

# SCIENTIFIC RESULTS OF THE VERNAY-LANG KALAHARI EXPEDITION, MARCH TO SEPTEMBER, 1930

## REPTILIA AND AMPHIBIA

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With Plates X, XI and 30 Text-figures

### INTRODUCTION

THE reptiles and amphibians collected on the Vernay-Lang Kalahari Expedition are by no means confined to the Kalahari, but include specimens collected throughout the itinerary of the expedition in the Bechuanaland Protectorate, Transvaal and Southern Rhodesia. The collection comprises 1452 specimens in all, distributed among 23 families and subfamilies, 60 genera and 99 species and subspecies as follows:

	<i>Tortoises and turtles</i>	No. of specimens
Testudinidae	2 genera, 3 species (1 new)	25
Pelomedusidae	2 genera, 2 species (1 new)	20
	<i>Crocodiles</i>	
Crocodylidae	1 genus, 1 species	4
	<i>Lizards</i>	
Geckonidae	4 genera, 9 species (4 new)	181
Agamidae	1 genus, 7 species (1 new)	117
Zonuridae	2 genera, 3 species	22
Varanidae	1 genus, 2 species	12
Amphisbaenidae	2 genera, 2 species (1 new)	25
Lacertidae	3 genera, 6 species	138
Gerrhosauridae	1 genus, 4 species	20
Scincidae	6 genera, 9 species (1 new)	287
	<i>Chameleons</i>	
Chamaeleontidae	1 genus, 2 species	14
	<i>Snakes</i>	
Typhlopidae	1 genus, 1 species (1 new)	2
Leptotyphlopidae	1 genus, 1 species	16
Boidae	1 genus, 1 species	4
Colubridae (Colubrinae)	5 genera, 5 species (1 new)	19
Colubridae (Boiginae)	8 genera, 11 species (2 new)	41
Colubridae (Elapinae)	4 genera, 6 species	20
Viperidae (Viperinae)	3 genera, 4 species	48
	<i>Frogs and toads</i>	
Ranidae	7 genera, 13 species (4 new)	345
Brevicipitidae	2 genera, 2 species	25
Bufonidae	1 genus, 4 species (1 new)	58
Pipidae	1 genus, 1 species	9

LIST OF LOCALITIES FROM WHICH SPECIMENS ARE RECORDED, WITH  
THEIR APPROXIMATE LATITUDE AND LONGITUDE

Bandolierkop	23° 15' S., 29° 48' E.	Matapa Pan	23° 19' S., 24° 35' E.
Beit Bridge	22° 17' S., 30° 0' E.	Matoppos	20° 30' S., 28° 40' E.
Bodiben	20° 17' S., 22° 39' E.	(World's View)	
Bosoli	20° 57' S., 27° 34' E.	Maun	19° 59' S., 23° 29' E.
Bulawayo	20° 0' S., 28° 6' E.	Metsimaklaba	24° 32' S., 25° 40' E.
Bushman Mine	20° 31' S., 26° 36' E.	River	
Chukudu	22° 27' S., 23° 25' E.	Molepolole	24° 26' S., 25° 27' E.
Damara Pan	22° 3' S., 22° 30' E.	Mothadi Pan	23° 48' S., 24° 37' E.
Figtree	20° 22' S., 28° 20' E.	Motlhatlogo	20° 29' S., 22° 50' E.
Gabani	24° 42' S., 25° 45' E.	Nata River	19° 48' S., 26° 33' E.
Gaberones	24° 41' S., 25° 57' E.	(Police Camp)	
Gemsbok Pan	21° 41' S., 21° 34' E.	N'kate	20° 2' S., 26° 12' E.
Goha Hills	18° 29' S., 24° 10' E.	Okwa River	22° 18' S., 23° 7' E.
Gomodimo	22° 41' S., 23° 55' E.	Plumtree	20° 30' S., 27° 52' E.
Gomodimo Pan	22° 35' S., 23° 45' E.	Sebena	20° 50' S., 27° 13' E.
Gwelo	19° 27' S., 30° 2' E.	Shaleshonto	19° 9' S., 23° 58' E.
Kabulabula	17° 49' S., 24° 58' E.	Shorobe	19° 44' S., 23° 42' E.
Kalakamati	20° 36' S., 27° 18' E.	Sunnyside	21° 37' S., 22° 0' E.
Kanke Pan	23° 37' S., 24° 31' E.	Titumi	20° 30' S., 27° 1' E.
Kaotwe Pan	22° 32' S., 23° 18' E.	Toten	20° 22' S., 22° 59' E.
Kasane	17° 48' S., 25° 9' E.	Tsessebe	20° 42' S., 27° 39' E.
Kuke Pan	23° 22' S., 24° 28' E.	Tsotsoroga Pan	18° 43' S., 24° 22' E.
Kumalo	20° 29' S., 27° 33' E.	Van Zyl's	21° 45' S., 22° 8' E.
Kwaai	10° 10' S., 23° 39' E.	Cutting	
Lobatsi	25° 20' S., 25° 45' E.	Victoria Falls	17° 59' S., 25° 51' E.
Mabeleapudi	20° 56' S., 22° 27' E.	Wankie	18° 5' S., 26° 25' E.
Machumi Pan	21° 10' S., 22° 16' E.	Zimbabwe	20° 0' S., 31° 0' E.
Maitengwe	20° 13' S., 26° 55' E.	Zweizwe River	18° 39' S., 24° 21' E.
Makarikari	20° 20' S., 26° 12' E.		
Salt Pan			

LIST OF NEW SPECIES AND SUBSPECIES WITH TYPE LOCALITIES

The following new species and subspecies from the collection, of which brief preliminary descriptions have already been published<sup>1</sup>, are here described in full detail:

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<i>Kinixys australis mababiensis</i> —Tsotsoroga Pan	302
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<sup>1</sup> *Ann. Trans. Mus.* xv, 1932, p. 35.

NOTES ON PREVIOUS COLLECTIONS MADE IN AND  
AROUND THE KALAHARI

Owing to its inaccessibility, the central Kalahari has until recent years remained somewhat of a "terra incognita" to travellers and collectors, very few of whom have penetrated or traversed this area. The majority of collectors have confined themselves to exploring along the outskirts, and of these mention may be made of the following who have made herpetological collection of varying magnitude.

Sir Andrew Smith (1834-5) in the course of his travels skirted the south-eastern Kalahari, collecting a few reptiles, etc., from indefinite localities to the north of Kuruman and Vryburg<sup>1</sup>.

Dr Emil Holub (1883-7), while travelling from Colesberg to Kazungula, on the Chobe River, collected half a dozen or so species from various localities along the eastern edge of the Kalahari<sup>2</sup>.

Dr Hans Schinz (1884-6) collected mainly in South-West Africa and Ovamboland, securing only four species in the vicinity of Ghanzi, on the western side of the Kalahari<sup>3</sup>.

Dr Eduard Fleck (1890) secured three species from the western Kalahari, near Uqua (= Okwa?), the remainder of his material coming from various localities in South-West Africa<sup>4</sup>.

Prof. Leonhard Schultze (1903-5), during his travels in South and South-West Africa, spent over three months collecting in the southern Kalahari, from Mafeking—Phitshane—Kanya—Kokong—Kang to Lehututu, and assembled a collection of close on fifty species of reptiles and Amphibia<sup>5</sup>.

R. B. Woosnam and the Hon. Gerald Legge (1909) traversed the southern Kalahari from Vryburg—Morokwen—Molopo River—Kokong—Lehututu—Okwa to Ghanzi, and thence north to Lake Ngami and the Thamalake River, returning via the Botletle River—Rakops—Serowe to Palapye Road. Their main efforts, however, were directed to the collecting of birds and fishes, comparatively few reptiles being secured<sup>6</sup>.

NOTES ON THE CHARACTER OF THE VARIOUS COLLECTING SITES,  
TO WHICH REFERENCES ARE MADE IN THIS REPORT

**Metsimaklaba River:** Situated 12 miles west of Gaberones Station. A dry river bed, about 60 yards wide, with fairly steep banks from 8 to 10 feet high. Bed of river flat and covered with coarse river sand: water obtainable by digging 2 feet down. River banks thickly wooded, mainly with acacia. Numerous rain-filled grass and reed-bound vleis in the vicinity. Sandy ridges, with numerous stony outcrops about a mile east of river.

**Gaberones Camp:** Situated about 6 miles west of Gaberones Station, in open bush country, with numerous solitary outcrops of quartz-porphry boulders, scattered throughout the neighbourhood.

<sup>1</sup> A. Smith, 1849, *Ill. Zool. S. Afr.*, *Reptiles*.

<sup>2</sup> Bocage, 1896, *Jorn. Sc. Lisb.* (2), IV, p. 115.

<sup>3</sup> Boettger, 1887, *Ber. Senck. Nat. Ges.* p. 137.

<sup>4</sup> Boettger, 1894, *Ber. Senck. Nat. Ges.* p. 88.

<sup>5</sup> Werner, 1910, *Jena. Denkschr.* XVI, p. 279.

<sup>6</sup> Dollman, 1910, *A.M.N.H.* (8), VI, p. 388.

Kuke, Gomodimo, Kaotwe and Damara Pans: Typical Kalahari pans, consisting of partly impermeable deposits of surface limestone lying in depressions of the surrounding sand veld. After good rains, water often lies in these pans for many months, and thus an aggregation of animal life invariably occurs in their vicinity. These pans are usually surrounded with a belt of acacia trees, which give way again on the higher sandy ground to the open grass country with scattered bushes, of the typical Kalahari complex.

Okwa River: A permanently dry river bed, about 1000 yards across, formed presumably during pluvial epochs in the Pleistocene. The banks have since broken down, while the bed has become heavily overgrown with vegetation, until now it is almost indistinguishable from the neighbouring country.

Van Zyl's Cutting: A cutting made in an outcrop of rock, by one of the early pioneers. During our visit it presented a stretch of water 30 feet long by 10 feet across, with an average depth of 8 feet. Among the heaps of excavated rubble a great diversity of small animal life was found.

Gemsbok Pan: In undulating country supporting a fairly dense bushy vegetation together with numerous large trees of the Combretum type. In this area, which is considerably higher than the Kalahari proper, red sand predominates, with surface limestone outcropping along the ridges. Between here and Sunnyside there are extensive deposits of surface limestone, in which numberless rain-filled pans occur.

Machumi and Tschoin Pans: Similar to the pans between Gemsbok Pan and Sunnyside and in a like formation.

Mabeleapudi: Here were encountered the first true hills on the journey from Molepolole. These hills, consisting of quartz-porphry outcrops, rise 500-600 feet from the flat plain, and extend in a series roughly south-west to north-east. The surrounding country approaches the "Lowveld" type, with Baobabs making their first appearance.

Lake Ngami: An extensive depression, approximately 60 miles long by 10 miles across, filled at one time with water but now for the most part grass-covered, with reed-beds persisting in the lower-lying hollows. Bounded by a belt of very large thorn trees, which on the south-eastern side give way to heavily wooded sand ridges.

Maun and Thamalakane River: The Thamalakane River forms the main outlet of the Okavango delta into the Botletle, and contains a perennial flow of water. Banks clothed in luxuriant river forest, backed by extensive mopane forests away from the river.

Shaleshonto: On the southern edge of the Mababe depression, which consists here of dry open grass country, with patches of dense thornbush and mopane forest.

Tsotsoroga Pan: A perennial fresh-water pan, situated on the north-eastern edge of the Mababe depression, in heavy mopane forest. The whole of this area is subject to inundation during periods of exceptional flood on the Okavango.

Kabulabula: Situated on the southern bank of the Chobe River, which here presents a permanent flow of water, 100-150 yards wide.

During the flood season the river rises rapidly and inundates extensive areas. The banks are lined with heavy river forest, which gives way on the southern side to a dry strip of dense thorn scrub, which in turn merges into a bush and tree covered sand ridge.

Kasane: Camp situated on southern bank of Chobe River, near the "Rapids," 3 miles down river from Kasane Police Station. Luxuriant river vegetation backed by open mopane forest covering a series of stony ridges and hillocks.

N'kate: A small fresh-water pan, in open grass-covered sandveld, with belts of thorn trees and large shrubs along the ridges of higher ground.

Makarikari Salt Pan: Camp situated within the Makarikari depression, near the outlet of the Nata River into the pan proper. Country here consists of extensive open grass and stunted scrub-covered flats, with patches of thorn bush near banks of river. During our visit the river consisted merely of a series of large pools, all heavily brackish.

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Family Testudinidae							
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## SYSTEMATIC LIST OF REPTILES COLLECTED

## Order LORICATA

## Fam. CROCODYLIDAE

**Champse vulgaris** (G. Cuvier)

*Crocodilus vulgaris* G. Cuvier, 1807, *Ann. Mus. Paris*, x, p. 40, figs. 1-2.

*Champse vulgaris* Werner, 1933, *Das Tierreich*, Lief. 62, p. 19.

