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A GUIDE TO THE  
SNAKES OF THE TANZANIA  
AND KENYA BORDERLANDS

*By*

DESMOND FOSTER VESEY-FITZGERALD  
*Scientific Officer, Tanzania National Parks\**

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# A GUIDE TO THE SNAKES OF THE TANZANIA AND KENYA BORDER-LANDS

## INTRODUCTION

This paper sets out to give an account of the common snakes of East Africa. Hopefully, it will stimulate an interest in these remarkable reptiles which should be respected, but not feared, and certainly not destroyed on sight without compassion, or comprehension of their extraordinary way of life.

It is nearly 50 years since our Society published the first list of East African Snakes, Loveridge (1924). At that time, 54 genera containing 138 species were recorded from the four territories, Uganda, Kenya, Tanganyika and Zanzibar. The latest East African checklist records 55 genera and 125 full species, Loveridge (1957).

As the distribution and geographical variation of the different species becomes better understood, it is expected that the number of species in each genus will be further reduced, although new subspecies may be discovered.

I have selected, for my present account, the kinds of snakes likely to be seen in the more populated parts of the Kenya and Tanzania upland areas, including the most popular National Parks near the border of the two countries. These are, in effect, the common snakes of East Africa.

This selection excludes a number of western genera which occur towards the Uganda and Lake Tanganyika borderlands. These are: *Boiga*, *Bothrophthalmus*, *Boulengerina*, *Dipsadoboa*, *Dromophis*, *Gastropyxis*, *Grayia*, *Hapsidophrys*, *Hormonotus*, *Lycodonomorphus*, *Miodon* and *Pseudohaje*.

Also omitted are dry-country and coastal genera, such as *Chamaetortus*, *Coluber*, *Echis*, *Eryx* and the Sea-snake *Pelamis*. The snake faunas of Tsavo and Serengeti National Parks are therefore not fully treated in this account. Several little-known (mainly burrowing) snakes have also been left out, as they have not been collected, as far as I know, in our area. These are: *Amblyodipsas*, *Calamelaps*, *Chilorhinophis*, *Geodipsas*, *Micrelaps* and *Rhinocalamus*.

This leaves 32 genera and some 41 species, which have been found, or are likely to be found in the general vicinity of Nairobi and Arusha. The area treated lies above the approximate 1000 m altitude and has a rainfall probability of between 600-1300 mm. The natural vegetation was mainly forest, now forest remnants with extensive cultivation. Marginally, there are deciduous woodlands where the characteristic trees include *Acacia*, *Combretum* and *Commiphora*. These have been extensively degraded by over-burning and, in part, by over-grazing. Secondary grasslands now cover extensive areas and edaphic grassland exists in the drainage lines.

It is rather difficult to decide which are the common snakes that one should get to know. Even for a resident of these countries, finding a snake is usually quite an excitement. Visitors are likely to finish their tour without seeing one at all. This is not because snakes are few; it is because they are extremely secretive creatures which are easily overlooked.

Several species are, in fact, widespread and have a habit of turning up unexpectedly in the garden, or even indoors. It is impossible to believe that these can really be so rare and yet survive over such a wide area and in such unexpected places. They must be about all the time. It is nice, therefore, to know them when you meet them, so as to be able to respect the dangerous ones and spare those that are harmless.

Also, one has a very good chance of learning something new. In this connection, I would like to stress that any smallish, burrowing snake is sure to be of interest. It is among this group that discoveries are likely to be made. Any found should be collected and sent to the Museum for identification.

## HOW TO EXAMINE A SNAKE

It is perhaps hardly necessary to say that no one should take risks with an unknown snake. This usually means that the specimen has to be killed before it can be examined in detail. A smart rap with a stick, or a shot in the middle of the back is usually the most effective method of doing this.

Small snakes can be very quickly killed by putting a feather smeared with nicotine from a pipe into their mouths. Most specimens brought in have usually had their heads badly bashed and, as this makes identification very difficult, it is a method of destruction which must be discouraged among would-be collectors. One can usually tell when a snake is properly dead by lying it on its back. If there is any life left in it, it will roll over onto its front again. In South Africa, we are told, there is a snake—the Rinkhals—which shams death by performing this trick!

The most important things to examine on a snake are, of course, the fangs. These will be obvious in a big viper, or cobra, and, needless to say, the observer should be careful not to prick his finger with the fangs of a freshly-killed snake. With small snakes, however, it will be difficult to differentiate between fangs and ordinary teeth. Indeed, a needle and a magnifying glass are necessary in order to see any teeth at all in the mouth of a very small snake. For this reason, it is not always convenient to rely on the presence or absence, and the position of the fangs, in identification. Nevertheless, as snakes are classified on the character of their teeth, it is necessary to know something about them.

Leaving, for the moment, the blind-snakes, worm-snakes, the python and the toothless egg-eater, the remaining snakes are divided into four groups.

Group one contains the harmless snakes which have no poison fangs, but have many needle-like, backwardly directed teeth in their mouth. These teeth are usually all more or less the same length.

The second group contains the back-fanged snakes, which are poisonous. Most of these species are too small to harm a human being; but others, the bigger ones, are dangerous, though the chances of their inflicting a bite are rather remote. The fangs of these snakes must be sought in the upper jaw, just behind the eyes. They can be recognised as somewhat longer and stronger teeth among the others. Feeling around with a pin will usually show them up. It must be emphasised, however, that the fangs—especially of small snakes—are quite easily overlooked. Some back-fanged snakes will be found which have large teeth in front of the eyes as well as behind. The forward teeth, however, are not the poison fangs, and such an arrangement of uneven length teeth is quite a good spot for recognising the various sand-snakes.

The third group covers the front-fanged snakes, the dangerous mambas and cobras. The fixed, peg-like fangs in front of the upper jaw are usually quite easily seen although they may be partly hidden in a sort of fleshy gum which, however, can be pushed down with a needle.

In the last group, the vipers, fangs are long and moveable, set near the front of the upper jaw. They are usually quite easy to see, and will be found lying back against the roof of the mouth; they can be moved up and down with a pin.

If the examination of the teeth yields a positive result, one is well on the way to identifying the snake. If no fangs can be seen with certainty, other characteristics about the snake must be looked for, and noted.

The first thing anybody asks about a snake is what is its length. Measure the snake, straightened out, but not unduly stretched, from the snout to the tip of the tail.

If one turns a snake over onto its back, it will usually be seen that there is a series of traverse scales along the underside of the body, from the neck backwards. If, however, the scales of the belly are like the scales of the back, it is a good spot for recognising the blind-snakes and worm-snakes. In all the other snakes, the traverse scales continue towards the tail until they reach a D-shaped scale which is like a flap. Note whether this special scale is divided or entire. Underneath and behind this anal scale, the opening of

the vent will be seen. This is the end of the body, and the rest of the snake is tail. Make a note of the separate lengths of the body and tail. In the text the length of a full-grown adult specimen is given in millimetres; then, in brackets, the length of the body and tail separately.

The ventral scales—those along the belly—should be counted, because their number helps in identification. The number will not be exactly the same in all specimens, but the range is meaningful. The counts given in the description of each species are those found on specimens which have been examined.

The scales under the tail will be seen to be paired. If they are not paired, by any chance, but are single (like the scales under the belly), make a note of the fact. This characteristic is important in the identification of some rather unusual species of snakes. Count the subcaudal scales, especially noting if the tip of the tail appears to be damaged.

Next, count the number of scales round the middle of the body. The number is an important characteristic for identification. Some people may find scale-counting tedious; but it is worth learning how to do it. Select an undamaged portion about the middle of the body, and, starting from the edge of one of the belly scales, count the rows of scales up the side and over the back to the edge of the belly scale on the opposite side see fig. 7. Note the number of scales.

Next, look at the head. Consider its shape, and the form of the neck. Memorising these details will be useful in recognising the same kind of snake next time. Note if the pupil of the eye is round or oval. Round-eyed snakes are usually diurnal and oval-eyed snakes nocturnal. If the pupil is horizontally elongated, it is the mark of the Vine-snake, which in any case is easily recognised, see fig. 19.

The details of the scales on the head are also important. The names of the different scales (and those which should be examined and counted for purposes of identification) are illustrated and referred to in the key and the descriptions of the species.

Naturally, the observer will take note of the colour-pattern of the snake. In many cases, this will enable the species to be recognised at once, but at other times it can be most misleading. There are many kinds of snakes which vary very much in colour and pattern; so that extreme forms can hardly be recognised as belonging to the same species. Then again, there are several quite different snakes which closely resemble each other in markings. Lastly, there are several small blackish snakes, both harmless and poisonous, which all look very alike.

A difficulty arises over young individuals of some species, because they may have a colour pattern very different from that of the adults. Indeed, several kinds have a very distinct pattern when young, whereas adults of the same kind may be unornamented. When applicable, distinct juvenile patterns are noted in the text.

Newly-born, or recently-hatched, snakes can be recognised by the umbilical scar. This will be found along a few of the ventral scales, a short distance up the belly from the vent. The scar looks like a tiny slit made by a razor blade. If it is present, it is a sure sign that the snake is very young.

To "sex" a snake is easy. Lie the specimen on its back and put your thumbs one on each side of the vent, one placed at the base of the body, the other at the root of the tail. Now apply slight rolling pressure. At the same time, press the thumbs gently towards one another so as to extrude the vent. If the snake is a male, two fleshy, horn-like objects will pop out, at each side of the vent. In the case of a female, the circular orifice of the vent is all that is seen. In the case of large snakes it is usually easier to detect the male organs by probing with a blunt needle backwards at the base of the tail, on either side of the vent. The two cavities from which the horns can be made to protrude are easily found in this way. Tails of male snakes are usually longer than those of females, see figs. 2a and 2b.

## THE KEY

1. Snakes in which head and tail ends are, on casual inspection, indistinguishable; mouth very small; eyes not evident; tail very short and stumpy. Sometimes small worm-like creatures; scales small, close set and of similar type all round body, photos i and ii.

Typhlopidae and Leptotyphlopidae

Snakes of normal appearance; head, eyes, mouth and tail apparent; body scales of three types, those on back and sides arranged rather like tiles on a roof, along the belly they form transverse scutes, under the tail they are usually paired, figs. 8, 9, 1a and 1b

2. Scales on top of head small, similar to, and merging into the neck and body scales, fig. 10.  
Viperidae (part)

Scales on top of head shield-like, quite distinct from the scales on the back of the body.

3. Head shields small and situated on front part of head only; belly scales do not extend across the full width of the underside.  
Boidae (Python)

Head shields large, covering top of head, fig: 8; belly scales extend more or less across full width of body beneath, fig 1a, b and c.

4. Enlarged fangs present in *front* of upper jaw, either fixed and peglike, fig 17, or curved and lying back, fig 11.

No obvious fangs in *front* of upper jaw.

5. Fangs fixed, peg-like. Elapidae

Fangs curved and lying back (seek out with pin). Viperidae

6. Long fang in upper jaw situated *behind* the eye (seek out with pin), fig 18 (In small snakes this back fang may be difficult to see, but the enlarged gum enclosing the fang is usually obvious.)  
Colubridae (back fanged)

No obvious enlarged fangs either in front of or behind the eye, ordinary teeth present or not evident.  
Colubridae (harmless)

### Typhlopidae and Leptotyphlopidae. Blind-snakes & Worm-snakes.

The snakes in this section are easy to recognise, and cannot be confused with any other snakes. However, separating the two families and sorting out the species is work for an expert. The layman therefore may not wish to proceed further with this section.

1. Scale rows (all round mid body) more than 18; tail scarcely longer than it is broad at the base.

Typhlopidae (Blind Snakes)

Scale rows (all round mid body) less than 14; tail three times as long as it is broad at base.  
Leptotyphlopidae (Worm Snakes)

### Boidae. Python.

There should be no difficulty in recognising the python, which is the only snake in this section.

Tail short but ending in thin extremity; large snake, when full grown up to 7 m. (possibly more), photo iv. Python, *Python*,

### Colubridae. (most of the common snakes).

There is sure to be some difficulty in identifying all the different snakes belonging to this family, unless the presence or absence of fangs behind the eye has been decided with certainty. However, consider the supporting characters in each couplet carefully and be prepared to assume you have overlooked the fang if the other characters match up to the specimen being a back-fanged species. Couplets 1-12 of the following key distinguish the harmless Colubridae, and 13-20 the back-fanged species.

