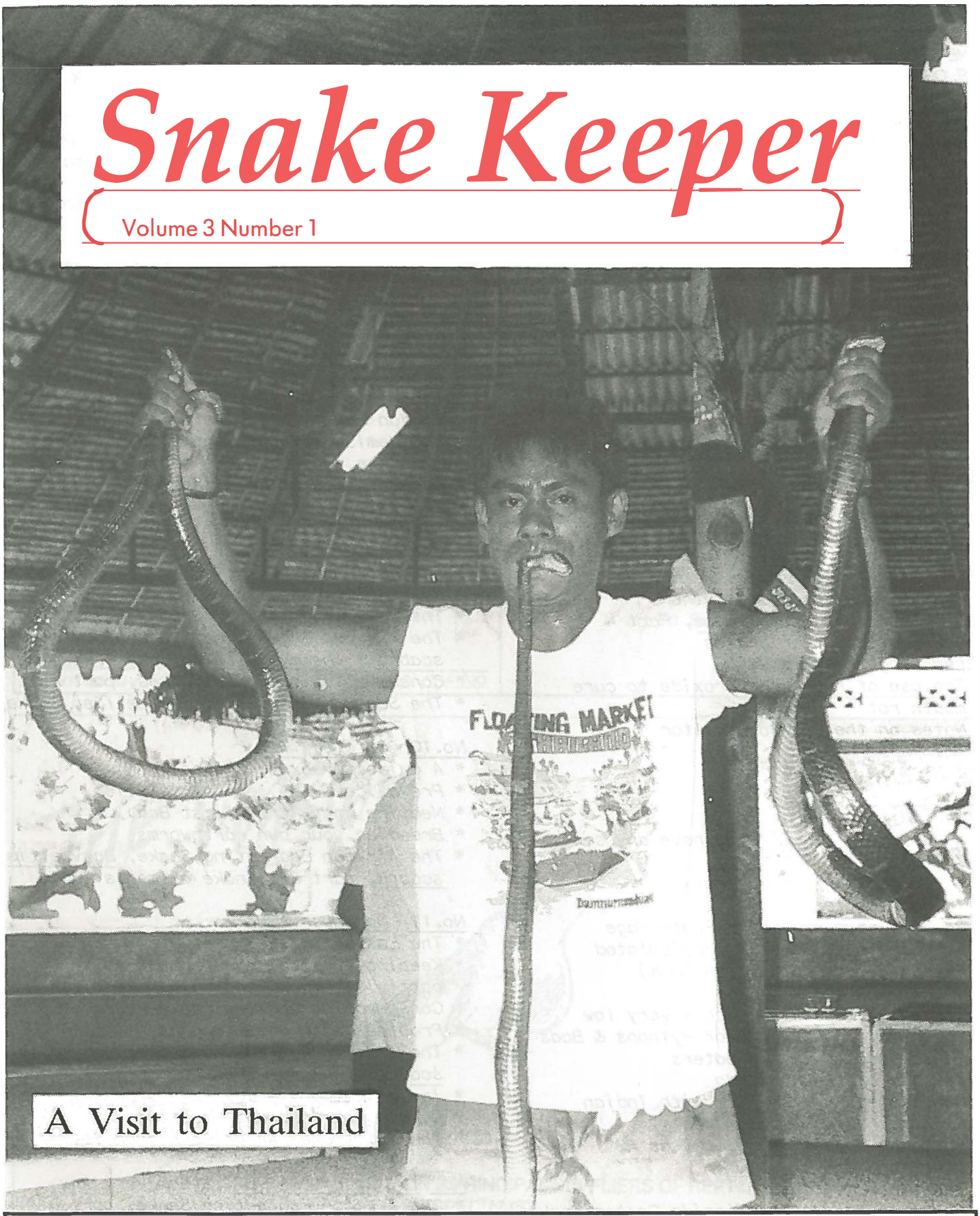
Snake Keeper

Volume 3 Number 1



A Visit to Thailand

The Snakes of Transcaucasia Part III

Asian Rat Snakes of the *Elaphe* Genus Part XI

24 pages

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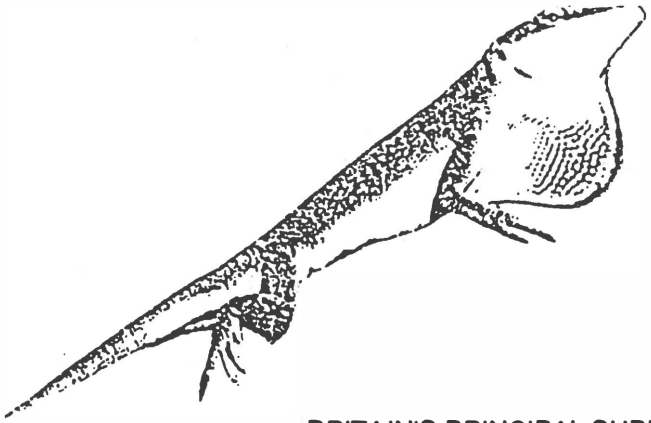
Front cover: Mangrove Snakes, (Boiga dendrophila), on display at a snake show in Bangkok, Thailand.

Photograph: Paul Hobson

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A Visit to Thailand

by Paul Hobson

Introduction

Thailand is a beautiful, exotic and colourful country in South East Asia which hosts 157 different species of snake. Many of these are freely imported into this country, often in an appalling state.

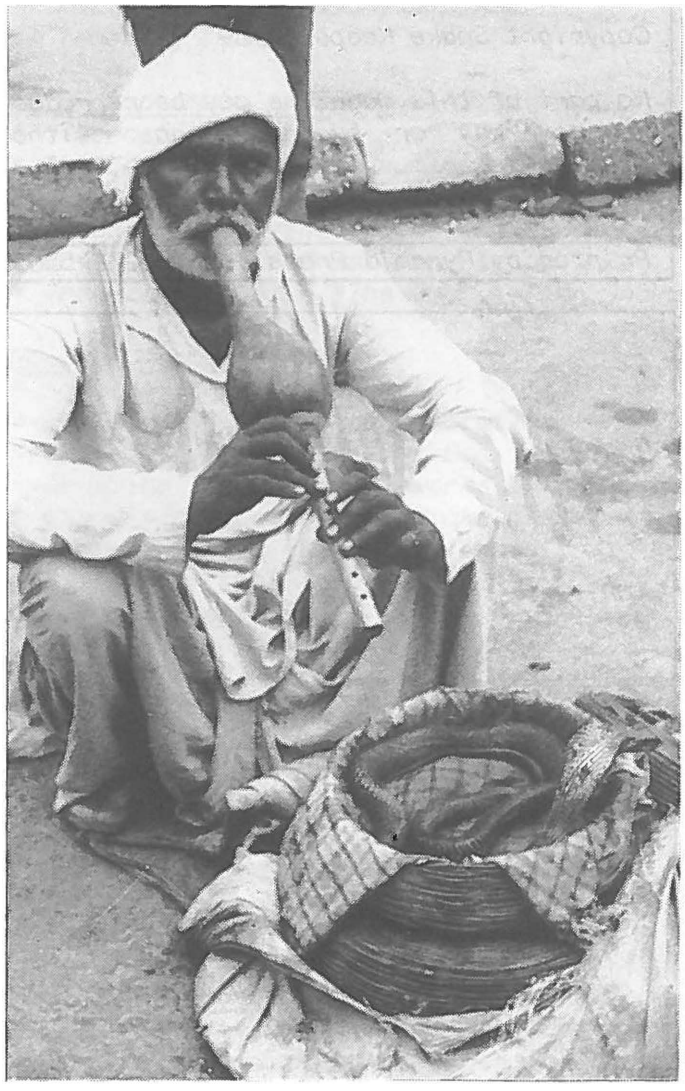
This summer I had the opportunity to visit Thailand for a number of weeks. I hoped to use the chance to view some of the environments that occur within its boundaries and to import some of its snakes for my private collection.

Due to the nature of our flight we were able to stop off in India for two weeks. We had, however, devised a very hectic itinerary, covering many hundreds of miles, and so were unable to spend any time snake hunting.

Before setting off on our long journey I had done a lot of planning and research. To import snakes into this country I had to acquire the relevant DOE import licences issued under the CITES convention. For these I had to know the exact species I wanted to import, number, sex, exporter and so on.

In previous years I had been snake hunting in Europe and I was under no illusions as to the difficulties involved in snake catching. I felt that I had to obtain my specimens from an exporter in Thailand to ensure getting all the species I wanted. In this I had a stroke of luck in that a kind herpetologist replied to an advert I placed in Snake Keeper and sent me a copy of an exporter's price list. This gave me a good idea of what species were available and their cost. Many of these species were new to me and I had no idea as to their requirements in the terrarium. With this in mind I had a thorough read through all my snake literature and ordered a few books from the library. At this stage I found that there are very few books on Thai snakes, even fewer with any relevant information on their environmental needs. I eventually made a list of a few species which I felt would adapt to captivity and whose needs I could recreate in the terrarium. I was successful in my applications for all the licences I needed except for Elaphe flavolineata which was refused due to its occurring in two localities only.

Armed with all relevant paperwork we set off with Air India to Delhi. Our stay in India was superb. It is a fascinating and thought-provoking country, ranging from abject poverty to some of the most beautiful buildings and countryside I have ever seen. Everywhere we went we were met with open friendliness and help. My only disappointment was the lack of snakes. The only two we saw were both on show with a 'typical' snake charmer. One was a cobra and the other an Indian Python. The latter, we were informed, was 'very poisonous' and could only be 'handled with great care!'