Three juvenile specimens were collected: V.L.K.E. Nos. 1323 and 1324 (June 1930), Thamalakane River, at Maun; No. 1355 (June), Kwaai. Also one adult skull, No. 1325 (July), from Chobe River, at Kabulabula.

DISTRIBUTION. Ranging over the whole of Africa, except the Sahara and Barbary in the north, and reaching in the south to Zululand, Transvaal (Limpopo River and its affluents), and the Cunene-Okavango-Chobe-Zambesi River systems.

REMARKS. The juvenile specimens consist of flat skins, with skulls. Snout about  $1\frac{3}{5}$  as long as broad. Mandibular symphysis reaching to fifth tooth. Four large nuchals forming a square, flanked by a smaller scale on each side anteriorly; two pairs of smaller nuchals in transverse series behind occiput. Dorsal scutes well separated from nuchals, in six longitudinal and sixteen transverse series. Tail about  $1\frac{1}{2}$  times head and body.

COLOUR. Above pale olive, with dense vermiculations of black; sides olivine, with large scattered black spots. Below yellowish, tinged with green.

FIELD NOTES. All three young specimens were shot in the Thamalakane River at night, with the aid of a torchlight, in the beam of which their eyes showed up as two bright red points.

## DIMENSIONS.

	No. 1323	No. 1324*	No. 1355	No. 1325 (skull only)
Total length	1350 mm.	1530 mm.	827 mm.	—
Snout to vent	600 mm.	755 mm.	377 mm.	—
Tail	750 mm.	775 mm.	450 mm.	—
Head length	223 mm.	308 mm.	141 mm.	475 mm.
Head width	111 mm.	96 mm.	50 mm.	260 mm.
Teeth	18/15	18/15	18/15	18-19/15

\* Tail damaged.

## Order TESTUDINATA

## Fam. TESTUDINIDAE

**Kinixys australis mababiensis** FitzSimons

(Plate X)

*Kinixys australis mababiensis* FitzSimons, 1932, *Ann. Trans. Mus.* xv, p. 37 (type loc.: Tsotsoroga, Ngamiland).

TYPE. An adult female (V.L.K.E. No. 1344 and T.M. 14689) collected at Tsotsoroga, 26th June, 1930.

DESCRIPTION. Anterior and posterior margins of carapace reverted and serrated, very feebly anteriorly, more strongly posteriorly. Nuchal shield present, small and projecting, over twice as long as broad. Vertebrae broader than costals; first vertebral subpentagonal in shape, about one-third wider posteriorly than anteriorly; anterior median angle slightly less than a right angle; vertebrae 2-5 subhexagonal; vertebrae 2 and 3 about one-third wider than long; fourth just slightly broader than long; fifth one-quarter broader than long. Marginals 4-7 with strong lateral keels; anterior and posterior



marginals subequal in length. Hinge well developed, between marginals 7 and 8. Gulars distinct, projecting slightly beyond anterior border of carapace and 4.3 mm. beyond anterior angle of humerals; hollowed out above; a distinct median notch; suture short,  $2\frac{1}{4}$  times into that between humerals; length of gulars almost ten times into total length of plastron. Suture between abdominals longest,  $2\frac{1}{3}$  times that between pectorals, which is slightly longer again than femoral; anal suture moderate subequal to femoral. Hind lobe of plastron very short and rounded, half the length of bridge, with a wide shallow notch behind. Axillary moderate, inguinal large, in contact by an anterior projection with marginal 6. Outer edge of humeral shield distinctly arched. Shell depressed, and distinctly flattened along middle of back, from hinder part of first vertebral to a prominence on middle of fourth; descent in front fairly steep from a median prominence on first vertebral to posterior edges of anterior marginals; behind descent gradual to middle of fifth vertebral and thence almost vertical to posterior edge of carapace. Median ridges present on all vertebrae, first, fourth and fifth with distinct prominences; other shields on carapace not raised; areolae on costals depressed. Five claws on fore limbs and four on hind limbs all bluntly pointed. Finger claws all functional, fourth largest and longest, third and fifth subequal, first smallest; Hind claws: second largest and longest, third longer than first, fourth widely separated from third, slender and only partly functional.

COLOUR. Above olive yellow, areolae of all carapace shields dark brown to blackish; usually a paler brown area round areolae midway between latter and outer edge of shield; shields edged with irregular markings of dark brown. Below dull yellowish, with dark brown suffusions radiating out from areolae, which bear a few dark spots or small blotches; central area of plastron free from pigmentation. Head and limbs grey to greyish yellow.

#### DIMENSIONS.

		Type ♀ (No. 1344)
Length of carapace	...	155 mm.
Length of plastron	...	145 mm.
Width of shell	...	110 mm.
Height of shell	...	65 mm.

DISCUSSION. Closely allied to *K. australis* Hewitt<sup>1</sup>, from which it may be distinguished by the greater width and height of shell, latero-posterior edges of carapace strongly reverted and dentated, well-marked prominences on vertebrae, the shorter anal suture, and the acute angle to first vertebral anteriorly.

#### *Testudo pardalis* Bell

*Testudo pardalis* Bell, 1828, *Zool. Journ.* III, p. 420 (type loc.: Africa). Boettger, 1889, *Ber. Senck. Nat. Ges.* p. 281 (Great Namaqualand). Siebenrock, 1910, *Sitzber. K. Akad. Wiss. Wien*, CXIX, p. 700 (Swakopmund and western edge central Kalahari). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 146 (Rietmond, Windhuk and Gibeon, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 330 (Neudamm and Omaruru, South-West Africa).

Eleven specimens were collected as follows: V.L.K.E. Nos. 1346-1348 (April-May), Gemsbok; No. 1349 (June), Maun; No. 1352 (June), Shorobe; No. 1369 (June), Shaleshonto; Nos. 1350 and 1351 (June), Tsotsoroga; Nos. 1353, 1354 and 1370 (August), Makarikari.

DISTRIBUTION. Ranging from the Sudan and Abyssinia southwards through Central and East Africa (excluding the forest areas) to the Cape

<sup>1</sup> 1931, *Ann. Natal Mus.* VI, pt. 3, p. 477.

Province (with the exception of the south-western portion), and extending westwards round the Kalahari into South-West Africa and southern Angola.

**REMARKS.** Five semi-adult and six juvenile specimens, comprising three males and eight females. Shell over  $1\frac{1}{2}$  times as long as broad in males, less than  $1\frac{1}{2}$  in females. In males sides of shell almost vertical, in females with a distinct outward bulge along upper edge of marginals. Anterior and posterior margins of carapace serrated and reverted, more strongly posteriorly than anteriorly. Vertebrae broader than long, except first which is about as long as broad. Gular region openly notched, gulars projecting two-fifths of their total length in males, not more than one-third in females. Hind lobe of plastron bifid and deeply notched; in adult females notch open and semi-circular in shape. Pectorals narrow and band-like in most specimens with anterior and posterior edges almost parallel, widening suddenly near axillary notch; in two specimens pectoral widest in median line, narrowing distally and then widening again near axillary notch. Suture between anals longer than that between pectorals in males, shorter in females. Large scattered rounded tubercles on anterior side of fore limb; large conical spurlike tubercles on heel; three large conical tubercles on back of thigh in all but one specimen. Plastron with longitudinal and transverse striations, former more deeply incised than latter; areolae in larger specimens, arranged near outer edges of shields. Makarikari specimens with claws and tubercles on limbs much worn and blunted as found in *T. oculifera* from the same locality.

**COLOUR.** Yellowish above, heavily marked (radially in adult and zonary in young) with black. In young specimens areolae brownish; black markings very dense, almost obscuring the yellow ground colour. Plastron uniform yellowish, or with a few scattered blackish spots or radiating streaks.

**FIELD NOTES.** These tortoises are much prized by the Bushmen, both for their flesh and shell. The carapace is severed from the plastron, and used as a receptacle for ladling or holding water. At Tsotsoroga no live specimens were obtained, although a large number of old shells and skeletal remains were found. This may be accounted for by the fact that a large part of this area had been inundated a few years previous, thus causing the death of many of these creatures by drowning.

**DIMENSIONS.** The measurements of the three largest specimens are as follows:

	No. 1347 ♂	No. 1348 ♀	No. 1349 ♀
Length of carapace	272 mm.	295 mm.	302 mm.
Length of plastron	236 mm.	245 mm.	271 mm.
Width of shell	175 mm.	204 mm.	210 mm.
Height of shell	140 mm.	155 mm.	166 mm.

### *Testudo oculifera* Kuhl

- Testudo oculifera* Kuhl, 1820, *Beitr. Zool.* p. 77. Siebenrock, 1910, *Sitzber. K. Akad. Wiss. Wien*, cxix, p. 704 (Swakopmund, South-West Africa, western edge central Kalahari and Kamelslip, southern Kalahari). Werner, 1910, *Jena. Denkschr.* xvi, p. 301 (Kooa, Lehututu-Kang, Mookane, and Vleij Topan, Kalahari). Sternfeld, 1911, *Mittl. Zool. Mus. Berlin*, v, p. 408 (Grootfontein, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* lxiv, p. 147 (Rietmond and Gibeon, South-West Africa). *Testudo semiserrata* Boettger, 1887, *Ber. Senck. Nat. Ges.* p. 138 (Ondonga, Ovamboland).

Thirteen specimens were collected as follows: V.L.K.E. Nos. 1356-1361 (April), Gomodimo; Nos. 1362-1365 (April), Kaotwe; Nos. 1366 and 1367 (April-May), Gemsbok; No. 1371 (August), Makarikari.

**DISTRIBUTION.** From the central Cape Province (Karoo areas) and Little Namaqualand, northwards into the Kalahari and South-West Africa.

**REMARKS.** Ten adult (2 ♂♂ and 8 ♀♀), two half-grown and one juvenile specimen. Shell strongly convex, except in very young, when it is somewhat flattened. Dorsal shields usually flattened, sometimes swollen and almost subconical. Margin of shell serrated, more or less feebly laterally, more strongly anteriorly, with marginals slightly reverted; shell strongly serrated posteriorly, with marginals strongly reverted and sharply pointed. Supra-caudal enlarged and more or less recurved, terminating inferiorly in a bifurcated concave notch, the edges of which are often finely serrated. Marginals, 10 in three specimens, 11 in ten. Nuchal fairly large, pointed anteriorly and widened posteriorly; breadth into length 1.3–2.0 times (average 1.66). First vertebral broader than long in eight specimens, subequal in three, longer than broad in two. Plastron openly notched in front, deeply notched behind. Anterior ends of gulars often shallowly bifurcated; suture between gulars longer than suture between anals in five specimens, equal in five and shorter in two. Suture between humerals about twice that between femorals. Suture between humerals just over half that between femorals in twelve specimens, greater in one. Inguinal in contact with seventh marginal only in ten specimens, with sixth and seventh in three. Fore limbs with three or four much enlarged horny scutes along antero-superior edge; a very large rounded subconical scute on anterior surface just distal to elbow. A large subconical to conical tubercle on hinder side of thigh, either single or supported by a few much smaller in size. Head scaling irregular, sometimes a pair of enlarged prefrontals may be differentiated. Tips of last pair of marginals form the posterior-most extremity of shell in twelve specimens. In central Kalahari specimens claws long and slender, especially so on hind foot, where they are often strongly incurved, reaching a length of 10 mm. or more. A large female from the Makarikari area has tips of posterior marginals blunt and rounded, femoral tubercle much worn and flattened, and claws very short and thick; all of which is probably due to the hard-baked nature of the ground surface in the above vicinity.

**COLOUR.** Above dark brown, with a series of yellowish rays on each shield, radiating from the areola towards the margin. These rays vary considerably in number (6 rays in one specimen, 8 in four, 10 in five and 12 in two), length (rays often extending only part of way towards margin) and width (rays narrow in four specimens, when dark brown is the predominant colour, rays wide and bifurcating distally in nine specimens, with yellow predominating). Plastron yellowish with light to dark brown rays, radiating out from areolae in more or less regular fashion; brown or yellow predominates in correlation with that dominant on carapace. Specimen from Makarikari a dull olive brown above and below, with pale markings barely discernible. Tails much longer in males than females.

**DIMENSIONS.** A summary of the measurements of adult specimens is as follows:

	Sex	No. of specimens	Extremes	Average
Length of carapace	♂	2	100.3–100.5 mm.	100.40 mm.
	♀	8	103.5–120.0 mm.	111.20 mm.
Length of plastron	♂	2	88.5–90.0 mm.	89.25 mm.
	♀	7	95.0–110.0 mm.	102.60 mm.
Width of shell	♂	2	72.5–73.5 mm.	73.00 mm.
	♀	8	79.5–87.5 mm.	82.70 mm.
Height of shell	♂	2	50.5–51.0 mm.	50.75 mm.
	♀	8	54.5–63.5 mm.	60.60 mm.