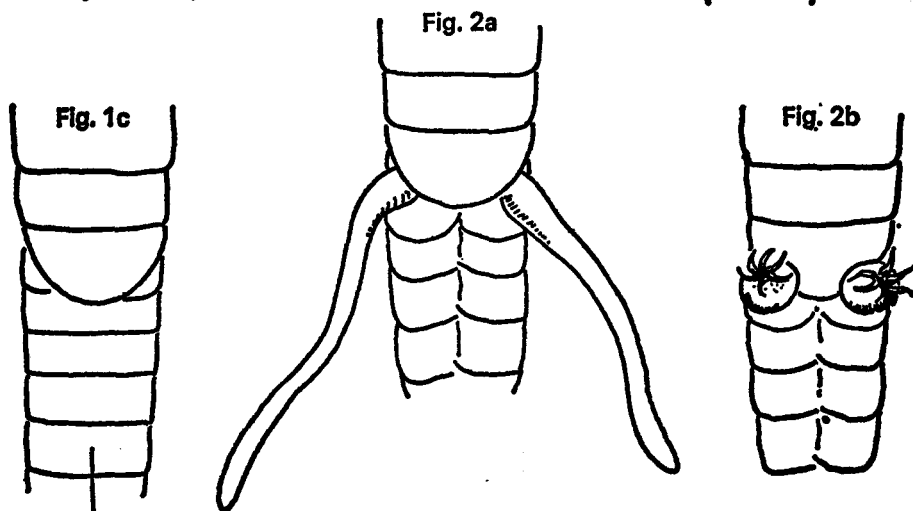
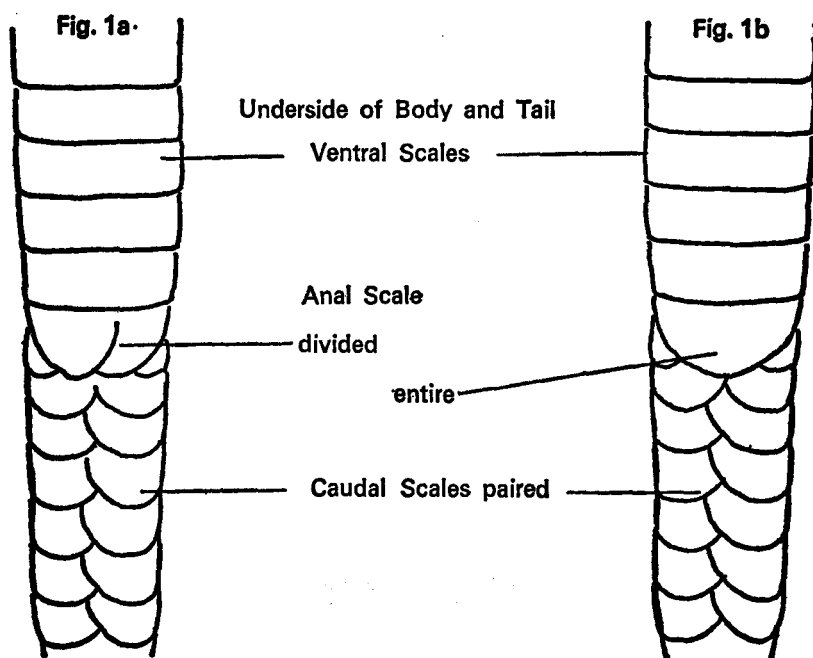
1. Subcaudals paired, fig. 1a and 1b. 2  
 Subcaudals single, fig. 1c, (very small snakes). Centipede-eater, *Aparallactus*

2. Long fang (grooved tooth transmitting venom) in upper jaw situated *behind* the eye. Seek out with a pin. The needle-fine fang is often hidden in a soft swelling of the gum, and may be very difficult to find. 13.

No poison fang in upper jaw. A row of backwardly directed, needle-like, ordinary teeth may or may not be obvious. 3

3. Small to medium size Green snakes (dark bluish-grey when preserved in formalin).  
Green bush-snakes, *Philothamnus*

(Note:—Green phase of *Dispholidus* would key out here if the back-fang has been overlooked).  
 Snakes which are other colours and patterns. 4



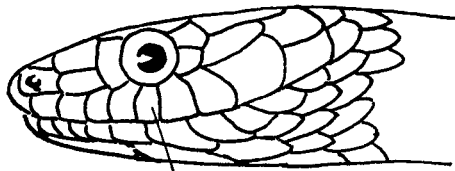
Subcaudal scales single

*Prosymna ambigua*

*Crotaphopeltis notamboela*

Male Organ or Hemipenis extruded

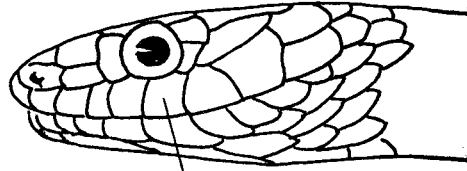
4. Body scales *noticeably* keeled. 5  
 Body scales *NOT* keeled. 6
5. Scale rows 21-27; scales heavily keeled and close together; skin not showing between scales. Only has minute teeth, so that jaws appear to be toothless. Body cylindrical fig. 5.  
 Egg-eating Snake, *Dasyveltis*  
 Black Tree Snake, *Thrasops*
- Scale rows 19 (scales keeled and overlapping)  
 (Note:—black phase of *Dispholidus* would key out here if conspicuous back fang is overlooked.)  
 Scale rows 15; scales heavily keeled but loosely held together; skin showing between scales.  
 Teeth normal size. Body triangular in section. File Snake, *Mehelya*
6. Scale rows 17 or less. 7  
 Scale rows 18 or more. 9
7. Scale rows 17; head flattened, eye small, tail short; small blackish snake.  
 Wolf Snake, *Lycophidion* 8  
 Scale rows 15. 8
8. Pupil vertically elliptic rostral shovel shaped with sharp edge, inter-nasal single, fig. 15.  
 Small snake, up to 30 cm. Shovel-snouted Snake, *Prosymna*  
 Pupil round, rostral rounded, inter-nasals two, fig. 14. Small snake up to 30 cm, with body laterally compressed and head narrower than body. Slug-eating Snake, *Dubertia*
9. Mid-body scale-rows 23-33. 10  
 Mid-body scale-rows 19-21. 12
10. Anal entire fig. 1b; pupil vertical. House Snake, *Boaedon*  
 Anal divided, fig. 1a; pupil round. 11
11. Ocular scales present encircle the eye so the labials are not in contact with the eye, rostral shield beak-like. Grey Beaked-snake, *Scaphiophis*  
 No sub-oculars, so fourth labial scale touches the eye. Mole Snake, *Pseudaspis*
12. Mid-body scale rows 21, anal divided, fig. 1a. Semiornate Snake, *Meizodon*  
 Mid-body scale rows 19, (or 17 in sub-species *ulugurensis*), anal divided, fig. 1a. Olive Marsh-Snake, *Natriciteres*  
 Mid-body scale rows 19, anal entire, fig. 1b. Black Tree Snake, *Thrasops*  
 (Note: *Crotaphopeltis* would key out here if the small back-fang is overlooked).
13. Scales keeled, narrow, and obliquely inclined, in 19 rows. (Tree snakes). 14  
 Scales smooth. 15
14. Pupil round, eye large, head short, fig. 20. Boomsliang, *Dispholidus*  
 Pupil horizontal, eye with dark band through it, head elongated, fig. 19. Twig Snake, *Thelotornis*
15. Dentition distinctive in that there are one or more long teeth between shorter teeth in the upper jaw. Therefore a long tooth in *front* of the eye resembles the true fang which is actually situated *behind* the eye, fig. 18. Sand-snakes, *Psammophis*
- Dentition not as above; teeth, invisible, form an even series from the front of the upper jaw backwards to the fang *behind* the eye. (Specimens which are too small for the teeth to be seen properly will present a difficulty but should be included here). 16
16. Snakes which are sombrely coloured throughout, except that under-parts may be lighter and head darker than general colour. 17
- Snakes having a marked pattern; body striped, marbled, barred, spotted or banded with different colours. 20
17. Scale rows 17. 18  
 Scale rows 19 or 21. 19
18. Rostral shield (snout) beak-like (stone coloured snakes, the body scales margined with amber brown; white, tinged with yellow below), fig. 6. Beaked-snakes, *Rhampiophis*
- No beak. (Stone coloured and banded above, pure white below and with a row of pink spots along the side of the body). White-bellied Grass-snake, *Psammophylax*
19. Head broad, distinct from neck; eye fairly large with vertical pupil, figs. 8 and 9; scale rows 19 (The back-fang of this species is difficult to find.) White-lipped Snake, *Crotaphopeltis*  
 Head small and not distinct from neck; eye minute with round pupil. Scale rows 19 or 21. Purple-glossed Snake, *Camelaps*
20. Small snake (up to about 40 cm) with a very characteristic dark brown mark on the head, which becomes zig-zag on the neck and breaks up into long-shaped spots along the top of the forward half of the body, photos. xii. Body marbled and dappled above and below, tail tending to be yellowish; tongue orange, pupil round; scale rows 17; the fangs are too small to be seen easily. Bark-snake, *Hemirhagerris*
- A medium sized snake (up to 90 cm). Colour pinkish-red, with evenly spaced black blotches down the back, starting with a dark band right across the neck, photo. vii. Head distinctly wider than the neck; whitish below; scale rows 19. Tiger-snake, *Telescopus*



three enter eye

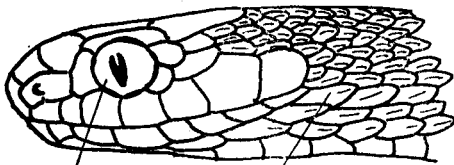
upper labials

Fig. 3 *Philothamnus irregularis*



two enter eye

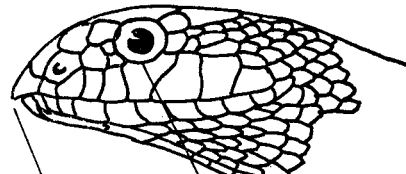
Fig. 4 *P. hoplogaster*



pupil vertical

scales keeled

Fig. 5 *Dasypeltis scabra*



rostral beak-like

pupil circular

Fig. 6 *Rhamphiophis acutus*

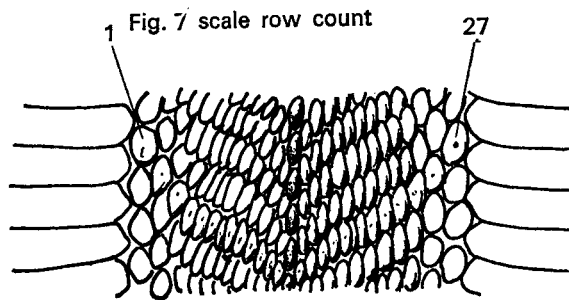


Fig. 7 scale row count

14

mid row



**Elapidae. Front-fanged snakes. Cobras and Mambas**

The snakes in this section are all venomous and dangerous. Their fangs are situated in front of the mouth and are usually easy to see; many of the species are large and easy to identify. However, there always remains the possibility that a juvenile specimen may be obtained in which the characters are not easy to make out though the individual may already be quite dangerous. Juvenile mambas for instance might be mistaken for the harmless green snakes of the genus *Philothamnus*.

1. Tail short, sub-caudals less than 30 scale rows 13. Garter Snake, *Elapsoidea*  
Tail longer, sub-caudals more than 40; scale rows 19 or more. 2
2. Head rather long, straight sided, but narrowing towards snout; subcaudals more than 90. Long snakes, growing to nearly 3 m, and very slender. 3  
Head short, sides curved; snout broader than long; subcaudals less than 90. 4
3. Inside mouth bluish-black; mid-body scale rows 21-25 (usually 25); ventrals more than 240. Common Mamba, *Dendroaspis polylepis*  
Colour slate, olive, brown or green. Inside mouth bluish-white; mid-body scale rows 17-21 (usually 19); ventrals less than 240. Green Mamba, *D. angusticeps*
4. Subocular scales present, fig. 16, therefore upper labials *not* contacting eye. Egyptian Cobra, *Naja haje*  
Subocular scales absent, fig. 17, therefore upper labials contacting eye. Underside of neck jet-black or irregularly marked pinkish, in either case distinctly coloured from underside of body. Spitting Cobra, *N. nigricollis*

**Viperidae. Vipers or Adders.**

The three groups of vipers are so different in general appearance from each other that the layman may find it difficult to believe that they all belong to the same family of snakes. However, they all have long, curved fangs, lying back in the front of the upper jaw, fig. 11. Once these are seen, and it is easy to find them and lift them up with a needle, it is easy to understand that all the vipers belong to one family. The true vipers of the genera *Bitis* and *Atheris* are fairly easy to recognise for those who are familiar with the appearance of the European adder. They all have the typical spade-shaped head which is covered with small scales instead of shields, as is more usual with most other snakes. The Night-adders on the other hand have shields on the head like other snakes, which they also resemble more in general configuration. The Burrowing-vipers, which are modified for a subterranean life, depart most of all from the usual conception of viper, because their heads are not only covered with shields, but the head is also actually much narrower than the neck and body. All species of vipers are venomous and dangerous.

1. Head spade-shaped, wider than neck, and covered with small scales, fig. 10 2  
Head not wider than neck, and covered with shield-like plates, fig. 12 3
2. Colour usually greenish; small rather slender snakes (up to 70 cm), found in trees. Tree Viper, *Atheris*  
Colour brownish or yellowish, distinctly patterned with dark markings; massive snakes, even young ones are heavily built; found on the ground. Puff Adder, *Bitis*
3. Shiny blackish burrowing snakes, recognised by head being indistinct from neck and conspicuously narrower than body. Burrowing Viper, *Atractaspis*  
Snakes of normal appearance, usually patterned, but in any case a distinct pattern becomes visible when skin is stretched. Night Adder, *Causus*

**Family Typhlopidae Blind Snakes.**

The genus *Typhlops* is sufficiently different from all other Snakes to make recognition easy. The head and tail ends look alike. The eye-spots, fig 13, are hidden under a scale; the tail is short and stumpy. The body is cylindrical and the same width throughout, except in very big specimens which are fatter towards the tail end. The scales are close set and shiny and of the same type all round, see photo. I.