Traditional Indian snake charmer in Delhi
Photo: Paul Hobson

After an adventurous two weeks we flew on to Bangkok and, to recover from all the travelling, we relaxed on the Thai coast

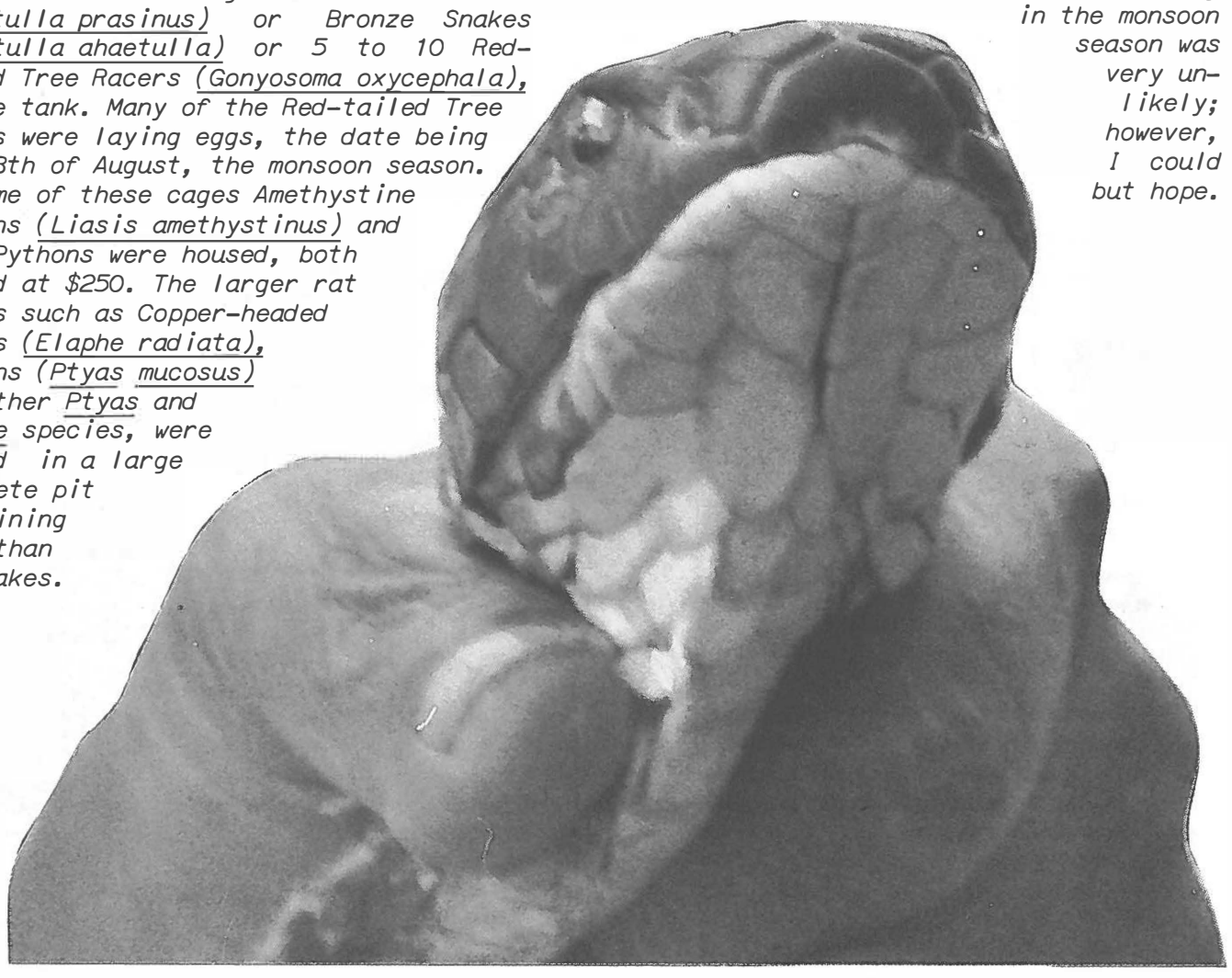
for a few days. We then moved back to the hectic, polluted atmosphere of Bangkok, all noise, traffic, hustle and bustle. Armed with the address of the snake dealer, we tackled a cab driver and, after a bit of haggling, agreed a price for the journey. Sitting in a taxi with dodgy air-conditioning in hot, humid, polluted air is no joke. After a two-hour crawl across Bangkok we eventually arrived at the dealer's. My companions were, by now, more than a little irritated and hot, whilst I was full of enthusiasm and chatting away about the snakes, all to deaf ears.

The dealer had around 70 snakes listed and probably had 35 different species at the time of our visit. The majority were kept in appalling conditions, water tanks fouled, grossly overcrowded, with shed skins and the occasional dead snake present.

Seperate species are housed in different ways. The more common smaller snakes are housed in boxes approximately two feet square and there could be anything up to 50 snakes such as Long-nosed Green Snakes (Ahaetulla prasinus) or Bronze Snakes (Ahaetulla ahaetulla) or 5 to 10 Red-tailed Tree Racers (Gonyosoma oxycephala), in one tank. Many of the Red-tailed Tree Racers were laying eggs, the date being the 28th of August, the monsoon season. In some of these cages Amethystine Pythons (Liasis amethystinus) and Tree Pythons were housed, both priced at $250. The larger rat snakes such as Copper-headed Racers (Elaphe radiata), Dhamans (Ptyas mucosus) and other Ptyas and Elaphe species, were housed in a large concrete pit containing more than 40 snakes.

There is no record as to when a particular snake arrives so any snake in the pit could have been there from a few days to several months. They are probably unfed all that time and are in close proximity to many other snakes of different species. It is easy to see how diseases can spread and how much stress these snakes must suffer. Water snakes (Rainbow, Tentacled etc.) are housed in water-filled pits with no access to land. Again they could have been in such conditions for many months. The larger pythons (Python molurus bivittatus and Python curtus) are housed in larger cages or concrete pits in similar conditions.

Even considering the conditions I decided to risk ordering some snakes. I felt that if I could choose each one and bring them back with the minimum amount of stress I might be lucky to get relatively healthy stock. The dealer did not have all the species I wanted but was confident that he could acquire the Elaphe species by the time I returned to Bangkok. I must admit that I was a little sceptical as I had been told that successful snake catching in the monsoon season was very unlikely; however, I could but hope.



King Cobra (Ophiophagus hannah) Photo: Paul Hobson

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Thailand is a tropical country and has a large number of venomous snakes. A few of these species are particularly dangerous and, in many cases, a bite can prove fatal. Approximately one thousand Burmese people die a year due to Russell's Viper bites out of ten thousand bites per annum. In Thailand the main culprits are the Thai Monocellated Cobra (Naja kaouthia), Russell's Viper (Vipera russelli siamensis), a few species of Pit Viper (eg. Green Pit Viper, Trimeresurus albolabris), Banded Krait (Bungarus fasciatus) and King Cobra (Ophiophagus hannah)(see photo on page 5).

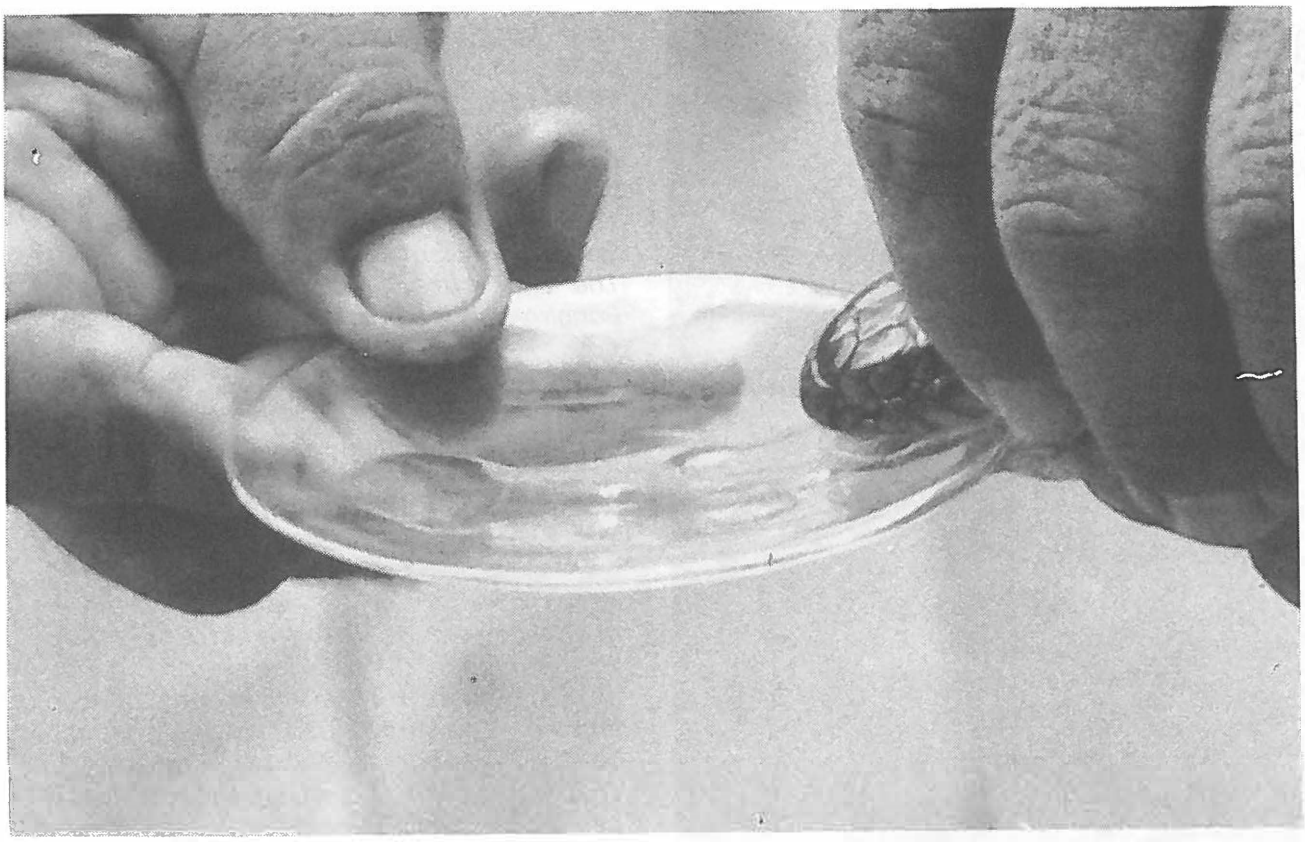
Venom is a mixture of components, the whole being a mechanism to kill the prey on which the animal will feed. Venom falls into two major groups: the first group are the neurotoxins, which act on the nervous system and cause paralysis, in extreme cases causing failure of the respiratory system and death. The second group are the haemotoxins, which, in small doses, act on the blood preventing it from clotting, leading to bleeding from the gums and kidney failure (though in small animals the blood clots and kills). Contrary to popular belief, 50% of poisonous snake bites result in little or no poisoning and, because of these problems, the Thai Red Cross Society has established a snake farm to keep different venomous snakes for venom collection. The venom is used to produce antivenin for treatment of snake bites. The snake farm, the second in the world, was opened in November 1923 and has since become a popular place for tourists and herpetologists alike.

Whilst we were in Bangkok I lost no time in spending a morning at the Institute. It is extremely peaceful even though it is situated in a very busy area of Bangkok. All the snakes are kept in large, well-planted pits surrounded by water, or in extensive cages. All of these are scrupulously clean and all the snakes look very healthy. Every morning there is a demonstration of 'milking' a snake for its venom (usually a Thai Cobra) and examples of the more common venomous and some non-venomous snakes are exhibited. Before this fascinating demonstration there is a film show which explains how the snake's venom is removed and the antivenin is produced.