Fam. **PELOMEDUSIDAE*****Pelusios bechuanicus* FitzSimons**

(Plate XI)

*Pelusios bechuanicus* FitzSimons, 1932, *Ann. Trans. Mus.* xv, p. 37 (type loc.: Thamalakane River, Maun, Ngamiland).

TYPE. An immature specimen (V.L.K.E. No. 1343 and T.M. 14688) from the Thamalakane River at Maun, collected on 30th May, 1930.

DESCRIPTION. Shell well raised, rounded and sloping off smoothly towards the sides. Vertebrals convex, with conspicuous median protuberances forming a well-marked ridge, arising on posterior part of first and ending on anterior half of fifth vertebral; vertebral shields longer than broad, second to fourth being as much as  $1\frac{1}{2}$  times as long as broad. Margin of shell between fore and hind limbs obtusely angular, marginal scales 5-7 clearly differentiated into dorsal and ventral surfaces, ventral breadth of fifth marginal equal to its length; eighth marginal in narrow contact or separated from abdominal shield. Shell margin, other than above, sharp and more or less regular behind; penultimate marginals not recurved. Gulars moderate; intergular elongate, 1.7 times as long as broad, rounded anteriorly and acutely pointed posteriorly, angle less than 45 degrees. Outer border of pectoral slightly longer than that of humeral. Suture between abdominals  $1\frac{1}{2}$  times that between femorals. Posterior lobe of plastron slightly longer than anterior, deeply notched behind. Apices of anal shields not incurved, outer margins slightly convex; transverse breadth of each shield subequal to its length. Head moderate; snout obtusely pointed; projecting beak, with feeble median notch. Length of suture between fronto-supraorbitals slightly greater than interorbital width. Interparietal large and rounded, with a median groove from posterior edge extending forward about one-third total length of shield. Two small barbels on chin, no enlarged scales. Fore and hind limbs with five claws, all functional, those on fore limb longer and sturdier. Fore-limb claws in order of length, third longest, then fourth, second, first and fifth; hind limb, second longest, then first, third, fourth and fifth.

COLOUR. Head black above, with more or less symmetrically arranged yellow markings forming a regular design. Lower jaw yellow, with slight infusions of dark brown; throat greyish yellow. Carapace dark olive brown with a pale dirty yellowish band round shell on ventral edges of costals, first and last vertebrals. Plastron a uniform dark brown. Limbs above greyish brown, below greyish yellow.

## DIMENSIONS.

Type (No. 1343)

Length of carapace	...	...	107.5 mm.
Length of plastron	...	...	103.5 mm.
Width of shell	...	...	80.0 mm.
Height of shell	...	...	44.5 mm.

DISCUSSION. Related to *P. sinuatus* but clearly distinguishable therefrom by the following characters: shell well raised and smoothly convex; edges more or less regular and not sinuate; vertebral protuberances well marked on all vertebrals, especially so on third and fourth; vertebrals 2 and 3 much longer than broad; intergular less than twice as long as broad; outer border of pectoral greater than that of humeral; upper jaw feebly notched, cusps indistinguishable; well-marked colour patterning on head.

FIELD NOTES. Extremely shy and difficult to approach. Specimens were observed basking on exposed rocks in the Thamalakane River, but these slipped

into the water and disappeared long before a near approach could be effected. The one specimen captured was caught on rod and line while fishing for barbel.

***Pelomedusa galeata* (Schoepff)**

*Testudo galeata* Schoepff, 1792, *Hist. Testud.* p. 12, pl. III, fig. 1 (type loc.: "India Orientale, Carolina").

*Pelomedusa galeata* Boettger, 1894, *Ber. Senck. Nat. Ges.* p. 88 (Rehoboth, South-West Africa). Werner, 1910, *Jena. Denkschr.* xvi, p. 305 (Mookane, Kalahari; Chamis, Great Namaqualand). Siebenrock, 1910, *Sitzber. K. Akad. Wiss. Wien*, cxix, p. 718 (Oas, western edge Kalahari). Sternfeld, 1911, *Mittl. Zool. Mus. Berlin*, v, p. 411 (Okonjati, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 148 (Rietmond and Aus, South-West Africa).

Nineteen specimens were collected as follows: V.L.K.E. Nos. 1325 and 1326 (March), Metsimaklaba River; No. 1368 (April), between Kuke and Gomodimo; Nos. 1327-1340 (April), Gomodimo Pan; No. 1342 (July), Zweizwe River; No. 1345 (August), N'kate Pan.

**DISTRIBUTION.** More or less confined to open country and ranging throughout Africa south of the Sahara.

**REMARKS.** One adult (male), six half-grown (5 ♂♂ and 1 ♀) and twelve juvenile specimens. First vertebral shield distinctly broader than long, a low ridge or obtuse keel on vertebrals 2-4. Specimen from N'kate with a projection on fifth vertebral fitting into a notch on posterior edge of fourth. Width of bridge into length of plastron 3.3-3.4 times in specimens from Metsimaklaba River, 3.7-4 times in Gomodimo, Zweizwe and N'kate specimens. Pectorals in contact in median line throughout series. Head slightly longer than broad; interparietal with a median groove on posterior half to a third. Frontal-supraorbitals divided in one specimen from Gomodimo by an antero-superior suture between the eyes. Warts on chin absent in specimens from N'kate. Plastron in males strongly concave posteriorly, flat to convex in females. Tail long, fleshy and obtusely pointed in males; short and sharply pointed in females. Well-developed scaly fringes along posterior edges of fore and hind limbs.

**COLOUR.** Above yellow, yellowish green or yellowish brown, with or without infusions of dark brown along sutures of plastral shields. Fleshy parts greyish green to brown above, pale yellowish white below. Carapace usually densely covered with green algae.

**FIELD NOTES.** Metsimaklaba specimens were caught along with barbels (*Clarias gariepinus*) in a small tributary of the main river, where the water was almost stagnant and but a few inches deep. In most of the pans throughout the Kalahari these turtles were to be found. When removed from the water and placed on mud or loose sand, they cover themselves rapidly by throwing the mud or sand over their backs, with quick outward and upward movements of the hind limbs. They are most evil-smelling creatures, and according to the natives will stampede cattle, as their smell is supposed to resemble that of a lion. After leaving Gemsbok no live specimens were seen in any of the pans, although their presence was clearly indicated. It is to be presumed that they had already retired for their winter aestivation.

**DIMENSIONS.** The measurements of the two largest specimens are as follows:

	No. 1326 ♀	No. 1345 ♂
Length of carapace	149.0 mm.	173.0 mm.
Length of plastron	130.5 mm.	151.0 mm.
Width of shell	114.0 mm.	120.5 mm.
Height of shell	54.0 mm.	55.0 mm.

## Order SQUAMATA

## Suborder OPHIDIA

## Fam. TYPHLOPIDAE

**Typhlops boylei** FitzSimons

*Typhlops boylei* FitzSimons, 1932, *Ann. Trans. Mus.* xv, p. 38 (type loc.: Gembok Pan, Ghanzi District).

TYPE. A semi-adult specimen (V.L.K.E. No. 805 and T.M. 14695), collected at Gembok Pan (Ghanzi District) and presented by A. M. Boyle, Esq., 28th April, 1930; also one juvenile (V.L.K.E. No. 804).

DESCRIPTION. Snout very prominent, with an obtusely angular horizontal edge; nostrils inferior; rostral large, but not extending backwards to level of eyes, portion visible below slightly broader than long. Nasal semidivided, suture proceeding from suture of first and second labials to nostril; preocular present, narrower than nasal and ocular together, in good contact with second labial, in narrow contact or separated from third labial. Eye distinct, just behind suture of ocular and preocular. Other head shields (supraoculars and parietals) distinctly larger than body scales. Four upper labials, fourth by far the largest, third and fourth below ocular. Twenty-six scales round middle of body. Diameter of body 45.5 times into total length. Tail slightly broader than long, ending in a sharp spine.

COLOUR. Above olive brown; head uniform; scales down middle of back edged behind with yellowish, on sides with darker centres only. Lower half rostral, nasal, preocular, ocular and under parts generally pale yellowish.

FIELD NOTES. Found under loose paving stones near farm homestead.

## DIMENSIONS.

	Type (No. 805)			
Total length	...	...	...	182 mm.
Tail	...	...	...	3 mm.
Diameter of body	...	...	...	4 mm.

DISCUSSION. According to Boulenger's Key<sup>1</sup>, the above species falls under group II, together with *T. mossambicus*, *T. anchietae* and *T. bibronii*. From these other members of the group it is readily distinguishable by the number of scales round body, and diameter of body into total length.

## Fam. LEPTOTYPHLOPIDAE

**Leptotyphlops scutifrons** (Peters)

*Stenostoma scutifrons* Peters, 1854, *Mon. Berl. Ac.* p. 621 (type loc.: Sena, Mozambique).

*Glauconia scutifrons* Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, xi, No. 255, p. 2 (Kazungula). Werner, 1909, *Mittl. Naturh. Mus. Hamb.* p. 210 (Gibeon, South-West Africa); 1910, *Jena. Denkschr.* xvi, p. 354 (Okahandja, South-West Africa; Vleij Topan, Severelela-Khakhea and Severelela-Kooa, Kalahari). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 54 (Omaruru, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 184 (Rietmond, Berseba and Windhuk, South-West Africa).

*Glauconia latifrons* Sternfeld, 1910, p. 53 (Gobabis and Outjo, South-West Africa).

Sixteen specimens were collected as follows: V.L.K.E. No. 806 (April), Chukudu; Nos. 807-818 (April-May), Gembok; No. 819 (May), Mabele-apudi; No. 820 (May), Motlhatlogo, on Lake Ngami; No. 821 (May), Maun.

<sup>1</sup> 1910, *Ann. S. Afr. Mus.* v, p. 497.

**DISTRIBUTION.** Southern Africa (including Angola) from the Zambesi River in the north to the northern Cape Province in the south.

**REMARKS.** Four adult, eight semi-adult and four juvenile specimens. Snout rounded, supraocular in good contact with rostral, which is from two to three times as wide as the nasal, and extends just beyond level between posterior border of eyes; nasal divided through nostril, lower half bordering lip; ocular much wider than nasal, bordering lip between a small anterior and a large posterior labial. Five lower labials. Fourteen scales round middle of body. In adult specimens diameter of body 60–63.5 times into total length; tail 13.3–16.3 times into total length.

**COLOUR.** Above reddish brown, scales edged with paler; below slightly paler than above. A young specimen from Chukudu is greyish brown in colour.

**FIELD NOTES.** Fairly common in and about Gembok, where they were usually found under stones and logs lying on soft ground.

**DIMENSIONS.** The measurements of the four adult specimens are summarised as follows:

	Extremes	Average
Total length	173.0–216.0 mm.	194.0 mm.
Body	160.0–201.0 mm.	180.2 mm.
Tail	12.0–15.0 mm.	13.5 mm.
Diameter of body	2.9–3.4 mm.	3.2 mm.

### Fam. BOIDAE

#### *Python sebae* (Gmelin)

*Coluber sebae* Gmelin, 1788, *Syst. Nat.* 1, p. 1118 (no type loc.).

*Python sebae* Boettger, 1887, *Ber. Senck. Nat. Ges.* p. 163 (Ombandja, Ovambo-land).

*Python sebae* Sternfeld, 1910, *Schlangen Deut.-Sudwestafr.* p. 14, fig. 13 (Grootfontein, South-West Africa; Xansis (= Ghanzi?)).

Four specimens were collected as follows: V.L.K.E. No. 822 (March), Metsimaklaba River; Nos. 823 and 824 (May), Maun; No. 825 (June), Kwaai.

**DISTRIBUTION.** Tropical Africa south to Pondoland, Transvaal, northern Cape Province, Bechuanaland (excluding central Kalahari) and the northern half of South-West Africa.

**REMARKS.** The above series comprises skulls and skins of four immature specimens. Scales round middle of body 81–88. Ventrals 276–282. Sub-caudals 75–77. Tail from 6 to 8.5 times into total length.

**COLOUR.** Pale brown above, with more or less black-edged dark brown irregular cross-bars, connected up along sides by an interrupted sinuous stripe; sides also with large irregular spots and speckling of blackish. Head with a large triangular black-edged dark brown marking, bordered along sides by a pale band running from end of snout, over nostril and eye; a dark brown band on side of head from nostril, through eye to just above angle of jaw; a dark subtriangular patch below eye. A pale median black-edged streak on tail, continuous or broken up. Below yellowish white, spotted and speckled with dark brown to blackish. In No. 823 from Maun, all markings uniform dark brown with no black edging dorsally, nor black spotting on sides. Below intensely spotted and blotched with dark brown.

**FIELD NOTES.** All four specimens were captured in river forest, along the edges of the Metsimaklaba, Thamalakane and Boror Rivers respectively. In

Ngamiland they frequently take refuge in the holes of old termite hills, to which they are tracked down by the natives, and captured by means of a noose placed over the entrance. In one specimen (No. 823) from Maun, ventral scales much frayed out due to softening by constant immersion in water.