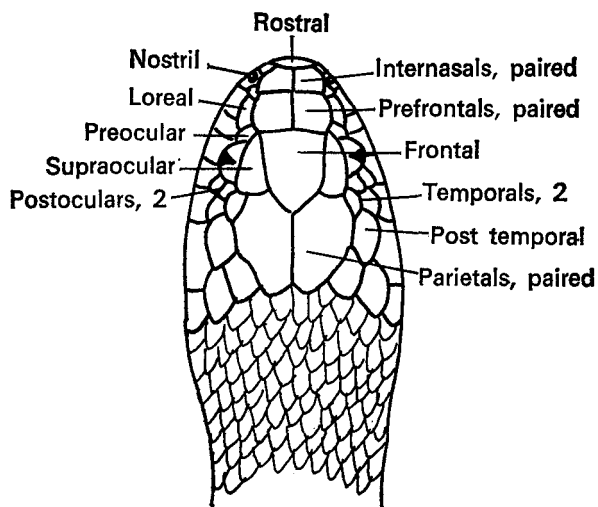
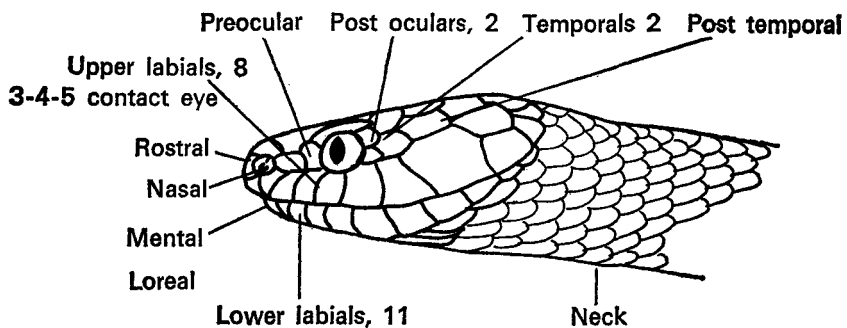


Fig. 8 Upper side of head, showing scales.



Side view of head, showing scales.

Fig. 9 White-lipped Snake *Crotaphopeltis hotamboeia*

The colour pattern is very variable and shows through the semi-transparent scales. Commonly these snakes are dark greyish variegated with ivory-white on the back and sides, and yellowish-white beneath. Another pattern comprises parallel rows of silvery-grey spots margined with black, and off-white underparts, photo. II.

All species are subterranean and they are adapted to this way of life. The rostral shield, see fig. 13, is hard and sharp, resembling a toe-nail, and is used for burrowing.

*Typhlops* feed on insects, termites providing their main diet. They are often found under rotten logs or in compost heaps; occasionally during the rains they come above ground. They become very fat and aestivate during the dry season.

All species lay eggs. Big fat females (700 mm.) of *T. schlegellii* have been found at the beginning of the dry season, with 40-80 eggs ready for laying. The eggs measured  $15 \times 10$  mm.

Two species commonly occur in our area, and they can be recognised as follows:  
Scale rows (all round body) over 30. Variable Blind-Snake, *T. schlegellii mucrosa* Peters.  
Scale rows (all round body) under 25. Spotted Blind-Snake, *P. punctatus* (Leach).

The variable Blind — Snake is common and widespread. A common length is 250 (248+3) mm, but large ones measure 700 (695+5) mm and these are very massive.

The Spotted Blind-Snake occurs in forested areas, or areas that were formerly forested. On the average this species is smaller, 200 (196+4) — 330 (322+8) mm; the scales are larger but in fewer rows and the snout is less sharp. Both species, however, have the same variable colour pattern.

There are several other species of *Typhlops* in East Africa which need study. Also certain legless burrowing lizards (*Amphisbaena* and *Geocalamus*) and amphibians (Caeciliidae) might be mistaken for *Typhlops*. All these burrowing creatures should be collected and sent to the Museum for identification.

#### **Leptotyphlopidae. Worm Snakes.**

*Leptotyphlops* resemble tiny, slender *Typhlops*, it is likely many people would not recognise them as snakes at all.

The commonest species is *L. conjuncta* (Jan), Jan's Worm Snake. A large specimen collected in Arusha National Park (1500 m alt.) measured 253 (241+12) mm, the mid-body diameter of 3.5 mm going 72 times into the total length. Colour uniform dark-slate; other specimens occasionally dark brownish.

Habits, habitat and food in general similar to *Typhlops*.

#### **Boidae. Pythons.**

*Python sebae* (Gmelin) Python.

The python is widespread and quite common. It is the largest African snake and the photograph clearly illustrates its appearance so further description is unnecessary.

The African python may reach a live length of 6 m, but anything over 4 m is big. Young ones on hatching are between 60-70 cm.

Pythons kill by constriction. Juveniles feed on rats, large adults on any warm blooded animal up to the size of small antelopes. They are rather sedentary creatures and tend to frequent moist places where their prey is easy to obtain. They climb trees easily and spend days coiled up in the branches. This habit often saves them from bush fires. Arusha and Tarangire National Parks are particularly good places to see pythons.

The female lays a cluster of eggs, between 30-50 at a time. She selects a suitable place for laying and coils round her clutch till the eggs hatch. After that, maternal instincts end.

Pythons are not dangerous, not venomous and should be protected. Many African cults venerate these fine snakes; trade in python skins should be severely discouraged.

Puff Adder *Bitis arietans*

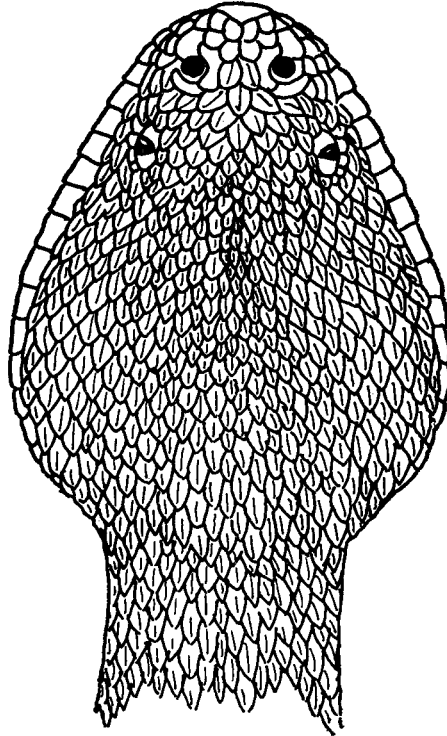


Fig. 10

Upper side of head showing wide head distinct from neck, and keeled scales similar to those of neck and body.



Fig. 11

Side view of head, showing long curved fangs erected in front of mouth.

## Colubridae.

Sub-family Colubrinae Harmless Snakes.

*Boaedon fuliginosus* (Boie) House Snake.

The commonest East African snake. It is not big, the largest collected being 1080 (942+138) mm, just over 3½ feet. It is undistinguished in appearance, being blackish-grey back and sides, and mother-of-pearl white below. In some districts this species is brown, and occasionally individuals of other colours or patterns occur. The best diagnostic characters are the high (27-35) number of mid body scale rows, and a distinctive light line extending from behind the eye. Other recognition details include a verticle pupil and entire anal; the tail is rather short about one seventh of the length of body in females and one sixth in males. Juveniles are not differently coloured from the adults; hatchlings about 200 mm long.

Nocturnal and retiring; oviparous, some 10 eggs being laid usually during the rains. Food: rodents and frogs which are killed by constriction.

Common in Arusha National Park.

*Duberria lutrix* (Gunth.) Slug-eating Snake.

This is definitely an upland species occurring from 1500 to 2700 m alt. It is a small snake (one collected at Mbeya measuring 410 (360+50) mm was exceptionally large) and most individuals are under 300 mm.

The species is widespread but its distribution is discontinuous and some different subspecies have been described. For general recognition, the slug-eater, is best described as a plain blackish or brownish unpatterned little snake with whiteish underparts. The head is small but the eye prominent, fig 14; the body is rather compressed with only 15 scale rows, and the tail ends in a sharp point.

Slug-eating Snakes can be found under stones or logs and in tussock grasses, they are rarely seen out in the open. Young are born alive. The food consists of slugs and sometimes snails.

Common in Arusha National Park.

*Lycophidion capense* (Smith) Wolf Snake.

Common and widespread. This is a small species measuring 480 (430+50) mm; dark grey or brownish in colour with a whitish chin and silvery-edged ventral scales. Other diagnostic characters include the rather short tail, one tenth of body length in females and slightly longer in males; flat head with no distinct neck, small eye, elliptical pupil and entire anal scale. Individuals may have silvery dots at the tip of each body scale which sometimes form an obscure mid-dorsal zig-zag pattern, photo vi.

Nocturnal, retiring and oviparous. Food: lizards, usually skinks, often quite big ones which the snake overcomes by constriction, sometimes after quite a struggle.

Common in Arusha National Park.

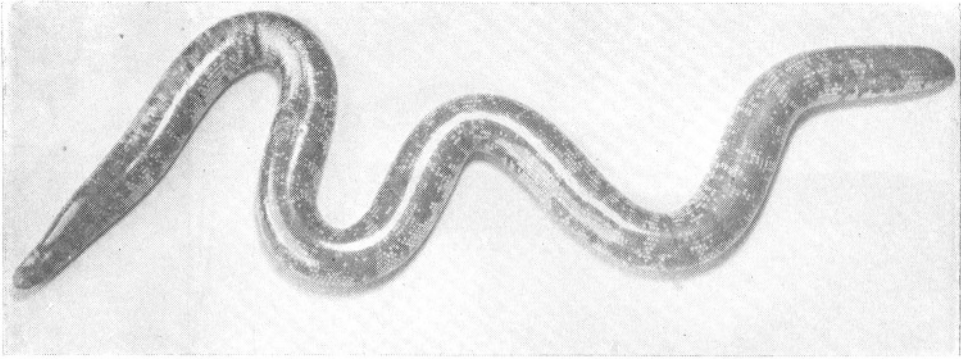
*Mehelya capensis* (Smith) File Snake.

Although widespread this large, 1400 (1245+155) mm, and very distinctive snake is seldom seen. The basic colour pattern may be greyish, brownish or blackish, with a mid dorsal ivory-white ridge; under parts whiteish. The body is triangular in cross section and the scales are keeled, hence the name file-snake. The anal scale is entire.

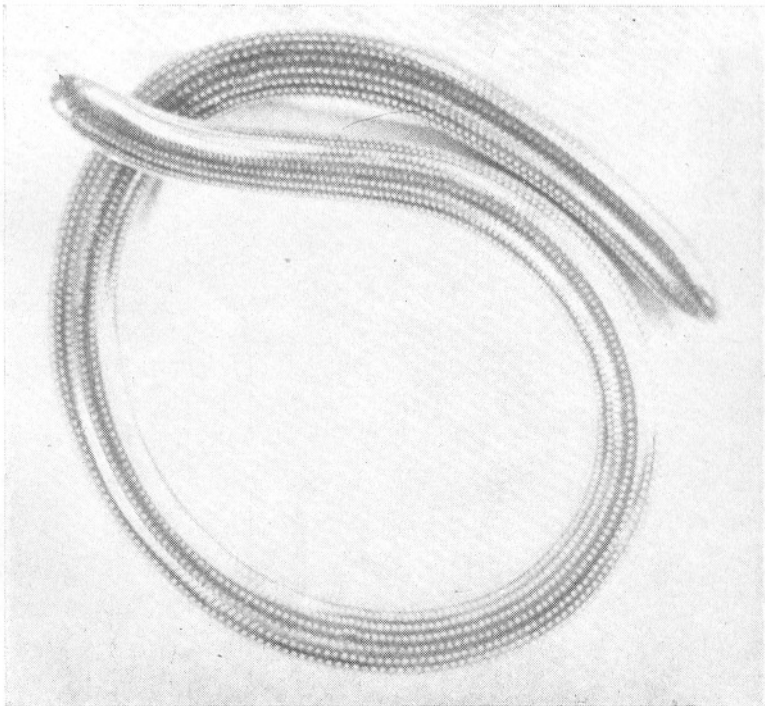
Nocturnal, secretive, very docile and lays a few rather large eggs. Food: other snakes, often poisonous ones, less frequently amphibians and small mammals.

*Trasops jacksoni* Gunther. Black Tree-snake.