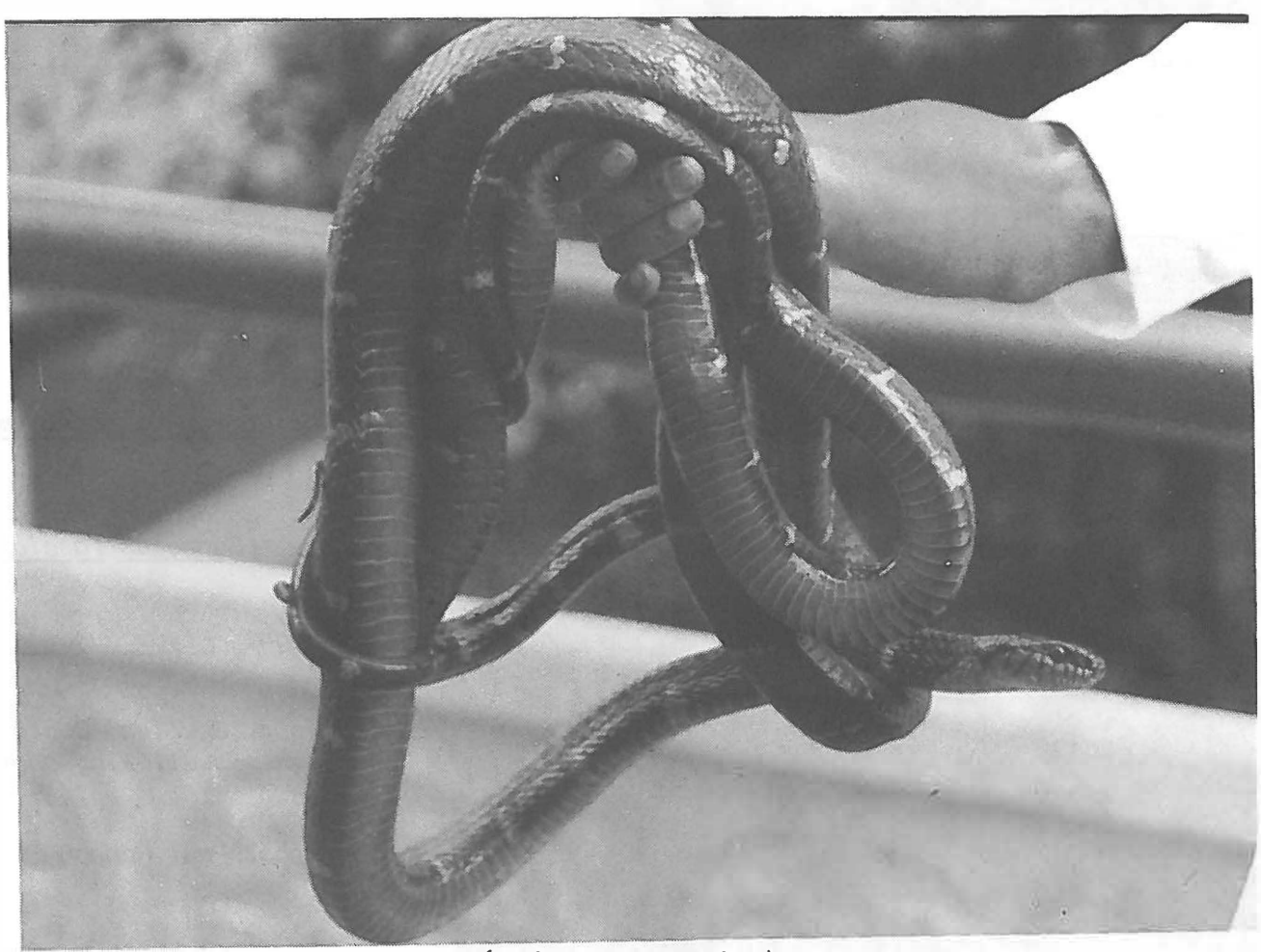
Briefly, the antivenin is produced by injecting a horse with a low dose of the venom so that it produces antibodies to



The snake farm, Bangkok *Photo: Paul Hobson*



Milking a Thai Cobra at the snake farm



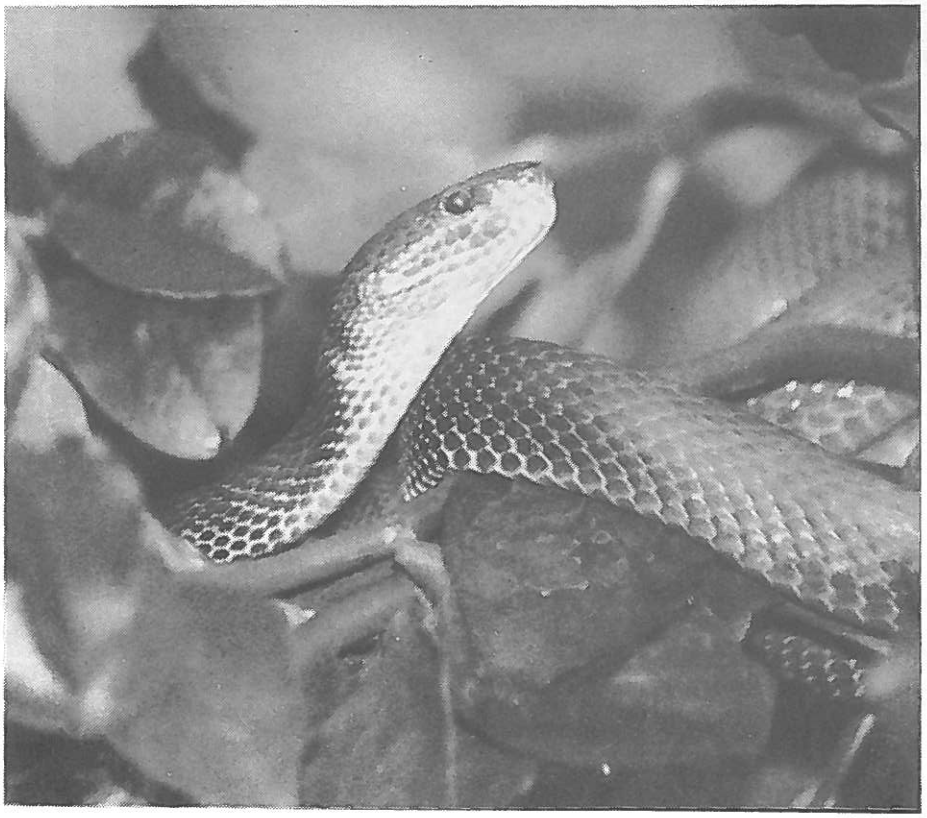
Mangrove Snakes (Boiga dendrophila) at the snake farm
Photographs: Paul Hobson



Above Force feeding an Indian Python
Photo: Paul Hobson

the venom. Over a period of months the dose is increased until the horse is totally immune to that particular venom. From then on blood is removed from the horse at intervals (just like a blood donor) and the antibodies are removed so that an antivenin is produced. The horse in no way suffers during this procedure. The Institute, which owns stables outside Bangkok, produces six different antivenin for the more venomous snakes. These are stored at the Institute and at the larger local hospitals throughout Thailand.

Apart from the work with the venomous snakes the Institute does work on other snakes and receives many herpetologists and doctors from around the world. Some more common non-venomous specimens are also housed at the Institute. I spent a fascinating morning watching the exhibition and looking around at the more common species, some of which I hoped to be taking back to the UK. The staff at the Institute, in keeping with all the Thai people we met, were very open and always willing to help in the most pleasant manner possible.



Scenes from the snake farm

Left Pope's Pit Viper
(Trimeresurus popeorum)

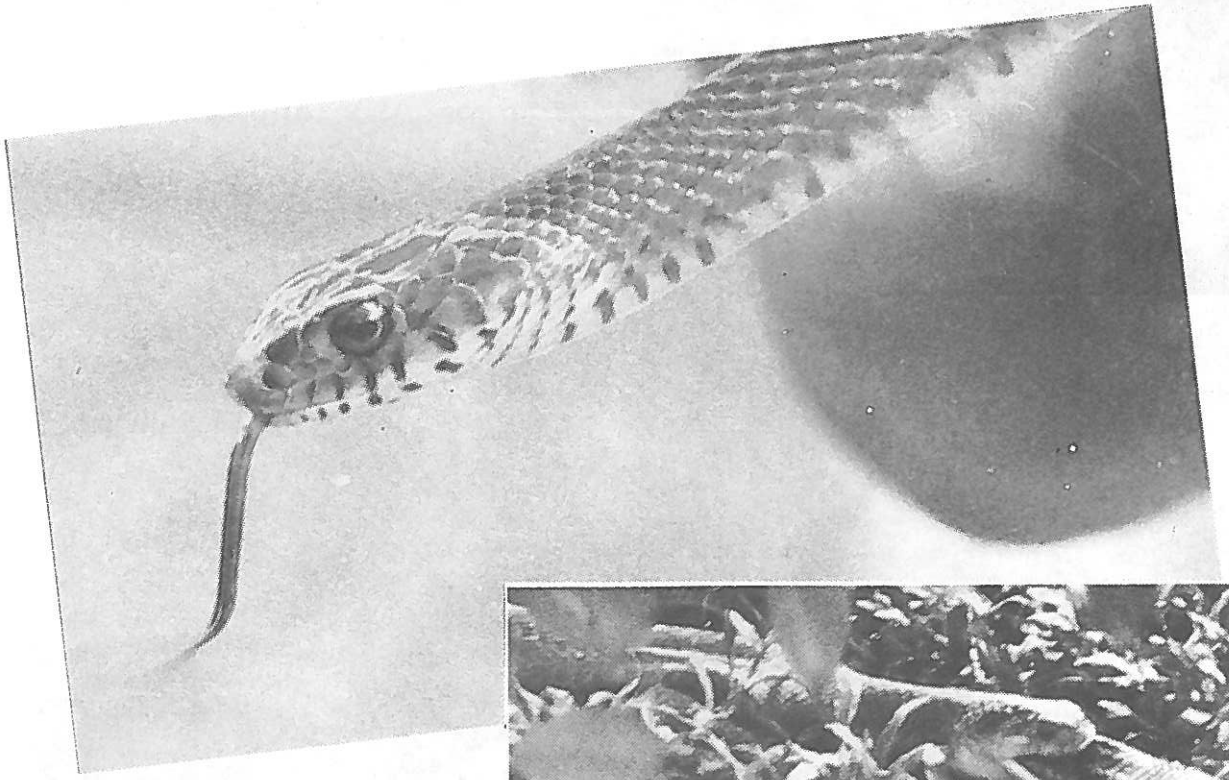
Top right Banded Kraits
(Bungarus fasciatus)