DIMENSIONS.

	No. 822	No. 823	No. 824	No. 825
Total length	2443 mm.	2634 mm.	1630 mm.	1160 mm.
Body	2133 mm.	2329 mm.	1400 mm.	970 mm.
Tail	301 mm.	305 mm.	230 mm.	190 mm.

Fam. COLUBRIDAE

Subfam. COLUBRINAE

**Boodon lineatus** Duméril and Bibron

*Boodon lineatus* Duméril and Bibron, 1854, *Erpet. Gen.* vii, p. 363 (type loc.: "Côte-D'or" = Gold Coast, West Africa). Werner, 1910, *Jena. Denkschr.* xvi, p. 355 (South Hereroland, South-West Africa; Vleij Topan, Kalahari; Kamaggas, Little Namaqualand). Lampe, 1911, *Jahrb. nass. Ver. Nat.* lxiv, p. 189 (Rietmond and Windhuk, South-West Africa). Nieden, 1913, *Sitzber. Ges. Nat. Freunde*, p. 450 (Kuibis, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 356 (Grootfontein, Okahandja, Okasise and Aua-bergen, South-West Africa).

*Boodon geometricus* Fischer, 1888, *Mittl. Naturh. Mus. Hamb.* p. 12 (Aus, South-West Africa).

*Boodon mentalis-lineatus* Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 54 (Gobabis).

Four specimens were collected as follows: V.L.K.E. No. 834 (December 1929), Titumi; No. 1320 (March 1930), Kuke; No. 832 (April), Gomodimo; No. 823 (April), van Zyl's Cutting.

DISTRIBUTION. A savannah species, ranging throughout tropical and South Africa.

REMARKS. Three half-grown (females) and one juvenile specimen. Preoculars 1-1 in two specimens, 1-2 in one, and 2-2 in one. Lower labials in contact with anterior chin-shields, 4-4 in one specimen, 3-4 in two, and 3-3 in one. Preocular in narrow contact with frontal in one specimen, separated in three. Ventrals 220-228. Subcaudals 46-49. Dorsal scales in 25-27 rows. Tail 6.8-8.0 times into total length.

COLOUR. Above tawny to yellowish brown, sides of head paler, the darker brown of upper surface ending in a point on snout between nostrils; two whitish streaks on each side of head, upper distinct, from supero-posterior edge of eye to nape, lower faint from infero-posterior corner of eye to angle of jaw. Below yellowish white. In juvenile a dark band on side of head, passing through eye, and edged above and below with whitish.

FIELD NOTES. Two specimens, Nos. 832 and 834, were captured at night by lamplight, just after rain; No. 833 was found under a heap of loose stones; while No. 1320 was captured during a rainstorm emerging from a hole, in pursuit of two *Phrynomerus bifasciatus*, which had just preceded it in hasty exit.

DIMENSIONS. Summary of measurements of three half-grown specimens is as follows:

	Extremes	Average
Total length	610-773 mm.	673.3 mm.
Tail	79-98 mm.	88.6 mm.



**Lycophidium capense capense** (A. Smith)

*Lycodon capensis* A. Smith, 1831, *S. Afr. Quart. Journ.* (1), No. 5, p. 18 (type loc.: Kurrichane, Transvaal).

*Lycophidium capense* Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 54 (Okahandja, Windhuk, Gobabis and Grootfontein, South-West Africa).

Two half-grown specimens were collected as follows: V.L.K.E. No. 836 (July), Kabulabula; No. 837 (July), Kasane.

**DISTRIBUTION.** South Africa, from the Equator southwards to the east and central Cape Province. Not recorded from the Kalahari, Great and Little Namaqualand, and the western Cape Province.

**REMARKS.** In No. 837 an abnormal state prevails in regard to the postoculars on the left side, the lower having fused with the fifth labial while the upper has fused with the supraocular. Scales round body in 17 rows. Ventrals 170 (male) and 179 (female). Subcaudals 35 (male) and 26 (female). Tail into total length 8 (male) and 11.5 (female) times.

**COLOUR.** Above dark purplish brown, head speckled or vermiculated with paler; scales on sides of body tipped with whitish on hind edges. Below purplish brown (paler than back), colour concentrated midventrally and along anterior edges of shields; throat whitish, chin with slight speckling of brownish. Colour variety B of Boulenger<sup>1</sup>.

**FIELD NOTES.** Captured under stones lying on soft loam in river forest, along banks of Chobe River.

**DIMENSIONS.**

	♂ (No. 837)	♀ (No. 836)
Total length	200 mm.	207 mm.
Tail	25 mm.	18 mm.

**Pseudaspis cana** (Linnaeus)

*Coluber canus* Linnaeus, 1754, *Mus. Adolph. Frider.* 1, p. 31, pl. XI, fig. 1 (type loc.: "Indiis").

*Coronella cana* Boettger, 1894, *Ber. Senck. Nat. Ges.* p. 91 (Hereroland and Kalahari).

*Pseudaspis cana* Fischer, 1888, *Mittl. Naturh. Mus. Hamb.* p. 11 (Aus, South-West Africa). Werner, 1910, *Jena. Denkschr.* xvi, p. 356 (Kooa, Kokong-Kang, Lehututu, Pitsani and Vleij Topan, Kalahari; Kamaggas, Little Namaqualand). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 54 (Gobabis, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 191 (Rietmond and Kakatskupp, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 358 (Swakop River, Okasise, Okawango, near Windhuk and near Grootfontein, South-West Africa).

Seven specimens were collected as follows: V.L.K.E. No. 826 (April), Kaotwe; No. 828 (May), between Sunnyside and Gemsbok; No. 889 (May), between Sunnyside and Mabeleapudi; Nos. 827-828 (May), Mabeleapudi; No. 830 (June), Maun; No. 831 (June), Shaleshonto.

**DISTRIBUTION.** Throughout South Africa northwards to Angola on the west, and Nyasaland and East Africa on the east.

**REMARKS.** Six semi-adult (2 ♂♂ and 4 ♀♀) specimens (No. 826 head only preserved) and one juvenile. Head scaling fairly constant; the following variations only were noted: postoculars 2-2 in six specimens, 2-3 in one; lower labials in contact with anterior chin-shields, 4-4 in four specimens and

<sup>1</sup> 1893, *Cat. Snakes Brit. Mus.* 1, p. 340.

5-5 in three; temporals 2 + 3 in four specimens, 2 + 4 in one and 3 + 4 in two. Scales round the body 27. Ventrals 194 in males, 210-212 in females. Subcaudals 62-63 in males, 52-55 in females. The respective number of ventrals and subcaudals in the two sexes is correlated with length of tail.

COLOUR. Above vinaceous fawn, with black interstitial spaces. Below pinkish to flesh colour, darker towards sides; scales with posterior borders edged more or less with dark brown. Young with four longitudinal series of irregular dark brown to blackish pale-edged spots on back; inner pair often linked up to form a more or less continuous zigzag band; outer series usually more clearly marked and persisting often in half-grown specimens. These Kalahari specimens are clearly referable to Boulenger's variety A<sup>1</sup>.

DIMENSIONS. A summary of measurements is as follows:

	Sex	No. of specimens	Extremes	Average
Total length	♂	2	1055.0-1172.0 mm.	1113.50 mm.
	♀	4	942.0-1330.0 mm.	1139.50 mm.
Tail	♂	2	203.0- 220.0 mm.	211.50 mm.
	♀	4	137.0- 196.0 mm.	171.25 mm.
Tail into total length	♂	2	5.2- 5.3 mm.	5.25 mm.
	♀	4	6.4- 6.8 mm.	6.60 mm.

### *Chlorophis vernayi* FitzSimons

(Fig. 1)

*Chlorophis vernayi* FitzSimons, 1932, *Ann. Trans. Mus.* xv, p. 38 (type loc.: Maun, Ngamiland).

TYPE. A single adult male specimen (V.L.K.E. No. 843 and T.M. 14724) collected at Maun, on the Thamalakane River, 23rd May, 1930.

DESCRIPTION. Rostral  $1\frac{1}{2}$  times broader than deep, portion visible from above about one-quarter times its distance from frontal. Snout about  $1\frac{2}{3}$  as long as eye. Internasals shorter (0.7) than prefrontals. Frontal just over  $1\frac{1}{2}$  times as long as broad, shorter than its distance from end of snout, much shorter than parietals. Loreal just less than twice as long as deep. A single preocular, separated from frontal. Two postoculars. Temporals 1 + 2. Nine upper labials; fourth, fifth and sixth entering eye. Five lower labials in contact with anterior chin-shields, which are distinctly shorter than posterior. Scales in 15 rows. Ventrals rounded, 162. Anal divided. Subcaudals also rounded, 86.

COLOUR. Above dark metallic green, scattered scales with a bluish white edging on basal half of outer margins. Below yellowish green anteriorly, passing to darker green posteriorly.

DIMENSIONS.

		Type ♂ (No. 843)
Total length	...	812 mm.
Tail	...	228 mm.

<sup>1</sup> 1893, *Cat. Snakes Brit. Mus.* 1, p. 374.

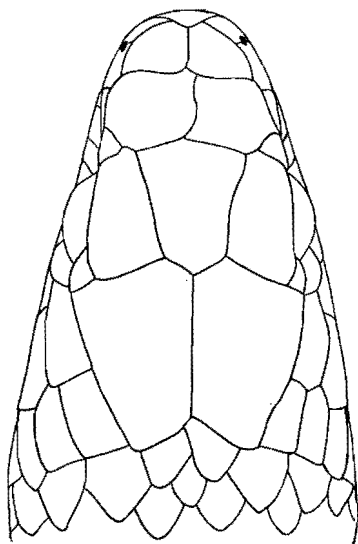


Fig. 1. *Chlorophis vernayi* FitzSimons. Dorsal view of head.

DISCUSSION. The above new form appears to be intermediate between *C. emini* (Günther) and *C. ornatus* (Bocage). From *emini* it may be distinguished by the wider rostral, shorter frontal and fewer subcaudals; and from *ornatus* by the shorter frontal, preocular separated from latter, temporals 1 + 2, nine upper labials, fourth, fifth and sixth entering eye, and colour.

FIELD NOTES. Found in dense river forest, along with very dark specimens of *Philothamnus semivariegatus semivariegatus*.

***Philothamnus semivariegatus semivariegatus* A. Smith**

*Dendrophis (Philothamnus) semivariegata* A. Smith, 1840, *Ill. Zool. S. Afr., Reptiles*, pls. LIX, LX and LXIV, fig. 1 (type loc.: Bushman Flat and Kurrichane). Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, XI, No. 255, p. 2 (Kazungula).

*Philothamnus semivariegatus* Werner, 1902, *Verh. Zool.-bot. Ges. Wien*, LII, p. 339 (Windhoek, South-West Africa). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 55 (Gobabis, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat. LXIV*, p. 193 (Kuibis, South-West Africa).

Five specimens were collected as follows: V.L.K.E. No. 841 (March), Metsimaklaba River; No. 842 (March), Gaberones; Nos. 845 and 846 (May), Maun; No. 844 (July), Tsotsoroga.

DISTRIBUTION. Tropical and East Africa extending southwards to Natal, Pondoland, Transvaal, northern Cape Province, and thence across Bechuanaland into the northern parts of South-West Africa, and southern Angola.

REMARKS. Two adult (male and female), two half-grown and one juvenile specimen. Upper head scaling typical. A single preocular, separated from frontal in four specimens, in narrow contact in one (juvenile). Two postoculars. Temporals 1 + 2 in one specimen, 2 + 2 in four. Upper labials 8-8 in one specimen (last two labials fused together), 9-9 in three, 9-10 in one; fourth, fifth and sixth labials entering eye. Lower labials in contact with anterior chin-shields, 4-4 in one specimen, 4-5 in one and 5-5 in three; posterior chin-shields longer than anterior. Scales in 15 rows. Ventrals 177-194 (adult ♂ 177, ♀ 194). Anal divided. Subcaudals 109-133 (adult ♂ 133, ♀ 123). Tail into total length, 2.95 times in adult male and 3.25 in female.

COLOUR. Above bluish to olive green with (in one specimen) or without irregular black cross-bars anteriorly. Below greenish yellow passing to olive green posteriorly.

DIMENSIONS. Following are the measurements of two adult specimens:

	No. 845 ♀	No. 846 ♂
Total length	1003 mm.	1003 mm.
Tail	308 mm.	340 mm.

FIELD NOTES. Essentially arboreal in habit, found usually frequenting the bush along stream beds. When disturbed they are very agile and quick of movement, disappearing from sight among the foliage in a flash.

Subfam. BOIGINAE

***Tarbophis semiannulatus* (A. Smith)**

*Telescopus semiannulatus* A. Smith, 1849, *Ill. Zool. S. Afr., Reptiles*, pl. LXXII (no type locality given (South Africa)).