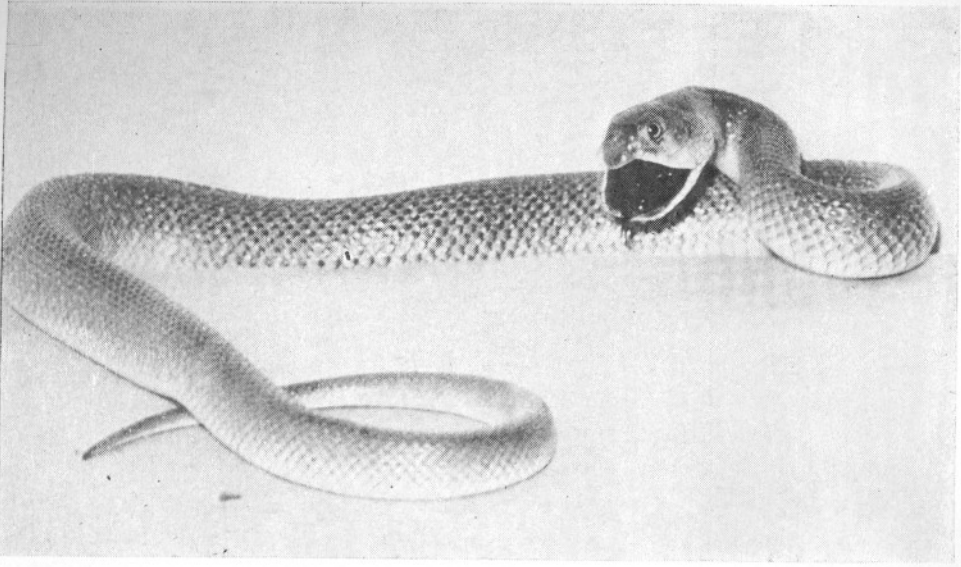
This is a western forest-frequenting species, but a population occurs in the central Kenya highlands which has been recognised as a distinct sub-species named *T. j. schmidti* Loveridge.



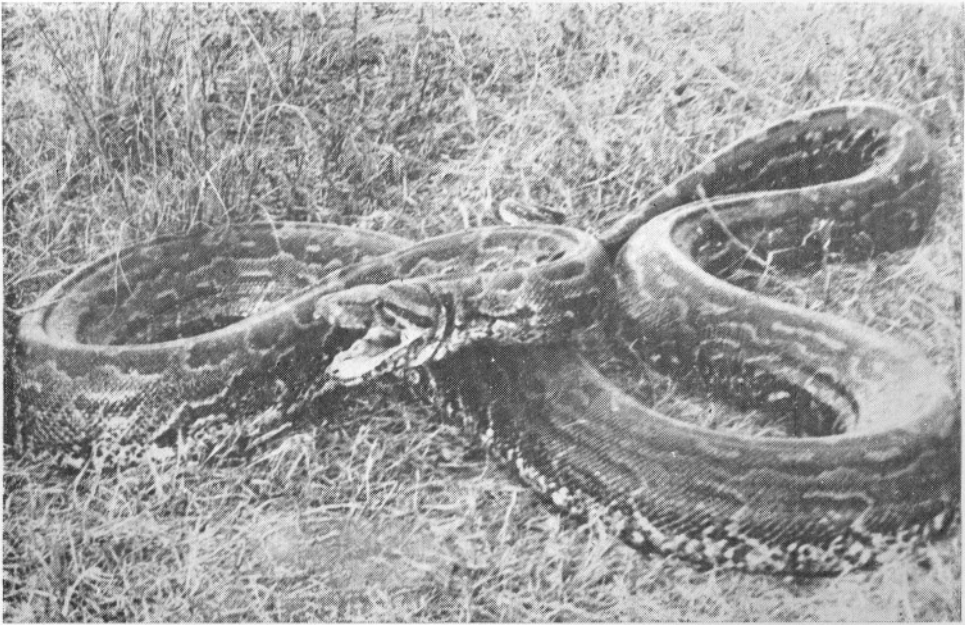
i Variable Blind Snake, *Typhlops schlegelii*



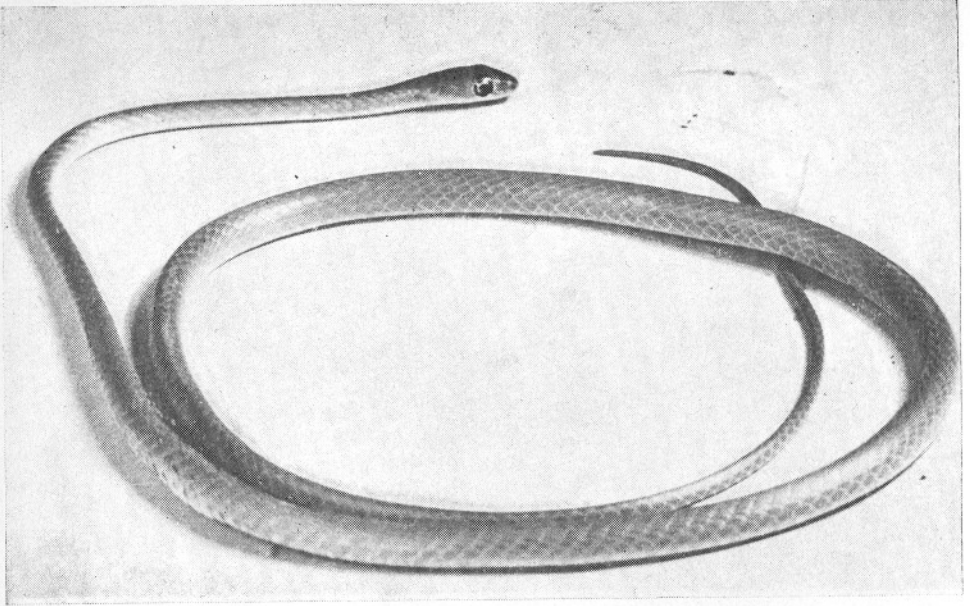
ii Spotted Blind Snake, *Typhlops punctatus*



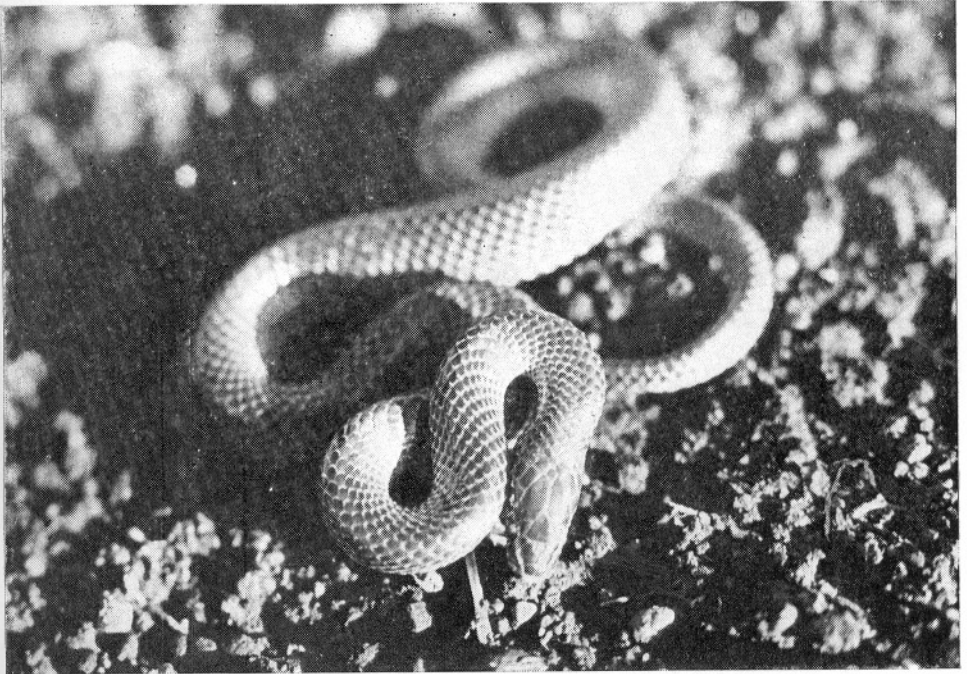
iii Grey Beaked-snake *Scaphiophis albopunctatus*



