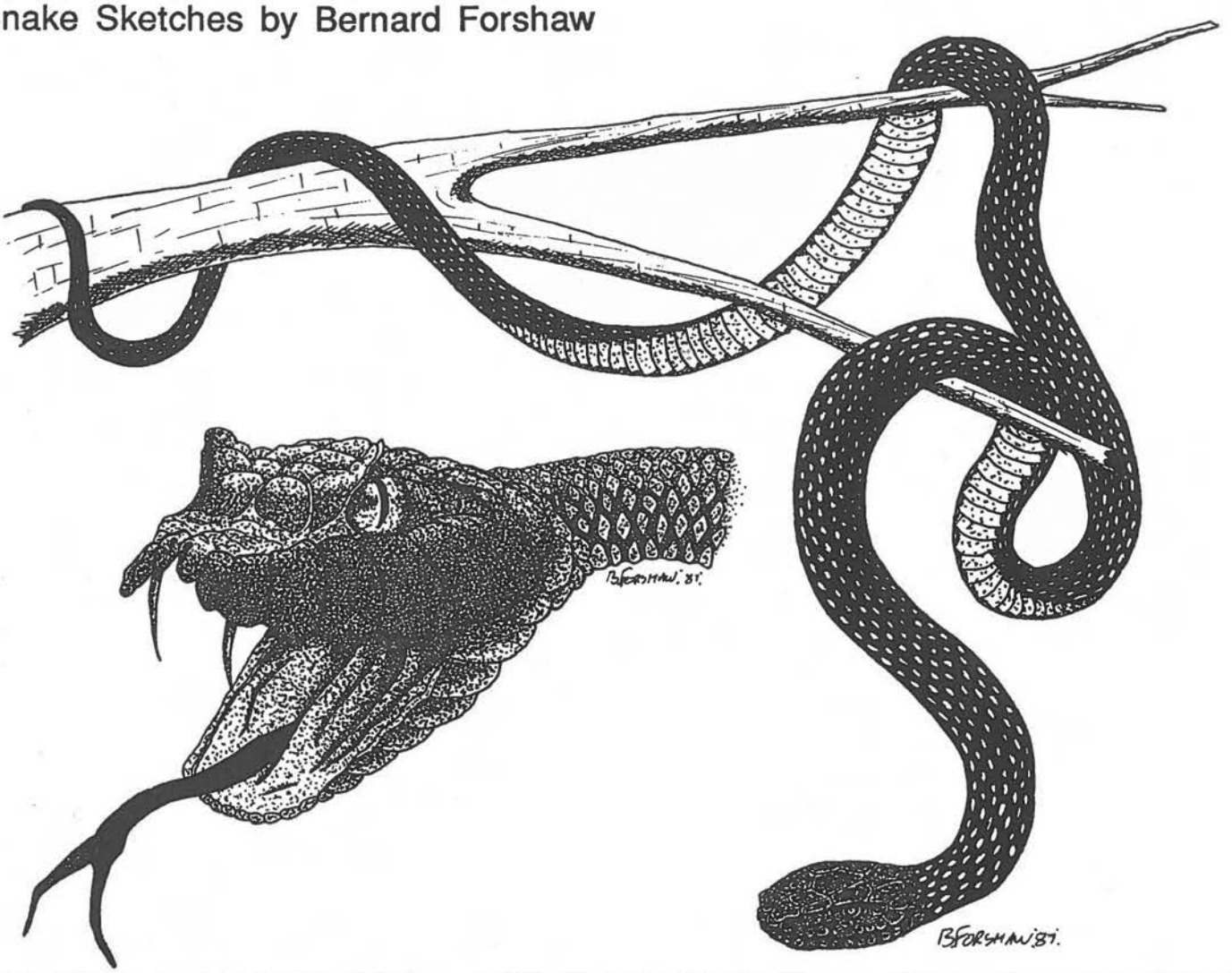
The first section deals with 'Maintenance in Captivity' and covers specific requirements; Temperature, Water, Feeding and Stress. Advice is given on quarantine procedures, cage sanitation and substrate. Although the items on temperature and water will be probably only be of use to Rattlesnake keepers, useful tips, of interest to snake keepers in general, will be found in the parts dealing with feeding and stress. This is true of a large part of the information contained in the book.

The second section is entitled 'Diseases, Infections and Treatments' and mentions Tuberculosis, Ulcerative stomatitis (mouth rot), Bacterial flora, Respiratory infections, Pathogenic fungi, Protozoa, Amoebiasis, Coccidiosis, Helminths, Cestodes, Nematodes, Linguatulida, Mites/Cheggers/Ticks, Lacerations/Lesions/Abscesses, Anaesthesia, Nutritional Difficulties, Miscellaneous Difficulties, Neoplasms and, finally, Surgical Techniques. As the whole of the second section fits into 19 pages, everything is kept very trim and concise.

All in all, this is a useful and interesting book. As one might expect, it is written in a scientific style and, as such, is probably not suitable for the beginner unless he or she possesses a good herpetological dictionary. MC

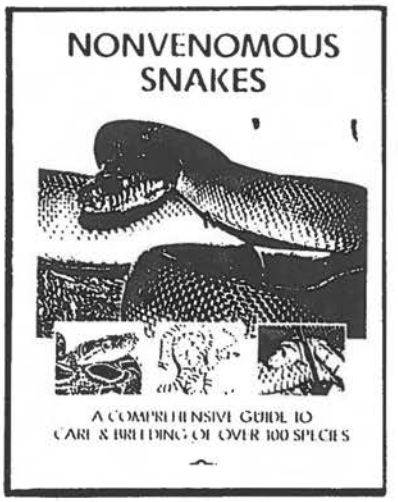
(Copies of this book are available from: Steven Simpson, 74 Landsdowne Place, Hove BN3 1FG at £3.50p inc. inland post.)

Snake Sketches by Bernard Forshaw



JUNIOR SNAKE KEEPER

Nonvenomous Snakes
by Ludwig Trutnau
Barron's Educational Series Inc.
ISBN 0-8120-5632-9
£7.95p



This is one of the best value books that I have ever bought. The book covers over 100 species of snakes and costs only £7.95p.

The snakes listed cover a broad range from Garter Snakes (Thamnophis sirtalis) to the Fishing Keelback (Xenochrophis). A detailed description of physical characteristics, length, distribution and behaviour, care in captivity and captive breeding is available for all the listed snakes.

The hardback book contains 188 pages with 63 excellent colour plates. The first edition was published in 1979 in Germany entitled 'Schlangen 1'. The English edition was published in 1986 by Barron's. This book is very handy and gives a very good simple guide to some of the most commonly available snakes. I can recommend it to any snake keeper, beginner or experienced. It is a book that should be on every snake keeper's bookshelf.

Lee Bowler

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1 Haitian Boa, 5' female, £50. 1 Haitian Boa, 4.5' male, £50. 1 Haitian Boa (hatchling) male, £20. 4 Hog Island Boas, £60 each. 1 Honduran Milk Snake, male, £85. All long term captives. Phone Neil Cass (0245) 466503 (Chelmsford) evenings.

I.R.A.M.

We printed an incorrect subscription price for International Reptile-Aid Magazine in last month's issue. Unfortunately we received an early press release. The correct subscription rate is £6 per year for the U.K. and £10 for overseas members. You will receive a refund if you paid the wrong amount. If you have any queries contact Brian Howard (0704) 74986.

Next Issue:
Asian Rat Snakes of the Elaphe Genus Pt.II
The Care and Captivity of the Rough Green Snake, Opheodrys aestivus.
The African Rock Python, Python sebae.



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