*Leptodira semiannulata* Boettger, 1887, *Ber. Senck. Nat. Ges.* p. 162 (between Aus and Keetmanshoop, South-West Africa).

*Tarbophis semiannulatus* Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, XI, No. 255, p. 2 (Kazungula). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 55 (Gobabis and Windhuk, South-West Africa).

Three specimens were collected as follows: V.L.K.E. Nos. 838 and 839 (April), Damara Pan; No. 840 (May), Maun.

**DISTRIBUTION.** East and Central Africa, south to Zululand and thence westwards across the Transvaal, northern Cape Province and Bechuanaland, to northern South-West Africa and Angola.

**REMARKS.** One adult, one half-grown and one juvenile specimen. Eight upper labials, third to fifth entering eye. Temporals 2 + 2 in one specimen and 2 + 3 in two. Lower labials in contact with anterior chin-shields, five in one specimen, four in two. Ventrals 194-211. Subcaudals 56-66. Dorsal scales in 19 rows. Tail 5.4-6.7 times into total length.

**COLOUR.** Above pale yellowish brown to sienna, with 22-38 black transverse bands over back and tail, widest middorsally, narrowing to a point on sides. Below yellowish white. [Cross-bars: (No. 839), 28 on body and 6 on tail; (No. 838), 28 on body and 10 on tail; (No. 840), 22 on body and none on tail.]

**DISCUSSION.** With the purpose of verifying Werner's *T. s. meridionalis*<sup>1</sup> a series of thirty-two specimens (Transvaal and Natal) in the Transvaal Museum collection was examined with the following results:

Number of cross-bars on body and tail, 22-52, with one-fifth of the total over 40. Two upper labials only, entering the eye, in two specimens, viz. third and fourth in one specimen and fourth and fifth in the other. As the number of lower labials in contact with anterior chin-shields was also variable (3-5), it would appear that the above variety cannot stand and may therefore be included within the range of typical *T. semiannulatus*.

**FIELD NOTES.** One specimen (No. 839) was found inside a deserted weaver bird's (*Hyphantornis velatus*) nest, hanging from a twig about eight feet from the ground. Owing to the length and thinness of the suspending twig, the snake must have exhibited extreme skill and ingenuity in entering the nest.

**DIMENSIONS.**

	No. 839 adult ♀	No. 840 half-grown ♂
Total length	761 mm.	497 mm.
Tail	113 mm.	87 mm.

***Amplorhinus nototaenia* (Günther)**

*Coronella nototaenia* Günther, 1864, *P.Z.S. Lond.* p. 309, pl. XXVI, fig. 1 (type loc.: Rios de Sena, Zambesi).

*Amplorhinus nototaenia* Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 55 (Gobabis, South-West Africa).

Two adult specimens were collected as follows: V.L.K.E. No. 881 (June), Tsotsoroga; No. 882 (July), Kabulabula.

**DISTRIBUTION.** A tropical species ranging from the Egyptian Sudan through East and Central Africa to Southern Rhodesia, Angola and the northern parts of the Transvaal, Bechuanaland and South-West Africa.

**REMARKS.** Rostral just visible from above; internasals much shorter than prefrontals; frontal just less than twice as broad, longer than distance from end of snout, slightly shorter than parietals. One large preocular; two postoculars; temporals 1 + 2; eight upper labials, fourth and fifth entering eye; eight lower labials, four in contact with anterior chin-shields, which are about equal in length to posterior. Scales in 17 rows. Ventrals 170-172. Subcaudals 76-79. Anal divided. Tail 3.8-4.3 times into total length.

<sup>1</sup> 1894, *S. Verh. Zool. bot. Ges. Wien*, XLV, p. 144.

COLOUR. Above greyish brown, with a double series of transverse blackish spots on back, connected up by a black vertebral stripe; spots on occiput and nape unite to form a well-marked zigzag band; a dark streak on either side of head, passing through eye. Below pale brownish, densely speckled with dark brown. Three indistinct darkish stripes on tail. Snout, sides of head and end of tail tinged with salmon.

FIELD NOTES. No. 881 was captured in a crack of a tree about four feet from the ground, in mopane forest, near Tsotsoroga Pan. No. 882 was found under a stone lying on soft leaf mould in dense river forest along banks of Chobe River near Kabulabula. These little snakes are very active and difficult to find.

DIMENSIONS.

	No. 881	No. 882
Total length	302.0 mm.	365 mm.
Tail	70.5 mm.	95 mm.

**Trimerorhinus tritaeniatus tritaeniatus** (Günther)

*Rhagerrihis tritaeniata* Günther, 1868, *A.M.N.H.* (4), 1, p. 423, pl. XIX, fig. H (type loc.: South-East Africa).

*Trimerorhinus tritaeniatus* Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, xi, No. 255, p. 2 (Kazungula). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 55 (Gobabis, Grootfontein, Okahandja and Windhuk, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 362 (Neudamm, Auasbergen and Brackwater, South-West Africa).

Three specimens were collected as follows: V.L.K.E. No. 856 (March), Gaberones; No. 870 (June), Goha Hills; No. 872 (August), Makarikari.

DISTRIBUTION. From East and tropical Africa (south of the Equator), southwards to Natal, Transvaal, Orange Free State, northern Cape Province, the Kalahari and South-West Africa.

REMARKS. Two young adult and one semi-adult specimen. Eye just over half its distance from end of snout; portion of rostral visible from above less than half its distance from frontal; internasals forming a wide median suture. Frontal about twice as long as broad. One preocular, in narrow contact with frontal in one specimen, narrowly separated in two. Postoculars 2-2 in two specimens, 3-3 in one. Temporals 2+3. Eight upper labials, fourth and fifth entering eye. Lower labials in contact with anterior chin-shields, 4-4 in one specimen, 4-5 in one and 6-6 in one; posterior chin-shields shorter than anterior. Scales in 17 rows. Ventrals 152-158. Anal divided. Subcaudals 56-64. Tail into total length 4.6-4.8 times.

COLOUR. Above slate grey to greyish brown, with three longitudinal brown, black-edged bands over back; vertebral band light brown, originating on crown of head, with or without a fine yellowish dividing line; lateral bands wide and dark brown, originating on snout and passing through eye. Sides below lateral bands creamy white with a pale brownish stripe along outer row of scales. Upper lips and lower parts white to cream colour.

DISCUSSION. Boulenger<sup>1</sup> considers *T. tritaeniatus* a variety of *T. rhombeatus*. Structurally the two forms are very closely related, but are widely different in colour markings. As no intermediate stages between these two definitely marked colour phases have been recorded, I am inclined in the meantime to retain *T. tritaeniatus* as a distinct subspecies.

<sup>1</sup> 1915, *P.Z.S. Lond.* 1, p. 212.

DIMENSIONS. The measurements of the two larger specimens are as follows:

	No. 870	No. 872
Total length	626 mm.	691 mm.
Tail	136 mm.	144 mm.

**Psammophis furcatus** Peters

*Psammophis moniliger* *ivar. furcatus* Peters, 1867, *Mon. Berl. Acad.* p. 236 (type loc.: Otjimbngue, South-West Africa).

*Psammophis sibilans* *var. furcatus* Fischer, 1888, *Mittl. Naturh. Mus. Hamb.* p. 12 (Aus, South-West Africa). Boettger, 1894, *Ber. Senck. Nat. Ges.* p. 92 (Great Namaqualand).

*Psammophis furcatus* Werner, 1910, *Jena. Denkschr.* xvi, p. 361 (Kgokong-Kong and south of Rietfontein, Kalahari; Okahandja, Rooibank, Kuikop-Tsibus, Kubub-Sinclair Mine and Keetmanshoop, South-West Africa; Steinkopf, Little Namaqualand). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 201 (Rietmond, Namib Wüste and Berseba, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 365 (Okahandja, South-West Africa).

*Psammophis leightoni* Werner, 1915, p. 365, pl. VII, fig. 3 (Swakopmund, South-West Africa).

Seven specimens were collected as follows: V.L.K.E. No. 857 (March), Kuke; Nos. 858-862 (April), Kaotwe; No. 865 (May), between Gembok and Sunnyside.

DISTRIBUTION. From South-West Africa, the Kalahari, Southern Rhodesia and the Transvaal, southwards through the Orange Free State to Cape Province, excepting the extreme eastern portion.

REMARKS. Five adult specimens (2 ♂♂ and 3 ♀♀), one half-grown and one juvenile. End of tail lost in two specimens. Forehead grooved, rostral slightly broader than deep; nostril between three shields (posterior nasal divided longitudinally); frontal equal to or just slightly longer than parietals. One preocular (semidivided in two specimens) in wide contact with frontal. Two postoculars. Temporals 2+2 in four specimens, 2+3 in one, 2+3 and 2+1 in one. Eight upper labials, fourth and fifth entering eye. Four lower labials in contact with anterior chin-shields, which are distinctly shorter than posterior. Scales in 17 rows. Ventrals 158-160. Anal divided. Subcaudals 100-106. Tail into total length 2.3 times in male and 2.77-2.98 in female specimens.

COLOUR. Above greyish brown anteriorly, passing to rufous posteriorly, scales dark-edged; a narrow vertebral streak (often indistinct), bifurcating on occiput, with black-edged prongs extending to anterior border of frontal; a median yellowish black-edged streak along sutures of prefrontals and internasals; a creamy white to yellowish brown band (dark-edged above) along each side from eye to end of tail. Upper lip, lower half of outer row of scales on sides, and lower parts generally creamy white to yellowish, with (in three specimens) or without (in four specimens) an interrupted brownish to blackish line along outer edge of ventrals. Chin and throat infuscated with dark brown, or with brown, blue or blackish vermiculate markings.

DIMENSIONS. Measurements of largest male and female specimens are as follows:

	No. 860 ♂	No. 865 ♀
Total length	803 mm.	834 mm.
Tail	360 mm.	297 mm.

**Psammophis subtaeniatus** Peters

*Psammophis sibilans* var. *subtaeniatus* Peters, 1882, *Reise n. Mossamb.* III, p. 121 (type loc.: Boror and Tette, Mozambique).

*Psammophis subtaeniatus* Werner, 1902, *Verh. Zool.-bot. Ges. Wien*, LII, p. 340 (Windhoek, South-West Africa).

*Psammophis bocagii* Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 56 (Gobabis, Grootfontein and Outjo, South-West Africa).

Seven specimens were collected as follows: V.L.K.E. No. 864 (May), between Gembok and Sunnyside; Nos. 866 and 867 (May), Mabeleapudi; Nos. 868 and 869 (May), Maun; No. 871 (August), Lupane; No. 853 (August), Makarikari.

DISTRIBUTION. An eastern species ranging from Tanganyika Territory southwards through Nyasaland and Portuguese East Africa to Southern Rhodesia and the Transvaal, and thence across Bechuanaland into northern South-West Africa and southern Angola. (The above distribution includes that of *P. bocagii* and *P. transvaalensis* which may be regarded as forms of *subtaeniatus*.)

REMARKS. Four adult, two semi-adult and one juvenile specimen. Head scaling typical. Preocular single and undivided in one specimen, semidivided in three and completely divided in three; in narrow contact with frontal in five specimens, separated in two. Two postoculars. Temporals 2+2. Nine upper labials; fourth, fifth and sixth entering eye. Four lower labials in contact with anterior chin-shields, which are distinctly shorter than posterior. Scales in 17 rows. Ventrals 162-172. Anal divided. Subcaudals 114-118. Tail into total length about 2.7 times.

COLOUR. Above olive to olive brown, paler posteriorly; seven middle rows of scales with dark edges, forming a wide black-edged band down back, separated from sides by a more or less distinct creamy to yellowish brown streak, which originates about one-fifth down the body and is continued on tail. Brown on the sides, edged below by a black line running along outer row of scales. Upper labials yellowish, with or without black dots and a black line along upper border. Below a wide chalky yellow band, bounded by a black line on each side; outer edge of ventrals and lower half of adjoining scales white; chin and throat with or without small scattered blackish dots. Juvenile specimen above, uniform dark olive, with no dorso-lateral streaks visible. No. 867 with a few indistinct pale cross-bars on back of head and nape.

DIMENSIONS. The measurements of the three largest specimens are as follows:

	No. 868 ♀	No. 871 ♀	No. 866 ♂
Total length	950 mm.	995 mm.	1110 mm.
Tail	342 mm.	370 mm.	375 mm.

NOTE. In No. 866 tip of tail missing.

**Psammophis sibilans** (Linnaeus)

*Coluber sibilans* Linnaeus, 1758, *Syst. Nat.* ed. 10, 1, p. 222 (type loc.: "Asia" presumably should read Africa).