iv Python, *Python sebae*

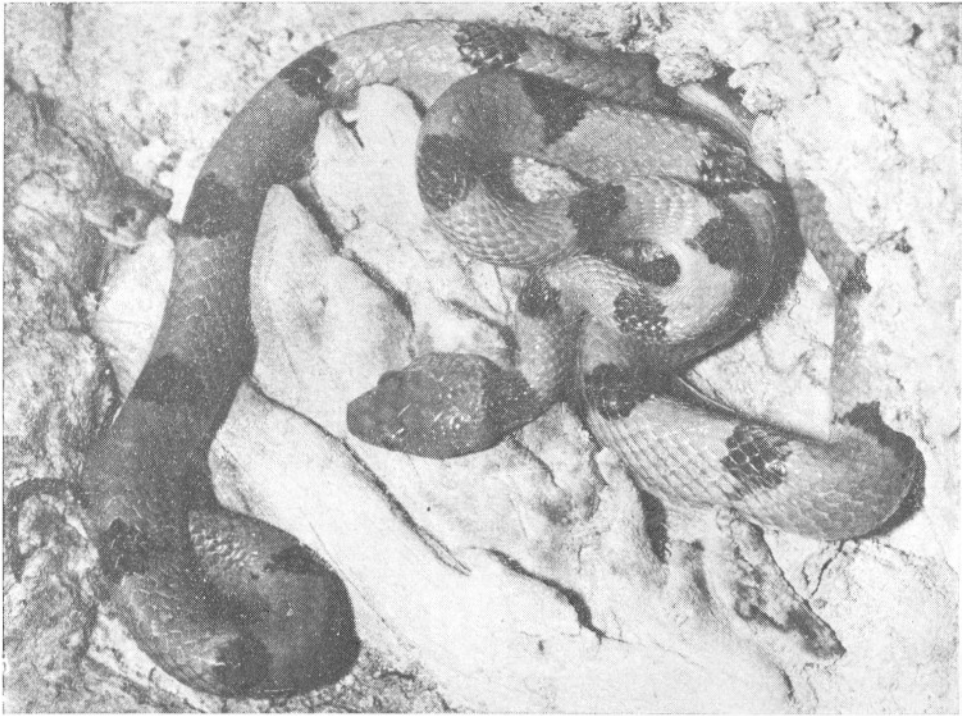


v Green Bush-snake, *Philothamnus hoplogaster*



vi Wolf Snake, *Lycophidion capense*

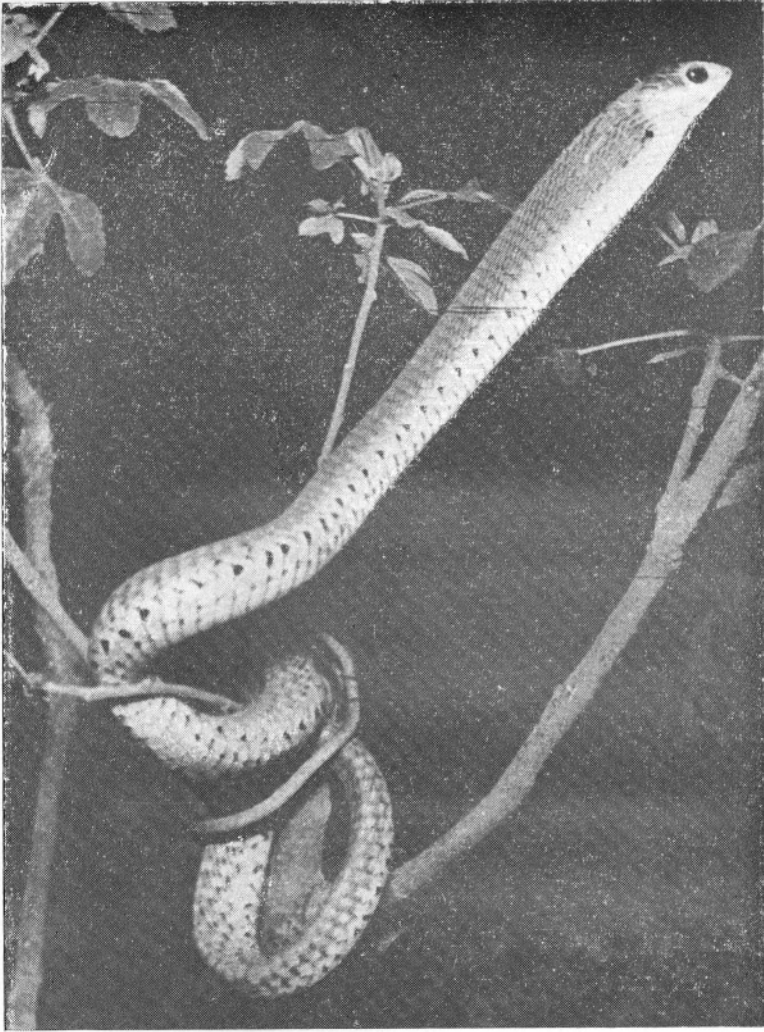




vii Tiger-snake, *Telescopus semianulatus*

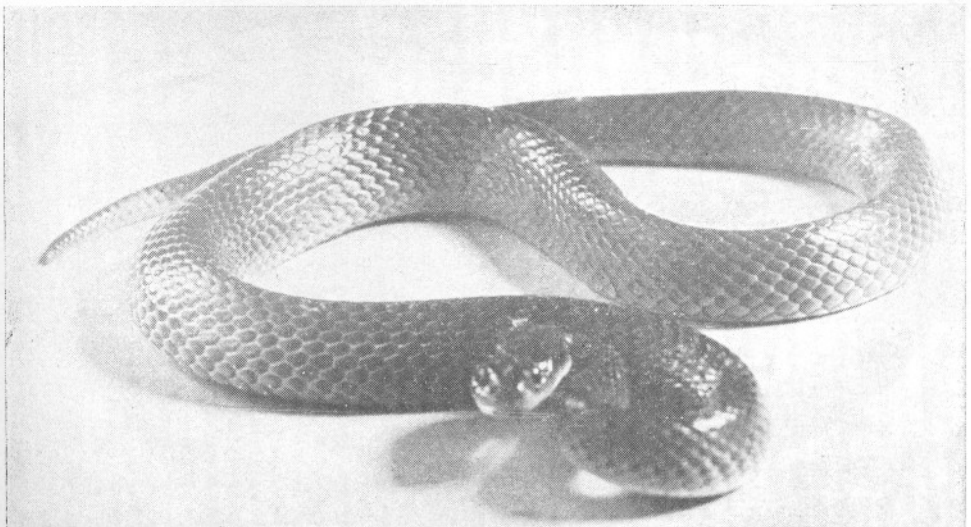


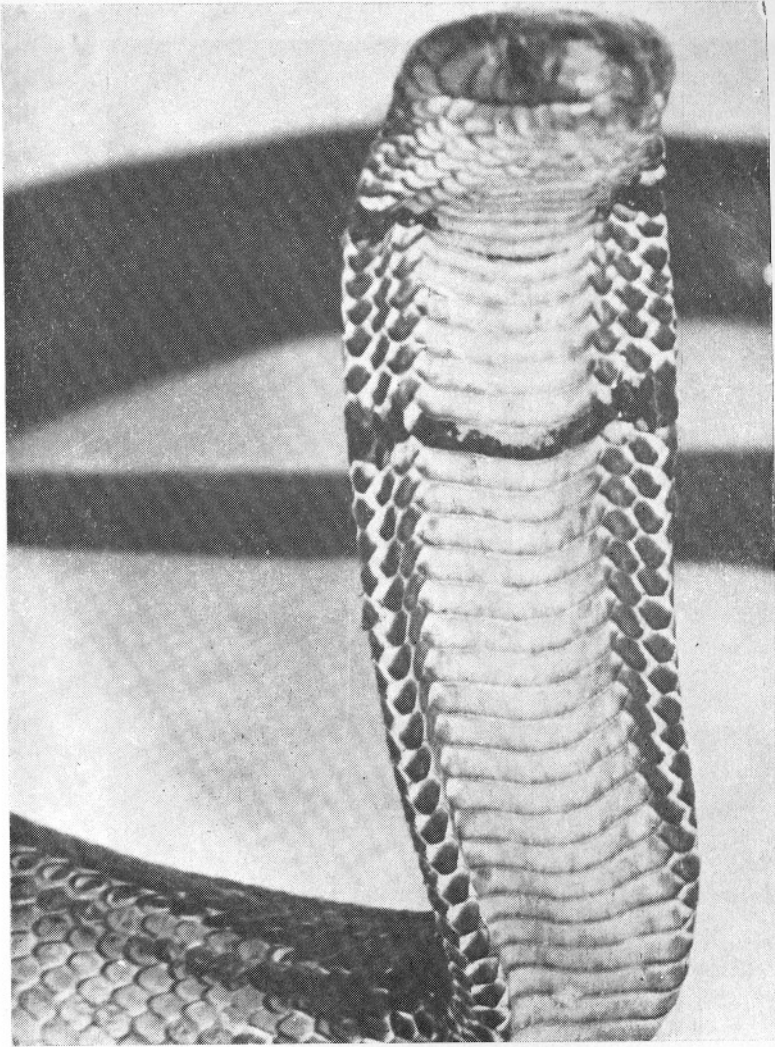
viii Egg-eating  
Snake,  
*Dasypeltis*  
*scabra*



ix Boomslang,  
*Dispholidus*  
*typus*

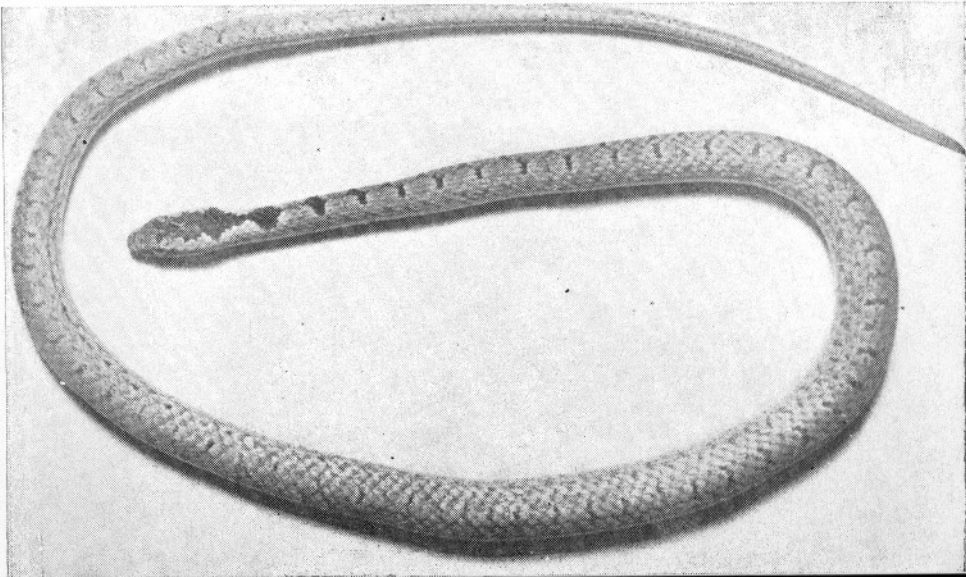
x White-lipped Snake, *Crotaphopeltis hotamboeia*

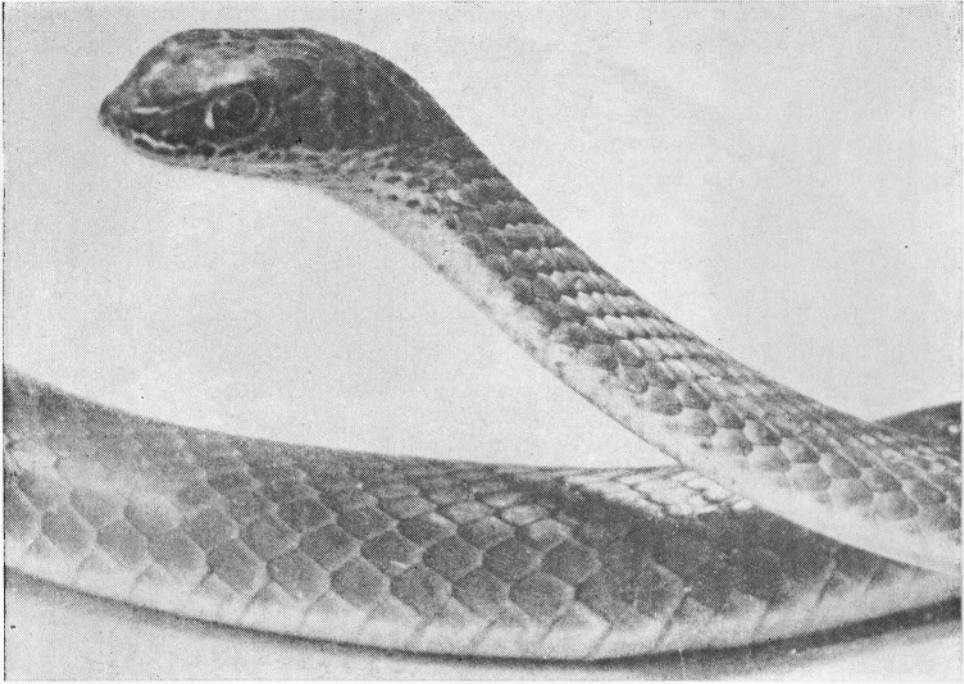




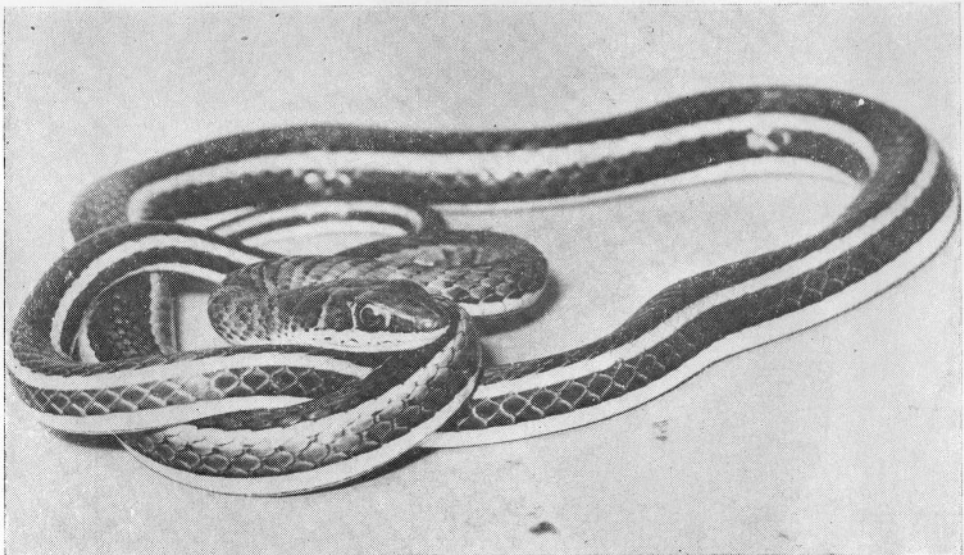
xi Cobra, *Boulengerina annulata*

xii Bark-snake, *Hemirhagerhis nototaenia*

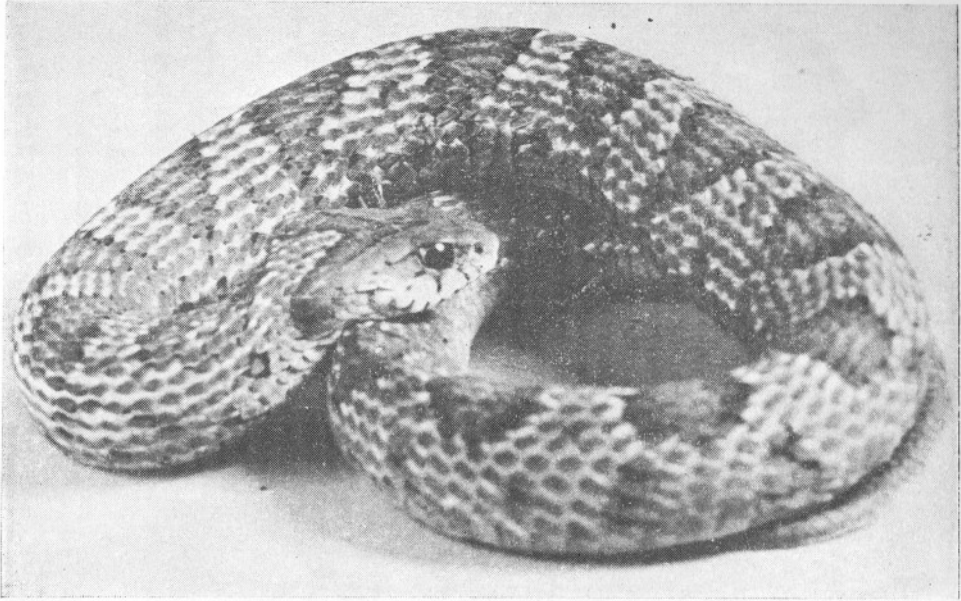




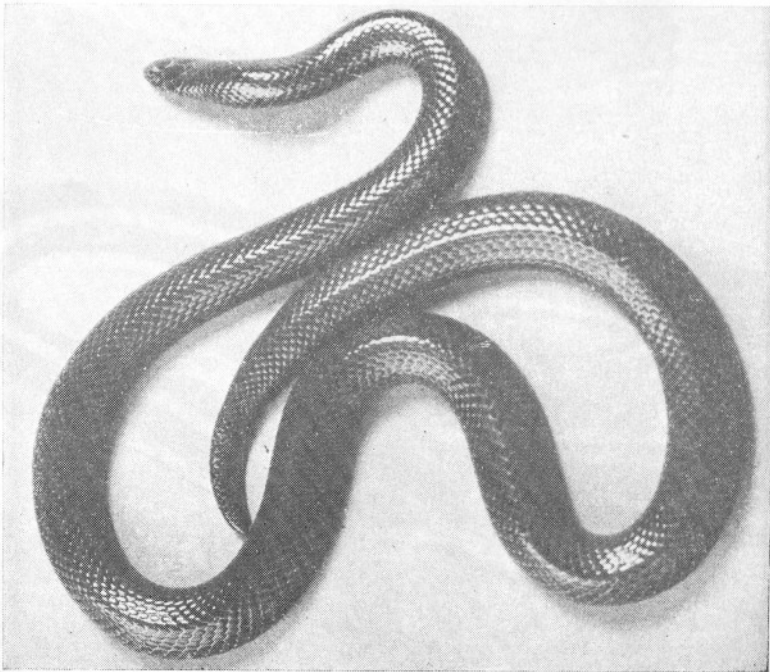
xiii Hissing Sand-snake, *Psammophis sibilans*



xiv Northern Stripe-bellied Sand-snake, *Psammophis subtaeniatus*



xv Rhombic Night-adder, *Causas rhombeatus*



xvi Burrowing-viper, *Atractaspis bibroni*

Black Tree-snakes are large, specimens up to 2 metres, over 6 ft, being on record. The most extraordinary thing about the harmless Black Tree-snakes is that in life they can hardly be distinguished from the black phase of the poisonous Boomslang.