Centre right Ptyas mucosus

Lower right One Thai Cobra
swallowing another

Photographs: Paul Hobson

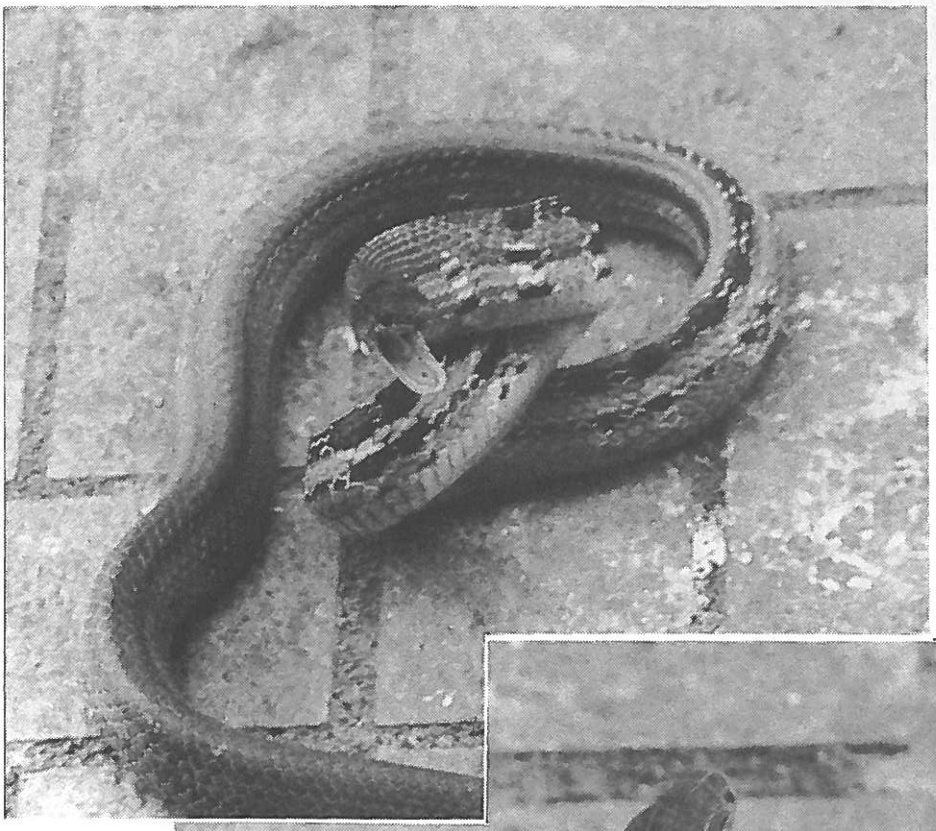


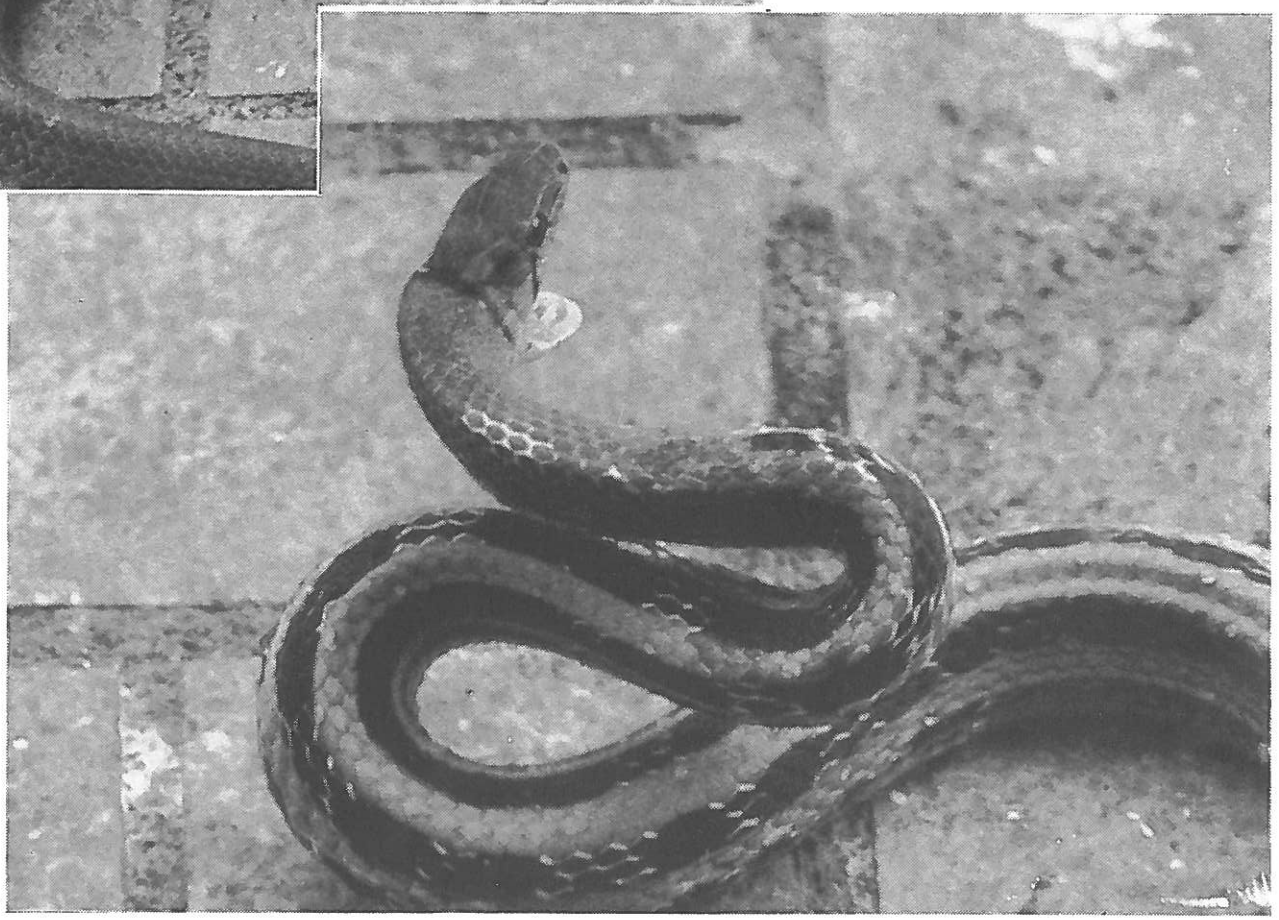




In the following days we saw more fascinating and beautiful aspects of Bangkok, two outstanding for sheer beauty being the Royal Palace and Barges. On a more sour note, we spent a short time at a snake show. These shows are purely for tourists and the snake's welfare is of secondary importance. The performance we witnessed consisted of two men in a ring handling a few common snakes. At one point they toyed with a Copper-headed Racer (Elaphe radiata), a common and aggresive non-venomous snake (see below). In Thailand it is sometimes known as a 'jumping snake' as it launches itself to bite its antagonist. It cannot actually jump but it projects its body a considerable distance. Later one man picked up three aggressive Mangrove Snakes (Boiga dendrophila), one in each hand and the third in his mouth (see front cover picture). The finale was a large 15 foot Reticulated Python (Python reticulatus) which launched itself clumsily at every movement. I found the show quite sickening but in Thailand, snakes and animals in general are not held in high regard. A great many are killed outright, both venomous and non-venomous; some of the larger pythons are eaten but snake skin products form a large part of many markets. Throughout our stay we must have seen hundreds of stuffed Thai Cobras for sale together with preserved python skins.

Another example of snake abuse, though thankfully one which we did not witness, is in the central Bangkok park where a number of snakes are bled alive every morning. The blood is mixed with whisky and drunk as a 'cure-it-all' treatment. The

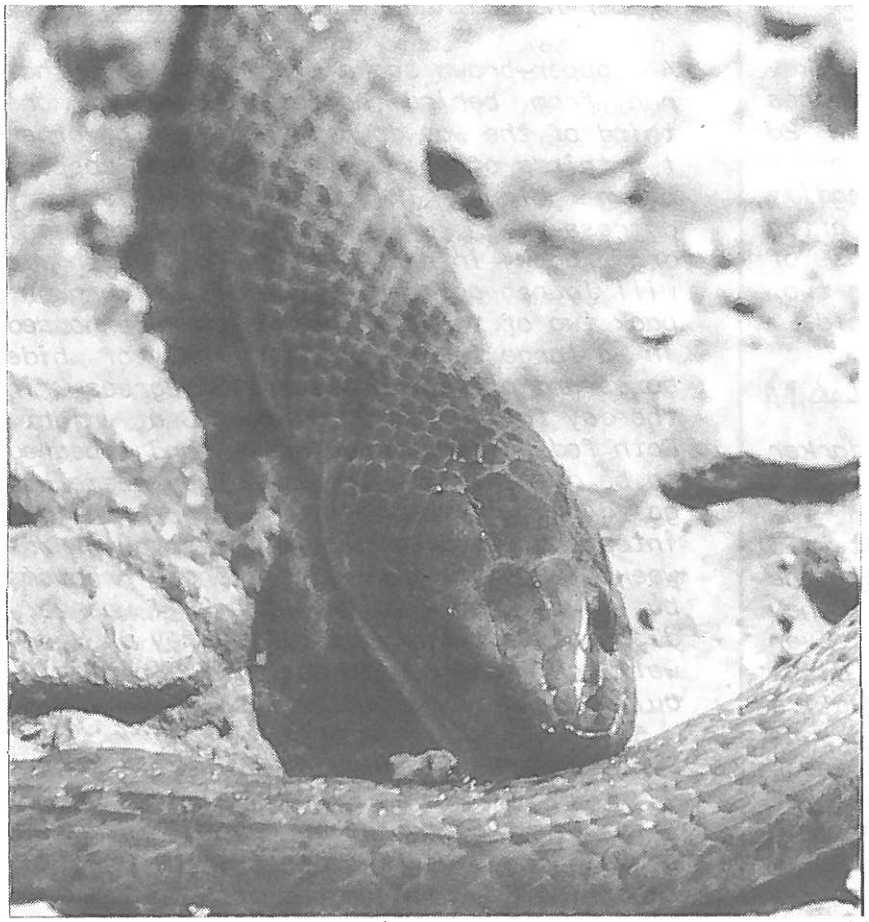




Above & right

Elaphe radiata

Photo-graphs Paul Hobson



Rhabdophis subminiatus (found in the area around Chiang Mai). Photo: Paul Hobson

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snake is then skinned alive and the body sold for food. I would hope that the work of the Institute will spread to these people and a more caring attitude will follow, stopping needless suffering and cruelty.

For the rest of our stay in Thailand we split our time into two weeks relaxing on the coast and one week touring in northern Thailand. The coast revealed very few snakes, only one dead Thai Cobra in fact. However, we did see many house geckos wherever there was a light at night. These charming creatures spend their time, each with its own territory, waiting for insects. These are pounced on with great gusto and eaten lustily, lips are smacked and the original position is taken up again, in waiting for the next victim.

Most of the habitat in the area in which we were staying was lowland interspersed with rice paddy fields and small woodlands. This is heavily populated and virgin habitat is in short supply. The week we spent in the north was in great contrast. We took an overnight train from Bangkok to Chiang Mai, Thailand's second city (but as similar to Bangkok as Salisbury is to London). Chiang Mai is quiet, clean and much more peaceful than Bangkok. We hired bikes and travelled around the area, the major habitat being tropical forest, warm and very humid, perfect for Red-tailed Tree Racers.