*Psammophis sibilans* Boettger, 1886, *Ber. Senck. Nat. Ges.* p. 5 (Angra Pequena, South-West Africa); 1887, p. 159 (Angra Pequena-Aus-Keetmanshoop and Damaraland, South-West Africa); 1894, p. 91 (Rehoboth, Damaraland and Namaqualand, South-West Africa). Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, XI, No. 255, p. 2 (Kazungula). Werner, 1902, *Verh. Zool.-bot. Ges. Wien*, LII, p. 340 (Windhoek, South-West Africa). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 56 (Gobabis, Windhuk, Okahandja and Omaruru, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 201 (Luderitzbucht, South-West Africa).

*Psammophis brevirostris* Sternfeld, 1910, p. 56 (Gobabis, South-West Africa). Lampe, 1911, p. 201 (Wüste Namieb, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 364 (Grootfontein and Okavango, South-West Africa).

Seven specimens were collected as follows: No. 848 (April), Kaotwe; No. 849 (April), Gemsbok; No. 850 (May), Maun; No. 851 (June), Shorobe; No. 852 (June), Shaleshonto; No. 855 (July), Kabulabula; No. 847 (August), Makarikari.

**DISTRIBUTION.** A tropical species, extending southwards to Natal, Transvaal, Bechuanaland, South-West Africa and western Cape Province. Recorded also from Egypt and central Sahara<sup>1</sup>. (Included in the above distribution are the two forms *P. brevirostris* and *thomasi*.)

**REMARKS.** Two adult (males) and five immature specimens. Rostral slightly broader than deep; nostril pierced between two shields in four specimens, and three shields in three. A single undivided preocular in six specimens, semidivided on one side and completely divided on the other in one; separated from the frontal. Two postoculars. Temporals 2+2. Eight upper labials, fourth and fifth entering eye. Four lower labials in contact with anterior chin-shields, which are slightly shorter than posterior. Scales in 17 rows. Ventrals 162-172. Anal divided. Subcaudals 91-100. Tail into total length,  $3\frac{1}{2}$  times.

**COLOUR.** Adults: Above olive to olive brown, paler posteriorly, colour extending down to outer edges of ventrals; scales dark-edged; a pale, dark-edged vertebral streak present or absent; head usually paler than body, with scattered blackish spots. Below yellowish white, with irregular blackish spots on upper labials, chin, throat, neck and along sides of belly. Young specimens: Above olive green to olive brown, colour extending on sides to upper half of outer row of scales in two specimens, to outer ends of ventrals in three; vertebral streak distinct; head uniform above. Below yellowish; upper labials, chin and throat spotted in three specimens, immaculate in two.

**DIMENSIONS.** Measurements of the two adult males are as follows:

	No. 850 ♂	No. 851 ♂
Total length	1240 mm.	1237 mm.
Tail	340 mm.	369 mm.

**NOTE.** No. 850 tip of tail lost. Injured tails are frequently found in this species, four specimens in the above series bearing such.

### ***Psammophis longirostris* FitzSimons**

(Figs. 2 and 3)

*Psammophis longirostris* FitzSimons, 1932, *Ann. Trans. Mus.* xv, p. 38 (type loc.: Gomodimo Pan).

**TYPE.** A semi-adult specimen (V.L.K.E. No. 854 and T.M. 14716), collected at Gomodimo Pan, 1st April, 1930. A second specimen (No. 863) was collected at Mabeleapudi on 6th May.

**DESCRIPTION.** Snout strongly projecting,  $1\frac{1}{2}$  times as long as the eye. Rostral as broad as deep, portion visible above equal to its distance from the prefrontals. Nostril pierced between three shields (the normal posterior nasal shield being longitudinally divided). Internasals just over half the length of prefrontals. Frontal twice as long as broad; distinctly narrower in the middle than supraocular; equal to its distance from end of snout; as long as parietals.

<sup>1</sup> Pellegrin, 1931, *Bull. Mus. Hist. Nat. Paris*, Ser. 2, III, p. 217.



Loreal twice as long as deep. A single semidivided preocular, in wide contact with frontal. Two postoculars. Temporals 2 + 2. Seven upper labials, third and fourth entering eye; fourth labial almost as long as eye. Four lower labials in contact with anterior chin-shields. Posterior chin-shields long and narrow, about  $1\frac{1}{2}$  times as long as anterior. Scales in 15 rows. Ventrals 160. Anal divided. Subcaudals 105. Tail into total length three times.

COLOUR. Above greyish brown anteriorly, passing to pale brown posteriorly; supraoculars and snout pale brownish; lower half of outer row of scales on sides and outer edge of ventrals white; midventrally yellow. Upper lips white; chin and throat spotted with blackish.

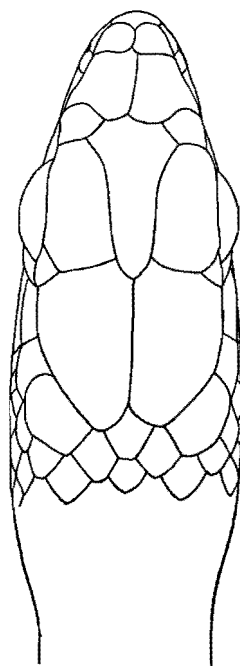


Fig. 2. *Psammophis longirostris* FitzSimons. Dorsal view of head.

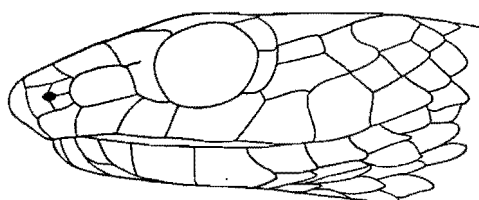


Fig. 3. *Psammophis longirostris* FitzSimons. Side view of head.

REMARKS. The second specimen (No. 863) has length of body = 625 mm. (tail injured); ventrals 163. Dorsal colour markings as follows: Arising about one-quarter of the way down the body is a black-edged dark median band (five scales wide), separated from the sides by a yellowish streak; a pale yellowish, interrupted vertebral streak also present, formed by a series of elongate spots on the anterior portion of each scale. In this specimen also the postoculars have completely fused on the one side to form a single elongate shield. Temporals 1 + 2.

DISCUSSION. Allied to *P. crucifer* and *P. ansorgii*, from both of which it is clearly distinguished by the long projecting snout, proportions of head-shields, greater number of ventrals and subcaudals, and colour marking.

#### DIMENSIONS.

			Type No. 854
Total length	...	...	850 mm.
Tail	...	...	285 mm.

**Dispholidus typus** (A. Smith)

*Bucephalus typus* A. Smith, 1829, *Zool. Journ.* iv, p. 441 (type loc.: Old Latakoo (= Kuruman)).

*Bucephalus capensis* Boettger, 1886, *Ber. Senck. Nat. Ges.* p. 160 (Ondonga, South-West Africa).

*Dispholidus typus* Werner, 1902, *Verh. Zool.-bot. Ges. Wien*, LII, p. 341 (Windhoek, South-West Africa); 1910, *Jena. Denkschr.* xvi, p. 363 (Kolah-Genuma and Ku-Gu-Di, Kalahari). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 57 (Gobabis, Windhuk and Okahandja, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 363 (Auasbergen and Grootfontein, South-West Africa).

Six specimens were collected as follows: V.L.K.E. No. 877 (April), Gomodimo; No. 873 (April), Kaotwe; No. 874 (April), between Okwa River and Damara Pan; No. 878 (May), Mabeleapudi; Nos. 875 and 876 (May), Maun.

DISTRIBUTION. Tropical and Southern Africa (excluding the Congo Rain Forest).

REMARKS. Five adult specimens and one immature. Eye shorter than snout; internasals from two-thirds to three-quarters length of prefrontals; frontal 1.16–1.3 times longer than broad; frontal less than length to end of snout in two specimens, equal in one and longer in three; shorter than parietals in three specimens and subequal in three; loreal longer than deep. One preocular; three postoculars in five specimens, four in one; temporals 1+2; seven upper labials with third and fourth entering eye in five specimens, eight upper labials with fourth and fifth entering eye in one; four lower labials in contact with anterior chin-shields in four specimens, five in two. Dorsal scales round body in 19 rows. Ventrals 182–192. Subcaudals 105–120. Tail into total length 3.54–3.77 in males and 3.83–4.3 in females.

COLOUR. Three colour varieties are represented in the above series, as follows:

(1) Above pale to dark brownish olive; head paler in dark specimens. Below yellowish to greyish brown. Four specimens (Nos. 874–877), corresponding to Boulenger's variety A<sup>1</sup>.

(2) Above bright green; scales on back tipped with blackish. Below greenish. One specimen (No. 873), corresponding to Boulenger's variety C.

(3) Above greyish brown, darker anteriorly, head with a pinkish tinge; scales on neck and isolated scales on back bluish; three black blotches on side of neck. Below dirty white with dense speckling of brown; throat bright yellow. Upper lip creamy white, with a few scattered black dots. One specimen (No. 878), corresponding to Bocage's variety 3<sup>2</sup>.

DISCUSSION. In the latter specimen from Mabeleapudi the pupil is almost horizontal, suggesting at first a form intermediate between *Thelotornis* and *Dispholidus*. A comparison of other characters, however, revealed it to be indistinguishable from *Dispholidus*, the horizontal pupil being probably a mutant character<sup>3</sup>.

FIELD NOTES. The Kalahari specimens were all captured in thorn scrub round the pans, while those from Maun were found in the river forest. At Gomodimo attention was directed to a certain spot by the noisy agitation of a pair of larks, which were endeavouring to drive off one of these snakes, which had just swallowed two out of three nestlings.

<sup>1</sup> 1896, *Cat. Snakes Brit. Mus.* III, p. 188.

<sup>2</sup> 1895, *Herp. d'Angola*, p. 121.

<sup>3</sup> Mr K. P. Schmidt of the Field Museum kindly examined this specimen, and also came to the above conclusion.

**DIMENSIONS.** A summary of the measurements of adult specimens is as follows:

	Extremes	Average
Total length	1214-1428 mm.	1369 mm.
Tail	317- 384 mm.	356 mm.

### ***Calamelaps pellegrini* Angel**

(Figs. 4 and 5)

*Calamelaps pellegrini* Angel, 1921, *Bull. Mus. Hist. Nat. Paris*, xxvii, p. 42, text-figs. 1-3 (type loc.: Lialui, Upper Zambesi).

One immature specimen (V.L.K.E. No. 888), collected at Kabulabula on the Chobe River, July 1930.

**DISTRIBUTION.** North-western Rhodesia, along the Upper Zambesi, south to northern border of Bechuanaland, along the Chobe River.

**REMARKS.** As the above specimen differs slightly in some characters from the type, a full description is now given. Rostral broader than deep, portion

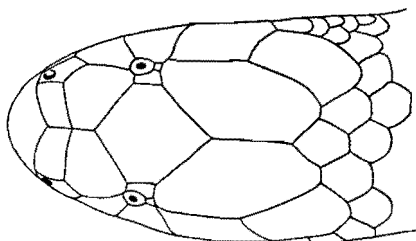


Fig. 4. *Calamelaps pellegrini* Angel.  
Dorsal view of head.

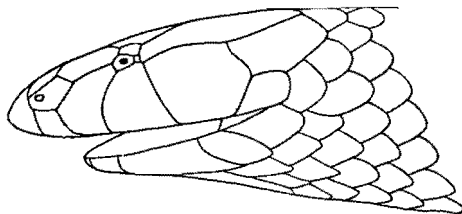


Fig. 5. *Calamelaps pellegrini* Angel.  
Side view of head.

visible from above slightly shorter than its distance from the frontal; inter-nasals much broader than long ( $1\frac{2}{3}$ ), just less than half the length of prefrontals; frontal hexagonal,  $1\frac{1}{2}$  times as long as broad, distinctly longer than its distance from end of snout, much shorter than parietals; nasal entire, with nostril pierced in anterior half; supraocular small, postocular minute; a single temporal; five upper labials, second only in contact with preocular, second and third entering eye, fourth very large, forming long suture with parietal; five lower labials, first three in contact with anterior chin-shields, fourth very large and separated from its fellow by posterior chin-shields, which are well separated by a median scale. Scales on body in 15 rows. Ventrals 186. Subcaudals 24. Anal divided. Tail 11.3 times into total length.

**COLOUR.** Above dark purplish brown, head uniform, scales on body narrowly edged with whitish; last three rows of scales on sides pale sulphur yellow, with a few small purplish brown spots on isolated scales. Below pale sulphur yellow, scales intensely infuscated with purplish brown, especially along anterior edges; throat and neck uniform yellow.

**FIELD NOTES.** Found in soft loam under a dead log, lying in dense river forest. On being exposed, it promptly started burrowing into the soft ground, and was rapidly disappearing when finally captured.

**DIMENSIONS.**

Total length	...	...	307 mm.
Tail	...	...	27 mm.

**DISCUSSION.** So far as can be ascertained the above specimen is the only one other than the type yet collected, and extends the range of the species

from Lialui on the Upper Zambesi, south to the Chobe River. The genus *Calamelaps* is now represented in South Africa by four species which may be distinguished by means of the following key:

Scales in 19-21 rows:

Nasal entire; second upper labial in contact with prefrontal; scales in 19 rows. *C. warreni* Boulenger.