The writer has only seen *Thrasops* in the Nairobi Snake Park, so nothing about the habits of this beautiful snake can be added here.

*Meizodon semiornata* Peters      Semiornate Smooth-snake.

A medium sized snake, adults 680 (530+150) mm; juveniles measure 230 (180+50) mm. Not often seen in the area treated probably because it is commoner in wet places at lower elevations.

Diagnostic characters include a rather long tail, which may be up to 25 per cent of total length. The eye has a circular pupil, the neck is distinct and the anal scale is divided. There are 21 scale rows which should be carefully counted. The general colour of adults is blackish. Being a rather sombre snake, it is therefore rather difficult to distinguish it from others of similar hue. Points to note are that the chin is white, and there are usually some dark vertical bars along the side of the neck and fore part of the body. The lips are whiteish and the upper labials margined with white. The ventral scales are narrowly bordered with silver along the posterior edge. Juveniles tend to be more distinctly patterned than adults.

Smooth-snakes inhabit grassy valleys near water. They are about at night and during overcast rainy days. Their main food comprises frogs.

*Natriciteres olivacea* Peters      Olive Marsh-snake.

A widespread and fairly common species inhabiting damp places. A rather small snake, 472 (347+125) mm. Recently hatched juveniles may occasionally be found clustered in a cavity, length of smallest found was 159 (87+72) mm.

Although variable and not striking in appearance the colour pattern is often quite distinctive. The body is dark grey or brownish grey with an oily sheen, often with a dark mid-dorsal band; ventral scales yellowish in the middle with greyish margins. Lips and chin yellowish or white, labial scales margined with black. Other spot characters include, round pupil, divided anal and rather long tail, which, however, is often damaged.

Marsh-snakes may be seen during the daytime in damp places. Food frogs and small fish.

Common in Arusha National Park.

*Philothamnus* (Synonym *Chlorophis*)      Green Bush-snakes.

This genus includes small to medium length, harmless, green, round eyed diurnal arboreal snakes with 15 mid-body scale rows. There are several species, Loveridge (1951) three of which are likely to occur in the area treated. These can be distinguished as follows.

- 1a. Ventral and subcaudal scales sharply angular at the sides; fore part of the body and neck with blackish spotting and barring; usually more than 130 pairs of subcaudals. *P. semivariegatus*.
- 1b. Ventral and subcaudal scales normally rounded at the sides; plain green; usually less than 130 pairs of subcaudals.
- 2a. Two upper labials contact eye, fig. 4. *P. hoplogaster*.
- 2b. Three upper labials contact eye, fig. 3. *P. irregularis*.

*P. semivariegatus* (Smith) Spotted Bush-snake.

A common and widespread species. The body is slender and the tail long, a big one measured 980 (680+300) mm. The scales are green but some of them on the front part of the body are edged with black and torquoise. This causes a barred and spotted effect. The underparts are yellowish-green. The eye is large and clear, and the neck slender and distinct, the ventrals and subcaudals are flattish and sharp edged which facilitates rapid movement among twigs of bushes.

Although active by day, these green snakes are hard to spot among the foliage. Food mainly lizards.

*P. hoplogaster* (Gunther) (Syn: *Chlorophis neglectus* (Peters)) Southeastern Green-Snake.

A common species with a southern distribution. Occurs in Arusha National Park. Smaller than the last, a good size being 590 (431+159) mm. The whole body is unadorned pea-green colour, becoming yellowish-green below. The scales overlap, and the hidden edge is turquoise blue. Also the actual skin under the scales is black. But these colour variations only show if the skin is considerably distended, photo. v.

This species frequents bushes particularly in the vicinity of water. Feeds mainly on frogs.

*P. irregularis* (Leach) Western Green-snake.

A common species with a western distribution. Very similar to the last but slightly longer, 820 (520+300) mm.

The habitat and habits are also similar.

*Prosymna ambigua* (Pfeffer) Shovel-snouted Snake.

A small blueish or brownish grey, flat headed snake with a rather short tail. Widespread but easily overlooked or confused with other small black species. Normal adults average 300 mm and juveniles 118 mm. A male measuring 453 (393+60) mm was exceptionally large for the species.

The snout is sharply produced like a shovel. The prefrontal and antinasal scales (those on top of the head between eyes and snout) are undivided, see fig. 15 (in other snakes these scales are paired). Mid body scale rows vary from 15-17; anal entire.

*Prosymna* is a burrowing snake, occurring in soil and under logs, stones, etc. It comes above ground at night. Probably feeds on small invertebrates.

Common in Arusha National Park.

*Pseudaspis cana* (L.) Mole-snake.

This species is widespread but seldom seen although it is large, 1200 (1055+145) mm, harmless and useful.

Distinctive characters of adults are the obese, rather flabby, very smooth and shiny body, with usually 27 scale rows (sometimes 25 or 29), narrow head, small eye, prominent snout and short tail. Note that the anal scale is divided and that the fourth upper labial contacts eye. The colour pattern is often pale grey with a brownish tinge and black tips to the scales. But this species is very variable and in some localities mole-snakes are blacker and elsewhere browner.

Juveniles, 330 (288+42) mm, have a very distinct colour pattern. The ground colour is stone, brownish, even reddish. From the middle of the back, alternating blackish bars extend down the flanks. These bars are interrupted by two white spots and end in white spotted lower flanks. The ventrals are rather narrow, not extending right across the underside. The whole of the underparts from chin to vent are off-white variegated with irregular black blotches and bars. Underside of tail white. Top of head unmarked, upper labials white divided by dark bars.

Mole-snakes are common in highland areas, but live underground and are very secretive. Food rodents.

*Scaphiophis albopunctatus* Peters Grey Beaked-snake.

The Grey Beaked-snake seems to have a more western and lowland distribution than the area treated. But being very distinctive the species is included in the hope that it will be recognised in a new area.

This is a medium sized snake, 860 (730+130) mm. The rostral shield is projecting like a hawk's bill. The general colour is grey above and white below; juveniles are lighter

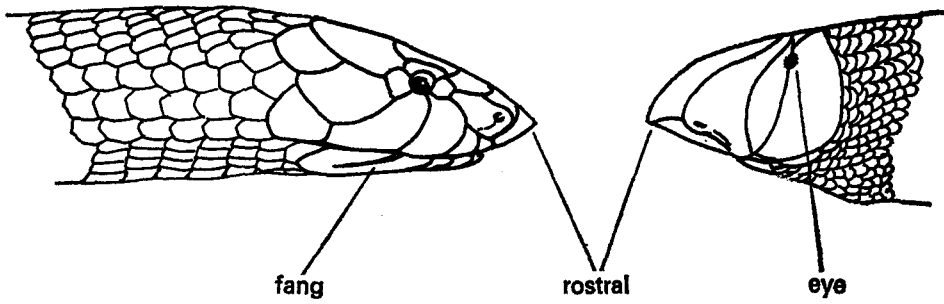


Fig. 12 *Atractaspis bibroni*

Fig. 13 *Typhlops schlegelii*

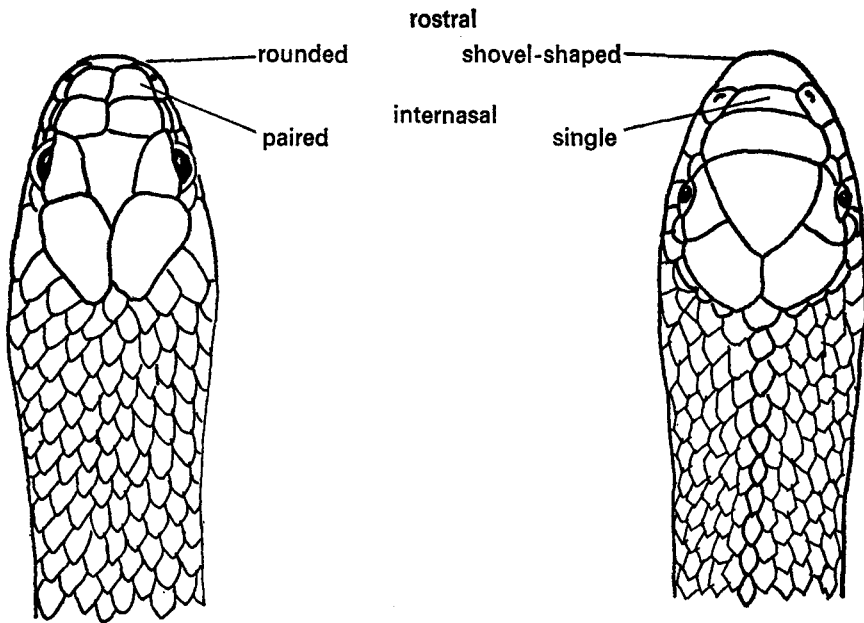


Fig. 14 *Duberria lutrix*

Fig. 15 *Prosymna ambigua*



coloured with a scattering of tiny milky coloured spots. The number of mid-body scale rows is rather variable, females may have a higher count than males. The tail is rather long, 25 per cent of total length; neck indistinct; pupil round and the eye completely encircled with ocular scales; the mouth closes with valve-like precision, the lower jaw fitting into a groove in the upper; the anal is paired, photo. iii.

Nothing seems to be known about the habits of this snake, except that it burrows. Its food is unknown, except that sand is often found in the stomach which suggests some soil inhabiting creatures like worms or termites.

#### Sub-family Dasypeltinae.

##### *Dasypeltis scabra* (L.) Egg-eating Snake.

This widespread and common species is in many ways the most interesting of all East African snakes. Their peculiarities are all concerned with the habit of eating fresh eggs, photo. viii.

It is not a large species. One collected measuring 980 (865 + 115) mm was exceptionally big. Typically the ground colour is greyish or greyish-brown with a very distinct pattern. There is a backwardly directed V-motif on the top of the head and a mid-dorsal series of dark rhomboid saddle-patches all the way down the back, and a series of dark blotches along each flank. The scales are keeled.

In this livery the egg-eater closely resembles the venomous Rhombic Night-adder, indeed the pattern is evidently a case of mimicry, and the display of false colours is intensified by aggressive behaviour. The snake, when alarmed, writhes from side to side, rasping its keeled scales on the ground, and striking furiously at its aggressor; the inside of the wide open mouth is deep blue.

But this display is all bluff, egg-eaters have no functional teeth at all. The fascinating performance of egg swallowing is easy to observe in a captive individual. First the egg is inspected for freshness and then pushed up against a support to get a purchase. The egg is then seized, and in a series of gulps the jaws slide over the shell and the elastic skin of the neck expands prodigiously to envelope the egg. The palate acts like a suction pad to prevent the egg slipping. After the egg has been engulfed, the shell is forced against a series of knobs which project downwardly from the vertebrae of the neck. The forward 'teeth' are sharp and split the shell; the rearward ones are knobly and serve to crush and roll the shell. The liquid contents of the egg then flows into the stomach. Finally the empty shell is regurgitated, neatly folded over like a pea pod.

It is certainly quite remarkable how big an egg this small headed snake can swallow. Even small birds eggs seem large for juvenile egg-eaters which measure about 250 (215 + 35) mm. One would imagine a newly hatched snake starts life with a problem. First to find an egg, next to find one small and fresh enough to swallow. In fact hatchling egg-eaters can easily swallow weaver bird size eggs measuring 22.5 × 15.5 mm.

*Dasypeltis* is active and nocturnal, both arboreal and terrestrial in its search for nests and eggs. The species is common in the Arusha National Park.

#### Sub-family Boiginae

##### *Aparallactus* Centipede-eaters.

There are six species in this genus in the E. African check-list. Only one, *A. capensis* Smith is treated here, because not only is it common and widespread woodland species in Tanzania, but it is also the species occurring in our area. But it must be mentioned that *A. jacksonii* (Gunther) is recorded from the Kenya and Tanzania borderlands around the base of Kilimanjaro. The writer has no knowledge of this latter species, so the following notes all apply to *A. capensis*.

The Centipede-eaters are tiny, slender snakes, 285 (240 + 45) mm being average. Specimens of up to 380 mm, or 15 inches, are on record but they must be unusual.