The area is hilly and the temperature drops noticeably as you ascend, which must affect the local snake population. It is important to determine exactly where any snakes are caught and the altitude, as this will affect their requirements in the terrarium. Again we only saw one snake, a type of grass snake (Rhabdophis subminiatus).

As a youngster I had a fascination with butterflies and I remember buying packets of large-winged exotic butterflies from various dealers. I now found it far more enchanting to see the species flying around. Some are enormous and possess the most vivid colours.

Regrettably we had to leave and return to Bangkok to collect the snakes I had ordered from the dealer. He had not (surprise, surprise) managed to get the other species so I chose from what was present. I brought back the following;

2 Copper-headed Racers (Elaphe radiata)
2 Sunbeam Snakes (Xenopeltis unicolor)
3 Red-tailed Tree Racers (Gonyosoma oxycephala)
4 Green Tree Snakes (Chrysopelea ornata)
3 Rainbow Water Snakes (Enhydris enhydris)

Bringing the snakes back proved to be no problem. The licences were effective and my passage through customs was smooth and easy. Not one snake died on the way and I had optimistic hopes for their survival. Before establishing each snake in its own terrarium, I de-wormed them all with stomach tubes. This I repeated a few weeks later by adding the de-worming solution to their food.

It is now some months since I returned from Thailand and I have had some disappointments with my Asian snakes. Before I left England I corresponded with Klaus-Dieter Schulz and he left me in no doubt about the likely outcome for most of my specimens. I have listed below some notes on each species and how it has fared in captivity.

Green Tree Snake (Chrysopelea ornata)

A slim, beautiful green and black snake. These were housed with climbing branches and a water bowl at a temperature of 28 degrees C. One snake died shortly after our return but the other three ate readily on new-born live mice. Another died after about a month with no obvious signs of illness. Some weeks later the other two, which still appeared healthy, were sold.

Rainbow Water Snake (Enhydris enhydris)

A small brown water snake with darker lines running down the body. These were housed in an aqua-terrarium with the temperature of the water kept at 25 degrees C. Upon closer inspection all the snakes had disfigured mouths and they quickly developed a fungal growth. Even after repeated treatment all three died. None had shown any interest in food, alive or dead. I was very disappointed and reasoned that the snakes were in poor condition in Thailand and the stress of the journey was too much for them.

Red-tailed Tree Racer (Gonyosoma oxycephala)

These are very attractive, slim green snakes, which grow to .9 to 1.5 metres in length (3' to 5'). Each has a brown tail and a blue tongue. Two of the three developed a cold and they were treated accordingly. Both recovered but one developed mouth rot and, this time, did not recover. The remaining two snakes appear healthy and feed readily on dead chicks, to these I add vitamin supplements. They are housed in a tall terrarium with climbing branches and a water bowl, at an air temperature of 26 to 30 degrees C. I do not spray them very often as both animals will drink from a water bowl.

Copper-headed Racer (Elaphe radiata)

A copper-brown snake with dark lines that run from behind the head to about one third of the way down the body. The other two thirds of the body are a light copper-brown colour. This rat snake is very aggressive and will puff up its throat and draw back into an S-shape from which it will launch and strike rapidly. I brought back two of these snakes which were housed in a large terrarium with plenty of hide boxes and a temperature of 28 degrees C in the day falling to 25 degrees C at night. Both fed well and regularly, and appeared to be doing very well. Then they seemed to go down with a cold, mouth rot and an intestinal problem all in the space of one week. They were treated for these problems but I was unable to save them. I was very disappointed as, initially, they did very well and seemed to adapt to captivity quite well.

Sunbeam Snake (Xenopeltis unicolor)

This is a stout-bodied brown snake which shows a superb irridescence when caught in the light. These snakes are adapted to a

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One of the handlers at the snake show with the three Mangrove Snakes (Boiga dendrophila) Photo: Paul Hobson



burrowing existence with small eyes situated on top of the head. I keep both in a terrarium filled with peat to a depth of six inches and a water bowl. They spend most of their time buried in the peat which is kept damp at one end of the tank. The air temperature is 26 degrees C. Both have shed since I brought them back and feed readily on dead pink rats. Both appear well and have never attempted to bite.

*****

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The Snakes of Transcaucasia
Part III *Eirenis, Telescopus* and *Vipera*

by Dieter Schmidt

In parts I and II of this series I have described the climatic and geographic conditions prevalent in Transcaucasia as well as the species Typhlops, Eryx, Natrix, Coluber, Elaphe and Coronella to be found there. In this final part I shall describe the other species of Eirenis, Telescopus and Vipera which were found on our second expedition to that area.

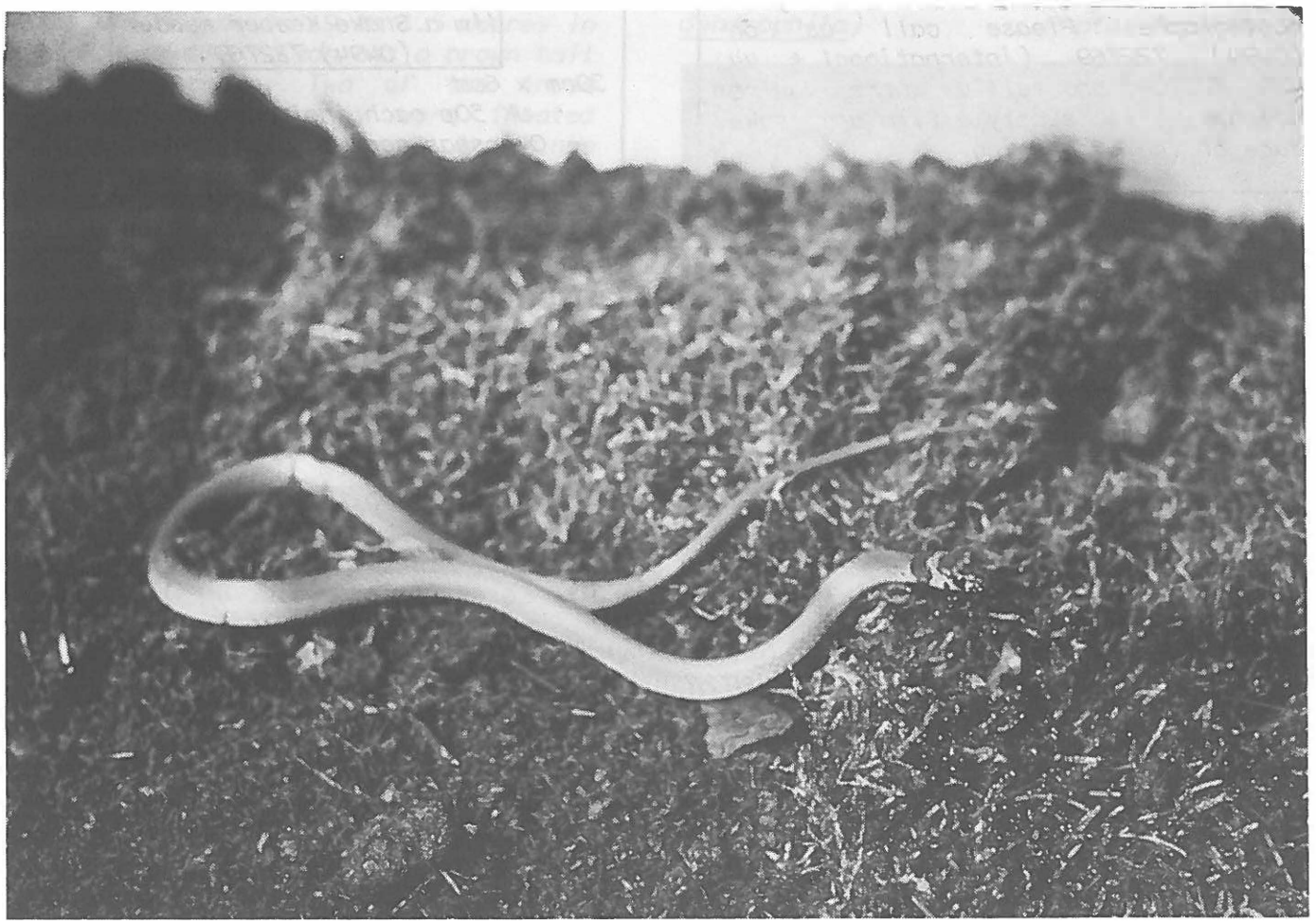
The snakes which belong to the genus Eirenis are interesting small snakes. All ten Eirenis species are at home in south-west and central Asia. Only one species reaches north-east Africa (Peters, 1967). The three representatives of this genus which are to be found in Transcaucasia were all seen by members of our expedition, in steppe-like territory, and, were mainly discovered below rocks. In general loose-lying rocks, hardly the size of tea plates, served as the hiding places for these burrowing snakes. The smallest of these snakes, which is only found in the vicinity of Yerevan, is the Collared Dwarf Snake (Eirenis collaris) which, according to Bannikov et al. (1971), reaches a length of up to 32 cm, is grey-

brown in colour and has a black collar some four scales wide. As with all Eirenis species the iris is black. These snakes can also be found in vineyards, gardens and fields. Rotter (1958) reported on a snake which was found on a grassy slope and which measured 47.2 cm. The rarer Armenian Dwarf Snake (Eirenis punctatolineatus) occurs especially in southern Armenia and reaches a length of 40 cm (Bannikov et al. 1971). This Dwarf Snake has no markings on its head, is a brownish colour and has a pale spotted pattern along its back. It was also found in the vicinity of Yerevan.

One of the most frequently found snakes in the Tbilisi area is the Asia Minor Dwarf Snake (Eirenis modestus modestus) (see photo below). It lives in south and southeast Georgia, Armenia, Azerbaijan and Dagestan. Rotter (1958) found the Asia Minor Dwarf Snake at the same place near Tbilisi where he found the Collared Dwarf Snake, and also beneath a rock. The young of these snakes are a uniform grey-brown with a black and yellowish marking on the head. The snake becomes paler as it becomes an adult and reaches a length of around 60 cm.

The basic food of the Eirenis species is very interesting. They feed mainly on insects, spiders and scorpions, but also eat worms and small lizards. Other competitors for hiding places under rocks are spiders (Galeodes), ants and scorpions (Buthus caucasicus) especially in the Tbilisi and Yerevan areas. However large, fully-grown Dwarf Snakes are only able to overpower and eat very young scorpions. According to Bannikov et al. (1971), snails are also eaten. Feeding these snakes in the vivarium is however more difficult than it would appear. Those Eirenis modestus kept by Molle would only eat grasshoppers, cockroaches and lizards. A specimen kept by Mertens ate dead insects and ate frequently but never a great amount at one meal. Three or four small lizards or around ten grasshoppers formed one meal (Klingelhoffer, 1959). As Hemmerling et al. (1970) reported, a female E. modestus caught near Tbilisi at first refused all food and had to be force-fed with a food purée. However, it finally accepted earthworms voluntarily.