Nasal divided; second upper labial not in contact with prefrontal; scales in 19 or 21 rows. *C. polylepis* Bocage.

Scales in 17 rows:

Ventrals 133-134.

*C. concolor* (A. Smith).

Scales in 15 rows:

Ventrals 177-186.

*C. pellegrini* Angel.

### ***Xenocalamus bicolor maculatus* FitzSimons**

(Figs. 6 and 7)

*Xenocalamus bicolor maculatus* FitzSimons, 1932, *Ann. Trans. Mus.* xv, p. 39 (type loc.: Kuke Pan, Kalahari).

TYPE. An adult specimen (V.L.K.E. No. 835 and T.M. 14450), collected at Kuke Pan, March 1930.

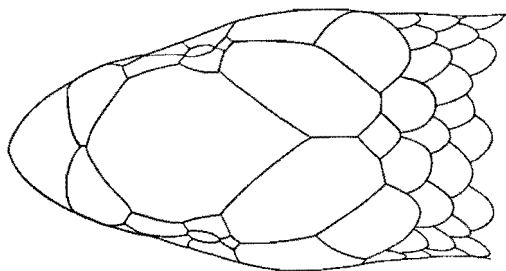


Fig. 6. *Xenocalamus bicolor maculatus* FitzSimons.  
Dorsal view of head.

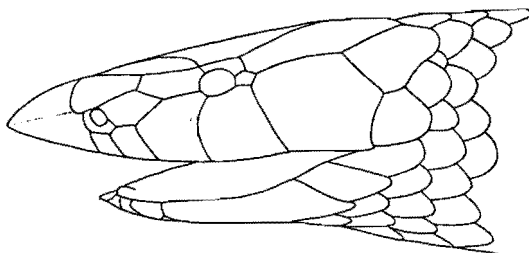


Fig. 7. *Xenocalamus bicolor maculatus* FitzSimons.  
Side view of head.

**DESCRIPTION.** Rostral large, obtuse, with horizontal edge, slightly convex below, upper portion about one-third length of frontal; latter very large, over half total length of shielded part of head; internasals large, forming a short median suture; nasal divided into a small anterior and a larger elongate posterior half; nostril pierced in anterior half, and abutting on suture. Supraocular small, elongate, wider posteriorly than anteriorly; preocular large, elongate, in contact with posterior nasal, internasal, frontal and third labial; postocular very small and five-sided. Suture between parietals distinctly

longer than scale immediately behind it. A single large temporal, in contact with parietal, and fifth and sixth labials. Six upper labials; first and second small, third and fourth entering the eye, fifth very large, sixth small and scale-like. Five lower labials, third very large; a single pair of narrow chin-shields, in contact with first three labials. Ventrals 216. Subcaudals 32. Anal divided. Tail about 10 times into total length.

COLOUR. Above bright yellow, with a series of large liver-brown spots or blotches on back, for the most part disposed in alternating or partly confluent pairs, except anteriorly and on tail where they fuse into an irregular longitudinal band; a large spot on posterior part of frontal and on parietals. Below yellow.

DISCUSSION. Allied to *X. bicolor*, but readily distinguished therefrom in colour, together with shorter and wider head, and rostral shorter in proportion to frontal. I am inclined also to regard *X. pernasuta* (Werner)<sup>1</sup> as a subspecies of *X. bicolor*, as the difference in characters does not appear to warrant specific separation.

FIELD NOTES. Found at night by lamplight near edge of Kuke Pan, just after rain. Sluggish and easy to capture.

DIMENSIONS.

Total length	...	...	440 mm.
Tail	...	...	44 mm.

**Aparallactus capensis** A. Smith

*Aparallactus capensis* A. Smith, 1849, *Ill. Zool. S. Afr., Reptiles*, App. p. 16 (type loc.: Kaffirland).

Two specimens were collected as follows: V.L.K.E. No. 879 (August), near Gwelo; No. 880 (September), Victoria.

DISTRIBUTION. An eastern species, ranging from East Africa, southwards, through Portuguese East Africa, Southern Rhodesia, Transvaal, Zululand and Natal to the eastern Cape Province, and extending west as far as the eastern edge of the Kalahari.

REMARKS. Semi-adult specimens; No. 879 with broken and partially regenerated tail. Ventrals 159-161. Subcaudals 55. Dorsal scales in 15 rows. Tail  $4\frac{1}{2}$  times into total length.

COLOUR. Above vinaceous tawny, with a faint blackish vertebral stripe; upper surface of head and nape black, extending downwards to third and fourth labial on sides of head and on to sides of neck. Below yellowish white.

FIELD NOTES. Captured under stones lying on slopes of granite hills.

DIMENSIONS.

	No. 879*	No. 880
Total length	264 mm.	290 mm.
Tail	14 mm.	64 mm.

\* Tail regenerated.

Subfam. ELAPINAE

**Naja flava** (Merrem)

*Vipera (Echidna) flava* Merrem, 1820, *Tent. Syst. Amph.* p. 154 (type loc.: Cape of Good Hope).

*Naja flava* Werner, 1910, *Jena. Denkschr.* xvi, p. 364 (Kang, Kalahari). Sternfeld, 1910, *Schl. Deutsch.-S.W.-Afrikas*, p. 32, fig. 38 (Rehoboth, Hereroland). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 203 (Rietmond, Aus and Kuibis, South-West Africa). Werner, 1915, in Michaelsen,

<sup>1</sup> 1915, *Beitr. z. K. Land- u. Süßwasserfauna Deutsch.-Südwest-Afrikas*, Rept. u. Amph. p. 358.

*Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 366 (Luderitz-bucht, South-West Africa).

A single specimen (V.L.K.E. No. 893), collected at Kuke Pan, March 1930.

DISTRIBUTION. Cape Province, excluding Pondoland and Griqualand East, northwards into South-West Africa and the southern Kalahari.

REMARKS. An adult female. Eye slightly less than half length of snout; upper portion of rostral about two-thirds of its distance from frontal; frontal  $1\frac{1}{2}$  times as long as broad, about two-thirds of its distance from end of snout, slightly less than three-fifths length of parietal. A single preocular, separated from internasal. Three postoculars. Temporals 1 + 2. Seven upper labials, third and fourth entering eye, sixth in contact with two lower postoculars. Four lower labials in contact with anterior chin-shields; posterior chin-shields subequal in length but much narrower than anterior, separated from each other by two rows of scales. Scales round neck in 23 rows, round body in 19 rows. Ventrals 202. Anal entire. Subcaudals 58. Tail 6.7 times into total length.

COLOUR. Above a uniform yellowish brown. Below yellowish.

FIELD NOTES. Dug out of the ground when excavating Gerbille holes in typical Kalahari sand veld. Very active and aggressive; largely cannibalistic in habit.

#### DIMENSIONS.

				No. 893 ♀
Total length	...	...	...	1480 mm.
Tail	...	...	...	220 mm.

#### *Naja nigricollis* Reinhardt

*Naja nigricollis* Reinhardt, 1843, *Danske Vidensk. Selsk. Afh.* x, p. 269, pl. III, figs. 5 and 7 (type loc.: Guinea, West Africa).

*Naia nigricollis* Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, xi, No. 255, p. 4 (Kazungula). Werner, 1910, *Jena. Denkschr.* xvi, p. 364, fig. 13 (Okahandja and Kubub, South-West Africa). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 57 (Gobabis and Windhuk, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 203 (Kuibis, South-West Africa). Methuen and Hewitt, 1914, *Ann. Trans. Mus.* iv, p. 144 (Narudas Sud, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 366 (between Omuramba and Owangowa, South-West Africa).

Three specimens (V.L.K.E. Nos. 894-896) were collected at Maun, during May 1930.

DISTRIBUTION. From Senegambia and Upper Egypt south throughout Central and Southern Africa, with the exception of the southern coastal strip of the Cape Province. (Most southerly records in Transvaal Museum collection are Grahamstown and Tulbagh.)

REMARKS. One half-grown (male) and two juvenile specimens. Internasals in contact with preocular in one specimen, narrowly separated in two. Two preoculars, three postoculars. Temporals 2 + 3. Six upper labials, third entering eye. Four lower labials in contact with anterior chin-shields; posterior chin-shields slightly longer but much narrower than anterior, widely separated by two series of scales. Scales in 21-25 rows round neck, 23 rows round body. Ventrals 193-196. Anal entire. Subcaudals 63-64. Tail 5-5 $\frac{1}{2}$  times into total length.

COLOUR. Above pale greyish brown to olive, interstitial spaces black, a few lateral scales black-edged. Below yellowish to pinkish brown, neck with black cross-bars. The above specimens correspond to Boulenger's colour variety A<sup>1</sup>.

<sup>1</sup> 1896, *Cat. Snakes Brit. Mus.* III, p. 378.

FIELD NOTES. Found in open bush country near the Thamalakane River. Very active and difficult to detect. When molested they will turn and spray their poison at the face of their aggressor without a moment's warning.

DIMENSIONS.

			No. 894 ♂
Total length	...	...	1095 mm.
Tail	...	...	216 mm.

***Naja anchietae* Bocage**

*Naja anchietae* Bocage, 1880, *Journ. Sci. Lisboa*, vii, pp. 89 and 98 (type loc.: Caconda, Angola).

*Naja haje* (non Linn.) Boettger, 1887, *Ber. Senck. Nat. Ges.* p. 164 (Ondonga, Ovamboland).

*Naia anchietae* Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 57 (Gobabis, Grootfontein and Windhuk, South-West Africa).

Five specimens were collected as follows: V.L.K.E. Nos. 897-900 (May), Maun; No. 901 (July), Kabulubula.

DISTRIBUTION. From Angola and north-western Rhodesia southwards to the northern parts of South-West Africa and Bechuanaland.

REMARKS. Four adult (males) and one semi-adult specimen. Diameter of eye just over half the length of snout; internasals half as long as prefrontals, frontal from  $1\frac{1}{5}$ - $1\frac{1}{2}$  times as long as broad, much less than its distance from tip of snout, and a little more than half the length of parietals. A single pre-ocular, two postoculars and two to three suboculars (two in two specimens, three in three). Temporals 2+3. Seven upper labials. Four lower labials in contact with anterior chin-shields, which are larger than posterior. Scales round neck and body in 17 rows. Ventrals 182-192. Anal entire. Subcaudals 56-58.

COLOUR. Above deep drab to blackish brown, head slightly paler. Below body yellowish brown, strongly infuscated with darker brown, or—in old specimens—uniform dark brown; a wide dark brown band on neck, clearly defined in young, inconspicuous in older specimens; chin and throat pale yellowish brown.

FIELD NOTES. Usually found in the thickly wooded areas near the rivers and swamps. Very active and aggressively hostile.

DIMENSIONS. A summary of the measurements of the four adult specimens is as follows:

	Extremes	Average
Total length	1600-1978 mm.	1787.7 mm.
Tail	263- 316 mm.	290.5 mm.

***Aspidelaps scutatus* (A. Smith)**

*Cyrtophis scutatus* A. Smith, 1849, *Ill. Zool. S. Afr., Reptiles*, App. p. 22 (type loc.: Kaffirland and country towards Port Natal).

*Aspidelaps scutatus* Werner, 1902, *Verh. Zool.-bot. Ges. Wien*, LII, p. 341 (Windhoek, South-West Africa); 1910, *Jena. Denkschr.* xvi, p. 365, fig. 15 (Kokong-Kong and Vleij Topan, Kalahari). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 57 (Gobabis and Windhuk, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 204 (Rietmond, South-West Africa).

Two adult specimens were collected as follows: V.L.K.E. No. 890 (March), Gomodimo Pan; No. 891 (May), Maun.

DISTRIBUTION. A south-eastern species, ranging from the southern part of Portuguese East Africa, southwards to Kaffraria, and extending westward

across the Orange Free State, Transvaal and Southern Rhodesia to the Kalahari and northern South-West Africa.

REMARKS. Rostral separating internasals; frontal small, as broad as long, as long as but narrower than prefrontals, and much shorter than parietals; preocular undivided; temporals 2 + 4, lower anterior very large, lying between fifth and sixth upper labials. Six upper labials, fourth only entering eye; eight lower labials, four in contact with anterior chin-shields. Dorsal scales in 21 rows, anteriorly smooth (No. 890) or faintly keeled (No. 891); tubercularly keeled on posterior part of body and on tail. Ventrals 118-123. Subcaudals 22-24. Tail 8.3-8.5 times in total length.

COLOUR. Above a pale greyish to pinkish brown, with a series of large irregular transverse deep brownish to drab spots down the back; scales on sides edged or slightly infuscated with brownish. Head and neck above uniform shiny black, which encircles neck, forming a wide nuchal collar; a prolongation of black on each side over temporal region meeting below, leaving lower half rostral, chin and throat whitish. Belly creamy white, ventrals edged laterally with brownish.