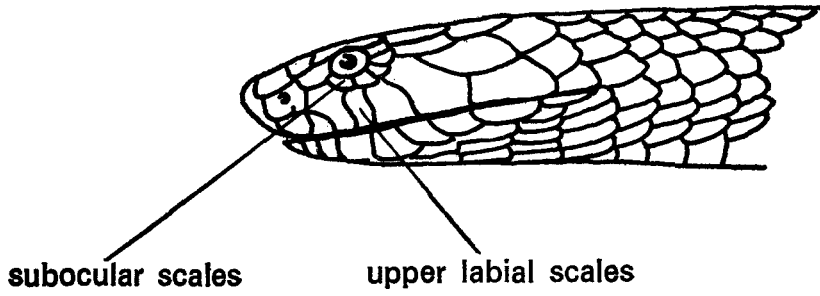


Fig. 16 *Naja haje*

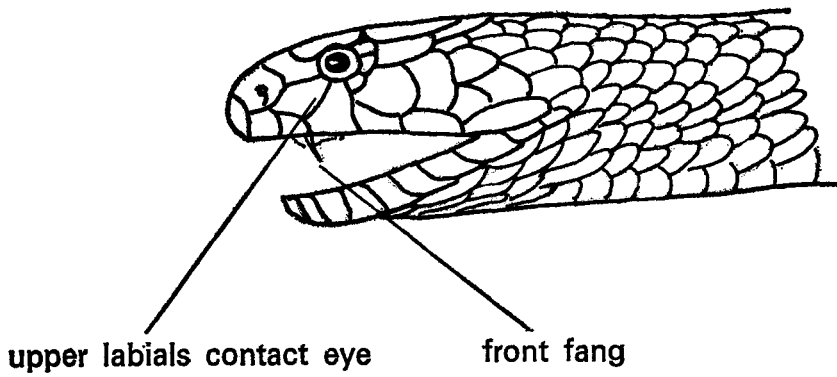


Fig. 17 *Naja nigricollis*

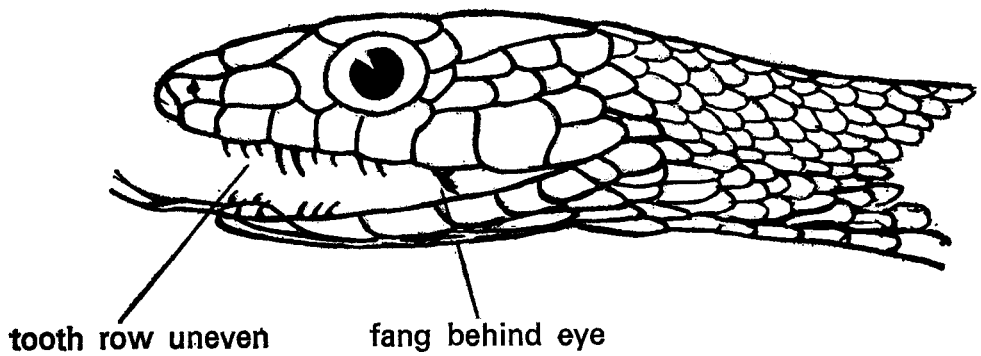
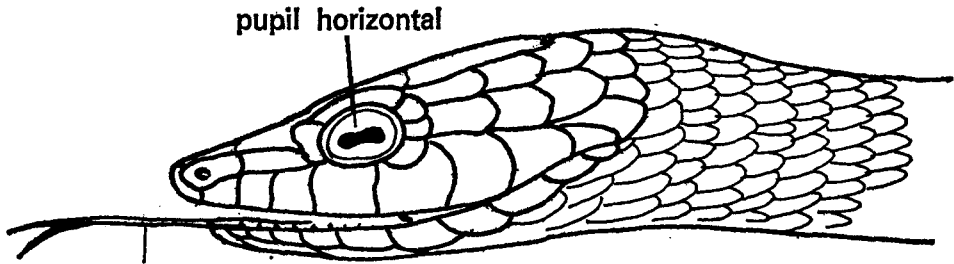


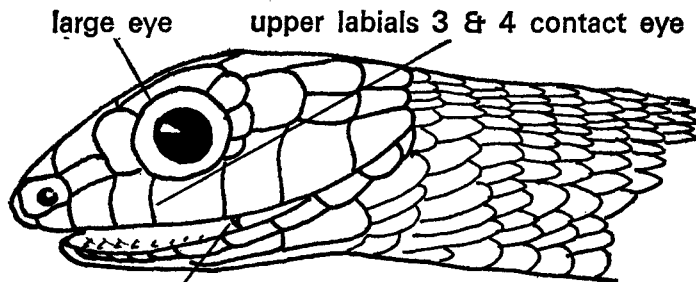
Fig. 18 *Psammophis sibilans*



tongue extended  
orange with black tip

Fig. 19

Twig Snake *Thelotornis kirtlandii*



fang behind eye

Fig. 20

Boomslang *Dispholidus typus*

Although so small, *Aparallactus* is back-fanged and poisonous, though it could not open its mouth wide enough to harm a person even as much as a bee. They are distinctly marked. The back is warm brown and the under side white tinged with yellow. The head and first few scale rows of the body, are very dark brown; the lips (except just under the eye where they are dark brown) and a few scale rows on the side of the neck, are white. The most distinctive character of all to note is that the subcaudal scales are single and not paired like most other snakes, see fig. 1c. Mid body scale rows 15.

Centipede-eaters are secretive little snakes that hide away in crevices, under logs and in tussocks and termitaria. Very little is known about their habits. They lay eggs. They probably eat termites as well as centipedes. They need somebody to study them.

*A. capensis* occurs in Arusha National Park.

*Crotaphopeltis h. hotamboeia* (Laurenti) White-lipped Snake.

This species shares the distinction with the House snake (*Boaedon*) in being the commonest snake in East Africa and they are rather alike. It is quite easy, however, to tell the two species apart by the mid body scale row count, 19 for the White-lipped, 29-33 for the House Snake. An exceptionally big White-lipped measured 735 (675+60) mm. Typically this species is an undistinguished blackish-grey, the top of the head is darker; the underparts, and the lips, are off-white. Other recognition characters are the wide head, vertical pupil, distinct neck and rather short tail, see figs. 8 and 9. Juveniles often have a minute milky spot on some scales which may form an obscure pattern on the back and sides, photo. x.

This snake is nocturnal, terrestrial and retiring. It is aggressive when first encountered and large ones, being back-fanged, should be treated with respect. About a dozen eggs are laid in compost heaps and such like places. Food usually frogs.

Common in Arusha National Park.

*Dispholidus typus* (Smith) Boomslang.

Common and widespread but, although a tree inhabiting snake, this is not a forest frequenting species. For this reason it is certainly not common in formerly forested areas such as the Nairobi and Arusha districts. It can, however, be expected to turn up in gardens and such like places. The true home of Boomslangs appears to be the vast deciduous woodlands that cover so much of East Africa. This is a rather big snake, a length of 1465 (1085+380) mm, or somewhere around 5 ft, is quite usual, photo. ix.

Boomslangs are beautifully and brightly coloured, but the pattern is so variable that they can be easily confused with other species. A common form is black, with each scale ornamented with yellow, greenish-yellow or blueish-yellow spots, the head shields in particular being variously margined with the same colours. The underparts are essentially the same colour as the spots, each scale more or less margined with black.

But self coloured individuals, usually males, are common. Pure green ones could be mistaken for the green bush-snakes (*Philothammus*), or mambas (*Dendroaspis*); black ones for the Black Tree-snake (*Thrasops*). There is sometimes a tendency for the pattern to have a longitudinal striped arrangement in which case confusion arises with the Sand-snakes (*Psammophis*). Rather rarely the pattern is variegated, and the snake then closely resembles the Twig-snake (*Thelotornis*).

But if one is not confused by the colour pattern, the Boomslang is an easy snake to recognise. The eye is large with a round pupil, and is set rather far forward in a short head. The body is rather compressed from side to side and the scales are overlapping and set at an oblique angle, and each is distinctly keeled; there are 19 mid body rows. The anal is paired and the tail rather long, rather over  $\frac{1}{4}$  of total length in males and just under in females, see fig. 20.

These beautiful snakes are diurnal, arboreal and inclined to display by inflating the neck when alarmed. Their venom is virulent but being back-fanged and not particularly

aggressive there is really no danger unless the snake is handled. Their favourite food is chameleons, but young birds, eggs and a variety of other creatures may be taken. Boom-slans are often mobbed by birds.

*Hemirhagerrhis n. nototaenia* (Gunther) Bark-snake.

This nice little snake attains a length of 335 (250+85) mm or slightly more. It is a woodland species and not found in formerly forested areas.

The colour pattern is distinctive and seemingly constant. The whole snake is marbled a pinkish-brown colour, both above and below. The top of the head is speckled with brown, becoming dark brown on the nape and this colour is continued as a blotchy zig-zag line down the back, eventually breaking up into a series of blotches and spots. The dark area of the neck is flanked with orange and the end of the tail is yellow. The tongue is orange at the base. In general appearance, therefore, the Bark-snake is rather like a tiny Twig-snake, but the circular pupil of the former removes any doubt even if confusion between the two species was possible, photo. xii

Bark-snakes spend their time secreted under bark, often with their head sticking out. From this position they seize small lizards upon which they prey.

*Psammophis* Sand-snakes.

The classification of the snakes in this genus has given trouble to experts, see Love-ridge (1940) and Broadley (1966). Without going into details of racial distinctions, we have to consider 4 species as possibly occurring in our area. The following key, partly adapted from the literature, may be helpful in identifying them.

1. Mid-body scale rows 15 *P. biseriatus.*
- Mid-body scale rows 17. 2
2. Three black stripes along the body; underparts greyish heavily speckled with black. *P. punctulatus.*
- Back and sides longitudinally zoned different shades of brown, brownish-grey or olive; underparts white, or tinged with yellow, and with a continuous black pencil line all the way down the outer one-eighth of each ventral and subcaudal scale. *P. subtaeniatus*
- Body not banded; below whitish or tinged yellow, sometimes spotted but not distinctly so, no pencil line. *P. sibilans*

*Psammophis s. sibilans* (L.) Hissing Sand-snake.

Common and widespread in the woodlands wherever there is convenient shelter, but not occurring in rain forest. This is a large species, 1815 (1345+470) mm, or 5½ ft, being a good sized specimen; it is also rather massively built, see photo. xiii.

The general colour is olive-brown, olive-green, brownish stone-colour or biege above, occasionally lighter on the flanks. The underparts are whitish or yellowish and usually lightly peppered with grey. The chin is white and usually spotted. The lips are light coloured and marked with irregular shaped, golden centred, dark edged spots. The mid dorsal scales along the body are usually distinctively coloured, being light at the base and dark at the tip. Juveniles tend to be longitudinally banded, but not adults.

This is an active diurnal snake frequently encountered ranging across country in search of prey which consists of frogs, lizards and rats. At other times it will remain motionless in the grass with head held aloft surveying the scene with watchful eyes.

All the sand-snakes are back fanged and so big ones should be treated with respect.

*P. subtaeniatus sudanensis* Werner Northern Stripe-bellied Sand-snake.

Common and widely distributed in the woodlands throughout Tanzania and Kenya up to about 1200 m altitude. This is a rather smaller snake than the last, a good size being 1312 (880+432) mm; it is also more lightly built, photo. xiv.

The colouration is brownish above, the individual scales being dark edged or divided into two shades of grey or olive, which causes a longitudinal banded effect. The under

side is normally china-white with the central parts of the belly and tail tinged yellow, the two shades being divided by a continuous black pencil line each side. This line is diagnostic for this species in our area. The lips and chin are white, with or without spots.

This is an alert diurnal species, moving with great agility. Large individuals need to be treated with respect.

*P. punctulatus trivirgatus* Peters      Southern Speckled Sand-snake.

This handsome species inhabits drier and lower country than our area, but probably occurs commonly in Masailand between the Kenya highlands and the Meru and Kilimanjaro massives.

It should be readily recognised by its distinctly, black and yellow, banded back and heavily spotted belly. This species is said to reach a good size, an East African record, quoted by Pitman (1938), being 1660 (1080+580) mm.

*P. biseriatus* Peters.      Eastern Link-marked Sand-snake.

This species is included here because Loveridge (1940) lists it from Arusha and Kilimanjaro mountain. But the general distribution of the species is surely drier and lower country than the area we treat.

As the writer has not seen this species no further details can be given, see Pitman (1938).

*Psammodromus tritaeniatus* (Gunther)      White-bellied or Striped Grass-snake.

Some confusion has arisen over the East African races of this snake, mainly because of variations in the colour pattern. An unstriped, white bellied subspecies occurring on the Tanzanian-Zambia borderlands was named after the writer *P. t. fitzgeraldi* by Broadley (1960). However, intermediate populations are widespread and so this form no longer has subspecific rank.

Another race having grey under parts, and therefore not qualifying to be called white-bellied, is sympatric with the nominate race and does not integrate. Broadley (1971), therefore considers this to be a good species. This one does not occur in our area.

The race within range of the Kenya-Tanzania borderlands, *P.t. multisquamis* Loveridge, is banded and white bellied, and is distinguished by a larger number of ventral scales, see Pitman (1938) who treats this subspecies under the old generic name of *Trimerorhinus*.

The White-bellied Grass-snake is a delightful and docile, diurnal snake. It is small to medium sized, a measurement of 625 (488+137) mm being large for the species. In the typical form the body is longitudinally banded darker and lighter greyish or brownish. The lower flanks are white with a row of red spots; the under parts are white.

Common, where occurring, amongst ground vegetation in woodlands. Active by day, but retiring; prey frogs, lizards and mice.

*Rhamphiophis*      Beaked-snakes.

The writer has no records of Beaked-snakes in the area treated. Three species are listed from Kenya and Tanzania, namely *R. acutus* (Gunther), Southern Striped Beaked-snake, *R. rubropunctatus* (Fischer), Red-spotted Beaked-snake and *R. oxyrhynchus* (Reinhardt), Western Brown Beaked-snake. They are all inhabitants of low, sandy, woodland areas, rather than of the formerly forested uplands.

In general they are medium sized snakes growing to 1 metre (rather over 3 ft) in length. *R. oxyrhynchus* is brownish with a distinct dark line through the eye. *R. acutus* is banded. *R. rubropunctatus* is said to be spotted with red, which is the characteristic livery of juveniles of the other species. All are back-fanged but docile and not dangerous.