Like the Montpellier Snake, the widely distributed Caucasian Cat Snake (Telescopus fallax iberus) belongs to the



Asia Minor Dwarf Snake (Eirenis modestus modestus) Photo: Dieter Schmidt

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family of opistoglyphic snakes (Boiginae). Although the venom of the Cat Snake is quite effective on smaller animals such as lizards, generally it cannot harm a human being with its bite because only its front teeth usually connect (Vogel, 1963). Klingelhoffer (1959) states that when caught it usually coils itself around the fingers before it bites. This snake, which according to Vogel (1963) reaches a length of 70 to 100 cm, can be recognised by its eyes with their vertical slit-like pupils. It is a glossy grey colour with black markings. Cat Snakes prefer sunny slopes, road sides, piles of rocks and old stone work. The Cat Snake can be found quite often in these biotopes around Lake Tbilisi and Mzcheta. These snakes are both nocturnal and diurnal and eat mainly lizards. They will however, if given the opportunity, eat mice, birds and smaller snakes. Animals kept in captivity usually refuse mice although fur was found in the excrement of newly-caught animals. Tying a mouse or a strip of beef heart to a food lizard has proved to be successful with these snakes. The young probably also feed on the numerous Agama caucasica and Lacerta strigata which occur amongst the rocks surrounding Lake Tbilisi. According to Popp (1963) a lizard which was bitten by a Cat Snake died after two minutes. Klingelhoffer (1959) reported on the case of a Grass Snake, some 90 cm long, being eaten by a Cat Snake. It died after three hours and was then devoured.

These snakes are very interesting to keep in a vivarium, but one should never forget to treat them with due care and attention. According to Nietzke (1972) Cat Snakes are not very sociable and they should therefore be housed seperately.

Keeping Vipers in captivity however is not recommended for everyone. We managed to find three of the subspecies listed by Bannikov et al. (1971) for Transcaucasia. The smallest representative of the genus Vipera which was found was the more colourful subspecies Vipera ursini renardi (Ursini's Viper) which occurs from eastern Europe to the central Asian regions of the Soviet Union. Usually it is only 35-45 cm long but, according to Bannikov et al. (1971) it can reach a length of 57 cm. Those which we saw had a dark-grey zig-zag band on a lighter grey background and looked almost identical to a Common Adder (Vipera berus). In the Caucasus this snake occurs up to an altitude of 2500 metres. Mouseholes are predominantly used as



Caucasian Cat Snake (Telescopus fallax iberus) *Photo: Dieter Schmidt*

hiding places. Unlike other Vipers, they do not coil themselves into a circle when basking but rather lie in a zig-zag line (Klingelhoffer, 1959). We found several specimens lying in this position under rocks amongst a wonderfully-flowered heath near Lake Sevan at altitudes of 2000 metres. The bite of this snake is only mildly dangerous to humans. Its food consists of small rodents and lizards.

Much more impressive than Vipera ursini renardi is the Ottoman Viper (Vipera xanthina raddei) with a length of 65-75 cm (up to 110 cm) and somewhat washed-out reddish dorsal markings on a grey background. It is also called Radde's Viper or the Armenian Adder. This Viper lives exclusively in the mountains and occurs at altitudes from 1000-3000 metres (Bannikov et al., 1971). Peters (1967) describes how in Armenia, in the vicinity of Aragaz at an altitude of 2000 metres, there is a 'Snake Mountain' in whose basalt caves hundreds of Vipers hibernate each year. It would appear that this Viper is common around Gechard in the Gechan mountains. In a stream we found the body of one specimen which we suspected had been beaten to death. The Ottoman Viper feeds on rodents, birds and lizards. It is also thought to eat insects. Somewhat larger still than the Ottoman Viper is the West-Asian Blunt-nosed Viper. This Viper occurs from the south of the Soviet Union eastwards and is represented in Armenia by its subspecies Vipera lebetina obtusa. This snake generally grows to a length of 100 cm, but the significantly larger males can reach a length of 1.6 metres and a weight of 3 kg (Vogel, 1954).

The West-Asian Blunt-nosed Viper has a grey ground colour with large brown dorsal markings. The subspecies vary in colour and markings. Blunt-nosed Vipers, especially the extremely belligerent males, are very dangerous to humans. Their bite leads to death if immediate medical assistance is not available. During our expedition we saw these Blunt-nosed Vipers in the steppe regions around Yerevan; they also occur up to altitudes of 1500 metres. Vogel (1954) has written in great detail about keeping Blunt-nosed Vipers in captivity. His animals ate white rats and sparrows. Being predominantly nocturnal they only hunted at night. During the day they were relatively sluggish and less dangerous. The young prefer to eat lizards.

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This series of articles is not intended in any way to be a substitute for a guide to the snakes to be found in Transcaucasia nor does it set out to give explicit information on the lifestyle of these animals either in the wild or in captivity. It is intended purely as an impression of the wealth of herpetofauna in the Soviet Union.

In their book about the amphibians and reptiles of the Soviet Union, Bannikov et al. list more than 40 species and subspecies of amphibians and over 180 species and subspecies of reptiles which occur within the borders of the USSR. The Soviet Union therefore offers an enormous field of activity for the herpetologist.

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This three-part article, 'Schlangen in Transkaukasian' was originally published in the magazine 'Aquarien-Terrarien. This English translation by John Hackworth has been printed by kind permission of the author.

Asian Rat Snakes of the *Elaphe* Genus
Part XI *Elaphe helena* (Daudin, 1803)

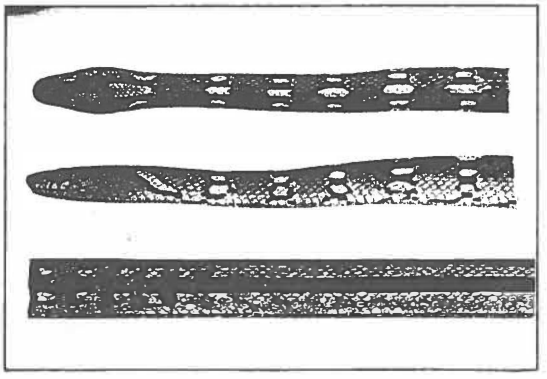
by Guido Niehaus & Klaus-Dieter Schulz

The magnificent 'Trinket Snake'(or Kattu Pambu' in Tamil) cannot complain about having a shortage of appropriate names. In Sri Lanka it is also called 'Mudu Karawala' and Bröer & Engelhard (1981) also call it the Indian Jewelled Snake. In spite of its many common names, the Latin term 'helena' explains everything. The daughter of the god Zeus was the most beautiful woman in Greek mythology. Why, therefore, should a snake not be described as the 'most beautiful snake'? It is a matter of taste and disagreements have caused wars! Many herpetologists are, however, of the opinion that even though it appears to be relatively uniformly coloured, Elaphe helena reflects a certain unique beauty. By 'reflects' we mean that, especially after sloughing, 'helena' takes on a wonderful sheen reflecting the colours of the rainbow. Even under normal circumstances the light brown body has a blue sheen.

Description
Because of its relatively large distribution range it is quite possible that there are various subspecies but, to date, no-one has really concerned themselves with this possibility. At present only two forms of Elaphe helena are recognised.

1. The Eastern Indian Form
The light brown body is interrupted at regular distances by white-outlined scales which give the impression of a continuous zig-zag stripe. On the neck there are four narrow, black longitudinal stripes. The first third of the body has a number of black and white eye-marks. At the centre of the body these change into two dark brown longitudinal stripes which run to the tail. Behind each eye there is a narrow black stripe. The ventral surface is a uniform cream colour. The golden yellow eyes have a round pupil. In older animals the colours become less prominent and the females especially appear to be completely dark.

2. The Western Form
This variety is different from that described above in having several transverse bands consisting of joined, black-banded, yellowish or white rings which become paler towards the centre of the body. In addition, just behind the head there is a black collar bordered with white or yellow (see illustration).



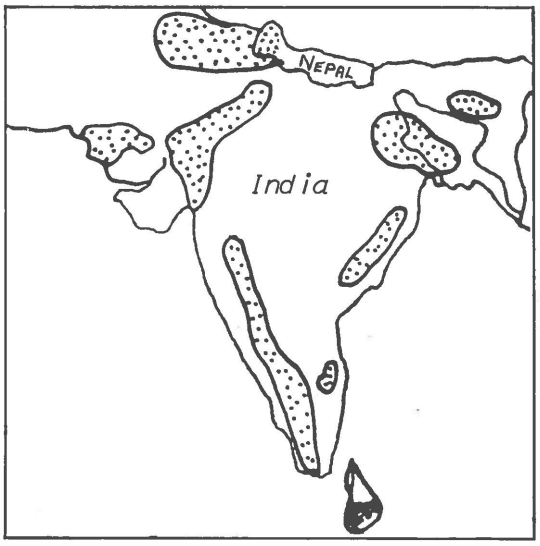
Western Indian Form after a colour plate by Wall (1913).

Albinos (Gohil, 1983) and melanistic specimens (Wall 1913) are also known. Wall mentioned that the inside of the mouth of an animal from Nilgiris (India) was black. In Sri Lanka this snake is known to the local Sinhalese-speaking population by the name of 'Kata Kalua' (Black mouth) which underlines the fact that Wall's observation was not an isolated incident.

Elaphe helena has pronounced sexual dimorphism; with a length of 120 to 130 cm, the females are significantly longer and stouter than the males which only reach 90 to 100 cm. Deraniyagala (1955) describes a female from Sri Lanka which even reached a length of 150 cm (5').

Distribution

The distribution of E. helena in India is limited to the coastal regions such as in the provinces of Assam (Naga and Khasi Hills), Kashmir and Sikkim. The snake also lives in Bangladesh, Southern Pakistan, Nepal and on the island of Sri Lanka. It was found at altitudes of over 1500 metres (Kilkotagiri, India) by Wall (1913) and at 1525 metres (Tansen, Nepal) by Fleming (1973).



Distribution range of Elaphe helena
K-D Schulz

Habits

Wall describes this rat snake as an inhabitant of the bush and rain forest edges. Whitaker (1978) found it on warm days in termite hills and hidden under rocks and stones, whilst on cooler days they were to be found more in trees and small bushes. The snake was also frequently found on cultivated land and even in houses (Wall, 1913). Wall describes this snake as being active at dusk and during the night and as being very difficult to find during daylight hours.