DISCUSSION. The uniform black of head and neck in Kalahari specimens (found also in specimens from South-West Africa) appears to be characteristic of the western forms, distinguishing them from those of the Transvaal and the east generally, where the head marking is more or less patchy (see Boulenger)<sup>1</sup>.

FIELD NOTES. One specimen (No. 890) was captured at night by lamplight in thorn scrub round Gomodimo Pan. For a snake of so squat a build it displayed remarkable activity, and after capture struggled and lashed out with the greatest abandon. When molested these snakes blow themselves up with air much like typical adders, and then emit a series of powerful low-toned abrupt hisses at short intervals.

#### DIMENSIONS.

	No. 890	No. 891
Total length	442 mm.	587 mm.
Tail	52 mm.	71 mm.

#### *Elapechis sundevallii* (A. Smith)

*Elaps sundevallii* A. Smith, 1848, *Ill. Zool. S. Afr., Reptiles*, pl. LXVI (type loc.: Southern Africa to the eastward of Cape Colony, i.e. Kaffraria).

*Elapechis sundevallii* Peracca, 1896, *Boll. Mus. Zool. Anat. Torino*, xi, No. 255, p. 4 (Kazungula).

Five specimens were collected as follows: V.L.K.E. No. 883 (April), between Kuke and Gomodimo; Nos. 885 and 886 (April), Gomodimo Pan; No. 892 (April), Okwa River; No. 887 (April), Damara Pan.

DISTRIBUTION. A southern species ranging from the eastern Cape and Natal, westwards across the Orange Free State, Swaziland, Transvaal and Northern Cape, into Bechuanaland and South-West Africa.

REMARKS. Two adult, two half-grown and one juvenile specimen. Snout obtusely pointed; part of rostral visible from above two-thirds to three-quarters as long as its distance from frontal; internasals one-half to two-thirds length of prefrontals; diameter of eye less than its distance from nostril; frontal  $1\frac{1}{3}$ - $1\frac{1}{2}$  times as long as broad, as long as or longer than distance from end of snout, shorter than parietals; three to four lower labials in contact with anterior chin-shields, which are subequal to or slightly larger than posterior. Dorsal scales in 13 rows. Ventrals 164-178. Subcaudals 21-23. Tail 13-16.6 times into total length. Tail regenerated in No. 883, with last five subcaudals unpaired.

<sup>1</sup> 1896, *Cat. Snakes Brit. Mus.* iii, p. 391.



**COLOUR.** Adult and half-grown specimens: Above dark slaty grey, with a reddish or purplish brown tinge, paler posteriorly and on sides; upper lip, outer row of scales and lower half of adjacent row, creamy white. Below uniform creamy white. Snout and sides of tail tinged with pinkish. Juvenile: Above alternately marked with equal-sized dark slaty brown and pale yellowish bands (scales on latter usually dark-edged); band on neck produced anteriorly over middle of head, narrowing to a point on a level with prefrontals; a dark spot just behind eye; sides of head yellowish. Below yellowish.

**DISCUSSION.** Considerable variation in colour marking is found in this species, ranging from alternate banding of dark and light in different proportions to uniform pale or dark. Adult specimens from the east are usually banded more or less, while those from the west are uniformly dark above. All juvenile specimens whether from the east or west are banded. The specimen from Gobabis, recorded by Sternfeld as *E. decosteri*<sup>1</sup>, is probably the dark form of *sundevallii*, as specimens from Okahandja, in the Transvaal Museum collection, are certainly referable to the latter species.

**FIELD NOTES.** Nocturnal in habit. Found usually near the pans, where they were captured in the early evening just after rain had fallen. Very active in movement, but like *Atractaspis bibronii* were very conspicuous on the light-coloured sand and were thus easily followed by lamplight.

**DIMENSIONS.** Measurements of the two adult specimens are as follows:

	No. 885 ♂	No. 887 ♂
Total length	708 mm.	766 mm.
Tail	45 mm.	50 mm.

### ***Dendraspis angusticeps* (A. Smith)**

*Naja angusticeps* A. Smith, 1849, *Ill. Zool. S. Afr., Reptiles*, pl. LXX (type loc.: Natal).

*Dendraspis angusticeps* Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 57 (Windhuk (Okahandja), South-West Africa).

Four specimens were collected as follows: V.L.K.E. No. 902 (March), Gaberones; No. 903 (May), Maun; No. 904 (May), Kwaai; No. 905 (July), Kabulabula.

**DISTRIBUTION.** From West Africa south of the Congo, Central and East Africa, southwards to Natal, Transvaal, north and eastern Bechuanaland and the northern part of South-West Africa.

**REMARKS.** Nos. 903 and 905 adult males. Nos. 902 and 904, heads only preserved. Internasals much shorter than prefrontals, frontal broader than long, much shorter than its distance from end of snout, about half the length of parietals, in narrow contact with upper preoculars. Preoculars 2-2. Postoculars 3-3 in three specimens, 2-3 in one. Subocular below postoculars absent in one specimen. Temporals 2+3. Upper labials 9-9 in one specimen, 8-9 in one and 8-8 in two. Labials entering the eye, fourth and fifth in one specimen, fourth only in three. Labials in contact with prefrontal, second and third in two specimens, second only in two. Lower labials 12-12 in two specimens, 13-11 in one and 11-12 in one. Lower labials in contact with anterior chin-shields, 5-5 in one specimen, 5-4 in one and 4-4 in two. Posterior chin-shields separated in three specimens, in contact in one. Scales round neck in 21-23 rows, body 21 rows, outer scales not noticeably shorter than dorsals. Ventrals 260-262. Anal divided. Subcaudals 119-122. Tail in males 4.5-4.7 times into total length.

<sup>1</sup> 1910, *Fauna der deutschen Kolonien*, Reihe IV, Deutsch-Südwestafrika, Heft 1, Schlangen, p. 31.

COLOUR. Above olive, passing to olive brown posteriorly. Below sage green, with blotches of olive brown posteriorly and under tail.

FIELD NOTES. Fairly common in the river forests and swampy regions of Ngamiland. Exceedingly quick and elusive and thus seldom encountered. Two specimens were shot when crossing the roadway in front of the motor-cars; another was captured while swimming across the Thamalakane River. No. 904 was one of a pair, which were encountered on the road *in copula*, by Mr A. S. Vernay and F. O. Noome, the latter of whom gives the following account of the occurrence: "The two snakes were reared up to a height of from three to four feet, with their bodies closely wound round one another. Their heads and necks were free, and swaying rhythmically from side to side. They were so engrossed in their love-making, that a near approach by car was effected before they became aware of our intrusion, when they hastily disentangled and made off into the adjoining bush. The male was shot, while the female escaped."

DIMENSIONS.

	No. 903 ♂	No. 905 ♂
Total length	2263 mm.	2440 mm.
Tail	496 mm.	515 mm.

Fam. VIPERIDAE

**Causus rhombeatus** (Lichtenstein)

*Sepedon rhombeata* Lichtenstein, 1823, *Verz. Doubl. Mus. Berlin*, p. 106 (no type locality).

*Causus rhombeatus* Peracca, 1896, *Boll. Mus. Zooll. Anat. Torino*, XI, No. 255, p. 4 (Kazungula).

A single specimen (V.L.K.E. No. 906) was collected at Shorobe on the Thamalakane River, June 1930.

DISTRIBUTION. Throughout tropical and Southern Africa.

REMARKS. An adult female, containing eggs *in utero*. Rostral about two-thirds its distance from frontal; internasals longer than prefrontals, in contact with loreal; frontal  $1\frac{1}{2}$  times as long as broad, much longer than its distance from end of snout, almost twice as long as parietals. Two preoculars; a single postocular; two suboculars. Temporals 2 + 3. Six upper labials. Four lower labials in contact with anterior chin-shields. Scales round the body in 19 rows; dorsal scales keeled, except on anterior quarter of body. Ventrals 144. Anal entire. Subcaudals 28. Tail 8.7 times into total length.

COLOUR. Above greyish olive, with a series of irregular rhomboidal blackish markings down back; A-shaped marking on head, with apex reaching frontal; labials edged with black. Below dirty yellowish white, with slight speckling of dark brown.

FIELD NOTES. Found under a heap of driftwood near river bank.

DIMENSIONS.

	No. 906 ♀
Total length	654 mm.
Tail	75 mm.

**Bitis arietans** (Merrem)

*Vipera (Echidna) arietans* Merrem, 1820, *Tent. Sept. Amph.* p. 152 (type loc.: Cape of Good Hope).

*Vipera arietans* Boettger, 1887, *Ber. Senck. Nat. Ges.* p. 167 (Kalahari); 1894, p. 93 (Rehoboth, South-West Africa).

*Bitis arietans* Werner, 1910, *Jena. Denkschr.* xvi, p. 366 (Okahandja, Aar and Kubub-Sinclair Mine, South-West Africa; Kooa, Kalahari; Steinkopf, Little Namaqualand). Sternfeld, 1910, *Mittl. Zool. Mus. Berlin*, v, p. 57

(Gobabis, South-West Africa). Lampe, 1911, *Jahrb. nass. Ver. Nat.* LXIV, p. 206 (Rietmond, South-West Africa). Werner, 1915, in Michaelsen, *Land- u. Süßwasserfauna Deutsch-S.W.-Afrikas*, Lief. 3, p. 367 (Luderitz-bucht, Neudamm, Tsumeb, Usakos and Okasise, South-West Africa).

Thirty-seven specimens were collected as follows: V.L.K.E. No. 916 (March), Kuke; No. 917 (April), between Kuke and Gomodimo; Nos. 918, 919 and 924 (April), Gomodimo Pan; Nos. 920 and 921 (April), between Gomodimo Pan and Kaotwe; Nos. 922, 923 and 925-934 (April), Kaotwe; Nos. 935-937 (April), Damara Pan; No. 938 (May), Mabeleapudi; No. 939 (May), Motihatlogo; Nos. 940-945 (May-June), Maun; Nos. 946 and 947 (June), Shorobe; No. 948 (June), Kwaai; Nos. 949 and 950 (June), Tsotsoroga; Nos. 951 and 952 (July), Kabulabula.

**DISTRIBUTION.** Ranging over practically the whole of Africa (excluding the rain-forest regions) and extending into Arabia.

**REMARKS.** Thirty-three adult specimens (21 ♂♂ and 12 ♀♀) and three juveniles; No. 917 head only preserved. Two scales between nasals and rostral, and two between nasals. Scales between eye and upper labials 3 in twenty-nine specimens and 4 in five; scales between the eyes, 7 in one specimen, 8 in nine, 9 in seventeen, 10 in five and 11 in two. Scales round eye, 11-13 in one specimen, 12-13 in four, 12-14 in one, 13-13 in six, 13-14 in seven, 13-15 in one, 14-14 in two, 14-15 in eight, 14-16 in one, 15-15 in one, 15-16 in one and 17-17 in one. Upper labials 12-13 in one specimen, 13-13 in three, 13-14 in six, 13-15 in two, 14-14 in five, 14-15 in eleven and 14-16 in one. Lower labials in contact with anterior chin-shields, 3-3 in six, 3-4 in one, 4-4 in twenty-five and 4-5 in one. Scales round body in 30-36 rows. Ventrals 127-139. Subcaudals 28-36 in males, 18-20 in females. Tail into total length average 7.2 times in males and 13.1 in females.

**COLOUR.** Two colour phases were found: a dark, in which greyish brown predominates; and a light, in which yellow is the predominating colour. Dark phase: Above smoky to greyish brown, with a regular series of dark brown to blackish crescent or chevron-shaped bars down the back, directed posteriorly and edged behind with yellow; crown of head to interorbital region dark brown, with a transverse yellow streak between the orbits; dark bands below the eye and on cheek. Below yellow, with a few large black blotches along lateral edges of ventrals. Specimens from Maun and Shorobe, on Thamalakane River, with a pinkish tinge ventrally. Light phase: Above yellowish, dark markings on back irregular and ill-defined, interspaces bright yellow.

**FIELD NOTES.** One of the commonest snakes throughout the Kalahari. Usually found at night, when they are abroad in search of small rodents, which constitute their staple diet. Two pairs, Nos. 920 ♂, 921 ♀ and 933 ♂, 934 ♀, were captured while *in copula*.

**DIMENSIONS.** A summary of the measurements of adult specimens is as follows:

	Sex	No. of specimens	Extremes	Average
Total length	♂	21	762-1030 mm.	865.6 mm.
	♀	12	710-965 mm.	806.6 mm.
Tail	♂	19	106-140 mm.	119.4 mm.
	♀	12	55-69 mm.	61.6 mm.
Scales round body	♂	21	30-35	33.1
	♀	12	31-36	33.8
Ventrals	♂	21	127-139	133.5
	♀	12	132-139	135.9
Subcaudals	♂	19	28-36	31.9
	♀	12	18-20	18.9