The diagnostic characteristic of all species is the beak-like rostral which is hollowed out below. The only other snake that has this character is *Scaphiophis* which has already been treated. Apart from colour-pattern differences, it should be noted that in *Rhamphiophis* 1 or 2 upper labials contact the eye which is not separated from them by sub-ocular scales like in *Scaphiophis*. The beak seems to be used for digging into loose sandy soil.

*Telescopus semiannulatus* (A. Smith) Tiger-snake.

This distinctive species is widespread in East Africa, but occurs mainly at lower elevations than the area treated. It is medium sized. A large individual collected in the Rukwa valley measured 930 (800+130) mm, photo VII.

The body is reddish-pink with a broad black blotch across the neck, and then a series of black blotches all down the back, about 30 on the body and 10 on the tail. The underparts are mother-of-pearl white tinged with pink. The head is broad, the neck distinct, the eye prominent and with a vertical pupil.

The Tiger-snake is nocturnal and rather vicious. Large ones should be treated with respect as they have a poison fang behind the eye in the upper jaw. They are terrestrial but good climbers and feed on small creatures varying from lizards, small birds to mice. One I collected had suffocated itself by trying to swallow a bat.

*Thelotornis kirtlandi* (Hallowell) Twig-snake or Vine-snake.

A common and widespread woodland species. Like the Boomslang, it is not common in formerly forested areas so may not be encountered around Nairobi; it has not been recorded from Arusha National Park. The Twig-snake is extremely slender but quite long, a good size being 1425 (880+545) mm, or around 4½ ft.

This species is very distinctive but practically impossible to see in the wild due to its cryptic colouration and habit of 'freezing'. The slender body and tail, the latter about 35 per cent of the body length, are intricately marbled all round with greyish and brownish, and speckled and spotted with pinkish and cream. The slender head is ornamented with dark and light colours which form a Y-shaped design on top. The whole effect completely harmonises with the twigs and branch among which Twig-snakes live. Furthermore the narrowly horizontal pupil is the antithesis of a bull's-eye for attracting attention, see fig. 19. The tongue, however, is conspicuous and gaudy, orange and black, and the snake has the habit of extending it to distract the attention of its prey from its own stealthy approach.

When detected these lovely snakes can put up quite a display by inflating the neck and exposing a striking pattern of colours. They have fangs behind the eye and their venom is dangerous. Food largely chameleons.

## Elapidae

*Elapsoidea sundevallii* (A. Smith) Garter-snake.

The Garter-snake is a primitive burrowing cobra which is secretive in habits and rarely seen.

Adults are usually slate grey with a number of lighter coloured transverse pairs of bands across the body which become more apparent when the snake inflates itself. The underside is mother-of-pearl white from chin to tail. The body has a smooth 'oily' appearance. Juveniles are said to be conspicuously banded black or reddish-brown and white.

This is a small species, a length of 483 (445+38) mm, about 18", being a good size.

Garter-snakes are front-fanged and venomous; but, being of a placid temperament, are not dangerous to human beings. They are nocturnal and likely only to be found by turning over rocks or logs. This species is oviparous; but very little seems to have been recorded about the life history or feeding habits.

*Dendroaspis angusticeps* (Smith) Green Mamba.

The mamba has the reputation of being the most dangerous snake in Africa, an indictment, however, that most people apply to any snake that they see. Moreover the Green Mamba is less aggressive than the so-called Black Mamba (*D. polylepis* Gunther) for which I have no record in our area.

The two East African mambas are extremely similar in appearance and so records as to which occurs where are often confused. They may be easily distinguished from each other, however, by the characters given in the key.

The Green Mamba is a very slender snake for its length. A good sized individual measures 1860 (1430+430) mm. The head tapers from the massive jowls to the blunt snout; it is flat topped and straight sided, with the supraocular bent sharply to form a ridge over the eye. The body is green above and paler below, with no pattern; the pupil is circular and the iris dull old-gold colour.

This is an arboreal snake inhabiting forest. It is quite common and widespread and occurs in the Arusha National Park. They feed on birds, eggs and chameleons.

*Naja haje* (L.) Egyptian Cobra.

This is the common cobra of north Africa and the Sudan and although widespread in East Africa it tends to be found mainly in the drier country. Its distribution is, therefore, rather marginal to the area treated.

It is a typical cobra. It is a big snake, specimens up to 2 m, 6 ft, occur. The body colour varies from light to dark brown with yellowish underparts. Sometimes there is a dark band on the neck. The presence of subocular scales, dividing the eye from the upper labials is the diagnostic character for recognising this species of cobra, fig. 16. Cobras rear up and expand the neck to form a flattened hood when in a threatening mood. Photo. xi, shows a water cobra (*Boulengerina*) in display.

This species is seemingly the asp of legend and its venom is dangerous, but the snake is not aggressive.

*Naja nigricollis* Reinhardt Spitting Cobra.

This is the commonest cobra in the drier parts of the area treated. It is a large, massively-built black snake and a large specimen can measure 2145 (1777+368) mm, just over 7 feet. Spitting cobras are diurnal and in the habit of frequenting farmsteads and chicken runs where they often have a favourite hole in which to live. This snake is therefore seen quite frequently.

It is a fearless creature, rearing up when disturbed, flattening its hood and exposing the shiny, black, ventral scales under the neck. These are usually irregularly-blotched, with dull reddish or whitish markings. The snake faces its antagonist and spits freely, ejecting a fine spray of venom from its grooved fangs by contracting the muscles around the poison glands. The jets are invariably directed at the eyes with forceful suddenness and, as they have a range of between 2-3 metres (according to the size of the snake), it is as well not to tease Spitting Cobras. I often think juveniles, 348 (288+60) mm, even more dangerous. They look innocent—like any other little blackish snake—and yet they can spit with accurate aim, without even rearing up or visibly opening the mouth. The element of surprise in their attack is perfect. Nevertheless, one of these plucky snakes, threatening an aggressor many times its own bulk, is one of the most rewarding sights of the African bush, I think.

Spitting cobras occur commonly at Tarangire and Lake Manyara, but I have not found one in the Arusha National Park.

**Viperidae.***Atheris* Tree or Bush-vipers.

These beautiful greenish, or variegated coloured, small arboreal vipers present a



bit of a mystery. They are typical tropical African snakes, frequenting forests and swamps. Consequently they tend to occur at the higher elevations where forest predominates, and because relict patches of forest and swamps are discontinuous, so is the distribution of Tree-vipers.

Being cryptically coloured, they are extremely difficult to see, and so are not well represented in collections. But where occurring they are usually common and, once the collector has got his eye in, not difficult to find. The general conclusion must be therefore, that *Atheris* are very local but widespread in suitable places in East Africa.

As a result of the discontinuous distribution of the genus, several species and subspecies have been described. But due to the usual lack of adequate specimens in museums, the validity of the different forms is sometimes in question. Our interest naturally centres on the new species, *A. desaixi*, described by Ashe (1968) from Kenya.

In general, Tree-vipers are small, the Kenya species is big for the genus with a possible length of 640 mm; a specimen attributed to *A. nitschei* from the southern Tanzania borderlands measured 340 (288+52).

The scales are prominently keeled, the head wide like other vipers and the short tail is prehensile. The colour is usually dark green with dark or yellowish tipped scales forming a pattern, the underparts often being yellowish. De Saix's Bush-viper is seemingly darker coloured than the usual run of *Atheris*.

Tree-vipers are recorded to feed on small mammals and frogs. Though venomous, they have not got a bad reputation; the writer has not heard of anybody being bitten by one. No species of *Atheris* have yet been found in the forests on the volcanic mountains of northern Tanzania. But anyone who finds a new locality for these snakes should report it to the Society as a matter of great interest.

*Vipera hindii* Boul. Montane-viper.

This is an endemic Kenyan snake occurring only on the Aberdares. The writer has no acquaintance with this species, and comparatively little seems to have been found out about it since it was first discovered in 1910.

Recently taxonomists have merged the genus *Vipera* in *Atheris*; so Montane-vipers now join the Tree-vipers, in a group that needs more study.

*Atractaspis bibroni* A. Smith Burrowing-viper.

The Burrowing-viper is an enigma. It is a smallish snake, 535 (506+29) mm, or a little over 18 inches, being a good size. It is plain shiny black, or very dark brown, above and below. The head is not distinct from the neck and not as wide as the body; the snout is rather prominent. The top of the head is covered with normal shields. They look, therefore, more like any other small blackish snake, particularly other burrowing kinds, than a viper, see photo. xvi.

Practically every herpetologist, especially beginners, has been taken in. Actually when one is initiated, one realises that the one good viperine character is painfully obvious, and that is the fangs. These are extremely long and project backwards from the corner of the mouth. Therefore the snake can give ones finger an injection without even opening its mouth. The result is nasty and there are reports of fatalities, Corkill (1935).

Recognition characters, apart from the fangs, include the long slender body and very short tail, about  $\frac{1}{16}$  of the total length; some or all of the subcaudal scales may be single, refer to figs. 12 and 10. The scales are smooth, varying from 19-23 rows at mid-body. Variations in details of scale counts have led to several species and subspecies being described.

Burrowing-vipers live underground, under stones, etc., and so may be encountered gardening. They feed on burrowing lizards, other burrowing snakes and nestling mice in holes, and such like subterranean prey. They move above ground at night, and sometimes become numbed with cold so they lie on the surface till warmed up again by the sun.

Burrowing-vipers lay eggs, so should not be called vipers at all (viper refers to being viviparous—that is, giving birth to living young). Common in Arusha National Park.

*Bitis arietans* (Merrem) Puff Adder.

The Puff Adder has the distinction of being the commonest, most widespread and most familiar large snake in E. Africa. In consequence of its abundance and almost domestic habits it has the most lethal (or, at least, extremely unpleasant) bites to its debit; and the most noxious rodents swallowed to its credit.

The Puff Adder is easy to recognise. An average large individual measures 1000 (940+60) mm; just over 3 ft. The build is massive, with a wide, spade-shaped head covered with small keeled scales, fig. 10, and a short tail. The colour pattern is variegated yellowish and darker brown. The dorsal pattern consists of a series of V-shaped marks of darker and lighter brown; there is a light yellowish line running between the eyes. The underparts are yellowish-white blotched with blackish. Juveniles are a small replica of adults, but the general tone is pinky-brown with dark amber-brown markings. This juvenile tone may be retained until the individual is nearly half grown.

Puff Adders are mainly nocturnal and terrestrial, but may be found anywhere at any time coiled up under partial cover. The body pattern harmonises so well with ground litter, that there is a real danger of treading on this snake unawares. They are sluggish, moving slowly forward by working the ventral scales. But they can strike with lightning speed. The poison causes disintegration of the blood vessels and extensive haemorrhage. This is a dangerous snake.

Puff Adders are viviparous, that is to say produce living young. A brood may comprise over three dozen, each juvenile being about 180 mm long, and fully equipped with venom ready for its first bite. Young snakes feed on frogs, later graduating to rats.

Occurs at 1500 m altitude in the Arusha National Park.

*Bitis worthingtoni* Parker Kenya Horned-vipers.

This species was described from Naivasha in 1932. I have not seen one, so have not been able to include this species in the key.

This is a small species, adults measure about 300 mm and the young, which number up to 12 at a birth, about 140 mm. In general appearance, these snakes resemble small Puff Adders with a horn above each eye. Their venom is virulent. It is reported that white mice bitten by Horned-vipers die quicker than those bitten by Puff Adders.

Up-to-date information on the habits and status of this endemic Kenyan snake is needed.

*Causus rhombeatus* (Licht.) Rhombic Night-adder.

There are four species of night-adders on the East African check-list; but the Rhombic is the commonest in the area treated, photo. xv.

Like the Burrowing-viper, this is not a typical Viperine snake. The top of the head has shields like the Colubrinae; there is no distinct neck and the head is actually narrower than the obese body. They lay eggs, instead of giving birth to living young, like the true vipers.

Night-adders are medium sized, a big one being 710 (630+80) mm, or nearly 3 ft. The large hinged fang in front of the mouth is easy to locate. The colour pattern when present is distinctive, but plain coloured individuals are not uncommon. The ground colour varies from olive-brown, brownish-grey, pale-grey to almost black. There is often a distinct V-mark, opened backwards, on top of the head. All the way down the back, there is a series of dark, white-edged, rhomboid markings; the under parts are ivory-coloured, with or without darker streaks.

The pattern is made up from the dark edges to the body scales which are overlapping. So if the dark edge is covered by the light edge of an adjacent scale, the snake appears

to be plain coloured. But these snakes blow themselves out when threatening and this expands the scales apart, even exposing the underlying black skin. This produces a rather startling effect. Patterned snakes become even more strikingly marked, and a hidden pattern appears on plain coloured individuals. Juveniles vary as much as adults in colour pattern.

Other points to note are that the dorsal scales are feebly keeled, the mid body scale row count varies from 15–19 and the tail is rather short.

Night-adders are nocturnal and terrestrial snakes frequenting wet places, or anywhere else during the rains, where they can find toads to eat. They lie up in any convenient shelter during the day or in dry weather.

Common in the Arusha National Park.

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