One of the present authors (Niehaus) had several opportunities to observe and study Elaphe helena in its natural habitat in Sri Lanka. Here the snake lives mainly in the south-west and central part of the island. It has not yet been found in the dry northern part of the island. The favoured biotopes are the edges of rain forests with low covering bushes. It is found especially frequently in the vicinity of human habitation where it no doubt keeps the local rodent population in check. Most adult specimens were seen at night whilst young animals could also be found during the day. Elaphe helena is not very shy and because of its peaceful behaviour and even temperament it is very easily caught when it generally does not react angrily. The threatening posture, which is typical of the genus and similar to that of Elaphe radiata (vertically flattened body coiled into an S-shape), has only been seen very rarely. It is worthy of note that Niehaus predominantly found female animals.

The food of E. helena consists of reptiles, frogs and small mammals as well as birds and their young. Young E. helena supposedly feed mainly on insects and small lizards (Whitaker, 1978).

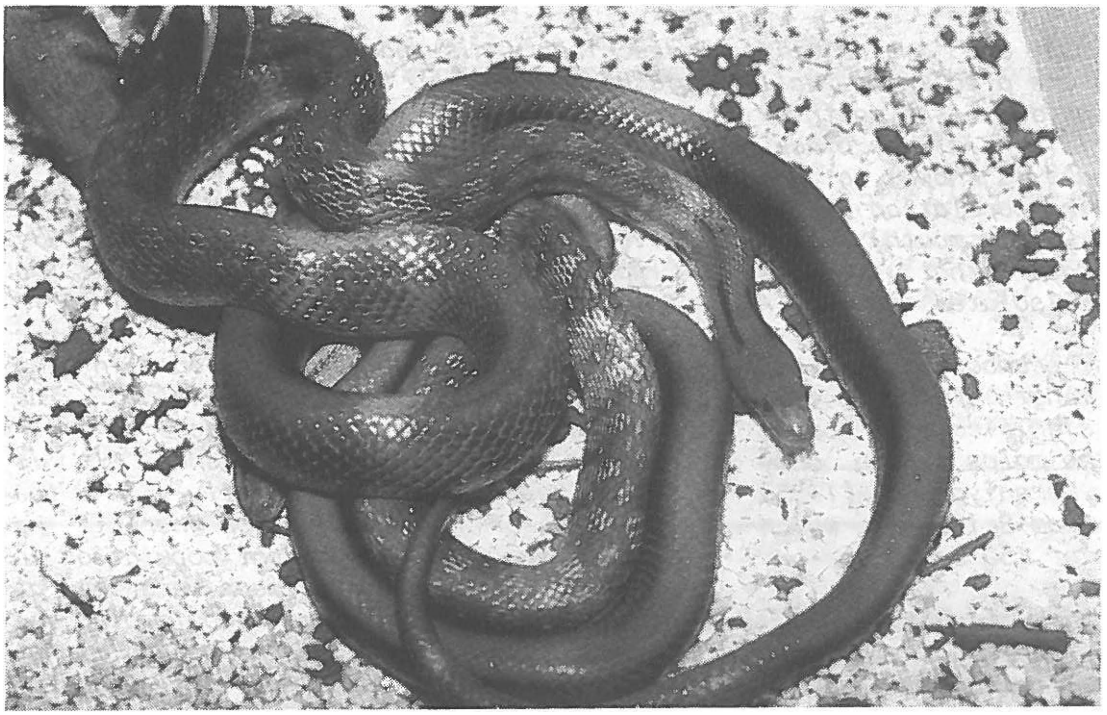
The breeding season extends over the whole year during which a maximum of eight eggs are laid in each clutch (Whitaker, 1978).

Maintenance in the Vivarium

Because of its small size Elaphe helena is an ideal candidate for a small vivarium: A vivarium of 60 x 60 x60 cm has been proven by Schulz to be ideal for a pair. As with other Elaphe species the furnishings should consist of several climbing branches and, for example, flat rocks which offer hiding places.

Every herpetologist has his own ideas and experiences with substrate. For this reason the choice is left to the individual. The authors have both used a sand/peat mixture as well as pure peat.

A medium-sized water container should always be present. This serves not only for drinking purposes but also helps to increase the atmospheric humidity, which ideally should be between 70 and 80%.



Photograph of an Eastern Indian Form of Elaphe helena

Photo: K-D Schulz

Shortly before sloughing it is strongly advised that the vivarium be sprayed with lukewarm water. If the snakes are kept in an environment which is too dry, this can easily lead to sloughing difficulties. Lighting is provided by fluorescent tubes which are in operation for 10 to 11 hours daily. In a heated room these usually serve to maintain the desired temperature of 25 to 28 degrees C without having to resort to additional localised substrate heating. Temperatures which are too high are also uncomfortable for E. helena. At night the temperature can safely be reduced to 18 degrees C.

Animals which are reared in the vivarium are generally quite peaceful and allow themselves to be handled with ease. It is worth mentioning here how rigid the snakes can become. Sometimes the body can actually be 'shaped' without immediately recoiling back to its original position. At first newly-caught specimens are quite shy but they settle down to captivity remarkably quickly.

As mentioned by Bröer & Engelhard (1981) E. helena enjoys climbing on the branches which corresponds with the observations which Whitaker was able to make in the wild. If it is too dry in the vivarium the snakes go to the ground and seek out a moist place in which to bury themselves (Niehaus). Their activity period is mainly at night and early morning. The daylight hours are usually spent in the branches or in their hiding places.

Food, for which we use laboratory mice, is taken at any time of the day. It should be noted here that in general the larger females eat more than the males. It can happen that if the prey animal is too large the males simply ignore it or kill it but do not eat it. These observations concur with those of Bröer & Engelhard. Food is not always refused during the sloughing period. E. helena prefers live as opposed to dead prey. The prey animal is quickly seized and constricted with several body coils. Our experience is that medium-sized mice are preferred by both sexes.

Because this is a tropical species it is not necessary to hibernate it at lower temperatures.

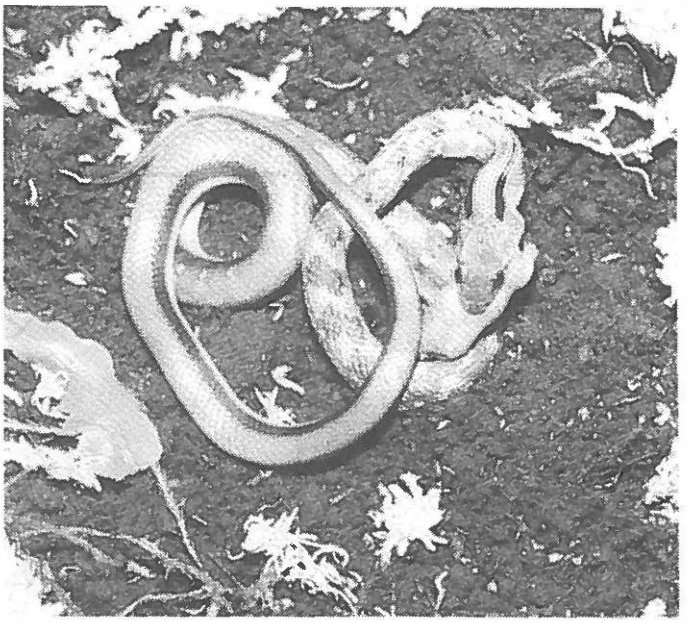
Reproduction
If the animals are kept under suitable conditions it is not difficult to breed them and this has been achieved on several occasions. The breeding season in the vivarium extends over the entire year, during which a maximum of four clutches of eggs can be expected from the female. The size of a clutch varies between two and seven eggs.

Mating follows the same procedure as other Elaphe species in that the male glides over the female with jerky movements rubbing his head against her body. As a rule the actual copulation lasts around one hour. Eggs are especially frequently laid during the months of September and December.

Because of their small size and the small



Newly-hatched Elaphe helena from Sri Lanka
Photo: G. Niehaus



A one month old Elaphe helena feeding
Photo: G. Niehaus

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number of eggs laid, it is difficult to determine gravidity in the females. The females continue to eat until shortly before the eggs are laid, whilst during mating activity the males refuse any kind of food.

It becomes obvious that the females are about to lay because they become very nervous and active and burrow in the substrate. If they do not find a suitable egg-laying site it can happen that the eggs are laid in the dry substrate or in the water bowl. For this reason it is advisable to have a container of moist substrate in the vivarium for the whole year.

After being laid, the elongated eggs weigh on average 10 g and measure around 18 x 35 mm. They have been successfully hatched using several methods. Bröer & Engelhard (1981) for example, hatched the eggs in a poultry incubator at 29 degrees C and an atmospheric humidity of 100%. The eggs were placed on a wire-mesh framework and the incubation lasted 63 to 67 days.

Juschka (verbal report) hatched the eggs in vermiculite at a temperature of 24 to 28 degrees C and 100% atmospheric humidity. This took 60 days.

One of the present authors (Niehaus) hatched the eggs in a mixture of peat and sphagnum moss with a daytime temperature of 28 to 30 degrees C and a relative humidity of 100%. The young hatched after 50 to 70 days depending upon the temperature. Within three years, 61 young were hatched from two females, a hatching rate of 100%. Only one hatchling was unable to emerge from the egg so it was removed and was found to be totally incapable of survival.

The colouring of the hatchlings is identical to that of their parents but their markings are much more strongly defined. Immediately after hatching they measure on average 25 cm. The first voluntary feeding usually results after 14 to 18 days. It is possible that pink mice are not recognised as food by these young snakes; therefore we advise that the babies be teased with a 'pinkie' until they finally bite, after which food is normally taken voluntarily. If possible force-feeding should be avoided. With good feeding Elaphe helena can become sexually mature within one and half years.

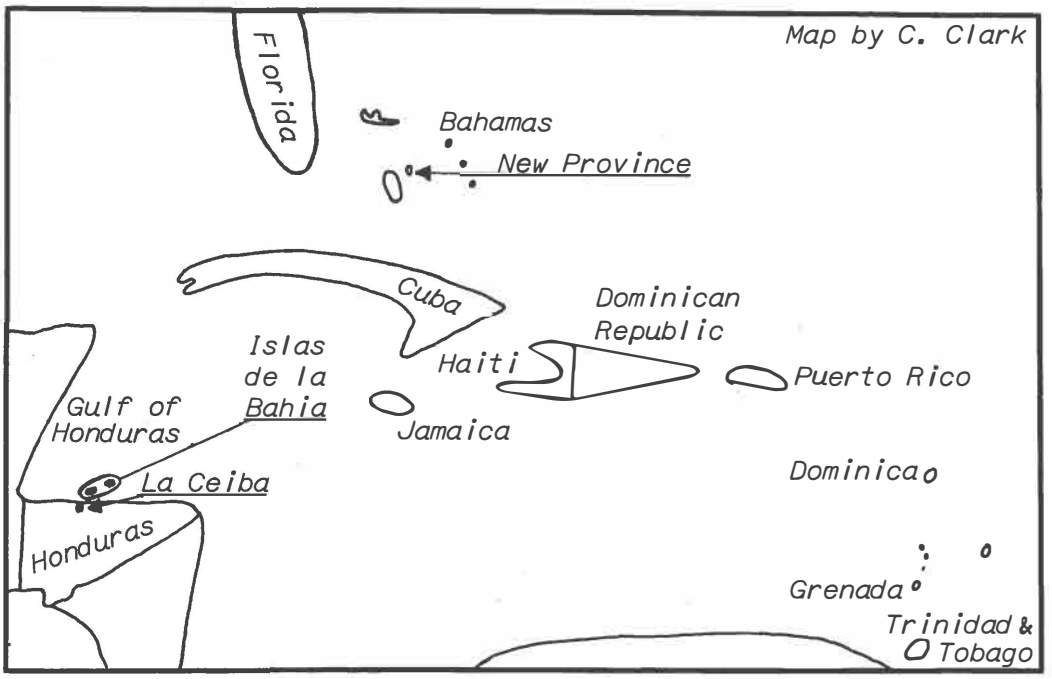
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Asian Rat Snakes of the Elaphe Genus, Part XII, Elaphe conspillata will appear in next month's issue.

This series of articles, 'Die hinterasiatischen Kletternattern der Gattung Elaphe', was originally published in the magazine 'Sauria' beginning in 1985. Part XI, featuring Elaphe helena appeared in 'Sauria' No.4, 1987. This English translation by John Hackworth has been printed by kind permission of the author(s).

Hog Island Boas (*Boa constrictor* enigma?) Update

by Colin Clark



Since my last article in Snake Keeper (Vol. 2, number 3), I have heard a few new ideas as to the origins of the Hog Island Boas. I have taken to calling these snakes 'Boa constrictor enigma' until the puzzle of their origin and sub-species is solved. Since my article, no less than three places called Hog Island have come to light. I have also been told that the boas come from the island of Roatan, north of Honduras in the Islas de la Bahia, approximately 17 degrees N 86 degrees W. Coincidentally this is also the approximate location of the first island found, described to me as being 22 miles NNE of La Ceiba, Honduras. One source compares the general build of these boas to that of some of the West Indian representatives of Epicrates.

The second island is found off New Province in the Bahamas, approximately 25 degrees N 77 degrees W and the third is found approximately 12 degrees N 61 degrees W off the southern end of Grenada. Both of these islands are relatively close to the Dominican Republic area. As I stated in my last article, although reported to have come from an island north of Honduras, the shipment contained reptiles and amphibians associated with this area. I personally do not wish to express an opinion at this moment in time as to their origin.

I would like to thank John Riley of Coventry and those people who have provided me with sloughed skins of Hog Island Boas for my scale-count survey, the results of which will be published in Snake Keeper when completed.

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Editor's note. Further information on the mysterious Hog Island Boa is welcome. Readers who wish to help Colin with his scale-count survey can send sloughed skins to Colin via Snake Keeper.

A Guide to Vivarium Heating Techniques

by Chris and Marcia Martin

In this article we give our opinions why the following systems of heating are good or bad. We have not put them in order of preference.

Light Bulbs or Spot Lamps

This form of heating must be regarded by any serious herpetologist as barbaric. The reason we come to this conclusion is because usually the bulbs are operated by a thermostat twenty four hours a day. Just imagine if you were in a room for three months (with food and water) and a strong light was turned on and off throughout the day and night. After a short time you would be a bag of nerves. Just imagine what your snake's mental state will be. You can reduce the stress by several methods. The best way is to provide a hide box for your animal but then you may never

see it. What happens if your snake becomes ill? You may never realise it is unwell until you find it dead. The life it leads will not be a pleasant one. Would you like to go through life having to shield your eyes from a bright light? What chance will you have of breeding your snake? We know of some people who keep the light bulb on for twenty four hours each day! This solves the problem of the light flashing on and off but how do you control the vivarium temperature? During the winter the vivarium could well be very cold with the result that your snake catches a cold and dies. During the summer you might find that on a very hot day your vivarium would overheat and your snake dies from heat exhaustion. Another problem you have to overcome is how to guard the light bulb. If your snake coils around the bulb it will get very badly burnt. Light bulbs are very fragile and if the snake breaks the bulb it may well be cut very badly or, worse still, electrocuted.

Underfloor Heating Systems

First let us say that if you use an underfloor heating system with a local hot spot provided by a good quality dull heat emitter situated overhead you may have a very good system. What we frown upon is systems that have all or part of the floor heated although partial floor heating is better than whole floor heating. We don't like underfloor heating for the following reasons. A snake's digestive system must be at the correct working temperature. If it is too low the animal will have trouble digesting its food. The snake's stomach can cope with small amounts of food but if you feed it too large a mouse or too many mice at the same time, the mice will go rotten before the snake's stomach can digest them with the result that the animal will regurgitate the food. If the floor is hot, as it will have to be to warm the air in the vivarium, the snake will also have problems, for example, terrible sloughing difficulties. You may supply a branch so that the snake can escape from the heat but it can't spend its whole life in a tree unless it is a totally arboreal species. If you only have half or part of the floor heated the snake can regulate its temperature but it is still a chancy method. What happens if your snake does not feel secure enough to come to the heat pad? It will stay cold. A cold snake will, sooner or later, become a dead snake. Another point about underfloor heating is the safety aspect. We have already heard from one Snake Keeper reader how dangerous this form of heating can be (Snake Keeper Volume 1, Number 11).

Tubular Heaters

This is the type of heating we used when we first started keeping snakes in March 1976. The main problem with this form of heating is that the heater is usually enclosed in a box and the snake sometimes lies on it. When we used this system the snakes sometimes defecated whilst on the box and the excrement passed through the ventilation holes into the compartment containing the heater. This causes a hygiene problem not to mention a smell. We found that the efficiency of the heater is very poor. The heater is confined in a box that gets very hot as the heat can only pass out through the ventilation holes. Some people mount the tube on the roof of the vivarium. However, mounted like this the heater becomes virtually useless. If you think about the shape of the tube only a small proportion of the heat is directed downwards. The rest of the heat warms the roof or the open space at the top of the vivarium.

Infrared Dull Heat Emitters

There are two forms of these heaters, the round cylindrical spot heaters and the trough wide-beam elements. The problem with the cylindrical type is that they are spot heaters and they beam most of their heat onto a very small area. Controlling the vivarium temperature using this form of heating is very difficult. The best form of heating we have found is the wide-beam element. As the name suggests, this form of heater is a flood type. This means that the heat is beamed out over a wide area in the vivarium. Being able to heat the vivarium in an overall area is far more natural for the snake and controlling the temperature is made far easier. As the name suggests, these elements only give out heat and no light. As the trough type elements fit into a reflector the efficiency of the elements is very high. This means that consumption of electricity is kept as low as possible.

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Anyone is most welcome to write to us for advice enclosing an sae or visit us (please telephone first to make an appointment). Chris and Marcia Martin, 18 Ballinode Close, Cheltenham, Glos GL50 4SQ. Telephone (0242) 573477

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Rates: Private advertisements (not exceeding 40 words) are printed without charge. Trade advertisements 10p a word. Deadline 20th day of the month. Private advertisements are accepted by telephone.

FOR SALE

Captive-bred Corn Snakes, Grey Rat Snakes and Yellow Rat Snakes. All 1988 hatchlings, £17 each. Ophidia (Herpetological Supplies). Telephone Hemel Hempstead 41453 or Oxford 790832.

Hog Island Boa, £150. Tel: (0895) 833734.

Common Boa, 9', in very good condition. Feeds well and is extremely tame. Vivarium available with snake. £150 for boa, £30 for vivarium. Telephone Whitehaven 63693.

Captive Bred Indian Pythons. Eight months old. Excellent condition. Please telephone Bristol 671557.

Female South American Boa Constrictor, 5', £160. Phone Graham on (031) 225 3153.

For sale to dedicated snake person. Male Boa approximately 4'+. Complete record of all meals taken in my possession (2+ years). Feeding on dead rats, mice etc. Never a live meal offered! Perfect handleable snake, ideal for breeding programme. Can deliver to good home. Offers invited. Contact Col G. Pywell-Fox, 24 George Street, Driffield YO25 7RA.

Snake Probes. Set of three - 1mm, 1.5mm & 2mm. £18 per set. Tel: The Reptile-arium (01) 367 9897.

Beautiful pink-bellied Elaphe guttata x rosacea intergrades. Telephone Dave Gales on (091) 251 2151 or (0289) 88277 (Tyne and Wear).

Sale or exchange - 8' female Red-tail Boa. Will swap for male 6'+. Telephone Neil Hardwick on (0623) 28023 (Mansfield).

Reticulated Python (Python reticulatus). Approximately 7'. Marvellous eater on dead food. Probably female. Excellent condition but unfortunately fallen out with Indian Python. £85. Telephone (0209) 213211 or, preferably, evenings on (0209) 215524 (Redruth).

Female Burmese Python. 8'6" long. Good condition and good eater but will only eat live food. £80 or will swap for male same size or bigger. Tel: (0484) 547207.

A pair of Hog Island Boas, 4.5-5'. Feeding on mice, chicks and rats. Perfect condition. £220. Contact Pete on (0793) 611273 (Wiltshire).

Royal Python, 3' long, healthy male. Very friendly. Complete with 3' vivarium containing all necessary extras (ceramic heater, thermostat etc.) £110. Tel: (916) 685957 (Canvey Island).

Female Carolina Corn Snake, 3.5', feeding well, £65. Female Northern Pine Snake, 2.5', good temperament, £45. Female Royal Python, 3.5', £40. Has bred in captivity. Golden Tegu, female, snappy when woken but otherwise ok. £40. Contact Jim on (0252) 702714 (Surrey).

100's of books on fish, reptiles and amphibians, cats, dogs, birds, bird-watching & poultry. Free catalogue. Bures and Son, PO Box 377, Coulsdon, Surrey CR3 1YU. Tel: (0737) 556139

WANTED

Male adult Yellow Rat Snake for breeding. A healthy feeding specimen will be given a luxurious home in one of my spacious purpose-built vivariums. The snake will be guaranteed first class care throughout its life. Adult female Great Plains Rat Snake (Elaphe guttata emoryi). Must be healthy and feeding well. Contact Col G Pywell-Fox, 24 George Street, Driffield, YO25 7RA.

Brazilian Rainbow Boas. Telephone Neil Hardwick on (0623) 28023 (Mansfield).

I.H.S. West Midlands Branch
1st Herpetological Fayre

It is proposed to hold a one or two day Fayre on 20th - 21st May 1989. Private and commercial dealers of livestock, books, equipment etc. are invited to request preliminary details from:

Kevin J. Hingley,
22, Busheyfields Road,
Russells Hall,
Dudley,
West Midlands DY1 2LP

Please enclose an s.a.e.